Streetcars and Economic Development: Do Streetcars Stimulate Employment Growth?

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Abstract

Positive economic development in association with transit investments such as light rail, bus rapid transit and streetcars is a common assumption in urban planning. However, the published literature on this relationship, primarily looking at light rail, shows varied outcomes, and studies on other modes such as BRT are very limited. This study reports economic development outcomes—defined as change in employment—for areas within one-quarter mile of three streetcar stations in each of four cities: Portland OR "Central Loop" line; Salt Lake City UT "S" line; Seattle WA "South Lake Union" line; and New Orleans LA "Rampart-St. Claude" line. Employment three years prior to the start of the streetcar construction was compared to employment within the three streetcar station areas in 2013. In addition, a before-after comparison was extended to ten bus stops within each urbanized area that serve as "pseudo" station areas that are quantitatively comparable to each streetcar station area studied, and shift-share analysis was used to compare each streetcar and pseudo station area's employment trends with respect to central county economic sector performance. Portland's system showed strong economic development consistency, confirming the pattern already established by the original Portland North-South streetcar. The New Orleans line also had positive performance. The Salt Lake City and Seattle lines, however, did not perform as consistently. These results indicate that while streetcar investment may support economic development, it is not alone a driver of employment growth.

Introduction: The American Streetcar Renaissance

Prior to the opening of Portland, Oregon's North-South streetcar line in 2001, streetcars in North America were a novelty – a charming relic of a bygone era found only in a handful of cities, such as Philadelphia and San Francisco, which had not paved over their tracks decades ago. Less than a decade later, streetcars are popping up all over North America, with about a dozen in operation and many more in the planning stages. A major impetus for streetcar investments has been US federal funding: the Small Starts Program beginning in 2005 and the federal Transportation Investment Generating Economic Recovery (TIGER) program, whose name indicates the philosophy behind it. Together, the programs support smaller-scale urban transit investments and economic development. The response from cities has been enthusiastic: it seemed for a time that a true streetcar renaissance was taking place that would reshape public transportation in American cities. More recently however, critical voices have grown louder, especially in the popular media, and the streetcar concept has come under greater scrutiny. In particular, the abrupt cancellation of two streetcar projects in Arlington, Virginia in late 2014 brought the debate to the fore. In essence, the debate rages between those who see streetcars as transit projects and those who see streetcars as economic development and/or urban revitalization investments. This dichotomy of perspective is more than nuance, for it is essentially what shut down the Arlington streetcar project and "…destroyed 15 years of a joint effort…It set back transit options in this part of the region for at least a generation or more" (*1*).

Those in the anti-streetcar camp argue that as a way of moving people around, streetcars are excessively expensive and inefficient. They point out that streetcars are subject to getting stuck in traffic, do not move much faster than a person on foot or bicycle, yet require multi-million dollar infrastructure investments. The transportation needs of communities, they argue,

would be better met by increasing bus service or by improving roads (*2*, *3*). In a recent comparative study, Brown, Nixon and Ramos (*4*) highlight the inefficiency of streetcars as a public transit mode compared with bus in terms of cost of operation, efficiency and speed of carrying passengers. There are, however, important differences among the five systems studied by Brown, Nixon and Ramos, with the Portland, Oregon system standing out in terms of its service and ridership performance. In their analysis, the authors conclude that the Portland streetcar system—held up as a model for modern streetcars as an economic development and urban revitalization tool—is in fact also the best-planned streetcar system among the five they studied from a transit planning perspective.

The pro-streetcar camp, on the other hand, argues that streetcars are not just transportation projects, although they do serve to meet some transportation needs. Rather, they are a highly visible investment in the community as a whole, and serve as a catalyst for economic development. A 2014 article in *The Guardian* speaks of the "emotional and aesthetic allure" of streetcars (*5*) and Brown, Nixon and Ramos (*4*) offer that streetcars "have now taken on an iconic role completely separate from any transportation function they possess." This project makes a comparative examination of the non-transportation effects – specifically, economic development – of recent streetcar projects in four US cities. This examination begins with a brief exploration of the connection between streetcars and economic development, using the example of the Portland North-South Line study. Given the lack of research on streetcars specifically, there is a brief review of studies on light rail, as the closest available rail-based analog. Following this, the objectives and methodology of the project are reviewed and the economic effects of four streetcar projects in Portland, Salt Lake City, Seattle, and New Orleans are

analyzed sequentially. The paper concludes with an interpretation of the applications and implications of the results for understanding the relationship between streetcars and employment.

Streetcars and Economic Development

Because the modern streetcar is a relatively new phenomenon, very few comparative, objective studies exist on the linkage between streetcars and economic development. Many of the studies currently available are either single-city case studies (*6*,*7*), and/or non-peer-reviewed reports commissioned and published by interested parties (*8*) such as transit agencies that operate the streetcar. In order to place this study into context, two related literatures were examined. First, the economic impacts of related transit modes such as light rail (LRT) and bus rapid transit (BRT) were reviewed. Light rail is a potential analog to streetcar as it uses similar technology (rails and cars), thus providing a similar riding experience and level of reliability (widely considered to be more popular with the public than buses) and so may be expected to generate similar economic impacts. Second, a few case studies of modern streetcar systems currently available were analyzed.

Economic Development and Transit Investment

The relationship between economic aspects of land use and transportation investments is one of the most-researched topics in urban planning. Only a few recent perspectives on the topic are presented in this literature review so as to not be exhaustive. A 2009 commissioned paper for Smart Growth America lays out a series of economic arguments in favor of transit investments, including facilitation of economic growth through agglomeration economies, increased real estate values and enhanced connectivity between people and locations of economic opportunity

(*9*). Higgins and Kanaroglou (*10*) point out that it has become a widely accepted belief that investments in transit such as light rail generate positive economic outcomes – in particular, increases in land values in close proximity to stations. The authors provide a comprehensive review of four decades of research on the effects of rapid transit on land values. They found considerable variation across cities and even stations, and end with a constructive critique of the assumptions and methodology associated with this particular body of literature.

It is important to note that transit investments are not typically planned as a sole anticipated driver of economic development, however, but often as part of a policy package that also directs land use and facilitates desired change. Kolko surmised that, "The relationship between transit and surrounding land values and densities depends both on how businesses and residents value proximity to transit and on public-sector decisions about zoning, land use, and other incentives for transit-oriented development" (*11*). As a case in point, a modeling study of projected streetcar impacts in Cincinnati found that impacts were spatially limited without accompanying policies to support economic development (*12*). The economic development surrounding the studied lines in Portland, Seattle, Salt Lake City, and New Orleans have various supporting land use policies. The policies are noted within each case study.

Nelson et al (*9*) carried out a case study of the Eugene-Springfield, Oregon BRT system, finding enhanced growth in employment relative to the rest of the metropolitan area within 0.25 miles of BRT stations. This growth was not consistent across job sectors however, a finding that is supported by Belzer et al.'s (*13*) analysis of preferences of different employment sectors to locate near transit infrastructure. In contrast, Kolko examined 204 rail transit stations in California and found that growth in employment near stations was variable, with statistically significant decreases found in more stations than statistically significant increases (*11*).

The examples above indicate several recent contributions to an extensive literature that has been well-reviewed elsewhere and provide an entry into that literature. They make it clear that transit investment, counter to common assumptions in the field, does not automatically or directly lead to positive economic growth outcomes. However, while it is important to understand the broader context and longer history of research on transportation and economic development, it is also salient to question the applicability of studies on BRT and LRT systems on streetcars. LRT and BRT are different from streetcars in several ways that may be important. As Brown et al (*4*) point out, streetcars are neither appropriately nor favorably compared with other transit modes in all cases.

The primary distinction between streetcars and LRT and BRT is speed; streetcars move in traffic at the speed of traffic, which as some critics note is often little faster than the speed of walking. Streetcars also stop more frequently than light rail, generally travel shorter distances and are less expensive to build and operate. As described by Hovee, "If light rail systems function as highways and arterials, streetcar systems function as the *local streets*" (*8*).

Streetcar systems are small and local in scale, and while they may or may not connect to regional transportation infrastructure, they are currently applied in a rather limited set of circumstances, primarily in association with urban revitalization of downtown areas, either via a tourism or local commuter focus. Modern streetcars in the United States have not been viewed simply as transportation infrastructure but as part of an economic development strategy. Thus the degree, form and extent of economic development and redevelopment are directed by the pre-existing built environment, the economic context of the downtown and the accompanying policies, zoning and incentives with regard to land use.

Where it all began: the Portland North-South Line

The recent streetcar renaissance in the U.S. has been strongly supported by federal funding programs, but it takes as its inspiration the single, shining example of Portland, Oregon's streetcar success story. If the Portland example has served as a model for potentially billions of dollars of investment nationwide in streetcar projects, it is worthwhile to take it as a starting point in this study. In addition, the Portland streetcar is essentially the only model for modern streetcar development at this time, so it is worthwhile to examine it.

The Portland North-South streetcar line opened in 2001 at a cost of $56.9 million, which, notably, was entirely locally funded. Its original length was 2.4 miles and it has since been extended to 4 miles, which makes it effectively 8 miles of track. The planning goals associated with the Portland streetcar (as listed at www.portlandstreetcar.org) were as follows:

- Link neighborhoods with a convenient and attractive transportation alternative.
- Fit the scale and traffic patterns of existing neighborhoods.
- Provide quality service to attract new transit ridership.
- Reduce short inner-city auto trips, parking demand, traffic congestion and air pollution.
- Encourage development of more housing & businesses in the Central City.

A report prepared by the Portland Office of Transportation and Portland Streetcar expressed this rationale and philosophy for the streetcar:

> Like many other cities, Portland is growing in population and is proactively looking for ways to promote economic development while managing growth. Keeping Downtown Portland healthy is critical to the region's economic stability. The Portland Streetcar is at the heart of a new approach to shaping cities that promotes investment at the City's core, provides homes for people of diverse income groups and supports the urban amenities that make great cities great. (*14*)

Hovee, in a report prepared for the Portland Office of Transportation, suggests that the Portland streetcar should actually be considered "development-oriented transit"(*8*). The Portland business and real estate development community were strong backers of the original streetcar development and saw it as evidence of a commitment on the part of the city to downtown development.

The Economist, in a brief but scathing 2014 critique of streetcar investments, refers to "vague benefits" offered by streetcars that help to justify their cost. Hovee and Gustafson (*7*) helpfully eliminate this vagueness by listing six benefit metrics by which the Portland streetcar may be assessed:

- Density of new development
- Return on investment
- Redevelopment potential
- Zoned development capacity
- Reduction in VMT (Vehicle Miles Traveled), and
- Reduced carbon footprint.

The Portland streetcar and its associated policies enacted by the City of Portland facilitated large increases in density immediately along the streetcar corridor, enhancing many of the economic advantages of higher density, including the expansion of new residential sectors such as the condo market. Hovee and Gustafson show that development patterns shifted to become concentrated strongly along the streetcar corridor, starting in 1997 when funding was committed and that new development achieved much higher densities than pre-streetcar development (*7*).

Hovee and Gustafson report $3.5 billion in private investment associated with the Portland streetcar, as of 2012. O'Toole (*2*) argues that the vast majority of development was highly subsidized and that subsidies were the primary driver of investment, however these arguments are countered by Bottoms et al. (*15*), who argue that the lower levels of development outside of the subsidy zones were due to the fact that that area was already largely built out and had much less development potential anyway.

Nelson et al (*9*) found explosive residential growth within a .25 mile distance along the Portland N-S line, much of it possibly displacing jobs. That is, while residents increased, jobs decreased within that corridor and appear to have moved to further distances out. This indicates a massive land use shift along the corridor with residential development being the preferred type within one block of the streetcar. They found that population growth within a half-mile of the streetcar could basically account for all of Central Portland's population growth over the time period from 2002-2011. However, the same area lost jobs even though the Metropolitan area gained jobs. Job gains within the half-mile distance were within the furthest distance band. The authors indicate that much of this change was likely due to policies in place that aimed to facilitate residential redevelopment and densification, particularly in the Pearl District.

A further consideration with regard to the Portland streetcar is its effectiveness as a transit system. Despite the many arguments made that the streetcar was as much an economic development investment as it was a transit investment, Brown, Nixon and Ramos (*4*) show that Portland's system is by far the most effective of five streetcars studied (Portland, Memphis, Little Rock, Tampa and Seattle) *as a transit mode*, in terms of ridership, cost-effectiveness and favorable comparison with bus service. In other words, people in Portland actually use the streetcar to get around. This is in part because, thanks to the high density surrounding the

streetcar route, 117,000 people live within 400 meters of a streetcar stop, double the density of the second-most dense city in the study, Memphis. It is also due to the fact that the Portland line is designed to provide public transit services to commuters, not just to tourists. Thus the frequency, hours of service, fares and connectivity to other transit modes and activity centers make it convenient and affordable.

Looking beyond Portland, there are few studies that allow for comparisons. Guthrie and Fan (*6*) studied building permits in relationship to streetcar stops during the years post-Hurricane Katrina in New Orleans and found that commercial and residential building permits showed opposite relationships to those observed by Nelson et al (*9*), with commercial building permits dominating the near distance range. The contrast between these findings points to the particularities associated with the planning and redevelopment processes in each city and the need for comparative studies. It leaves open the question of whether streetcars are more effective at supporting residential versus commercial development.

A recent qualitative study by Ramos-Santiago, Brown and Nixon (*16*) examines the Little Rock, Arkansas and Tampa, Florida streetcars, and raises questions as to the economic and other benefits achieved by these two streetcars. While qualitative, this study does suggest these cities have not seen economic development associated with streetcars to the extent that Portland has; however, these lines are also more tourist-oriented and less supported by high-density populations, and the lack of a quantitative analysis of these systems makes it difficult to draw direct comparisons.

Study Objectives

This research addresses the question of whether streetcars do, in fact, promote economic development, measured here by employment. It is the first comparative study of employment

patterns associated with modern streetcars in the United States, examining four modern streetcar systems that had completed construction and initiated service at the time of this study.

Methodology

Economic development may be assessed in various ways. In the literature on transportation and land use there are three common metrics. One approach measures economic development in terms of financial investment in real estate development (*6*), another as changes in real estate value (*10*), and a third in terms of employment (*9, 11*). It is difficult in any case to make a direct causal link between a transportation project and the real estate development metric; the relationship is generally inferred by examining spatial patterns and temporal trends in the data. A further challenge is presented in studies that compare more than one city, because local data associated with real estate development, building permits, etc., are collected and maintained locally and in different ways from one jurisdiction to the next. Thus no objective, comparative, multi-city studies of economic development associated with streetcar projects have been completed to date.

In order to avoid the challenges of obtaining comparable real estate investment data for all four cities in our study, employment was chosen to be the metric for economic development. This metric has the advantage of being available nationwide in a common format (US Census). However, it has the arguable disadvantage of being perhaps less responsive to streetcar development in the sense that real estate investment generally must occur first, in order for the employment to follow. For this reason, and because the streetcar lines in question are so new, this analysis can only lay the groundwork for detecting employment change for the new lines

studied in this paper. The processes of change taking place may well be far from having run their course and only show small indications of things to come.

From a city planning perspective, forward-looking investments in public transit such as light rail are expected to increase density (residential and/or employment) near transit stations, as rail infrastructure is too expensive to cost-efficiently serve low density land uses. There are complications in studying the impacts of rail transit investment, however, because changes in density associated with rail transit projects may either reflect new, net economic growth occurring preferentially in those locations, or it may reflect spatial redistribution of pre-existing jobs. In addition, there is a chicken-or-egg dilemma in assessing economic impacts, as many transit investments are intentionally located to serve already-dense or growing population or job centers (see *11* for trends in California). That is, transit projects may be built specifically in locations that are already on a growth trajectory.

In this project, four streetcar systems were studied that were new streetcars, not "heritage" lines, carrying modern trains and developed primarily to serve transit functions for the local community rather than tourists. The four study systems were Portland, Oregon's Central Loop; Salt Lake City, Utah's S Line; Seattle, Washington's South Lake Union line; and New Orleans, Louisiana's Rampart-St. Claude Line. Changes in employment around focal streetcar stops were tracked over time against a set of comparable non-streetcar control sites, with the Central County as a whole[1], and within economic groups. For each study system, a "before" year, specified as 3 years prior to the beginning of construction, and an "after" year, specified as 2013, being the most recent year for which data were available, were determined (see Appendix

[1] We use central counties for our region because streetcar systems are designed to serve only the most centralized and built out area of the central county.

for dates). The before date was considered to reflect the date of the project funding announcement, since such an announcement might trigger real estate speculation, however since only employment is being studied, not real estate investment or land values, the date of three years prior to the construction start was considered sufficiently early as to represent a "before" condition. The after dates are the primary limitation of this study: service on two of these streetcar systems began so recently (Salt Lake City: 08 December 2013[2]; New Orleans: 28 January 2013[3]) that the most recent available data at the time of this study are less than one year after start of service.

Study locations and controls

For each streetcar line studied, three focal stops were selected to serve as pseudo-experimental "treatments". The primary selection criterion for streetcar stops was spacing, that they be far enough apart that quarter-mile buffers around each stop would not overlap significantly with one another and that they represent as much of the full length of the line as possible. Each treatment site consists of a quarter-mile radius walkshed centered on the selected stop. Guerra, Cervero and Tischer (*17*) find support for a quarter mile catchment as appropriate for employment-transit studies. Each walkshed had a different socioeconomic profile and in order to detect the effect of streetcar development, a set of control sites ("pseudo-stations") with similar profiles but without streetcars, were selected for comparison. A multidimensional similarity measure was used to select 10 control sites for comparison with each study stop; these control sites were located within the same metropolitan area, were served by existing bus routes, and shared similar socioeconomic characteristics in terms of population, employment, housing

[2] https://en.wikipedia.org/wiki/S_Line_(Utah_Transit_Authority); accessed 03 March 2016
[3] https://en.wikipedia.org/wiki/Rampart-St._Claude_Streetcar_Line; accessed 03 March 2016

units, households, median household income as reported at the Census block group level prior to the streetcar project development's before date. A similar conceptual approach, with slightly different methodology, may be found in Kolko's analysis (*11*). The process of selecting pseudo station areas consisted of two steps: first, creating a large set of candidate points, and second, assessing each candidate point for similarity with the actual streetcar locations. For the first step, it was assumed that bus service follows corridors that are similar to those considered by planners when designing streetcar alignments, and a large number of points (n=1000) randomly distributed along the network of arterial streets was created.

The second step used census measures of population, employment, housing units, households, and median household income at the Census block group level from the identified "before" year. These variables were chosen because of their availability at annual intervals going back to the earliest year considered in our study (2003 for the Seattle line) and their universal availability from US Census; the block group is dictated as the spatial unit of reporting as this is the finest unit for which the Census Bureau reports the median household income variable.

For each streetcar station (treatment) point and candidate control station point, values were estimated for each of the five variables for the area within one-quarter mile of the point, allocating block group level measures proportionately to the fraction of the block group falling within this area. The distributions of the five measures were checked for normality and, if necessary, transformed to normalize them; individual measures were then standardized to z-scores. Taking each streetcar station (treatment) point individually, the distance in the standardized 5-dimensional space was computed between the treatment point and each candidate control point. This distance is proportionate to dissimilarity, and the final ten control sites were selected starting with the smallest dissimilarity distances from each streetcar station (treatment)

sites and rejecting candidates that overlapped in geographic space with already-selected control sites.

Descriptive Analysis

Each system was evaluated for the change in overall employment and employment in economic groups over the study periods. The streetcar station areas and the central county were compared, as well as pseudo station areas with the central county; in both cases using z-scores to test whether differences over time are statistically different from null. While we did not analyze the impact of planning policies associated with each streetcar project, these policies are listed in the Appendix.

Employment Analysis

With this study design, employment within each treatment walkshed is compared with itself over time (before-after), and with its respective set of control walksheds, also over time. In addition, as in the BRT study by Nelson et al (*9*), shift-share analysis was used to examine employment trends at each of the study sites and controls. This approach looks at employment within each walkshed at the before and after dates, compared with broader trends in the central county as a whole, and within industry sectors in the central county, and allows the determination of changes in employment at each studied treatment or control site as attributable to broader trends within the central county (as a whole and/or within industry sectors) or as due to local factors at the study site. Nelson et al. (*9*) developed the shift-share approach for transit-related economic development that was used in this study.

Longitudinal Employer Household Dynamics (LEHD) data from the US Census Bureau was used for the before and after years at the Census Block and Central County levels. LEHD economic sectors were combined into economic groups reflecting roughly comparable

employment, land use, and building characteristics (see *18* for details). Economic sectors were not included for which workers do not occupy building spaces on a regular basis, such as farming, forestry, fishing, mining and construction.

Application and Results

The results are presented for each streetcar line in the following format: 1) overview of the system history and focal station areas; 2) employment change for the streetcar station areas and for the Central County as a whole with individual sector assessments; and 3) apportionment of shift-share results with respect to pseudo station areas and station areas. At the end of the section, the results are broadly summarized in Table 5 for comparative purposes. In addition, all four cities enacted zoning adjustments to facilitate development along the new streetcar corridors. Although we did not analyze the impacts of these policies, they are listed for reference in the Appendix.

Portland, OR – Central Loop Line

The Portland Phase II streetcar system, known as the Loop, opened in 2012, although elements of the system, such as the Tilikum Crossing Bridge, were not operational until September 2015. As discussed previously, the first phase of Portland's streetcar system, the North-South Line, opened in 2001 and represented the first modern streetcar project in the United States. The success of Phase I in stimulating economic development has already been explored, so the Loop portion was the focus of the current research. The Central Loop line was chosen because 1) it serves an area outside of, and across the Willamette River from, downtown

and 2) the original North-South line has already been studied. Land use policies were put in place around the line, as described in the Portland Comprehensive Plan, to support development around, and the use of, the streetcar. The policies describe the potential use of transit investments, support of economic development goals with transportation planning, and rezoning permitted uses and density maximums to further foster economic growth. The Portland stations were all located along the “B Loop” and include these stations:

- Northeast Grand at Holladay
- Grand and Stark
- Southeast Grand and Hawthorne.

For brevity, results are reported for the combination of treatment and control sites. Table 1 reports descriptive results as well as shift-share results, focusing only on the control station area and streetcar station area effects. Discussion follows.

Table 1

Pooled Descriptive and Shift-Share Results for Portland Streetcar Economic Development Analysis.

Economic Group	Control Station Area 2006	Control Station Area 2013	Central County 2006	Central County 2013	Control Station Area Change	Central County Change z	Control Station Area Share
Manufacturing	29	54	40,166	36,988	86%	-8% *	27
Light Industrial	310	166	28,403	26,919	-46%	-5% *	(128)
Retail-Lodging-Food	3,490	3,402	90,257	97,573	-3%	8% *	(371)
Knowledge	687	750	58,714	70,044	9%	19%	(70)
Office	2,365	2,818	164,032	172,446	19%	5% *	332
Education	126	200	19,002	23,652	59%	24% *	43
Health	5,210	5,605	60,270	68,912	8%	14% *	(352)
Arts-Ent-Rec	242	271	15,432	18,482	12%	20%	(19)
Total	12,459	13,266	476,276	515,016	6%	8%	(537)
Economic Group	**Streetcar Station Area 2006**	**Streetcar Station Area 2013**	**Central County 2006**	**Central County 2013**	**Streetcar Station Area Change**	**Central County Change z**	**Streetcar Station Area Share**
Manufacturing	863	904	40,166	36,988	5%	-8% *	109
Light Industrial	1,767	2,017	28,403	26,919	14%	-5% *	342
Retail-Lodging-Food	2,038	2,522	90,257	97,573	24%	8% *	319
Knowledge	958	1,736	58,714	70,044	81%	19% *	593
Office	5,978	7,052	164,032	172,446	18%	5% *	767
Education	76	106	19,002	23,652	39%	24%	11
Health	878	1,070	60,270	68,912	22%	14%	66
Arts-Ent-Rec	173	188	15,432	18,482	9%	20%	(19)
Total	12,731	15,595	476,276	515,016	22%	8% *	2,189

* Z scores are p <0.05.

Overall, the control areas increased jobs by 6 percent during the study period while the central county (Multnomah) grew by 8 percent, which is not a significant difference in change based on z scores. In contrast, the streetcar station areas added 22 percent to their cumulative job base between 2006 and 2013, which is significant. Shift-share analysis shows that whereas control areas lost share of change in jobs during the study period, streetcar station areas gained shared. Cumulatively, both streetcar station areas and controls had statistically significant gains in jobs in several economic groups though the control areas lost jobs in the light industrial and retail-lodging-food groups. Education and health care economic groups added significant numbers of jobs in the control areas while the streetcar station areas did not. On the whole, streetcar station areas performed better during the study period in attracting jobs in more economic groups than the controls.

It is clear that the employment mix differs among streetcar station areas, and among control areas as well as between the streetcar station areas and their matched pseudo station controls. The three consistent employment growth areas for streetcar stations in Portland were Knowledge, Retail-Lodging-Food, and Health.

Salt Lake City, UT – S Line

The S Line is the first modern streetcar line in Utah. It joins the main TRAX light rail system at its western end, and runs east for two miles through a dedicated right-of-way that previously carried freight rail, ending in Salt Lake City's "second downtown," the Sugar House neighborhood. Future planned phases would extend the line deeper into Sugar House and eventually create a loop, connecting back to the TRAX Red Line, however no funding has yet been secured for future phases. The line was built rapidly, with construction initiated in April 2012 and the opening of the line in December 2013. Redevelopment activity along the line has been quite variable, with high levels of investment in the Sugar House area and less at other locations. A form-based code was put in place around the streetcar line to support redevelopment activity. The form-based code allows a variety of land uses and building types that increase economic potential along the line. Streetcar stations used in the analysis include:

- Fairmont Station;
- 500 East Station
- South Salt Lake Station.

The S Line is unique in several ways. In addition to running through an abandoned rail corridor instead of in a street, the project also includes a linear park and bike path that represents a critical linkage in the regional bicycle system. Moreover, the South Salt Lake Station is substantially surrounded by a park-and-ride lot serving the TRAX light rail system. With the exception of the Sugar House end of the line, the areas served by the S Line were not on a growth or redevelopment trajectory prior to the construction of the streetcar. Table 2 reports pooled descriptive and shift-share results for streetcar station areas and control areas, and for Salt Lake County as a whole.

Table 2

Pooled Descriptive and Shift-Share Results for Salt Lake City Streetcar Economic Development Analysis

Economic Group	Control Station Area 2009	Control Station Area 2013	Central County 2009	Central County 2013	Control Station Area Change	Central County Change	z	Control Station Area Share
Manufacturing	79	108	52,503	54,956	37%	5%	*	25
Light Industrial	32	20	33,170	34,713	-38%	5%	*	(13)
Retail-Lodging-Food	753	1,404	117,648	125,702	86%	7%	*	599
Knowledge	267	230	71,808	81,006	-14%	13%	*	(71)
Office	445	507	242,008	254,659	14%	5%		39
Education	195	200	17,421	21,496	3%	23%	*	(41)
Health	935	950	60,907	65,460	2%	7%		(55)
Arts-Ent-Rec	92	70	13,757	14,420	-24%	5%	*	(26)
Total	2,798	3,489	609,222	652,412	25%	7%	*	457
Economic Group	**Streetcar Station Area 2009**	**Streetcar Station Area 2013**	**Central County 2009**	**Central County 2013**	**Streetcar Station Area Change**	**Central County Change**	**z**	**Streetcar Station Area Share**
Manufacturing	402	141	52,503	54,956	-65%	5%	*	(280)
Light Industrial	285	207	33,170	34,713	-27%	5%	*	(91)
Retail-Lodging-Food	1,441	1,492	117,648	125,702	4%	7%		(48)
Knowledge	338	361	71,808	81,006	7%	13%		(20)
Office	1,376	1,563	242,008	254,659	14%	5%	*	115
Education	91	64	17,421	21,496	-30%	23%	*	(48)
Health	75	101	60,907	65,460	35%	7%	*	20
Arts-Ent-Rec	81	92	13,757	14,420	14%	5%		7
Total	4,089	4,021	609,222	652,412	-2%	7%	*	(345)

* Z scores are $p < 0.05$.

During the study period—extending from the depths of the Great Recession well into recovery—jobs increased by 25 percent in the control station areas but decreased by 2 percent in the streetcar station areas, both significant relative to the Salt Lake central county increase of 7 percent. Shift-share analysis further shows that by controlling for regional and industrial mix influences, the control station areas gained share of jobs while streetcar station areas lost share. The control areas gained jobs in most economic groups, notably retail-lodging-food. In contrast, the streetcar station areas lost jobs in many more groups than they gained, though they did gain substantially more and statistically significant jobs in the office economic group.

When considered separately, there is no consistency among streetcar stations in Salt Lake with regard to employment sector dynamics. What growth there is at streetcar stations is driven primarily by growth at the Sugar House end of the line, although there is some office growth at South Salt Lake. The 500 E station area experienced a hemorrhaging of jobs over the study time period.

Short-term economic development outcomes of the S Line should not be surprising. Not only does the line not travel along a regular street but a key station (South Salt Lake) is mostly a park-and-ride lot. Much of the length of the line is also currently dominated by relatively low-density and low-to-moderate-income single-family housing that is unlikely to redevelop in the near future. This project was built opportunistically, with a view to the long-term infrastructure of the city, not as a local economic development stimulus. The economic growth that has occurred around the Sugar House terminus is in a regional center that was poised to take off regardless of the addition of a new rail-transit line.

Seattle, Washington – South Lake Union Streetcar

The South Lake Union Streetcar in Seattle started operation in 2007, connecting the South Lake Union neighborhood to downtown. The neighborhood was approved to be developed as a biotechnology and biomedical research center and those sectors contributed heavy funding for the streetcar. In 2010, Amazon built a new campus building in South Lake Union, which increased ridership considerably. The area is substantially developed into offices and other nonresidential uses though new high-density residential development has dominated new construction on parking lots and the redevelopment of older, low-rise structures. All of the development occurred after rezoning the area from industrial to land uses that would create a productive urban center. The effect of the change in policies was major redevelopment, economic growth, and a willingness on the part of developers to invest in projects around the streetcar line. The streetcar stations evaluated include the following:

- Westlake Hub
- Westlake Ave and Thomas Street
- Fairview Ave and Campus Drive.

What follows is a discussion of the key interpretations of Table 3 which reports descriptive and shift-share results.

Spanning 10 years, this line's before/after study period was the longest of the cases evaluated. Unlike Portland, the Seattle streetcar system has not been expanded beyond its small downtown footprint. As seen in Table 3, it has also not performed well relative to the central county. During the study period,the control station areas increased jobs by 27 percent whereas King County's increased by 15 percent, and streetcar station areas actually lost one percent of

jobs, mostly in the office sector group. Otherwise, statistically significant changes among economic groups around streetcar stations were positive. During much of the study period and especially since the Great Recession, residential development in downtown Seattle has outstripped office and other nonresidential development. Results shown in Table 3 confirm this. The effect of residential development near streetcar stations should be the subject of future research.

Shift-share analysis shows that whereas control station areas gained share of jobs overall, streetcar station areas lost share. Indeed, streetcar station areas lost share of jobs in six of eight economic groups compared to just one for the control station areas. Health and Arts-Entertainment-Recreation appear to be the most consistent positive growth sectors for streetcar station areas but again, there is little consistency between locations.

Table 3
Descriptive and Shift-Share Results for Seattle Streetcar Economic Development Analysis

Economic Group	Control Station Area 2003	Control Station Area 2013	Central County 2003	Central County 2013	Control Station Area Change	Central County Change	z	Control Station Area Share
Manufacturing	508	624	112,737	112,807	23%	0%	*	116
Light Industrial	8,850	9,041	68,725	68,425	2%	-0%	*	230
Retail-Lodging-Food	7,139	8,155	223,327	246,110	14%	10%	*	288
Knowledge	18,553	24,263	194,368	254,175	31%	31%		1
Office	38,163	51,432	386,941	419,973	35%	9%	*	10,011
Education	7,666	8,291	27,731	36,057	8%	30%	*	(1,677)
Health	1,283	2,458	114,410	159,481	92%	39%	*	670
Arts-Ent-Rec	1,363	1,517	36,577	44,137	11%	21%	*	(128)
Total	83,525	105,781	1,164,816	1,341,165	27%	15%	*	9,511
Economic Group	**Streetcar Station Area 2003**	**Streetcar Station Area 2013**	**Central County 2003**	**Central County 2013**	**Streetcar Station Area Change**	**Central County Change**	**z**	**Streetcar Station Area Share**
Manufacturing	751	396	112,737	112,807	-47%	0%		(355)
Light Industrial	7,874	7,824	68,725	68,425	-1%	-0%		(16)
Retail-Lodging-Food	10,227	10,491	223,327	246,110	3%	10%	*	(779)
Knowledge	15,521	18,356	194,368	254,175	18%	31%	*	(1,941)
Office	22,032	15,358	386,941	419,973	-30%	9%	*	(8,555)
Education	609	818	27,731	36,057	34%	30%		26
Health	2,281	4,633	114,410	159,481	103%	39%	*	1,453
Arts-Ent-Rec	858	1,805	36,577	44,137	110%	21%	*	770
Total	60,153	59,681	1,164,816	1,341,165	-1%	15%	*	(9,397)

* Z scores are p <0.05.

New Orleans, LA - Rampart-St. Claude Line

New Orleans' Rampart-St. Claude Streetcar line opened in 2013, one of the newest systems in this study. It begins at a transit hub that connects Amtrak, Greyhound and Regional Transit Authority (RTA) bus lines, and runs 0.8 miles into the New Orleans Central Business District, running through the historic arts and theater district. The streetcar station areas are:

- Union Passenger Terminal
- Rampart-St. Claude Ave and Poydras Street
- Canal Street and Elk

As this is the newest system studied, there may not have been enough time for the market to respond to the streetcar system. Land use policies were established to help with economic development, such as rezoning with overlays that support mixed use and multi modal and aim for 24 hour programming. On the other hand, among all the systems, this may be the one with the most advance planning. Construction and initiation of service on this line follows a sustained wave of recovery-related growth for Orleans Parish (the central county) initially from Hurricane Katrina and then the Great Recession. Finally, it is in an area dominated by surface parking lots and older properties, prime for redevelopment. Table 4 reports economic development outcomes for the streetcar and control station areas.

Table 4

Descriptive and Shift-Share Results for New Orleans Streetcar Economic Development Analysis

Economic Group	Control Station Area 2008	Control Station Area 2013	Central County 2008	Central County 2013	Control Station Area Change	Central County Change	z	Control Station Area Share
Manufacturing	313	116	6,970	4,766	-63%	-32%	*	(98)
Light Industrial	1,212	882	5,707	4,904	-27%	-14%	*	(160)
Retail-Lodging-Food	5,256	5,149	41,972	53,293	-2%	27%	*	(1,524)
Knowledge	3,559	3,424	25,205	28,858	-4%	14%	*	(652)
Office	4,036	4,571	77,590	77,023	13%	-1%	*	565
Education	53	84	15,249	19,540	58%	28%		16
Health	253	176	18,591	21,868	-30%	18%	*	(122)
Arts-Ent-Rec	205	84	9,534	9,627	-59%	1%	*	(123)
Total	14,887	14,485	200,818	219,879	-3%	9%	*	(2,098)
Economic Group	**Streetcar Station Area 2008**	**Streetcar Station Area 2013**	**Central County 2008**	**Central County 2013**	**Streetcar Station Area Change**	**Central County Change**	**z**	**Streetcar Station Area Share**
Manufacturing	121	97	6,970	4,766	-20%	-32%		14
Light Industrial	603	432	5,707	4,904	-28%	-14%	*	(86)
Retail-Lodging-Food	3,744	7,309	41,972	53,293	95%	27%	*	2,555
Knowledge	3,880	5,086	25,205	28,858	31%	14%	*	644
Office	8,281	8,877	77,590	77,023	7%	-1%	*	657
Education	33	131	15,249	19,540	297%	28%	*	89
Health	3,757	3,172	18,591	21,868	-16%	18%	*	(1,247)
Arts-Ent-Rec	2,844	2,147	9,534	9,627	-25%	1%	*	(725)
Total	23,263	27,251	200,818	219,879	17%	9%	*	1,900

* Z scores are p <0.05.

Table 4 shows that overall, the streetcar station areas outperformed Orleans Parish and the control areas, gaining jobs at 17 percent compared to the Parish at seven percent while the control areas lost three percent. Moreover, where the control areas lost jobs in six of the eight economic groups, the streetcar station areas lost jobs in just three. The shift-share results show further that the streetcar station areas gained share of central county jobs overall while the control areas lost job share.

Overall, relative to their matched controls, the streetcar station areas are all clearly more dynamic with regard to employment than control areas in New Orleans, however the dynamism does not follow consistent trends across station areas. The only consistent growth areas for streetcar station areas were Office and Retail-Lodging-Food.

Table 5. Summary and comparison of four streetcar systems

Name	Location	"Before" Date; Date Opened	Stations	Control area employment growth	Street-car area employment growth	Employment Growth Sectors	Surrounding influential land use
Central Loop (Phase II)	Portland OR	2006; 2012 (bridge opened 2015)	(1) NE Grand + Holladay (2) Grand + Stark (3) SE Grand Hawthorne	8%	22%	Knowledge, Retail-Lodging-Food, Health	Crossing bridge, Convention Ctr, Lloyd District, aging industrial, County Admin
S-Line	Salt Lake City UT	2009; 2013	(1) Fairmont (2) 500 East (3) South Salt Lake	25%	-2%	Office	Linear park, bike path, park-and-ride lots, major commercial ctr, aging industrial
South Lake Union	Seattle WA	2003; 2007	(1) Westlake Hub (2) Westlake Ave + Thomas St (3) Fairview Ave + Campus Dr	27%	-1%	Health, Arts-Entertainment-Recreation	Amazon campus, other corporate HQ's, biotechnology/ biomedical research, museums
Rampart-St. Claude	New Orleans LA	2008; 2013	(1) Union Passenger Terminal (2) Rampart-St. Claude Ave + Poydras St (3) Canal St + Elk	-3%	17%	Office, Retail-Lodging-Food	Bus terminal, CBD, Surface parking lots, entertainment district

Interpretations and Implications

The primary outcome desired from these analyses is consistency in the response of employment to streetcars. Does each city streetcar line behave in an internally consistent manner, or is the difference between station areas greater than the difference between cities? If local employment effects are consistent among the sites within a single streetcar line, and in their differences with control sites, it is likely that there is a streetcar effect for that city. If streetcars may be said to reliably promote economic development (as measured here by employment), then there should be: 1) across all sites and cities, a greater positive change in employment at treatment sites than at controls and 2) positive local effects in the shift-share results. It should be noted that all four cities enacted zoning changes and design standards that facilitated development along the streetcar corridor, including mixed-use, transit-oriented development, and increased permitted densities (Appendix).

Among the study streetcar lines, Portland's Central Loop line exhibits by far the greatest internal consistency in employment response. As expected, there is positive employment growth among the streetcar station areas that exceeds the growth at control sites. There is an economic development pattern that extends the pattern established with the original Portland North-South streetcar line. This confirms that Portland has an established streetcar-economic development strategy that works for Portland. The city and its business community have "bought in" to the streetcar paradigm and effective planning and design have created a streetcar system that functions well in both its transportation and economic functions. While the raw scale and industry mix of employment varies from one station to the next, the results of the analysis reflect heavy economic development and job growth locating preferentially at streetcar stations, well

ahead of control areas and the metropolitan area as a whole, even though the Loop line only became fully connected in 2015.

Of the other streetcars included in this study, it might be predicted that Seattle would be the most likely to follow the Portland model. Both are Pacific Northwest cities with similar culture and feel, although Seattle is much larger. Seattle's streetcar has also been in operation longer than any of the other lines considered in this study, second only to the original Portland line. However, this prediction was not borne out in analysis. Certainly, considerable investment in real estate redevelopment by major employers such as Amazon has occurred within and near the streetcar station areas, but job performance has been surprisingly weak, actually declining. The Seattle example is lacking the internal consistency that was expected, showing patchy development along the streetcar line. However, it is also known from current ongoing work that whereas job production may be weak, residential development has dominated the streetcar station areas since the Great Recession.

The New Orleans streetcar was built within the unique context of recovery from Hurricane Katrina. As noted by Guthrie and Fan (*6*), there has been significant commercial investment along the streetcar line during the post-Katrina years, but this has occurred within the context of strong investment and recovery activities citywide. New Orleans also has a long history of streetcars, making it more likely that investors will feel comfortable with streetcars as a valuable amenity. In fact, all three streetcar stations in this study showed positive employment growth and out-performed the control sites in both direct comparison and shift-share analysis. Furthermore, it is evident that all of the streetcar sites in New Orleans are more dynamic than their matched controls. Can streetcar sites in New Orleans become the centers of focused

development that we have seen in Portland? This is left to future research, but there is certainly strong potential.

The streetcar with perhaps the least internal consistency is the S Line serving the Sugar House area of Salt Lake City. The streetcar concept is new to Salt Lake City (although it had a streetcar network in the past), and the corridor through which the S Line runs is in the early stages of what will probably be decades of change. Wildly differing and rapidly changing employment numbers along the line indicate possibly several processes at work: relocation of jobs and activities along the corridor, vacating of older buildings and businesses in preparation for demolition, redevelopment, renovation, and simply very different uses of land and land densities at the different stops. Furthermore, the S Line does not run within a street, but through its own right of way that also supports a linear park, bike trail, and easy pedestrian movement. It is a novel and unique amenity, and it still remains to be seen how employment activities might orient themselves in relation to it. Among all streetcar lines studied and perhaps even all such lines nationally, the S Line's design may be the most unique, though also, potentially, least conducive to stimulating economic development.

Overall, Portland has continued to follow in its own footsteps as this analysis confirms previous observations of Portland's streetcar success story. All of the other cities lacked the consistency of Portland. As the literature review above showed, Portland's streetcar itself is only part of a mosaic of planning and development policies designed to reinforce streetcar use. Our policy inventory (Appendix) indicated that all four cities did implement zoning changes to facilitate development along the streetcar line. It seems likely that in the case of the newer systems, employment development will follow, eventually, as there is evidence of employment change occurring. Portland may have been in a better position to develop quickly, based on its

recent experience with the earlier streetcar line. Our study also did not have a way to gauge the degree of buy-in on the part of the local business community and the dynamics of public-private sector relationships in each city. A final point is that despite the short distance between streetcar stations, from the perspective of supporting business development and therefore employment growth, a streetcar line does not behave as a corridor but as a series of discrete points associated with individual station areas.

References

1. Sullivan, P. and Olivo, A. 2014-11-18. Arlington officials halt efforts on long-planned streetcar projects for Columbia Pike, Crystal City. Washington Post.
2. O'Toole, R. 2012. The Great Streetcar Conspiracy. Cato Institute Policy Analysis no. 699.
3. The Economist. August 9, 2014. Streetcars and Urban Renewal: Rolling Blunder. http://www.economist.com/news/united-states/21611123-federal-subsidies-have-inspired-some-silly-transit-projects-rolling-blunder
4. Brown, J., H. Nixon, and E. Ramos. 2015. *The Purpose, Function, and Performance of Streetcar Transit in the Modern U.S. City: A Multiple-Case-Study Investigation*. Mineta Transportation Institute Report 12-39.
5. Marshall, S. 2015. Streetcars of desire: why are American cities obsessed with building streetcars? The Guardian. Friday February 20, 2015. http://www.theguardian.com/cities/2015/feb/20/streetcars-of-desire-why-are-americans-obsessed-with-building-trams accessed Dec.10,2015.

6. Guthrie, A. and Y. Fan. 2013. Streetcars and Recovery: an analysis of post-Katrina building permits around New Orleans streetcar lines. *Journal of Planning Education and Research* 33(4): 381-394.
7. Hovee, E.D. and R. Gustafson. 2012. Streetcar-Development Linkage: The Portland Streetcar Loop. Transportation Research Board conference publication. http://onlinepubs.trb.org/onlinepubs/conferences/2012/LRT/RGustafson.pdf
8. Hovee, E.D. 2008. *Streetcar-Development Linkage: The Portland Streetcar Loop*. E.D. Hovee & Company, LLC, prepared for City of Portland Office of Transportation.
9. Nelson, A.C., G. Anderson, K. Bartholomew, P. Perlich, T.W. Sanchez, and R. Ewing. 2009. The Best Stimulus for the Money: Briefing Papers on the Economics of Transportation Spending. Smart Growth America http://www.smartgrowthamerica.org/documents/thebeststimulus.pdf
10. Higgins, C. D. and P.S. Kanaroglou. 2015. *40 Years of Modelling Rail Transit's Land Value Uplift in North America: Diverse Methods, Differentiated Outcomes, Debatable Assumptions, and Future Directions.* Transportation Research Board Annual Meeting 2015 Paper #15-4103.
11. Kolko, J. 2011. *Making the Most of Transit: Density, Employment Growth, and Ridership Around New Stations*. Public Policy Institute of California http://www.ppic.org/main/publication.asp?i=947
12. Mokadi, E., D. Mitsova, and X. Wang. 2013. Projecting the impacts of a proposed streetcar system on the urban core land redevelopment: The case of Cincinnati, Ohio. *Cities* 35: 136-146.

13. Belzer, D., S. Srivastava, and M. Austin. 2011. *Transit and Regional Economic Development*. Oakland, CA: Center for Transit-Oriented Development. http://www.reconnectingamerica.org/resource-center/browse-research/2011/transit-and-regional-economic-development/
14. Adams, S. and J. Carroll. 2006. Portland Streetcar: Development Oriented Transit. Portland Office of Transportation and Portland Streetcar, Inc. http://www.portlandfacts.com/docs/development
15. Bottoms, G.D., R. Gustafson, E. Hovee and W.S. Lind. 2013. The Small-Minded Anti-Streetcar Conspiracy. Response to O'Toole 2012, uploaded to http://www.theamericanconservative.com/cpt/wp-content/uploads/2013/08/The-Small-Minded-Anti-Streetcar-Conspiracy-FINAL.pdf
16. Ramos-Santiago, L.E., J. Brown, and H. Nixon. 2015. A Cautionary Tale of Two Streetcars: Little Rock's River Rail and Tampa's TECO Line. *Journal of Public Transportation* 18(1): 1-17.
17. Guerra, E., R. Cervero and D. Tischler. 2011. The Half-Mile Circle: *Does it Best Represent Transit Station Catchments?* University of California Transportation Center UCTC-FR-2011-09.
18. Hinners, S. J. and M. A. Larice. 2016. *Assessing the Impacts of Streetcars on Economics, Equity, and Quality of Life*. Salt Lake City, Utah: Metropolitan Research Center, University of Utah.

Appendix – Streetcar Planning Policies

City	Streetcar line	Policies	Intended Effect of policies	Additional incentives	Source
Salt Lake City	**S-Line**	Zoning: High Density Mixed Use and Residential	High density near transit stops to increase accessibility and transit ridership		East Streetcar Neighborhood Form Based Code
		Design standard: Implementation of greenway along streetcar line	a multi-use corridor to increase access and attract new businesses, residents, and visitors		Downtown South Salt Lake Zoning Ordinance and Design Standards
		East Streetcar Neighborhood Form Based Code	Transit-oriented redevelopment near streetcar corridor		East Streetcar Neighborhood Form Based Code
				Suggested incentive programs: First-time home buyer assistance; Financing for public improvements, such as lighting or streets; Financial partnership to build housing that the city desires such as senior or workforce housing; Financial partnership on shared parking; Rental unit buy back	East Streetcar Master Plan
		Streetcar Community Development Area (CDA)	negotiate participation terms with taxable entities in CDA		South Salt Lake Economic Development Report

Appendix – Streetcar Planning Policies continued

City	Streetcar line	Policies	Intended Effect of policies	Additional incentives	Source
Portland	**Central Loop (Phase II)**	Central Employment Zone	Mixed use of commercial and industrial buildings in a central location with transit access that matches existing development;		Portland Zoning Code
		Central Commercial Zone	Intense development with high building coverage, large buildings, close spacing, and pedestrian oriented with attractive streetscapes		Portland Zoning Code
				Streetcar installation expected as development catalyst	Portland Streetcar Loop Development Strategy

Appendix – Streetcar Planning Policies continued

City	Streetcar line	Policies	Intended Effect of policies	Additional incentives	Source
Seattle	**South Lake Union**	Incentive zone o**verl**ay	Provide affordable housing or other public amenities	Developers gain extra floor area within their project by providing external amenities	Seattle Municipal Code; Incentive Zoning Overview, City of Seattle Office of Housing
		Seattle Mixed Zone	Higher density and transit-supportive residential, commercial, and office uses will redevelop industrial areas		Seattle Municipal Code
		Downtown Mixed Zone	Urban center with mixed uses supporting transit and pedestrian orientation		Seattle Municipal Code
		Downtown Office Core Zone	High density office and commercial land uses due to higher building heights take the place of older office and light manufacturing areas		Seattle Municipal Code

Appendix – Streetcar Planning Policies continued

City	Streetcar line	Policies	Intended Effect of policies	Additional incentives	Source
New Orleans	**Rampart-St. Claude**	Current Zoning: Commercial streetcar corridor now exists for the buildings fronting the streetcar.	High density commercial buildings along streetcar line will boost economic development in the area.		City of New Orleans Property Viewer & Comprehensive Zoning Ordinance
		Design standard for central commercial and historic commercial	Promotes historic preservation and tourist traffic in the area		City of New Orleans Vieux Carre Design Guidelines
				Streetcar implementation expected to be a catalyst for commercial/private development and to bring economic profit to the area by increasing property taxes and promoting tourist traffic	Mayor Landrieu and RTA's press release 10/03/16: https://www.nola.gov/mayor/press-releases/2016/20161003-pr-rampart-st-claude-line-opening/