

**RESPONDING TO WENDELL COX:  
A REPORT BY G.B. ARRINGTON,  
PARSONS BRINKERHOFF QUADE & DOUGLAS, INC.**

From Auckland, New Zealand, to Dallas, Texas, to London, England Wendell Cox has been a hired gun in opposing new rail projects. Where ever he goes comes the same well-polished anti-rail mantra:

- ✓ urban rail is “an expensive and ineffective strategy,”<sup>i</sup>
- ✓ the proponents of rail engage in “waste and deception,”
- ✓ it costs “less to lease cars for new riders”
- ✓ “light rail (is) not justified,”
- ✓ “there is no hope of reducing auto dependency,”
- ✓ “there is virtually no connection whatsoever between new urban rail and traffic relief”
- ✓ urban areas would be better off “to increase the frequency of garbage collection” to reduce congestion.

So who is Wendell Cox? Mr. Cox is a self-employed privatization proponent who lives in the St. Louis area who has written attacks on transit for the Cato Institute, the Heritage Foundation, the Highway Users Alliance, the American Bus Association and others. Cox’s background as an “expert” rests on his appointment as a citizen member to the former Los Angeles County Transportation Commission.<sup>ii</sup>

According to his resume, Cox has he played a role as a hired gun in the defeat of rail projects in Milwaukee, Chicago, Orlando, Phoenix, Seattle, St. Louis, Denver, Aspen and Salt Lake City. In 2000 he has been actively opposing rail and smart growth strategies in cities including Dallas, Denver, San Antonio, Atlanta and Austin and Auckland, New Zealand.

In his many criticisms of rail transit, Wendell Cox employs a virtual avalanche of official sounding statistics supporting his view that modern light rail and commuter rail systems are a profoundly misguided waste of public money.

**“Writing propaganda for pro-road causes”**

For the communities Cox visits, the staccato of numbers and cute quips can be very difficult to deal with. Unfortunately Cox’s work is so badly flawed that it lacks any objective credibility. He consistently presents data in a selective way that leads to inaccurate and misleading conclusions. His work is difficult to respond to because of the lack of a published methodology for his analysis and the use of contradictory evidence.

The most important lesson to be gleamed from reviewing Cox’s body of work is how factual knowledge is often manipulated and distorted to reflect personal ideology or, more importantly, the funders of his studies. Wendell Cox’s work has been pretty much dismissed by both from the left, middle and even right:

- ✓ **Robert D. Miller, Chairman Houston MTA** (8/27/2000) “Cox’s arguments simply don’t make sense”<sup>iii</sup>
- ✓ **Atlanta Journal Constitution** (7/6/ 2000) Called Cox “A self-proclaimed (though untrained) transportation expert who makes his living writing propaganda for pro-road causes.”
 

“His report is flawed in many respects,” . . . “Cox calls it a "New Vision," but it's more like a regressive hallucination.”<sup>iv</sup>
- ✓ **San Antonio Express-News** (4/19/2000) “On point after point, his paper on sprawl is incoherent or irrelevant, making it a perfect complement to his many papers on light rail.”<sup>v</sup>
- ✓ **Texas Observer** (June 99), “Over the last ten years, Wendell Cox Consultancy has been the attack dog for groups opposing public transportation projects - especially light rail and commuter rail - across the country.”<sup>vi</sup>
- ✓ **Paul Weyrich, Free Congress Foundation** (Oct 99) A friend of mine once said that he could beat the Harlem Globetrotters if he could make up his own rules to the game of basketball. You can say just about anything about what transit can and cannot do if you make up your own rules in developing your numbers. That’s what Wendell (Cox) does and will do tonight.<sup>vii</sup>
- ✓ **Governor, Tommy Thompson (R), Wisconsin** (May 1999) “the anti-transit conservative studies ask the wrong question. They base their anti-transit conclusions on the question: what percentage of total trips does transit carry? That number is relatively small. But it is an academic, not a real world number.”<sup>viii</sup>
- ✓ **Milwaukee Journal Sentinel** (4/5/98) Cox's analysis was dismissed as a "screwy light rail report" in an editorial<sup>ix</sup>

### Is What He Says True?

The balance of this paper takes a careful look at the specific charges and conclusions Wendell Cox has made in recent reports, editorials, articles and on his website [www.publicpurpose.com](http://www.publicpurpose.com). In his writing, Cox has two major themes that are addressed in this paper:

1. Rail is a failure, here are the numbers
2. Portland’s land use & LRT story is a false success, not a model

The power and inherent danger of Cox’s analysis is that he takes a very simplistic approach to highly complex topics, and then provides a ‘sound bite’ quote and a number to reinforce his point.

The following section takes statements selected verbatim from Cox's many editorials and publications, compares them to readily available sources and provides appropriate citations. *In every instance, Cox's statements are either inaccurate, distortions or claims not supported by the facts. Cox's technique seems to be to start with a snippet of the truth and stretch it like taffy until it turns into something else that supports his position.*

## RAIL IS A FAILURE?

Cox's attack on new rail projects runs counter to the body of knowledge or experience with new rail investments across America. Cox cavalierly dismisses the record number of new rail projects underway as deception on voters by "rail cheerleaders."<sup>x</sup>

### **Light Rail ridership does not even equal a freeway lane?**

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**COX MYTH:** *"An analysis of actual US data on all new light rail systems indicates that no system carries more than 1/3 of the volume of a single freeway lane."*<sup>xi</sup>

**FACT:** During rush hour, Portland's Eastside Light Rail line is carrying on average 120 percent of the peak hour capacity of the adjacent freeway lane.<sup>xii</sup>

Without the 2,900 people per rush hour carried on light rail, Portland's Banfield freeway would be much more congested and cars would spillover on neighborhood streets. The capacity of the rail line can be easily expanded with the existing signal system to 5,300 people per hour - whereas the parallel freeway has a fixed capacity of 2,400 people per lane per hour and cannot be expanded without significant costs and disruption.

### **No traffic congestion relief from rail?**

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**COX MYTH:** *"There is no connection whatsoever between new urban rail and traffic relief."*<sup>xiii</sup>

**FACT:** New urban rail lines have been effective tools to help manage congestion.

Community leaders have come to learn that you can't build your way out of congestion with roads or transit. New rail lines and road improvements provide temporary relief, but then the roads fill back up. The result is to relieve congestion, not to solve it.

**Houston** and **Phoenix** are wonderful illustrations of communities that have discovered they can't spend enough billions of dollars on roads to solve congestion. The Phoenix metro area is presently investing \$4.2 billion on new roads. Despite this massive investment in new freeway capacity, congestion during commute times will actually be worse in 20 years.<sup>xiv</sup> After investing billions in roads, both Houston and Phoenix are actively pursuing new light rail systems to offer citizens a balanced approach for managing congestion.

**Portland.** Westside MAX is demonstrating the short-term congestion relief rail can offer. Drivers will get out of their cars if they have an attractive choice for avoiding the pains of congestion. According to an Oregon Department of Transportation study,<sup>xv</sup> transportation improvements made in the Westside corridor have increased transit trips, (keeping pace with auto trips) and traffic would be significantly heavier without those improvements. Looking at data collected between May 1993, October 1997 and May 1999, they found "transit's share of westbound trips leaving downtown during evening rush hour increased 5 percent, while the share of drive alone auto trips declined 3 percent."

### **Minimal impact since there are few new rail riders?**

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**COX MYTH:** *“The impact on traffic congestion is even less, since on average fewer than 25 percent of light rail riders are former automobile drivers.”<sup>xvi</sup>*

**FACT:** New rail lines have been successful in attracting new riders to transit and improving the quality of service for existing riders. New riders comprise 45 percent of riders in Salt Lake and 39 percent in Denver.

Rail systems are planned for both existing riders (bus riders) and attracting new riders. A major benefit of rail is the ability to offer bus riders superior quality service, and greater reliability from not being stuck in traffic. And they do it at a lower operating cost per rider. The myth is that somehow this is a problem.

**Salt Lake.** Prior to TRAX’s commencement of service, UTA had projected an average weekday ridership of 14,000 people. During TRAX’s first four months of operation ridership has greatly exceeded the projected average weekday ridership of 14,000. While it was expected that ridership would be exceptionally high during the holiday season (25,000 - 32,000), the average weekday ridership for January, February, March, and April was 19,039, 18,956, 19,742, and 19,210 respectively, much higher than projected. Saturday ridership has also exceeded projections and even surpasses weekday ridership with an average ridership of 22,561 (January), 23,138 (February), 23,591 (March), and 25,621 (April).

"We were always optimistic about TRAX, but its success has surpassed even our expectations," said John English. "We are especially pleased with the success we have had in attracting new customers, who represent almost half of our TRAX riders."

In order to gain an accurate profile of TRAX riders, UTA’s strategic planning department surveyed approximately 2,000 riders during February. Astonishingly, 45% of those surveyed indicated they were new transit riders.<sup>xvii</sup>

**St. Louis** MetroLink carried nearly 9 million customers during its first year of operation; almost double the projected ridership of 4.8 million passengers.<sup>xviii</sup>

Before service began, ridership was projected at 12,000 per day. In August of 1993, the system’s first month of operation, approximately 30,000 passengers rode MetroLink each day. In June, 1998, the average weekday ridership topped 46,750 commuters.

**Denver** The portion of new riders on Denver’s first rail line ranges from 39% on weekdays to 93% on weekends.

“On weekends, the proportion of new and previous RTD riders is vastly different. On weekends, nearly all of the park-n-Ride users (93%) were new riders while only 4% were

previous riders. In addition, 92% of the weekend park-n-Ride users are new RTD riders who ride Light Rail compared to 39% of weekday park-n-Ride users.<sup>xxix</sup>

Denver, like virtually all new rail lines has found a strong market for non-work trips in addition to the work trip, meaning there is a greater opportunity to reduce dependency on the automobile.

**Portland** When Portland opened its second rail line, in the first year ridership in the corridor increased by 20,000 transit trips.<sup>xx</sup>

The addition of Westside MAX and improved bus service led to a 46 percent increase in transit service in the corridor. Transit ridership in the corridor rose 137 percent in 1999 to 33,900 average daily trips.

### Light Rail hurts Transit Ridership?

**COX MYTH:** *“Average public transport market in urban areas served by light rail dropped from the year before light rail opened and in 1997.”<sup>xxi</sup>*

**FACT:** Ridership on *new* light rail systems has seen steady increases. Ridership on ten light rail systems that have opened since 1981 has averaged 11.4 percent annual increases following their first full year of operation.<sup>xxii</sup>

<b>Table: Transit Ridership Change 1996-1999</b>				
o Percentage Change in Unlinked Trips Compared to Previous Year				
o VEHICLE MODE	o 1996	o 1997	o 1998	o 1999 (1st quarter)
Heavy Rail	+2.5%	o +1.5%	o +5.5%	o +5.8%
Light Rail	+7.2%	o +5.8%	o +6.3%	o +5.2%
Commuter Rail	+2.3%	o +2.4%	o +5.4%	o +3.2%
Trolley Bus	- - 1.3%	o +1.3%	- 2.8%	o +3.7%
Motor Bus	- 0.3%	o +3.2%	o - 4.2%	o +2.9%
Demand Response	o +2.5%	o +4.2%	o +4.5%	o +4.0%
<b>All Modes Total</b>	<b>o +0.3%</b>	<b>o +4.6%</b>	<b>o +5.3%</b>	<b>o +3.8%</b>
o Source: American Public Transit Association Transit Ridership Report.				

**Portland.** Transit ridership has continuously increased since light rail opened in Portland. Ridership on the eastside line has more than doubled. And eastside bus ridership has risen more than 35% since the rail line opened.<sup>xxiii</sup>

Transit ridership has grown 72% from 154,200 average daily boarding rides before light rail opened to 265,300 for FY 2000. Total fiscal year ridership has been up 11 years in a row.<sup>xxiv</sup>

### **Freeways are cheaper to build?**

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**COX MYTH:** *“On average the cost to build and operate motorways, including private auto costs, are 1/7<sup>th</sup> that of light rail per passenger kilometer.”<sup>xxv</sup>*

**FACT:** Urban freeways cost significantly more to build than light rail.

In Portland, the Oregon State Department of Transportation estimated the freeway alternative to a light rail project would cost \$1.74 billion more (\$1.5 billion for 21 miles of rail verse \$3.24 billion for a 6 lane freeway) for a freeway of half the length and half the capacity.<sup>xxvi</sup>

### **Little Unsubsidized Development has occurred**

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**COX MYTH:** *“Little unsubsidized, market based light rail development has occurred.”<sup>xxvii</sup>*

**FACT:** In combination with a growing real estate market and supportive public policy new rail lines have been shown to be powerful tools to help shape urban development without public subsidy.

**Washington DC.** Washington’s transit operator, WMATA, has undertaken 27 development projects at a value of more than \$2 billion on land they own. In the past year WMATA has realized a 50 percent price premium (over appraised value) on land sales. The premium in land sales to WMATA exceeds \$50 million.<sup>xxviii</sup>

“Between 1980 and 1990, 40% of the region’s office and retail space was built within walking distance of a Metrorail Station. Since 1990, about 20% of office and retail space has been constructed at a Metrorail station.

The Urban Land Institute estimated that \$15 billion in additional development has been generated by Metrorail – this number will grow to \$20 billion with the completion of the 103-mile system.

KPMG Peat Marwick estimated in a northern Virginia study that the Commonwealth of Virginia is receiving an annual rate of return of 19% on its investment in Metrorail through additional development attracted by Metrorail.<sup>xxix</sup>

**Dallas** “a recent DART study reported that \$800 million worth of new development has

occurred within a quarter-mile of DART rail stations, almost equal to the 20-mile system's \$860 million construction cost. Several more major projects have been announced for rail stations in Richardson, Plano and Farmers Branch.<sup>xxx</sup>

A number of new projects indicate Dallas' LRT system may begin having a major impact on the city's urban form. At the Mockingbird Station for example, the Development Company, UDC Urban, is constructing a 10-acre mixed-use project featuring an art house, movie theater, 220 loft apartments, a new hotel, offices, and restaurants.<sup>xxxi</sup>

Dallas offers no subsidizes targeted to transit.<sup>xxxii</sup>

**San Diego.** San Diego's system has expanded to four lines since the system opened for operation in 1984. The trolley has helped shape development in San Diego's central city and along the outer stretches of the line. A total of 15 major joint development projects have occurred along the system at a value in excess of \$540 million.<sup>xxxiii</sup>

**COX MYTH:** *"As little as 10 percent of the cost of building and operating light rail systems are recovered in fares."*

**FACT:** As much as 74 percent of the operating costs of rail systems are recovered in fares.

**Washington DC.** WMATA recovered 74 percent of its 1999 operating costs from fares.<sup>xxxiv</sup>

### **Construction Costs have Soared Above Projections**

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**COX MYTH:** *"In some cases (construction) costs have increased by as much as 325% compared to original projections"* <sup>xxxv</sup>

**FACT:** New rail systems have a remarkable record of being completed within the budget established at the completion of design.

The best estimation of whether construction costs are met is to look at the actual cost verse the estimate at the end of preliminary design.

**Portland.** Both of Portland's light rail lines were completed on schedule and within budget.<sup>xxxvi</sup>

**Dallas.** "DART's \$860 million starter system was built on budget and on schedule. DART is also on schedule and significantly under budget on its \$1 billion light rail project that will open to in Garland, Richardson, and Plano in FY 2002 and 2003."<sup>xxxvii</sup>

**Salt Lake.** The TRAX light rail line was completed a year ahead of schedule and under budget.<sup>xxxviii</sup>

**Atlanta.** “MARTA has consistently completed its rail development projects on time and under budget.” MARTA has completed projects for under the budgets forecast in early environmental budgets. And for the past three grant funded projects MARTA actually had leftover funds which where reprogrammed to other projects.<sup>xxxix</sup>

## PORTLAND IS A FALSE SUCCESS?

Cox's attack on Portland's strategy of marrying transit and land use seems to be intended to show Portland is a false model, not something for other cities to learn from. He believes sprawl and decentralization are inevitable and blithely dismisses the litany of Portland's significant accomplishments with containing sprawl, growing transit riders and revitalizing the central city as hollow marketing success.

### Los Angeles denser than Portland

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**COX MYTH:** *“Even Portland, Oregon, with its mythical transit orientation, is nothing more than a sprawling metropolis barely half as dense as Los Angeles.”<sup>x1</sup>*

**FACT:** This is an example of taking facts totally out of context to distort and purposely mislead the reader. Cox knows Los Angeles actually has the highest density of any metro area in the US, yet he plays on a widely held misconception to imply Portland is somehow a failure based on a false comparison.

Where the density goes is more important than how much you have. Portland has focused density in centers and corridors served by transit. Los Angeles density is more uniform, not concentrated.

Because of its infamous sprawl many lay people assume the Los Angeles megalopolis is low density; in 1997 the Los Angeles urban area averaged 5,465 people per acre compared to New York with 4,835. In some of Los Angeles's proposed transit corridors the density is over 20,000 per square mile. So yes, like all other American metropolitan areas, Portland with an average density per square mile of 2,680 is not as dense as Los Angeles.<sup>xli</sup>

### Portland Sprawls Like any Other US City

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**COX MYTH:** *“Portland is not unique. It sprawls like any other U.S. urban area.”<sup>xlii</sup>*

**FACT:** Portland is far from a “sprawling metropolis.” While sprawling American cities have been expanding outward 2 to 4 times faster than population growth, for 20 years Portland has been on a different path, expanding at half the rate of population growth.

**Portland.** Between 1979 and 1997 the region's population grew by 30% while the urbanized area inside the Urban Growth Boundary grew by just 16%. Portland is urbanizing land at roughly half the rate of population growth.<sup>xliii</sup>

Just as significant, in an era where the majority of growth in the west is outside of central cities, the Brookings Institution reports Portland's share of housing in the 6 county area climbed from 7.6 percent in 1986 to 18.2 percent in 1998.<sup>xliv</sup>

**St. Louis.** St. Louis occupies 350% more land today than it did 40 years ago and the population has increased 35% in the same period, sprawl has become a serious threat to maintaining neighborhood connections.<sup>xlv</sup>

**Denver.** The land area defining the Denver metropolitan region increased by 66 percent between 1990 and 1996<sup>xlvi</sup>, yet between 1982 and 1997 the urban area grew by just 33 percent in population.<sup>xlvii</sup>

### **Atlanta is denser than Portland**

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**COX MYTH:** *“data indicates that new development in Atlanta has been twice as dense as Portland’s since 1982.”*<sup>xlviii</sup>

**FACT:** From 1990 to 1995 Atlanta was sprawling outward 40 times faster than Portland has spread in the past 20 years.

Portland and Atlanta have developed in profoundly different ways. According to the Atlanta Regional Commission “. . . development (in Atlanta) continues to occur in a scattered, low-density manner. From 1990 to 1995 alone, 132,920 acres were developed to accommodate regional growth – during which time population increased by 324,700.”<sup>xlix</sup>

Atlanta in the 90’s has been consuming land at the rate of “.409 acres per person.” In contrast to Atlanta’s appetite for land, “by growing up, not out” Portland was urbanizing land at a rate of 19.6 persons per acre between 1979 and 1997. In that period the region’s population grew by 30% while the urbanized area inside the UGB grew by just 16%. Portland is urbanizing land a roughly half the rate of population growth.<sup>1</sup>

### **No transit oriented development without subsidy**

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**COX MYTH:** *“Faced with the reality of little development, the City of Portland now grants 10 years of property tax abatement for developments within walking distance of light rail stations.”*<sup>li</sup>

**FACT:** More than \$2.4 billion investment in new development has occurred within walking distance of the stations along Portland’s light rail lines<sup>lii</sup>. The City of Portland’s transit tax abatement accounts for less than four one hundredths<sup>liii</sup> of the total.

Suburban communities along Portland’s Westside line--Washington County, Beaverton and Hillsboro--are not using the property tax abatement technique, and yet nearly 6,000 housing units have been permitted in the Westside station areas of those three communities. This includes the National Association of Homebuilders' 1999 Planned Community of the Year, Orenco Station. No housing subsidy. No tax break.

**Transit Oriented Development Property Tax Abatements  
Portland, Oregon**

<b>Project</b>	<b>Units</b>	<b>Total Development Cost</b>	<b>PDC Funding</b>
160th & Burnside Apartments	51	\$2,454,000	\$0
Center Station & Center Square	228	\$20,012,000	\$2,100,000
Collins Circle	124	\$13,324,000	\$350,000
Floyd Light Apartments	51	\$3,319,000	\$303,724
Gateway Condos	24	\$1,430,000	\$0
Hazelwood Apartments	119	\$10,449,000	\$700,000
Russellville School Phase I	282	\$20,192,000	\$0
Stadium Station	115	\$8,469,000	\$1,000,000
<b>Total</b>	<b>994</b>	<b>\$79,649,000</b>	<b>\$4,453,724</b>

**Portland’s congestion is getting worse.**

**COX MYTH:** *“Portland is not winning the battle against traffic congestion. Since 1982, Portland’s FHWA Roadway Congestion Index has risen 33 percent, nearly equal to Atlanta’s 36 percent.”<sup>liv</sup>*

**FACT:** According to studies by both the Lincoln Land Institute and the Texas Transportation Institute Portland’s policies of land containment and not investing in major new roads have out performed Atlanta’s practice of road building and sprawling outward.

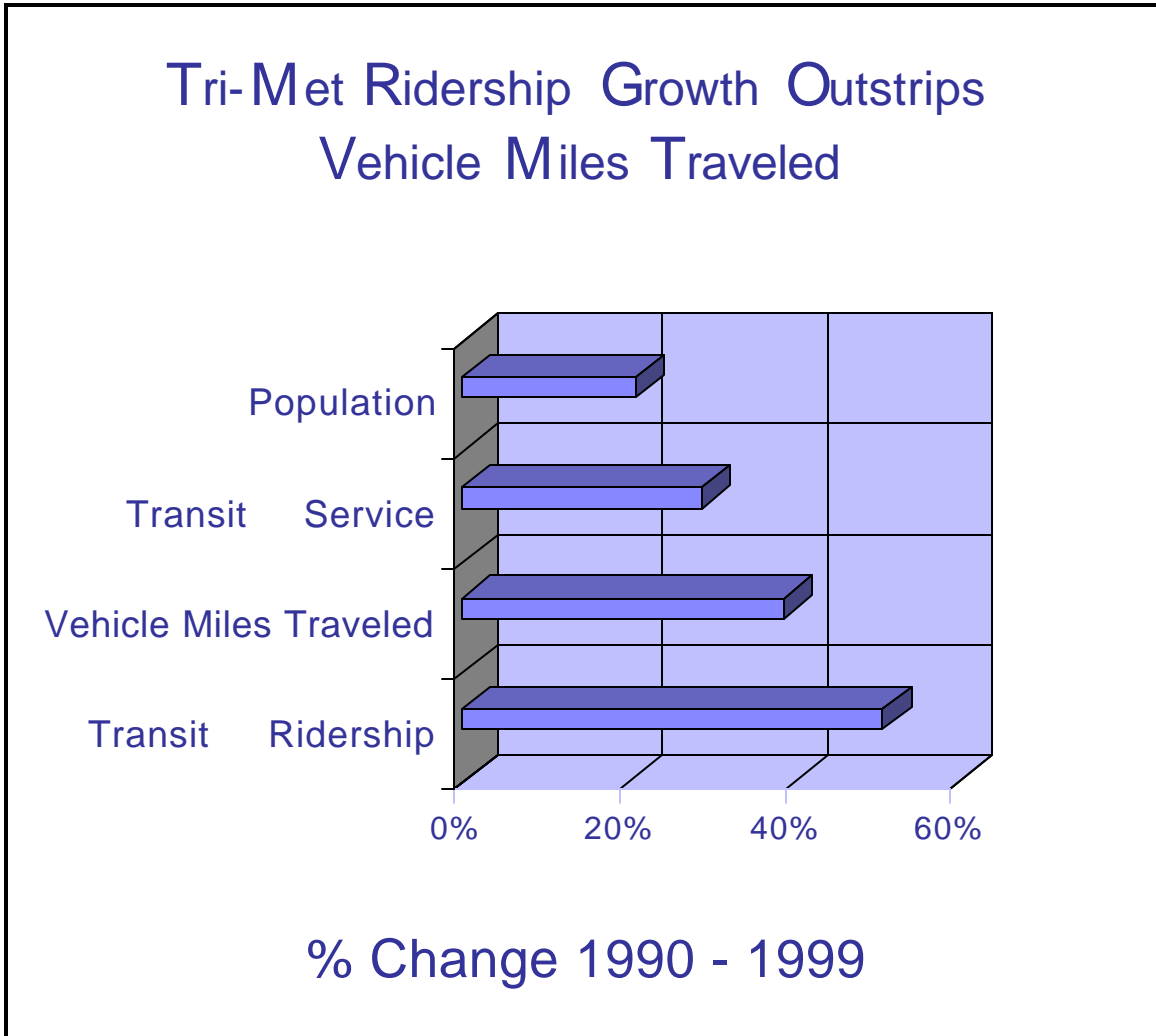
“While vehicle miles traveled increased in both places, Portland experienced little change (2 percent) whereas Atlanta experienced a significant increase (17 percent). At the same time, Portland’s average commute times fell, air quality improved, and per capita energy consumption declined.”<sup>lv</sup>

In it’s most recent study of congestion in America, the Texas Transportation Institute showed that Portland’s rate of congestion is not increasing while Atlanta has grown in congestion.

“The rate of growth in traffic congestion is starting to slow, and Portland’s long-term attack on transportation problems is starting to give the region an edge over cities that have spent hundred of millions of dollars on new freeways.

In 1993, Portland ranked as the nation’s 12<sup>th</sup> most congested city and Atlanta was ranked 24<sup>th</sup>. Portland has held its ranking and Atlanta climbed to 6<sup>th</sup>.<sup>lvi</sup>

Portland is the only urban region in the United States where transit ridership is increasing faster than vehicle miles traveled (VMT). From 1990 to 1999 transit ridership in the Portland Metropolitan area grew 31% faster than the growth in vehicle miles traveled (VMT), 75% faster than the growth in service and 143% faster than the growth in population. In the period In that period transit ridership grew by 51%, VMT grew by 39%, Tri-Met service by 29% and population by 21%.<sup>lvii</sup>



## Footnotes

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- <sup>ii</sup> Center for Transportation Excellence, web page <http://www.cfte.org/opposition.htm>
- <sup>iii</sup> Miller, Robert D., "If Dallas can do it, why not Houston?" *Houston Chronicle*, August 27, 2000
- <sup>iv</sup> *Atlanta Journal Constitution*, "Road report is blueprint for razing Atlanta region," Editorial, July, 6 2000
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- <sup>vi</sup> Blakeslee, Nate, Article from *Texas Observer*, June 1999
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- <sup>viii</sup> Weyrich, Paul M and William S. Lind, "Does Transit Work? A Conservative Reappraisal" Free Congress Research and Education Foundation, Washington, DC, May 1999
- <sup>ix</sup> *ibid*, Blakeslee
- <sup>x</sup> Cox, Wendell, "New Light Rail in the United States: Promise and Reality." Prepared for the Road Transport Forum New Zealand, March 2000
- <sup>xi</sup> *ibid*, *The Public Purpose*
- <sup>xii</sup> Griffiths, John. Manager Rail Operations Planning, phone interview, June 2000, Tri-Met, Portland, Oregon
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- <sup>xiv</sup> Greater Phoenix Chamber of Commerce, "Public Transit: An Important Investment." Phoenix, AZ, November 1999
- <sup>xv</sup> Oregon Department of Transportation, "Westside Traffic & Transit Report Released Study Shows Transit Keeps Pace With Auto Use," Salem, Oregon, October 11, 1999
- <sup>xvi</sup> *ibid*, *the Public Purpose*
- <sup>xvii</sup> Center for Transportation Excellence, web page <http://www.cfte.org/newlite.htm>
- <sup>xviii</sup> Center for Transportation Excellence, web page, [http://www.cfte.org/st\\_louis.asp](http://www.cfte.org/st_louis.asp)

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- <sup>xix</sup> Center for Transportation Excellence, web page <http://www.cfte.org/denver.asp>
- <sup>xx</sup> Tri-Met, "Facts About Tri-Met: The Rail~volution continues in Portland." Portland, Oregon, September, 1999
- <sup>xxi</sup> *ibid*, Cox, New Zealand
- <sup>xxii</sup> Center for Transportation Excellence, web page [http://www.cfte.org/benefits\\_of\\_transit.asp](http://www.cfte.org/benefits_of_transit.asp)
- <sup>xxiii</sup> *ibid*, Tri-Met, Facts
- <sup>xxiv</sup> Tri-Met, "Monthly Performance Report." June 2000
- <sup>xxv</sup> *ibid*, Cox, New Zealand
- <sup>xxvi</sup> "House Interim Task Force on Light Rail," Oregon Legislature, Salem, OR, July 1995
- <sup>xxvii</sup> *ibid*, Cox, New Zealand
- <sup>xxviii</sup> McNeil, Alvin, Manager Real Estate for WMATA, phone interview, August 28, 2000
- <sup>xxix</sup> Center for Transportation Excellence, web page [http://www.cfte.org/washington\\_dc.asp](http://www.cfte.org/washington_dc.asp)
- <sup>xxx</sup> Hartzel, Tony, "DART looking to move faster Opponents of bond proposal question borrowing of money," *The Dallas Morning News*, July 23, 2000
- <sup>xxxi</sup> Barra, Joel Warren, "Reshaping the City." *Texas Architecture*, 5/6 1999
- <sup>xxxii</sup> Wierzenski, Jack, Senior Manager of Planning Studies & Economic Development, DART, "Phone Interview," Dallas, TX August 29, 2000.
- <sup>xxxiii</sup> Metropolitan Transit Development Board, "MTDB Joint Development Major Project Summary." San Diego, CA 1998
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- <sup>xxxvii</sup> DART fact sheet, "Long-Term Debt Questions." Dallas, TX, July 2000
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- <sup>x</sup> *ibid*, Cox, *Engineering News*

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<sup>xli</sup> Texas Transportation Institute, "1999 Annual Urban Mobility Study"  
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<sup>xlii</sup> Cox, Wendell, "Portland Not Sprawl Free" *Atlanta Constitution Op-Ed*, June 23, 1999

<sup>xliii</sup> Metro, "Metro 2040 Growth Concept," Portland, Oregon, December 1994.

<sup>xliv</sup> Von Hoffman, Alexander, "Housing Heats Up: Home Building Patterns in Metropolitan Areas," *Brookings Institution Center on Urban & Metropolitan Policy*, Washington, DC, December 1999.

<sup>xlv</sup> Sierra Club, "Sprawl Report" <http://www.sierraclub.org/sprawl/report98/>

<sup>xlvi</sup> *ibid*, Sierra Club

<sup>xlvii</sup> *ibid*, Texas Transportation Institute, *Mobility*

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<sup>xlix</sup> Atlanta Regional Commission, "Regional Development Plan," undated, Atlanta, GA

<sup>l</sup> *ibid*, Metro

<sup>li</sup> *ibid*, Cox, *New Zealand*

<sup>lii</sup> Arrington, G. B., "At Work in the Field of Dreams: Light Rail & Smart Growth in Portland" *Tri-Met*, Portland, Oregon, September 1998.

<sup>liii</sup> Warner, John F., "Transit Oriented Development Property Tax Abatements", excel spreadsheet, *Portland Development Commission*, August 22, 2000

<sup>liv</sup> *ibid*, Cox, *op-Ed*

<sup>lv</sup> Nelson, Arthur C., "Effects of Urban Containment on Housing Prices and Landowner Behavior." *Land Lines*, Lincoln Institute of Land Policy, Cambridge, MA May 2000

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<sup>lvii</sup> Arrington, G.B. compiled from Metro, Tri-Met and ODOT data