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Over 30 million are daily riders on bus rapid transit (BRT), which offers many of the advantages of light-rail, but at a fraction of the cost. Riders in [190 global cities](#) find that BRT moves people faster than cars crawling in congestion, because BRT uses segregated lanes. BRT is faster than normal bus service because of attributes such as prepayment, fewer stops, station design, level boarding, and technology.

BRT started in Brazil over 40 years ago in a city that needed light-rail, but could not afford its cost. Its success in Brazil led to growing use throughout Latin America including Colombia, Ecuador, and Mexico.

BRT is used in 18 cities in the United States for cost-affordable faster metro service. For example, in New York, the subway offers maximum capacity and speed. Yet, subway expansion can cost \$2 billion per mile. Less demanding routes can be accommodated with BRT for under \$40 million per mile.

Subway lines are fixed for decades, where BRT is more flexible in changing as a city changes. BRT is effective in connecting people to major rail corridors. When a BRT line exceeds 50,000 riders daily, it could be upgraded to light-rail, taking advantage of all the corridor and station infrastructure in place.

In addition to New York, other U.S. cities succeeding with BRT include Pittsburgh, Boston, Las Vegas, Miami and Los Angeles.

Urban Acupuncture in Brazil

Talking with architect Jamie Lerner, the former Mayor of Curitiba, Brazil, is like talking with Santiago Calatrava about designing buildings or having an imagined conversation with Frederick Olmsted about designing parks. Jamie Lerner designs cities. More accurately, he helps all create a strategic vision of cities for people, not cities for cars. A few years ago, I talked with Jamie Lerner.

As one of Brazil's most popular mayors, Lerner was elected three times. He helped transform Curitiba from a collection of shanty towns

to a beautiful and sustainable city of 1.8 million. At a time when many Latin Americans were disenchanted with their politicians, Jamie Lerner had a 92% approval rating. Following his success as mayor, he served as governor of the state of Parana for 8 years.

In the late sixties, Curitiba had a contest for the best urban design for their city's future. In 1968, the city incorporated many of the ideas of young architect Lerner into the Curitiba Master Plan. In 1971, he was appointed mayor of Curitiba.

Facing a budget crisis, he had to search for big ideas that could be implemented with little money. He greened the city by involving citizens in planting 1.5 million trees. He solved the city's flood problems by diverting water into lakes in newly created parks. He lifted some children from poverty by paying teenagers to keep the parks clean.

Any leader will tell you that change is likely to be met with strong resistance. Lerner wanted to beautify the city with pedestrian boulevards that were car-free. Shop owners were up in arms, fearing that the change would destroy them. Lerner convinced some to take part in a thirty day trial. Shoppers loved it. Before the trial ended, the merchants asked that the pedestrian zone be expanded to include more streets.

Lerner got the city moving. Curitiba could not afford the light-rail systems of Europe and the U.S. Curitiba invented rapid transit using buses. Since implementing BRT, Curitiba's population of people tripled, yet its population of cars declined. In 1974, there were only 25,000 daily passenger rides on Curitiba buses. Now BRT is more popular than cars. Out of 1.8 million people, over 550,000 ride BRT daily in Curitiba.

Jamie Lerner's new book, *Urban Acupuncture*, is full of lessons and photographs from global cities illustrating big improvements from small changes in urban design, transportation, and living spaces.

Los Angeles

O.K. BRT is a major success in Latin America. What about in the United States with our suburban sprawl and love of cars?

Although public transportation is effective in a compact city like Curitiba, it is a challenge in the suburban sprawl of Southern California, home to nearly 24 million people stretched from Los Angeles to Orange County to San Diego to San Bernardino and Riverside Counties.

When I grew up in Pasadena, a suburb of Los Angeles that is famous for its Rose Parade, my father had one choice to reach his L.A. job; he crawled the stop-and-go freeways to work and came home exhausted from the stressful traffic. Years later, while attending a conference in Los Angeles, I was able to take a more pleasant journey from Pasadena. Each morning, I walked two blocks, waited an average of five minutes, and then boarded the Metro Rail Gold Line, a modern light-rail that took me to Union Station in the heart of L.A. From there, I took L.A.'s modern and efficient subway to the conference hotel. Metro was faster than driving.

In addition to the expensive Metro Rail, two BRT lines extend Los Angeles service across the sprawling basin. The Metro Orange Line allows me to take BRT on a dedicated Transitway from my stepdaughter's home in Laurel Canyon to Chatsworth in the valley where I can connect with the Amtrak Pacific Surfliner or with Metrolink. The Orange Line BRT allows 30,000 daily commuters to avoid the driving stress between work and home.

A similar Silver Line allows 14,000 daily commuters and college students from El Monte to Gardena to get in and out of downtown L.A. without crawling in overcrowded freeways. A third BRT line starts this June, speeding travel for a dozen miles on Wilshire Boulevard from downtown to Santa Monica.

1.7 million times per day, people travel on Los Angeles Metropolitan Transit Authority (Metro). Although light-rail is at the heart of the system, 90% of the rides are on buses, not light-rail. Much of the bus riding is similar to light-rail, using pleasant stations, pre-paid tickets for fast boarding, electronic signs that announce when the next bus will arrive, buses that seat 84 to 100 people, and some dedicated busways. In a few years, the L.A. Metro system will also connect with an 800-mile California high-speed rail system.

BRT Best Practices

In the United States, BRT will grow from 18 cities to 100. For example, in the San Francisco Bay Area, ten systems are in planning or construction to move people at a fraction of the cost of widening freeways or adding rail. Yet for all the U.S. progress, BRT ridership is a small fraction of countries such as Brazil, Colombia and Mexico. In the United States, BRT is rarely implemented in an ideal form, but often compromised with lack of dedicated busways, merchant and NIBMY opposition, priority for cars, infrequent buses, and slow speeds.

Meeting of the Minds delivered [a recent webinar about Bus Rapid Transit](#) featuring Dr. Juan Carlos Munoz, Bus Rapid Transit Centre of Excellence, Universidad Catolica de Chile. Rather than taking a "BRT-light" approach, based on his research, Dr. Munoz recommends these best practices:

- segregated lanes
- lower wait time

- prepayment
- level boarding
- increase distance between stations
- express services
- multi-corridor (not hub and spoke)
- regular headways (regular time intervals between buses)

Effective BRT also integrates into intelligent transportation systems. As a bus approaches a light it gets priority, more rapidly getting a green light. Advanced buses automatically precision stop. Stations and mobile apps show the location of each bus and expected arrival.

Singapore's Circle Line is autonomous, moving people on its underground metro without drivers. Like the Circle Line and like cars of the future, Dr. Munoz states the BRT is a good candidate for self-driving vehicles, especially BRT in dedicated busways.

Mobility apps continue to improve, especially for urban transportation. For many of us, our weekly travel is multimodal, as we shuttle between suburbs and urban environments. At times a car is faster, at other times rail and bus. A single and integrated application, as in the movie "[Her](#)," could learn our preferences and seamlessly navigate us through bus, rail, shared vehicles, new modes of travel, and telepresence.

How rapidly BRT expands from 30 million daily riders to 100 million, will depend, in part, on how well systems integrate with safe walking, bicycle routes, Uber and taxi, local buses and commuter rail. BRT makes all connecting modes more valuable. BRT is even a blessing for those who must drive, because 30 million fewer people are behind the wheel of a car.

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