Annex 1
BRT system comparisons

The information provided in this comparison matrix of different BRT systems has been collected from a variety of sources, including the transport authorities of the particular cities. The authors of this Planning Guide thus cannot ascertain the veracity of the information provided. System characteristics also change with time as cities extend and improve services. The data presented here is based on information received in early 2007. A copy of the most recently updated comparison matrix can be found at: http://itdp.org/brt_guide.html.

Qualitative comparisons

Colombia

✔ – Yes x – No P – Partial I – Insufficient network to make a conclusion NA – Not applicable

BRT Feature	Bogotá (TransMilenio)	Pereira (Megabus)
Segregated busways or bus-only roadways	✔	✔
Existence of an integrated "network" of routes and corridors	✔	I
Enhanced station environment (*i.e.,* not just a bus shelter)	✔	✔
Special stations and terminals to facilitate transfers	✔	✔
Overtaking lanes at stations / Provision of express services	✔	x
Improvements to nearby public space	✔	✔
High average commercial speeds (> 20 km/h)	✔	✔
Actual peak ridership over 8,000 passengers per hour per direction	✔	x
Pre-board fare collection and fare verification	✔	✔
At-level boarding and alighting	✔	✔
Fare- and physical-integration between routes and feeder services	✔	✔
Entry to system restricted to prescribed operators under a reformed business and administrative structure (closed system)	✔	✔
Competitively-bid and transparent contracts and concessions	✔	✔
No need for operational subsidies	✔	✔
Independently operated and managed fare collection system	✔	✔
Quality control oversight from an independent entity / agency	✔	✔
Low-emission vehicle technology (Euro III or higher)	P	x
Automated fare collection and fare verification system	✔	✔
System management through centralised control centre, utilising automatic vehicle location system	✔	✔
Signal priority or grade separation at intersections	P	x
Distinctive marketing identity for system	✔	✔
High-quality customer information (*e.g.,* clear maps, signage, real-time information displays)	✔	✔
Modal integration at stations (*e.g.,* bicycle parking, taxi stations, easy transfers between public transport systems)	P	x
Supporting car-restriction measures (*e.g.,* road pricing)	✔	x

1. Bogotá data courtesy of TransMilenio SA
2. Pereira data from Monica Venegas, Megabus System Manger, 2nd TransMilenio International Conference, 8 Nov 2006

Qualitative comparisons

Brazil

✔ – Yes x – No P – Partial I – Insufficient network to make a conclusion NA – Not applicable

BRT Feature	Curitiba (Rede Integrada)	Goiânia (METROBUS)	Porto Alegre (EPTC)	São Paulo (Inteligado)
Segregated busways or bus-only roadways	✔	✔	P	P
Existence of an integrated “network” of routes and corridors	✔	✔	x	✔
Enhanced station environment (*i.e.,* not just a bus shelter)	✔	✔	P	P
Special stations and terminals to facilitate transfers	✔	✔	x	P
Overtaking lanes at stations / Provision of express services	x	x	x	P
Improvements to nearby public space	P	x	x	x
High average commercial speeds (> 20 km/h)	✔	x	x	P
Actual peak ridership over 8,000 passengers per hour per direction	✔	✔	✔	✔
Pre-board fare collection and fare verification	✔	✔	x	x
At-level boarding and alighting	✔	✔	P	x
Fare- and physical-integration between routes and feeder services	✔	✔	✔	✔
Entry to system restricted to prescribed operators under a reformed business and administrative structure (closed system)	✔	✔	✔	✔
Competitively-bid and transparent contracts and concessions	x	P	x	✔
No need for operational subsidies	✔	P	✔	x
Independently operated and managed fare collection system	✔	✔	✔	✔
Quality control oversight from an independent entity / agency	✔	P	✔	x
Low-emission vehicle technology (Euro III or higher)	x	x	P	P
Automated fare collection and fare verification system	P	✔	x	✔
System management through centralised control centre, utilising automatic vehicle location system	x	x	x	P
Signal priority or grade separation at intersections	x	x	x	x
Distinctive marketing identity for system	✔	✔	x	✔
High-quality customer information (*e.g.,* clear maps, signage, real-time information displays)	✔	✔	x	P
Modal integration at stations (*e.g.,* bicycle parking, taxi stations, easy transfers between public transport systems)	P	x	x	x
Supporting car-restriction measures (*e.g.,* road pricing)	x	x	x	✔

1. Brazil data courtesy of Eric Ferreira (ITDP) and Wagner Colombini (Logit)

Qualitative comparisons

Ecuador

✔ – Yes x – No P – Partial I – Insufficient network to make a conclusion NA – Not applicable

BRT Feature	Guayaquil (Metrovía)	Quito (Trolé)	Quito (Ecovía)	Quito (Central Norte)
Segregated busways or bus-only roadways	✔	✔	✔	P
Existence of an integrated "network" of routes and corridors	I	P	P	X
Enhanced station environment (*i.e.,* not just a bus shelter)	✔	✔	✔	✔
Special stations and terminals to facilitate transfers	✔	✔	✔	✔
Overtaking lanes at stations / Provision of express services	x	x	x	P
Improvements to nearby public space	✔	✔	x	X
High average commercial speeds (> 20 km/h)	✔	x	✔	✔
Actual peak ridership over 8,000 passengers per hour per direction	✔	✔	✔	✔
Pre-board fare collection and fare verification	✔	✔	✔	✔
At-level boarding and alighting	✔	✔	✔	✔
Fare- and physical-integration between routes and feeder services	✔	✔	✔	P
Entry to system restricted to prescribed operators under a reformed business and administrative structure (closed system)	✔	✔	✔	✔
Competitively-bid and transparent contracts and concessions	✔	x	x	P
No need for operational subsidies	✔	P	✔	✔
Independently operated and managed fare collection system	✔	x	x	X
Quality control oversight from an independent entity / agency	✔	P	P	P
Low-emission vehicle technology (Euro III or higher)	✔	✔	x	P
Automated fare collection and fare verification system	✔	✔	✔	X
System management through centralised control centre, utilising automatic vehicle location system	✔	x	x	X
Signal priority or grade separation at intersections	x	P	x	✔
Distinctive marketing identity for system	✔	✔	✔	P
High-quality customer information (*e.g.,* clear maps, signage, real-time information displays)	✔	✔	✔	P
Modal integration at stations (*e.g.,* bicycle parking, taxi stations, easy transfers between public transport systems)	x	x	x	X
Supporting car-restriction measures (*e.g.,* road pricing)	x	x	x	X

1. Guayaquil data courtesy of César Arias.
2. Quito data courtesy of the Metropolitan Municipality of Quito and Hidalgo et al., 2007

Qualitative comparisons

Chile and Mexico

✔ – Yes x – No P – Partial I – Insufficient network to make a conclusion NA – Not applicable

BRT Feature	Santiago (Transantiago)	León (Optibus SIT)	Mexico City (Metrobús)
Segregated busways or bus-only roadways	P	✔	✔
Existence of an integrated "network" of routes and corridors	✔	✔	x
Enhanced station environment (*i.e.,* not just a bus shelter)	P	✔	✔
Special stations and terminals to facilitate transfers	✔	✔	x
Overtaking lanes at stations / Provision of express services	P	x	x
Improvements to nearby public space	P	x	x
High average commercial speeds (> 20 km/h)	P	✔	x
Actual peak ridership over 8,000 passengers per hour per direction	P	✔	x
Pre-board fare collection and fare verification	X	✔	✔
At-level boarding and alighting	x	✔	✔
Fare- and physical-integration between routes and feeder services	✔	P	x
Entry to system restricted to prescribed operators under a reformed business and administrative structure (closed system)	✔	✔	✔
Competitively-bid and transparent contracts and concessions	✔	x	x
No need for operational subsidies	✔	✔	P
Independently operated and managed fare collection system	✔	✔	✔
Quality control oversight from an independent entity / agency	x	P	✔
Low-emission vehicle technology (Euro III or higher)	✔	✔	✔
Automated fare collection and fare verification system	✔	✔	✔
System management through centralised control centre, utilising automatic vehicle location system	x	P	✔
Signal priority or grade separation at intersections	x	x	x
Distinctive marketing identity for system	✔	✔	✔
High-quality customer information (*e.g.,* clear maps, signage, real-time information displays)	✔	✔	✔
Modal integration at stations (*e.g.,* bicycle parking, taxi stations, easy transfers between public transport systems)	x	x	x
Supporting car-restriction measures (*e.g.,* road pricing)	x	x	x

1. Santiago data courtesy of Eduardo Giesen.
2. León and Mexico City data courtesy of Bernardo Baranda (ITDP)

Qualitative comparisons

China

✔ – Yes x – No P – Partial I – Insufficient network to make a conclusion NA – Not applicable

BRT Feature	Beijing	Hangzhou	Kunming
Segregated busways or bus-only roadways	P	P	✔
Existence of an integrated "network" of routes and corridors	I	I	✔
Enhanced station environment (*i.e.,* not just a bus shelter)	P	✔	P
Special stations and terminals to facilitate transfers	x	x	NA
Overtaking lanes at stations / Provision of express services	P	x	x
Improvements to nearby public space	✔	✔	x
High average commercial speeds (> 20 km/h)	✔	✔	x
Actual peak ridership over 8,000 passengers per hour per direction	x	x	✔
Pre-board fare collection and fare verification	✔	✔	x
At-level boarding and alighting	P	P	x
Fare- and physical-integration between routes and feeder services	x	P	NA
Entry to system restricted to prescribed operators under a reformed business and administrative structure (closed system)	P	x	x
Competitively-bid and transparent contracts and concessions	x	x	P
No need for operational subsidies	x	x	✔
Independently operated and managed fare collection system	✔	x	x
Quality control oversight from an independent entity / agency	P	P	P
Low-emission vehicle technology (Euro III or higher)	✔	✔	x
Automated fare collection and fare verification system	✔	✔	x
System management through centralised control centre, utilising automatic vehicle location system	✔	x	P
Signal priority or grade separation at intersections	x	x	P
Distinctive marketing identity for system	x	✔	x
High-quality customer information (*e.g.,* clear maps, signage, real-time information displays)	✔	✔	x
Modal integration at stations (*e.g.,* bicycle parking, taxi stations, easy transfers between public transport systems)	P	P	P
Supporting car-restriction measures (*e.g.,* road pricing)	x	x	P

1. Beijing data courtesy of Kangming Xu
2. Kunming data courtesy of Lin Wei (Municipality of Kunming)

Qualitative comparisons

Indonesia, Japan, South Korea, and Taiwan

✔ – Yes x – No P – Partial I – Insufficient network to make a conclusion NA – Not applicable

BRT Feature	Jakarta (TransJakarta)	Nagoya (Yutorito line)	Taipei	Seoul
Segregated busways or bus-only roadways	✔	✔	✔	P
Existence of an integrated “network” of routes and corridors	x	P	✔	✔
Enhanced station environment (*i.e.,* not just a bus shelter)	✔	✔	P	x
Special stations and terminals to facilitate transfers	x	P	x	x
Overtaking lanes at stations / Provision of express services	x	x	P	x
Improvements to nearby public space	x	x	x	✔
High average commercial speeds (> 20 km/h)	✔	✔	✔	x
Actual peak ridership over 8,000 passengers per hour per direction	✔	x	✔	✔
Pre-board fare collection and fare verification	✔	x	x	x
At-level boarding and alighting	✔	x	x	x
Fare- and physical-integration between routes and feeder services	I	x	✔	✔
Entry to system restricted to prescribed operators under a reformed business and administrative structure (closed system)	✔	✔	x	P
Competitively-bid and transparent contracts and concessions	x	x	x	
No need for operational subsidies	x	x	✔	x
Independently operated and managed fare collection system	✔	x	x	✔
Quality control oversight from an independent entity / agency	P	x	P	✔
Low-emission vehicle technology (Euro III or higher)	x	x	✔	✔
Automated fare collection and fare verification system	✔	x	✔	✔
System management through centralised control centre, utilising automatic vehicle location system	x	x	✔	✔
Signal priority or grade separation at intersections	x	✔	x	x
Distinctive marketing identity for system	✔	x	x	x
High-quality customer information (*e.g.,* clear maps, signage, real-time information displays)	✔	✔	P	P
Modal integration at stations (*e.g.,* bicycle parking, taxi stations, easy transfers between public transport systems)	x	✔	P	P
Supporting car-restriction measures (*e.g.,* road pricing)	P	x	x	x

1. Jakarta data courtesy of ITDP
2. Nagoya data courtesy of Hiroyuki Takeshita (Nagoya University)
3. Seoul data courtesy of the Municipality of Seoul
4. Taipei data courtesy of Dr. Jason Chang (Taiwan National University)

Qualitative comparisons

Australia

✔ – Yes x – No P – Partial I – Insufficient network to make a conclusion NA – Not applicable

BRT Feature	Adelaide (O-Bahn)	Brisbane (SE Busway)	Sydney (Liverpool - Parmatta)
Segregated busways or bus-only roadways	✔	✔	✔
Existence of an integrated “network” of routes and corridors	✔	✔	x
Enhanced station environment (*i.e.,* not just a bus shelter)	✔	✔	✔
Special stations and terminals to facilitate transfers	✔	✔	✔
Overtaking lanes at stations / Provision of express services	✔	P	✔
Improvements to nearby public space	✔	✔	P
High average commercial speeds (> 20 km/h)	✔	✔	✔
Actual peak ridership over 8,000 passengers per hour per direction	x	✔	x
Pre-board fare collection and fare verification	x	P	x
At-level boarding and alighting	x	x	x
Fare- and physical-integration between routes and feeder services	✔	✔	P
Entry to system restricted to prescribed operators under a reformed business and administrative structure (closed system)	✔	✔	✔
Competitively-bid and transparent contracts and concessions	P	P	P
No need for operational subsidies	x	x	x
Independently operated and managed fare collection system	x	x	x
Quality control oversight from an independent entity / agency	✔	✔	✔
Low-emission vehicle technology (Euro III or higher)	P	P	P
Automated fare collection and fare verification system	P	x	P
System management through centralised control centre, utilising automatic vehicle location system	P	P	✔
Signal priority or grade separation at intersections	✔	✔	✔
Distinctive marketing identity for system	✔	✔	✔
High-quality customer information (*e.g.,* clear maps, signage, real-time information displays)	✔	✔	✔
Modal integration at stations (*e.g.,* bicycle parking, taxi stations, easy transfers between public transport systems)	✔	✔	✔
Supporting car-restriction measures (*e.g.,* road pricing)	x	x	x

1. Australia data courtesy of Richard Filewood (McCormick Rankin Cagney)

Qualitative comparisons

France

✔ – Yes x – No P – Partial I – Insufficient network to make a conclusion NA – Not applicable

BRT Feature	Caen (Twisto TVR)	Lyon (C-lines)	Nantes (Busway -Line 4)
Segregated busways or bus-only roadways	✔	P	✔
Existence of an integrated “network” of routes and corridors	x	x	x
Enhanced station environment (*i.e.,* not just a bus shelter)	✔	P	✔
Special stations and terminals to facilitate transfers	✔	✔	✔
Overtaking lanes at stations / Provision of express services	x	x	x
Improvements to nearby public space	✔	x	✔
High average commercial speeds (> 20 km/h)	x	x	x
Actual peak ridership over 8,000 passengers per hour per direction	x	x	x
Pre-board fare collection and fare verification	✔	x	✔
At-level boarding and alighting	✔	x	✔
Fare- and physical-integration between routes and feeder services	✔	✔	✔
Entry to system restricted to prescribed operators under a reformed business and administrative structure (closed system)	✔	✔	✔
Competitively-bid and transparent contracts and concessions	✔	✔	x
No need for operational subsidies	x	x	x
Independently operated and managed fare collection system	x	x	x
Quality control oversight from an independent entity / agency	✔	✔	✔
Low-emission vehicle technology (Euro III or higher)	✔	✔	✔
Automated fare collection and fare verification system	✔	✔	x
System management through centralised control centre, utilising automatic vehicle location system	✔	✔	✔
Signal priority or grade separation at intersections	✔	✔	✔
Distinctive marketing identity for system	✔	✔	✔
High-quality customer information (*e.g.,* clear maps, signage, real-time information displays)	✔	✔	✔
Modal integration at stations (*e.g.,* bicycle parking, taxi stations, easy transfers between public transport systems)	P	P	✔
Supporting car-restriction measures (*e.g.,* road pricing)	x	x	x

1. Caen, Lyon, and Nantes data courtesy of François Rambaud (CERTU)

Qualitative comparisons

France continued

✔ – Yes x – No P – Partial I – Insufficient network to make a conclusion NA – Not applicable

BRT Feature	Paris (RN305, Mobilien, Val de Marne)	Rouen (TEOR)	Toulouse
Segregated busways or bus-only roadways	✔	✔	P
Existence of an integrated “network” of routes and corridors	x	x	x
Enhanced station environment (*i.e.,* not just a bus shelter)	P	P	P
Special stations and terminals to facilitate transfers	P	✔	P
Overtaking lanes at stations / Provision of express services	x	x	x
Improvements to nearby public space	x	✔	P
High average commercial speeds (> 20 km/h)	✔	✔	x
Actual peak ridership over 8,000 passengers per hour per direction	x	x	x
Pre-board fare collection and fare verification	P	P	x
At-level boarding and alighting	x	✔	x
Fare- and physical-integration between routes and feeder services	✔	✔	✔
Entry to system restricted to prescribed operators under a reformed business and administrative structure (closed system)	✔	✔	✔
Competitively-bid and transparent contracts and concessions	x	✔	✔
No need for operational subsidies	x	x	x
Independently operated and managed fare collection system	x	x	x
Quality control oversight from an independent entity / agency	✔	✔	✔
Low-emission vehicle technology (Euro III or higher)	✔	P	✔
Automated fare collection and fare verification system	x	x	x
System management through centralised control centre, utilising automatic vehicle location system	✔	✔	✔
Signal priority or grade separation at intersections	✔	✔	✔
Distinctive marketing identity for system	P	✔	x
High-quality customer information (*e.g.,* clear maps, signage, real-time information displays)	P	✔	P
Modal integration at stations (*e.g.,* bicycle parking, taxi stations, easy transfers between public transport systems)	P	P	P
Supporting car-restriction measures (*e.g.,* road pricing)	x	x	x

1. Rouen data courtesy of Werner Kutil (Veolia Transport)
2. Paris and Toulouse data courtesy of François Rambaud (CERTU)

Qualitative comparisons

Netherlands

✔ – Yes x – No P – Partial I – Insufficient network to make a conclusion NA – Not applicable

BRT Feature	Amsterdam (Zuidtangent)	Eindhoven
Segregated busways or bus-only roadways	✔	✔
Existence of an integrated "network" of routes and corridors	x	P
Enhanced station environment (*i.e.,* not just a bus shelter)	✔	✔
Special stations and terminals to facilitate transfers	x	✔
Overtaking lanes at stations / Provision of express services	x	x
Improvements to nearby public space	x	✔
High average commercial speeds (> 20 km/h)	✔	✔
Actual peak ridership over 8,000 passengers per hour per direction	x	x
Pre-board fare collection and fare verification	x	P
At-level boarding and alighting	✔	✔
Fare- and physical-integration between routes and feeder services	✔	x
Entry to system restricted to prescribed operators under a reformed business and administrative structure (closed system)	✔	✔
Competitively-bid and transparent contracts and concessions	✔	x
No need for operational subsidies	x	x
Independently operated and managed fare collection system	x	✔
Quality control oversight from an independent entity / agency	✔	
Low-emission vehicle technology (Euro III or higher)	✔	✔
Automated fare collection and fare verification system	✔ (from 1-1-2008)	x
System management through centralised control centre, utilising automatic vehicle location system	✔	✔
Signal priority or grade separation at intersections	✔	✔
Distinctive marketing identity for system	✔	✔
High-quality customer information (*e.g.,* clear maps, signage, real-time information displays)	✔	✔
Modal integration at stations (*e.g.,* bicycle parking, taxi stations, easy transfers between public transport systems)	✔	✔
Supporting car-restriction measures (*e.g.,* road pricing)	x	x

1. Amsterdam data courtesy of Ruud van der Ploeg (Stadsregio Amsterdam)
2. Eindhoven data courtesy of Jacques Splint (Municipality of Eindhoven)

Qualitative comparisons

United Kingdom

✔ – Yes x – No P – Partial I – Insufficient network to make a conclusion NA – Not applicable

BRT Feature	Bradford (Quality Bus)	Crawley (Fastway)	Edinburgh (Fastlink)	Leeds (Superbus, Elite)
Segregated busways or bus-only roadways	P	✔	✔	P
Existence of an integrated "network" of routes and corridors	P	✔	P	P
Enhanced station environment (*i.e.,* not just a bus shelter)	P	✔	P	P
Special stations and terminals to facilitate transfers	I	P	P	I
Overtaking lanes at stations / Provision of express services	x	x	x	x
Improvements to nearby public space	x	P	P	x
High average commercial speeds (> 20 km/h)	x	P	P	x
Actual peak ridership over 8,000 passengers per hour per direction	x	x	x	x
Pre-board fare collection and fare verification	x	x	x	x
At-level boarding and alighting	P	P	P	P
Fare- and physical-integration between routes and feeder services	P	✔	P	P
Entry to system restricted to prescribed operators under a reformed business and administrative structure (closed system)	I	✔	I	I
Competitively-bid and transparent contracts and concessions	x	✔	I	x
No need for operational subsidies	P	✔	✔	P
Independently operated and managed fare collection system	x	x	x	x
Quality control oversight from an independent entity / agency	x	x	x	x
Low-emission vehicle technology (Euro III or higher)	I	✔	✔	I
Automated fare collection and fare verification system	x	x	x	x
System management through centralised control centre, utilising automatic vehicle location system	x	✔	P	x
Signal priority or grade separation at intersections	P	✔	P	P
Distinctive marketing identity for system	x	✔	P	x
High-quality customer information (*e.g.,* clear maps, signage, real-time information displays)	P	✔	P	P
Modal integration at stations (*e.g.,* bicycle parking, taxi stations, easy transfers between public transport systems)	I	✔	P	I
Supporting car-restriction measures (*e.g.,* road pricing)	x	x	x	x

1. UK data courtesy of Dr. Alan Brett (BRT-UK)

Qualitative comparisons

Canada and United States

✔ – Yes x – No P – Partial I – Insufficient network to make a conclusion NA – Not applicable

BRT Feature	Ottawa (Transitway)	Boston (Silver Line Waterfront)	Eugene (EmX)	Los Angeles (Orange line)
Segregated busways or bus-only roadways	✔	✔	✔	P
Existence of an integrated "network" of routes and corridors	✔	✔	✔	✔
Enhanced station environment (*i.e.,* not just a bus shelter)	x	P	✔	P
Special stations and terminals to facilitate transfers	x	✔	✔	P
Overtaking lanes at stations / Provision of express services	x	x	x	x
Improvements to nearby public space	x	✔	✔	✔
High average commercial speeds (> 20 km/h)	✔	✔	✔	✔
Actual peak ridership over 8,000 passengers per hour per direction	x	x	x	x
Pre-board fare collection and fare verification	x	x	NA (free fare)	x
At-level boarding and alighting	x	x	✔	x
Fare- and physical-integration between routes and feeder services	P	x	✔	✔
Entry to system restricted to prescribed operators under a reformed business and administrative structure (closed system)	✔	✔	✔	x
Competitively-bid and transparent contracts and concessions	✔	x	x	x
No need for operational subsidies	x	x	x	x
Independently operated and managed fare collection system	x	x	NA (free fare)	x
Quality control oversight from an independent entity / agency	✔	✔	x	x
Low-emission vehicle technology (Euro III or higher)	x	✔	✔	✔
Automated fare collection and fare verification system	P	P	NA (free fare)	✔
System management through centralised control centre, utilising automatic vehicle location system	x	✔	✔	✔
Signal priority or grade separation at intersections	x	✔	✔	✔
Distinctive marketing identity for system	✔	✔	✔	✔
High-quality customer information (*e.g.,* clear maps, signage, real-time information displays)	✔	✔	✔	✔
Modal integration at stations (*e.g.,* bicycle parking, taxi stations, easy transfers between public transport systems)	P	x	✔	x
Supporting car-restriction measures (*e.g.,* road pricing)	x	x	x	x

1. Ottawa data based on Metro Magazine (2006) and OCTransit website
2. Eugene data courtesy of Graham Carey, Lane Transit District
3. Boston data based on Schimek et al. (2005) and MBTA website
4. Los Angeles data courtesy of Gary Spivack, Los Angeles County Metropolitan Transportation Authority

Qualitative comparisons

Canada and United States

✔ – Yes x – No P – Partial I – Insufficient network to make a conclusion NA – Not applicable

BRT Feature	Miami (South Miami-Dade Buswway)	Orlando (LYNX Lymmo)	Pittsburgh (South Busway)	Pittsburgh (MLK East Busway)	Pittsburgh (West Busway)
Segregated busways or bus-only roadways	✔	✔	✔	✔	✔
Existence of an integrated "network" of routes and corridors	x	x	✔	✔	✔
Enhanced station environment (*i.e.,* not just a bus shelter)	P	✔	P	✔	✔
Special stations and terminals to facilitate transfers	✔	x	P	✔	✔
Overtaking lanes at stations / Provision of express services	x	x	P	✔	✔
Improvements to nearby public space	x	✔	x	✔	P
High average commercial speeds (> 20 km/h)	✔	x	✔	✔	✔
Actual peak ridership over 8,000 passengers per hour per direction	x	x	x	x	x
Pre-board fare collection and fare verification	x	NA (free fare)	x	x	x
At-level boarding and alighting	x	x	x	P	P
Fare- and physical-integration between routes and feeder services	✔	x	P	P	P
Entry to system restricted to prescribed operators under a reformed business and administrative structure (closed system)	✔	P	✔	✔	✔
Competitively-bid and transparent contracts and concessions	✔	✔	P	P	P
No need for operational subsidies	x	x	x	x	x
Independently operated and managed fare collection system	x	NA (free fare)	x	x	x
Quality control oversight from an independent entity / agency	✔	✔	P	P	P
Low-emission vehicle technology (Euro III or higher)	x	✔	x	P	x
Automated fare collection and fare verification system	x	NA (free fare)	x	x	x
System management through centralised control centre, utilising automatic vehicle location system	x	x	x	x	x
Signal priority or grade separation at intersections	✔	✔	✔	✔	✔
Distinctive marketing identity for system	P	✔	x	P	P
High-quality customer information (*e.g.,* clear maps, signage, real-time information displays)	P	✔	P	P	P
Modal integration at stations (*e.g.,* bicycle parking, taxi stations, easy transfers between public transport systems)	P	x	P	✔	✔
Supporting car-restriction measures (*e.g.,* road pricing)	x	x	x	x	x

1. Miami data courtesy of the Miami Dade Bus Transit Services
2. Orlando data courtesy of Doug Jamison (Lynx Lymmo)
3. Pittsburgh data courtesy of David Wohlwill (Port Authority of Pittsburgh)

Colombia

BRT Feature	Bogotá (TransMilenio)	Pereira (Megabus)
Year system commenced	2000	2006
Number of existing trunk corridors	6	2
Total length of existing trunk corridors (km)	84 km	15 km
Number of trunk routes	84	3
Location of busway lanes	Centre lanes	Centre lanes
Location of doorways	Median side (left)	Median side (left)
Type of surface material on runways	Concrete	Concrete
Type of surface material on runways at stations	Concrete	Concrete
Total length of existing feeder routes (km)	212 km	Not available
Projected length of total future trunk corridors (km)	388 km	16.7 km
Number of stations	107	38
Average distance between stations (m)	500 m	395 m
Number of stations with passing lanes	Not available	0
Number of terminals	7	2
Number of depots	7	1
Number of total system passenger-trips per day	1,450,000	100,000
Actual peak ridership (passengers per hour per direction)	45,000	6,900
Actual non-peak ridership (passengers per hour per direction)	28,000	Not available
Average commercial speed (km/h)	27 km/h	20 km/h
Average peak headway (seconds or minutes)	3 min	3-5 min
Average non-peak headway (seconds or minutes)	5 min	5 min
Average dwell time at stations (seconds)	25 seconds	20 seconds
Number of trunk vehicles	1,013	51
Trunk vehicle type	Articulated	Articulated
Fuel type used in trunk vehicles	Diesel Euro II/III	Diesel Euro II
Trunk vehicle capacity	160	160
Trunk vehicle length (m)	18.5 m	18.5 m
Number of feeder vehicles	407	85
Type of guidance system, if applicable	None	None
Type of fare collection / verification technology	Smart card	Smart card
Number of intersections with priority signal control	0	0
Number of grade-separated intersections	3	0
Fare (US$)	US$0.58	US$0.48
Total planning costs (US$)	US$5.3 million	Not available
Average trunk vehicle costs (US$)	US$200,000	US$200,000
Total infrastructure costs (US$per km)	$5.3 mill/km (ph. I) $13.3 mill/km (ph. II)	US$1.7 million/km

1. Bogotá data courtesy of TransMilenio SA
2. Pereira data from Monica Venegas, Megabus System Manger, 2nd TransMilenio International Conference, 8 Nov 2006

Brazil

BRT Feature	Curitiba	Goiânia	São Paulo (Interligado)	Porto Alegre
Year system commenced	1972	1976	2003	1977
Number of existing trunk corridors	6	2	9	8
Total length of existing trunk corridors (km)	64.6 km	35 km	129.5 km	45.6 km
Number of trunk routes	12	1	> 40	> 40
Location of busway lanes	Curbside & centre	Centre lanes	Centre lanes	Centre lanes
Location of doorways	Curbside (right)	Median side (left)	Median & curbside	Curbside (right)
Type of surface material on runways	Asphalt	Asphalt	Asphalt	Asphalt
Type of surface material on runways at stations	Concrete	Concrete	Concrete	Asphalt
Total length of existing feeder routes (km)	Not available	Not available	Not applicable	Note applicable
Projected length of total future trunk corridors (km)	Not available	Not available	Not available	Not available
Number of stations	123	23	235	128
Average distance between stations (m)	540 m	560 m	500 m	550 m
Number of stations with passing lanes	0	0	43	0
Number of terminals	16	5	27	1
Number of depots	12	Not available	Not available	Not available
Number of total system passenger-trips per day	562,000	140,000	2,780,000	900,750
Actual peak ridership (passengers per hour per direction)	20,000	11,500	34,900	28,000
Actual non-peak ridership (passengers per hour per direction)	Not available	Not available	Not available	Not available
Average commercial speed (km/h)	19 km/h	18 km/h	22 km/h	15 km/h
Average peak headway (seconds or minutes)	2 minutes	40 seconds	30 seconds	30 seconds
Average non-peak headway (seconds or minutes)	6 minutes	2 minutes	45 seconds	2 minutes
Average dwell time at stations (seconds)	22 seconds	20 seconds	30 seconds	30 seconds
Number of trunk vehicles	232	87 articul./5 bi-artiuculat.	Not available	Not available
Trunk vehicle type	Bi-articulated	Articul./Bi-articulated	Articulated / Standard	Standard
Fuel type used in trunk vehicles	Euro III Diesel	Euro II/III Diesel	Diesel	Diesel
Trunk vehicle capacity	270	160 & 270	100	100
Trunk vehicle length (m)	24 m	18.5 m & 25 m	18.5 m	12 m
Number of feeder vehicles	Not available	Not available	Not applicable	Note applicable
Type of guidance system, if applicable	None	None	None	None
Type of fare collection / verification technology	Smart card	Smart C. & Magnetic Strip	Smart card	Smart card
Number of intersections with priority signal control	0	0	0	0
Number of grade-separated intersections	0	0	0	1
Fare (US$)	US$0.74	US$0.59	US$1.00	US$0.68
Total planning costs (US$)	US$380,000	Not available	Not available	Not available
Average trunk vehicle costs (US$)	US$395,000	US$220,000	Not available	Not available
Total infrastructure costs (US$per km)	US$1.1 – US$6 mill/km	US$1.3 mill/km	US$2 – US$22 mill/km	US$1.2 mill/km

1. Curitiba data courtesy of URBS
2. São Paulo data courtesy of SPTrans

Quantitative comparisons

Ecuador

BRT Feature	Guayaquil (Metrovía)	Quito (Trolé)	Quito (Ecovía)	Quito (Central Norte)
Year system commenced	2006	1995	2001	2004
Number of existing trunk corridors	1	2	1	1
Total length of existing trunk corridors (km)	15.5 km	16.2 km	9.4 km	12.8 km
Number of trunk routes	1	5	1	2
Location of busway lanes	Centre lanes	Centre lanes	Centre lanes	Centre lanes
Location of doorways	Median side (left)	Curbside (right)	Median side (left)	Curbside (right)
Type of surface material on runways	Concrete	Asphalt	Asphalt	Concrete
Type of surface material on runways at stations	Concrete	Concrete	Concrete	Concrete
Total length of existing feeder routes (km)	24 km	Not available	Not available	Not available
Projected length of total future trunk corridors (km)	44.1 km	Not available	Not available	Not available
Number of stations	34	34	19	16
Average distance between stations (m)	62 m	476 m	494 m	800 m
Number of stations with passing lanes	0	0	0	0
Number of terminals	2	2	2	1
Number of depots	2	1	1	1
Number of total system passenger-trips per day	100,000	246,000	81,000	120,000
Actual peak ridership (passengers per hour per direction)	5,400	9,600	6,400	6,400
Actual non-peak ridership (passengers per hour per direction)	3,700	2,900	1,680	1,680
Average commercial speed (km/h)	22 km/h	15 km/h	18 km/h	23 km/h
Average peak headway (seconds or minutes)	2.5 minutes	1 minute	2 min	2 min
Average non-peak headway (seconds or minutes)	5 minutes	3 minutes	5 min – 10 min	5 min
Average dwell time at stations (seconds)	20 seconds	20 seconds	20 seconds	30 seconds
Number of trunk vehicles	40 artic./10 stand.	113	42	74
Trunk vehicle type	Articulated/stand.	Electric trolley	Articulated	Articulated
Fuel type used in trunk vehicles	Diesel Euro III	Electricity	Diesel Euro II	Diesel Euro II / III
Trunk vehicle capacity	160	160	160	160
Trunk vehicle length (m)	18.5 m	18.5 m	18.5 m	18.5 m
Number of feeder vehicles	30	90	36	135
Type of guidance system, if applicable	None	None	None	None
Type of fare collection / verification technology	Smart cards	Coins / mag. Strip	Coins / mag. strip	Paper
Number of intersections with priority signal control	0	0	0	0
Number of grade-separated intersections	0	1	0	4
Fare (US$)	US$0.25	US$0.25	US$0.25	US$0.25
Total planning costs (US$)	US$1,300,000	US$400,000	US$500,000	Not available
Average trunk vehicle costs (US$)	US$240,000	US$650,000	US$167,000	US$180,000
Total infrastructure costs (US$per km)	US$1.4 million	US$5.1 million	US$585,000	US$1.4 million

1. Guayaquil data courtesy of César Arias.
2. Quito data courtesy of the Metropolitan Municipality of Quito and Hidalgo et al., 2007

Chile and Mexico

BRT Feature	Santiago (Transantiago)	León (Optibus)	Mexico City (Metrobús)
Year system commenced	2005-2007	2003	2005
Number of existing trunk corridors	2	3	1
Total length of existing trunk corridors (km)	Not available	26 (15 km exclusive)	20 km
Number of trunk routes	Various	3	3
Location of busway lanes	Centre lanes and curbside	Centre lanes	Centre lanes
Location of doorways	Curbside (right)	Median side (left)	Median side (left)
Type of surface material on runways	Asphalt	Concrete: 99% Asphalt: 1%	Asphalt
Type of surface material on runways at stations	Asphalt	Concrete: 92% Asphalt: 8%	Concrete
Total length of existing feeder routes (km)	Not applicable	140 km	0
Projected length of total future trunk corridors (km)	Not available	34 km	Not available
Number of stations	Not available	51	34
Average distance between stations (m)	Not available	400 m	450 m
Number of stations with passing lanes	Not available	0	0
Number of terminals	0	3	2
Number of depots	Not available	2	Not available
Number of total system passenger-trips per day	Not available	220,000	260,000
Actual peak ridership (passengers per hour per direction)	Not available	2,900	8,500
Actual non-peak ridership (passengers per hour per direction)	Not available	900	Not available
Average commercial speed (km/h)	20 km/h	18 km/h	19 km/h
Average peak headway (seconds or minutes)	3 minutes	T1: 2.5 min, T2/T3: 7 min	63 seconds
Average non-peak headway (seconds or minutes)	7 minutes	T1: 7 min, T2/T3: 12 min	Not available
Average dwell time at stations (seconds)	1 – 3 minutes	7 seconds	Not available
Number of trunk vehicles	Not available	55	97
Trunk vehicle type	Articulated & standard	Articulated	Articulated
Fuel type used in trunk vehicles	Diesel Euro II/III	Diesel	Diesel Euro III
Trunk vehicle capacity (passengers)	160	160	160
Trunk vehicle length (m)	18 m & 12 m	18.5 m	18.5 m
Number of feeder vehicles	Not applicable	Feeder serv: 350 Auxiliar serv: 150	0
Type of guidance system, if applicable	None	None	None
Type of fare collection / verification technology	Smart card	Smart card	Smart card
Number of intersections with priority signal control	0	0	0
Number of grade-separated intersections	0	0	0
Fare (US$)	US$0.70	US$0.50	US$0.35
Total planning costs (US$)	Not available	US$1.5 million	Not available
Average trunk vehicle costs (US$)	US$240,000	US$260,000	US$243,000
Total infrastructure costs (US$million per km)	Not available	US$1.0 mill. / km	US$1.5 mill. / km

1. Santiago data courtesy of Eduardo Giesen, 2. León data courtesy of Dr. Dario Hidalgo, Booz Allen Hamilton, 3. Mexico City data courtesy of Bernardo Baranda (ITDP) and Gerhard Menckhoff (World Bank consultant)

Quantitative comparisons

China

BRT Feature	Beijing	Hangzhou	Kunming
Year system commenced	2004	2006	1999
Number of existing trunk corridors	1	1	4
Total length of existing trunk corridors (km)	16 km (14 exclusive)	27.2 km	32.2 km
Number of trunk routes	1	2	Not available
Location of busway lanes	Centre lanes	Curb lanes	Centre lanes
Location of doorways	Median side (left)	Curbside (right)	Curbside (right)
Type of surface material on runways	Asphalt	Asphalt	Asphalt
Type of surface material on runways at stations	Asphalt	Asphalt	Asphalt
Total length of existing feeder routes (km)	0	0	Not applicable
Projected length of total future trunk corridors (km)	100 km	180 km	179 km
Number of stations	18	16	53
Average distance between stations (m)	940 m	1,800 m	500 m
Number of stations with passing lanes	7	0	4
Number of terminals	1	3	8
Number of depots	1	1	5
Number of total system passenger-trips per day	120,000	40,000	156,000
Actual peak ridership (passengers per hour per direction)	8,000	1,500	6,300
Actual non-peak ridership (passengers per hour per direction)	1,500	500	1,000
Average commercial speed (km/h)	22 km/h	24 km/h	18 km/h
Average peak headway (seconds or minutes)	1 minute	2 minutes	40 seconds
Average non-peak headway (seconds or minutes)	4 - 8 minutes	5 minutes	3 minutes
Average dwell time at stations (seconds)	20 seconds	18 seconds	34 seconds
Number of trunk vehicles	87	48	Not available
Trunk vehicle type	Articulated	Articulated	Standard
Fuel type used in trunk vehicles	Diesel Euro III, CNG	Diesel Euro III	Diesel Euro II
Trunk vehicle capacity	160	160	80
Trunk vehicle length (m)	18 m	18 m	12 m
Number of feeder vehicles	0	0	Not applicable
Type of guidance system, if utilised	None	None	None
Type of fare collection / verification technology	Smart card	Smart card	Smart card & coin
Number of intersections with priority signal control	3	3	0
Number of grade-separated intersections	3	0	5
Fare (US$)	US$0.26	US$0.40	US$0.12 – US$0.26
Total planning costs (US$)	US$765,000	US$255,000	US$60,000
Average trunk vehicle costs (US$)	US$250,000	US$250,000	US$250,000
Total infrastructure costs (US$per km)	US$4.68 million/km	US$450,000 / km	US$750,000 / km

1. Beijing data courtesy of Kangming Xu
2. Kunming data courtesy of Lin Wei (Municipality of Kunming)

Quantitative comparisons

Indonesia, Japan, South Korea, and Taiwan

BRT Feature	Jakarta (TransJakarta)	Nagoya	Seoul	Taipei
Year system commenced	2004	2001	2002	1998
Number of existing trunk corridors	3	1	6	11
Total length of existing trunk corridors (km)	46.9 km	6.8 km	86 km	60 km
Number of trunk routes	3	1	Various	Not available
Location of busway lanes	Centre lanes	Separated ROW	Centre & curbside	Centre lanes
Location of doorways	Median side (right)	Curbside (left)	Curbside (right)	Curside (right)
Type of surface material on runways	Asphalt	Concrete	Asphalt	Asphalt
Type of surface material on runways at stations	Concrete	Concrete	Asphalt	Concrete
Total length of existing feeder routes (km)	0	None	9,000	0
Projected length of total future trunk corridors (km)	97 km (2008)	11.9 km	192 km	90 km
Number of stations	54	9	73	150
Average distance between stations (m)	860 m	720 m	750 m	380 m
Number of stations with passing lanes	1	0	0	4
Number of terminals	4	5	Not available	Not available
Number of depots	3	3	40	10
Number of total system passenger-trips per day	140,000	9,000		1,200,000
Actual peak ridership (passengers per hour per direction)	3,600	Not available	12,000	9,500
Actual non-peak ridership (passengers per hour per direction)	1,000	Not available	5,000	3,500
Average commercial speed (km/h)	17 km/h	30 km/h	17 km/h	17 km/h (peak hour), 22 km/h (non-peak)
Average peak headway (seconds or minutes)	1.5 minutes	3-4 minutes	4-5 buses / minute	15–30 seconds
Average non-peak headway (seconds or minutes)	Not Available	10 minutes	3-4 buses / minute	1-2 minutes
Average dwell time at stations (seconds)	Not Available	Not available	10 sec – 20 sec	7-25 seconds
Number of trunk vehicles	Not Available	25	Not available	Not available
Trunk vehicle type	Standard	Standard	Standard	Standard
Fuel type used in trunk vehicles	I: Euro I diesel II&III: Euro III CNG	Diesel	CNG	Diesel
Trunk vehicle capacity	75	75	75	69
Trunk vehicle length (m)	12 m	12 m	10 m & 12 m	10 m & 12 m
Number of feeder vehicles	0	0	Not applicable	Not applicable
Type of guidance system, if applicable	None	Mechanical	None	None
Type of fare collection / verification technology	Smart Card	Coins/magnetic card	Smart cards	Smart cards & coins
Number of intersections with priority signal control	None	Not applicable	0	0
Number of grade-separated intersections	None	All (elevated)	0	0
Fare (US$)	US$0.30	US$2.00	US$1.00	US$0.45
Total planning costs (US$)	US$2 million	Not available	US$1 million	Not available
Average trunk vehicle costs (US$)	Not Available	Not available	US$150,000	US$125,000
Total infrastructure costs (US$per km))	US$1 million/km	US$46.5 mill./km	US$1.2 million/km	US$350,000 / km

1. Jakarta data courtesy of ITDP, 2. Nagoya data courtesy of Hiroyuki Takeshita (Nagoya University), 3. Seoul data courtesy of the Seoul Development Institute, 4. Taipei data courtesy of Dr. Jason Chang (Taiwan National University)

Quantitative comparisons

Australia

BRT Feature	Adelaide (O-bahn)	Brisbane (SE Busway)	Sydney (Liverpool-Par.)
Year system commenced	1986	2001	2003
Number of existing trunk corridors	2	1	1
Total length of existing trunk corridors (km)	12 km	16.5 km	10 exclusive + 20
Number of trunk routes	18	117	1
Location of busway lanes	Centre lanes	Separated ROW	Curbside lanes
Location of doorways	Curbside (left)	Curbside (left)	Curbside (left)
Type of surface material on runways	Concrete	Concrete	Asphalt
Type of surface material on runways at stations	Concrete	Concrete	Asphalt
Total length of existing feeder routes (km)	Not applicable	Not applicable	None
Projected length of total future trunk corridors (km)	0	Not available	Not available
Number of stations	3 stations	10 stations	36 stations
Average distance between stations (m)	5,000 m	1,650 m	861 m
Number of stations with passing lanes	0	Not available	0
Number of terminals	Not available	0	Not available
Number of depots	Not available	Not available	Not available
Number of total system passenger-trips per day	25,000	93,000	6,800
Actual peak ridership (passengers per hour per direction)	4,500	10,000	Not available
Actual non-peak ridership (passengers per hour per direction)	Not available	Not available	Not available
Average commercial speed (km/h)	80 km/h	55 – 58 km/h	29 – 34 km/h
Average peak headway (seconds or minutes)	50 seconds	23 seconds	10 minutes
Average non-peak headway (seconds or minutes)	5 min – 15 min	27 seconds	20 minutes
Average dwell time at stations (seconds)	Not available	Not available	Not available
Number of trunk vehicles	118	475	15
Trunk vehicle type	Articulated / Standard	Standard	Standard
Fuel type used in trunk vehicles	Diesel	Diesel & CNG	Diesel
Trunk vehicle capacity	Not available	Not available	Not available
Trunk vehicle length (m)	18.5 m / 12 m	12 m	12 m
Number of feeder vehicles	Not applicable	Not applicable	0
Type of guidance system, if applicable	Mechanical	None	None
Type of fare collection / verification technology	Magnetic strip	Smart card and paper	Not available
Number of intersections with priority signal control	None	Not available	None
Number of grade-separated intersections	25	8	None
Fare (US$)	US$1.92 – US$3.17	US$1.83 – US$14.50	US$1.42 – US$4.67
Total planning costs (US$)	Not available	Not available	Not available
Average trunk vehicle costs (US$)	Not available	Not available	Not available
Total infrastructure costs (US$per km)	US$7.2 / km	US$20.2/km – US$33.3/km	US$23.9 / km

1. Source: Currie (2006)

France

BRT Feature	Caen	Lyon	Nantes
Year system commenced	2002	2006	2006
Number of existing trunk corridors	2	1	1
Total length of existing trunk corridors (km)	15.7 km	4 km	7 km
Number of trunk routes	2	1	1
Location of busway lanes	Centre lanes	Curbside lanes	Centre lanes
Location of doorways	Curbside (right)	Curside (right)	Curbside (right)
Type of surface material on runways	Asphalt	Asphalt	Asphalt
Type of surface material on runways at stations	Asphalt / concrete	Asphalt	Asphalt “percolés”
Total length of existing feeder routes (km)	Not applicable	Not applicable	Not applicable
Projected length of total future trunk corridors (km)	Not available	26	Not available
Number of stations	34	10	15
Average distance between stations (m)	500 m	430 m	500 m
Number of stations with passing lanes	0	0	0
Number of terminals	4	2	2
Number of depots	1	1	1
Number of total system passenger-trips per day	45,000	Not available	25,000
Actual peak ridership (passengers per hour per direction)	Not available	Not available	Not available
Actual non-peak ridership (passengers per hour per direction)	Not available	Not available	Not available
Average commercial speed (km/h)	20	17	20
Average peak headway (seconds or minutes)	6min	10 min	4 to 5 min
Average non-peak headway (seconds or minutes)	10 to 15min	10 min	6 to 7 min
Average dwell time at stations (seconds)	Not available	Not available	Not available
Number of trunk vehicles	24	Not available	20
Trunk vehicle type	Bi-articulated	Articulated	Articulated
Fuel type used in trunk vehicles	trolley	trolleybus	CNG
Trunk vehicle capacity	150	110	110
Trunk vehicle length (m)	24.5	18	18
Number of feeder vehicles	Not applicable	Not applicable	Not applicable
Type of guidance system, if applicable	Central rail	None	None
Type of fare collection / verification technology	Not available	Not available	Not available
Number of intersections with priority signal control	49	All	All
Number of grade-separated intersections	0	0	0
Fare (US$)	US$1.5	US$1.5	US$1.5
Total planning costs (US$)	US$190 million	US$29 million	US$75 million
Average trunk vehicle costs (US$)	US$2 million	US$800,000	US$600,000
Total infrastructure costs (US$per km)	Not available	Not available	Not available

1. Caen, Lyon, and Nantes data courtesy of François Rambaud (CERTU)

France (continued)

BRT Feature	Paris (Val de Marne)	Rouen
Year system commenced	1993	2001
Number of existing trunk corridors	1	3
Total length of existing trunk corridors (km)	12.5 km	26 km (12 exclusive)
Number of trunk routes	1	3
Location of busway lanes	Centre lanes	Centre & curbside
Location of doorways	Curbside (right)	Curbside (right)
Type of surface material on runways	Asphalt	Asphalt
Type of surface material on runways at stations	Asphalt	Asphalt
Total length of existing feeder routes (km)	Not available	Not available
Projected length of total future trunk corridors (km)	20.2 km	38 km
Number of stations	22	41
Average distance between stations (m)	600 m	535 m
Number of stations with passing lanes	0	0
Number of terminals	2	1
Number of depots	1	1
Number of total system passenger-trips per day	45 000	32,000
Actual peak ridership (passengers per hour per direction)	Not available	1,770
Actual non-peak ridership (passengers per hour per direction)	Not available	640
Average commercial speed (km/h)	23 km/h	16.6 km/h
Average peak headway (seconds or minutes)	4 minutes	3 minutes
Average non-peak headway (seconds or minutes)	8 minutes	4 minutes
Average dwell time at stations (seconds)	Not available	6.3
Number of trunk vehicles	19	38
Trunk vehicle type	Articulated	Articulated
Fuel type used in trunk vehicles	Diesel	Diesel Euro II & III
Trunk vehicle capacity (passengers)	110	110
Trunk vehicle length (m)	18 m	17.9 m
Number of feeder vehicles	Not available	Not available
Type of guidance system, if applicable	None	Optical
Type of fare collection / verification technology	Not available	Magnetic strip
Number of intersections with priority signal control	All	15 (out of 25)
Number of grade-separated intersections	2	1
Fare (US$)	US$1.5	US$0.90
Total planning costs (US$)	US$9 million	Not available
Average trunk vehicle costs (US$)	Not available	US$390,000
Total infrastructure costs (US$per km)	Not available	US$8.3 million/km

1. Rouen data courtesy of Werner Kutil (Veolia Transport)
2. Paris data courtesy of François Rambaud (CERTU)

Netherlands and United Kingdom

BRT Feature	Amsterdam (Zuidtangent)	Eindhoven	Crawley (Fastway)
Year system commenced	2002	2003	2003
Number of existing trunk corridors	1 (2nd opens , 1-1-2008)	2	2
Total length of existing trunk corridors (km)	30 km (2nd: 8 km)	12 km exclusive	24 km
Number of trunk routes	1	2	2
Location of busway lanes	Separated ROW and curbside	Centre lanes	Curbside lanes
Location of doorways	Curbside (right)	Curbside (right)	Curbside (left)
Type of surface material on runways	Concrete	Concrete	Concrete/asphalt
Type of surface material on runways at stations	Concrete	Concrete	Concrete/asphalt
Total length of existing feeder routes (km)	1 km	0	None
Projected length of total future trunk corridors (km)	50 km	50 km	Not available
Number of stations	22	32	62
Average distance between stations (m)	1500 m	550 m	400 m
Number of stations with passing lanes	0	0	0
Number of terminals	5	3	3
Number of depots	2	1	1
Number of total system passenger-trips per day	28,500	12,000	6,000
Actual peak ridership (passengers per hour per direction)	Not available	Not available	Not available
Actual non-peak ridership (passengers per hour per direction)	Not available	Not available	Not available
Average commercial speed (km/h)	38 km/h	21 km/h	20 km/h
Average peak headway (seconds or minutes)	7.5 minutes	7.5 minutes	10 minutes
Average non-peak headway (seconds or minutes)	10 minutes	10 minutes	10 minutes
Average dwell time at stations (seconds)	10-15 seconds	10 seconds	Not available
Number of trunk vehicles	33	11	Not available
Trunk vehicle type	Articulated	Articulated	Single deck rigid
Fuel type used in trunk vehicles	Diesel Euro III	LPG	Diesel Euro IV
Trunk vehicle capacity	130	120	60
Trunk vehicle length (m)	18 m	18 m	11 m
Number of feeder vehicles	0	0	0
Type of guidance system, if applicable	None	Magnetic	Mechanical
Type of fare collection / verification technology	Paper (strippenkaart)	Paper (strippenkaart)	Cash, smart card
Number of intersections with priority signal control	45 (all)	20 (all)	None
Number of grade-separated intersections	11	0	None
Fare (US$)	US$1.00- $4.00	US$2.27	Not available
Total planning costs (US$)	US$350 million	US$143 million	Not available
Average trunk vehicle costs (US$)	Not available	Not available	US$250,000
Total infrastructure costs (US$per km)	US$11 million / km	US$10 million / km	US$2 million

1. Amsterdam data courtesy of Ruud van der Ploeg (Stadsregio Amsterdam)
2. Eindhoven data courtesy of Jacques Splint (Municipality of Eindhoven)

Quantitative comparisons

Canada and United States

BRT Feature	Ottawa (Transitway)	Boston (Silver Line Waterfront)	Eugene (ExM)	Los Angeles (Orange Line)
Year system commenced	1983	2004	2007	2005
Number of existing trunk corridors	3	1	1	1
Total length of existing trunk corridors (km)	30 km	11.3 km	6.44 km	22.7 km
Number of trunk routes	Various	4	1	1
Location of busway lanes	Curbside and separated ROW	Curbside and separated ROW	Centre lanes and curbside	Centre, curbside, separated ROW
Location of doorways	Curbside (right)	Curbside (right)	Double-sided (3 right / 2 left)	Curbside (right)
Type of surface material on runways	Asphalt	Asphalt	Concrete	Asphalt
Type of surface material on runways at stations	Asphalt	Asphalt	Concrete	Concrete
Total length of existing feeder routes (km)	Not applicable	Not available	Various	Various
Projected length of total future trunk corridors (km)	Not available	Not available	145 km	14.2 km
Number of current stations	37	11	8	14
Average distance between stations (m)	810 m	1,130 m	530 m	1,610 m
Number of stations with passing lanes	Not available	0	None	14
Number of terminals	4	1	2	2
Number of depots	Not available	Not available	1	1
Number of total system passenger-trips per day	200,000	9,300	3,500	22,000
Actual peak ridership (passengers per hour per direction)	10,000	Not available	500	Not available
Actual non-peak ridership (passengers per hour per direction)	Not available	Not available	Not available	Not available
Average commercial speed (km/h)	Not available	Not available	24 km/h	34 km/h
Average peak headway (seconds or minutes)	2 minutes	3 minutes	10 minutes	5 minutes
Average non-peak headway (seconds or minutes)	15 minutes	12 minutes	10 - 20 minutes	20 minutes
Average dwell time at stations (seconds)	10-20 seconds	24 seconds	10 seconds	10-20 seconds
Number of trunk vehicles	Not available	Not available	4	30
Trunk vehicle type	Standard	Articulated & standard	Articulated	Standard
Fuel type used in trunk vehicles	Diesel	Dual mode (electric-diesel)	Hybrid-electric	CNG
Trunk vehicle capacity (passengers)	50	104	120	120
Trunk vehicle length (m)	12 m	18 m & 12 m	18 m	18 m
Number of feeder vehicles	Not applicable	Not available	Various	Not available
Type of guidance system, if applicable	None	None	None	None
Type of fare collection / verification technology	Cash, paper, pass	Cash, paper, magnetic strip	Free (no fare)	Cash, paper
Number of intersections with priority signal control	0	None	24	35
Number of grade-separated intersections	0	Bay tunnel	0	0
Fare (US$)	US$0.85	US$1.70 – US$2.00	Free	US$1.25
Total planning costs (US$)	Not available	Not available	US$1.5 million	US$1.8 million
Average trunk vehicle costs (US$)	Not available	US$640,000	US$966,000	US$663,000
Total infrastructure costs (US$per km)	US$8.3 mill/km	US$53.2 mill/km	US$2.8 mill/km	US$14.9 mill/km

1. Ottawa data based on Metro Magazine (2006) and OCTransit website, 2. Eugene data courtesy of Graham Carey, Lane Transit District, 3.Boston data based on Schimek et al. (2005) and MBTA website
4. Los Angeles data courtesy of Gary Spivack, Los Angeles County Metropolitan Transportation Authority

Canada and United States

BRT Feature	Miami (Busway)	Orlando (Lynx LYMMO)	Pittsburgh (South Busway)	Pittsburgh (MLK East Busway)	Pittsburgh (West Busway)
Year system commenced	1997	1997	1977	1983 & 2003	2000
Number of existing trunk corridors	1	1	1	1	1
Total length of existing trunk corridors (km)	21.9	4.8 km	6.9 km	14.7 km	8.1 km
Number of trunk routes	6	1	15	38	10
Location of busway lanes	Separated ROW	Curbside, septd. ROW	Separated ROW	Separated ROW	Separated ROW
Location of doorways	Curbside (right)	Right Side	Curbside (right)	Curbside (right)	Curbside (right)
Type of surface material on runways	Asphalt	Concrete	Concrete	Concrete	Concrete
Type of surface material on runways at stations	Asphalt	Concrete	Concrete	Concrete	Concrete
Total length of existing feeder routes (km)	Not applicable	0	Not applicable	Not applicable	Not applicable
Projected length of total future trunk corridors (km)	Not available	30.42 km	6.9 km	25.7 km	9.3 km
Number of stations	21	13 (plus 7 stops)	2 (plus 8 stops)	9	6
Average distance between stations (m)	920 m	300 m	627 m	1,633 m	1,350 m
Number of stations with passing lanes	0	10	2	9	6
Number of terminals	3	2	2	3	1
Number of depots	1	1	5	5	5
Number of total system passenger-trips per day	22,500	3,000	11,000	26,000	9,100
Actual peak ridership (passengers per hour per direction)	Not available	Not available	1,650	5,000	1,365
Actual non-peak ridership (passengers per hour per direction)	Not available	Not available	Not available	Not available	Not available
Average commercial speed (km/h)	45 km/h	Not available	34.5 km/h	40.1 km/h	40.5 km/h
Average peak headway (seconds or minutes)	10 minutes	4 minutes	2 minutes	4 minutes	5 minutes
Average non-peak headway (seconds or minutes)	20 minutes	10 minutes	8.6 minutes	8.6 minutes	20 minutes
Average dwell time at stations (seconds)	Not available	Not available	Not available	Not available	Not available
Number of trunk vehicles	62	9 (plus 1 spare)	68	162	50
Trunk vehicle type	Low Floor	Low Floor	Standard	Articulated	Standard
Fuel type used in trunk vehicles	Diesel	CNG	Diesel	Diesel + Hybrid-Electric	Diesel
Trunk vehicle capacity (passengers)	52	30	50	80	50 & 57
Trunk vehicle length (m)	12 m	10.7 m	12.2 m	18.3 m	12.2 m & 13.7 m
Number of feeder vehicles	Not applicable	None	Not applicable	Not applicable	Not applicable
Type of guidance system, if applicable	None	None	None	None	None
Type of fare collection / verification technology	Cash, paper, mag. strip	Free Fare	Cash, paper	Cash, paper	Cash, Paper
Number of intersections with priority signal control	All	10	None	1	1
Number of grade-separated intersections	0	None	None	None	None
Fare (US$)	US$1.50		US$1.75	US$1.75	US$1.75
Total planning costs (US$)	Not available	Not available	Not available	Not available	Not available
Average trunk vehicle costs (US$)	Not available	Not available	US$357,000	US$477,000	US$357,000 & US$395,000
Total infrastructure costs (US$per km)	US$21 mill/km	US$4.3 mill/km	US$3.9 mill/km	US$12.5 mill/km	US$31.9 mill/km

1. Miami data courtesy of Miami Dade Transit Bus Services
2. Orlando data courtesy of Doug Jamison (Lynx Lymmo)
3. Pittsburgh data courtesy of David Wohlwill (Port Authority of Pittsburgh)