

## Basic Busway Data in Latin America

by Jorge M. Rebelo

Given the long experience acquired by the Brazilians and Latin Americans with busways, we thought it would be useful to gather some operating data which might serve as a basis of comparison for other busway projects. To do that we have selected a number of exclusive (fully segregated), non-exclusive and mixed busway corridors in 3 cities (São Paulo, Curitiba and Porto Alegre), and , with the help of the local bus agencies organized these data into the following tables. All corridors which have a passenger per peak hour per direction volume which exceeds 10,000 in the highest direction have been highlighted. The highest peak hour per direction load appears to be in the São Mateus-Jabaquara trolleybusway (21,600) and in the Santo Amaro/ 9 e Julho busway (17,658) both in São Paulo. Those two busways also have the highest volume per day.

**BASIC BUSWAY DATA IN SÃO PAULO, BRAZIL**

Name of busway	Length	Segregated length.	Nº of lanes by direction 3)	Volume	Pass. Peak hour Per direction	Commercial Speed	Nº of stops	Nº of Terminals	Nº and Type of vehicles	Nº of Bus lines Operating
Unit	(Km.)	(Km.)	Number	Pass/day	pphpd	Km/h	number	number	number	number
<b>Santo Amaro / 9 de Julho <sup>1</sup></b>	<b>14.6</b>	<b>10.8</b>	<b>1</b>	<b>196,202</b>	<b>17,658</b>	<b>16</b>	<b>23</b>	<b>2</b>	<b>–</b>	<b>25</b>
Vila Nova Cachoeirinha <sup>1)</sup>	11.0	↑ = 10.500 ↓ = 7.400	1	38,247	3,442	16	↑ = 23 ↓ = 14	11	93	5
Paes de Barros	3.6	–	1	39,902	3,120	17	7	1	–	–
<b>São Mateus/ Jabaquara <sup>2)</sup></b>	<b>33.0</b>	<b>30.0</b>	<b>1</b>	<b>206,778</b>	<b>21,600</b>	<b>22</b>	<b>110</b>	<b>9</b>	<b>189<sup>2</sup></b>	<b>10</b>

Sources: SPTrans – EMTU

1 – data in link with highest frequency

2 – **Trolleybus**: padron = 68, articulated = 10 ; **Diesel** : padron = 88 , articulated = 23

3 – additional lane at bus stops

**BASIC BUSWAY DATA IN CURITIBA, BRAZIL**

Name Of busway	Length	Segregated length	Nº of lanes by direction	Volume	Pass. Peak hour Per direction	Commercial Speed	Nº of Stops	Nº of Terminals	Nº and Type of vehicles		Nº of Bus lines Operating
Unit	(Km.)	(Km.)	Number	Pass/day	pphpd	Km/h	Number	number	Number		Number
Boqueirão	10.63	10.63	1	90,663	7,552	18.75	16	3	33	Biart	2
Norte	9.3	9.3	1	86,412	7,198	18.32	14	3	40	Biart	1
<b>Sul</b>	<b>10.08</b>	<b>10.08</b>	<b>1</b>	<b>156,231</b>	<b>13,014</b>	<b>18.61</b>	<b>18</b>	<b>3</b>	<b>85</b>	<b>Biart</b>	<b>3</b>
Leste	12.04	12.04	1	89,476	7,453	18.82	24	4	45	Artic	4
Oeste	8.25	8.5	1	46,023	3,834	18.72	16	2	24	Artic	2
Circular Sul	14.09	14.09	1	63,011	5,240	19.90	19	1	20	Biart	2

(1) Commercial Speed including an average of 5 minutes dwell time at terminals. The actual operating speed is 21-22 km/hr.

Source : URBS-Urbanização de Curitiba S.A – Diretoria de Operações – Diretor Dr. Euclides Rovani

**BASIC BUSWAY DATA IN PORTO ALEGRE, BRAZIL**

Name Of busway	Length	Segregated length	Nº of lanes by direction	Volume (4)	Pass. Peak hour Per direction (3)	Commercial Speed (2)	Nº of stops	Nº of Terminals	Nº and Type of vehicles (7)		Nº of Bus lines Operating
Unit	(Km.)	(Km.)	Number	Pass/day	Pphpd	Km/h	number	number	Number	Type	
<b>1ª Perimetral</b>	<b>6.4</b>	-	<b>4</b>	<b>147,288</b>	<b>11,783</b>	<b>6.77</b>	<b>14</b>	<b>Zero</b>		<b>C P</b>	<b>41</b>
2ª Perimetral	7.7	-	↑3 and ↓ 2	112,100	8,968	9.82	23	1	100	C P	19
3ª Perimetral	10.4	-	↑2 and ↓ 3	69,338	5,547	11.27	28	Zero		C P A	6
Borges de Medeiros	7.7	-	3	101,100	8,088	17.43	13	1	ND	C P	36
<b>João Pessoa/Bento Gonçalves</b>	<b>8.8</b>	-	<b>↑3 and ↓ 2</b>	<b>178,863</b>	<b>14,309</b>	<b>19.06</b>	<b>13</b>	<b>Zero</b>	<b>(6)</b>	<b>C P</b>	<b>29</b>
Corr. Exclusivo João Pessoa/Bento Gonçalves (1)	-	5.2	1	122,563	9,805	14.73	9	1	450	C P A	
Oswaldo Aranha/Protásio Alves	8.2	-	2	59,425	4,754	-	29	Zero		C P	19
<b>Corr. Exclusivo Oswaldo Aranha/ Protásio Alves (1)</b>	<b>-</b>	<b>8.2</b>	<b>1</b>	<b>131,788</b>	<b>10,543</b>	<b>14.67</b>	<b>29</b>	<b>1</b>	<b>131</b>	<b>C P A</b>	
Independência/ 24 de Outubro/Plínio	5.4	1.1	3	193,663	15,493	10.22	18	1	ND	C P	10
Farrapos/Sertório	9.1	-	2	110,538	8,843	18.90	23	Zero	ND	C P	34
<b>Corr.. Exclusivo Farrapos (1)</b>	<b>-</b>	<b>3.8</b>	<b>1</b>	<b>134,700</b>	<b>10,776</b>	<b>14.18</b>	<b>8</b>	<b>3</b>		<b>C P A</b>	
<b>Assis Brasil</b>	<b>5.8</b>	-	<b>2</b>	<b>140,38</b>	<b>11,267</b>	-	<b>25</b>	<b>Zero</b>	48	<b>C P</b>	36
<b>Corr. Exclusivo Assis Brasil</b>	<b>-</b>	<b>5.8</b>	<b>1</b>	<b>151,863</b>	<b>12,149</b>	<b>10.29</b>	<b>25</b>	<b>1</b>		<b>C P A</b>	
Cascatinha	2.8	-	2	17,800	1,424	-	3	Zero	ND	C P	10
Corr. Exclusivo Cascatinha (1)	-	2.8	2	40,313	3,225	14.82	3	Zero		C P	
<b>Oscar Pereira</b>	<b>2.9</b>	-	<b>2</b>	<b>30,638</b>	<b>2,451</b>	<b>17.40</b>	<b>5</b>	<b>Zero</b>	ND	C P	9

(1) Segregated, exclusive corridor.

(2) Lowest speed at peak hour.

(3) Highest load in both directions.

(4) Peak hour factor of 8%

(5) Includes all municipal lines using the Corredor Exclusivo.

(6) Includes Oscar Pereira

(7) C – Conventional bus; P – Padron; A - Articulated

Source: Survey undertaken by TC/BR in Porto Alegre (by Eng. Luiz Fernando Oliveira) based on local information and based on information provided in “Redução das Deseconomias Urbanas com Melhorias do transporte Público. Cidade de Porto Alegre, 1997 . IPEA/ANTP-Trensurb/PMPA e UFGRS” and “Estudo de Viabilidade da Expansão do Sistema Trensurb, 1997 – Consórcio TC/BR-Ecoplan-Magna”

### BASIC BUSWAY DATA IN QUITO, ECUADOR

Name Of busway	Length	Segregated length	N° of lanes by direction	Volume (1)	Pass. Peak hour Per direction (2)	Commercial Speed (3)	N° of stops	N° of Terminals	N° and Type of vehicles		N° of Bus lines Operating
Unit	(Km.)	(Km.)	Number	Pass/day	Pphpd	Km/h	number	Number	Number	Type (2)	(3)
<b>Trole</b>	<b>11</b>	<b>11</b>	<b>1</b>	<b>180.000</b>	<b>N.A.</b>	<b>20-25</b>	<b>39</b>	<b>2</b>	<b>54</b>	<b>A</b>	<b>3</b>

(1) Maximum volume per day was of 214.857 on 04/22/99. w

(2) Articulated buses, for 174 passengers, (124 standing).

(3) The Trole operates with three routes or circuits.

Sources: <http://www.quito.gov.ec/upgt/trole/sindex.html>, and GERMAN OSPINA, consultant.

### BASIC BUSWAY DATA IN BOGOTA, COLOMBIA

Name Of busway	Length	Segregated length	N° of lanes by direction	Volume (1)	Pass. Peak hour Per direction (2)	Commercial Speed (3)	N° of stops	N° of Terminals	N° and Type of vehicles		N° of Bus lines Operating
Unit	(Km.)	(Km.)	Number	Pass/day	Pphpd	Km/h	number	number	Number (4)	Type (5)	
<b>Troncal Ave. Caracas</b>	<b>16.0</b>	<b>16.0</b>	<b>2 (10)</b>	<b>372,658</b>	<b>36,500</b>	<b>18</b>	<b>32</b>	<b>0</b>	<b>630</b>	<b>C</b>	<b>200</b>
<b>Calle 80 (6)</b>	<b>9.9</b>	<b>0</b>	<b>3</b>	<b>309,573</b>	<b>30,405</b>	<b>12 (8)</b>	<b>(7)</b>	<b>0</b>	<b>500</b>	<b>C, B, M</b>	<b>N.A.</b>
<b>Av. Américas (6)</b>	<b>9.8</b>	<b>0</b>	<b>3</b>	<b>332,454</b>	<b>32,647</b>	<b>15 (8)</b>	<b>(7)</b>	<b>0</b>	<b>N.A.</b>	<b>C, B, M</b>	<b>N.A.</b>
<b>Carrera 10 (6)</b>	<b>3.5</b>	<b>0</b>	<b>3</b>	<b>295,988</b>	<b>29,066</b>	<b>&lt;10 (8)</b>	<b>(7)</b>	<b>0</b>	<b>N.A.</b>	<b>C, B, M</b>	<b>N.A.</b>
<b>Calle 68 (9)</b>	<b>12.9</b>	<b>0</b>	<b>2 (9)</b>	<b>191,008</b>	<b>18,757</b>	<b>&lt;10 (8)</b>	<b>(7)</b>	<b>0</b>	<b>N.A.</b>	<b>C, B, M</b>	<b>N.A.</b>
<b>Carrera 7 (6)</b>	<b>3.2</b>	<b>0</b>	<b>3</b>	<b>108,523</b>	<b>10,657</b>	<b>10 (8)</b>	<b>(7)</b>	<b>0</b>	<b>N.A.</b>	<b>C, B, M</b>	<b>N.A.</b>

(1) Peak hour factor of 9.82%

(2) Highest load in both directions.

(3) Average Speed at peak hour.

(4) Buses per hour per direction

(5) C=Conventional. These buses in Bogota can carry between 80 and 120 passengers; B= small buses, which can carry up to 32 passengers; M=minibus, typically for up to 15 passengers, no standees.

(6) Buses in mixed traffic.

(7) A few bus stops are defined but enforcement is null. For practical purposes buses stop anywhere.

(8) Gross estimate from available data.

(9) Two lanes per direction are for buses in mixed traffic. Additionally, there are another two lanes per direction for cars and trucks.

(10) The busway has two lanes per direction for the exclusive use of buses. Additionally, there are another two lanes for cars, trucks, and off-service buses.

Sources: Master Transportation Plan for Bogota (JICA, 1996), Cal y Mayor and Associates (1998), Ardila Arturo, Como reducir la congestión vehicular en Bogota con Herramientas Microeconomicas (1995), Ardila and Rodriguez (2000) How chaos does not destroy ridership: operations of an exclusive busway carrying over 35.000 passengers per hour per direction, and calculations by Arturo Ardila.

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