

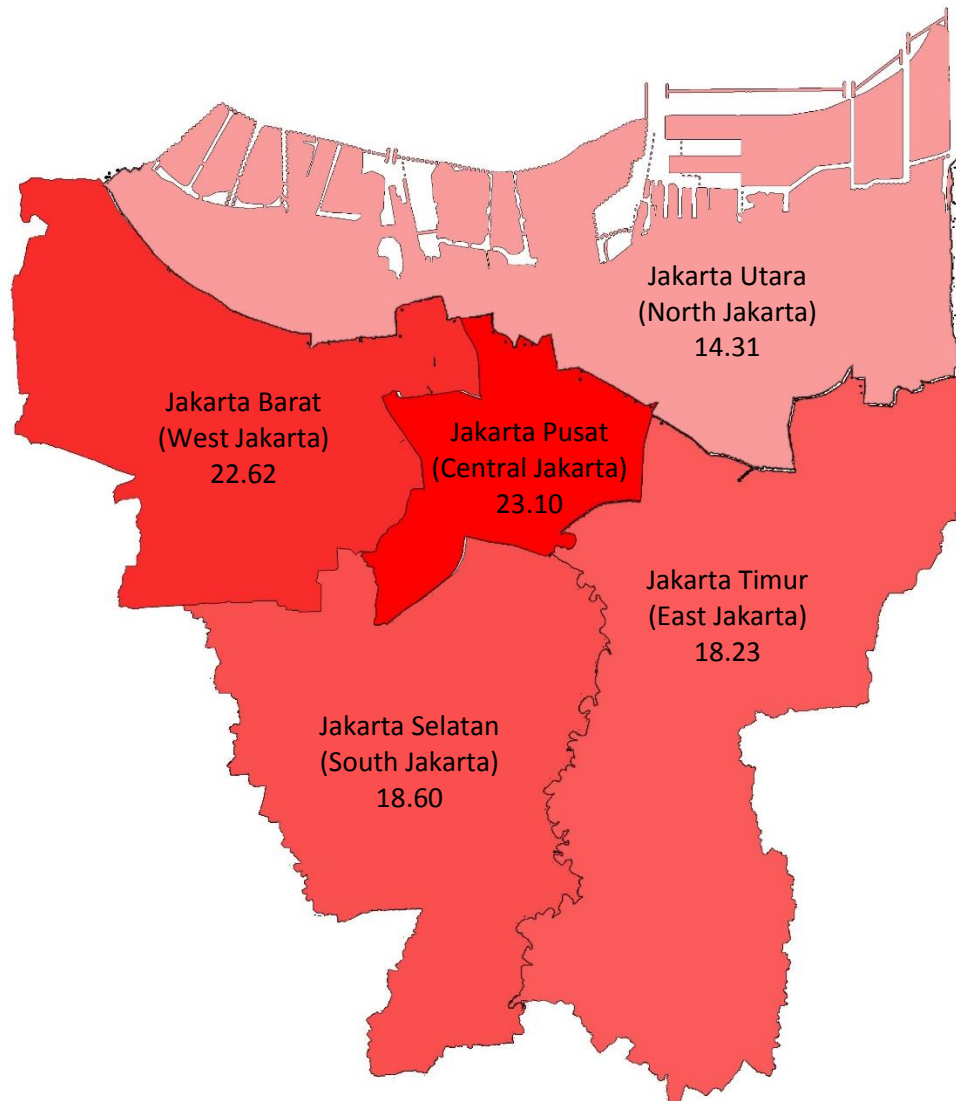
## **TRANSJAKARTA: JAKARTA BUS RAPID TRANSIT SYSTEM**

### **Jakarta, Indonesia**

Jakarta is the capital city of Indonesia, located on the northwest coast of Java Island. Being the largest, most crowded city in Indonesia with approximately 10,200,000 inhabitants (2014), Jakarta is Indonesia's cultural, economic, and political center.

Jakarta was established in the fourth century and had been an important trading port due to its location. In 2011, Brookings Institute surveyed that Jakarta's economic growth is ranked the 17<sup>th</sup> among the world's 200 largest cities, which is a big leap from its former position in 2007, where Jakarta only ranked in 171<sup>th</sup>. In the past ten years, Jakarta has grown more rapidly compared to other big cities in South East Asia such as Kuala Lumpur-Malaysia, Bangkok-Thailand, and even Beijing-China.

Though a city, Jakarta is administratively equal to a province and has a special status as the capital of Indonesia, and it leads to a governor instead of a mayor. Jakarta consists of five administrative municipalities that each lead by a mayor, and an administrative regency that is led by a *bupati* (regent). The five municipalities are Central Jakarta, West Jakarta, East Jakarta, South Jakarta, and North Jakarta. It is also part of the greater metropolitan area called *Jabodetabek*, formed of adjacent cities and regent of Bogor, Depok, Tangerang, and Bekasi. These cities make Jakarta as one of the most populous city in the world that has or made by the urban agglomeration effect. Altogether, *Jabodetabek* total population reached up to 27,957,104 inhabitants living in 6,392 km<sup>2</sup> (2,467.10 sqmi) of lands compared to 9,607,787 that live in 664 km<sup>2</sup> (256 sqmi) of Jakarta in 2010. Jakarta population density in 2010 was 14,469 people/km<sup>2</sup> (37,460 people/sqmi) compared to *Jabodetabek* population density of 4,373.8 people/km<sup>2</sup> (11,353 people/sqmi). Jakarta, which was designed for 800,000 people when it first found by the Dutch, nowadays has to support up to 12,000,000 people daily during a work week, with approximately 250,000 new residents coming to the *Jabodetabek* region each year. By 2020, it is expected that *Jabodetabek* will grow at 3.7% rate; from about 28,000,000 inhabitants to approximately 35,000,000 people.

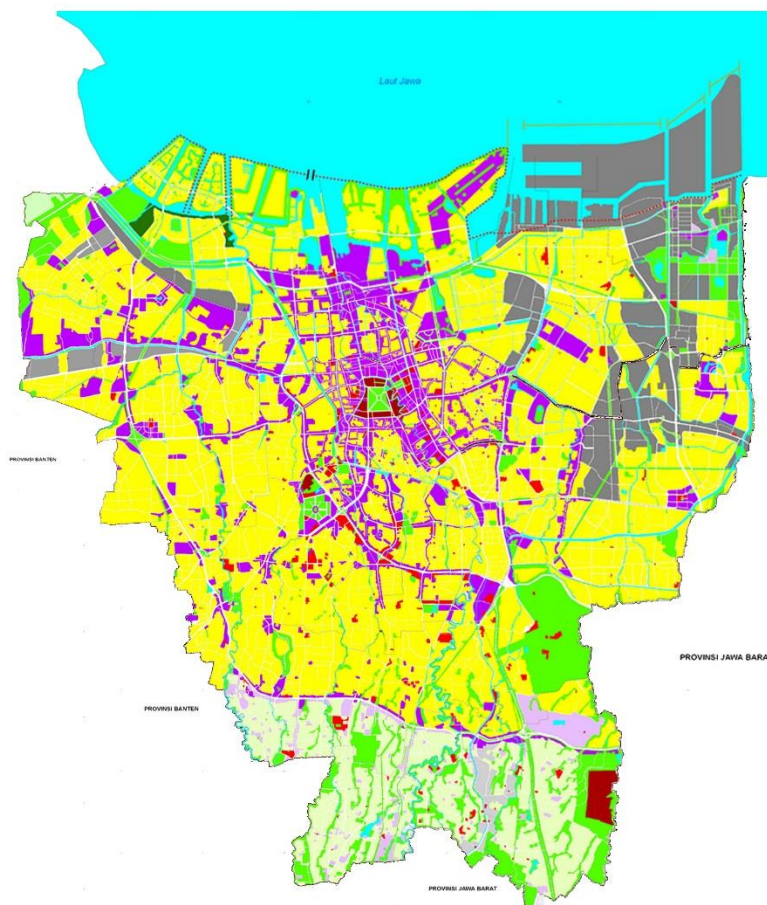


*Jakarta Density Map*

13% of Indonesia GDP that grew annually at 5.37% from 2000 to 2015 comes from Jakarta, make it the highest GDP contributor for Indonesia. Indonesia's GDRP in September 2015 reached up to 4.73%. In 2007, Jakarta's transportation and communication sector made up 15.25% of Jakarta GDRP, while 7.81% came from construction sectors. Trade and service such as hotel and restaurants made up 26.88% of Jakarta's GDRP. The largest percentage of Jakarta's GDRP coming from the finance, ownership, and services sector that contributed 29% of the city's GDRP. Followed by manufacturing industry sector which contributed 16%. In the same year, 2007, Jakarta GDRP increased by 11.6% compared to the previous year. In 2000, Jakarta demographics was made up of 35.16% Javanese, 27.65% of Native Jakarta/ Betawi, 15.27% of Sundanese, 5.53% of Chinese, and 16.39% of other ethnic groups.

## Bus Rapid Transit in Jakarta

Jakarta is located in a flat basin with an average elevation of 26 feet above sea level. The southern area is hilly, while about 40% of the total area of Jakarta, in which mostly located in the northern, coastal area, is below sea level. This combined with all the rivers, rainy season, and insufficient drainage makes Jakarta one of the city with the highest flooding rate in Indonesia. Not to mention that Jakarta's land structure is sinking about 5 to 10 cm annually, with the most problem located in the coastal area, which sinks up to 40 cm. Jakarta's land structure, high in water concentration, makes it hard to build certain transportation modes such as subway. These situations leave the need for a good transportation, moreover, good public transit system. In 2004, the first Bus Rapid Transportation (BRT) operated in Jakarta. The system was named TransJakarta, and it was the first BRT system built in Southern and South East Asia. As Jakarta's main public transportation system, this system then further will be connected into other mass transit mode such as high-speed rail, which costs more than BRT system. Also, the distribution of urban land and population across the Jakarta metropolitan region highlights the need to look deeper into the matter of connection since only 37% of urban land lies in Greater Jakarta, as of 2010, while 42% lies in West Java province. In 1998, up to 49.3% of total trips in Jakarta were made by public transport, therefore, a good public transit system and connection within these areas are needed.



*Jakarta Land Use Map*

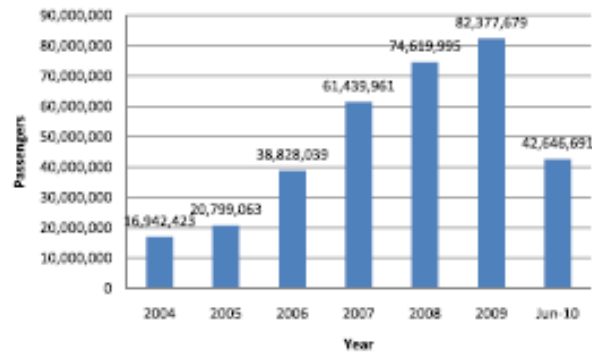
Most of Jakarta's land use is dedicated for housing (yellow), followed by businesses (purple), government (red), green spaces and parks (green), and Industrial areas (grey). Jakarta BRT, TransJakarta, was also built to provide a fast, comfortable, affordable mass transportation system, and a good access within Jakarta since 2004. This air-conditioned bus system with dedicated stations and lines that restricted to other traffic, separated by concrete blocks on the streets that became part of the routes. Up till now, there are twelve working corridors that are served by TransJakarta. Jakarta's BRT runs on rather grid system, some run alongside the busy main roads from south to north then vice versa, and some run from east to west and vice versa. At some point, the system has to share with vehicle lanes and yield to traffic lights. TransJakarta currently has 669 operating buses in a 208 km-long (129.2 miles) corridor system, with 12 primary routes and 10 cross-corridor routes. In addition, there are 18 'feeder routes; routes that continue into the *Jabodetabek* area. The system used the elevated terminal for boarding. The operation hours are from 05.00 AM to 10.00 PM, while some routes operating up until 11.00 AM, and 7 others providing 24-hours service. The final design of the bus capacity is 31 seats and 52 standing facilities, allowing each bus to accommodate 83 passengers. The bus has double doors located on each middle side of the bus, so it can accommodate either right or left side platforms. There is emergency door located on the right side of the bus, and two folding doors located on the left side of the bus. The bus designated to run at a speed of 20 km/ hour (12 mi/hour), and the frequency is 39 buses per hour. This should accommodate up to 3,230 passengers per hour on each route. On it the first year of its commercial operation, TransJakarta served approximately 0.45 million riders per month. In 2009 along with the opening of the 8<sup>th</sup> route, the ridership has increased to 500%. As per 2013, TransJakarta works with several national banks to create the Smartcard system. It costs a passenger Rp. 3,500 (30 cents) to ride TransJakarta during normal hours (07.00 AM to 23.00 PM) and Rp. 2,000 (15 cents) to ride it on the morning hours (05.00 AM to 07.00 AM).

**Table 1** Operational characteristics of TransJakarta Busway, corridor I–VII (BLUTransjakarta 2007)

Corridors	Specification				Schedule <sup>a</sup>	
	Route length (km)	Number of stops	Distance between stops (m)	Fleet size (unit)	Headway at peak (min)	Headway at off-peak (min)
I (Blok M–Kota)	12.9	20	650	91	1.2	3
II (Pulogadung–Harmoni)	14	23	700–800	55	3.3	3.8
III (Kalideres–Harmoni)	19	16	700–800	71	3.4	3.8
IV (Pulogadung–Dukuh Atas 2)	11.85	17	400–1600	30	2.6	3.3
V (Kampung Melayu–Ancol)	13.5	17	400–2250	17	2.6	3.3
VI (Ragunan–Kuningan)	13.3	20	400–1000	31	2.6	3.3
VII (Kampung Rambutan–Kampung Melayu)	12.8	14	500–1500	51	2.6	3.3

<sup>a</sup>All corridors have operation time from 05.00 to 22.00

**Fig. 2** Ridership of TransJakarta Busway 2004–2010 (Adiwianto 2010)



#### *TransJakarta Operation Characteristic*

The longest corridor of TransJakarta system is the Route III that serves from Kalideres to Harmoni with a 19 km-long (11.8 miles) corridor. The most stops are in Route II (Pulo Gadung to Harmoni) with 23 stops. The distance between stops in overall system varied between 400 to 2250 meters (0.25 to 1.4 miles), with the most units serves Blok M to Kota corridor with 91 buses daily.

TransJakarta riders in total, however, one dominated by males with 57.2%. The most dominant passenger and aged between 21 - 25 years old (27.2%), followed by 16-20 and 26-30 years old (each 23.6%). Only 10.1% of riders are aged above 36 years old. Most of these riders are single (75.9%), with Senior High School degree (39.7%), followed by a Bachelor degree or higher (36.2%). TransJakarta users are generally from low-income group that makes 1 to 2.5 million Rupiah (\$ 80 – 200) a month (43.5%), most of them did not own a car (49%) but own a motorcycle (44.2%), and their home located mostly in West Jakarta (43.5%). Most riders take TransJakarta to work (45.3%) for the faster trip (34%). Most of the passenger, 55.2% of them, have fair satisfaction rating on this system.

Characteristics	Statistics
1. Sex	Female (42.8 %), male (57.2 %)
2. Age	16–20 years old (23.6 %), 21–25-years old (27.2 %), 26–30 years old (23.6 %), 31–35 years old (15.5 %), 36 years old or older (10.1 %)
3. Marital status	Single (75.9 %), married (23.6 %)
4. Education	Junior High School or lower (8.4 %), Senior High School (39.7 %), Diploma (15.7 %) and Bachelor degree or higher (36.2 %)
5. Income (IDR)	<1 million (34.9 %), 1–2.5 million (43.5 %), 2.5–5 million (13.7 %), and over 5 million (7.9 %)
6. Home Location	Central Jakarta (14.3 %), North Jakarta (14.1 %), South Jakarta (10.2 %), East Jakarta (21.6 %), West Jakarta (31.6 %), Others (8.2 %)
7. Car ownership	Did not own any car (49 %), one car (39.7 %), two cars (7.9 %), three cars or more (3.3 %)
8. Motorcycle ownership	Did not own any motorcycle (37.1 %), one motorcycle (44.2 %), two motorcycles (13.2 %), three motorcycles or more (5.5 %)
9. Trip purpose	Work (45.3 %), study (25.6 %), shopping (8.8 %), vacation (9.9 %) and other (8.2 %)
10. Reason for using busway	Faster trip (34 %), did not own any private vehicle in the family (26.9 %), cheaper fare (16.3 %) and other (22.7 %)
11. Overall satisfaction rating	Very dissatisfied (2.4 %), dissatisfied (19.2 %), fair (55.2 %), satisfied (20.8 %), very satisfied (2.4 %)

#### *TransJakarta Ridership Profiles*

The system's first corridor serves Blok M, which is located in a busy area of southern Jakarta, and it connects to the City Center, northern Jakarta. This is the most crowded corridor of all TransJakarta system that serves 23,792,069 riders in 2012. The second corridor goes from Pulo Gadung to Harmoni with 8,821,192 riders annually. The third corridor goes from Harmoni to Kalideres with 10,831,473 riders per year. The Pulo Gadung to Dukuh Atas corridor served a total of 7,282,254 riders last 2012. On the same year, Kampung Melayu to Ancol corridor served 11,436,445 riders, while the Ragunan to Kuningan corridor served 9,090,588 riders. The Kampung Rambutan to Kampung Melayu corridor served 10,681,357 riders in 2012, while the Lebak Bulus to Harmoni corridor served 8,516,995 riders. The second busiest route in 2012 is the Pinang Ranti to Pluit corridor with 14,352,556 riders. The Cililitan to Tanjung Priok corridor served 3,895,295 riders on 2012, which is among the less busy corridor, with the least popular corridor on 2012 held by Kampung Melayu to Pulo Gebang corridor with only 2,560,645 riders. The last corridor is Pluit to Tanjung Priok corridor and there is yet to be available data for this route since the corridor runs effectively later on, after 2012. Future plan will include development of Route 13, which will go from Blok M to the east part at Pondok Kelapa, Route 14 that will serve between the University of Indonesia Depok and Manggarai which is close to the University of Indonesia Salemba, and Route 15 will continue Route 13 to the west from Blok M to Ciledug.

Connections and transfers between Route 9 and Route 12 are available at Pluit and Penjaringan station. Kota station allows passengers to transfer between Route 1 and Route 12. Ancol, Pademangan, Pasar Baru, Budi Utomo, Pal Putih, Kramat Section NU, Salemba UI, Salemba Carolus, Tegalan, Slamet Riyadi, and Kebon Pala stations connecting Route 5 and 7 along the ways, while Gunung Sahari Mangga Dua and Jembatan Merah station allow transfer between Route 5, 7, and 12. Pasar Baru station allows connection between Route 3 and 5. Juanda and Pecenongan station allow transfers between Route 2, 3, 5, 7, and 8. Harmoni Central is one of the main stations that provide connections between Route 1, 2, 3, 5, 6, 7, and 8. Kalideres, Pesakih, Sumur Bor, Rawa Buaya, Jembatan Baru, Dispenda Samsat Barat, Jembatan Gantung, Taman Kota, Indosiar, Jelambar, and RS. Sumber Waras station connects Route 2 and 3. The other main transfer point is Grogol station, which provides a connection between Route 2, 3, 8, and 9. S. Parman, Podomoro City connects Route 8 and 9. Pulogadung station provides a connection between Route 2, 4, and 6. Halimun, Pasar Rumput, Manggarai, Pasar Genjing, Utan Kayu, Pramuka, UNJ, Sunan Giri, Velodrome, Pemuda Rawamangun, Layur, TU Gas, Pasar Pulogadung provide a connection between Route 4 and 6. Cempaka Mas and Cempaka Timur stations are connected through an elevated walkway, and provide a connection between Route 2 and 10, while Senen Sentral allows connection between Route 2 and 5. Monas, Bank Indonesia, Sarinah, Bundaran HI station connect Route 1, 2, 3, and 6. Dukuh Atas station allows connection between Route 1, 2, 3, 4, and 6. Setiabudi, Karet, Polda Metro Jaya, Gelora Bung Karno, Bundaran Senayan connecting Routes 1, 2, and 3, while Bendungan Hilir station allows connection between Route 1, 2, 3, 9, and 12. Matraman 1 and Matraman 2 stations connecting Route 4, 5, 6, and 7, while Pramuka and UNJ stations connecting Route 4, 6, and 10. Flyover Jatinegara and Stasiun Jatinegara station are also connected through the elevated walkway, connecting Route 10 and 11. Stasiun Jatinegara 2 and Pasar Jatinegara stations, also both are connected by an elevated walkway, Kampung Melayu, and RS. Premier Jatinegara stations connect Route 5, 7, and 11. Kuningan Timur and Kuningan Barat stations connect Route 6, 9, later 13 in the future development. Pancoran Tugu 9 and later on will connect to 13 and 14 as well. Tegal Parang, Pancoran Barat, Tebet, Stasiun Cawang Cikoko, Cawang Ciliwung currently



Further, plans will also allow connection between Route 1, 13, and 15 at Blok M station, Cawang Sutuyo station will connect Route 10 and 13, and then Pasar Kebayoran Lama Station will connect Route 8 and 15.



In addition to the 15 main corridors, TransJakarta, in cooperation with other public transportation companies, provides feeder buses to passengers from suburbs outside Jakarta to the bus terminal. Each of these final stops is a long-distance bus terminal, in which passengers can transfer and catch buses that go in and out of Jakarta. In addition to this convenience, TransJakarta is also conveniently connected to Park and Ride, and a Light Rail system. The Park and Ride facility allow riders from further, suburban area to ride their private vehicles and park it there before continuing their trip to the city center with the BRT system. Park and Ride facilities located at Kalideres, Ragunan, Lebak Bulus, Pulogadung, PGC, Kampung Rambutan stations. Beside this Park and Ride facility, TransJakarta also connected with Jakarta Light Rail system that allows connection to the more suburban area and adjacent cities within Greater Jakarta Area, Jabodetabek. These Light Rail stations can be accessed through Cawang, Manggarai, Juanda, Gambir, Kebayoran Baru, Dukuh Atas, Jakarta Kota stations. TransJakarta is also connected to major highways, Angkot system (Minibus/ minivan), Intercity Bus System, and Ojeg/ Motorbike Taxi system.

Due to the capacity and land use problems, TransJakarta shelters mostly designed to be located in the middle of the road and can be reached by elevated bridges. Some, though at a minimum level, are equipped with escalators and elevators, usually to provide integrated access to the commercial or business buildings nearby. The shelters are made of mostly aluminum, glass, and steel for easier and faster construction. Though at first designed to be air-conditioned, the shelters or stations only have fins that allow air circulations in the room. Floors made from plate, though the new one made from the concrete material. Some stations have elevated bridge ramps to accommodate the disabled, though some are too long to be accessed by a normal person, furthermore by people with disabilities. The connecting elevated walkway, ramps, bridges, and stairs, though covered and shaded, is still slippery and wet during windy, heavy rain. There are no sanitary facilities in most of the stations.

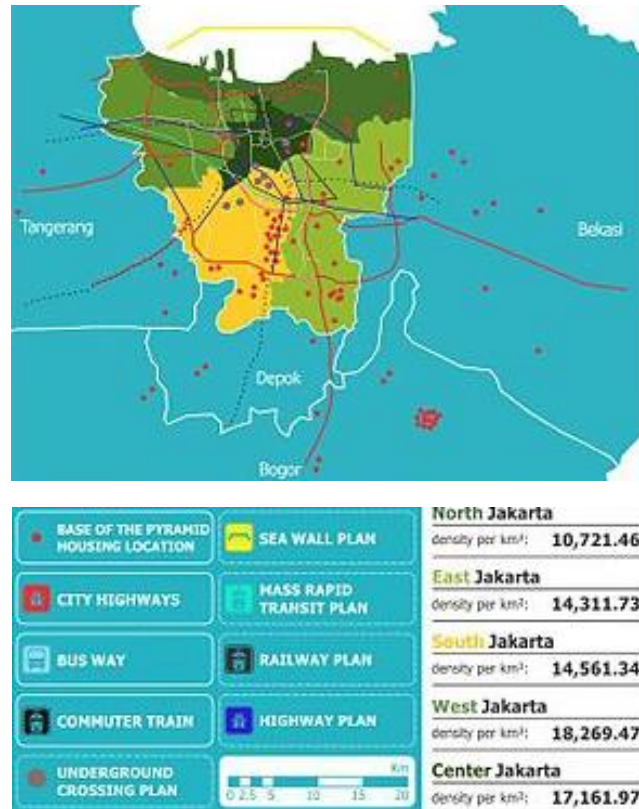


*View from the Shelter's stairs.*



## Future Development

In total, there are currently 12 active corridors, one corridor is under construction, and 2 more are planned corridors. Corridor or Route 13 that will connect Blok M to the east of Jakarta and will end at Ciledug will be 9.4 kilometers and 9 meters wide. It will fly over 18 to 23 meters height above ground level and will be integrated with Jakarta MRT (high-speed rail system) in Sisingamangaraja Street. This route is predicted to operate in 2016.



*Peta Pola Induk Transportasi Metropolitan Jakarta.*

## How Can It Be Improved

These routes provided by TransJakarta, although connected through other transport modes such as Light Rail system, do not really touch suburban areas. If you want to continue there are other modes such as the local Bus system and Angkot, a minivan that can carry up to 14 passengers and goes around smaller roads. This system is not enough to support Jakarta's needs of mass rapid transit that runs regularly.

Key factors in planning a BRT system are:

Land use, which takes into account of growth, activity centers, and growth patterns, the location of major employment, development, and expansions.

Road networks, which supposed to analyze the needs of BRT system such as street width, capacity, congestion, and opportunities for off-street running ways.

And bus operation, a past and future project that should be learned before building the system. Standards such as operating speeds and BRT reliability.

According to the TCRP Report 90, A BRT plan should be developed as an integrated system that adapts attributes of rail transit, focuses on major markets, emphasizes speed and reliability, takes advantage of incremental development, and establishes complementary transit-first policies. Other system attributes that are equally important include the times during which service is available, frequency/headways, walking distances, waiting times, transfers, in-vehicle time, a clean and appealing image, and fare collection strategies.

In 2003, before the routes are operated, it was estimated that the demand for Transjakarta will be between 2000 to 3000 passengers on both directions, while the maximum volume per direction will only be between 1280 to 1500 passengers per peak hours. This will cause the existing roads to be much more congested and overall traffic speed will be slowed by up to 20%.

Currently, there are 669 buses that run daily on 18 hours of service hour. This means that each hour there are about 37 buses run daily. Since there are currently 12 routes available, it leaves to about 3 buses running for each route each way each hour. The corridors are about 12 to 19 km long, and the bus designed to run at 20 km (12 miles) per hour. This makes each bus will only able to run once in one direction, which means the bus runs every 12 to 20 minutes each route, each direction. This, compared to the huge demand Jakarta has, is definitely not enough to support the riders need. TCRP Report 90 stated that desired service frequencies for basic BRT line should be at least 8 to 10 minutes during peak hours and 12 to 15 minutes during off-peak hours to support daily ridership of 5,000 people. TransJakarta serves about 300,000 riders daily.

Distances between stations vary from about 400 to 2250 meter (0.25 to 1.4 miles), a person willing to walk approximately 0.25 miles to get to a place.

Fares are collected using Smartcard, with no discount available for elderly, disabled or school kids.

Running ways should have a minimum interference with traffic. It is possible to have BRT mixed with traffic since it will reduce the construction costs, but the system will possibly be affected by the traffic because there are conflicts between traffic lights, pedestrian crossing, and other transportation modes such as the Light-Rail system that will cause delay.

The prohibition of curb parking generally should be prohibited before (curb) bus lanes are established, at least during peak hours:

(1) Provides a bus lane without reducing street capacity for other traffic

Which TransJakarta, during its earlier construction, took up a lane from existing traffic

(2) Reduces delays and marginal frictions resulting from parking maneuvers

(3) Gives buses easier access to stops.

Below are tables to compare the standard form TCRP Report with the existing condition in Jakarta as an input to improve the system:

**Running Ways Regulations (TCRP Report 90)**

No.	Running Ways Regulation	Standard	TransJakarta	
1	General traffic improvements and road construction should be coordinated typical improvements	v	v	
2	Curb parking generally should be prohibited before (curb) bus lanes are established, at least during peak hours	v	v	
3	Bus routes should be restructured as necessary to make effective use of buslanes and busy streets	v	v	
4	Bus priority treatments should reduce both the mean and variability of average journey times	v	v*	Number of buses that running is not maximized yet
5	Extended bus lanes are necessary to enable BRT schedule speeds to achieve significant time savings, better service, reliability, and increased ridership.	v	v*	
6	Police cars, fire equipment, ambulances, and maintenance vehicles should be allowed to use bus lanes and bus streets	v	v	
7	Design and operation of bus lanes must accommodate the service requirements of adjacent land uses	v	v	
8	Access to major parking garages should be maintained	v	v	
9	Taxi loading areas should be removed from bus lanes	v	N/A	Not Available
10	Access to bus stops and stations should be convenient and safe	v	v*	Open access, not enough or broken sidewalks
11	Running way design should reflect available street widths and traffic requirements	v	x	Some routes take up other traffic lanes
12	When buses preempt moving traffic lanes, the number of lanes taken should be kept to a minimum	v	v	
13	Bus lanes and streets should provide a strong sense of identity	v	v	Concrete separator

14	Effective enforcement and maintenance of bus lanes and bus streets is essential	v	v	
15	BRT bus lanes (and streets) should operate all day whenever possible	v	v*	Operational hours: 05.00-22.00; Some routes are not activated yet
16	Generally, far-side bus stops should be provided	v	v	
17	BRT lane widths should accommodate the anticipated BRT fleet	v	v	Standard: 11-13 feet
18	Bus lanes in the center of streets should be physically separated from other traffic	v	v	Standard: 75 - 80 feet curb to curb
19	Bus lanes and bus streets must be perceived as reasonable by users, public agencies, and the general public	v	N/A	No Data

#### Stops, Stations, and Terminal Designs (TCRP Report 90)

No.	Stops, Stations, and Terminal	Standard	TransJakarta	
1	Provide a full range of amenities at stations, including shelters, passenger information, telephones, lighting, and security provisions	v	v*	No Display or Announcement of bus schedules, estimate time of arrival, the announcement of the bus route, lack of signage of transfer points, warning 'between the gap', lack of the map of whole system and location. Safety: some broken automatic sliding door.
2	Design for station access by customers who have disabilities	v	v*	Steep ramp, Lack of elevators, ruined sidewalks
3	Provide a consistent pattern of station location, configuration, and design to the maximum extent practicable	v	v*	Distance between stations varies from 0.25 miles to 1.4 miles
4	Separate BRT, local buses, automobiles, and pedestrian movements in station design	v	v	

5	Coordinate station platform design with vehicles and fare collection policies	v	v	Raised platforms
6	Ensure that station configurations support the service plan and operating philosophy of the BRT route	v	N/A	No express bus available
7	Size station berths, platforms, and access facilities to serve the expected number for riders without overcrowding or spillback, to provide capacity for future growth, and to achieve reasonable levels of service	v	v*	Overcrowded at some transfer points such as Harmoni Sentral station
8	Increase berth capacity by fostering fare prepayment and/or multidoor boarding	v	v	Multidoor, dedicated female-only section with its own entrance
9	Ensure that station locations and designs are developed cooperatively with the surrounding community	v	v*	Some stations lack standard due to no space situation
10	Provide far-side stops where running ways cross streets at grade	v	v	To most transit mode such as intra-cities bus and Light-Rail system
11	Provide convenient transfers between BRT and intersecting transit routes	v	v	
12	For routes that terminate at the station, allow independent bus arrivals and departures at major transit centers and bus terminals	v	v	

#### Vehicle Designs (TCRP Report 90)

No.	Vehicle	Standard	TransJakarta	
1	Vehicles should provide sufficient passenger capacity for anticipated ridership levels	v	v*	There is not enough number of buses running
2	Vehicles should be easy to board and alight	v	v	
3	A sufficient number of doors should be provided, especially when coordinated with off-vehicle fare collection	v	v	

4	Internal vehicle design generally should maximize the number of people each the bus can carry, rather than the number of seated passengers	v	v	52 standing, 31 seated
5	Wide aisles should be provided to maximize internal circulation space	v	v	
6	Bus propulsion systems should be “environmentally friendly” by minimizing air pollution and noise	v	v	CNG
7	Vehicles should have a distinctive BRT identity and image	v	v	
8	Vehicles should have a high passenger appeal and give passengers a comfortable ride	v	v*	Crowded bus = uncomfortable
9	Vehicles should be reliable, with a long mean distance between failures	v	v	
10	Life service costs should be reasonable; the cost of acquiring and operating buses should be reasonable	v	v	

#### Services, Fares, and Marketing (TCRP Report 90)

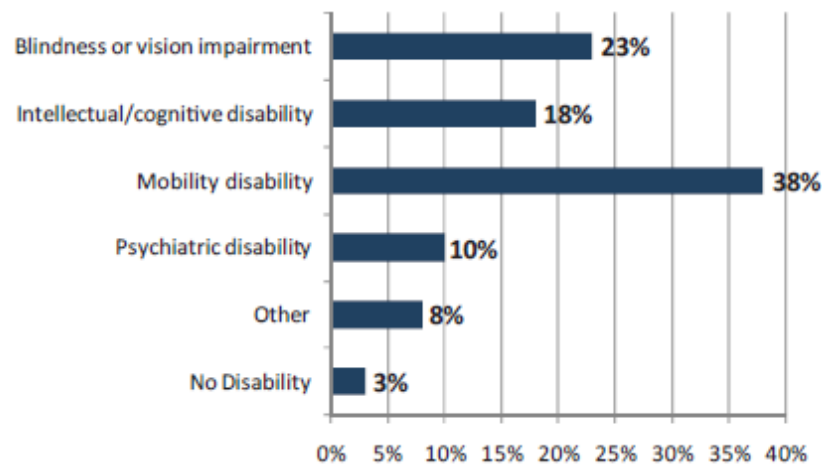
No.	Services, Fares, and Marketing	Standard	TransJakarta	
1	Service patterns and frequencies should reflect the types of running way, city structure, potential markets, and available resources	v	v	
2	Service should be simple, easy to understand, direct, and operationally efficient	v	v*	No real-time map and schedules
3	Busway route structure should include a combination of basic all-stop service that is complemented by express (or limited-stop), feeder, and connector service	v	v*	Standard: Service hours between 06.00 - 00.00; peak hours intervals 5-10 minutes, off-peak hours 12-15 minutes. Real-time: 05.00-22.00, intervals 20 minutes or more. No Express system.
4	BRT running ways may be used by all transit operators in a region where vehicles meet established safety requirements	v	v	



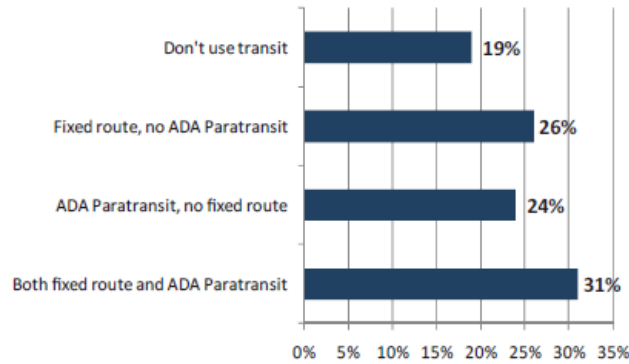
5	Running times and average operating speeds should be maximized by providing wide station spacing and by reducing dwell times at stops	v	v	Distance between stops: 0.25-1.4 miles
6	Fares should be integrated with the rest of the bus system, but they may not necessarily be the same.	v	v	Fares: 15 to 30 cents, another bus system 15 cents
7	Fare collection systems should facilitate multiple-door boarding, at least at major stops during busy periods	v	v*	Not applied to all major stops
8	Marketing should emphasize the unique features of BRT such as speed, reliability, service frequency and span, and comfort	v	x	No Marketing

Another thing that TransJakarta system lack of are facilities for the disabled, as stated in TCRP Report 163 which suggests that transit agencies can improve their success in encouraging fixed-route transit service by:

- Travel training efforts tend to be more effective when integrated with eligibility determination processes;
- Fare incentive programs can be more cost-effective, and the consequences are limited if implemented along with more thorough eligibility determination processes;
- Improvement to the pedestrian infrastructure can be more effective when priority stops are identified using information from travel training and eligibility determination processes.

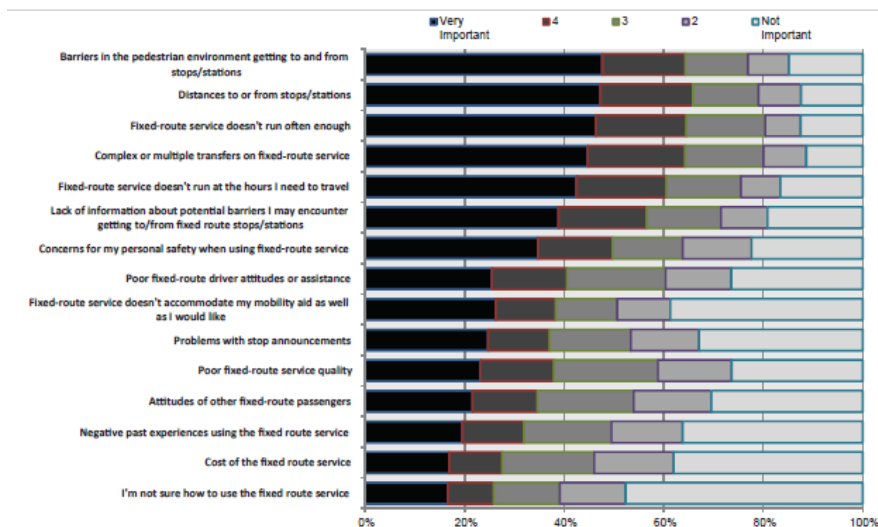


*Interest in Using the Transit Service*



*Survey of Current Use of Public Transit Services in the US*

In the US, according to the TCRP report 163, 38 Percent of the disable riders suffer from mobility disability. And these people mostly (31%) use both fixed route transit and ADA transit. The factors that discourage people with disabilities of using transit mostly because the service did not run enough during the hours that they needed, and also because the route is not what the people with disabilities needed. Since TransJakarta buses run irregularly, this will cause more inconvenience for people with disabilities. Another reason is complicated or multiple transfers, since people with disabilities have limited movements, the complicated transfer will discourage them to use public transit. TransJakarta system still lacks facilities for the disabled, far distances from and to the station, from steep ramps to lack of elevators on the stops, lack of signage, and bad access towards the station. Costs of the public transit are the other factor, though TransJakarta fare is relatively cheap, there is no discounted price for people with disabilities, which will reduce their willingness to use public transit in general. Lack of information and announcement of the system and the barriers, concern of personal safety, other riders' attitude, negative past experience, and driver's incompetency towards handling riders with disability are the other crucial factors for people with disability in using public transportation.



*Important Factors for Disabled in using Transit*

US DOT and ADA regulations require that:

- All new transit facilities should be accessible by the people with disabilities
- Existing facilities may be altered to provide maximum accessible access
- All new vehicles purchased for fixed-route transit

To improve TransJakarta system, this regulation can be applied in TransJakarta BRT system, especially for the people with disabilities. And in general, TransJakarta should also consider constructing a passing lane at each bus stop. There is sufficient right of way to do this along with the corridor without further reducing capacity on the mixed traffic lanes.

One other consideration is to adjacent two bus stops at each bus stop location. This is because capacity restrictions in busways mostly happen at the bus stops and because overcrowding at the bus stops will occur in some locations otherwise. These considerations would generate enough capacity for all the transit trips in the corridor. Also, rather than having two bus stops, TransJakarta should consider procuring larger buses and extending the existing stations to have two bus bays instead of just one. Combining two larger buses, and larger stops, a passing lane, and two bus stops would give the corridor more capacity. Another solution will be building elevated road ways dedicated to the Bus Rapid Transit.

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