IEP- Technical Lecture

Karachi Centre

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Seminar on Public Transport

Public Transport Options

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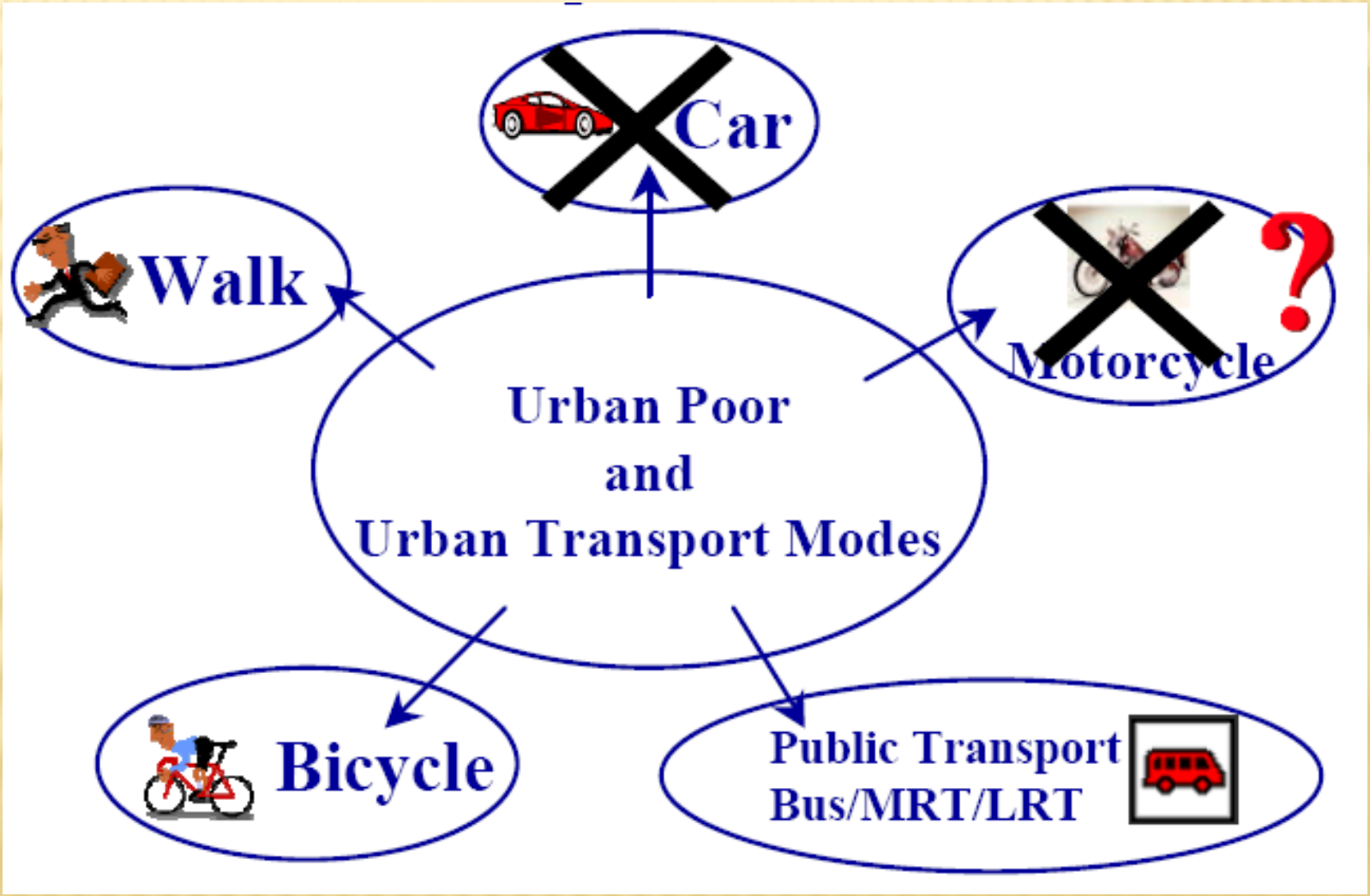
PRESENTATION OUTLOOK

- Public Transport Functions
- Public Domain Transport System
- Public Transport Options
- Issues in Public Transport
- Framework for Sustainable public Transport
- Conclusions and way forward

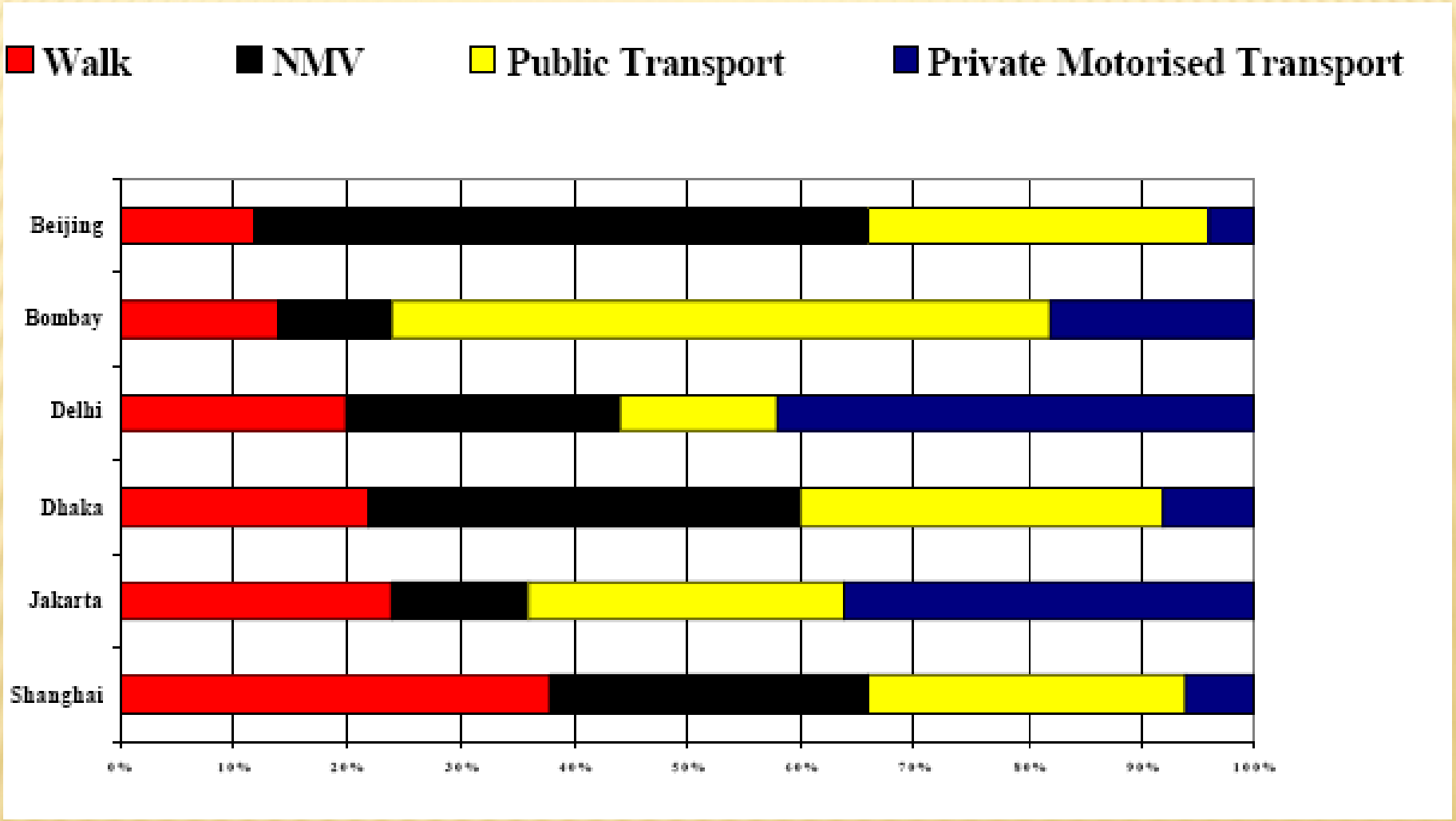
PUBLIC TRANSPORT FUNCTIONS

- Public transport provides 3 functions for society
  - Mobility for those not using private transport
  - Development tool to reduce infrastructure costs
  - A business operation with potential for profits
- Investment in public transport is investment in **critical** communications **infrastructure**

TRANSPORTATION FOR THE POOR



MODE SPLIT IN LOW INCOME ASIA CITIES



Ref: Word Bank Report

PUBLIC DOMAIN TRANSPORTATION

- MASS TRANSIT
  - Fixed route
  - Large capacity
- PARA TRANSIT
  - Demand oriented routes
  - Personalized Public Transport

PUBLIC TRANSPORT MODES

- Personalized Transit Systems
- Bus Transit
- Bus Rapid Transit
- Streetcars
- Fixed Guideway Vehicles
- Light Rail System
- Heavy Rail
- Commuter Rail

MASS TRANSPORTATION PLANNING

TRIP

- Collective movement of people

  A technical analysis supported by strategic planning and policy initiatives

ROUTE

- Servicing common corridor with greater efficiency

  An operational task also supported by carefully crafted policies

THE BOTTOM LINE OF PUBLIC TRANSPORT…

*MAKE TRIP **FAST** AND **COMFORTABLE***

*GETTING PLACES **SIMPLE** AND **STRAIGHT FORWARD***

*TRANSFERS BE **CONVENIENT** AND **HASSLE FREE***

KEY PERFORMANCE INDICATORS in:

- Accessibility
- Availability
- Reliability
- Safety
- Comfort

The measurement of performance is the key, because……

- If you can't measure it, you can't control it…
- If you can't control it, you can't manage it…
- If you can't manage it, you can't improve it.

MOVING 10,000 PASSENGERS/D/H

BUS TRANSIT

BUS RAPID TRANSIT

- Premium transit using rubber tire vehicles
  - Dedicated running way
  - Fewer stops than local bus
  - Distinct stations, vehicles, and systems
- Allows flexibility to operate multiple routes

LAMATA BRT Buses – Ojota Depot

LAMATA Bus Shelter – Ilupeju

STREETCAR OR LIGHT RAIL TRANSIT

- **Street Car or Light Rail Vehicle**: An electrically propelled rail vehicle operated singly or in trains on shared, semi exclusive, or exclusive right-of-way

FIXED GUIDE WAY VEHICLES

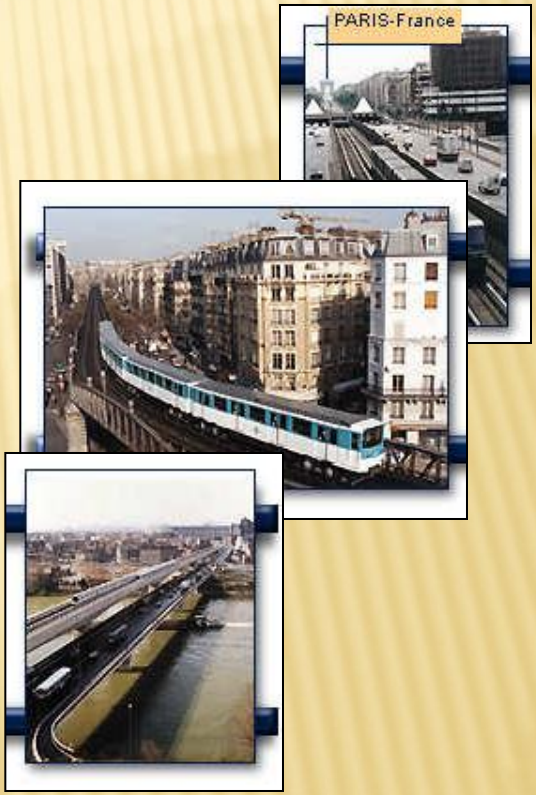
- Automated guide way small and medium-sized vehicles that operate fully automatically on guideways with exclusive rights-of-way
- Typically on a loop or as a shuttle within central business districts, airports or other high activity centers

LIGHT RAIL TRANSIT

- Modern version of traditional streetcars
- May operate alongside auto, rail traffic
  - Reduces costs
  - Increases travel time
- Stations $^{1}/_{3}$–1½ miles apart

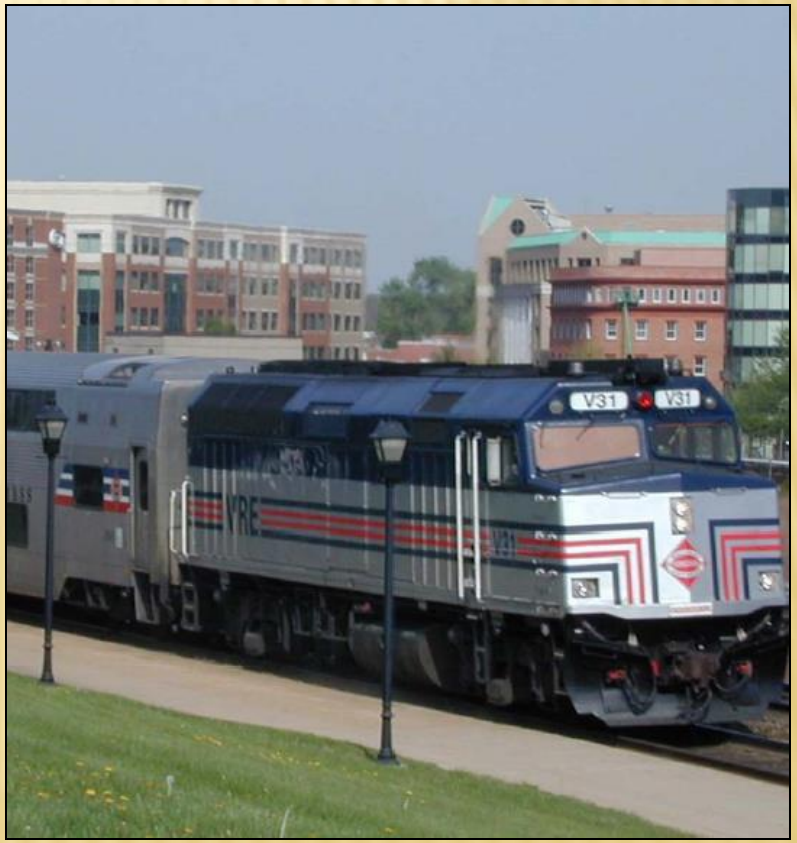
HEAVY RAIL

- The term **heavy rail** is often used for regular rail, to distinguish from systems such as light rail, monorail, Street car etc.
- Heavy rail typically refers to the standard inter-city rail network, which is built to be robust enough for heavy and high-speed trains, including freight trains, and long distance passenger trains.



COMMUTER RAIL TRANSIT

- Similar to passenger railroad service
- Existing railroads with improvements
- Long-distance commuting
- Stations 1½ –5 miles apart



PERSONALIZED TRANSIT SYSTEM/ TRANSIT ON DEMAND

CHINCHI FILLING THE GAP !!

- Chinchi Design
- Traffic contributions- solutions and problems
- Road safety issues
- Technical aspects
- Legal framework

CHINCHI BACKGROUND

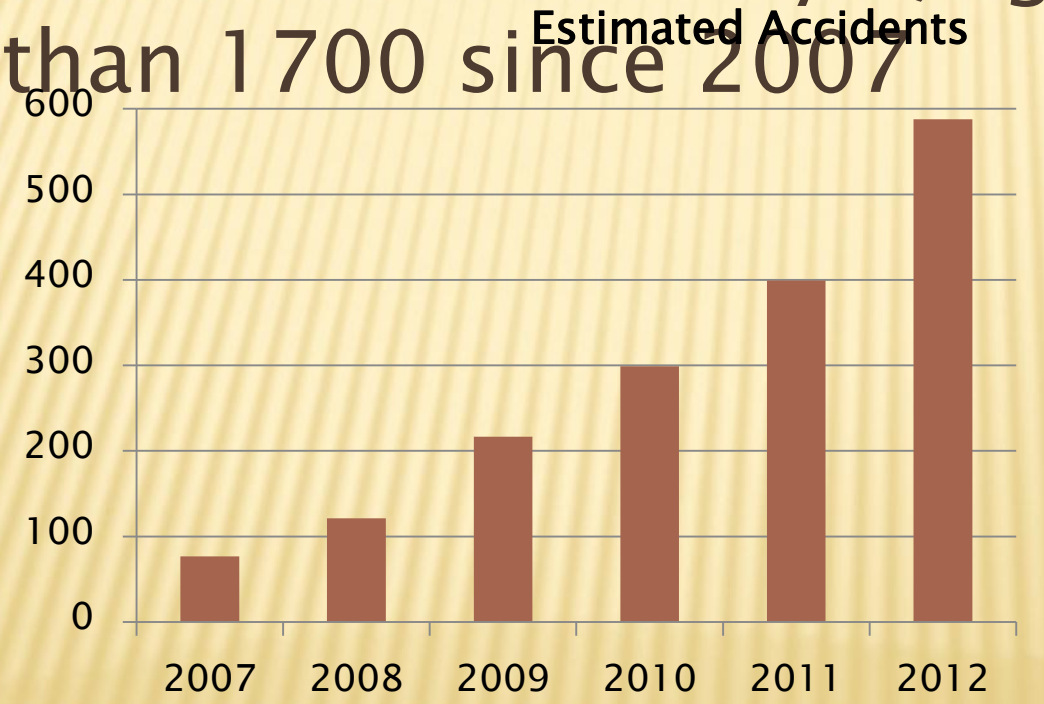
- Due to absence of proper mass transit system, idea of low cost transport solution came into existence which name as “Qingqi”
- Transport like Qingqi is not new for Karachi, over decades it keeps on improving it’s form with demand.

TRAFFIC CONTRIBUTIONS

- Today Chinchi system is flourishing day by day by occupying Public and mini buses slots due to its
  - High Accessibility
  - Small Headway
  - Lesser Travel Time
- But as their numbers are increasing there problems are increasing too; like
  - Accidents
  - Degree of Disorderliness
  - Fare Price

CHINGCHI ACCIDENTS

- As per data of Road Traffic Injury Research, the estimated no. of accidents caused by Qingqi are more than 1700 since 2007



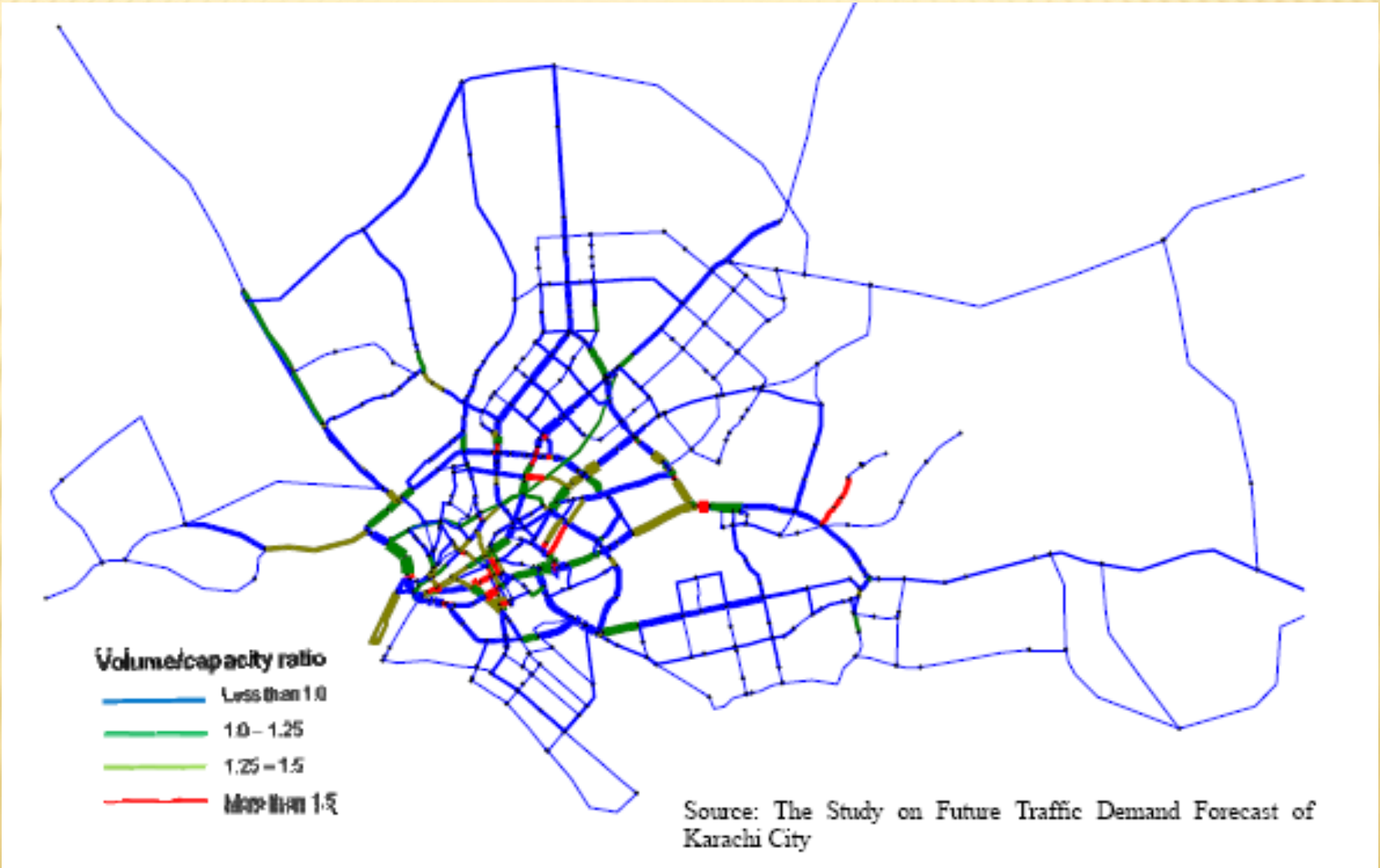
Based on 5% annual increase of chinchi and 5% annual decrease of regular rickshaws

TRANSPORTATION SYSTEM ALTERNATIVES IN KARACHI CITY

- **Future Traffic Prob Road Network**

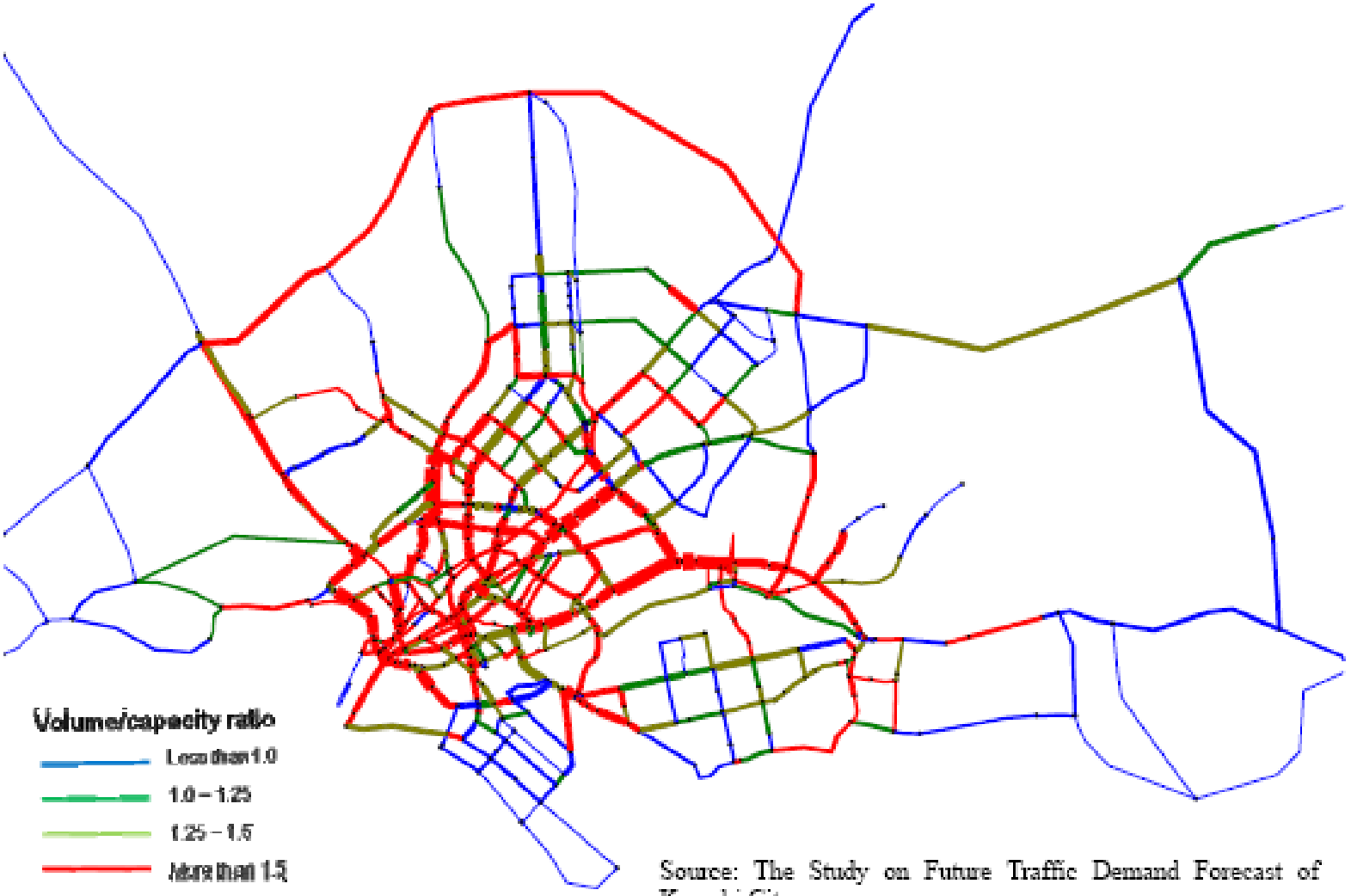
- The road network in Karachi is adequate in terms of the total length, although there are still some problems such as the low ratio of arterial roads in the network and lack of the arterial circular roads. Figure 2-16 shows the road network evaluation result in 2008. There are few red sections where traffic volume significantly exceeds the capacity, and this shows that the current road network has enough capacity to accept the current traffic volume.

V/C RATIO (2008)



Source: The Study on Future Traffic Demand Forecast of Karachi City

V/C RATIO (2020)

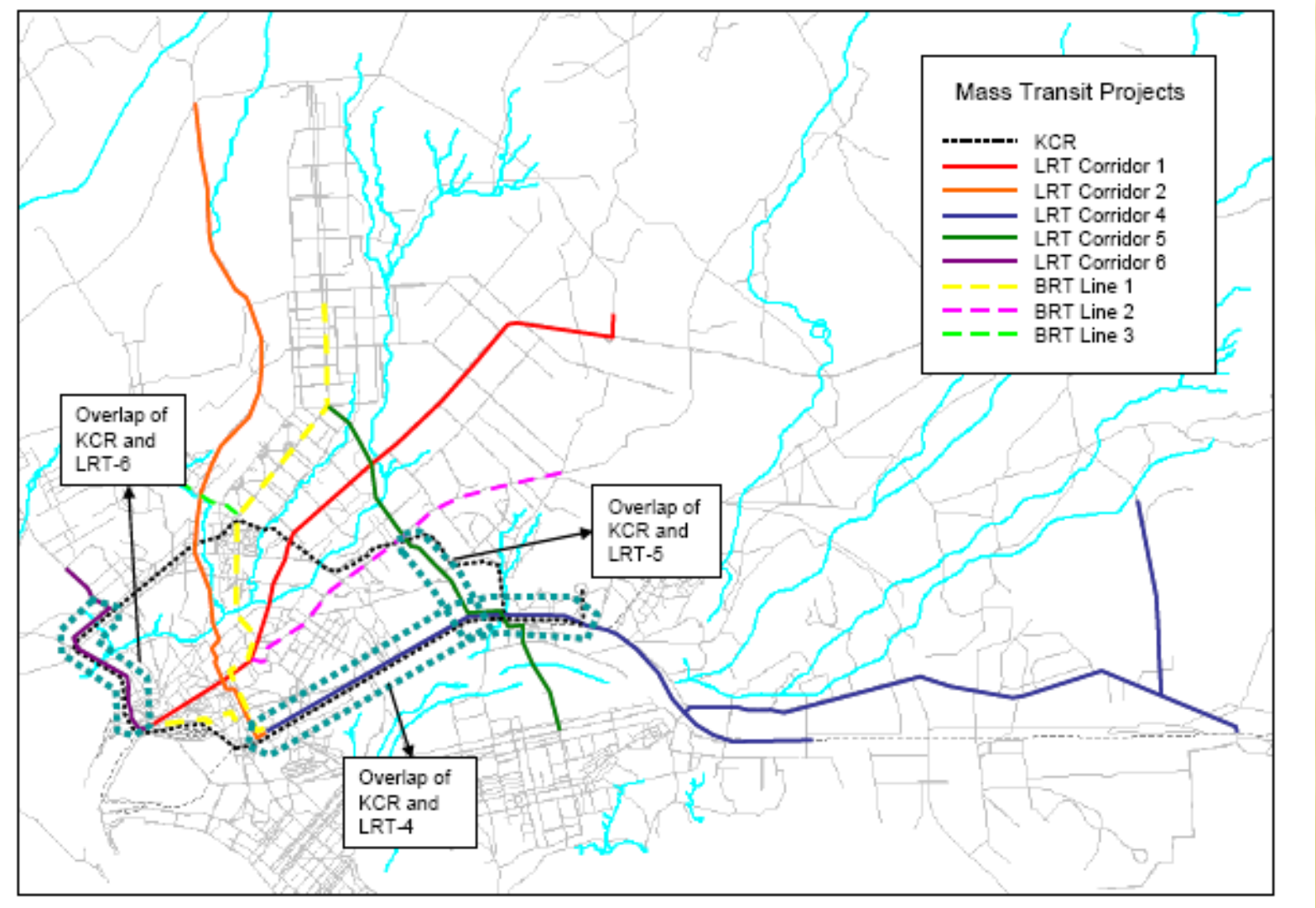


Source: The Study on Future Traffic Demand Forecast of Karachi City

PUBLIC TRANSPORTATION NETWORK

- In Karachi, the KCR, LRT and BRT are planned as public transportation facilities in the future (Refer to Figure 2-18). However, no mutual coordination seems to have been done for these plans. Therefore, of the routes of KCR and LRT Corridor-4 to 6, LRT Corridor-3 and BRT Line-1, three routes are partially overlapping, and the general route setting is inefficient.

FUTURE MASS TRANSIT NETWORK



PUBLIC TRANSPORT ISSUES

- Operation
  - Infrastructure
  - Interchanges / Timetables
  - Financing
    - Fare and ticketing;
    - Revenue, profit and subsidies
  - Safety and security
- Impact
  - Environmental
  - Land use
  - Social;
  - Economic
- Regulations

CHINA SUCCESS

Classification		Frequency (person, %)
Mode of Before The BRT Opening	Bus	251 (79.2)
	Taxi	25 (7.9)
	Car	11 (3.5)
	Bike	14 (4.4)
	Walking	9 (2.8)
	Others	7 (2.2)
Mode of After The BRT Opening	Bus	22 (6.9)
	Taxi	11 (3.5)
	Car	6 (1.9)
	Bike	5 (1.6)
	Walking	2 (0.6)
	Others	0 (0)
	BRT	271 (85.5)

CHINA SUCCESS–OPERATION MATTERS

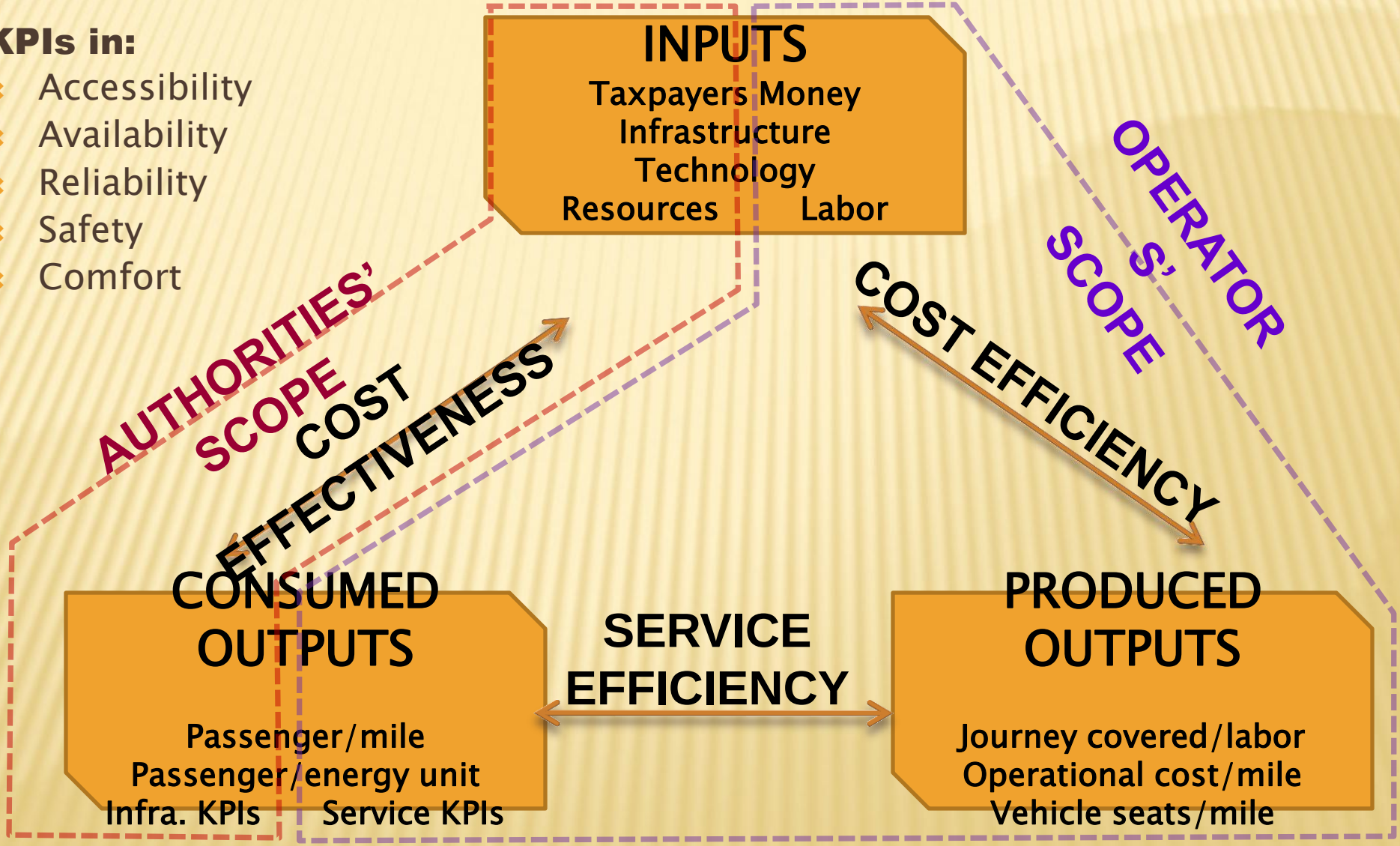
Reasons	Reasons for Preferring The BRT		Reasons for Preferring The Subway	
	Frequency (%)	Total (%)	Frequency (%)	Total (%)
Arriving on Time	52(17.3)	32.3	83(39.0)	69.7
Fast Operation Speed	35(11.6)	21.7	79(37.1)	66.4
Convenience in Getting On/Off	67(22.3)	41.6	20(9.4)	16.8
Crowdedness	17(5.6)	10.6	17(8.0)	14.3
Fare	123(40.9)	76.4	3(1.4)	2.5
Others	7(2.3)	4.3	11(5.2)	9.2
Total	301(100.0)	187.0	213(100.0)	179.0
Note	Valid Number of Samples: 161		Valid Number of Samples: 119	

PUBLIC TRANSPORT INFRASTRUCTURE

A NEW ORGANIZATIONAL MODEL

KPIs in:

- Accessibility
- Availability
- Reliability
- Safety
- Comfort



Ref: Malaysia

SUSTAINABLE PUBLIC TRANSPORT FRAMEWORK

- Planning
  - Vision for a livable city and city master plan
    - Land use planning
    - Transport master plan
- Design Integrated Transport Systems
  - Public transport – commuter rail, metro rail, mono rail, commuter rail, city buses, taxis, autos
  - Intermodal Transportation Hubs to connect different modes
  - Promotion of Walking and cycling
  - Private vehicles
  - Trucks and freight movement
- Analyses
  - Political
  - Economic
  - Social
  - Technical
  - Environmental
- **Implementation and Monitoring**
  - Technical support
  - Stakeholder involvement
  - Institutional setup
  - Capacity
  - Policies
  - Financing

CONCLUSION

- Understand what makes public transport works best (utilizing all 3 functions)
- Fair allocation: funding, resources & risks
- Maximize benefits, minimize costs!
- Keep it simple and make it work!

THE WAY FORWARD

- Rapid Transit on main roads (BRT, KCR) is the best way to introduce rapid transit to our communities
  - Uses the existing (and paid-for) road infrastructure
  - Construction costs are lower so more km of routes
  - Can be built faster and fine-tuned more easily

THANK YOU FOR YOUR ATTENTION… QUESTIONS PLEASE?