Public Transport Rationalization as a means to Sustainability

CRESENCIO "DAYO" MONTALBO JR., PHD.

SCHOOL OF URBAN & REGIONAL PLANNING

NATIONAL CENTER FOR TRANSPORTATION STUDIES

UNIVERSITY OF THE PHILIPPINES

Contents

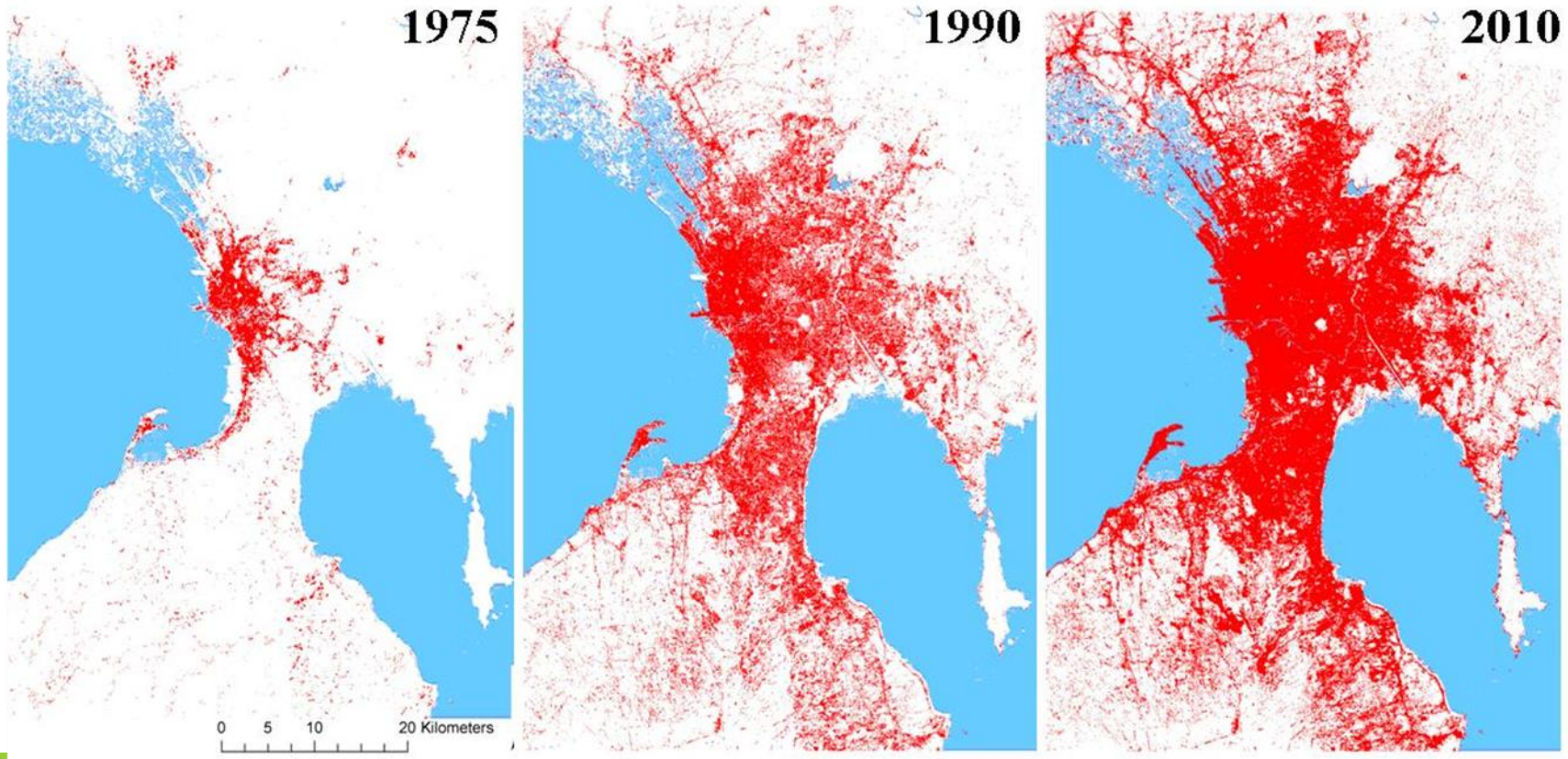
- Background
- How road-based public transport is planned now
- PUV Modernization
- Road Transit Rationalization Studies (RTRS)
- Study Findings
- Institutional & Regulatory Reform
- Quo vadis

Metro Manila

- Population = **12 million**
- Mega Manila pop. approx **35 million!**
- Area of 639 sq. km
- Pop density of 15,617 per sq. km
- Urban development driven by Metro Manila and nearby urban areas hosting 20% of the population but contributing 50% of the country's GDP
- Made up of 16 cities and one municipality
  - 17 different mayors/leaders to make decisions!

Urban transport, accessibility, and mobility issues

Urban transport, accessibility, and mobility issues



Getting Around Metro Manila

- 3 elevated rail metro lines, with 1 line severely challenged!
- 1 heavy rail line
- All other transport is road-based!

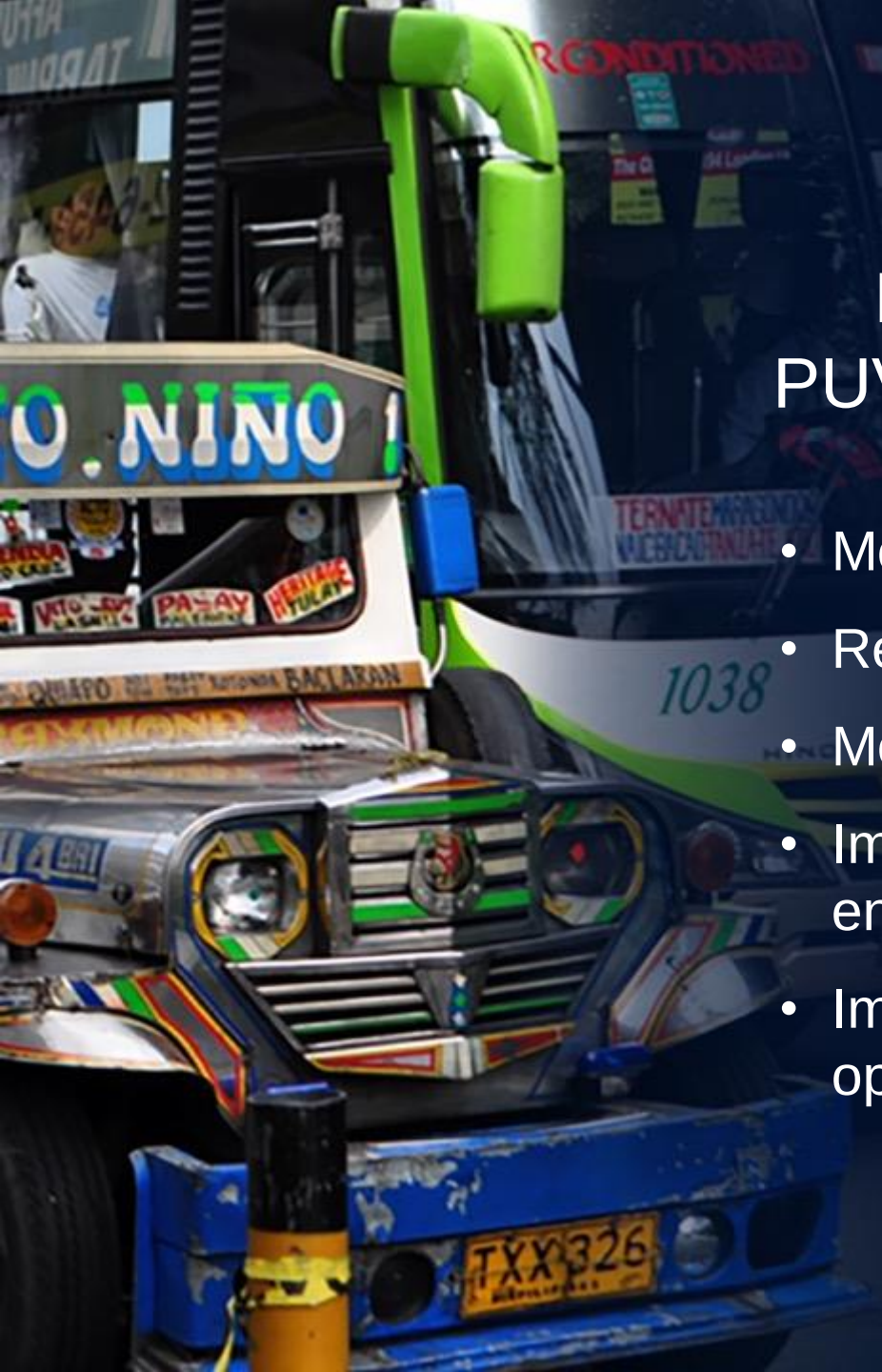
How is the PT network planned now?

- No government-led planning of the road transit network
- Network evolved based on historical issuing of franchises
- Emphasis upon the private sector willingness to, ‘enter the market’
- Highly individualized & fragmented operations!
- Earnings based on boundary system or commission
- Franchises issued based on Route Measured Capacity (RMC)
  - Optimum number of vehicles to be assigned on given route
  - Volume of passenger demand & viability

  Limitations
  - Not dynamic to changes in demand (land use planning?)
  - Doesn’t consider road capacity constraint
  - Not linked to physical planning of the network
  - Route centric
  - Nor related to franchise that guarantees service level

What is the government doing about it?

- PUV Modernization Program
- Modernization of both hardware and software
- Hardware
  - Vehicles
  - Standards
  - Road safety
  - Local pollution
  - Global pollution
- Software
  - Institutional & regulatory reform
  - Planning paradigm



Main Objectives of the PUV Modernization Program

- Modernize the current PUV fleet
- Reform and consolidate the industry
- Move towards low emission PUVs
- Improve welfare of commuters and encourage modal shift
- Improve standards of living of drivers, operators, and their families

MAJOR COMPONENTS
PUV MODERNIZATION PROGRAM

"System Reform and Vehicle Modernization"

Road Transit Rationalization Studies

RTRS1 Final Report dated June 2014 (data collected 2013)

RTRS2 Final Report dated January 2016 (additional data collected 2015)

Strategic and analytical study – looking at the whole network

- Key corridors or mass transit corridors
- Appropriate mode of public transport
- Commercial viability
- Based on demand analysis

Mindful of impact management

- 34,650 PUJ franchised (approx. 1 for every 345 people)
- 5,337 PUB franchised
- How to treat colorum vehicles
- Ability of operators to respond to opportunity
- Engaging the public (and politicians)

RTRS Study Objectives

Develop an integrated public transport system that:

1. Enables the efficient movement of the traveling public across MM
    a) Service-oriented to meet traveller demand, not profit-oriented
2. Enables people to travel in an environmentally sustainable manner
3. Is cost effective for passengers & commercially viable for operators
4. Supports the developed and evolving mass transit network
    a) Determination of the optimum public transport corridors
    b) Determination of the most appropriate mode of transport driven by demand
    c) Determination of most appropriate level of service, no of units, driven by demand
5. Finally, highlight where demand is of a level of intensity that may warrant and justify further mass transit systems or routes

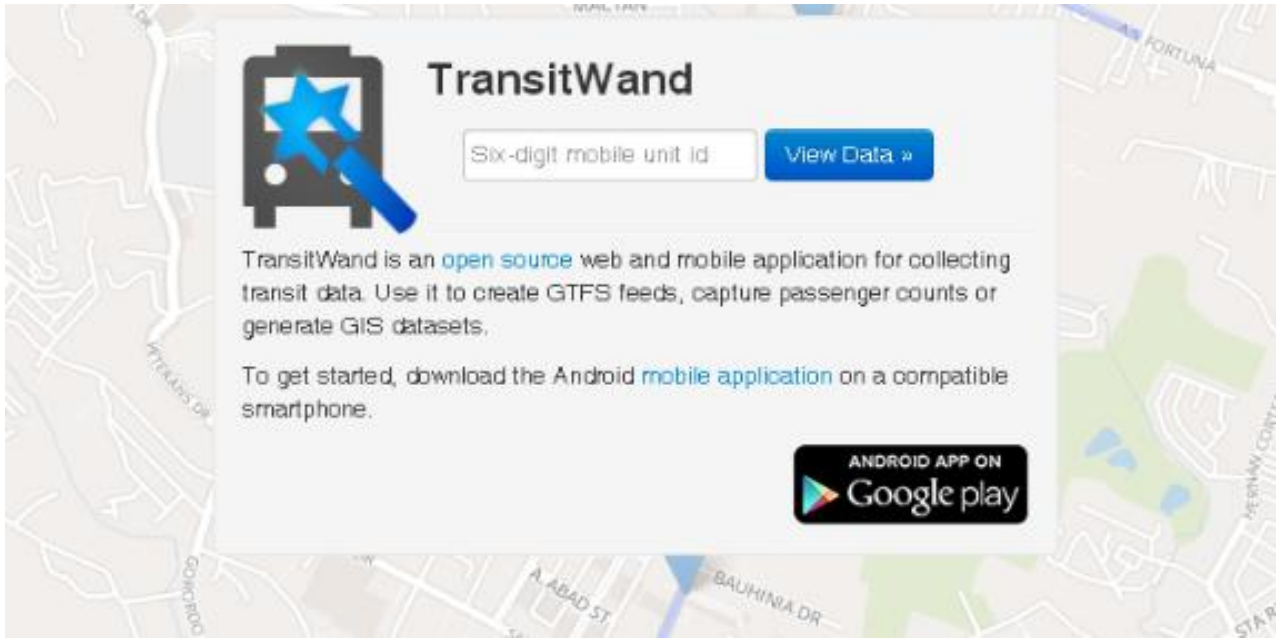
Main mandate of the RTRS1 is to identify corridors that should optimally be served by mass transit.

Methodology & Work Programme

- Need to understand...
  - Existing transit network and how it is used
    - Existing road transit network – routes, frequencies, loadings etc
    - Cost to passenger of existing journeys, and cost to operator
    - Journey times and interchange
  - Passenger demand
    - Where people want to travel from and to, and when
- Therefore, carried out
  - Vehicle Occupancy and PT Frequency Surveys
  - Boarding and Alighting Surveys
  - Origin Destination Surveys

Understanding Existing Supply

- Boarding and Alighting Surveys
  - Use Transitwand smartphone application
  - Geo-code for where passengers board & alight <u>all PUJ and PUB routes</u>
  - GPS tracking to map all routes
  - Factor up B&A points based on PT frequency & veh. occupancy data



Understanding Demand

- Origin and Destination Surveys
  - Developed a new survey app
  - Used tablets
  - Map-based data collection
  - Geo-coded Os and Ds
  - GPS tracking to monitor surveyors

- Between 30,000 and 35,000 OD Surveys or Interviews
- Carried out on every PUJ and PUB service in MM
- 'Expanded' dataset using frequency and occupancy data

- Provides a map of all PT trips made in 1 day across MM

Understanding Supply: Key Statistics

677 different PUJ routes across Metro Manila

Average PUJ route length = 10.9km

8,959,000 passengers per day

82 PUB routes across Metro Manila

Average PUB route length = 36.7km

1,865,000 passengers per day

Most heavily used PUJs

Route Name	Daily Pax	AM Peak Hr Pax Inbound	PM Peak Hr Pax Outbound
Sandgandaan-Divisoria/Quiapo	213,861	10,914	6,534
Karuhatan-Ugong (Valenzuela)	150,736	6,736	5,573
GMA-Alabang (via National Rd)	140,441	4,875	5,642
Novaliches-Malinta	105,921	5,342	3,486
Kalentong-Boni/Pinatubo	105,695	4,834	3,519
Sta Ana-P Faura	104,032	4,015	3,450
Novaliches-Rizal Ave	95,972	3,929	4,419
Divisoria-Cubao	94,064	4,035	2,691
Alabang-Pasay Rotonda	75,157	2,485	4,131
Marikina-Pasig	72,726	3,819	2,545
Lagro-Cubao	71,693	3,244	3,603
Binangonan-Sta Lucia (via Tikling)	70,473	2,396	2,229
Libertad-Evangelista	68,781	2,541	2,739
Alabang-Baclaran (via Zapote)	67,433	2,837	1,128
Rosario-San Juan	66,167	2,833	1,868
FTI-Guadalupe	65,737	3,645	1,512
L Guinto-Pandacan	63,439	2,838	2,520
Malanday-Recto	63,090	3,557	1,500
Bagong Silang-Novaliches	61,692	3,854	2,265
Malanday-Pier South 15	60,199	3,178	1,714

Most heavily used PUBs

Route	Approx. Daily Passengers	AM Peak Hour Passengers Inbound	AM Peak Passengers Outbound
SM Fairview-Baclaran via Quezon Commonwealth	94,162	5,224	2,373
Grotto-Baclaran via EDSA Commonwealth	84,621	1,758	5,079
Norzagaray Sapang Palay-Sta Cruz via NLEX Santa Maria	79,235	6,314	623
Malanday-NAIA via EDSA McArthur Ayala	75,107	3,252	2,845
Grotto-NAIA via EDSA Commonwealth	59,460	3,285	2,058
Naic-Zapote pub	57,207	2,953	1,967
SM Fairview-Alabang via EDSA Commonwealth	54,451	2,689	2,570
Norzagaray Sapang Palay-Sta Cruz via NLEX Marilao	54,397	2,874	1,836
SM Fairview-Baclaran via EDSA Commonwealth	52,288	2,506	2,068
Novaliches-Alabang via EDSA Mindano	51,978	2,322	2,376
Cavite-Zapote	45,847	2,082	1,672
Taytay-Quiapo via Ortigas	44,164	2,139	754
NAIA-Malanday via EDSA McArthur	42,055	1,041	2,492
Navotas-FTI via EDSA	40,542	1,287	1,530

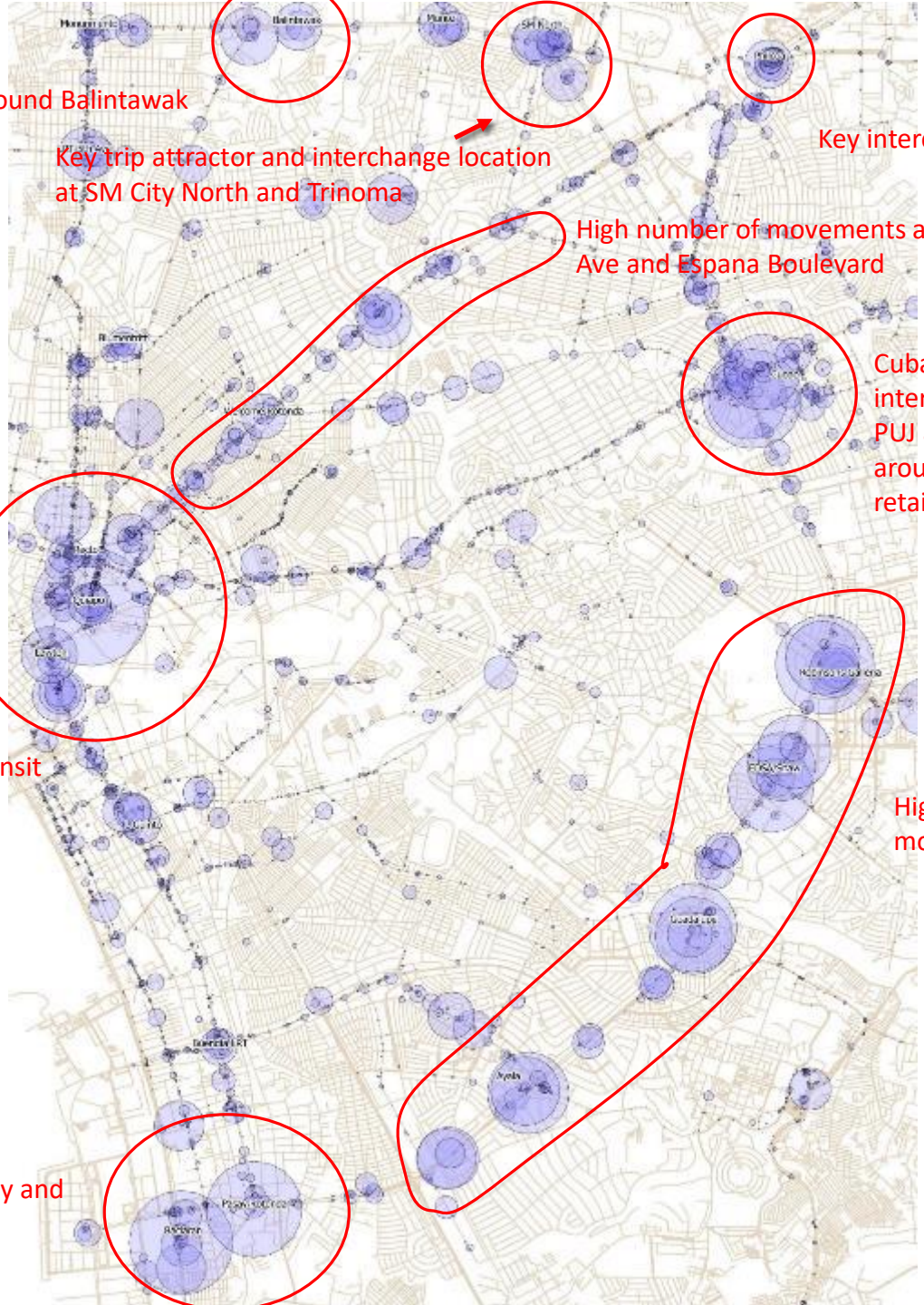
Average hourly frequency of PUB and PUJ services throughout the day

	6am-9am	9am-12pm	12pm-3pm	3pm-5pm	5pm-7pm	7pm-10pm
PUJ Inbound	21.15	16.70	15.21	16.00	16.98	13.74
PUJ Outbound	20.45	16.81	15.05	16.44	17.69	13.98
PUB Inbound	9.93	9.15	8.37	8.02	8.29	7.32
PUB Outbound	9.49	9.60	8.64	9.07	8.82	7.71

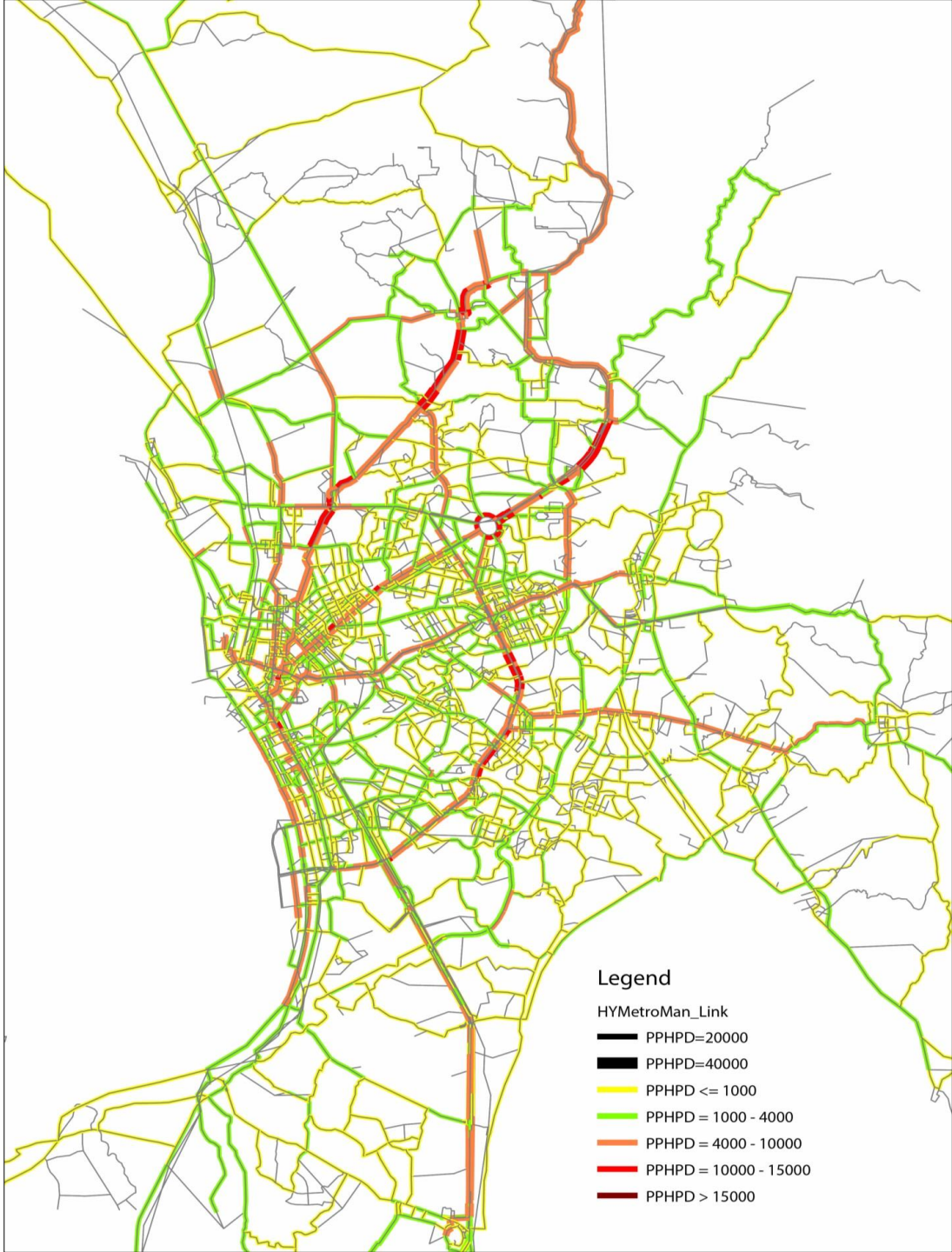
Average vehicle occupancy of PUJ and PUB services throughout the day

	6am-9am	9am-12pm	12pm-3pm	3pm-5pm	5pm-7pm	7pm-10pm
PUJ Inbound	12.17	10.29	9.55	9.16	10.24	8.78
PUJ Outbound	9.55	9.16	9.92	11.60	14.56	13.93
PUB Inbound	46.36	39.23	31.70	29.43	36.41	30.53
PUB Outbound	27.53	21.91	28.41	38.79	57.11	51.67

Current Network Utilization

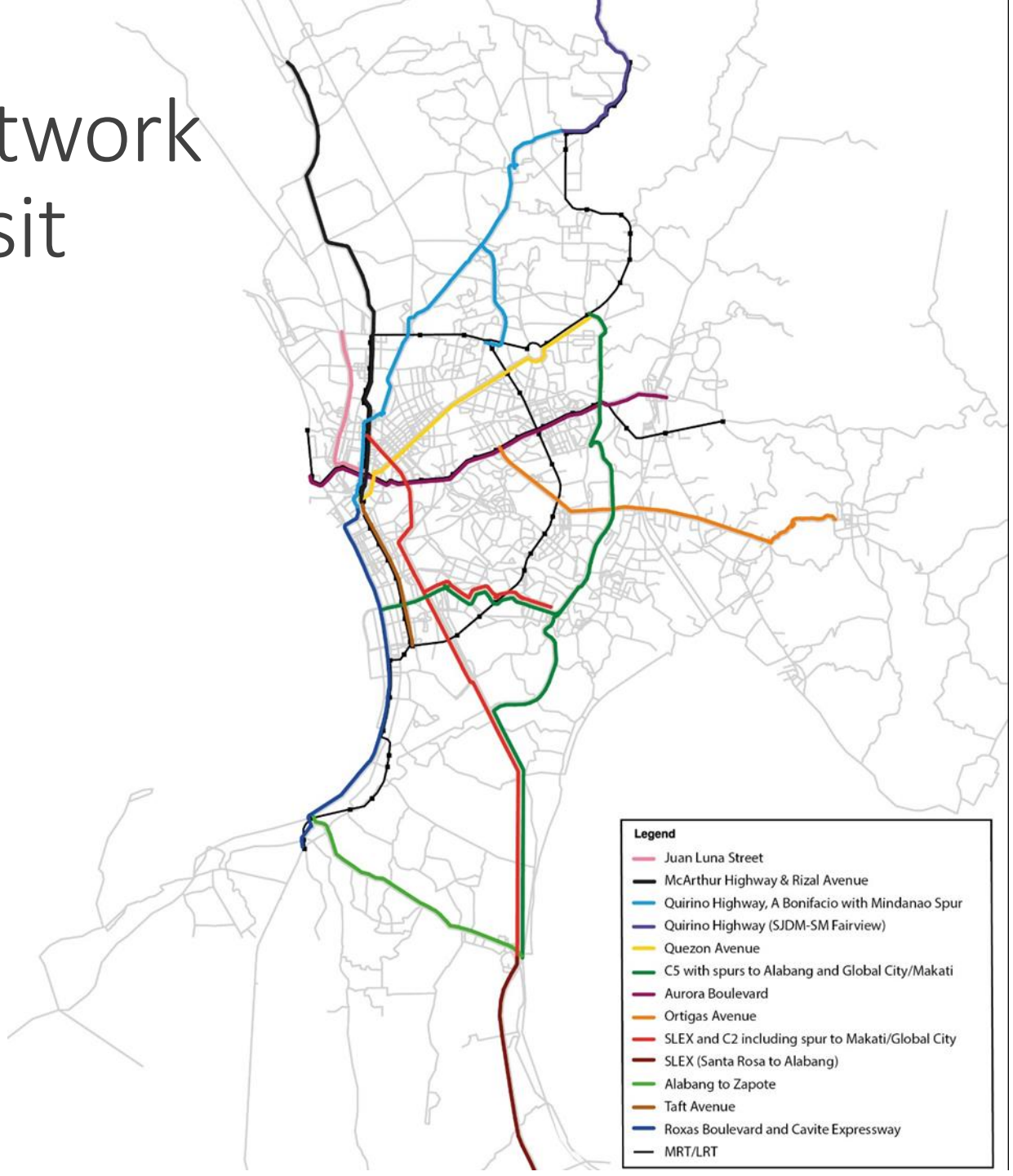

Key interchange location around Balintawak
Key trip attractor and interchange location at SM City North and Trinoma
Key interchange location at PHILCOA
High number of movements along Quezon Ave and Espana Boulevard
Cubao is a key trip attractor and interchange location given MRT, LRT PUJ and PUB services all converging around the Araneta Centre and other retail outlets
Dense concentration of transit movements in Manila City
High level of road transit movements along EDSA
Concentration of transit movements around Pasay and Baclaran

O-D Pair Assignment Model Output



Proposed network of mass transit routes

16 mass transit trunk-feeder routes
Linking areas of highest demand
Creating network of transit routes
Strong interchange between routes



Modelled Mass Transit Demand

Route	One-way Distance (km)	Daily Passengers	Peak hour passengers
Aurora Boulevard	16.8	677,422	56,333
Quezon (SM Fairveiw to Lawton)	24.7	563,257	46,839
McArthur (Marilao-Lawton)	20.6	483,332	40,193
Quirino Highway, A. Bonifacio	19.6	477,518	39,709
SLEX & C2 (Alabang to Rizal Ave)	25.1	430,590	35,807
Taft (Baclaran to Lawton)	6.6	412,171	34,275
C5, Global City, Makati (SM Fairview-Roxas)	33.8	400,216	33,281
Ortigas Avenue (Antipolo-LRT2)	16.4	394,053	32,769
C5 (SM Fairview-Alabang)	42.9	326,435	27,146
Makati, SLEX, C2 (Global City-Rizal Ave)	14.2	278,553	23,164
Mindanao (SM Fairview-SM North)	11.7	254,008	21,123
Roxas Boulevard, Cavite Expressway	16.9	190,044	15,804
SLEX (Sta Rosa-Alabang)	16.2	180,022	14,970
Juan Luna Street	8.8	134,934	11,221
SJDM-SM Fairview	13.3	103,987	8,647
Alabang-Zapote	11.3	77,293	6,428

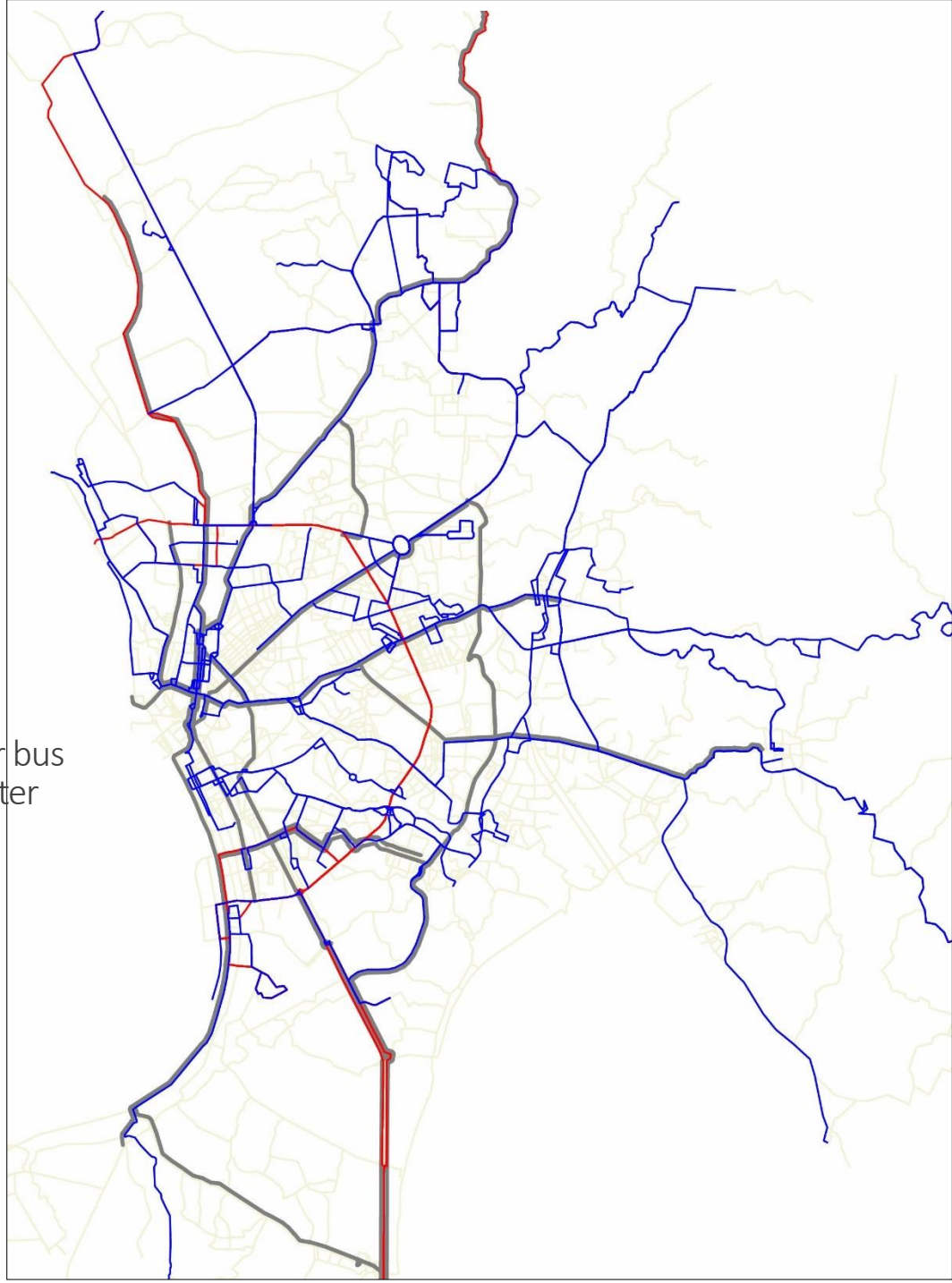
Proposed Secondary Bus Network

59 Secondary Bus Routes

Support mass transit - acting as feeders

Certain routes along EDSA require an open BRT or bus priority system to ensure consistent speeds & better meet passenger demand

Standalone routes to provide access to important residential or employment areas



Summary

- Created an evidence base of existing PT supply
- Created evidence base of existing PT demand
- Knowledge of the ideal hierarchy of the network to serve demand
  - Network of mass transit corridors and feeders **that meets the needs of (existing) PT users**
- Snapshot of an ideal network based on existing demand
  - Population increases not yet taken into account
  - No control over land use, demand likely to change as land use changes

Institutional & Regulatory Reform

- Before: the DOTr Road Transport Planning Division did the planning (for local areas of the country!)
- Soon: Local Public Transport Route Planning (LPTRP) undertaken by LGUs
- Omnibus Franchising Guidelines issued by the DOTr in June 2017
- Joint Memorandum Circular of DOTr & DILG
- Capacity development for LGUs
- Short-term actions?
- Long-term actions?
- Challenges

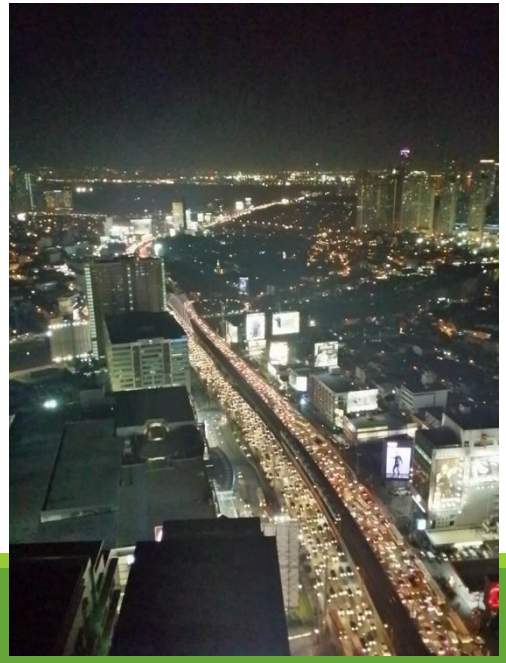
Quo Vadis?

- Refinement of the strategic study (RTRS) into one that can be directly used for determination of:
  - Required services to meet demand on both a network and route basis
  - Attain financial viability for operators
  - Required physical infrastructure
    - Support the services
    - Land use-transport integration opportunities
  - New business model
  - New regulatory or franchise framework

Metro Manila by Day…

and Night!

Thank you!



Salamat po!

Photos of
Dayo Montalbo

Thank you!

cmontalbojr@gmail.com

cmmontalbo@up.edu.ph