POLICY BRIEFS 27/25 | XX OCTOBER 2025

Ensuring Reliability through Bus Control Strategies

Gregory Ho Wai Son, Shukri Mohamed Khairi & Kelvin Ling Shyan Seng

A double decker bus and cars on a street

AI-generated content may be incorrect.

Policy Briefs are… short opinion pieces by the author(s) to encourage the exchange of ideas on current issues. They may not necessarily represent the official views of KRI. All errors remain the authors’ own.

Wai Son, researcher from the Khazanah Research Institute (KRI). The author is grateful for the valuable comments from Dr. Suraya Ismail and

Author’s email address:

[gregory.ho@krinstitute.org](mailto:gregory.ho@krinstitute.org)

Attribution – Please cite the work as follows: Gregory Ho. 2025. Familiar Strangers: Thoughts on the role of Space and Urban Design. Kuala Lumpur: Khazanah Research Institute. License: Creative Commons Attribution CC BY 3.0.

Photo by CG Tan on iStock

Information on Khazanah Research Institute publications and digital products can be found at [www.KRInstitute.org](http://www.KRInstitute.org).

# Background and Context

Public transport in Greater Kuala Lumpur (GKL) functions as both a daily necessity and a barometer of system-wide efficiency. Variations in reliability compound over time. When busses fail to arrive or depart as scheduled, commuters adjust their routines, shift to private cars and gradually lose confidence in the system. This ultimately reduces ridership and undermines the fiscal sustainability of public transport investments.

Public transport in Greater Kuala Lumpur (GKL) has long been framed in public discourse as “unreliable”. In particular, our focus here is on the reliability of the bus through two dimensions: late arrivals and early departures.

Late arrivals frustrate commuters by adding stress to those who plan their day around scheduled arrival times. Early departures on the other hand, is particularly harmful. For instance, a commuter walking to a bus stop expecting an 8:15 A.M. bus may find that it already left. A minor delay is somewhat tolerable, but a commuter cannot recover from an early departure, especially when the waiting time to the next bus can more than 20 minutes on a good day. This ruins the entire journey for them. Early departures erode trust in the system, discourage ridership, and contribute to congestion when commuters ultimately shift to private cars.

## Diagnosing the problem: Departure Non-Compliance and Schedule Variance

Our Bus Performance Index (BPI) reveals that while average punctuality for Rapid KL busses hovers around 70%, a significant share of trips departs ahead of time. Analysis of GTFS-RT data shows that nearly one-fifth or Rapid KL bus routes collapse into complete failure (BPI=0). We propose two complementary indicators: On-Time Performance (OTP) and <>, both are essential to capturing reliability in systems with long headways.

Lateness is often driven by structural or environmental factors such as road congestion, lane encroachment, urban design bottlenecks, or even the weather. But early departures are entirely preventable.

Where late departures heighten commuter stress and reduce system throughput, early departures directly negate commuter agency by rendering timetables meaningless. Even if the commuter arrives on time, through no fault of his own, it is entirely possible to miss the bus. In low-frequency systems, such behaviour destroys commuter trust by eliminating predictability and forcing passengers to alter departure routines or abandon bus use altogether.

# Policy Recommendations

## Policy Recommendation 1: Institutionalize System of Real-time schedule adherence

Operators should institute a system of real-time schedule enforcement to ensure that busses adhere to published departure times. This involves combining stricter terminal control with dynamic feedback to drivers and dispatchers. Using GTFS-RT data, deviations can be monitored live, allowing immediate corrective actions that uphold the schedule and maintain commuter confidence.

Objective: Prevent early departures that leave commuters stranded

Mechanism: Introduce schedule-based holding control at terminal and key transfer points. Dispatches ensure that no bus departs before its scheduled time, while real-time feedback is implemented via GTFS-RT feeds to enable the control centre to monitor deviations live and send direct prompts to drivers for immediate corrective action.

Why it fits: In networks with more than 20-minute headways, holding to schedule improves commuter recoverability and reduces stress.

## Policy Recommendation 2: Calibrate Run-Times and Padding using observed data

Objective: Reduce mid-route drift and systematic lateness while reinforcing schedule reliability.

Mechanism: Use GTFS-RT data to adjust running times and dwell allowances by segment and time-of-day. Shift schedule padding to terminals, allowing drivers a structured buffer for recovery and schedule compliance.

Context: TCRP, London (To be expanded)

Outcome: Consistent, data-driven schedules that improve Punctuality, eradicate early departures and stabilize commuter expectations.

## Policy Recommendation 3: Targeted Intersection Control via TSP

Objective: Address intersection related delays where congestion is most acute. In GKL, these bottlenecks are particularly visible along corridors such as <>,<> and <>, where busses lose significant time waiting at signalized junctions.

Mechanism: Implement conditional Transit Signal Priority (TSP) and queue-jump lanes on these corridors. Unlike Full TSP, which may disrupt broader traffic flow, conditional TSP activates only when busses fall behind schedule, granting temporary green extensions or shorter red phases. This approach balances efficiency with traffic equity.

Context: International benchmarks illustrate its feasibility. For example, London’s iBus[[1]](#footnote-2), and Singapore’s GLIDE[[2]](#footnote-3) adaptive signal timing system, demonstrate how dynamic timing can respond to traffic variation.

## Policy Recommendation 4: Enforceable Peak-Hour Bus Lanes

Objective: Reduce travel time variability and improve consistency through visible, enforceable priority.

Mechanism: Introduce time-of-day bus lanes along critical corridors such as <>,<> and <>, supported by automated camera enforcement and clear road markings. Pair enforcement with public awareness campaigns and signage that communicate the purpose and hours of operation.

Context: Cities such as Seoul and Istanbul have implemented peak-hour bus lane enforcement by digital monitoring and community outreach. These interventions have helped boost bus speeds by up to 36% in enforced routes in other global cities[[3]](#footnote-4).

References

ABC News. 2021. “Uber Drivers Are Not Employees, Fair Work Ombudsman Finds.” ABC News, 2021. https://www.abc.net.au/news/2019-06-07/uber-fair-work-ombudsman-investigation-contractor-employee/11189828.

Abdul Rahman Abdul Aziz. 2014. Pembangunan 1960-an: Daripada Kata-Kata Tun Abdul Razak Hussein. Kuala Lumpur: Institut Terjemahan & Buku Malaysia Berhad.

Abdul Razak, Abd Manaf, Othman Siti Zubaidah, Mohd Isa Mohd Faizal, Mohd Noor Wan Shakizah, and Azizan Norizan. 2019. “Employment Challenges among Persons with Disabilities in Malaysia.” International Journal of Academic Research in Business and Social Sciences 9 (10).

Abraham Lincoln. 1854. “Abraham Lincoln, Fragment on Government, circa July 1, 1854.” House Divided: The Civil War Research Engine at Dickinson College. 1854. https://hd.housedivided.dickinson.edu/node/40487.

Adams, Charles, Benno Ferrarini, and Donghyun Park. 2010. “Fiscal Sustainability in Developing Asia.” Asian Developement Bank.

ADB. 2001. Social Protection Strategy. Asian Development Bank.

———. 2012. “Pension Systems in East and Southeast Asia.” Manila: Asian Development Bank.

———. n.d. “SPI Database.” ADB Social Protection Indicator. n.d. https://spi.adb.org/spidmz/.

Aishah, Bidin, Khan Shereen, and Olivia Tan. 2012. “Protection of Employees’ Entitlements in Cases of Employer Insolvency in Malaysia.” International Journal of Business and Society 13 (2): 209.

AKPK. 2018. “Financial Behavior and State of Financial Well-Being of Malaysian Working Adults 2018.” Kuala Lumpur: Bank Negara Malaysia.

Allianz Research. 2021. “Allianz Pension Report Asia Special 2021.” Munich: Allianz and Euler Hermes.

Arranz Muñoz, José María, and Juan Muro. 2004. “An Extra Time Duration Model with Application to Unemployment Duration under Benefits in Spain.”

1. [↑](#footnote-ref-2)
2. [↑](#footnote-ref-3)
3. [↑](#footnote-ref-4)