# Data Collection for the 50 Cent Public Transport Fare Trial

## Preamble

In a landmark initiative to address road congestion and provide significant cost-of-living relief, the Queensland Government, led by Premier Steven Miles, has announced a six-month trial reducing public transport fares to 50 cents across all TransLink services, effective August 5, 2024. This initiative is expected to encourage more residents to switch from driving to public transport, thereby alleviating traffic congestion and delivering substantial savings to commuters.

The trial represents a unique opportunity to study the impacts of drastically reduced fare prices on public transport usage, commuter behaviour, and overall traffic patterns. As such, a comprehensive data collection strategy is essential to evaluate the effectiveness of this initiative, understand its broader implications, and inform future transport policies.

This memo has been developed by members of the Australian Institute of Traffic Planning and Management (AITPM) and is intended as industry input to assist in the preparation of data collection plans and analysis by the Department of Transport and Main Roads. The AITPM sees this as a once-in-a-lifetime opportunity to collect valuable data that can inform future policy choices for managing the state's transport challenges and improve modelling for testing future policy initiatives.

The data collection plan overview outlined in this memo aims to capture key metrics before, during, and after the trial period. This includes ridership numbers, demographic variables, travel patterns, park-and-ride facility usage, intensity of activity, and traffic performance. The plan also emphasises leveraging advanced data sources, such as mobile phone location data, to gain deeper insights into commuter behaviour and the trial's environmental impact.

This initiative has the potential to unlock a wealth of information about the long-term benefits of reduced public transport fares through data collection and analysis. Data that could be instrumental in the development of sustainable, cost-effective transport policies for Queensland, shaping the future of our transport system.

## It is a once-in-a-lifetime opportunity to gather valuable information.

The 50-cent fare trial offers a unique and unprecedented opportunity to deepen our understanding of transport economics, particularly fare price elasticities, which is currently lacking in the Australian context. Fare elasticity measures how sensitive public transport demand is to fare price changes. By drastically reducing fares and closely monitoring the resultant changes in ridership, travel patterns, and commuter behaviour, we can gather valuable data that would otherwise be impossible to collect. This data is crucial for developing accurate models of fare elasticity, which can inform future pricing strategies and transport policies.

The significance of this trial and data collection extends beyond the immediate practical benefits of assessing trial performance; it represents a rare chance for the industry to collect comprehensive data on how fare prices influence commuter decisions. Such insights are instrumental in the economic appraisal of various approaches to reducing traffic congestion and improving accessibility. By analysing the data collected during this trial, policymakers can design more effective and evidence-based strategies that enhance the well-being of our communities. The knowledge gained from this trial can inform local policy and contribute to the global body of research on transport economics, providing a robust foundation for future innovations in public transport systems.

### Preference Surveys

During the 6-month fare reduction trial, gathering both revealed preferences (observed travel patterns) and stated preferences (directly asking people about their travel changes) is recommended. This dual approach ensures that detailed demographic data and preferences are captured, which may not be fully represented through observed data alone. To facilitate this, consider implementing an online survey accessible via QR codes strategically placed on public transport vehicles and stops. The survey could include regular prompts throughout the trial, notifying respondents at intervals to provide updated responses. This approach would track real-time changes in behaviour and the underlying reasons driving those changes. The surveys should be carefully crafted to maximise their effectiveness, resembling a targeted Household Travel Survey focusing on individual decisions regarding public transport and how these decisions evolve over time in response to cost changes.

# Other Considerations

## Access to Data

Access to comprehensive and detailed data is critical for the private sector in assessing the impact of the 50-cent fare trial. Publicly available data, such as GoCard data, often lacks the granularity required to derive underlying trip patterns and behavioural changes. It is important to consider publicising any collected data in as raw a format as possible. This transparency would allow for more detailed analysis by various stakeholders, facilitating a deeper understanding of the trial's impact and fostering informed decision-making for future policies.

## Brisbane Metro

The introduction of Brisbane Metro represents a significant change in the PT network. As such, it becomes a crucial variable to consider when collecting data during the fare reduction trial. The challenge lies in isolating the effects of Brisbane Metro from the fare reduction trial that may also influence ridership patterns. Without proper isolation, there is a risk of attributing changes solely to the fare reduction when they might be due to the metro system. Data collection methodologies should incorporate mechanisms to distinguish between the effects of the fare reduction and those resulting from Brisbane Metro related changes.

## Fare Evasion

The significant reduction in fares to 50 cents might lead to a decrease in fare evasion, as the low cost diminishes the incentive to evade payment. However, this assumption needs validation. Implementing alternative measures, such as door counters on buses and trains before and after the trial, can help isolate the effect of fare evasion. Comparing the data from these counters with ticket sales could provide insights into the true change in ridership numbers and the extent of any changes in fare evasion rates. Understanding the significance of fare evasion currently will inform the importance of such measures.

## Tap-on/ tap-off protocol compliance.

Implementing a flat 50-cent fare may lead to reduced compliance with tap-on/tap-off protocols. Data from other states shows that fare capping often results in fewer people tapping off, as there is no financial penalty for failing to do so. To ensure accurate patronage data is collected through ticketing systems, it is crucial to consider the impact of a capped fare if the cost remains at 50 cents even when not tapping off, and measures to reinforce Tap-on/tap-off protocol compliance throughout the trial.

## Regional Services Data Collection

Collecting data from regional services poses unique challenges, especially in areas where smart ticketing systems are not yet implemented. These regions may require alternative data collection methods such as manual surveys, paper ticket audits, and local traffic counts. Ensuring comprehensive coverage of urban and regional services is essential to fully understanding the trial's impact across the entire transport network.

## Impact on Work-from-Home and University Attendance Rates

Surveys are crucial to understanding how the 50-cent fares influence work-from-home rates. The reduced commuting cost may encourage some individuals to return to office work, while others may continue to prefer remote work due to other factors. Likewise, in understanding how the 50-cent fares influence in-person attendance and university, and other major education and training providers where online and in-person attendance is available. Capturing this data through surveys will provide insights into how fare reductions impact commuting patterns and work and study preferences.

## Environmental Impact

Increased public transport usage can lead to reduced car emissions, contributing to environmental sustainability goals. Collecting data on vehicle usage, emissions, and public transport ridership will help quantify the environmental benefits of the fare reduction. Analysis of data from existing environmental monitoring stations may be a useful metric during the evaluation period.

Addressing these considerations can help the data collection plan provide a comprehensive and nuanced understanding of the trial's impact, helping to shape effective and sustainable transport policies for the future.

# A preliminary plan for data collection

## Objective:

To evaluate the impact of the 50-cent public transport fare trial on public transport usage, elasticity and decision-making, user demographics, travel patterns, and overall satisfaction, including the effects on park-and-ride facilities and traffic patterns.

## Baseline Data Collection (Pre-Trial - 1 month before trial):

- **Objective:** Establish baseline metrics for comparison post-trial.
- **Data Points:**
    - Current ridership numbers
    - Travel patterns (peak/off-peak usage, popular routes).
    - Usage of park-and-ride facilities.
    - Traffic congestion levels on key routes and at specific times.
    - Current operational costs and revenue from fares.
- **Methods:**
    - Ridership Data from the Smart Ticketing system.
    - Traffic surveys (manual counts, automated counters, and cameras).
    - Telematic data to understand traffic operations (Speeds, travel times and reliability)
    - Bicycle and pedestrian counts on key commuter routes
    - Analysis of mobile phone location data for travel patterns.
    - Timing for data collection would need to be around school holiday period, and likely a two-week period to provide a sufficient sample size.

## Data Collection During the Trial

- **Objective:** Monitor changes and gather ongoing data throughout the trial period.
- **Data Points:**
    - Patronage numbers
    - Surveys to gather information on user demographics, changes in behaviours and trade-offs.

    - Usage and occupancy rates of park-and-ride facilities.
    - Traffic congestion levels on key routes and at specific times.
    - Active transport demand
    - User satisfaction and feedback.
    - Impact on operational costs and revenue.
    - Environmental impact (e.g., reduction in car usage, emissions).
- **Methods:**
    - Automated data collection from ticketing systems.
    - Regular surveys to track changes decision making and user demographics.
    - Environmental sensors/data for monitoring changes in emissions or traffic congestion.
    - Traffic surveys (manual counts, automated counters, and cameras).
    - Telematic data to understand traffic operations (Speeds, travel times and reliability)
    - Bicycle and pedestrian counts on key commuter routes.
    - Use of mobile phone location data to analyse travel patterns, including park-and-ride trip origins.

## Post-Trial Data Collection (if required)

- **Objective:** Compare data post-trial with baseline and during-trial data to assess impact.
- **Data Points:**
    - Ridership numbers (daily/weekly/monthly) after returning to normal fares.
    - User demographics post-trial.
    - Travel patterns post-trial.
    - Post-trial user satisfaction and willingness to pay.
    - Long-term changes in operational costs and revenue.
    - Park-and-ride facility usage and traffic patterns post-trial.
- **Methods:**

- Surveys to capture user experiences , travel behaviour change and decision making.
- Patronage data.
- Focus groups or interviews with a representative sample of users.
- Ticketing data.
- Telematic data to understand traffic operations (Speeds, travel times and reliability)
- Bicycle and pedestrian counts on key commuter routes
- Analysis of mobile phone location data for travel patterns.

# Additional Data Sources

- **Objective:** Enrich the data set with external sources for comprehensive analysis.
- **Data Points:**
  - Traffic data from Local Government.
  - Economic data (e.g. impact on local businesses, employment rates).
  - Health data (e.g., changes in physical activity levels due to increased public transport use).
  - Environmental data (e.g., changes in air quality).
- **Methods:**
  - Collaboration with other State agencies and Local Governments.
  - Integration of data from public health and environmental monitoring systems.

# Leveraging Mobile Phone Location Data

- **Objective:** Gain insights into travel patterns (Origin/Destination, Weekday/Weekend), park-and-ride usage, and shifts in transport mode.
- **Data Points:**
  - Anonymised location data showing travel routes and times.
  - Patterns of park-and-ride facility usage.
  - Changes in travel behaviour
  - Regional mobility patterns (e.g., commuting vs. leisure travel).

- **Methods:**
    - Data from third-party data aggregators, or the private sector to access anonymised location data.
    - Use geofencing to track entries and exits at park-and-ride facilities/key transport hubs and the Origin and Destination of those trips
    - Combine mobile phone data with public transport usage data to identify shifts in mode of transport.

# Data Analysis and Reporting

- **Objective:** Analyse the collected data to derive insights and formulate recommendations.
- **Methods:**
    - Comparative temporal analysis (pre-trial, during-trial, and post-trial data).
    - Statistical analysis to identify significant changes and trends.
    - Qualitative analysis of user feedback
    - Cost-benefit analysis to evaluate economic impact.
    - GIS mapping to visualise changes in travel patterns and park-and-ride usage.

# Specific Locations for Traffic and Occupancy Rate Surveys

## Park-and-Ride Facilities

- **Locations:**
    - Park-and-ride facilities near key public transport hubs (train stations, major bus interchanges).
    - Smaller park-and-ride sites in less populated areas to gauge regional impact.
- **Methods:**
    - Manual counts at peak times (morning and evening peak hours).
    - Mobile Phone Location Data
    - Automated entry/exit counters to measure vehicle flow.

- Surveys of park-and-ride users to understand demographics and motivations.

## Public Transport Stations and Stops

- **Locations:**
  - Major and highly patronaged train stations, bus stops, and light rail stops
  - Key interchange points.
  - High use bus/train stations with significant park'n'hide behaviour occurring, to understand behavioural change patterns.
- **Methods:**
  - Manual passenger counts during peak and off-peak hours.
  - Mobile phone data
  - Automated counting systems
  - Surveys and interviews with passengers at these locations.

## Major Arterials and Highways

- **Locations:**
  - Major highways and arterial roads.
  - Access points to central business districts and major employment hubs.
- **Methods:**
  - Automated traffic counters (loop detectors, cameras).
  - Travel time studies using GPS or mobile phone data.

## Residential and Commercial Areas

- **Locations:**
  - Commercial areas with significant foot traffic and parking demand.
  - Areas near major public transport stations or stops.
- **Methods:**
  - Parking occupancy surveys to assess spillover effects.
  - Mobile phone data to measure intensity
  - Traffic counts on local streets.

    - Surveys of residents and businesses to gather qualitative data.

## Environmental Monitoring Locations

- **Locations:**
    - Existing monitoring locations
- **Methods:**
    - Air quality monitoring stations to measure pollutants
    - Noise level measurements
    - Comparative analysis of pre-trial and during-trial environmental data.

# Cost-Effective Strategies and Prioritisation

1. **Automated Data Collection:**
    - Prioritise the installation of automated counters and sensors at key locations to reduce the need for frequent manual counts.
    - Utilise existing infrastructure and data sources (e.g., traffic cameras, smart card systems, TMR traffic surveys).
2. **Targeted Manual Surveys:**
    - Conduct manual surveys and counts primarily during peak times and critical points of the trial (e.g., initial implementation, mid-trial, end of trial).
3. **Sampling Approach:**
    - Implement a sampling strategy to reduce the number of locations and times for surveys. Focus on representative samples that can infer broader trends.
4. **Partnerships and Collaboration:**
    - Collaborate with universities, research institutions, and the private sector to share resources and expertise.
    - Seek funding or grants from government and private sector partners interested in the trial's outcomes.