KING STREET TRANSIT PILOT
NACTO – Making Transit Count

April 17th, 2018
David Kuperman – King Street Transit Pilot Project Manager
Scott Fraser – Evaluation and Monitoring Program Lead
Presentation Overview

- Pilot Overview
- Evaluation and Monitoring Program
- Interim Results
- Q&A
WHY KING?

- King Street is a key arterial road in the Financial District and Entertainment District of Downtown Toronto
- City of Toronto population: 2.8 million
- Daily riders on streetcar route: 72,000 (2017)
- Streetcar service can be slow and unreliable
- Streetcars are overcrowded
- King Street doesn’t work well for cars (about 20,000 vehicles per day)
- Neighbourhoods are growing and so will transit demand
- Operational tweaks are not enough

Subway stations (major transfer locations)
KING STREET TRANSIT PILOT

STREET DESIGN: KING STREET BEFORE

- Streetcars operate in mixed traffic: through movements allowed, higher traffic volumes, left turns block streetcars
- Transit passengers must cross live traffic lane to board streetcar
- Cyclists ride in curb lane, share space with traffic or on-street parking (off peak)
- Pedestrians on sidewalks on both sides of the street
- Limited designated spaces for deliveries, loading, or taxis
Entertainment District – Before
KING STREET TRANSIT PILOT

THE CHANGE: MAKE TRANSIT FIRST BETWEEN BATHURST AND JARVIS...ALLOW LOCAL TRAFFIC ACCESS

- Local traffic access only
- Right-turn ‘loops’ within the pilot area, and no left turns at signalized intersections
- No east-west through traffic at key intersections within the pilot area
- Traffic can use parallel east-west routes: Queen, Richmond, Adelaide, Wellington, Front
- Exceptions: Transit, Bicycles, Police, Fire, Paramedics (and taxis between 10 pm and 5 am)
- Designated space for short-term loading, deliveries and taxis
Pilot Overview
Entertainment District - After
Evaluation Plan
EVALUATION & MONITORING

MOVE PEOPLE MORE EFFICIENTLY ON TRANSIT

Transit Service
• Reliability
• Speed
• Capacity

Corridor Person-Capacity
• Transit/Walking/Cycling/Auto Volumes

Safety & Accessibility
• Safety of Vulnerable Users
• Universal Accessibility

SUPPORT BUSINESS & ECONOMIC PROSPERITY

Traffic & Parking
• Traffic Impacts
• Local On-Street Curbside Activity
• Compliance & Enforcement

Economics & Businesses
• Economic Impact Monitoring Study

IMPROVE PUBLIC SPACE

Public Space & Public Life
• Public Realm
• Programming & Activation
• Comfort & Enjoyment

Environment
• Air Quality & Greenhouse Gases

MOVE PEOPLE MORE EFFICIENTLY ON TRANSIT

SUPPORT BUSINESS & ECONOMIC PROSPERITY

IMPROVE PUBLIC SPACE
Traditional vs. Modern Approach to Monitoring

Traditional Approach

- Largely manual data collection (usually traffic counts)
- Very expensive and “throw away”
- Low sample sizes
- Easy to make mistakes, too easy to discount the analysis
- City does not appear to be transparent and objective with analysis
Traditional vs. Modern Approach to Monitoring

Modern Approach

- Embrace new sensing technologies
- Investment that builds capability
- Pervasive and permanent data feeds
- Automated and open source
- Leverage in-house data science capability
- Share openly and actively through open data portal and public dashboards
Streetcar GPS Tracking
Permanent Video Based Counting

- 360 degree cameras and video analytics units mounted in traffic signal cabinet.
- Video analyzer processes counts from video feeds in real time
- Measures pedestrians, bicycles, cars, medium trucks, heavy trucks, transit vehicles
- Provides 24-hour counts for through and turning movements
- Queue data to inform decisions on lane storage lengths, signal timing
Video Count Locations
Bluetooth Readers

- Sensors placed at strategic locations
- Identify devices within a ~100 m range using their MAC ID
- MAC IDs hashed to protect privacy
- Pairs of readings can infer travel time
- A grid of sensors can study how people navigate through the network
3rd Party Economic Point of Sale Data

- The City has obtained trend data on customer spending from Moneris Solutions Corporation, the company with the largest market share of point-of-sale payment processors in Canada.

- Comparison of:
  - King St. Pilot Area
  - Surrounding Control Area
  - City Wide
Additional Data Being Monitored

1. Transit Ridership
2. Causes of Delay (boarding, signal, congestion, curbside)
3. Parking Utilization (On/Off Street) and Curbside Activity (Loading)
4. Additional Pedestrian Counting
5. Queue observation studies
6. Collisions
7. Compliance/violation rates
Interim Results
Notes on Transit Performance Measures
MONTHLY DASHBOARD

TRANSIT RELIABILITY

- **85%** of streetcars arriving within 4 minutes westbound during the morning commute.

TRANSIT TRAVEL TIMES

The reliability of streetcar travel times has continued to improve.

- **4 to 5 minute** improvement (in each direction) during the PM commute for the slowest streetcar travel time.

CAR TRAVEL TIMES & VOLUMES

- Average car travel times on most streets in the downtown vary +/- less than a minute compared to before the pilot.

- Drivers on King Street continue to access local businesses or residences, conduct loading and deliveries, and pick-up/drop-off passengers. Traffic previously using King Street has generally shifted to alternative east and west routes.

- The downtown traffic network has been largely able to absorb and respond to the changes in routing that drivers have made.

PEDESTRIAN VOLUMES

Changes in the number of pedestrians from November to February show a slight increase on King Street, which is comparable to the increase on Queen Street.

- **KING ST.** 1.0% increase in the afternoon peak at Bathurst Street.
- **QUEEN ST.** 0.5% increase in the afternoon peak.

Changes in the number of pedestrians from November to February on King Street at Spadina Ave. show that midday, P.M. peak and early evening volumes exceed the baseline. Lower volumes in the A.M peak remain consistent with what was observed in January.

- **A.M. PEAK** 11% decrease in pedestrian volume.
- **MIDDAY** 2% increase in pedestrian volume.
- **P.M. PEAK** 6% increase in pedestrian volume.
- **EARLY EVENING** 1% increase in pedestrian volume.

CYCLING VOLUMES

Overall changes in the number of cyclists throughout the downtown are consistent with expected seasonal changes.

On King Street, cycling volumes initially increased after the pilot was installed, before returning to cycling volumes relatively consistent with before the pilot.

TRANSIT RIDERSHIP

- **16%** increase in all-day weekday ridership.
- **25%** increase in AM commute ridership (eastbound at Spadina Ave.).
- **27%** increase in PM commute ridership (westbound at University Ave.).

TRANSIT CAPACITY

To respond to this growth in ridership, the TTC has increased the capacity of streetcar service on routes that serve the pilot area.

ECONOMIC POINT-OF-SALE DATA

- **No change**

Customer spending since the pilot began is in line with seasonal spending patterns over the past three years.

Streetcar Travel Times and Ridership

**TRANSIT RIDERSHIP**

16% increase in all-day weekday ridership.

25% increase in AM commute ridership (eastbound at Spadina Ave.).

27% increase in PM commute ridership (westbound at University Ave.).

**TRANSIT RIDERSHIP**

**ALL DAY WEEKDAY RIDERSHIP (BOARDINGS)**

<table>
<thead>
<tr>
<th></th>
<th>BASELINE</th>
<th>PILOT</th>
<th>RIDERSHIP GROWTH (%)</th>
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<tbody>
<tr>
<td>2014</td>
<td>65,000</td>
<td>84,000</td>
<td><strong>(+16%)</strong> FROM BASELINE</td>
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**MORNING PEAK DEMAND**

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<tr>
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<tr>
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**AFTERNOON PEAK DEMAND**

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# Vehicle Travel Times

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<tr>
<th>EASTBOUND (BATHURST - JARVIS)</th>
<th>WESTBOUND (JARVIS - BATHURST)</th>
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<tr>
<td><strong>CHANGE FROM BASELINE [MIN]</strong></td>
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<td>13.6</td>
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<td>-0.1</td>
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<td>16.4</td>
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<td>RICHMOND</td>
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<td>+0.5</td>
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<td>FRONT</td>
<td>WELLINGTON*</td>
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<td>17.3</td>
<td>10.9</td>
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*Adelaide EB - Spadina to Jarvis  
*Wellington WB - Jar to Blue Jays | *Front WB - Yonge to Bathurst
Vehicle Volumes

WEEKDAY | P.M. PEAK PERIOD (4-7P.M.)

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Pedestrian Volumes

TOTAL WEEKDAY PEDESTRIAN VOLUMES AT KING AND SPADINA
TOTAL HOURLY EAST-WEST VOLUMES, FEBRUARY 2018

TOTAL WEEKDAY P.M. PEAK PERIOD (4-7P.M.) PEDESTRIAN VOLUMES AT KING/QUEEN AND SPADINA
Economic Point of Sale Data

Preliminary findings indicate that customer spending since the pilot began is in line with seasonal spending patterns over the past three years.

The value of customer spending for the pilot area increased 21% from October 2017 to December 2017, which was in line with the seasonal growth for the City as a whole of 20%.

[Graph showing total value of customer spending over time, with lines representing different areas such as City of Toronto and surrounding areas.]
Summary

- King Street Transit Pilot design developed through public and stakeholder consultation to improve transit speed and reliability and the public realm

- Implemented in November 2017, and to be monitored through late 2018
- Changes to design and operations (signal timing, loading zones, etc.) made throughout project, based on requests and observations
- Improvements to transit travel times and reliability observed to date, without significant impacts to broader transportation network
KING STREET PILOT PROJECT
NACTO – Making Transit Count

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