Agenda

1. Addressing Bus Performance
   - Early arrivals/departures
   - Late arrivals/departures
   - Slow speeds or long dwell time
   - Bunching
   - Inaccurate data
   - Overcrowding
   - Missed trips

2. Implementing Bus Service Changes
   - MDOT MTA BaltimoreLink Bus Service Changes
   - Service Equity Analyses
MDOT MTA on-time performance and ridership dashboard: https://www.mta.maryland.gov/performance-improvement
Early Arrivals/Departures

• Supervise departures at one or more timepoints
• Subtract running time
• Subtract recovery/layover time
Late Arrivals/Departures

Late through most of a route
• Supervise departures at one or more timepoints
• Add running time to the schedule
• Add recovery/layover time
• Shorten the route

Late through a specific segment
• Add running time to the schedule
• Install or enforce transit priority infrastructure
  – Dedicated bus lanes
  – Transit signal priority
  – Queue jumps
Slow Speeds or Long Dwell Time

- Install or enforce transit priority infrastructure
  - Dedicated bus lanes
  - Transit signal priority
  - Queue jumps
- Reroute via a less congested street
- Consolidate bus stops
- Enable off-board fare payment
- Add a short turn
Bunching

Legend
- Route 70
- Route 79

Observed Bus Travel Time
February 20, 2014, 6:00 AM to 10:00 AM
Georgia Avenue Corridor - Washington, DC

Data Source: WMATA

Slide Source: Kittelson & Associates slides for DDOT

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Bunching

Slow due to congestion

Bunching due to high boardings

Closely spaced departures

Legend
- Red: Route 70
- Blue: Route 79

Observed Bus Travel Time
February 26, 2014, 6:30 AM to 10:00 AM
gas Avenue Corridor - Washington, DC

Slide Source: Kittelson & Associates slides for DDOT
Data Source: WMATA
Inaccurate Data

- Relocate bus stop points
- Install more accurate or more secure bus location hardware
- Diagnose and fix bus location hardware
- Diagnose and fix bus trip misassignment
- Exclude missed trips and non-reporting buses
- Enable customers to report bus location

Weekdays
Southbound to UM Medical Center
Días de la semana / Dirección sur a UM Medical Center
Inaccurate Data

- Relocate bus stop points
- Install more accurate or more secure bus location hardware
- Diagnose and fix bus location hardware
- Diagnose and fix bus trip misassignment
- Exclude missed trips and non-reporting buses
- Enable customers to report bus location
Overcrowding

• Improve frequency
• Assign articulated buses
• Add supplemental service
• Create a new route
Missed Trips

• Improve operator absentee rates
• Utilize more extra board (on-call) operators
• Hire more operators
• Perform preventative maintenance on schedule
• Purchase more reliable buses
Implementing Bus Service Changes

Run-Times for Route CityLink BROWN

Run-Times Suggested Schedule

<table>
<thead>
<tr>
<th>Timebands</th>
<th>Potential OTP</th>
<th>Potential OTP</th>
</tr>
</thead>
<tbody>
<tr>
<td>00:00 - 05:44</td>
<td>100.0%</td>
<td>70.9%</td>
</tr>
<tr>
<td>05:45 - 08:44</td>
<td>89.5%</td>
<td>61.6%</td>
</tr>
<tr>
<td>08:45 - 14:29</td>
<td>82.4%</td>
<td>77.4%</td>
</tr>
</tbody>
</table>

Potential OTP: Swiftly's suggested schedule: 83.3%
Maryland Transit Administration's current schedule: 74.6%

CAD/AVL data
3 years ago
data quality & sample size limitations

APC data
data quality & sample size limitations
2-3 months of analysis

Utah Methodology
2-3 months of analysis
5-10 routes per pick
dissatisfied with results

Swiftly Run-Times
analysis in seconds
40+ routes per pick
OTP improvements
MDOT MTA BaltimoreLink Bus Service Changes

Fall Service Change
- *Major Service Change*
  - Create a new route
  - Eliminate a route
  - Change routing
  - Reduce frequency
  - Reduce days of service
  - Resume supplemental service to schools
- Developed January-March
- Public hearings April-May
- Implemented in September

Winter Service Change
- *Minor Service Change*
  - Adjust schedules for existing routes
- Developed September-October
- Implemented in February

Summer Service Change
- *Minor Service Change*
  - Adjust schedules for existing routes
  - Suspend supplemental service to schools
- Developed January-February
- Implemented in June
Service Equity Analyses

- Title VI of the Civil Rights Act of 1964 requires public transit agencies to conduct a service equity analysis when making major service changes:
  - Eliminate a route
  - Change routing
  - Change hours of service by an hour or more
- Protects people of color, people earning less than $25,000 per year, people with disabilities, and people with limited English proficiency
- Modification or mitigation required in cases of disproportionate effect on one or more protected populations

*as defined in the MDOT MTA Title VI Implementation Plan
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Slide Source: Kittelson & Associates for Baltimore City Charm City Circulator
Data Source: 2014 American Community Survey 5-Year Estimate
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Baltimore Data Day 2019

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