It's Not Me, It's You

Refocusing Transit Agency Data To Be About Customers and for Customers

Dominick Tribone, MBTA
June 2nd, 2015
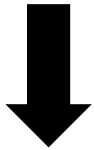
5th International Transportation Systems Performance Measurement
and Data for Decisions and Performance Measures Conference
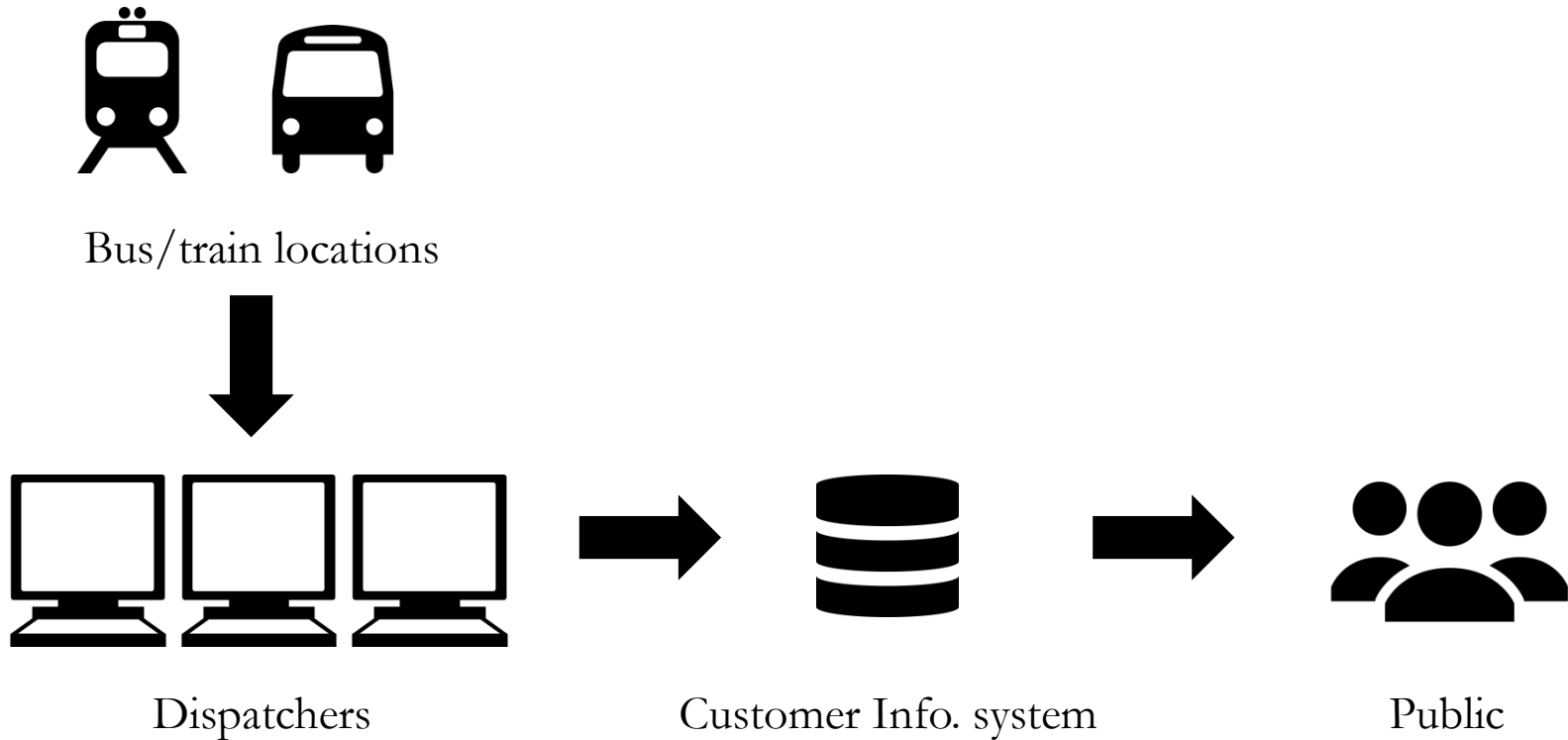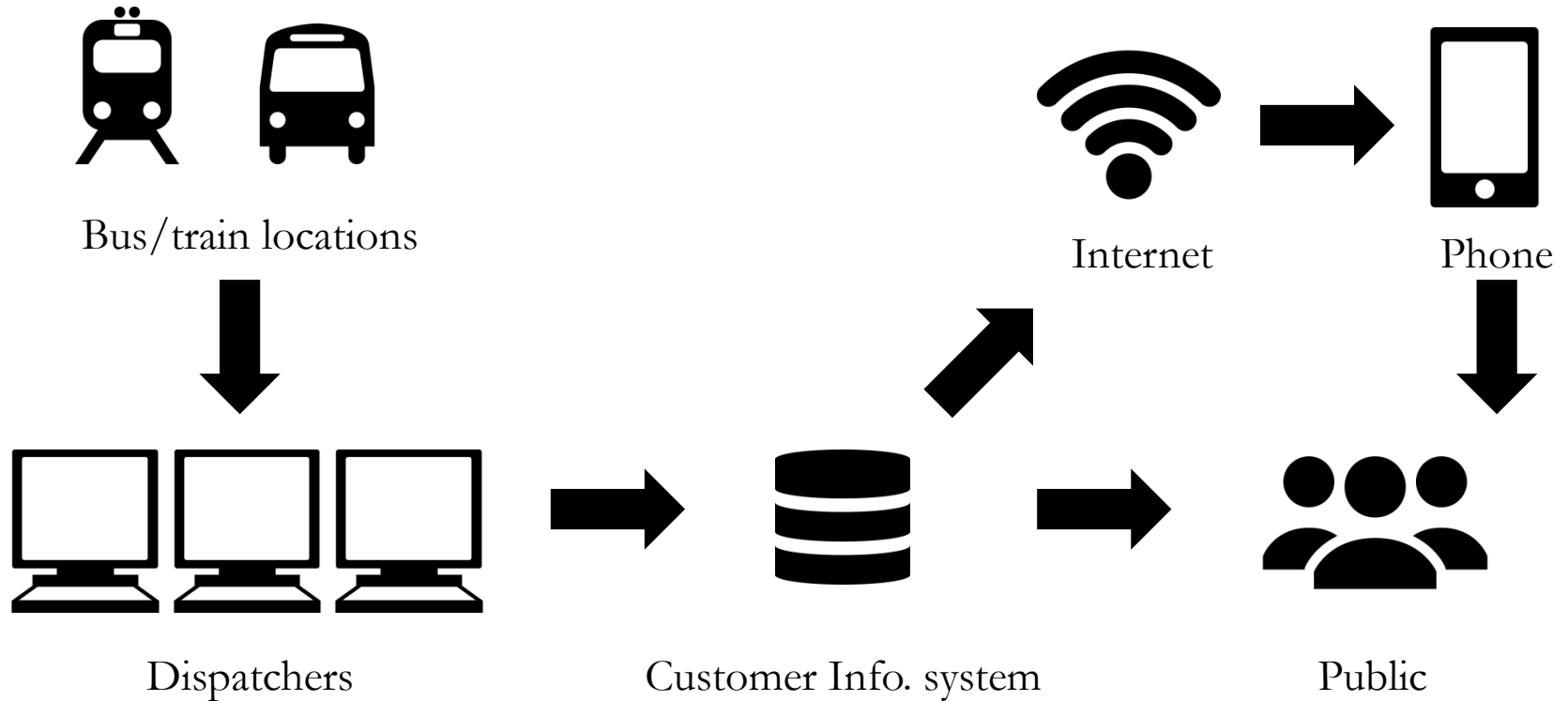
Ⓣ

20 years ago

Bus/train locations

Dispatchers

10 years ago

Bus/train locations

Dispatchers

Customer Info. system

Public

5 years ago

Bus/train locations

Internet

Phone

Dispatchers

Customer Info. system

Public

(Very) Near Future

Bus/train locations   Performance reports   Internet   Phone

Dispatchers   Customer Info. system   Public
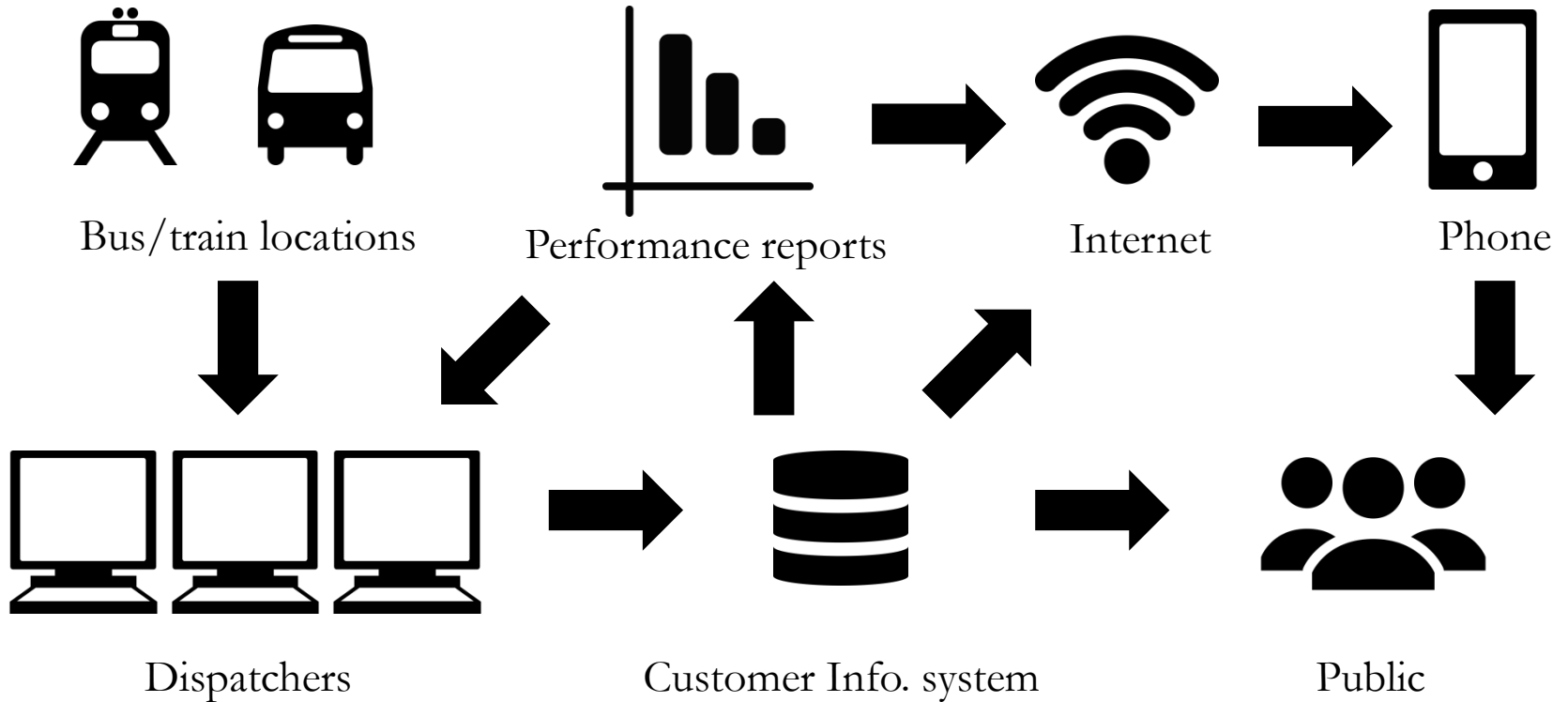
Next Level for both:

- Real-time info
  - How's my train (not just where)
  - Augmenting alerts
- Performance reports
  - Customer-oriented
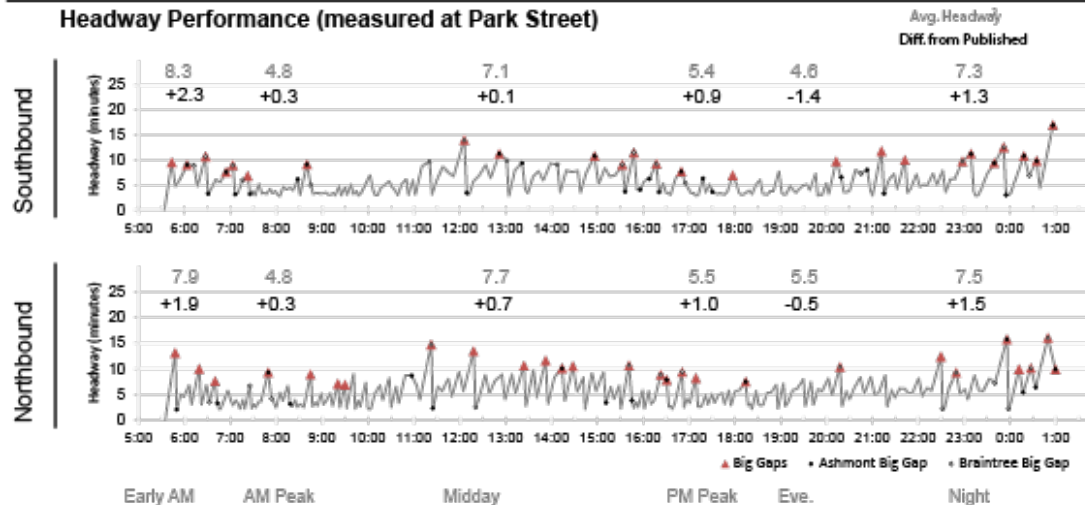 - Real-time
  - Public
  - Open standard

Passsengers Waits

87%
< Headway
Goal: 90%*

97%
< Big Gap
Goal: 98%*

100%
< 2X Headway
Goal: 100%*

Passenger Travel Time[2]

96%
delayed < 3 min.
Goal: TBD

100%
delayed < 6 min.
Goal: TBD

Comparison to range for each metric over prior 6 months (red bar is today, dark grey is worse than median, light grey is better)
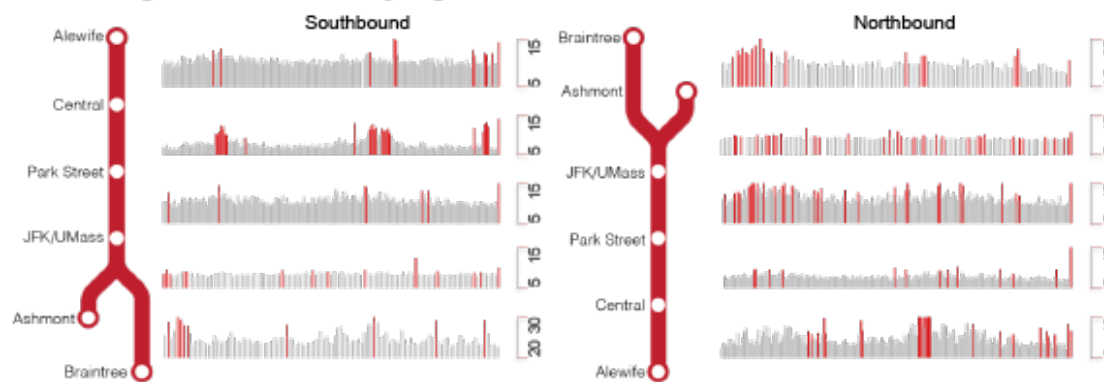
* Goals are tentative, may be changed

Headway Performance (measured at Park Street)

Avg. Headway
Diff. from Published

Southbound

8.3	4.8	7.1	5.4	4.6	7.3
+2.3	+0.3	+0.1	+0.9	-1.4	+1.3

Northbound

7.9	4.8	7.7	5.5	5.5	7.5
+1.9	+0.3	+0.7	+1.0	-0.5	+1.5

▲ Big Gaps   • Ashmont Big Gap   • Braintree Big Gap

| Early AM | AM Peak | Midday | PM Peak | Eve. | Night |

Running Time Performance by Segment

Southbound

Alewife — Central — Park Street — JFK/UMass — Ashmont — Braintree

Northbound

Braintree — Ashmont — JFK/UMass — Park Street — Central — Alewife

Highlighted times are 15% higher than the median for the period

1. The standard for a big gap is either 1.5 times or 3 minutes greater than the scheduled headway, whichever is lower.
2. Passenger travel time is based on average passenger demand rates per period. I.e. 18000 people entering a station during the peak is a demand rate of 6000/hr or 100/min, which are further divided by destination. The rate is multiplied by the headway of a train to get the number of people boarding that train. If a train takes more than 3 minutes more than normal between any two points, the passengers on that train are considered delayed. It does not account for people not being able to board a train due to crowding.
3. Weighted average headway accounts for the fact that fewer people end up experiencing a short headway than a long headway, since fewer people arrive between trains.

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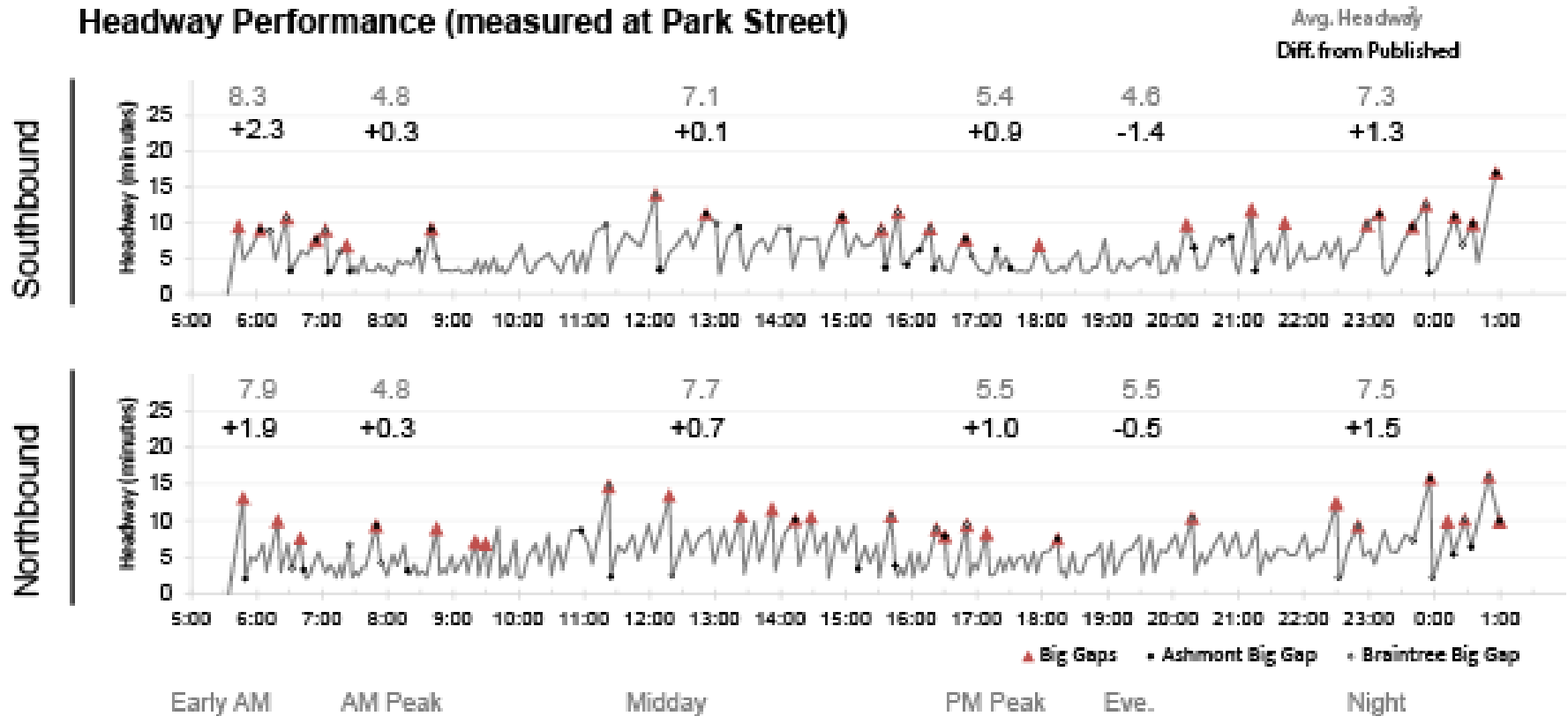Goal: TBD

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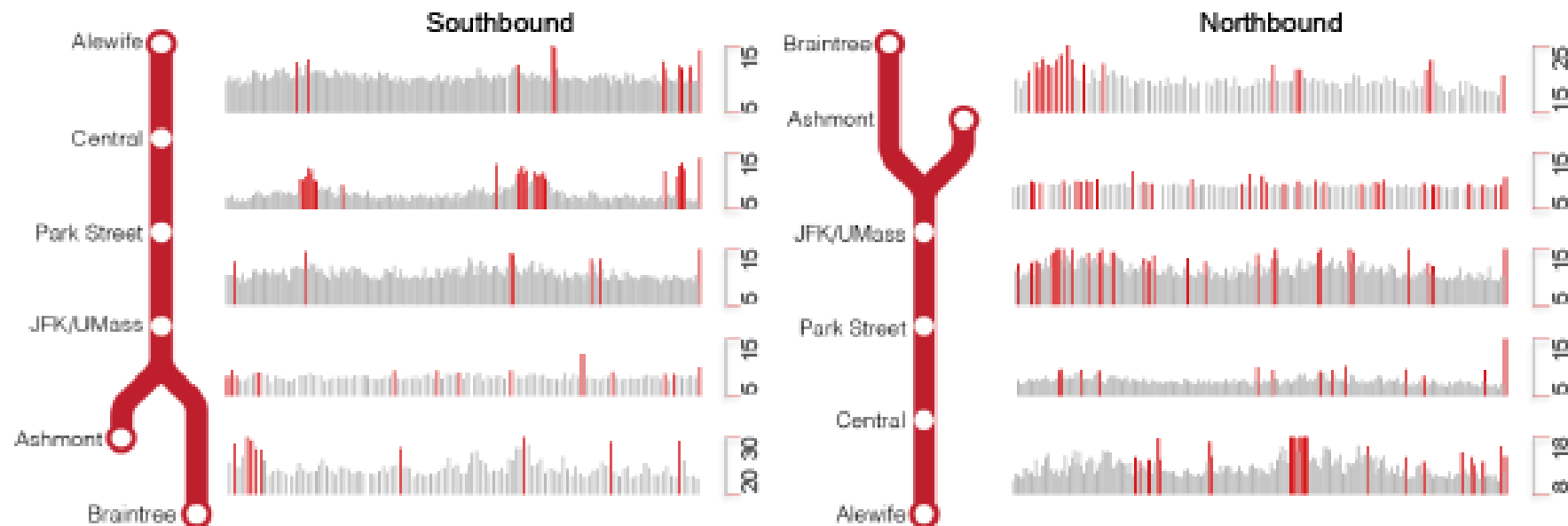* Goals are tentative, may be changed

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Framework

- Use real-time data via GTFS-realtime feeds to measure performance:
  - Schedule adherence
  - Travel times
  - Headways
  - Dwell times
  - Passenger wait times
  - Passenger travel times
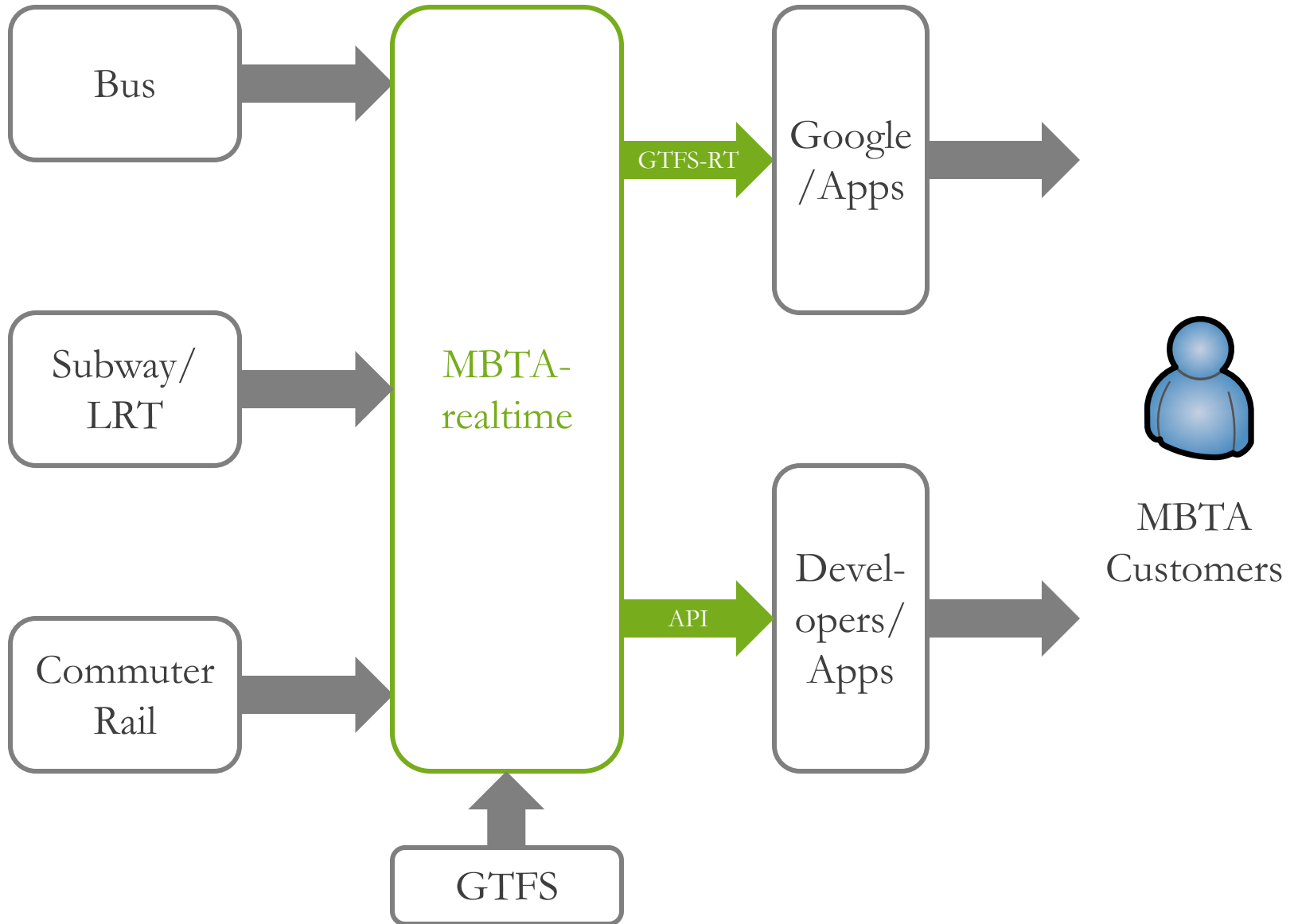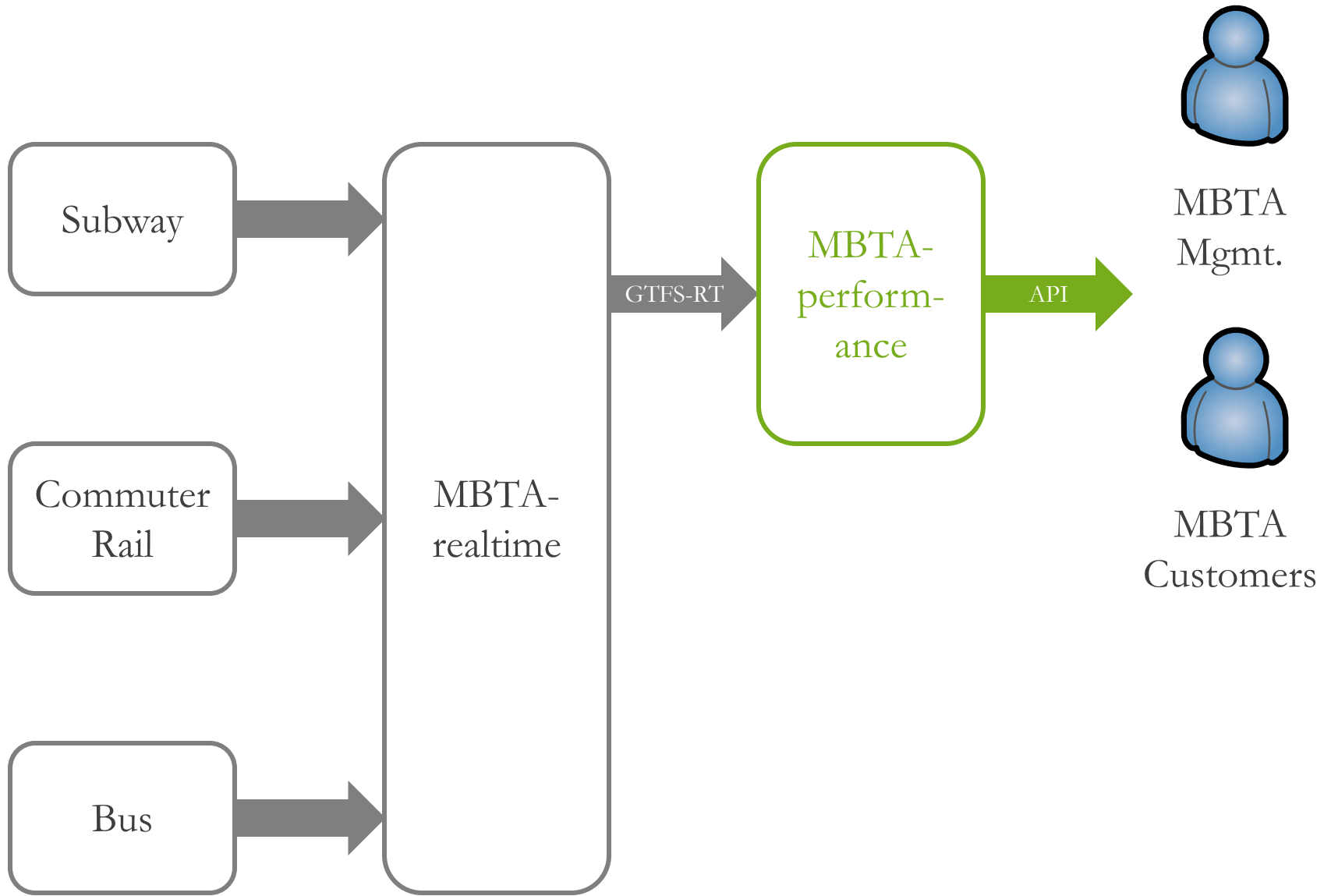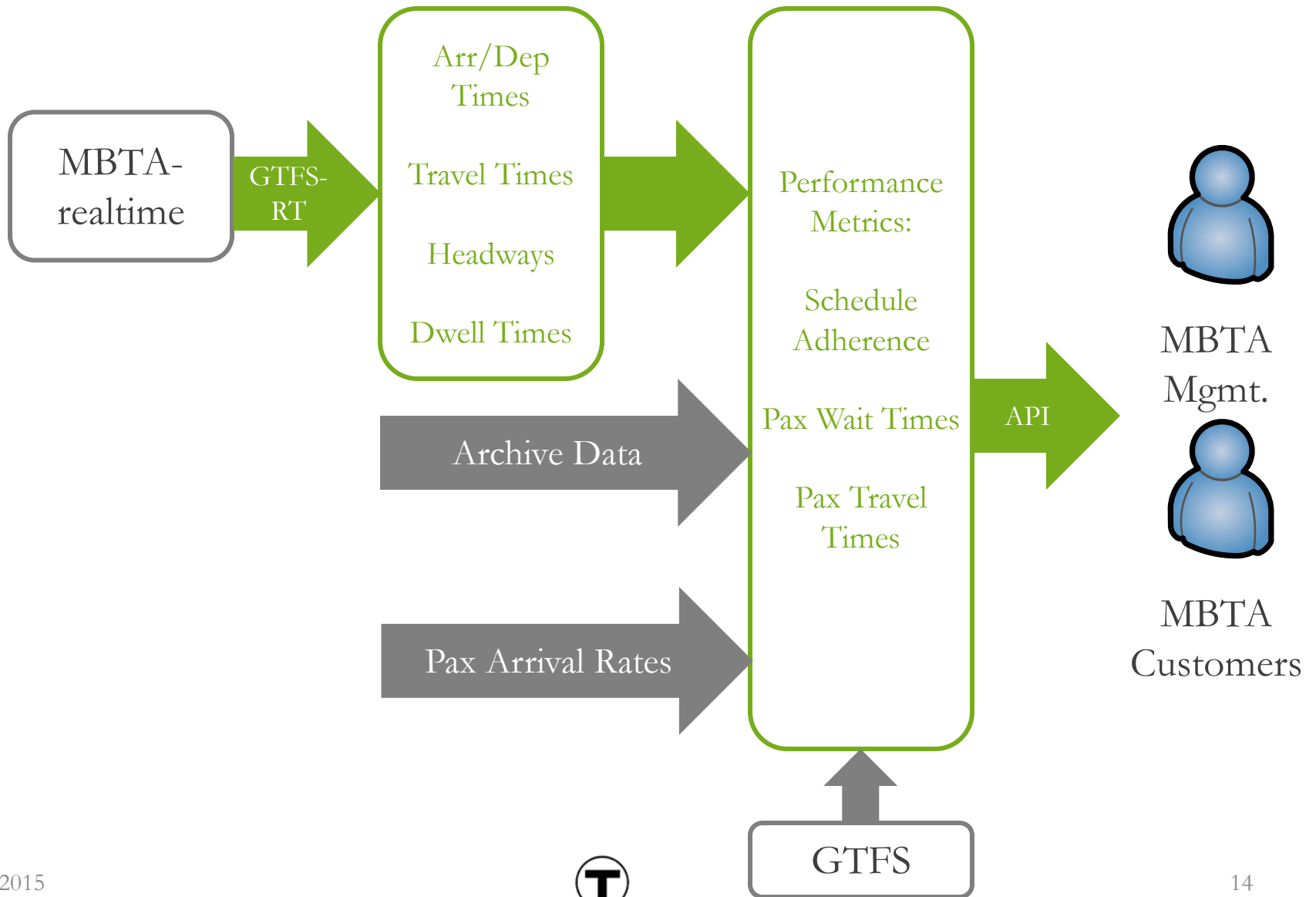
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delayed < 3 min.	delayed < 6 min.
Goal: TBD	Goal: TBD

Date	Headway	2X Headway	Big Gap	delayed < 3 min.	delayed < 6 min.
3/25/2015	84%	98%	94%	99%	100%
3/26/2015	89%	99%	95%	99%	100%
3/27/2015	88%	98%	95%	98%	100%
3/28/2015	74%	96%	86%	89%	98%
3/29/2015	81%	98%	92%	99%	100%
3/30/2015	87%	98%	95%	95%	98%

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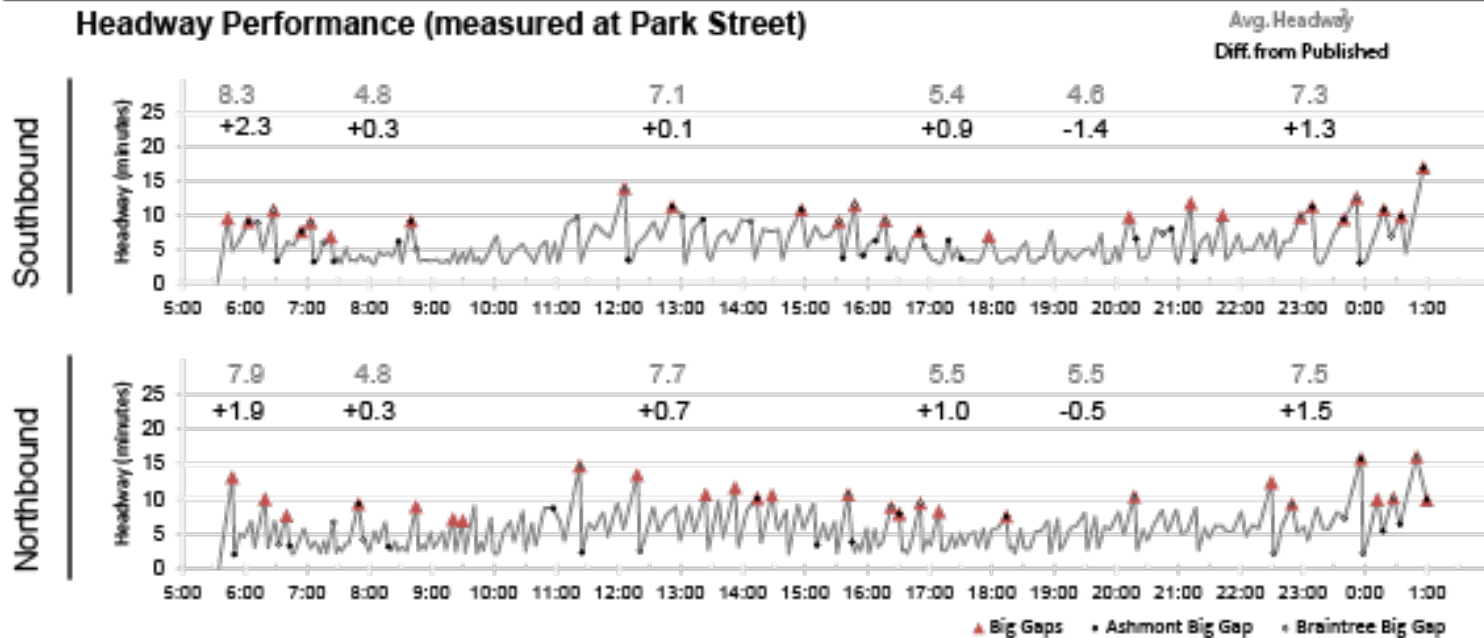
Headways at Park St. Station towards Harvard Station

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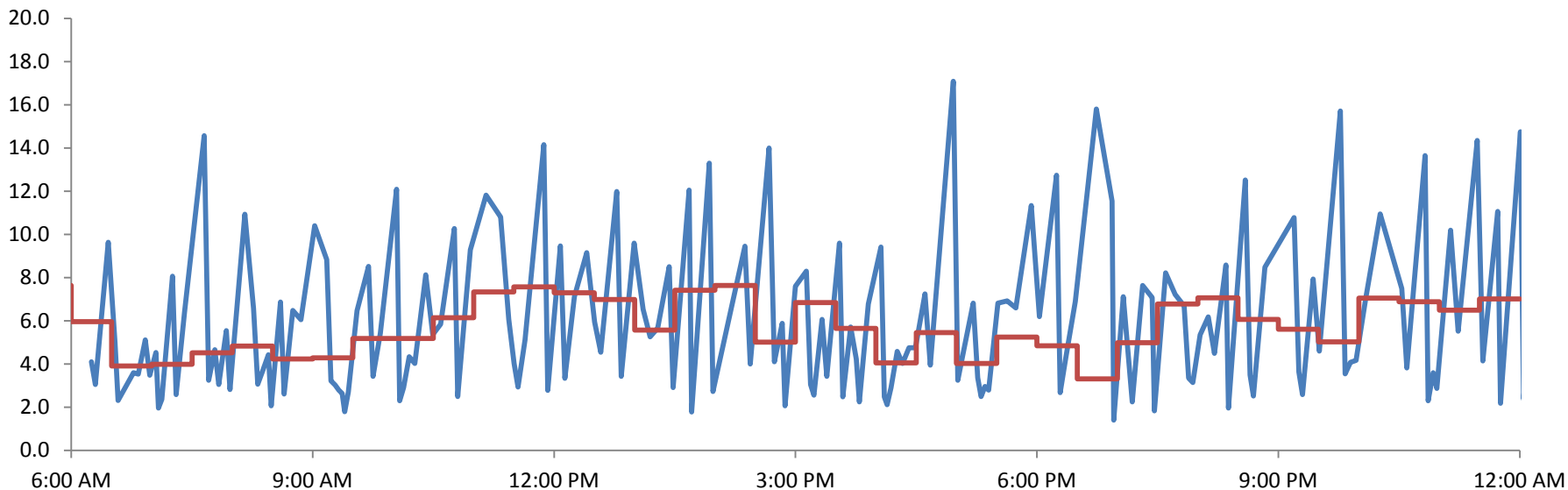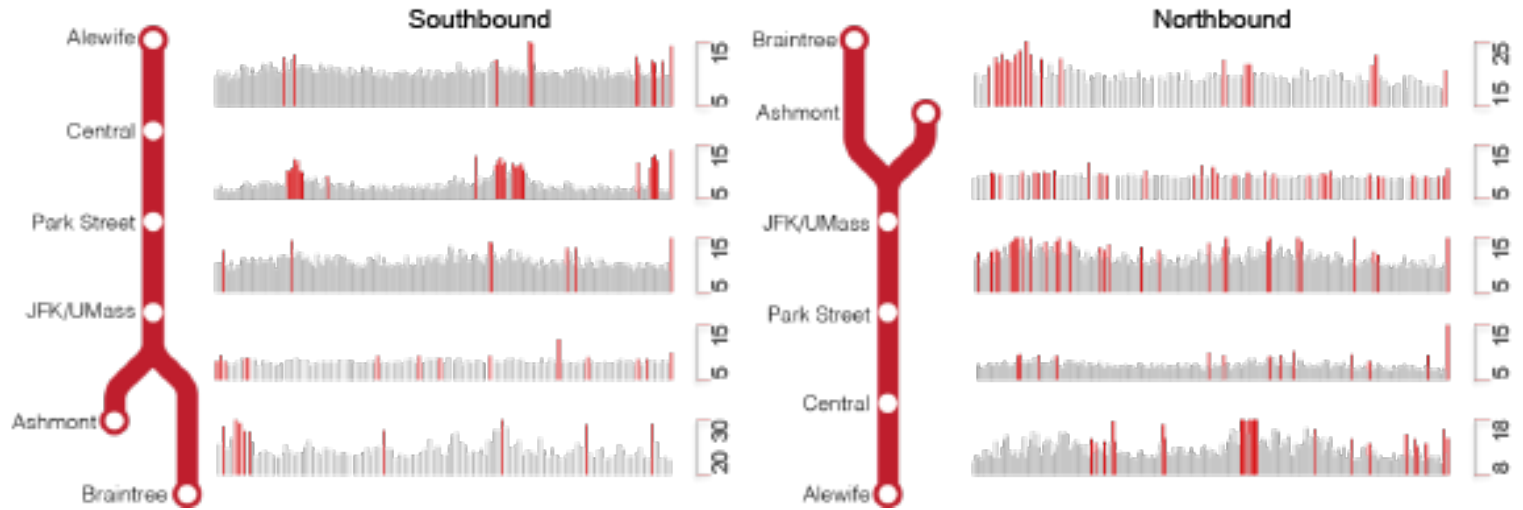
Travel Time From Park St. Station to Harvard Station
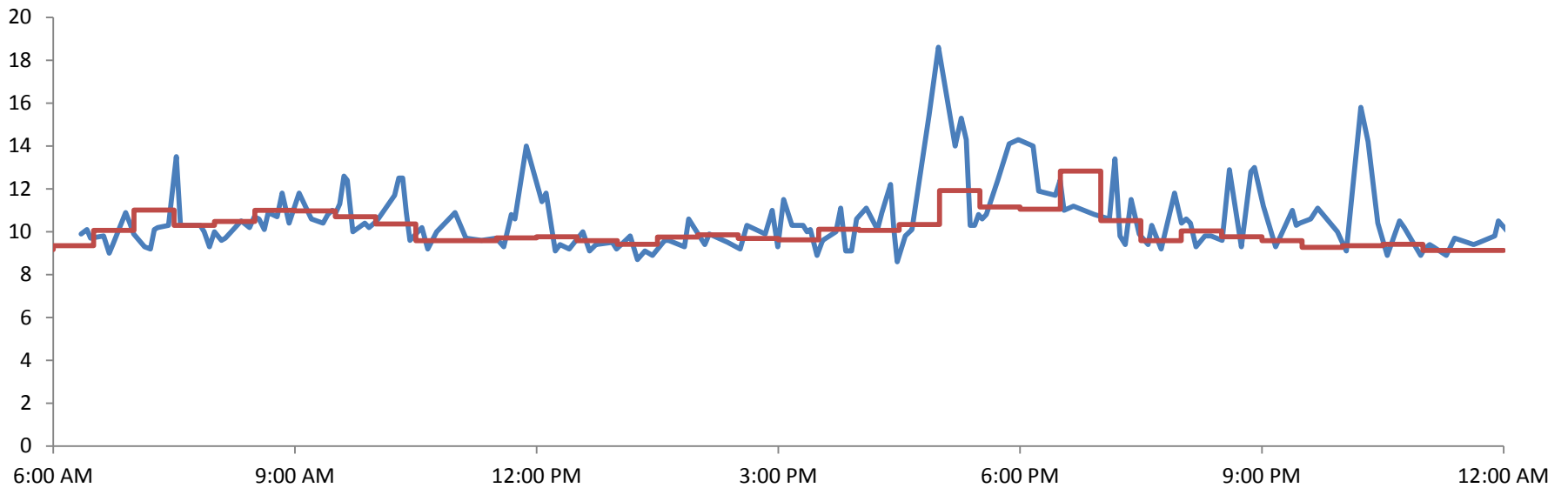
Advantages

- Based on 100% sample of data collected in real-time

- Does not need to be tightly integrated with the source of data

- Can be segmented by day, time

- Can be segmented by route, direction, stop, etc.

Advantages

- Based on common data standard used by multiple agencies

- Allows for common calculation of metrics for internal benchmarking (i.e. we use our peers' data but generate our metrics from it)

- Open source: code and documentation will be available for other agencies to use if they want

Questions?

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