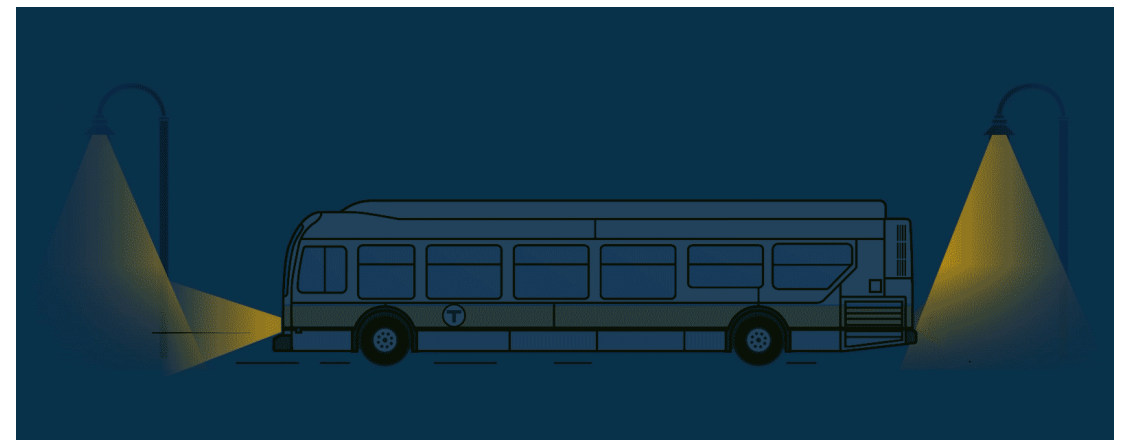




**Massachusetts Bay
Transportation Authority**

Late Night Pilot Update

June 3, 2019



Summary of Late Night Service



- **MBTA staff, municipal partners, and advocates have worked to craft an Overnight service proposal since March 2016**
 - Proposal divided into Early Morning and Late Night
 - Early Morning pilot started in April 2018; FMCB voted to become permanent in December 2018
 - Late Night pilot started in September 2018
 - **Goal was to provide new mobility, especially for work trips, and to reduce overcrowding during a time when resources could be added**
 - Approach was to use similar incremental approach as Early Morning Pilot and add service where we expected strongest ridership
 - **Evaluation shows increased weekly ridership (~2,000) and decreased crowding, but not all changes equally successful**
 - **Today staff asking FMCB for formal vote on whether and how to continue service (in accordance with 2017 Transit Pilot Policy)**
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Goal of Late Night Pilot: Provide new mobility, especially for work trips, and to reduce over-crowding during a time when resources could be added

Evaluation metrics:

- **Net new riders** on buses during late night time period
- **Impact on crowding** on previously crowded trips and/or routes
- Proportion of riders who are **minority and/or low-income**
 - Late Night route ridership (48% low-income and 51% minority) vs. System-wide bus ridership (41% low-income and 48% minority)
- **Operating subsidy** per trip vs. subsidy on the most similar existing service

Evaluation: Operating subsidies



Evaluation criteria: Operating subsidy per trip vs. subsidy on the most similar existing service

Categories	Description	Est. operating subsidy	Comparison
Category 1: "Fill-in"	Increase frequency on routes with crowding and/or high ridership <i>(10 PM - 12 AM)</i>	~\$4.30 per trip	10 PM - ~2AM: ~\$2.40 1 AM - ~2AM: ~\$4.40 Early Bird: ~\$1.50
Category 2: "Later Last Trip"	Add 1-2 additional "last" trips where there's high ridership already on the current last trip <i>(After 12:30 AM)</i>	~\$5.30 per trip	
Category 3: "Late Night Spine"	New service in the 1-3am timeframe to create late night spine <i>(1 - 3 AM)</i>	~\$16.30 per trip	

Takeaways:

- Operating subsidy for Pilot more expensive than average subsidy during same timeframe
- Operating subsidy becomes more expensive the later service operates

Note: Operating subsidy for all local bus is ~\$2.55; Operating subsidies for Late Night Pilot estimated using 2017 actual reported costs, adjusted for inflation and spread across Fall 2018 service hours, comparison includes cost of new trips

Evaluation: Performance Measures



Evaluation criteria: Increased ridership, boardings and/or decreased crowding

Categories	Description	Performance Measure	Outcome
Category 1: "Fill-in"	Increase frequency on routes with crowding and/or high ridership <i>(10 PM – 12 AM)</i>	<ul style="list-style-type: none"> Decrease crowding and/or increase net ridership 	<ul style="list-style-type: none"> Decreased crowding and increased net ridership
Category 2: "Later Last Trip"	Add 1-2 additional "last" trips where there's high ridership already on the current last trip <i>(After 12:30 AM)</i>	<ul style="list-style-type: none"> Usage of new last trips at or above boardings in similar timeframe 	<ul style="list-style-type: none"> Moderate usage of new last trip Some additional net ridership
Category 3: "Late Night Spine"	New service in the 1-3am timeframe to create late night spine <i>(1 – 3 AM)</i>	<ul style="list-style-type: none"> Usage of trips at or above boardings in similar timeframe 	<ul style="list-style-type: none"> Low to moderate use of new trip

Takeaways:

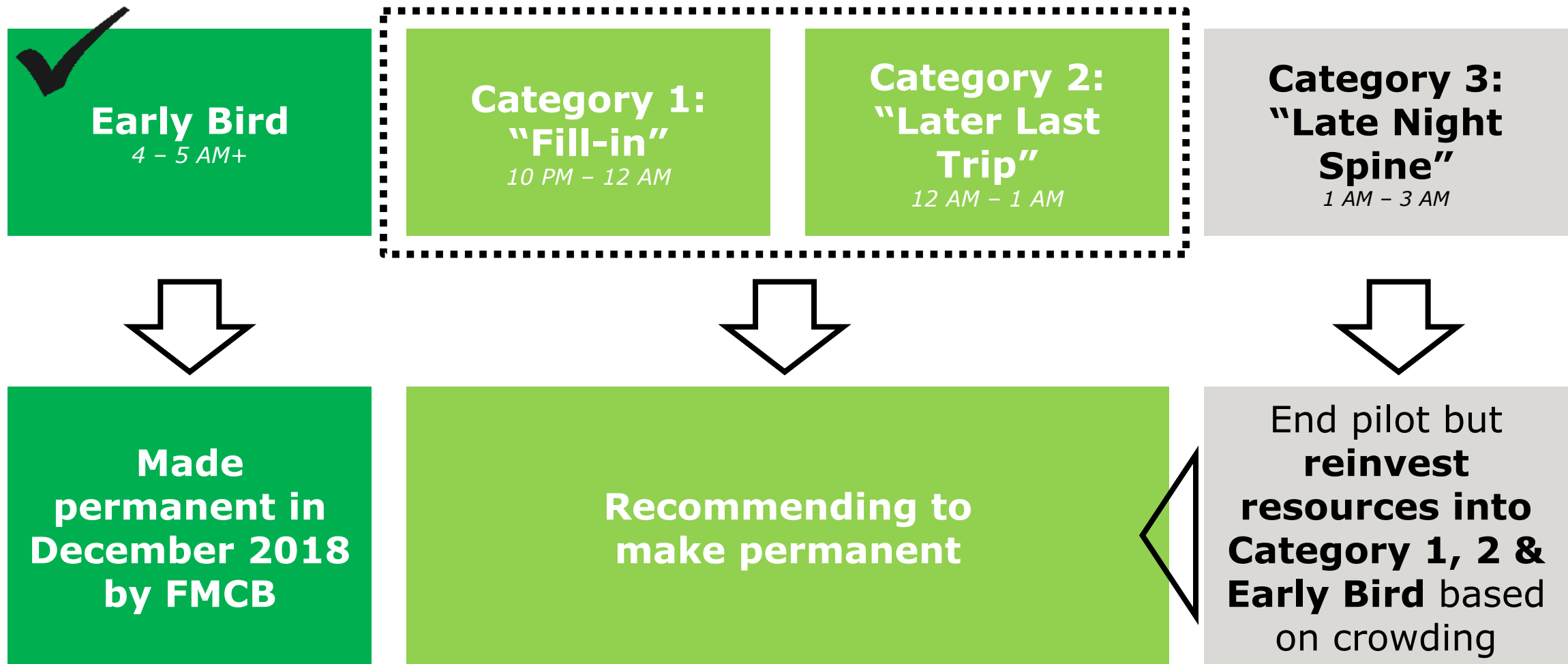
- Investing in service based on existing ridership patterns most effective
- Availability of service alone does not drive ridership, but also availability of options



- **On Time Performance: On the majority of routes, Late Night On Time Performance was equal or better than a Route's daily average**
 - For example, the 117 had a daily average of 78% OTP vs. 80-85% for Category 3 trip
 - Only 4 trips / routes had lower OTP (1 route in category 1 and 2 each, 2 routes in category 3)
 - Exceptions predominantly driven by trips either being held for the last train or trips running early (as less traffic than predicted)
- **Automated Passenger Counter methodology: 60% of the bus fleet is equipped with APCs, but this varies by garage**
 - Garages open 7 days / week have a higher % of APC-equipped vehicles
 - Multiple samples taken throughout fall rating for Late Night
 - Data manually verified as well, especially for Category 3, in cases where automatic data quality thresholds were excluding otherwise reliable data



Four overall components of Overnight Service pilot



Note: Categories 1 & 2 require ~3 FTEs total, and Category 3 requires ~1.5 FTEs, all are accounted for in the FY20 budget



- A **projected operating subsidy per trip**, comparable to the current average per trip subsidy on the most similar existing service
- An **amount of capital expenditure** (if any) and identified sources for that spending
- A **ridership target** for the pilot expressed as both total ridership over the pilot period and average daily ridership, including riders shifted from other forms of public transit and net new riders
- **Projected revenue** (by day, by week, or by month, as appropriate) for the pilot service
- The proportion of anticipated **low-income and/or minority riders**
- A **performance measure** that best measures whether and by how much a pilot achieves the goals originally established for it

APPENDIX: Automated Passenger Counter (APC) Methodology



- In general, we assume that because the vehicles are either 100% APC-equipped or randomly distributed through similar buses, it is not necessary to deploy APC vehicles on specific assignments
- **Availability of APCs:** 60% of the bus fleet is equipped with APCs, but this varies by garage (garages open 7 days / week have a higher % of APC-equipped vehicles)
 - Southampton, Cabot, and Arborway have 100% of their buses equipped with APCs
 - Lynn, Quincy and Charlestown have 40-60% of their buses equipped with APCs
 - **Relevance to Late Night Spine trips (category 3):** Buses are operated from Charlestown (93/108/109/104), Cabot (SL1, SL4, 191), and Lynn (117/442)
- **Data quality:** Over course of fall rating, based on availability of APCs and passing data quality thresholds, following sample sizes available for analysis
 - Avg. Category 1 trip: 25 samples (weekday), 5 samples (weekend)
 - Avg. Category 2 & 3 trips: 16 samples (weekday), 3 samples (weekend)
 - Furthermore, Service Delivery team manually verified category 3 trip passenger counts as automated data quality thresholds excluded some potential samples; **no meaningful variation found**

APPENDIX: On Time Performance



- In most cases, **Late Night OTP was better than a Route's daily average**; for example in April 2019, the 117 had a daily average of 78% OTP vs. 80-85% for Category 3 trips
 - There are some exceptions, predominantly driven by trips either being held for the last train or trips running early
- **Category 1 ("Fill-in")**: OTP was higher than route average in every case with the exception of the 34E on Saturdays
- **Category 2 ("Later Last Trip")**: OTP was higher or on par with the route average for all trips, except for the SL1 trips, where the bus will hold at South Station until the last Red Line train departs (which can cause delays)
- **For Category 3 trips ("Late Night Spine")**: OTP was higher than the route average, with the exception of 191 outbound and SL1/SL4

APPENDIX: Category 1: “Fill-in”

Operating subsidy:
~\$4.30 per trip



Intent of service was to increase frequency on routes where there was latent demand (as seen in crowding) in order to reduce crowding

Route	Day	Ridership	Comfort		
		Net Change during 10 PM-12PM	Avg. Max Load (Fall 2017)	Avg. Max Load (Fall 2018)	Delta
34E	Saturday	0*	43	33	-10
66	Weekday	29	39	31	-8
66	Saturday	25	32	31	-1
104/109	Weekday	38	49	40	-9
104/109	Saturday	32	49	40	-9
111	Weekday	56	48	50	2
111	Saturday	32	48	45	-3
116/117	Weekday	156	41	47	6
116/117	Saturday	5	49	51	2
442	Weekday	12	45	33	-12

Takeaways:

- On most routes, crowding was reduced or eliminated
- Increased frequency also encouraged higher ridership on some routes

Notes: *Follow up adjustments are recommended to improve 34/34E coordination; Number of seats available on a Bus range from 30-40 and off-peak definition of crowding during off-peak is >125% (>140% for trolleys) of seated capacity, projected to be 43-50 riders (based on 2017 Service Delivery Policy)

APPENDIX: Category 2: “Later Last Trip”

Operating subsidy:
~\$5.30 per trip



Intent of service was to add additional last trip where there was latent demand (as seen in high ridership on last trip)

Route	Day	Time	Ridership	
			Net new riders <i>(between new last and second-to-last trips)</i>	Boardings on <u>new</u> last trips
104	Weekday	12:45 AM	14	16
104	Saturday	1:10 AM	14	25
109	Weekday	12:30 AM	11	18
111	Saturday	1:00 AM	1	23
116	Saturday	1:00 AM	2	12
SL1	Weekday	12:45 AM & 1:00 AM	34	19*
SL1	Saturday	12:45 AM & 1:00 AM	34	16*
SL1	Sunday	12:45 AM & 1:00 AM	38	30*

Takeaways:

- Riders chose to take the later last trip when offered, and at a higher usage than other last trips during similar timeframe (median of 6-8 boardings)
- Later last trip also encouraged increased ridership

Notes: Net new riders calculated through the sum of all riders on new last trip and second-to-last trip, netted against the total of all riders on the previously 'last' trip in a previous rating; for SL1, as 2 new trips added, net new riders considers addition of 2 new trips compared to now third-to-last trip; *Boardings for SL1 is sum of both new last trips

APPENDIX: Category 3: New “Late Night Spine”

Operating subsidy:
~\$16.30 per trip



Intent of service was to add new overnight service and enable new mobility

Trip	Day	Time	Ridership: Boardings <i>(Fall 2018)</i>
93/109/108/104	Weekday	2:00 AM	5
93/109/108/104	Saturday	2:00 AM	3
93/109/108/104	Sunday	2:00 AM	3
191 (SL5/15/18/27)	Weekday	1:10 AM & 2:00 AM	9
191 (SL5/15/18/27)	Saturday	1:10 AM & 2:00 AM	19
191 (SL5/15/18/27)	Sunday	1:10 AM & 2:00 AM	5
SL1/SL4	Weekday	2:30 AM	17*
SL1/SL4	Saturday	2:30 AM	2*
SL1/SL4	Sunday	2:30 AM	Not observed*
117/442	Weekday	2:00 AM	4
117/442	Saturday	2:00 AM	9
117/442	Sunday	2:00 AM	6
117	Weekday	1:15 AM	15
117	Saturday	1:15 AM	2*
117	Sunday	1:30 AM	6

Takeaways:

- Low ridership on most trips, and majority below or on low end of other last trips during similar timeframe (median of 6-8 boardings)
- Significantly higher operating subsidy required

Notes: * not observed in Fall 2018; Winter 2019 data used instead; Using Spring 2019 data, the average ridership was 6, 8, and 4 respectively

APPENDIX: Messaging, Branding, & Marketing



- Built awareness utilizing MBTA owned **media properties**
 - Bus tails, car cards, station signage, station monitors
- Supported through **digital campaign** and **earned media**
- Promoted utilizing **Grassroots partnerships**
- Leveraged messaging with paid media in **key neighborhoods**
 - Chelsea Record, Dorchester Reporter, East Boston Times, South End News, Everett Independent
- **Surveyed riders** for awareness of campaign and source of information
- Increased **marketing efforts** in fall/winter 2018 based on preliminary findings

Local Print Media Update

Through October and early November, we ran two placements in each of the following publications.

Chelsea Record	South End News
Dorchester Reporter	El Mundo
East Boston Times Free Press	Everett Independent

Local news publications

The combined weekly circulation for all targeted publications is 147k, meaning the total potential circulation size across all placements was roughly 294k.

147k
PER WEEK

294k
TOTAL

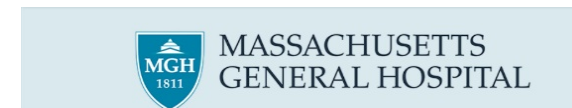
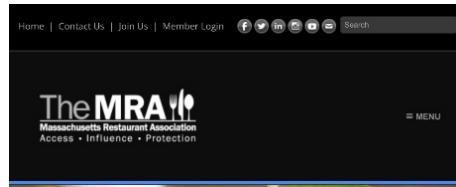




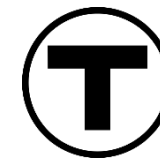
APPENDIX: Grassroots Partnerships



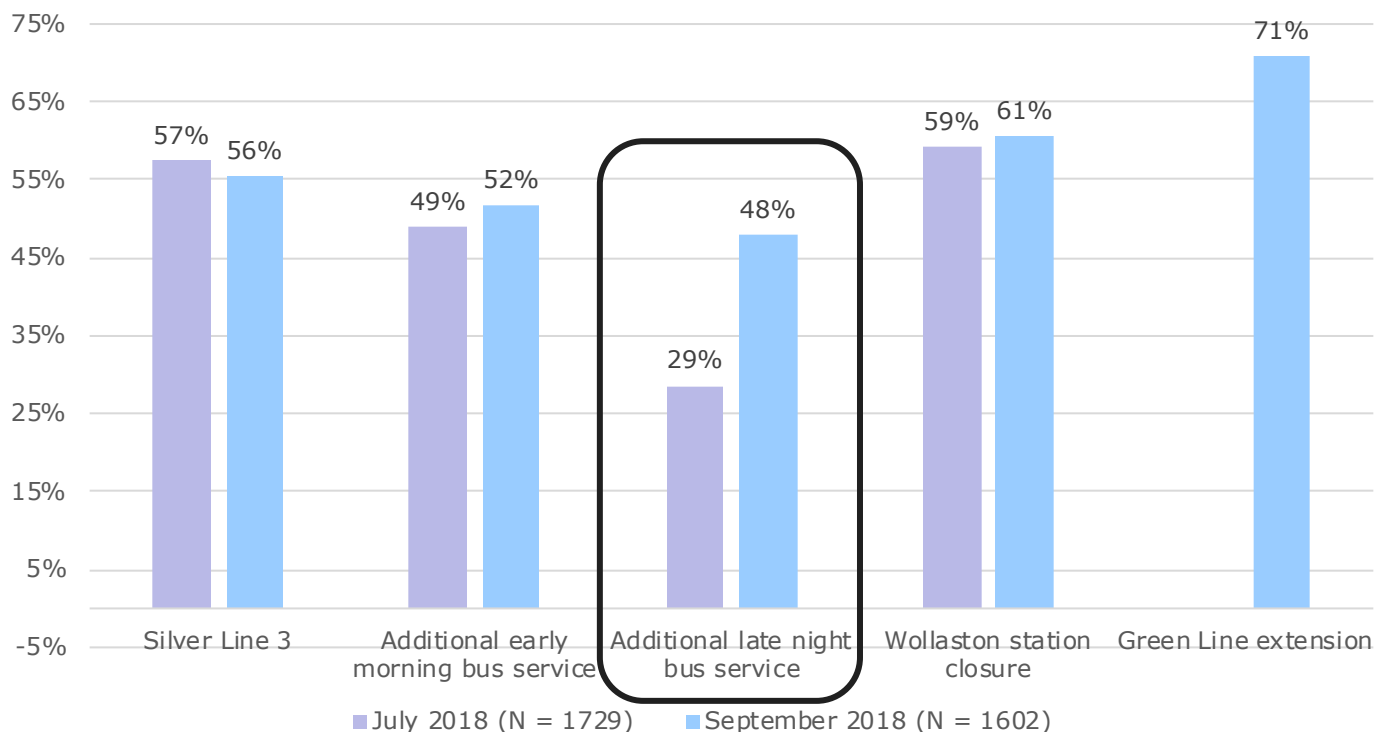
Grassroots partners distributed Late Night promotional material to members utilizing, newsletters, webpages, Facebook and flyers



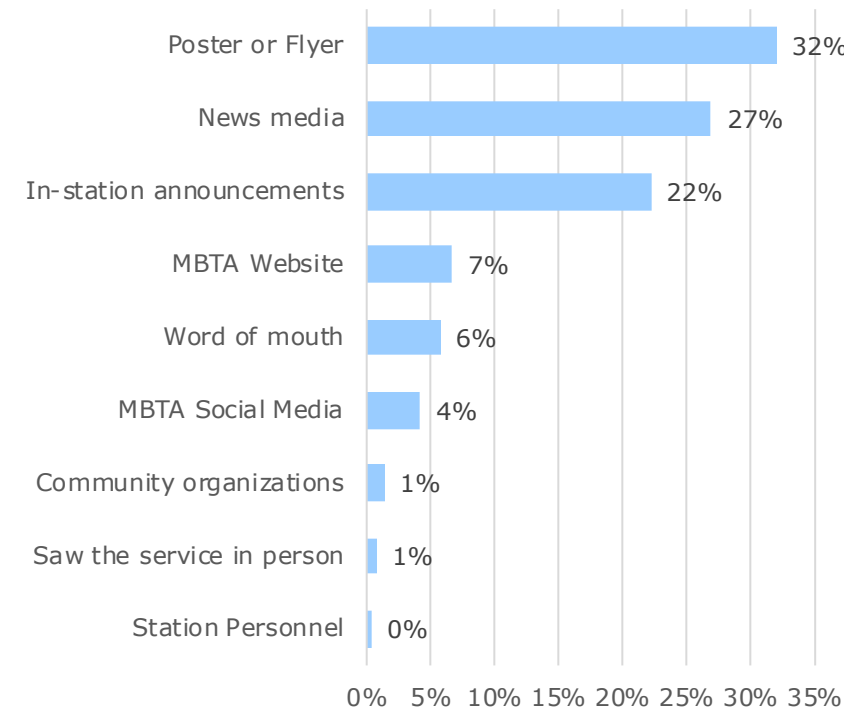
APPENDIX: Customer Awareness of Early Morning and Late Night



Which of the following newly implemented or upcoming MBTA initiatives are you familiar with?



September: How did you first hear about late night bus service? (N = 726)



Largest increase in awareness from July 2018 to September 2018 was for late night bus service

Most customers initially found out about late night bus service from posters/flyers, news media, or in-station announcements