



**SFMTA**

# **SFMTA Rail Operations during COVID-19 Emergency**

SFCTA Board

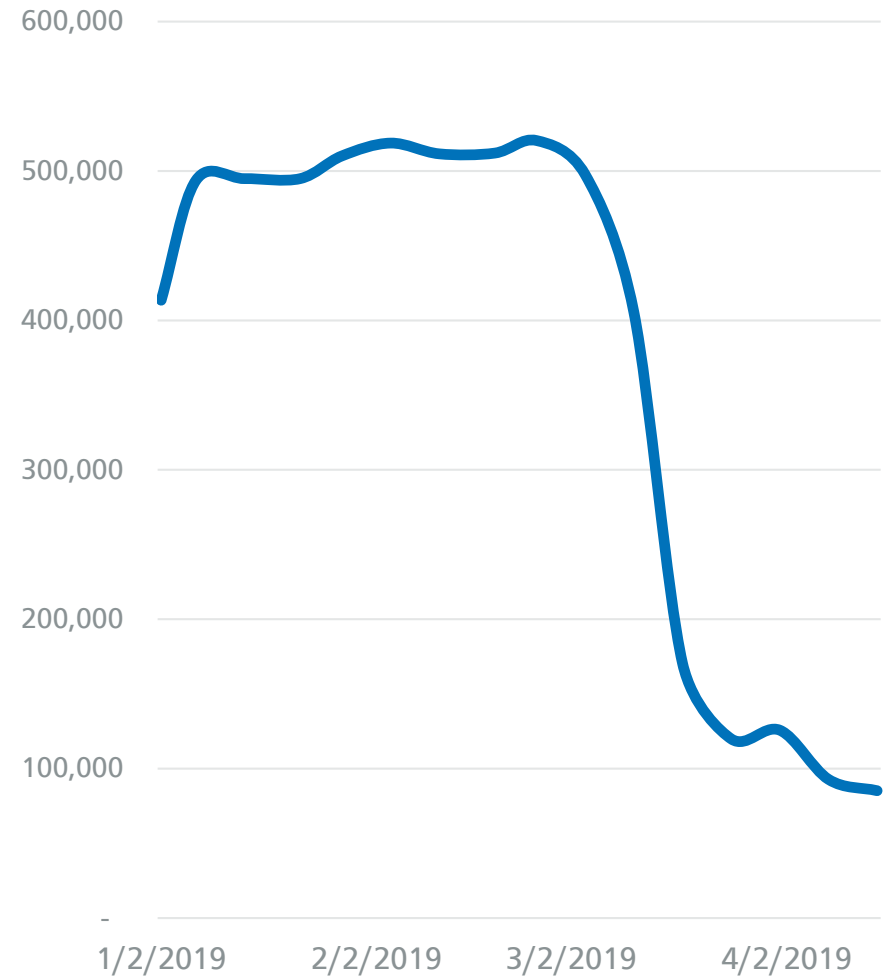
September 15, 2020

# March 2020

The pandemic unfolded very quickly:

- Staff began calling out sick, reducing coverage for critical activities
- Ridership fell by 80% in two weeks
- Every day was new and unpredictable
- We redesigned service appropriate to needs and available resources

**Daily Boardings: Bus**



# Real Time Data Guiding All Decisions

Monday, August 3, 2020

## Date

Sunday 09/13/2020

## Trend Type

Weekly

## Period Type

(Multiple values)

## Service Category

(All)

## Routes

- ☒ (All)
- ☒ 1 California
- ☒ 5 Fulton
- ☒ 7 Haight/Noriega
- ☒ 8 Bayshore
- ☒ 9 San Bruno
- ☒ 9R San Bruno Rapid
- ☒ 12 Folsom/Pacific
- ☒ 14 Mission
- ☒ 14R Mission Rapid
- ☒ 19 Polk
- ☒ 22 Fillmore
- ☒ 24 Divisadero
- ☒ 25 Treasure Island
- ☒ 28 10th Avenue

Cancel

Apply

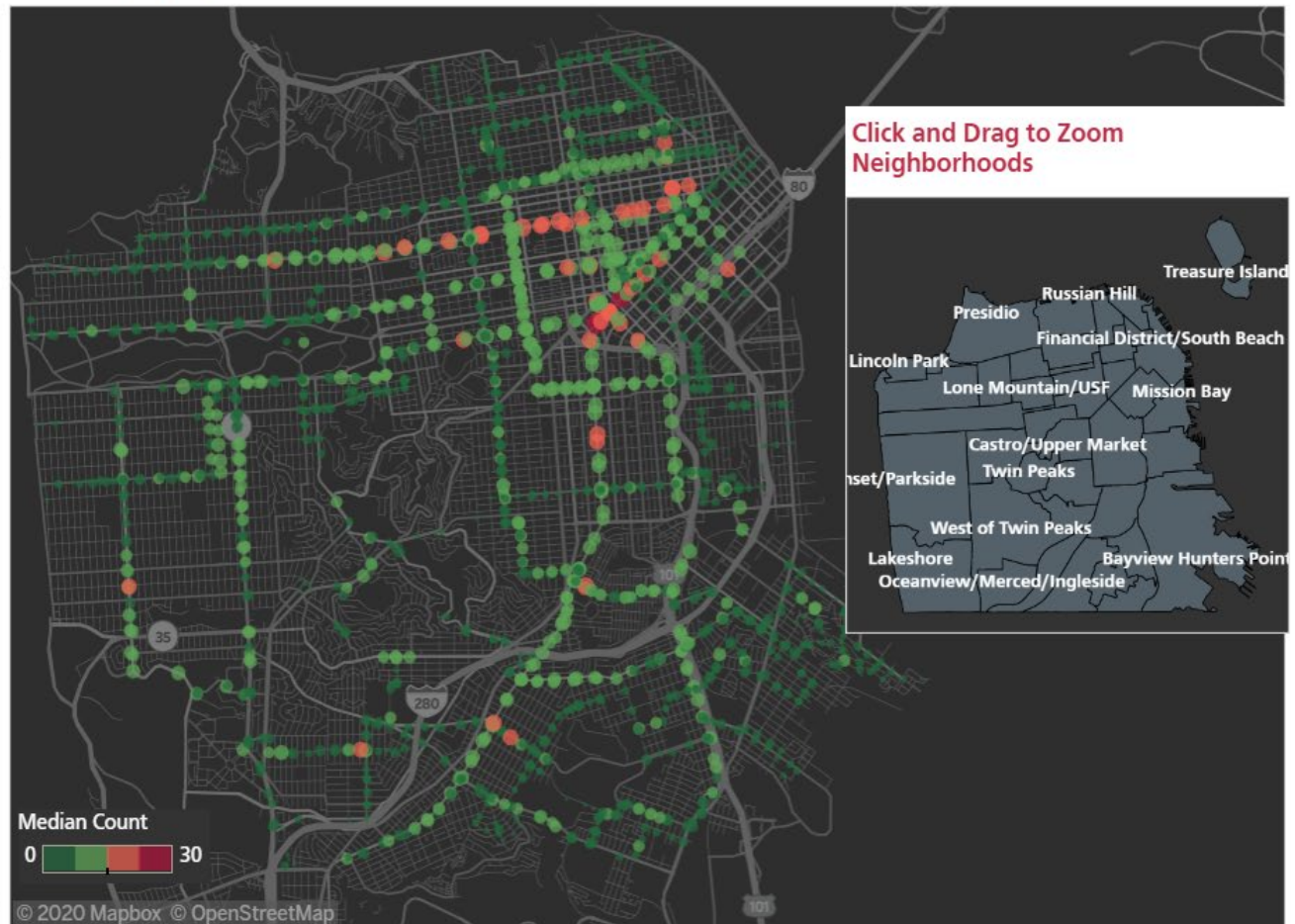
## Median Load

0

26

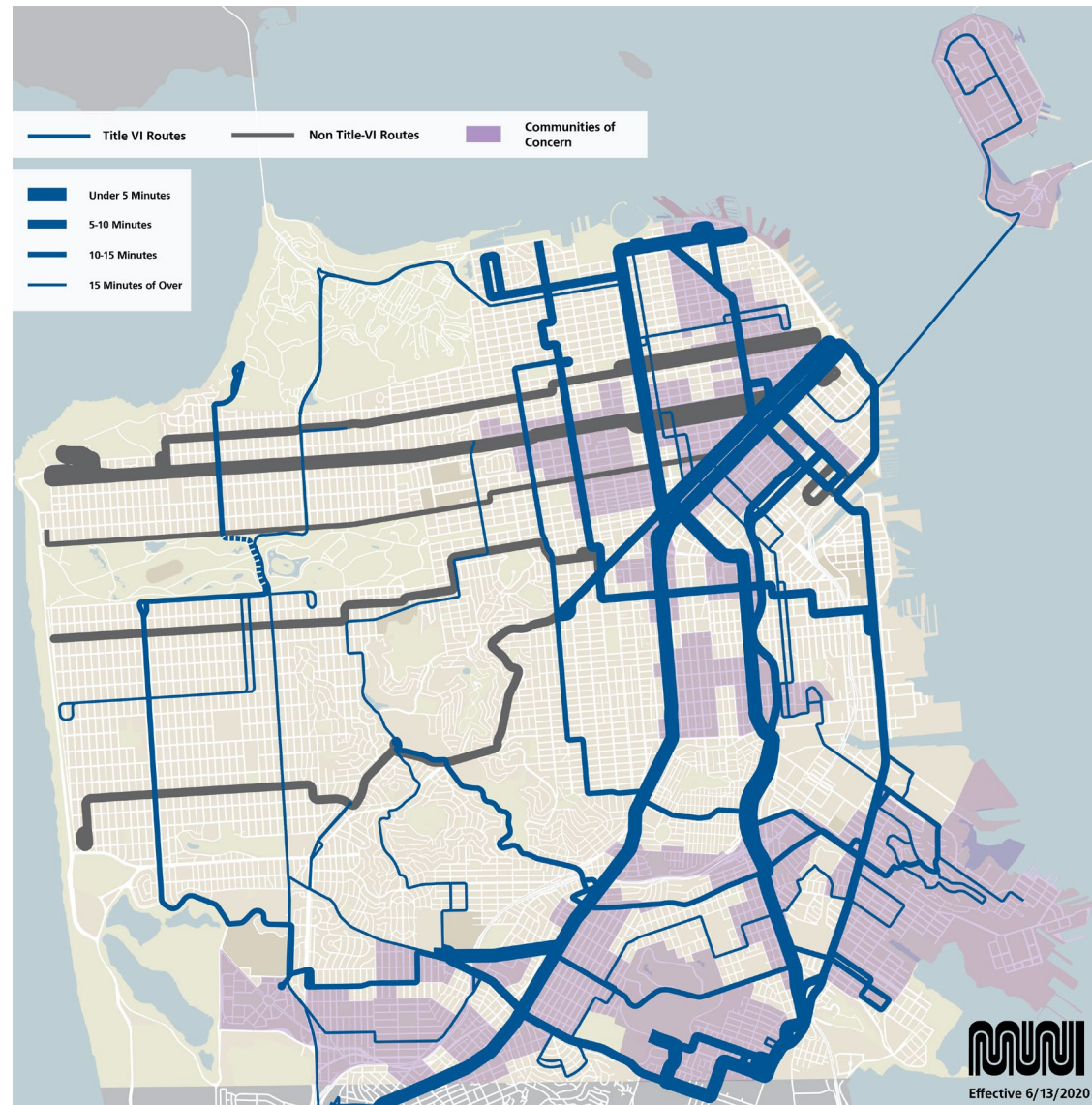


## Median Passenger Count by Stop Sunday 09/13/2020



# COVID19 Service Strategy

- How do we deliver *predictable* service during an unpredictable time?
- How do we ensure equity is at the core of our decisions?
- How do we make the best use of our limited resources?
- How have trip patterns changed?

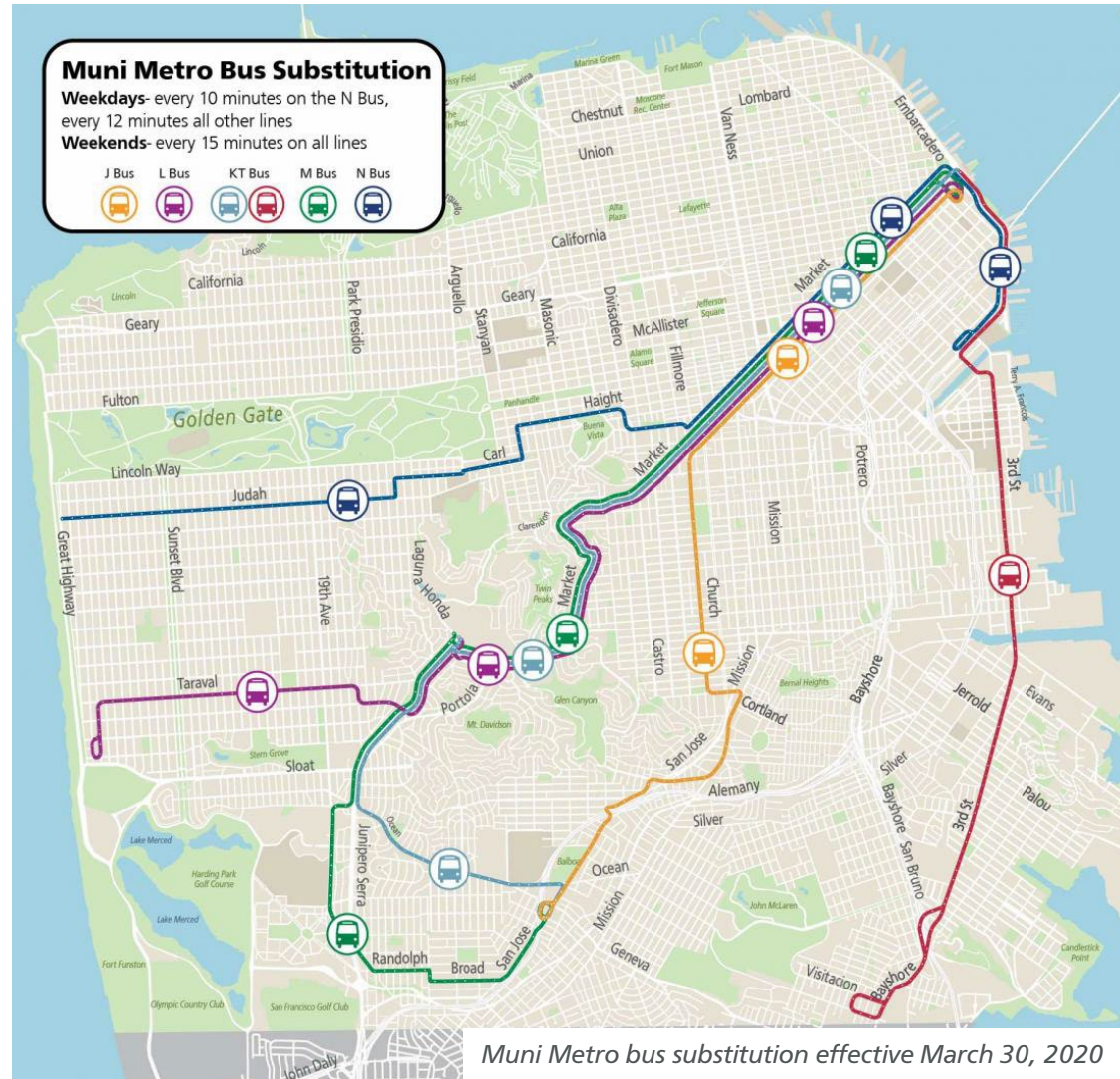




# Evaluate Resources for Resilience

It is always better to *plan* for a service change than to cut service unexpectedly - Muni Metro was a vulnerability:

- Staff shortages could require us to halt service unexpectedly
- Shortages in maintenance could lengthen response times to urgent issues
- The cost-to-passenger ratio given reduced ridership was very high



Muni Metro bus substitution effective March 30, 2020

# Work accelerated while Metro was closed

- Initially, DPH restricted maintenance work to caretaker role, basic safety inspections
- Mid-summer, close contact guidelines for maintenance allowed state-of-good-repair (SGR) work to accelerate:
  - Completed work on LRV4s that will improve reliability
  - Activated West Portal crossover for three car subway shuttles
  - Renewed sections of overhead wire, replaced and adjusted electrical hardware in the subway
  - Cleaned stations top to bottom
  - Replaced sections of track and track fasteners
  - Installed better lighting in tunnels to improve work environment for rail maintenance staff
  - Campaigned the trolley bus network

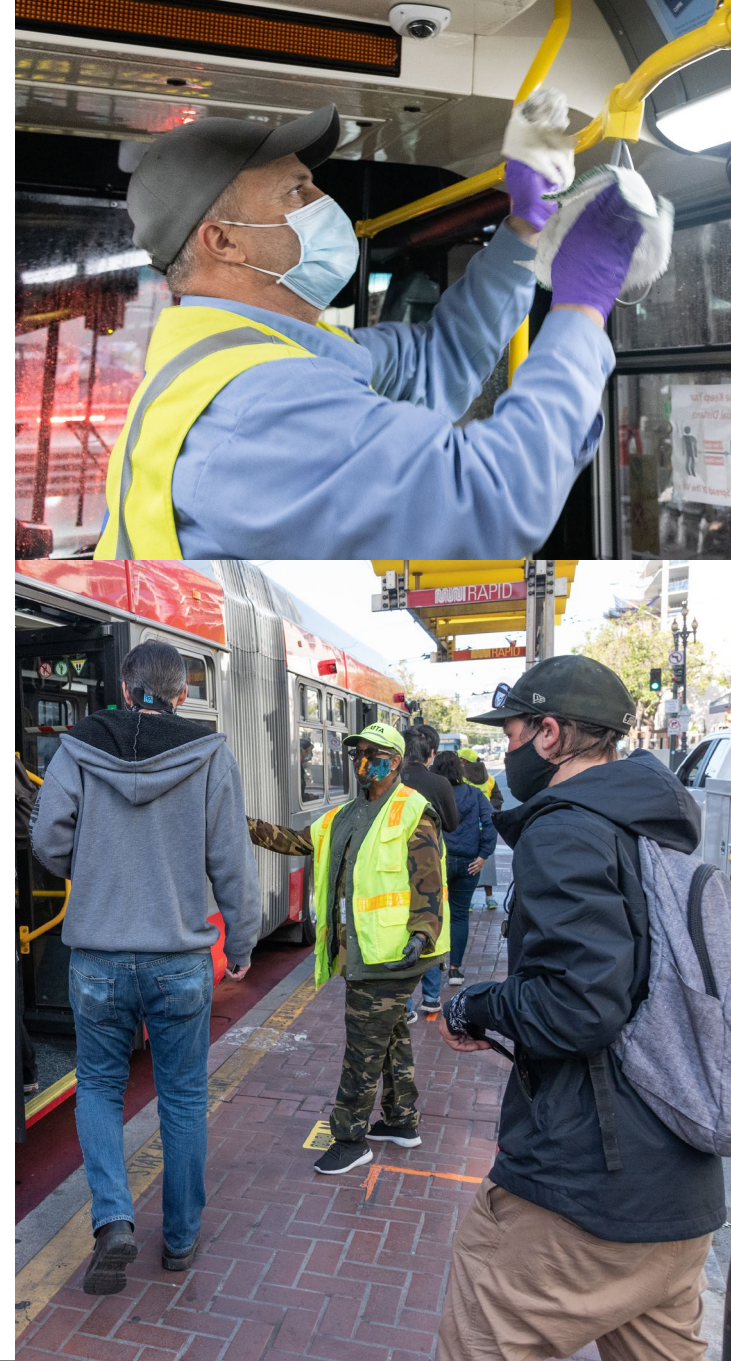






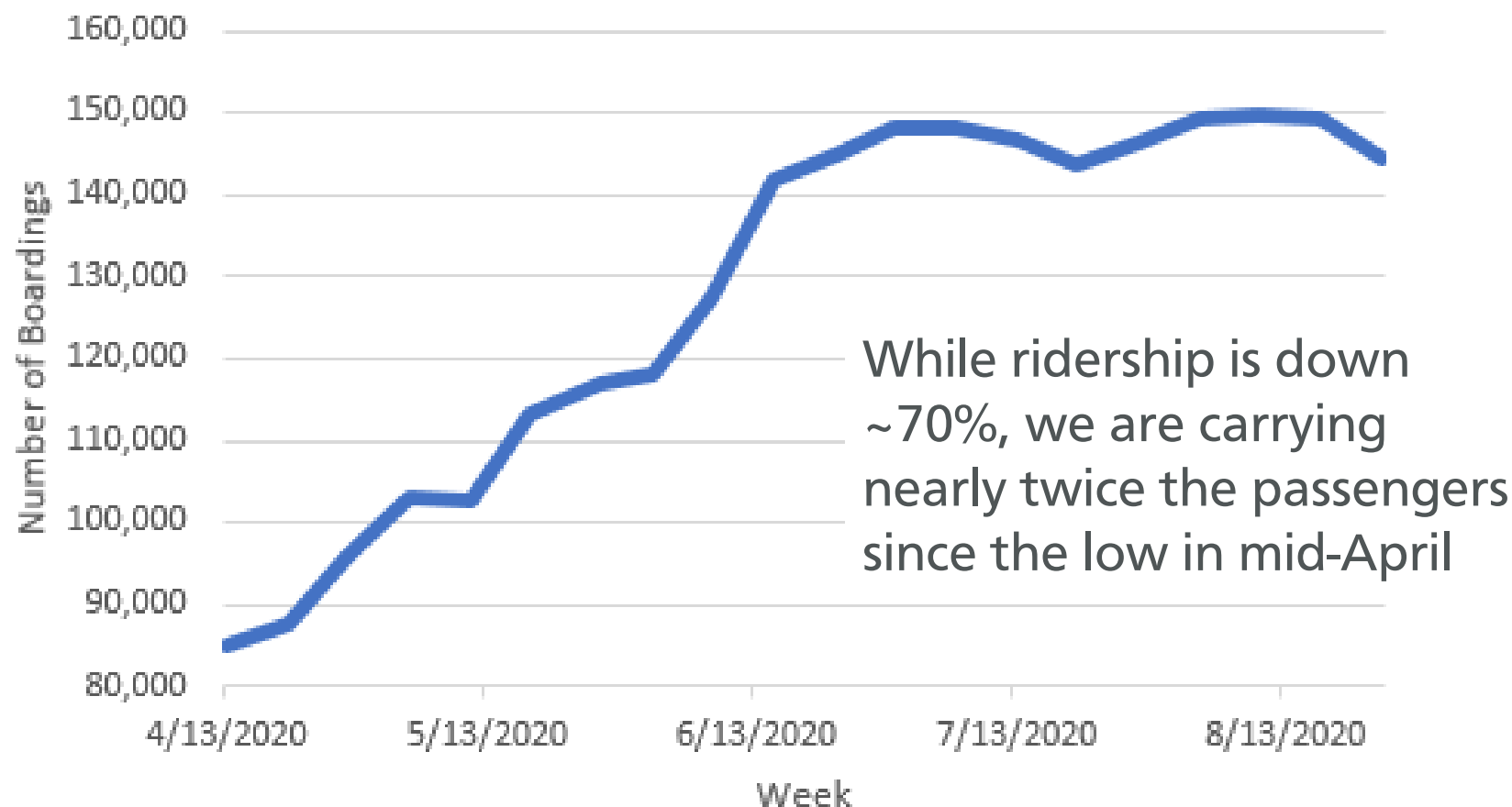
# Why reopen rail?

- Increasing economic activity also means increasing crowding
- Following five months of operations, felt we had a handle on this “new normal”
- Light rail can carry more passengers per operator, freeing up buses to add service to crowded routes
- Overhead line issues known, but solutions were underway, and presented as relatively low risk



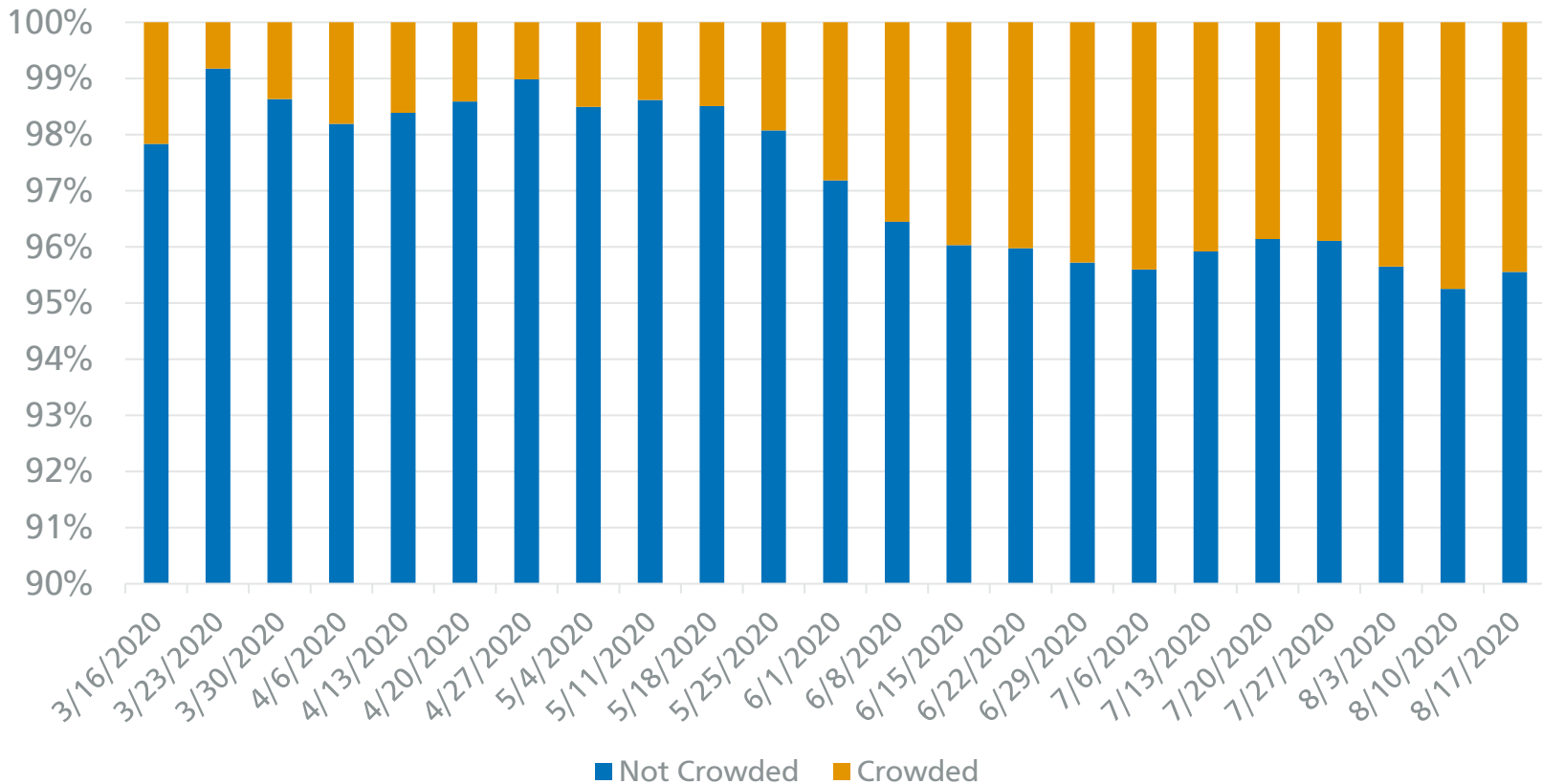


# Ridership recovery since Shelter in Place



# Despite adding service, crowded trips are increasing

Percent of Trips Crowded by Week



# Shutting down rail for a second time

- Risk profile changed significantly when two splices broke within 72 hours
- Splice failures in the subway raised concern of customers getting stuck in the subway for extended periods of time during COVID





# What is a splice?

- A *splice* is how we connect two pieces of overhead wire to one another
- Splices are customized to our system's specifications and require highly specialized manufacturing
- Splices should be stronger than the surrounding wires



# Background on Failed Splices

## *Failed splices*

**2019**

**2020**

*No subway service*

April 16

August 23  
August 21  
June 9 (surface)  
May 15  
April 26 (surface)

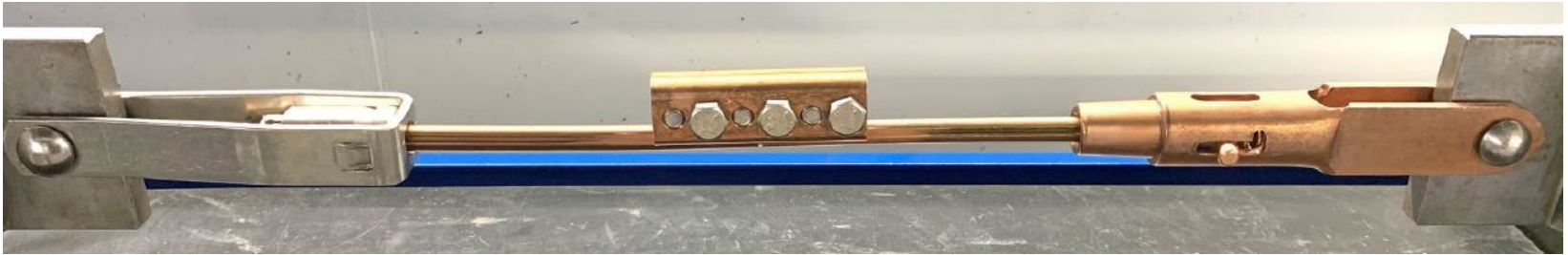


# Poor Quality Led to Splice Failure

- Independent failure analysis determined that splices failed due to poor metallurgy quality - it contained low silicon levels which results in low tensile strength
- Splice is not a new design, and has been used in our system for over a decade
- Splice is a low-cost part ~\$200, more like a bolt than an engine
- Splice did **not** fail because of state of good repair issues
- Splice problem not visible as part of our routine preventative maintenance inspections



# Options for Overhead Lines in Subway



	Timeline	Cost
Replace existing splices 1:1 in subway with new Arthur Flury part	10-12 weeks	\$
New subway wire in sections with the most splices, splice replacement in other locations	3-4 months	\$
All new wire in the subway – eliminate splices	8-12 months	\$\$
Replace wire/splices with alternative (e.g., rigid catenary system)	TBD	TBD

# Next Steps for Surface Overhead

- Work with metallurgist to identify stronger parts from existing supply for short term needs
- Design new installation method to reduce shock to an already vulnerable part
- Work with manufacturers to identify a higher quality part that is trolley/historic compatible
- Determine if there is a way to test quality of existing splices (e.g., dye test)



# Maximize SGR work to come back stronger

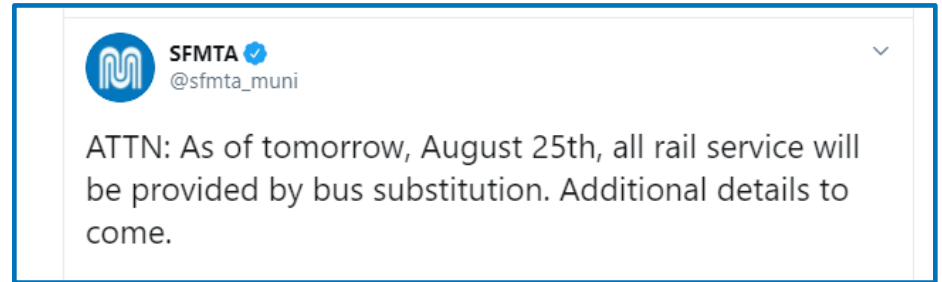
- Shutdown presents opportunity to address state of good repair needs and create more reliable subway
- Will build on progress made over the summer (*minimal work was conducted this spring due to COVID restrictions*)
- Multi-disciplinary Task Force created to identify and plan work in key areas including track, signals, and fire/life safety systems





# Lessons Learned – What Worked

- Making difficult decision early preserved service for essential workers



- Radical resilience of our bus system continues to allow SFMTA to respond to the changing needs of COVID pandemic
- Extended maintenance windows should continue – existing splices reduced by 25% since April 2019

# Lessons Learned – For Improvement

- Direct more engineering resources to accelerate solutions
- Think bigger – consider full replacement rather than incremental upgrades
- Continue cultural shift towards cross-silo problem solving
- Build closer relationships with peer agencies – recent work shows some systems having similar challenges
- Re-evaluate COVID procedures for Transportation Management Center (TMC) and other small, mission critical groups
- Run several days of full service (without customers) to stress-test system before start-up

# Next Steps

- Determine best course of action for Overhead Lines in the subway
  - **Should we consider a longer shutdown to accelerate work on other subway vulnerabilities (e.g., special track replacement) and maximize state-of-good-repair and customer-facing investments (e.g., WiFi)?**
- Continue to refine service to address challenges, such as system crowding and customer information
- Work with national experts to refine our quality-control and risk management programs





Thank you

