

SFMTA Pilots Surface-Only J Church Line to Address Subway Congestion



Purpose and Need

So that Muni Metro is the best option for people taking crosstown trips, SFMTA staff are working to identify ways to reduce Muni Metro travel times, increase frequency, improve reliability and reduce (or even eliminate!) delays caused by subway congestion for customers. It is [well-documented](#) that the J Church service in the subway has contributed to the congestion plaguing service reliability for decades.

The quality of Muni Metro service before the COVID-19 pandemic was unacceptable. Muni Metro was regularly plagued with frustrating delays caused by congestion in the subway. The Market Street subway trains were arriving more quickly than they were leaving, leading to trains queuing, or becoming “stuck” in the tunnel traffic.

On average 30% of trains during each day’s morning peak were stuck in congestion trying to get to Embarcadero. At that time, we were running 43 trains per hour in the Muni Metro subway. That queuing is representative of a lot of congestion!

Many riders remember their “worst trip” and they use the travel time associated with that trip when planning how long it takes to get from point A to point B. Reducing this “worst case” trip makes Muni Metro more reliable and allows riders to budget less of their time to traveling. To understand how many trains in the subway is “too many” before we start experiencing congestion-related delays systemwide on the Muni Metro again, SFMTA staff have been collecting data.

Surface-only J Church Pilot Project

Along with all other Muni Metro lines, the J Church service was temporarily suspended at the beginning of the COVID-19 pandemic in April 2020. To reduce congestion in the subway, a pilot project limiting the number of trains operating in the tunnel [was launched as Muni Metro rail service was restored](#). To do this, we determined that the J Church would be run as a surface-only route to alleviate subway congestion.

The J Church was selected because its surface-level route constraints limit the line to one-car trains, which reduces the total number of people the Muni Metro subway can serve when the J Church is operating there. In addition, traveling a shorter surface route saves travel time for the J Church, allowing for increased frequency and capacity.

Creating a surface-only route for the train also required a new transfer at Market and Church Street to the Church Street Station for those J Church riders whose trips continue in the Muni Metro subway. To assist Muni customers transferring between the J Church and Market Street transportation we implemented temporary transfer improvements on Church Street from 15th Street to Duboce Avenue.

Once the subway re-opened in May 2021, we began evaluating the design and operation of the pilot project. We conducted a public survey about the accessibility changes in summer 2021, in addition to reaching out to merchants in the project area. We also analyzed travel time data and other performance metrics.

Outcomes

From a subway reliability perspective, when the number of lines serving the subway was reduced in 2021, Muni Metro had the fastest, most reliable subway service the city has ever seen. This massive improvement is mostly due to a reduction in subway congestion. In 2021, when we only ran 25 trains per hour, less than 3% of trains in the morning peak period had to

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wait in the tunnel before arriving at Embarcadero. The number of hours Muni Metro trains spend stopped in the tunnel (either not at a station, or for too long at a station) dropped 75% between 2019 and 2021. Initial findings also showed a 15% improvement in reliability on the J Church.

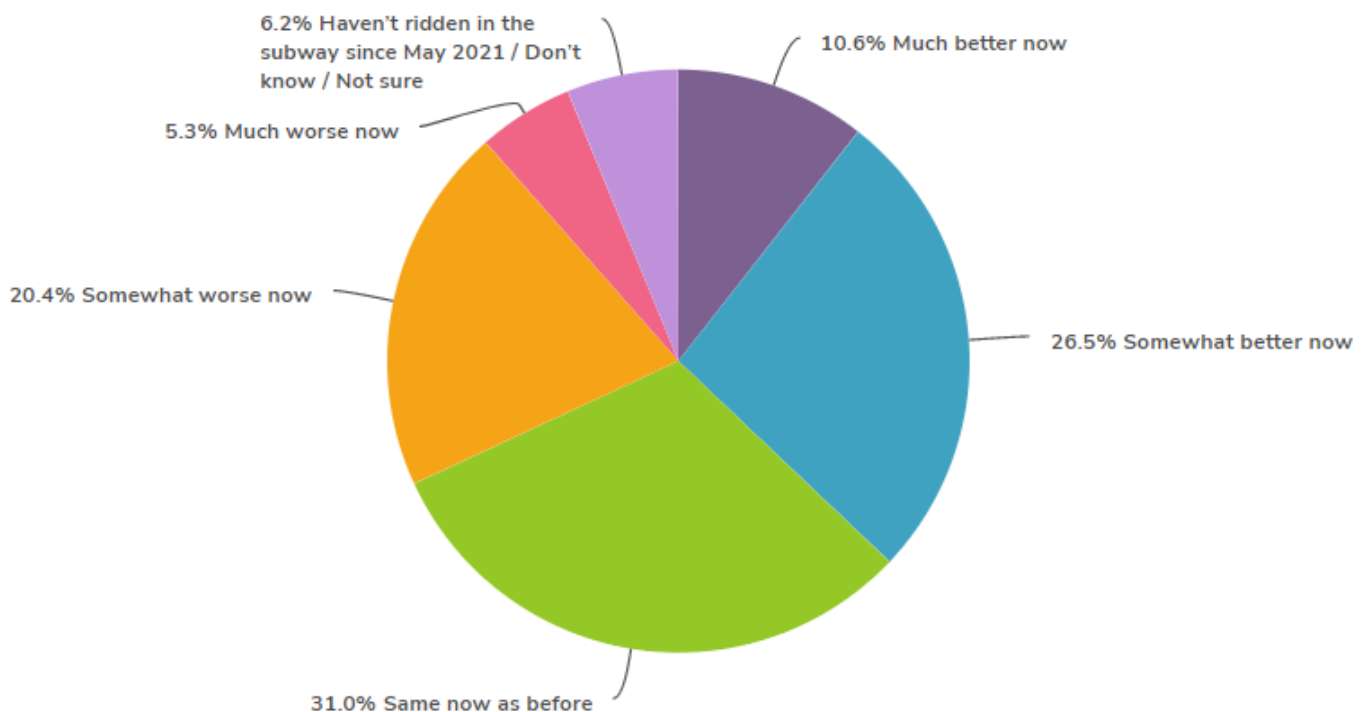
This change also maximized subway capacity by only running lines that can operate two-car trains. In addition, the shortened, surface-only J Church route allowed for more frequent and reliable service. And, while J Church customers traveling further than Market and Church were required to transfer at the Church Station, 73% of trips transferring at Church Station in July 2021 had wait times of six minutes or less.

This reduction in delays and wait times on Muni Metro in 2021 meant that people's worst trips from West Portal to Embarcadero went from 28 minutes to 17 minutes. 90% of trips from West Portal to Embarcadero were 17 minutes or less! For riders, that means they can count on a faster trip more often. Reducing trip travel time variability is extremely important to riders who want a consistent, dependable journey.

In addition to being technically successful, there was a perception among Muni Metro customers that service improved comparing March 2020 to May 2021 when the J Church was surface-only.

In November 2021, we asked Muni customers...

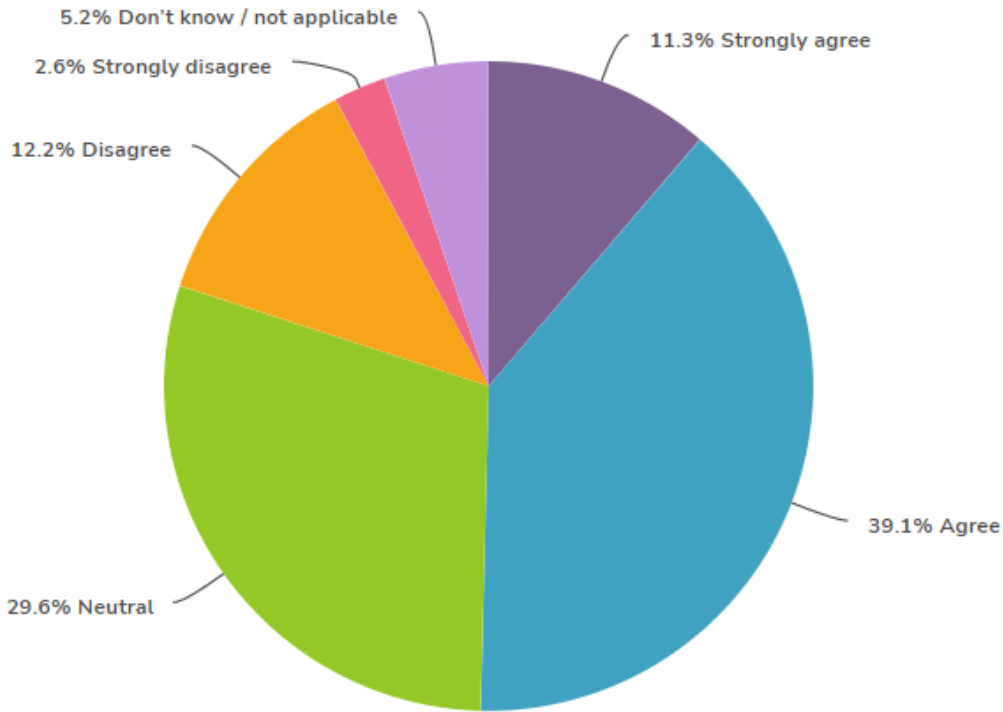
How would you compare Muni Metro service since May 2021 to Metro service prior to March 2020?



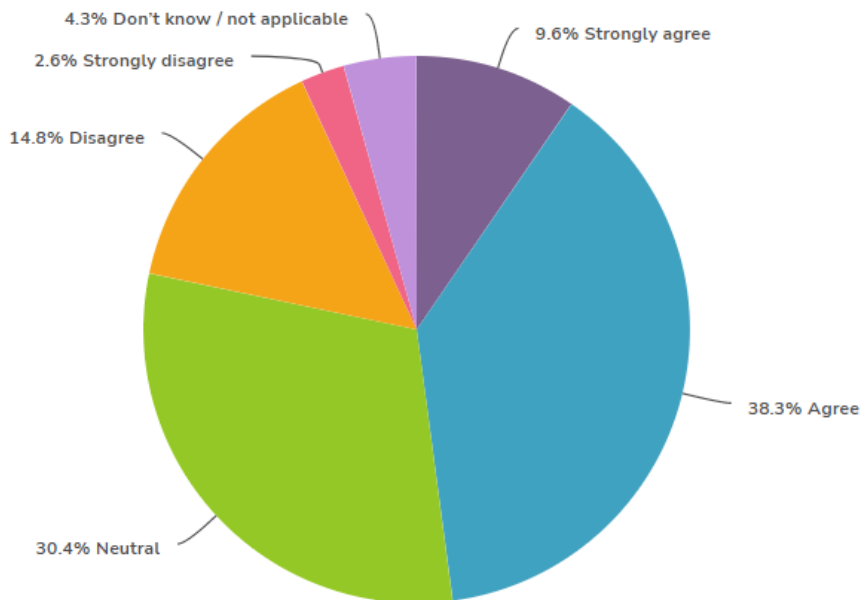
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Agree/Disagree? Muni Metro service in the subway is more reliable since May 2021.



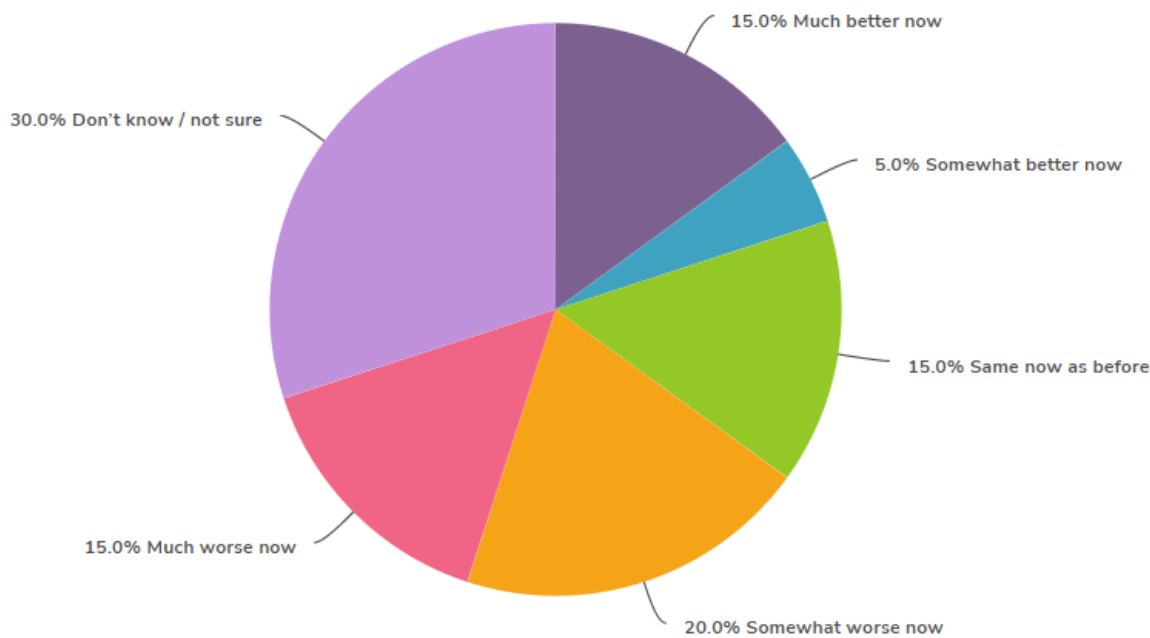
Agree/Disagree? Muni Metro service in the subway is quicker since May 2021.



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How do you think the J Church compares to how it was before March 2020?



These numbers indicate overall positive public perception of Muni Metro subway service improvements at the time the survey was administered in November 2021.

In conclusion, the pilot project limiting the number of trains operating in the tunnel succeeded in reducing subway congestion delays. The removal of the J Church out of the subway also contributed to other noteworthy improvements to Muni Metro service systemwide, including significantly reduced wait times and a significant decline in trip variability. This translated into faster, more reliable rail service in the core of our network.

Next steps

The goal now is to maintain those 2021 improvements to delay and reliability while carefully increasing the number of trains in the subway. As people return to Muni, we will need to increase train service, but subway delay and congestion are already creeping back up. As ridership increases, we are monitoring and regularly reporting on subway health by tracking the number of trains in the subway, the headways (the duration of the time between trains moving in the same direction) ridership and crowding. We have created [dashboards](#) that are helping show Muni Metro health so that we can track service quality and report its status to the SFMTA Board.

Using both the qualitative and quantitative data we collected in the summer of 2021 while the J Church operated as a surface-only route, we are developing a proposal for a permanent design for Church and Market Streets to improve pedestrian safety, business vitality and access for people making transit transfers.

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As limiting trains in the subway reduces the number of people the subway can serve, we also are looking at ways to maximize capacity by running two- or three-car trains and improving reliability for the entire Muni Metro system. We aim to use shuttle trains to supplement service and increase frequency in the subway, and to close gaps on the surface and address other service reliability issues. Another consideration being studied is a surface-only J Church route that would turn onto Market Street to continue to the Embarcadero on the surface.

For decades Muni Metro has been pushed to its limits. Customers regularly experienced crowded trains and delays due to failures of critical and aging infrastructure like track or overhead lines, unresponsive train control and failed portal entries or vehicle breakdowns. Subway modernization, technology upgrades and improved regular maintenance, along with pilots like making the J Church route surface-only, aim to eliminate delays and minimize wait times, while improving safety and access on Muni Metro. The solution is three parts: subway modernization and renewal; Muni Forward surface-level Metro improvements; and upgraded technology and train control systems.

These changes that we are working on now are on track to deliver a Muni Metro that is frequent, dependable light rail service with short, uninterrupted trips (because the system will be free from congestion and delays caused by system failures), minimal wait times, high frequency of service and predictable transfers. Critical infrastructure that keeps the system moving will be state-of-the-art and routine maintenance will ensure the system is kept in a state of good repair. Modern stations, customer information and amenities will attract riders, provide equitable access and increase comfort and safety at all stages of our customers' journey. We are working to make Muni Metro the best option for crosstown trips, supporting the city's environmental and Vision Zero goals, while being safe and accessible for people of all abilities.