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Try Transit! Lessons Learned From Metrolink Riders to Incentivize a Post-Pandemic Mode Shift to Commuter Rail

Author
Owen, Elizabeth

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CAPSTONE PROJECT REPORT

UCLA Institute of Transportation Studies

Try Transit!

Lessons learned from Metrolink riders to incentivize a post-pandemic mode shift to commuter rail

Project Lead: Elizabeth Owen
Faculty Advisor: Professor Brian Taylor
Client: Southern California Regional Rail Authority - Metrolink

June 2022

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16. Abstract
The COVID-19 pandemic has left future travel to work behavior uncertain since most office employees have not yet returned to commuting to five days per week. This uncertainty underscores the precarious future of American commuter rail, with existing rail service narrowly focused on connecting suburbs to downtown employment centers. The goal of this project is to answer the following question: what factors motivate travelers to switch from driving alone to riding commuter rail? The recommendations of this study were informed by a literature review, two surveys conducted with existing and potential Metrolink riders, and a review of other commuter rail agencies' pandemic ridership and recovery efforts. Research focused on how to incentivize mode shift through a behavioral science perspective has provided ideas that broadly fall into three categories: "try transit" exposure programs; technologies that are either gamification-based apps or trip planning tools that provide information and rewards to people considering transit usage; and targeted marketing campaigns to attract new riders. Survey participants from this study reflected higher engagement and interest in Metrolink amongst low-income households, older riders, lapsed riders, people who have never used Metrolink, and riders mostly interested in using service for leisure trips. The surveys provided insights about the criteria that existing and potential Metrolink riders consider when choosing commuter rail, including feeling secure from crime, convenient train schedules, cleanliness onboard trains, and on-time performance. Metrolink riders expressed the need for increased access to real-time information, more transit connections offered at stations, and more affordable fare options. Other commuter rail agencies such as Caltrain, BART, Long Island Railroad, NJ Transit, and Metra all have found similar ridership trends and offer ideas for service improvement, marketing campaigns, and mode shift incentives that Metrolink should consider.

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METROLINK

Try Transit!

Lessons learned from Metrolink riders to incentivize a post-pandemic mode shift to commuter rail

A comprehensive project submitted in partial satisfaction of the requirements for the degree Master of Urban and Regional Planning.

June 2022

Disclaimer

This report was prepared in partial fulfillment of the requirements for the Master in Urban and Regional Planning degree in the Department of Urban Planning at the University of California, Los Angeles. It was prepared at the direction of the Department and of Metrolink as a planning client. The views expressed herein are those of the authors and not necessarily those of the Department, the UCLA Luskin School of Public Affairs, UCLA as a whole, or the client.

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I would also like to thank the UCLA Institute of Transportation studies, as this project was supported in part by a student fellowship funded through the UCLA Institute of Transportation Studies, the Pacific Southwest Region University Transportation Center, and the University of California Mobility Research Program (SB1).

The Institute of Transportation Studies at UCLA acknowledges the Gabrielino/Tongva peoples as the traditional land caretakers of Tovaangar (the Los Angeles basin and So. Channel Islands). As a land grant institution, we pay our respects to the Honuukvetam (Ancestors), ‘Ahiihirom (Elders) and ‘Eyoohiinkem (our relatives/relations) past, present and emerging.

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Executive Summary

Metrolink, a commuter rail agency operated by the Southern California Regional Rail Authority (SCRRA), is one of the busiest public transportation providers in Southern California. As of 2018, Metrolink service averaged over 47,000 weekday boardings, and because of its relatively long average trip lengths, Metrolink ranked second only to LA Metro in serving over 441 million passenger miles traveled that year. With the onset of the COVID-19 pandemic, ridership plummeted to only 100k boardings per month for most of 2020. As the pandemic continues, Metrolink ridership has been slow to recover. In February 2022, Metrolink reported 282,483 passenger boardings, only 28 percent of pre-pandemic ridership levels recorded in February 2020.

The COVID-19 pandemic has left future travel to work behavior uncertain since most office employees have not yet returned to commuting to five days per week. This uncertainty underscores the precarious future of American commuter rail, with existing rail service narrowly focused on connecting suburbs to downtown employment centers. Metrolink has an opportunity to appeal to new potential riders and leverage changes in commute behavior as a time for more sustainable habits by convincing people who currently drive alone to try transit. However, the relative dearth of recent research on commuter rail ridership motivations, combined with the need for pandemic and post-pandemic travel commute and traveler data, and willingness to experience mode shift all underscore the need for this research project.

The goal of this project is to answer the following question: what factors motivate travelers to switch from driving alone to riding commuter rail? To answer this question, I present an overview of the existing commuter rail ridership market, a conceptual framework for encouraging mode shift, a discussion of applying behavioral-science based research as an emerging focus of mode shift interventions, an analysis of original Winter 2022 survey data on riders' travel behavior and perceptions of commuter rail, and lessons learned from other commuter rail agencies data on riders' travel behavior that can inform strategies for post-pandemic ridership recovery on Metrolink.

While existing research offers context into the pre-pandemic commuter rail market and conceptual discussions of mode shift, I could find no data focused exclusively on the switch to commuter rail. Few studies have collected recent data on the influence on post-pandemic return to work plans and whether remote work will become more permanent. To better design post-pandemic service and regain ridership, commuter rail agencies need more data on lapsed riders' return-to-work plans and willingness to return to commuter rail. Research has proven that using behavioral science is a

new way to consider mode shift and elicit a greater response from drivers who are less sensitive to variations in the price of driving. However, no research on public transit agencies, let alone commuter rail providers, exists that have tested the effectiveness of behavioral science approaches to encouraging ridership compared to other approaches. Research discussing the application of behavioral science to transportation demand management (TDM) has generally served as a roadmap that provides a framework for future implementation and policy implications. Interventions discussed in behavioral science-based transportation research generally recommend "try transit" exposure programs, new technologies with gamification or trip planning tools that provide information and rewards, and targeted marketing campaigns to attract new riders.

The findings from this study are based on the results of two surveys conducted in December 2021 and January 2022. Participants included both current and potential Metrolink riders. Overall, my analyses of these survey data offer insights on the travel behavior of existing and potential Metrolink riders and the criteria they consider important when choosing whether to ride commuter rail. Survey participants reflected higher engagement and interest in Metrolink amongst low-income households, older riders, lapsed riders, people who have never used Metrolink, and riders mostly interested in using service for leisure trips. The surveys provided insights about the criteria that existing and potential Metrolink riders consider most important when choosing commuter rail, including feeling secure from crime, convenient train schedules, cleanliness onboard trains, and on-time performance. When asked to identify interventions that would encourage them to ride Metrolink more often, participants ranked real-time train status information, increased transit connections available at Metrolink stations, and more affordable fare options as the most important factors.

Continued ridership from low income, non-White households, and leisure travelers has represented most of the demand for transit during the pandemic observed by other commuter rail agencies in the U.S. Few commuter rail agencies have developed a post-pandemic ridership recovery plan and as a result, there is no set playbook for how agencies will recover ridership lost during the pandemic. Caltrain, BART, Long Island Railroad, NJ Transit, and Metra all offer ideas for service improvement, marketing campaigns, discounted fare programs, and mode shift incentives that Metrolink should consider.

While this study unearthed no silver bullet to restore commuter rail ridership, using behavioral science insights to incentivize mode shift offers a promising approach

to increasing transit ridership. However, more research is needed to craft and pilot incentives. It is impossible to say with certainty that any interventions will lead to a direct increase in ridership and a return to pre-pandemic ridership levels, however the data collected from this study can inform Metrolink of possible improvements that would improve service quality and incentivize more frequent ridership, particularly from people who are lapsed riders or who have never considered Metrolink.

The recommendations of this report fall into three priority areas:

1. **Improving riders' Metrolink experience and persuading potential riders to switch to Metrolink.** Future actions under this goal may be to diversify fare offerings that accommodate less predictable Metrolink demand, particularly for riders who do not want to commit to a fixed pass or to use Metrolink for work trips. Supporting expanded fare discounts for youth, seniors, and low-income riders may also encourage more frequent trips. Addressing the concerns of existing riders and people hesitant to try transit, particularly due to COVID and security concerns, and improving their access to information and ease of Metrolink use could also encourage ridership.

2. **Develop low-risk ways for people unfamiliar with transit to experience Metrolink and reward permanent mode shift.** Exposing people to Metrolink could occur through periodic "try Metrolink" pilots, a permanent program through the existing Corporate Partner Program, or through a rider referral program. New technologies could also improve trip planning capability and provide rewards for choosing alternative modes of transportation. Promoting fun, well-known destinations, such as through a formal "Rail to Trails" program could also incentivize ridership.

3. **Expand outreach efforts and community partnerships to attract new ridership.** Metrolink marketing efforts should use message framing to convince riders to adopt new habits, such as through anecdotes about time and cost savings to riders, personalized ads, and promoting the return to transit as a "welcome back" celebration that agencies look forward to. Strengthening community relationships by establishing formal partnerships with local transportation management associations (TMAs) and universities are another way for Metrolink to making connections within the community and be recognized as a household staple in California.

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Chapter 1 - Introduction

Metrolink, a commuter rail agency operated by the Southern California Regional Rail Authority (SCRRA), is one of the busiest public transportation providers in Southern California. As of 2018, Metrolink service averaged over 47,000 weekday boardings and over 441 million passenger miles traveled per year, making it the second busiest public transportation provider in Southern California (Metrolink 2018 Origin-Destination Study).

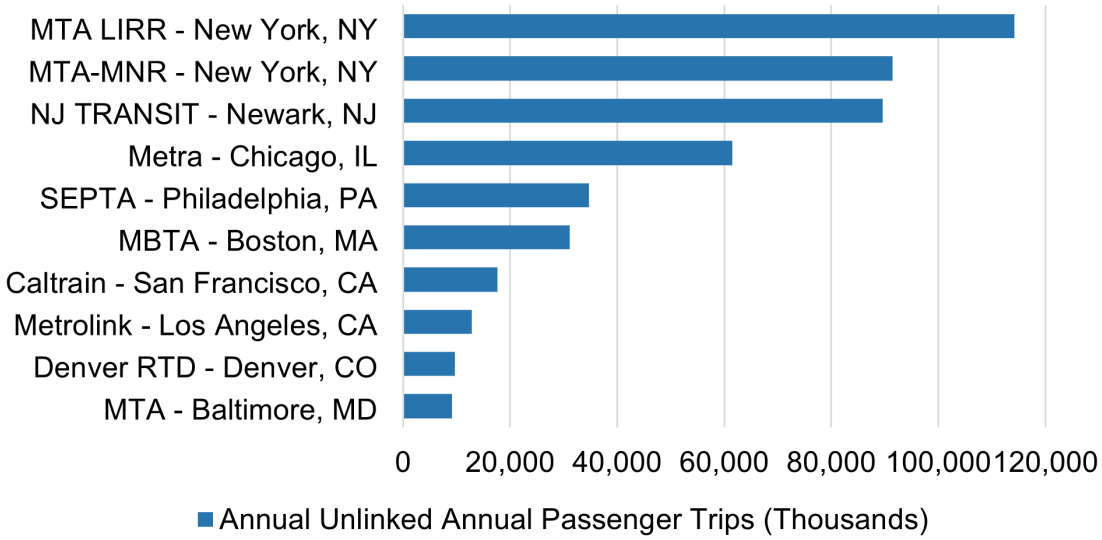
The Southern California Regional Rail Authority (SCRRA) is a joint powers authority funded by five transportation commissions that represent Los Angeles, Orange, Riverside, San Bernardino, and Ventura counties. SCRRA was established in 1991 with funds from half-cent sales tax revenue, Measure A and Measure I, to purchase abandoned right-of-way from the Southern Pacific Railroad. Metrolink service began in October 1992 with three routes and has since expanded to seven routes that serve 62 stations.

Metrolink System Ridership - National Comparison

As of 2019, Metrolink service averaged over 47,000 weekday boardings, and over 441 million passenger miles traveled per year (Metrolink 2018 Origin-Destination Study). By ridership, Metrolink is the eighth largest commuter rail system in the nation, and the second largest in California. **Figure 1** shows a comparison of Metrolink's annual pre-pandemic ridership compared to other U.S. commuter rail agencies.

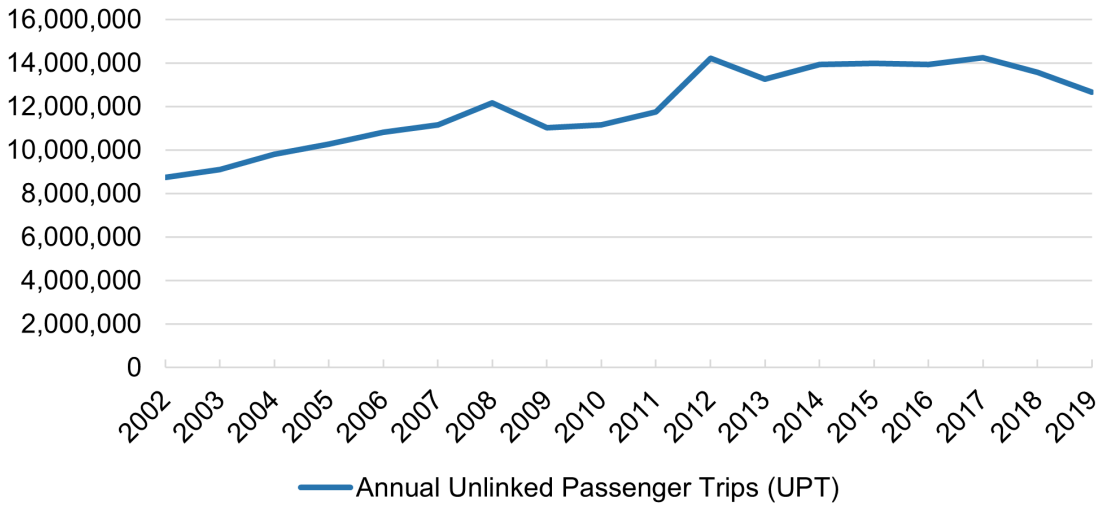
Data from the National Transit Database shows that Metrolink was experiencing an increase in ridership for nearly two decades. Annual ridership in 2002, the earliest year available, was at 8.7 million unlinked passenger trips. By the end of 2007, this increased to over 12 million. Ridership declined slightly during the years following the 2008 recession, however recovered to over 14 million by the end of 2012. Ridership peaked at the end of 2017 with 14.2 million, and declined to approximately 12.6 million at the end of 2019. **Figure 2** displays annual unlinked passenger trips for Metrolink from 2002 through 2019.

Figure 1: Largest U.S. Commuter Rail Agencies, by ridership (2019)



Source: *2021 Public Transportation Factbook, American Public Transportation Association*

Figure 2: Metrolink System Ridership (2002-2019)



Source: *National Transit Database, 2022*

Metrolink System Service – Characteristics by Line

Metrolink operates seven commuter rail lines throughout Southern California, each described below.

- **Ventura County Line**: This line spans 71 miles across 12 stations covered, with service between Ventura–East and L.A. Union Station. Service provides direct connections between Los Angeles and the Burbank Airport–South station and transfers from Amtrak's Pacific Surfliner service.

- **Antelope Valley Line**: This line spans 77 miles across 12 stations covered, with service between Lancaster and L.A. Union Station. Service provides connections between Los Angeles and the San Fernando Valley, with direct connections at the Burbank Airport–North station. The line includes service to Palmdale where future transfers may be available to high-speed rail, including northern service via the Bakersfield-Palmdale segment of the California High-Speed Rail system and eastern service to Las Vegas via the Brightline West line.

- **San Bernardino Line**: This line spans 58 miles across 14 stations, with service between downtown San Bernardino and L.A. Union Station. An additional five stops will be added to the line in a 2022 service extension from downtown San Bernardino to the University of Redlands.

- **Riverside Line**: This line spans 59 miles across 7 stations, with service between downtown Riverside and L.A. Union Station.

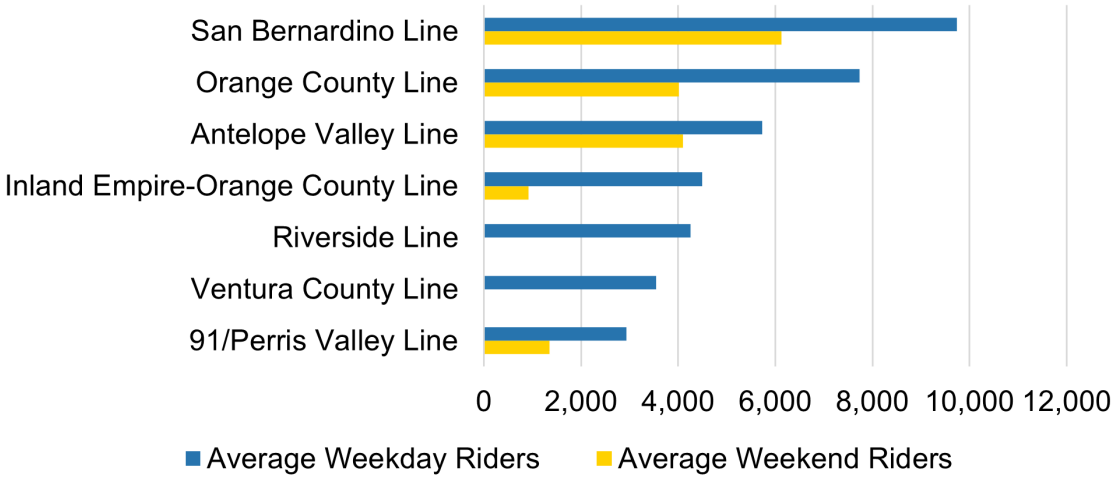
- **Orange County Line**: This line spans 87 miles across 15 stations, with service between Oceanside to L.A. Union Station. Service provides connections to Amtrak's Pacific Surfliner service and to service operated by the North County Transit District (NCTD) throughout San Diego County.

- **Inland Empire-Orange County Line**: This line spans 100 miles across 16 stations, with service between Downtown San Bernardino and Oceanside. It is the only Metrolink line that does not serve L.A. Union Station, making this route one of the only suburban rail lines in the U.S. to not connect to a major downtown city center.

- **91/Perris Valley Line**: This line spans 84 miles across 12 stations, with service between Perris – South and L.A. Union Station. Service was extended from downtown Riverside to Perris in 2016.

The San Bernardino, Orange County, and Antelope Valley lines had the highest weekday and weekend ridership before the COVID-19 pandemic. **Figure 3** displays average pre-pandemic ridership data for all seven lines obtained from 2018-2019 Metrolink Quarterly Fact Sheets, and **Map 1** provides a system overview.

Figure 3: Metrolink Average Ridership, by line (2018)



Source: Q3 FY2018-2019 Fact Sheet, Metrolink


METROLINK REGIONAL RAIL SYSTEM
VENTURA CO.
LOS ANGELES CO.
SAN BERNARDINO CO.
RIVERSIDE CO.
ORANGE CO.
SAN DIEGO CO.
PACIFIC OCEAN
Lancaster
Palmdale
Vincent Grade/ Acton
Via Princessa
Santa Clarita
Newhall
Sylmar/ San Fernando
Sun Valley
Burbank Airport – North (AV Line)
Burbank – Downtown
Glendale
L.A. Union Station
APU/Citrus College
Cal State L.A.
El Monte
Baldwin Park
Covina
Pomona – North
Claremont
Montclair
Upland
Rancho Cucamonga
Fontana
Rialto
San Bernardino – Depot
San Bernardino – Downtown
San Bernardino – Tippecanoe
Redlands – Esri
Redlands – Downtown
Redlands– University
Future Stations Under Construction
Ventura – Downtown / Beach
Ventura – East
Oxnard
Camarillo
Moorpark
Simi Valley
Chatsworth
Northridge
Van Nuys
BUR
Chatsworth
North Hollywood
Burbank Airport - South (VC Line)
Wilshire/Western
7th/Metro
Santa Monica
Atlantic
Montebello/ Commerce
Industry
Pomona – Downtown
ONT
Ontario – East
Jurupa Valley/ Pedley
Riverside – Hunter Park/UCR
Moreno Valley/March Field
Perris – Downtown
Perris – South
Riverside – Downtown
Riverside – La Sierra
Corona – North Main
Corona – West
Placentia Future Station
Commerce
Norwalk
Norwalk/Santa Fe Springs
Buena Park
Fullerton
Anaheim
Anaheim Canyon
Orange
Santa Ana
Tustin
Irvine
Laguna Niguel/ Mission Viejo
LAX
Redondo Beach
Long Beach
SNA
San Juan Capistrano
San Clemente
San Clemente Pier
Limited Service
Oceanside
Escondido
Solana Beach
San Diego
Antelope Valley Line
Inland Empire-Orange County Line
Orange County Line
Riverside Line
San Bernardino Line
Ventura County Line
91/Perris Valley Line
Future Station
Under Construction
Station Served by Multiple Lines
Amtrak Pacific Surfliner
Metro Rail/Metro Bus
LAX FlyAway Bus
Coaster
Oceanside to San Diego
Sprinter
Oceanside to Escondido
METROLINK
metrolinktrains.com
MAP NOT TO SCALE
Updated March 2022 subject to change

Before the pandemic, who used Metrolink service?

Metrolink's most recent ridership profiles rely on Spring 2018 survey data, published online in Metrolink's 2018 Origin-Destination Study. The results reflect 7,729 survey participants of both onboard and mailed surveys.

Sixty-seven percent of riders surveyed were non-Caucasian, a 2 percent increase since Metrolink's survey efforts from 2015. Caucasian riders reflect 33 percent of weekday riders surveyed, and Asian/Pacific Islanders account for 22 percent. Hispanic ridership is unchanged at 29 percent, while African American ridership declined by 5 percent.

The median household income of survey participants increased from $76,976 in 2015 to $92,833 in 2018. Participants who use the Ventura and Orange County Lines reported median household incomes over $100k.

Sixty-five percent of riders surveyed were using Metrolink five days per week. Eighty-one percent of all weekday trips were for work or business purposes. Eighty-two percent of systemwide weekday trips were for trips going to work destinations in LA County, followed by 16 percent in Orange County. Eighty-nine percent of weekend trips were non-work related, an increase from 82 percent in 2015.

The percentage of riders who rely on driving alone to reach their origin Metrolink station increased from 63 percent in 2015 to 67 percent in 2018. Thirty-six percent of riders reported use of Metro bus or rail as a transfer mode from Metrolink stations, up from 26 percent in 2015.

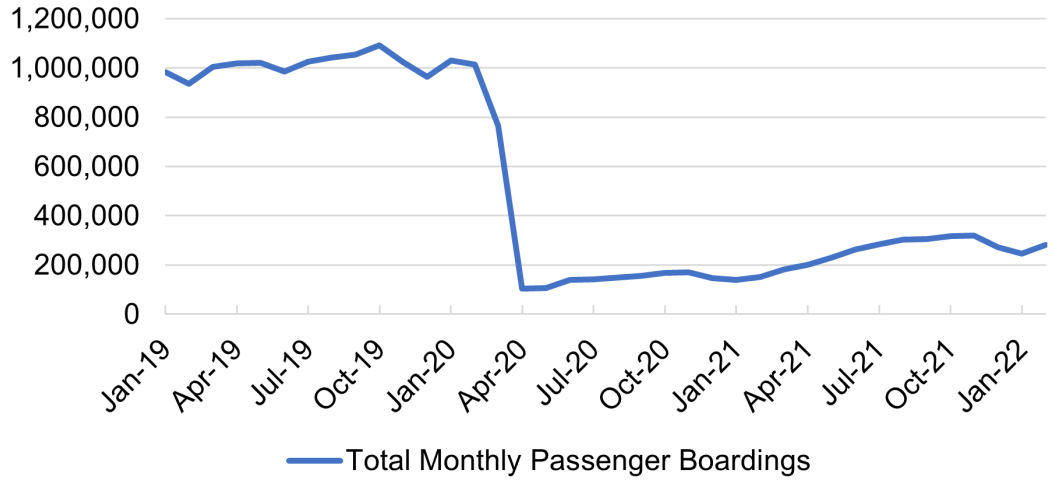
Reduced fares were the most frequently requested improvement to Metrolink service, followed by more reliable travel times, more evening trains, and being able to access more destinations with Metrolink service.

Effects of the COVID-19 Pandemic on Metrolink Ridership

The onset of the COVID-19 pandemic in March 2020 caused historic declines in public transit usage. **Figure 4** displays Metrolink system ridership from January 2019 through February 2022. From January 2019 through February 2020, Metrolink reported an average of 1 million passenger boardings per month. With the onset of the COVID-19 pandemic, ridership plummeted to approximately 100k boardings per month for most of 2020.

As the pandemic continues, Metrolink ridership has been slow to recover. The highest ridership since the start of the pandemic occurred between August 2021 through November 2021, however ridership declined slightly with the Omicron surge in December 2021. For the month of February 2022, Metrolink reported 282,483 passenger boardings, only 28 percent of pre-pandemic ridership levels recorded for February 2020.

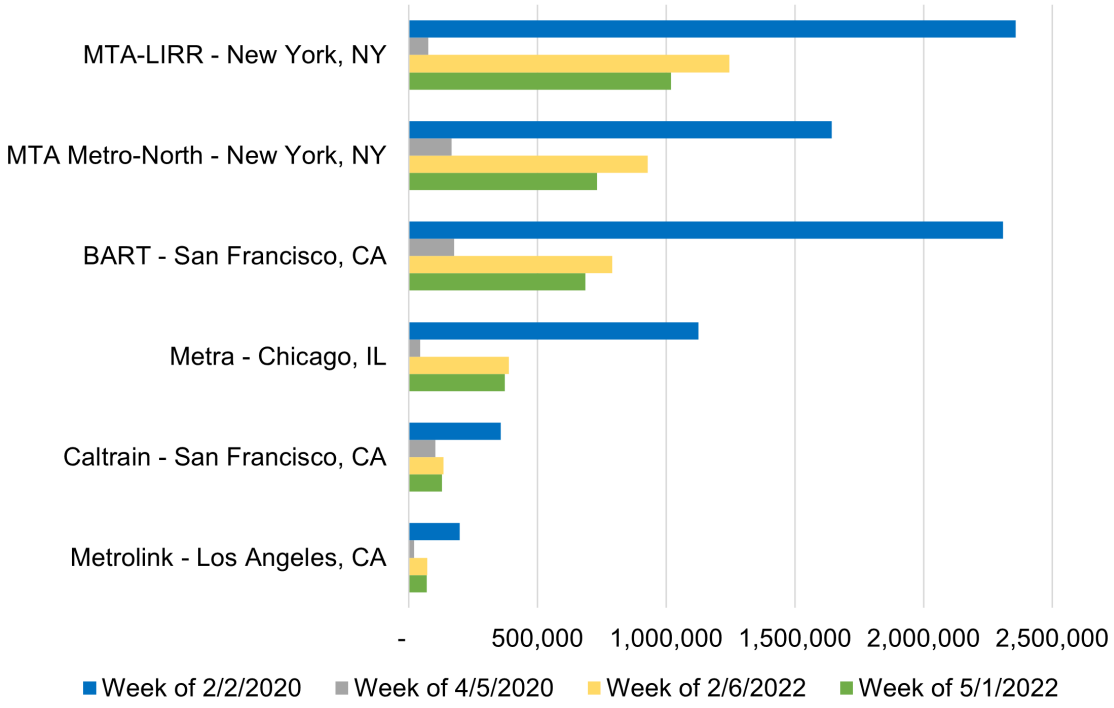
Figure 4: Metrolink System Ridership (January 2019 - February 2022)



Source: Monthly boardings data, Metrolink

The American Public Transportation Association (APTA) partners with the Transit app to publish estimates of weekly boardings and ridership recovery based on app usage and data submitted from transit agencies. **Figure 5** compares estimated weekly boarding data from the weeks of February 5, 2020, April 5, 2020, and February 2, 2022, for several commuter rail agencies in the U.S.; I selected agencies based on whether they exclusively provide commuter rail (no other modes). The Transit app data predicts that Metrolink ridership for the first week of February 2022 has recovered to 36 percent of what it was the first week of February 2020. The other agencies reviewed have similar estimates between 34 to 38 percent, with the exceptions of the MTA Long Island Railroad (MTA-LIRR) and MTA Metro-North Railroad (MTA-MNR).

Figure 5: Predicted UPT (Transit App)



Source: American Public Transportation Association Ridership Trends Dashboard

Takeaways from Metrolink's April 2020 COVID-19 Customer Survey

At the start of the pandemic, Metrolink distributed an online survey to its email subscribers and mobile app account holders. The survey was open for April 23-28, 2020, and collected 11,069 responses.

Low-income riders reported that they were less likely to stop riding Metrolink compared to higher-income riders. Only eight percent of riders earning less than $20k stated they had stopped riding compared to 22 percent of riders who earn between $100,00 to $149,999.

Seventy-one percent of people continuing to ride Metrolink identified as essential workers, and 32 percent said that Metrolink is their only available transportation mode since they do not have car access.

Eighty-one percent of riders surveyed said they are likely to ride Metrolink again. Thirteen percent of riders said they are unlikely to ride again and had concerns about social distancing (72 percent), cleanliness onboard trains (51 percent), and feeling safer in their own car (39 percent). After COVID-19 safety improvements, such as disinfecting and social distancing, riders who said they are unlikely to return again would be motivated by more frequent trains (53 percent) and discounted day passes (45 percent) to encourage their return to Metrolink.

Challenge: Predicting Commuter Rail Ridership Recovery

Since April 2020, Metrolink has not conducted ridership surveys. Gaps in information exist about the current and anticipated travel behavior of Metrolink riders who continue using service as well as those who stopped riding altogether. With 81 percent of Metrolink's pre-pandemic weekday trips for work or business purposes, it is uncertain how quickly Metrolink ridership will recover without these trips.

The COVID-19 pandemic has left future commute behavior uncertain since most office employees have not yet returned to commuting to work five days per week. This uncertainty underscores the precarious future of American commuter rail, with existing rail service narrowly focused on connecting suburbs to downtown employment centers. The era after the pandemic is an opportunity to shift the agency's focus from "commuter" to "passenger" rail given the declined demand for work trips Metrolink has an opportunity to appeal to potential riders who have never considered using Metrolink, or who previously considered Metrolink undesirable for their pre-pandemic travel. The COVID-19 pandemic has provided transit agencies a rare opportunity to leverage changes in travel behavior as a time to encourage new habits by convincing people who currently drive alone to try transit.

Research Objectives

This study presents a conceptual framework for encouraging travelers to shift modes, offers an overview of the existing commuter rail ridership market, and analyzes survey data on riders' travel behavior that can inform strategies for post-pandemic commuter rail ridership recovery.

Research Question

What factors motivate travelers to switch from driving alone to riding commuter rail?

Methods

To answer this question, the recommendations of this study are informed by the following:

- A literature review discussing the pre-pandemic commuter rail ridership market, criteria that influence mode shift, emerging research focused on promoting mode shift from a behavioral science perspective, and current discussions of post-pandemic ridership recovery

- Two surveys, conducted between December 2021 through January 2022, that solicited input on Metrolink users' travel behavior and the criteria they consider important when choosing to ride.

- A review of pre-pandemic and COVID-19 customer surveys, website information, and publications available from other commuter rail agencies in the U.S.

Chapter 2 - Literature Review

What do we know about mode shift to commuter rail?

This review of earlier travel behavior research aims to answer the following: what factors motivate behavior change in people who drive alone, and specifically what would make them switch to commuter rail? There is limited research focusing on mode shift from car to commuter rail, therefore the goal of this literature review is to better understand the relationship between these topics.

I focus this review on two areas: 1) factors attributing to early 2000s commuter rail ridership increases, and 2) efforts to understand motivations for mode shift from a new approach using behavioral science.

I begin with an overview of recent commuter rail trends to establish the context in which commuter rail ridership was increasing prior to COVID. I then discuss existing research relating to mode shift amongst drive-alone commuters to understand current knowledge and identify the established methods for evaluating mode shift. This is followed by a discussion of an emerging focus on promoting mode shift from a behavioral science perspective, a new framework for public transportation ridership campaigns. Finally, I conclude by presenting the challenges for commuter rail and the best practices recommended for commuter rail agencies to recover ridership.

I found several gaps in the literature that this project aims to fill. First, few recent studies focus on the factors influencing commuter rail ridership, as opposed to public transit use more broadly. There are also few studies of California commuter rail agencies, and I could find none that examine mode shifts from driving to commuter rail. I also found that considering mode shift from a behavioral science perspective is a promising approach to attract new transit ridership, however there is a lack of data testing the effectiveness of this approach and testing various mode shift incentives with people reluctant to use transit. Finally, the effect of the COVID-19 pandemic on both commuter rail ridership recovery and commute patterns is uncertain. A lack of data exists surveying commuters on their 2022 return-to-work plans, let alone on if they would consider adopting commuter rail as part of their eventual return to work.

Background: Increases in Commuter Rail - Late 1990s to March 2020

American commuter and passenger rail does not account for a significant proportion of transit ridership; however, transportation agencies argue that its demonstrated ridership growth over the past two decades makes it a tool to address suburban mobility and improve intercity travel. The two passenger rail systems in the Southern California Association of Governments (SCAG) region – Metrolink and the Amtrak Pacific Surfliner – provide nearly 900 miles of infrastructure that can reduce vehicle congestion and provide access to public transportation for those without private vehicles.

Commuter ridership declined during the decades following World War II, however, ridership rebounded in the 1980s and has been increasing since. Commuter rail accounted for 3 percent of unlinked U.S. passenger trips in 1990 and rapidly increased until 2007, when ridership plateaued and has since increased at a slower rate (Allen & Levinson, 2014). By the end of 2019, commuter rail ridership was at its highest, rising to just over 5 percent of all unlinked U.S. public transit passenger trips, while other transit modes, such as bus and light rail, were losing ridership (American Public Transit Association, 2019). An interesting distinction is that while ridership, measured in terms of boardings, has slowly grown in the past decades, commuter rail passenger miles have dramatically increased since 2005. **Figure 6** provides a comparison of commuter rail passenger trips, passenger miles, and national vehicle miles traveled since 1984 (Allen & Levinson, 2014). Increases in car ownership as an alternative to rail and residential sprawl placing housing further from downtown employment centers are likely to have affected ridership levels and increase the trip distance for commuter rail riders (Allen & Levinson, 2014).

Metropolitan areas elsewhere in the U.S. experienced ridership increases similar to Metrolink over the several decades prior to the pandemic. Allen and Levinson (2014) compared weekday ridership, summarized in **Figure 7**, for select commuter rail agencies throughout the U.S. that have been in service since 1967. Agencies throughout the U.S. experienced between 106 percent to 1,405 percent increases in ridership growth between 1967 and 2007.

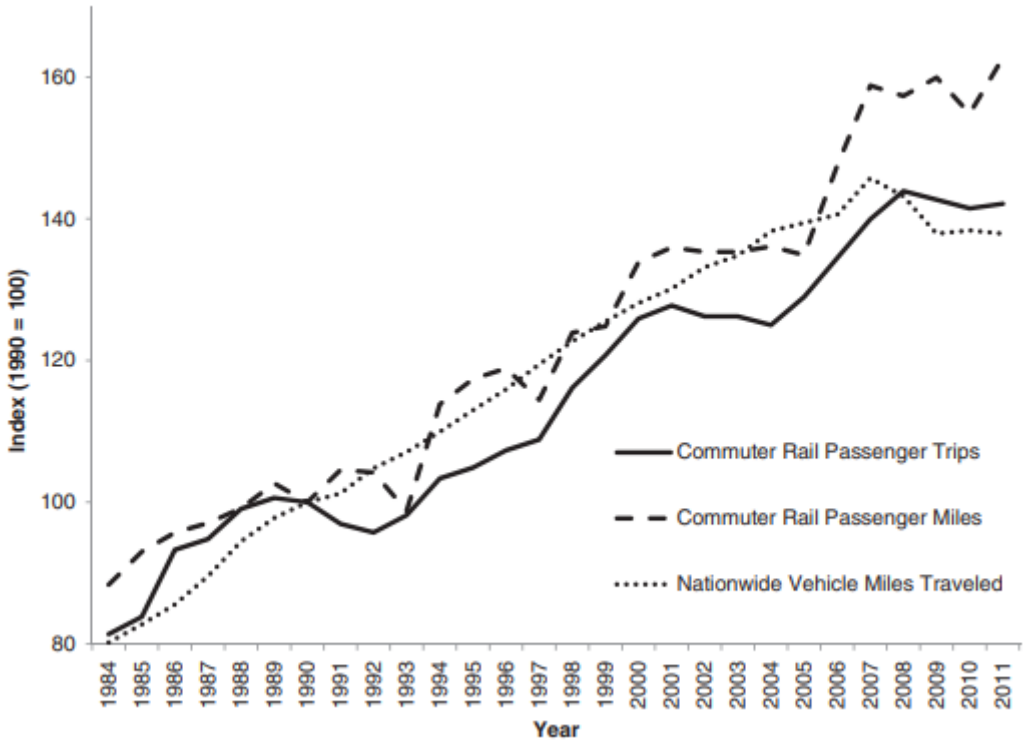


Figure 6 Source: Allen & Levinson, 2014

Figure 7: Total Weekday Ridership, National Comparison (1967-2007)

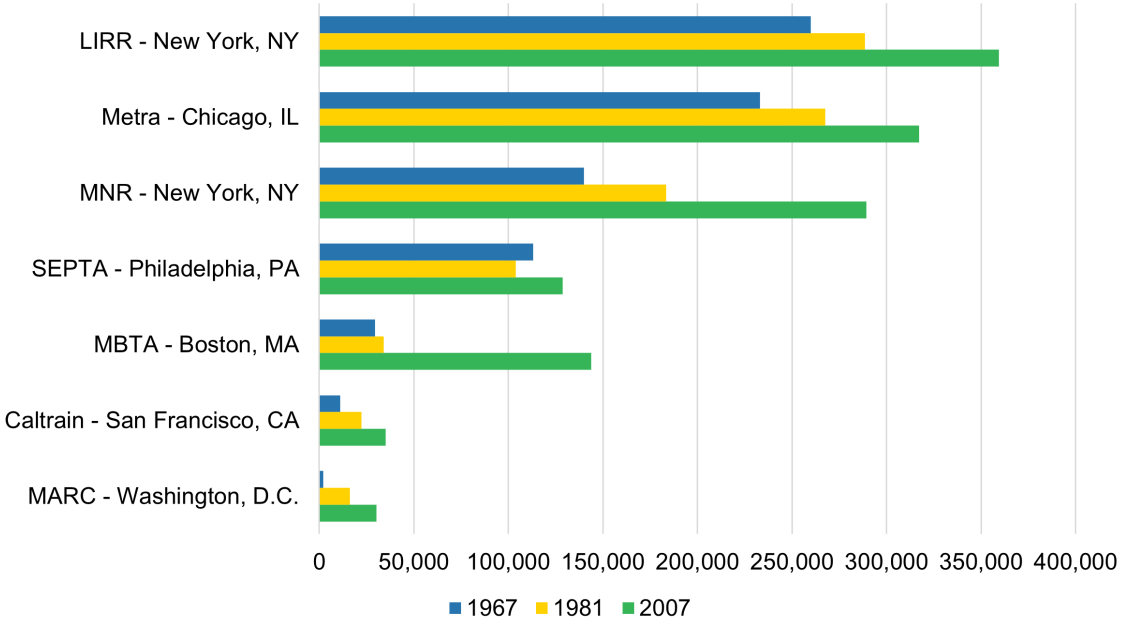


Figure 7 Source: Allen & Levinson, 2014

Researchers believe infrastructure investments and increased demand for alternatives to cars caused the increase in commuter ridership that has occurred since the 1990s. In terms of broader use of public transportation, people with limited car access - such as children, elderly, disabled, and low-income households - and commuters needing access to large employment centers were the two primary markets who represented most transit users throughout the past two decades (Taylor & Fink, 2003). The goal of commuter rail has primarily been to connect suburban residents to urban downtown employment centers, and Metrolink service before the pandemic was designed to primarily serve work trips. Allen & Levinson (2014) argue that highway congestion and downtown parking availability are two significant deterrents to car use that incentivize commuters to try rail. Continued commuter rail investments throughout the 2000s intended to serve the large number of workers who live in the suburbs and work downtown.

Little research exists that evaluates commuter rail ridership increases since 2010, however one early 2000s study from Yoh, Haas, & Taylor (2003) includes surveys of transit agencies that provide commuter rail service, including the Metropolitan Atlanta Rapid Transit Authority (MARTA) and Caltrain. Yoh et al (2003) argue that the 1996 Summer Olympics hosted in Atlanta supplied significant exposure to transit for the city and contributed to long-term ridership growth. Increased ridership following the city's hosting of the Olympics is especially promising for Metrolink given that Los Angeles will host the Summer 2028 Olympics. Yoh et al (2003) also collected data from Caltrain in the San Francisco Bay Area, one of the few metropolitan areas with significant passengers commuting both towards and away from downtown. Increased employment density in both Downtown San Francisco and San Jose, with new employment hubs in between the cities throughout Silicon Valley, fueled commuter rail ridership increases. Caltrain also attributes its increase in ridership to non-commuters, particularly recreational cyclists. Yoh et al (2003) found that as of 2003, Caltrain carried over 2,000 bicycle riders per day, the most on-train bicycle rider passengers in the U.S. (Yoh et al, 2003, p.114). The significant ridership increases experienced by MARTA and Caltrain offer lessons for Metrolink to consider in evaluating who their service could serve.

A Conceptual Framework for Understanding Mode Shift

Metrolink must understand the decision-making process of riders when choosing commuter rail over their private vehicle to effectively attract new ridership. Pre-pandemic research supported by the National Academy of Sciences developed frameworks for understanding intercity passenger rail mode choice. A 2016 report titled Intercity Passenger Rail in the Context of Dynamic Travel Markets from the National Cooperative Rail

Research Program (NCRRP) outlines a four-step process that summarizes the decision to choose passenger rail. “Longer-term values” include characteristics such as preferring privacy while traveling, valuing the independence and freedom of owning a car, valuing urbanism and sociability, and being able to access information and maintain productivity. The report concludes with the development of four scenarios in which rail ridership increases between 4 to 18 percent because of changes in values and attitudes about travel, car use, tolerance for privacy and information communications technology (ICT).

Figure 8 summarizes the findings of the NCRRP report and further expands on a transtheoretical model (TTM) that the Safe Routes Partnership (2017) set up to outline the stages of modifying transportation behavior. Safe Routes Partnership outlines a five-step process for behavior modification: pre-contemplation, contemplation, preparation, action, and maintenance. The model I developed in **Figure 8** includes these five stages plus internal (colored in purple) and external (colored in green) factors that influence the transition between each stage in the process of deciding on a new mode of transportation.

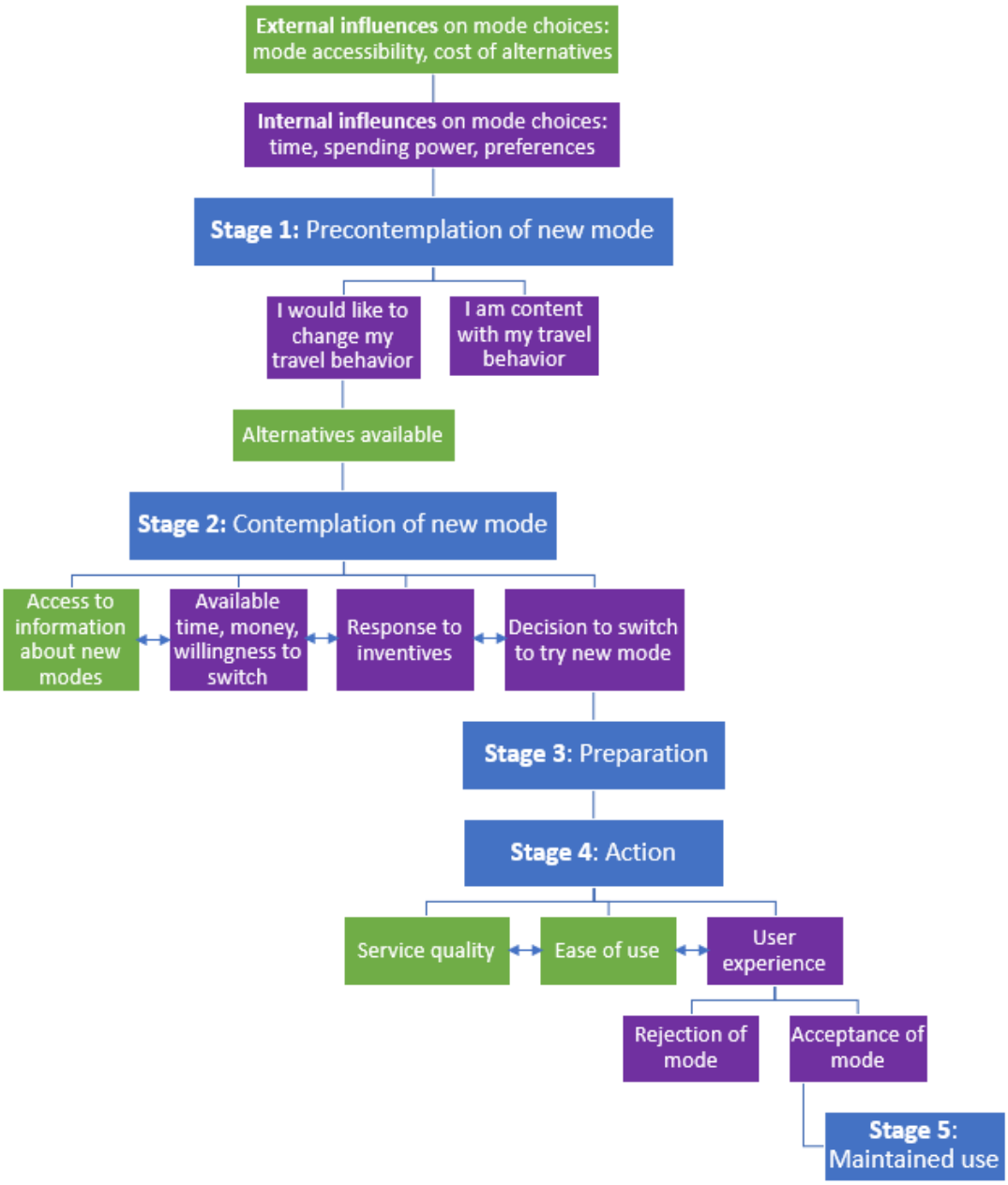


Figure 8: Conceptual framework for understanding the mode-shift decision making process

Challenge: How Can Agencies Encourage Mode Shift from Cars to Rail?

No data could be found from U.S. rail agencies that tracks whether observed ridership increases are directly caused by gaining new riders who switched from private vehicle to rail. Rail agencies have not surveyed their riders who own a private vehicle (people with "mode choice") on why they choose to use or even prefer public transit over their own vehicle. The current industry practice for encouraging transit ridership is to communicate to potential riders the high monetary cost of driving, but recent research has found that monetary costs alone are not enough to encourage significant mode shift.

Drivers' Reluctance to Consider Alternative Modes

Given the convenience and flexibility of cars, planners have had a difficult time convincing drivers that their commute could be improved by ditching their car. Psychological resistance to changes in commute has been a significant focus of recent commuter studies. Gao, Shao, and Sun (2019) found that people commuting via car have stronger desires for routine, are more likely to resist change, and have a less emotional reaction to the stress of driving. Findings from a 2004 commuter survey from Ory et al indicate that just half of Bay Area commuters surveyed were content with their commute, yet people gradually become more tolerant to their commute since they believe it is "reasonable" compared to people with different jobs, work locations, and commute time and frequency As a result, Bay Area commuters surveyed reported a higher tolerance for stressful commutes over time and as their incomes increase. These perceptions of existing commute quality are a significant policy barrier to encourage mode shift to public transportation, as some commuters may be resistant to approaches that try to shift travelers away from driving.

Debate: The Carrot or the Stick Approach to Encouraging Mode Shift

While lower out-of-pocket costs for public transit compared to driving do increase ridership, studies focused on mode shift within the last 10 years have acknowledged that the extent of monetary commute costs only go so far to encourage mode shift. Zhou and Schweitzer (2011) found that making transit cheaper is limited in encouraging drivers to switch to transit. Zhou and Schweitzer (211) argue the time differences between driving and public transit are the most significant predictor of drivers' willingness to switch modes. Chakrabarti (2017) argues that planners are

aware that the relative costs of driving must be high to motivate drivers to switch to transit, yet planners have struggled to determine a threshold for when costs become too high, and people can no longer afford frequent driving. This becomes difficult to establish when higher costs of driving are likely to only price out those with lower spending capability, often lower-income drivers. Riggs (2017) argues that there is little consensus on how much transit agencies should balance "carrot" (transit incentives) and "sticks" (such as by pricing driving). Riggs argues that reliance only on attracting new transit riders through changes in the monetary costs of commuting by car have become too common and that these tools have lost their value and made drivers increasingly price-inelastic over time (Riggs, 2017). Using data collected from a 2015 pilot of students and employees at California Polytechnic University, San Luis Obispo, Riggs argues that using social incentives to change travel behavior can have an equal if not greater effect than financial incentives. Ultimately, the existing discourse on encouraging mode shift proves that there is a gap in understanding how both financial and social factors contribute to changes in travel behavior.

A New Perspective: Applying Behavioral Science to Mode Shift

The potential overuse of pricing mechanisms to cause mode shift has encouraged researchers to try to understand travel behavior from a different perspective. This literature review found that a significant number of transportation academics are researching travel behavior from a behavioral science perspective. Chakrabarti (2017) argues that policy is the only way to influence travel choices, however, mode choice is an inelastic decision that "is governed by a complex set of personal attitudes, preferences, habits, culture, lifestyle, and physical (dis)abilities" beyond the costs incurred (Chakrabarti, 2017, p.81). Incorporating a behavioral science approach into studies on commuter behavior can provide planners with a greater understanding of the psychological impact of commuting and the role that social forces and personal attitudes towards transit have on mode shift.

Evaluating the role of Behavioral Science in Mode Shift

Applying behavioral science to the study of public transportation is a relatively new concept, so most literature on the topic serves as a broader road map that provides a framework for future implementation and policy implications. I could find no research on public transit agencies, let alone commuter rail providers, that have tested the effectiveness of behavioral science approaches on encouraging ridership compared to other interventions. Studies on the role of behavioral science have mostly

summarized best practices and behavioral science techniques or have led small pilots primarily with universities, that exposed a small population of drivers to transit and tested the effectiveness of various incentives. A paper released in 2021 from the Behavioral Science & Policy Association offers an overview of existing research on behavioral science approaches and strategies to encourage transit use. Kormos et al (2021) classify behavioral science interventions into three general categories: communication-based, bias-busting, and technology-based interventions. They argue that there are tradeoffs associated with all of these approaches, particularly in tracking long-term mode shift and finding a sample population that is both willing and unbiased in participating in a “try transit” pilot. The paper is most impactful for its recommendation of eight strategies that behavioral science-based transit studies should test, including 1) information provision interventions; 2) interventions focused on user goal setting and plan formation; 3) message framing campaigns; 4) strategies to counter negative views of public transit; 5) campaigns or pilot programs that aim to break habits; 6) interventions to help new transit riders overcome anticipated dislike of transit, particularly social interactions; 7) interventions focused on the emotions associated with making major decisions; and 8) feedback and gamification interventions that leverage potential technology partnerships.

Using behavioral science to change travel behavior has also been an area of discussion amongst transportation demand management (TDM) consultants. Alta Planning + Design has published several toolkits and presentations exploring how to apply behavioral science approaches to TDM. A 2018 study by Alta focused on encouraging more frequent transit use in Canada outlines a three-step approach for applying behavioral science to TDM: 1) mapping out behavioral touch points, 2) designing interventions, and 3) testing whether interventions are effective. Alta’s research further divides riders into three market segments: 1) people who currently are low-frequency riders, but want to “try it again”, 2) moderate-frequency users who want to “make it a habit”, and 3) high-frequency users who want to “use it well”. Using these frameworks to understand the motivations for mode shift and to understand the various markets of current Metrolink ridership could provide tailored interventions that incentivize ridership.

Existing Pilot Studies that Studied Mode Shift in Drive-Alone Commuters

The existing research on the factors that influence mode shift fall into two categories: 1) studies that surveyed existing transit riders on their commute behavior, perceptions of transit, and response to potential incentives, or 2) studies that conducted a pilot program, involving participants willing to try transit for the first time in exchange for a free pass, and surveyed participants on their willingness to continue transit use before and after exposure. Ibrahim et al (2019) conducted research in Malaysia that is one of the only studies on commuter rail mode shift within the last 10 years, and they surveyed commuters both before and after their transit experience. Other studies involving rider surveys from Horton and Louviere (1974), Spears et al (2013), and Fu and Juan (2017) provided surveys on public transit perceptions and commute behavior, which influenced the questions included on the surveys for this study. Ory et al (2004) best described their methodology by classifying survey questions into ten categories asking participants' opinions on 1) objective mobility; 2) subjective mobility; 3) travel liking; 4) relative desired mobility; 5) attitudes towards travel (participant response to statements); 6) participants' personality; 7) participants' lifestyle; 8) excess travel; 9) participants' mobility constraints; and 10) participants' socio-demographic characteristics.

Two pilot programs, both conducted in university settings, offer valuable insight into how to design a successful transit pilot that studies mode shift. The earliest was a "try transit" pilot at the University of California, Los Angeles during June 2008 that provided a 12-week bus pass to employees willing to give up their employee parking pass. The goal of the pilot led by Gould and Zhou (2010) was to "unfreeze" driving habits, change misconceptions of transit, and provide a space for behavioral change by providing drivers with the experience of using transit. The pilot had 381 participants who completed surveys before and after the pilot, and two-thirds of participants continued using transit and permanently surrendered their parking passes. Riggs (2017) later conducted a campus travel survey with California Polytechnic State University, San Luis Obispo, in 2015 which involved nearly 4,500 participants who were university students, faculty, and staff. 3,961 participants supplied responses to a survey designed to capture data on participants' commute behavior, and 500 survey participants were then invited at random to receive an incentive to switch to transit. Some of the incentives were a pass, while others were simply a free coffee or other non-financial perks. Riggs found that social values could have an equal or greater impact than financial incentives, and that willingness to do something positive for the environment was a motivation for 43 percent of participants to try transit.

Ultimately, both the existing research on behavioral science approaches and previous “try transit’’ pilots offer surveying examples for how to collect data on commute behavior and willingness to try transit for the first time. It is important to acknowledge, however, that none of the research on commute behavior has focused on the influence of remote working and what effect the COVID-19 pandemic will have on decreased travel due to work-from-home capability. Additionally, none of these transit pilot programs have focused on U.S. commuter rail.

Encouraging Ridership After COVID: What is the Future of Commuter Rail?

At the beginning of 2021, commuter rail trips accounted for only 2.3 percent of public transit trips, down from 5 percent in 2019 (APTA, 2021). The national level of agencies’ public transportation (all modes) recovery as of November 2021 is at 65 percent of pre-pandemic ridership levels (APTA, 2021). For February 2022, Metrolink restored just 28 percent of pre-pandemic ridership, and Caltrain in the San Francisco Bay Area scored similarly at 36 percent. Commuter rail agencies within dense urban areas along the east coast have had greater levels of recovery. The Long Island Railroad, Metro-North, SEPTA (Philadelphia), MBTA (Boston), and the MTA (Baltimore) have all recovered between 54 to 61 percent of pre-pandemic ridership (APTA, 2021). Two interesting outliers within the list of 2019 top-performing commuter rail agencies are Metra (Chicago) and Denver RTD. Metra has only recovered 29 percent of ridership, while Denver – an agency that provides other modes of service beyond commuter rail - has had the greatest recovery at 69 percent.

It is impossible to deny that the future of commuter rail still is uncertain. There are not enough data to definitively say that commuters will return to downtown jobs or whether commuting mode will change because of the pandemic. The Federal Transit Administration (FTA) did release a toolkit in 2021 that offers five best practices for renewing post-pandemic transit ridership. They highlight best practices from public transit agencies throughout the United States, and their guidance focuses on 1) ridership campaigns, 2) review of transit system design, 3) restoring public confidence in transit safety, 4) levering partnerships, and 5) building better transit that also prioritizes climate change and equity. While ambitious and forward-thinking, the FTA toolkit offers little guidance on specific implementation strategies. Their recovery strategies are also not focused exclusively on commuter rail.

It is certain that rail will remain a part of the future of American mobility, however, it is unclear whether commuter rail specifically will attract enough riders or be a significant policy focus given the uncertainty in commute behavior. A report produced by the Congressional Research Service (2021) focuses instead on the importance of future high-speed rail and Amtrak investments, and the report has no mention of commuter rail, which indicates a burden on state and local governments to be the primary source for commuter rail funding and operation costs Federal bailouts like the ones provided throughout the pandemic may be a three-off event that commuter rail agencies will not have again. A 2021 report from the US Government Accountability Office (GAO) does have a commuter rail focus, however, the report offers a grim outlook on commuter rail recovery by focusing on the high capital and operational costs associated with service in combination with low fare recovery revenue due to the pandemic.

Before the pandemic, the California Department of Transportation did produce a California State Rail Plan (2018) that has a strong 2040 Rail Vision. Data from the plan states that as of 2018, rail accounts for only 0.34 percent of passenger miles in California. The 2040 Rail Vision aims to have passenger rail trips account for 6.8 percent of all passenger miles and hopes to divert 88 million daily passenger trips from highways to rail by 2040. These ridership numbers are extremely ambitious, and the plan offers few implementation tools or sub-regional projections. The plan also shows a focus on high-speed rail and regional trips over commuter trips. The Southern California Association of Governments (SCAG) Connect SoCal Passenger Rail report (2020) acknowledges the importance of Metrolink service throughout southern California, however most of the future projects evaluated are focused on high-speed rail and Amtrak service.

The greatest question for commuter rail agencies is whether they can survive without work or business trips. The loss of downtown trips, combined with the loss of higher-income riders who can afford to use a car instead, make a strong case for expanding the focus of commuter rail to markets besides commuters. Both Bloomberg and the New York Times have released opinion pieces throughout the pandemic weighing in on commuter rail recovery. Most of the discussion on commuter rail has been to expand service to accommodate the increase in off-peak trips, and to add new off-peak service and improve service to attract riders beyond five-day work trips. Agencies like the MBTA (Boston) and SEPTA (Philadelphia) attribute their higher levels of ridership recovery to service improvements reflecting a broader user market. SEPTA's post-pandemic transit recovery plan includes a vision for commuter rail that views service as a "frequent, regional transit system that runs more like a

metro than a commuter railroad" (Governing, 2021). New Jersey Transit has also prioritized strategies that regain some of the revenue lost from monthly passes by offering a FlexPass that provides 20 one-way rides per month at a 20 percent discount (NY Times, 2021). Frequency, off-peak service, and fare pricing designed for less frequent users all seem to be the predominant tools used by commuter rail agencies to recover ridership. Efforts to rebrand existing commuter rail as passenger rail service that appeals beyond work trips will be necessary for Metrolink to recover ridership and eventually exceed pre-pandemic levels by capturing new users from mode shift. Lessons Metrolink could adopt from other commuter rail agencies will be explored further in this study.

Takeaways from Literature Review

While the future of commuter rail is uncertain, the post-pandemic period provides an opportunity for a new era of commuter rail. Reimagined service and initiatives to attract new ridership will be crucial in restoring ridership to pre-pandemic levels. Encouraging mode shift from people who previously drove to work, as well as an expanded focus on markets beyond work trips, offer an opportunity to attract new riders to transit and change habits.

The goal of this literature review was to understand what factors motivate voluntary behavior change in people who drive alone, and specifically what would make them switch to commuter rail. More research is needed to understand will motivate changes in travel behavior during and after the pandemic. Research has proven that using behavioral science is a new way to consider mode shift and elicit a greater response from drivers insensitive to the price of driving. More data is needed testing drivers' responses to interventions focused on improving access to transit information, message framing, changing bias against transit bias, and other behavior-focused interventions.

The lack of recent research on motivations for choosing commuter rail combined with the need for post-pandemic commute data and willingness to experience mode shift all underscore the need for this research project. While the studies cited all offer context into the pre-pandemic commuter rail market and conceptual discussions of mode shift, I could find no data focused exclusively on the switch to commuter rail. Few studies have collected recent data on the influence on post-pandemic return to work plans and whether remote work will become more permanent. To better design post-pandemic service and regain ridership, commuter rail agencies need more data on lapsed riders' return-to-work plans and willingness to return to commuter rail.

Chapter 3 - Research Design

Methodology

This project relies on surveys as the primary tool of data collection. The commuter rail case studies that I found in the literature review all relied on surveys of current riders to collect data. The intent of this project is to also capture feedback from people who do not currently use Metrolink. With support from Metrolink staff, I conducted two surveys, each with distinct goals. Copies of both surveys are provided in **Appendix items 1 and 2**.

I also hoped to gain an understanding of how other commuter rail agencies in the U.S. view the post-pandemic future of commuter rail and forecasts for ridership recovery. I hoped to find strategies that other agencies have explored and proven effective to encourage ridership recovery. This research entailed analyzing materials available on transit agency websites, publications, and data from recent ridership reports and customer service surveys.

Amended Research Plan due to Omicron Winter 2022 Surge

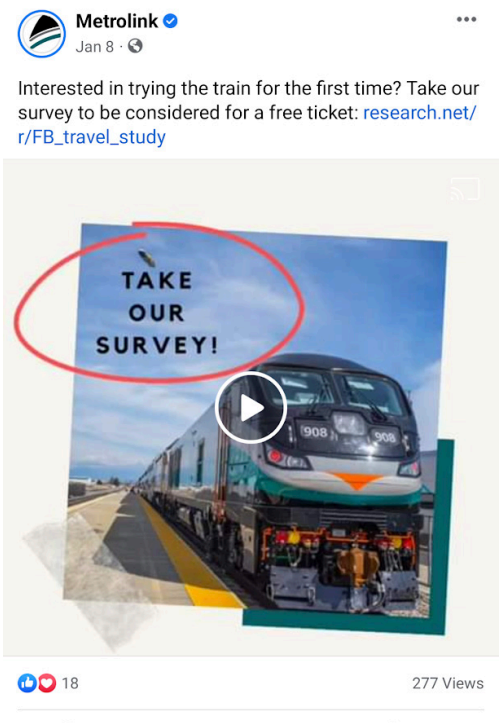
The original focus of my research plan was to recruit people willing to try Metrolink for the first time and to see if riders' perceptions of public transportation and willingness to use commuter rail increased after exposure to Metrolink. We originally planned a three-step process for the surveys. First, Metrolink staff would recruit participants to complete survey 1. People who live in the Metrolink service area and fully completed the first survey would then be invited to ride Metrolink, using a complementary round-trip ticket. Participants who successfully redeemed their ticket would then be emailed a second follow-up survey evaluating their experience using Metrolink and what would incentivize more frequent use. After survey 1 was made available on December 20, 2021, and eligible participants sent a complementary ticket, we observed a low number of ticket redemptions and received requests to extend the deadline to redeem the ticket beyond early February. Only 110 tickets were redeemed by participants, meaning that they either were not riding Metrolink or chose not to redeem the promo code. Because few participants were willing to complete both the online survey and participate in-person – likely due to both the surge in COVID-19 cases and the winter holidays – we then amended the second survey to capture feedback that did not depend on using Metrolink service to answer questions. We also extended the deadline to redeem complementary tickets until February 28, 2022.

Survey 1 Purpose

The first survey is designed to collect socio-economic data on current and potential riders, understand their pre-pandemic travel behavior, and understand their perceptions and attitudes of Metrolink and public transportation. Survey 1 asked 22 questions. As an incentive, Metrolink then offered 685 complementary round-trip ticket promotion codes for participants who completed the first survey and were interested in participating in a second follow-up survey.

Survey 2 Purpose

The second survey is designed to understand participants' decision-making criteria when choosing Metrolink over alternative modes and whether certain incentives would encourage more frequent Metrolink use. Survey 2 asked four questions. As an incentive to complete the survey, participants who responded to Survey 2 were entered into a raffle to win 15 seven-day passes.



Above: Example of Metrolink social media post promoting the first survey

Participant Recruitment

The recruitment of participants to complete both surveys relied on the use of Metrolink's official social media accounts and through targeted Facebook ads inviting people to take part in a Metrolink survey. We intentionally included targeted ads so that we could recruit survey participants who did not subscribe to Metrolink social media, many of whom have likely never used Metrolink and could be considered potential riders. The targeted ads were conducted to reach Facebook users who lived within 5 miles of a Metrolink station.

Metrolink staff oversaw weekly postings on Facebook, Instagram, and Twitter that invited responses to Survey 1. Survey 1 was published weekly on Metrolink social media and was open from December 20, 2021, through January 15, 2022. Survey 1 received a total of 1,628 responses. Metrolink staff then reviewed Survey 1 responses and sent a free round-trip ticket to ride Metrolink to respondents who lived within the Metrolink service area and completed all survey questions. This was a total of 811 respondents.

The 811 respondents from Survey 1 were then sent a follow-up email on January 26, containing a link to Survey 2. Survey 2 was open from January 26, 2022, through February 4, 2022. A total of 219 responses were received, a 27 percent response rate. For comparison, Metrolink's April 2020 COVID-19 Customer Survey was sent to 226,000 Metrolink users and received 11,069 responses, a nearly 5 percent response rate.

Sample Size

Survey 1 had 1,628 total responses and survey 2 had 219 responses. Before analyzing the data, I removed any observations that included a blank response to a survey question, as respondents were asked to complete the entire survey. I did not exclude responses where "Prefer not to answer" was indicated and provided as a response option. I also dropped from the sample respondents who said their county of residence was outside the Metrolink service area, indicated on the survey as "some other county". As a result, 817 observations were dropped from survey 1 and 17 observations were dropped from survey 2.

Changes in the results of both surveys from excluding observations were not statically significant; responses differed by no more than 3 percent for most

questions. An exception to this is the question asking the date of participants' last trip with Metrolink; a large number of excluded participants used Metrolink in the past month (22 percent of the original sample, 12 percent of the final sample) or within the past two to six months (19 percent of the original sample, 15 percent of the final sample). The demographic data from survey participants remained nearly the same, with some variation by race (a "check all that apply" question): 478 responses from Caucasian participants in the final sample (compared to 556 before dropping), 262 from participants of Hispanic origin (compared to 316), 55 from African American participants (compared to 68), 33 American Indian or Alaska Native participants (compared to 38), 132 Asian or Pacific Islander participants (compared to 152). Because blank responses were dropped, this resulted in Caucasian participants representing nearly 60 percent of the final sample despite being only 34 percent of all responses received.

With the observations dropped from both surveys, 50 percent of survey 1 responses were considered valid for analysis and 92 percent of survey 2. For comparison, 54 percent of Metrolink's 2018 Origin-Destination Study responses were considered valid for analysis, with 14,258 completed surveys and 7,729 used as the study sample size. The final sample size of survey 1 is 811, and the final sample size of survey 2 is 202.

Data Analysis Plan

The product of these two surveys is a series of detailed survey responses conveyed in tables, charts, and summary text. I analyzed the responses to both surveys in Stata and coded each survey question to conduct data analysis. Metrolink staff handled administering both surveys on SurveyMonkey, and staff removed all personal identifiers such as participants' name and email before providing me with the data. The desired outcomes of these two surveys were to collect data that informs commuter rail agencies' understanding of the factors that motivate behavior change and, in particular, a switch to commuter rail among drive-alone commuters. The results of these surveys supply demographic data on who existing and potential Metrolink riders are and their pre-pandemic and predicted 2022 travel behaviors. Both surveys collected data on the perceptions and attitudes drive-alone commuters have of commuter rail and other modes of public transportation. Finally, survey 2 identified the criteria people value when making the decision to ride Metrolink, and what incentives and service improvements would encourage their more frequent use.

Chapter 4 - Summary of Survey Results

Participant Demographics

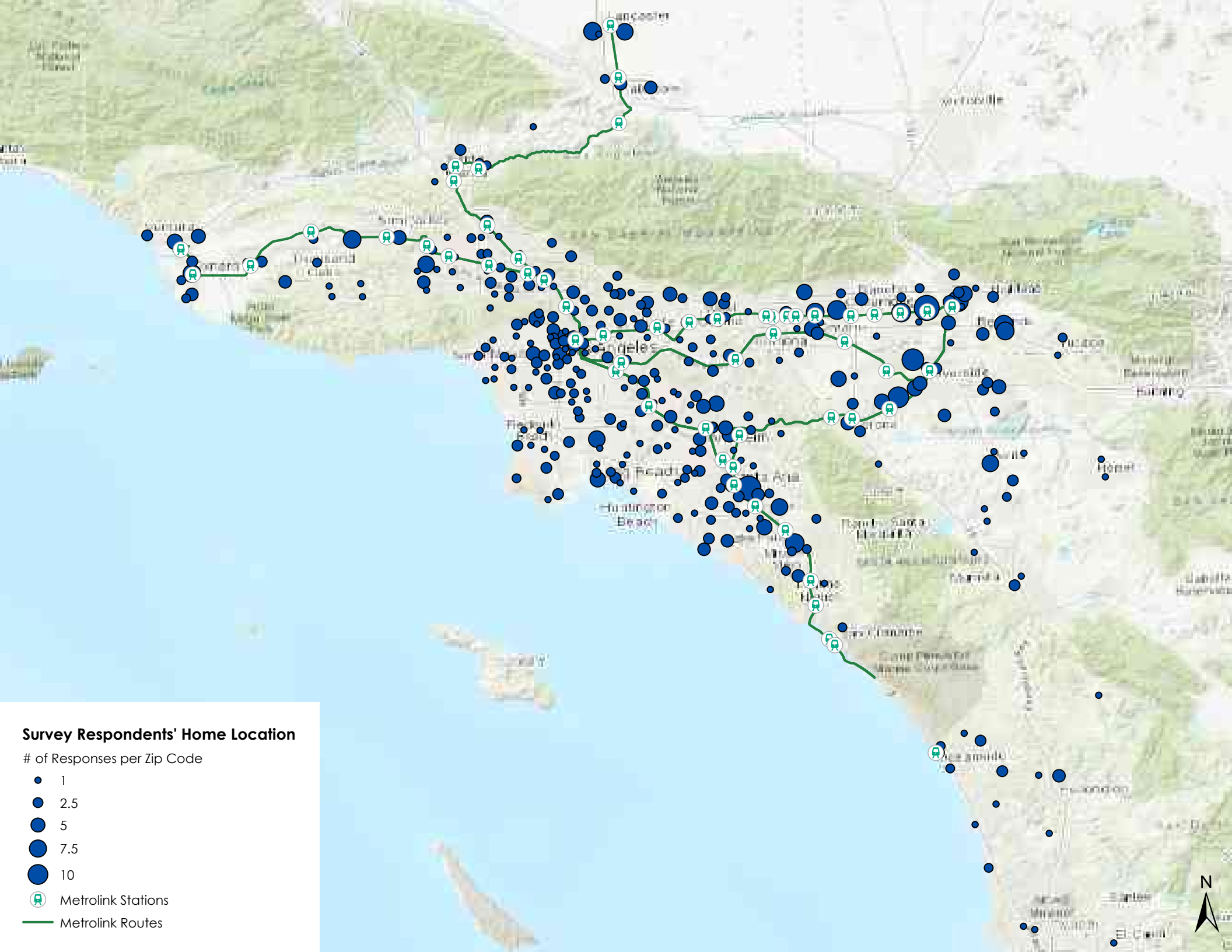
The race of participants is similar to those identified in Metrolink's 2018 Origin-Destination Study; when including blank responses, 34 percent of all responses received were from Caucasian participants compared to 33 percent in 2018.

Participants live and work in over 300 zip codes across Southern California, shown in **Maps 2 and 3**. Almost half of participants are residents of Los Angeles County, which is consistent with 2018 survey data. When zip codes were compared to the nearest Metrolink station, sizable response rates were found from participants who live in San Bernardino County stations and by those who work near Los Angeles Union Station or in Orange County.

The median age of participants is 51 years old, which is slightly older than the 44 years old median age found of Metrolink riders in 2018. 50 percent of participants identify as male, 49 percent female, and 1 percent chose other and self-identified.

The household income of participants was significantly lower than findings from earlier Metrolink ridership surveys. Forty-two percent of participants stated that they earn less than $20,000 to $49,999 annually. For comparison, the median household income of Metrolink riders in 2018 was $92,833. **Figure 9** compares participants' household income.

Forty-one percent of respondents are full-time employees, followed by 24 percent are retired. San Bernardino, Orange, and Los Angeles County had the highest percentage of full-time workers. Ventura and Riverside County had the most retirees.


Survey Respondents' Home Location
# of Responses per Zip Code
1
2.5
5
7.5
10
Metrolink Stations
Metrolink Routes
N

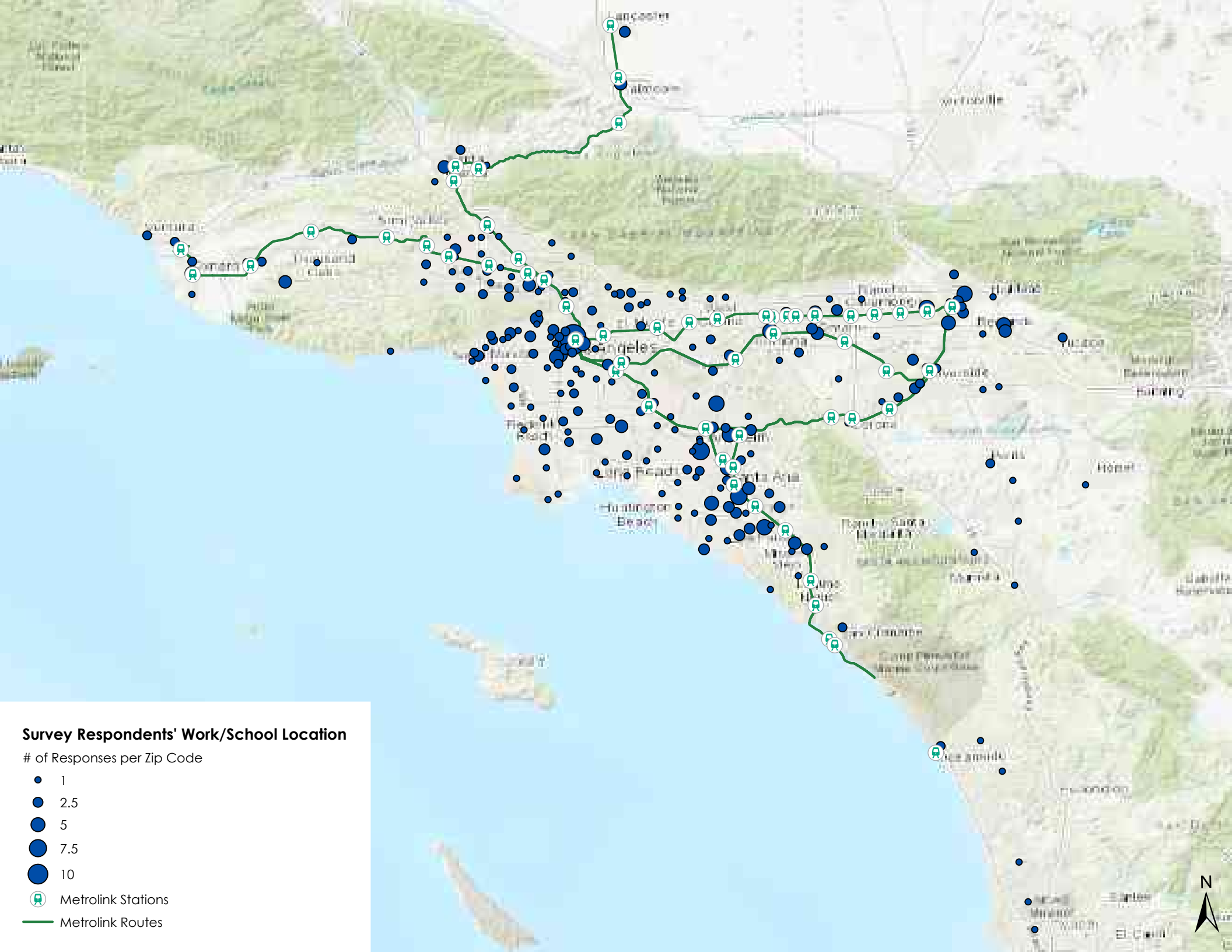
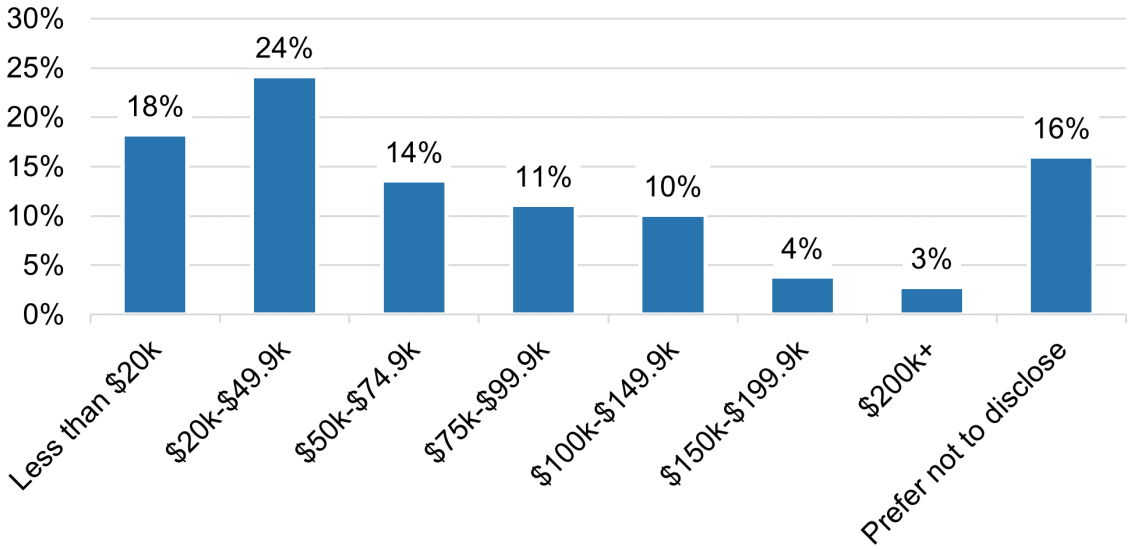

Survey Respondents' Work/School Location
# of Responses per Zip Code
1
2.5
5
7.5
10
Metrolink Stations
Metrolink Routes
N

Figure 9: Participants' Reported Household Income



Current Metrolink Usage

Most Recent Metrolink Trip & Purpose

Figure 10 displays the last date participants used Metrolink. Eighty-two percent of participants have used Metrolink before, and 18 percent have not. Lapsed riders (last rode more than one year ago) or potential riders (have never used Metrolink) account for 67 percent of participants. **Figure 11** compares household income to date of most recent Metrolink trip. Fifty-one percent of participants who rode Metrolink in the past month have annual household incomes below $50k.

Figure 12 displays the purpose of participants' last Metrolink trip. Of the 664 participants who have used Metrolink before, 47 percent used service for leisure travel or sightseeing, followed by 21 percent for visiting friends or family. Commuting to work accounted for 13 percent. Commutes to school only accounted for 1.4 percent of responses. Nearly 60 percent of trips made by Orange County residents were for leisure travel or sightseeing. Participants living in Riverside County and Los Angeles County had the highest percentage of commute to work trips.

Figure 10: Date of Most Recent Metrolink Trip

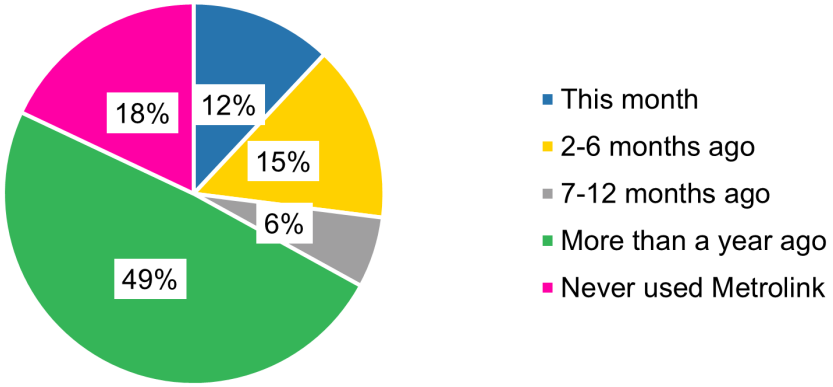


Figure 11: Most Recent Metrolink Trip, by Annual Household Income

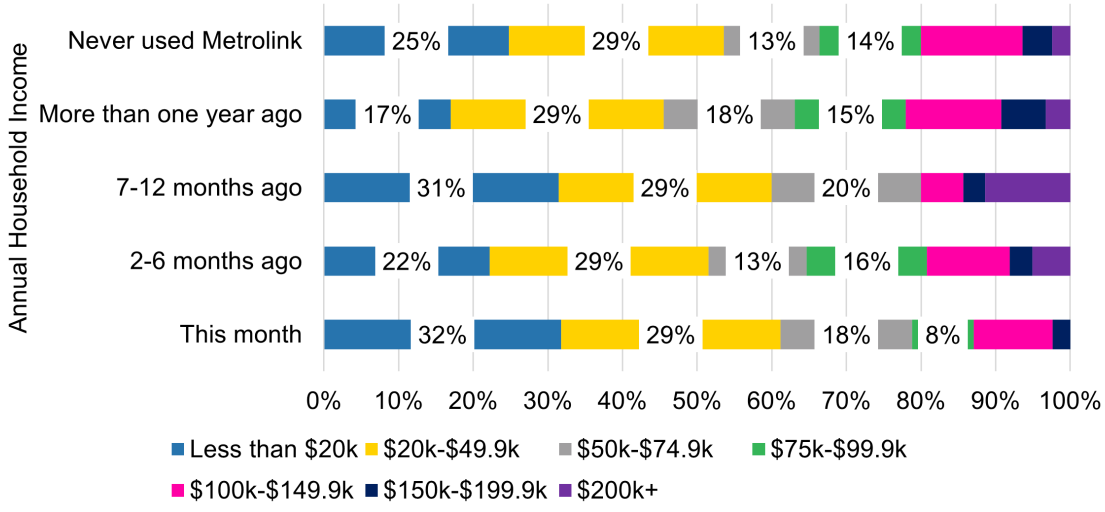
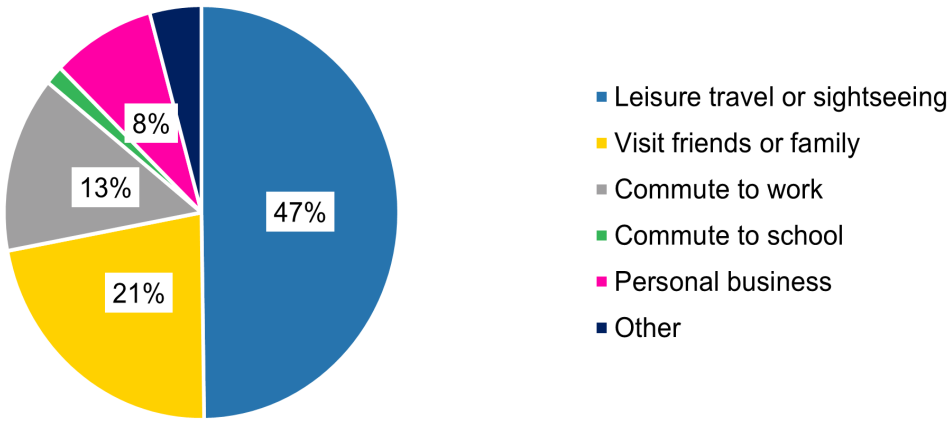


Figure 12: Purpose of Most Recent Metrolink Trip



Factors Limiting Metrolink Use in Non-Riders

Eighteen percent of participants who said that they have never used Metrolink were asked what factors have limited their use. Lack of information about Metrolink and difficulty reaching their final destination from the Metrolink station were cited the most.

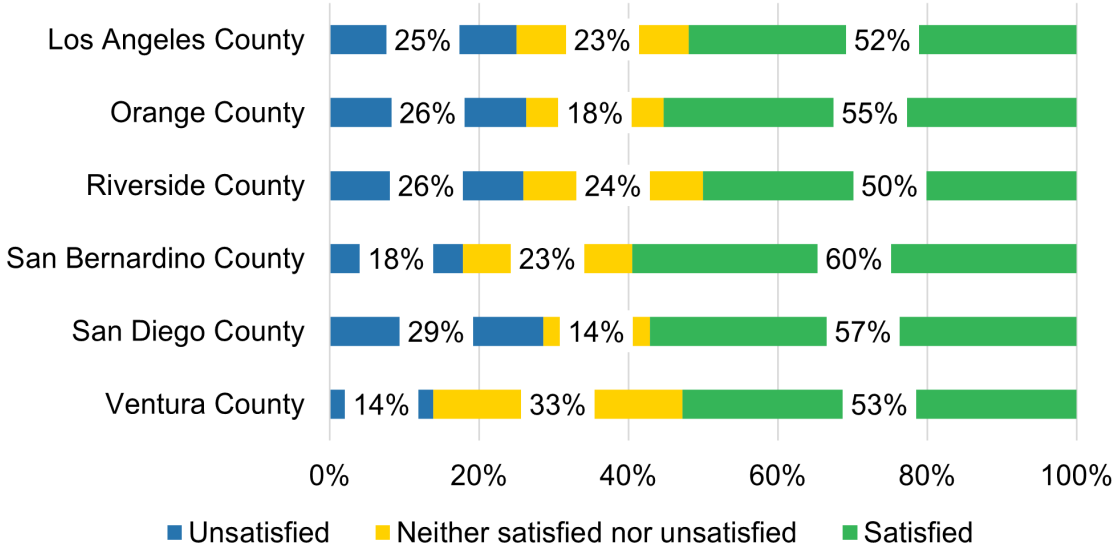
	# of responses
Lack of information about Metrolink	64
Difficulty reaching my final destination from the Metrolink station	50
Fares are too expensive	43
Difficulty accessing the Metrolink station near my home	39
Train schedule is inconvenient	37
Concerns about personal safety	34
Driving my car is faster	33
I prefer the flexibility and independence of driving my car	29
I prefer the privacy and comfort of my own car	22
Train is not reliable enough	16
Having to socialize with others on public transportation	14

Table 1: Factors limiting use amongst participants who have never used Metrolink

Pre-Pandemic Commute Satisfaction

Before the COVID-19 pandemic, 67 percent of all participants commuted to work or school five days or more. The mean number of days commuting before the pandemic was reported as 4.6 days. 53 percent of participants were either somewhat or very satisfied with their commute before the pandemic. Results did not significantly change by county of residence, although San Bernardino County had a slightly higher percentage of satisfied commuters. San Diego County had the least satisfied, although this reflects a very small sample size of participants who live in San Diego County.

Figure 13: Pre-Pandemic Commute Satisfaction, Home Residence



Expected 2022 Commute to Work Behavior

To understand expected 2022 commute behavior, I analyzed results only from participants who identify as full- or part-time employees and students (489 participants, or 60 percent of the sample size). Participants expect their commute frequency to decline, regardless of their pre-pandemic commute.

When asked the number of days participants expect commuting in 2022, the mean dropped from 4.6 before the pandemic to 3.5 days. The number of participants who said that they will be commuting five days per week declined by 28 percent, as shown in **Figure 14**.

Figure 15 compares changes in five-day work trips by county of residence. Participants who live in Orange County report the greatest anticipated decline in five-day commuters (38 percent decline from pre-pandemic commute frequency). Ventura County has the most participants who anticipate returning to a five-day commute (63 percent, although this is based off a very small sample size) followed by Riverside County (55 percent).

Figure 14: Change in Commute Frequency

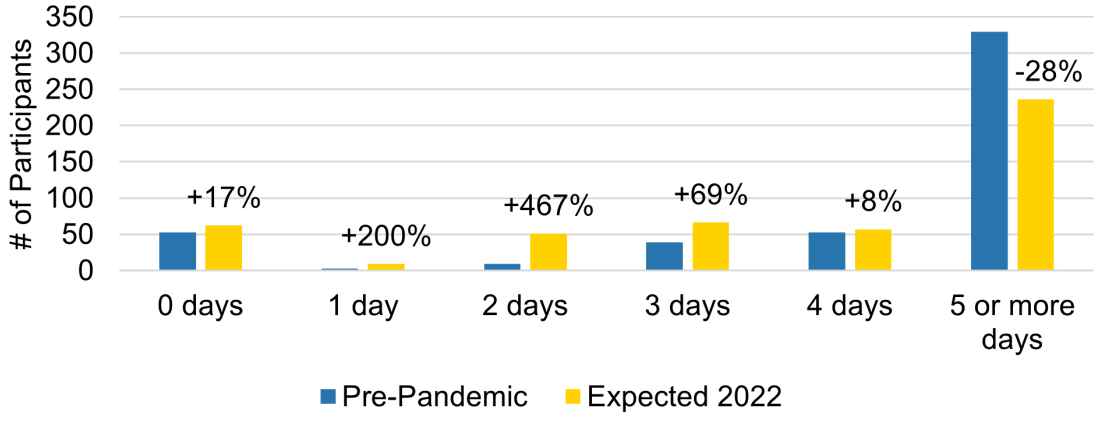
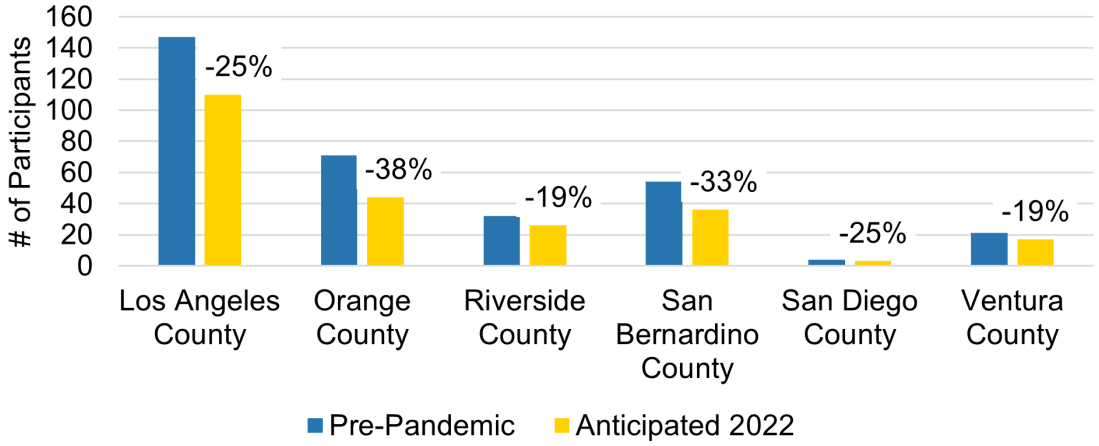


Figure 15: Change in Expected Five-Day Commutes, by County



Values and Existing Perceptions of Public Transportation

Participants were asked to respond to 29 different statements that contained a statement regarding public transportation, the participant's existing travel behavior, or their willingness to engage in new behaviors. They could respond to the statement with a one ("strongly disagree"), a two ("somewhat disagree"), a three ("neither agree nor disagree"), a four ("somewhat agree"), or a five ("strongly agree"). These topics were chosen due to the goals of the research project and were of interest to inform Metrolink sustainability, marketing, and ridership efforts.

The mean scores ranged from 4.41 to 2.72. "I know where the closest Metrolink station is to my home" scored the highest at a mean score of 4.41. This was followed by "I know where the closest bus stop is to my home" at 4.17. "I can complete most of my personal needs without access to a car" scored the lowest at 2.72.

	Mean Response	Standard Deviation
I know where the closest Metrolink station is to my home.	4.41	1.09
I know where the closest bus stop is to my home	4.17	1.22
I enjoy using my time on transit to do other tasks or relax.	3.95	1.01
I think riding transit is more relaxing than driving.	3.93	1.04
I think driving my car is expensive.	3.93	1.06
I think taking the bus or train saves money.	3.90	1.01
I consider my habits to be good for the environment. P1	3.63	1.09
My family and friends would support me if I chose to use public transit more.	3.60	1.03
I feel like my time is limited.	3.59	1.08
My family and friends would support me if I drove less for environmental reasons.	3.57	1.03
I think transit is easy to use.	3.51	1.16
I use public transit when I go on trips elsewhere in the United States.	3.51	1.21
I consider my schedule to be flexible.	3.49	1.26
I use public transit when I go on trips outside the country.	3.49	1.31
I feel safe walking in my neighborhood at night	3.39	1.31
I see myself trying to incorporate Metrolink into my commute.	3.34	1.12
I see myself trying to incorporate other modes of transportation besides Metrolink into my commute.	3.32	1.09
I am uncomfortable riding a crowded bus or train. P19	3.31	1.24
Driving my car is the only way I can reliably get where I need to.	3.29	1.26
I see myself not driving more or less.	3.27	0.95
My daily routine is predictable, I don't like to change things.	3.26	1.26
I enjoy driving.	3.25	1.26
COVID prevented me from using transit.	3.24	1.29
I get enough daily exercise.	3.20	1.23
COVID has made me drive more than before.	3.01	1.33
I do not feel safe on public transit.	2.92	1.15
I believe there are plenty of places to visit within walking distance of my house.	2.89	1.31
My commute stresses me out.	2.85	1.19
I can complete most of my personal needs without access to a car.	2.72	1.34

Table 2: Response to statements on values and perceptions of public transportation

Criteria that Influence Decision to Ride Metrolink

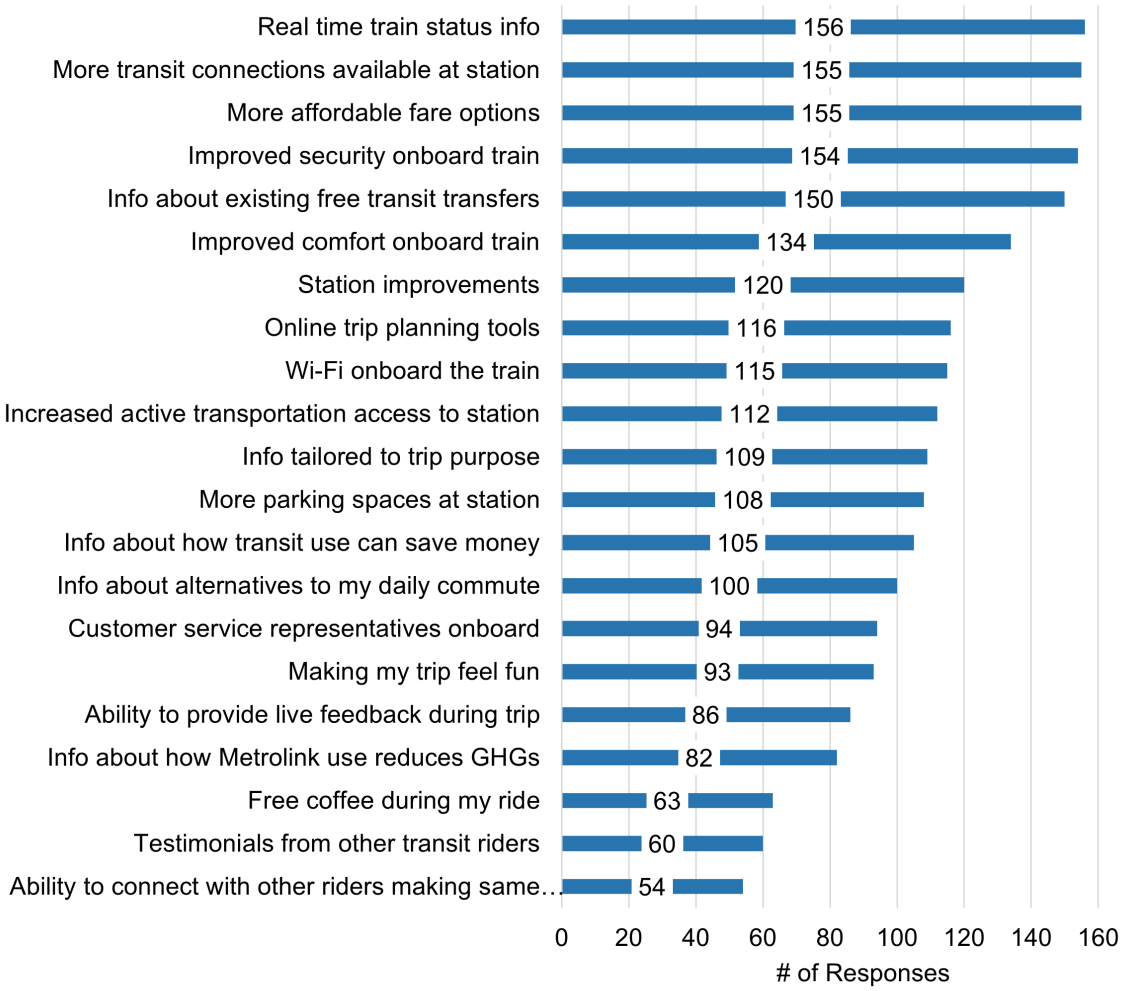
Participants were asked how important certain criteria were in their decision to use Metrolink service, as shown in **Figure 16**. Feeling secure from crime, both onboard Metrolink trains and while waiting at stations, received the most responses. The availability of Wi-Fi onboard the train received the least responses.

Figure 16: Factors that Influence Decision to Ride Metrolink

Incentives to Encourage More Frequent Ridership

Participants were asked if certain incentives and Metrolink improvements, shown in Figure 17, would increase their willingness to use Metrolink more often. Real time train status information, increased transit connections available at Metrolink stations, and more affordable fare options had the most responses. Free coffee, the ability to connect with other riders, and testimonials from people who use Metrolink had the least responses.

Figure 17: Incentives and improvements that would increase willingness to ride



Chapter 5 - Lessons Learned from Other Commuter Rail Agencies

After analyzing the results of both surveys, I also reviewed ridership surveys, agency reports, and website materials from five other commuter and hybrid rail agencies in the U.S. The primary goal for this was to gain an understanding of how other commuter rail agencies in the U.S. view the post-pandemic future of commuter rail and forecasts for ridership recovery. I also hoped to find strategies that other agencies have explored and proven effective to encourage ridership recovery, and gain an understanding of how they describe the post-pandemic future of commuter rail and forecasts for ridership recovery.

The following sections have brief profiles of the five selected rail agencies, outlining findings from pandemic ridership surveys and reports:

1. Caltrain – San Francisco, CA

In October and November 2020, Caltrain staff conducted an onboard survey of riders focused on the pandemic. They then conducted a second customer survey during the fall of 2021. Caltrain staff found that when compared to 2019, 2020 riders were less likely to use monthly passes and to commute 5 days per week or more. Riders surveyed in 2020 were twice as likely to identify as either Hispanic (12 percent in 2019 compared to 26 percent in 2020) or Black (4 percent in 2019 compared to 8 percent in 2020). Caltrain also found that the average annual household income of riders surveyed was $95,000, down from $158,000 in 2019. The number of Caltrain riders who used service three days per month or less increased from 8 percent in 2019 to 24 percent in 2020. Trip purpose had also shifted amongst Caltrain riders. In 2020, commute trips made up 62 percent of all Caltrain trips, down from 87 percent in 2019. During the same period, he percentage of social or recreational trips increased from 9 percent to 20 percent. Multi-modal trips also increased; trips where riders use SamTrans or another form of public transit to access Caltrain increased from one percent in 2019 to 11 percent in 2020. Data from the Bay Area Council (BAC) found that as of December 2021, only 23 percent of employees were in the office five days per week and that most employers anticipate a return to three days once the pandemic ends.

Caltrain riders reported high satisfaction with safety, on-time performance, and crowding onboard trains. Riders reported they are dissatisfied with evening and weekend frequency as well as transfer times. Caltrain's outlook is for gradual ridership recovery, with 70 percent of lapsed riders reporting that they plan to return to Caltrain once the pandemic is over.

Materials from Caltrain meetings indicate that the agency's focus is on improving mid-day and evening service, improving BART connections to lower transfer waits, and to complete electrification projects throughout summer 2022. Caltrain has also frequently offered 50 percent discounted individual tickets, monthly passes, and event ticket promotions throughout the past two years. Caltrain also just launched a new agency website that is much easier to use and has easy access to trip planning tools, live maps, service alerts, ticket and service information, and performance metrics about security and sustainability. Most notably, Caltrain began participating in the Clipper START Discount Program, a pilot launched by the Metropolitan Transportation Commission (MTC) in July 2020, that offers 50 percent discounted single-ride fares for households with an income up to 200 percent of the federal poverty level.

In September 2021, one year after they conducted their ridership survey, Caltrain conducted a regional marketing campaign and ridership promotion. The Metropolitan Transportation Commission (MTC) led the “All Aboard Bay Area Transit” campaign and had participation from 27 transit agencies, including Caltrain and BART. The campaign to incentivize ridership consisted of many tactics including:

- social media posts
- a regional website promoting the campaign with information about all agencies
- radio advertisements
- digital advertising
- onboard announcements and displays
- a joint press release.
- Information focused on service improvements, discounted fares, and regional events such as travel to Giants games.

Example of train wraps used by Caltrain to promote “All Aboard Bay Area Transit” campaign. **Source**: Caltrain Ridership Promotion Presentation, July 28, 2021

2. Bay Area Rapid Transit (BART) – San Francisco, CA

BART, while not exclusively a commuter rail agency, is a hybrid rail service that runs alongside Caltrain in the San Francisco Bay Area and is the fifth busiest heavy rail rapid transit system in the United States. In October 2020, Bay Area Rapid Transit (BART) conducted their annual Customer Satisfaction Survey focused on customer satisfaction, willingness to recommend BART to others, and perceived value of service. Compared to their last Customer Satisfaction Survey in 2018, they found that riders age 55+, lower-income households, and people who identify as non-white made up a higher percentage of participants surveyed. The results from the survey also showed a decrease in commute trips (down from 70 percent of riders to 64 percent), and an increase in weekend trips to visit friends and family or shop.

Riders named onboard train cleanliness and personal security as of highest priority and felt that the BART system was not adequately addressing these concerns. The agency's efforts to address homelessness on the BART system, enforcement against fare evasion, and the presence of BART Police received low customer satisfaction ratings, although it is unclear if riders were concerned about too little or too much being done to address these issues. BART received high ratings for on-time performance of trains, information made available through the bart.gov website, and service access for people with disabilities.

In addition to updates to their website and several fare promotions throughout the past two years, BART has a "welcome back" plan publicly available and has one-page handouts about BART service that can be found online and posted in locations throughout the Bay Area. It is unclear how much of pre-pandemic service has been restored or if substantial service changes have been implemented. BART's 2020 Report to Congress does highlight several projects underway, including an updated BART app and station parking payment modernization. BART is also exploring ways to encourage more frequent ridership and incentive transit use. The agency is exploring a program that rewards people who ride BART to the San Francisco International Airport with the ability to receive priority security screening. BART also joined the Clipper START Discount Program and offers 20 percent discounted single-ride fares for households with an income up to 200 percent of the federal poverty level.

BART: Safer Than Ever

Let's go.

Welcome back to a new customer experience:

- Less crowding
- More cleaning
- Less crime
- Restrooms re-opening in underground stations
- New service to North San José
- New safety staff
- Improved station lighting
- Plenty of parking

BART is back to full service. We're open until around midnight every day. Weekday service frequency ranges from every 4 to 15 minutes until about 9pm. Weekend service is better than before for most riders with more trains in service. We've increased direct service to SFO for when you want to get away.

Superior Air Filters and Ventilation

All BART cars have virus-trapping MERV-14 air filters, and air in cars is replaced and filtered every 70 seconds. Masks are required on BART, and we have free masks available.

New Safety Ambassadors

BART has a historically high number of uniformed safety staff on platforms and trains, including police officers dedicated to riding trains, new unarmed ambassadors, community service officers, and fare inspectors. Crisis intervention specialists help those experiencing homelessness or struggling with mental health or addiction.

Safety Tip: Text BART Police at (510) 200-0992 to request a welfare check or report suspicious activity.

Pay With Your Phone

Avoid lines at ticket vending machines by adding Clipper to your mobile wallet and pay for BART fares with Google Pay and Apple Pay. Load funds in real time and use immediately. Tap your phone at the fare gate instead of a card.

Getting to Stations is Easier

Driving:
Parking lots do not fill up. Quickly pay for parking using the official BART app. Our parking payment machines inside stations will soon take credit cards for the first time ever—be on the lookout as machines are upgraded starting in March.

Taking Transit:
We've coordinated with other agencies to improve transfer times.

Bikes and Scooters:
Improvements to bike access, including new stair channels are coming soon. And we've added shared scooters to our trip planner to make leaving your car at home even easier.

BART: Safer Than Ever

bart.gov/welcomeback

BART "Welcome Back" marketing materials. **Source**: BART website, 2022

3. Long Island Railroad (LIRR) – New York, NY

The Long Island Railroad (LIRR) is the busiest commuter rail system in the United States and is one of the few commuter systems in the world that runs 24/7 year-round. It is one of several services offered by the Metropolitan Transportation Authority (MTA). MTA staff conducted a systemwide survey in September and October 2021 that collected ridership data from approximately 123,000 LIRR riders. It was the first survey conducted by MTA that included commuter rail. Overall findings from LIRR riders showed a shift from work commutes to personal business, and a growth in midday off-peak travel. Riders expected less use of monthly ticket purchases in lieu of alternative, more flexible fare types. Seventy-five percent of riders said that they plan to continue remote work in some capacity even after pandemic work restrictions are lifted.

Riders provided high satisfaction ratings to on-time train performance, seat availability, station cleanliness, and the presence of both conductors and electronic signage advertising information at stations. Riders reported lower satisfaction ratings about the presence of homelessness at LIRR stations, the cost of tickets, and the frequency of both peak and off-peak service. When asked to name the factors that would increase their future use, riders stated that addressing COVID health and safety concerns, improving onboard and station security, and increasing off-peak service frequency are most important. For future trips, riders stated that they planned to use the round trip off-peak, monthly, and ten-trip peak tickets fare types most often.

It is unclear how much of pre-pandemic service has been restored or if substantial service changes have been implemented, however, the agency continues to improve on-time train performance. The agency reached an all-time record of 96.3 percent of trains on-time in 2021, up from 95.9 percent in 2020 and 90.4 percent in 2018. Significant investments were also made into new digital platform screens, audio announcements, and LIRR Train Time app improvements throughout 2020 and 2021.

The LIRR also offers a robust “Getaways” program that offers discounted transit tickets with access to local events. The agency also offers a “beach package” program during the summer that provides discounted roundtrip tickets and a discounted beach access pass to various New York beaches.

4. New Jersey Transit (NJ Transit) - Newark, NJ

NJ Transit is the largest statewide public transit system in the U.S. and was one of the first transit agencies to begin major COVID safety protocols and disinfecting onboard. Staff conducted four customer service surveys during COVID in addition to extensive community engagement and employer outreach. In their 2021 Ride to Recovery report, staff included ridership forecasts that predicted by July 2022, 85 to 90 percent of NJ Transit riders will feel safe returning to transit. They also predict that only 10 percent of workers who currently work remote five days a week will stay remote July 2022. Rail ridership forecasts are grim compared to data from other commuter rail agencies; NJ Transit expects only 25 to 40 percent pre-pandemic rail ridership recovery by fall 2022. By fall 2024, they predict this will increase to 70 to 75 percent of pre-pandemic levels.

The agency has undertaken a significant “While You’ve Been Away” marketing and service enhancement campaign to attract lapsed riders and potential new markets. Their website provides in-depth information on agency priorities. NJ Transit has made significant performance improvements by adding over 100 new trains to service schedules, purchased 113 new multi-level rail cars to replace older single-level cars, increased on-time performance to 93.3 percent, and enhanced weekend rail service at several major stations. They also completed updates to their website and mobile app to include real-time information on live vehicle capacity, arrival alerts, and location tracking of both buses and trains. NJ Transit also expanded their commuter rail fare offerings to include a FLEXPASS that supplies 20 discounted one-way tickets, discounted student passes and a university partnership program, and a rewards program for riders to earn points for ticket purchases. They also focus on major event collaborations throughout the state and with venues such as MetLife Stadium. NJ Transit also partners with Waze to identify grade crossing locations and with the state park system for a “Transit to Trails” online program that connects riders to parks accessible by transit. Before the pandemic, NJ Transit upgraded to contactless payment technology, and the agency continues to prioritize fare collection and mobile app payment improvements and updating station information kiosks.

5. Metra - Chicago, IL

Metra is the fourth busiest commuter rail system in United States, and the busiest commuter rail system outside of the New York metropolitan area in terms of annual unlinked passenger trips. Outside of agencies in California and the Mid-Atlantic, Metra stands out for its response to the pandemic and efforts to attract lapsed and new potential riders. Ridership recovery has been slow compared to other agencies, with only 19 percent of pre-pandemic ridership recovered at the end of 2021.

The agency is leading an extensive “Getting You Back on Track” campaign to encourage increased ridership. Marketing and positive messaging is the core of their ridership recovery efforts, with ads promoting service as “My Metra” and sharing rider and employee testimonials. Their marketing emphasizes COVID safety protocols and research showing that it is safe for riders to return to public transportation. Returning riders expressed a preference for contactless payment methods and Metra made contactless payment and flexible fare options a priority. As of February 2022, Metra added a $6 three-zone day pass to encourage use amongst riders with shorter travel distances who did not need a $10 all-zone day pass. They also started MyMetra magazine. The magazine is published several times per year and includes coupons to partnered businesses, rider guides tailored to upcoming regional events, answers to common questions about Metra service, and testimonials from riders and Metra employees.

SPRING EVENTS

SPRING INTO THE CITY

What to See, Where to Eat, And How to Get There

There's nothing like those first signs of life after months spent cooped up indoors or trudging through the snow. Spring is finally on the horizon and there are plenty of things to look forward to as the Chicago region thaws out. Ride Metra to one of our downtown stations and take in one of the many live performances, enjoy an unforgettable meal or stop to smell the flowers. There's also plenty blooming in the suburbs, including fun events at the Chicago Botanic Garden, the Morton Arboretum, and more!

Each year, Journeymen Plumbers Local Union 130 dyes the river a bright emerald green to kick off the Chicago St. Patrick's Day celebrations

Thousands of participants make a splash and raise money for charity by jumping into the ice-cold waters of Lake Michigan

Chicagohenge, a celestial phenomenon where you can see the sun rise or set directly between buildings on Chicago's east- and west-facing streets

Petty Outdoor Auditorium, Millennium Park

Event	Date(s)	Location
The Orchid Show	February 12-March 27	Chicago Botanic Garden
The Spring Flower Show	February 26	Lincoln Park Conservatory
Hadestown	March 2-13	CIBC Theatre
King James	March 3-April 10	Steppenwolf Theatre
Chicago Fire Home Opener	March 5	Soldier Field
International Carnivale	March 5	Navy Pier
The Inspired Home Show	March 5-8	McCormick Place
Chicago Polar Plunge	March 6	North Avenue Beach
Chicago St. Patrick's Day Parade and River Dyeing	March 12	Columbus Drive
The Swell Season	March 12	Cadillac Palace Theatre
Ice Skating Ribbon Closes	March 13	Maggie Daley Park
Chicagohenge	March 16	East- and west-facing streets
Chicago Flower & Garden Show	March 16-20	Navy Pier
Moulin Rouge! The Musical	March 19-May 14	James M. Nederlander Theatre
Shamrock Shuffle	March 20	Grant Park

Event	Date(s)	Location
Chicago Restaurant Week	March 25-April 10	Hundreds of local restaurants
Six The Musical	March 29-July 3	CIBC Theatre
Chicago White Sox Opening Day	March 31	Guaranteed Rate Field
Chicago Cubs Opening Day	April 4	Wrigley Field
Bunny Brunch	April 17 (TBD)	Macy's Walnut Room
The Prom	April 19-24	Cadillac Palace Theatre
The Champion of Trees 10K	April 23	Morton Arboretum
Of Mice and Men and Serenade	April 27-May 8	Joffrey Ballet
Mike Birbiglia: The Old Man and The Pool	April 28-May 22	Steppenwolf Theatre
Seagull	April 28-June 12	Steppenwolf Theatre
One of a Kind Spring Show	April 29-May 1	Merchandise Mart
Jersey Boys	May 3-8	Cadillac Palace Theatre
Mother's Day Gospel Brunch	May 8	House of Blues
Fiddler On the Roof	May 17-22	Cadillac Palace Theatre
To Kill a Mockingbird	May 17-29	James M. Nederlander Theatre

For the latest on events happening this spring, follow us on Instagram @MetraRail

OUR LOWEST FARE YET:

The $6 Day Pass

We recently introduced a $6 Day Pass that is valid for unlimited rides within three zones for a full day. This affordable option, available only in the Ventra app, is great for shorter trips between stops or for our riders who live closer to the city.

The new $6 Day Pass is in addition to our other money-saving passes, including the popular $10 Day Pass and our $10 Weekend Pass, which are only available in the Ventra app. If you're traveling only one day on the weekend, the $7 Saturday or Sunday pass can be purchased from an agent, conductor or with the Ventra app.

Visit metra.com/fares for more details on types of Metra tickets.

5

Excerpt from myMetra magazine, spring 2022 edition. **Source**: Metra

Lessons learned from review of other commuter rail agencies

Similar to Metrolink, the commuter rail agencies reviewed are all focused on service improvements, improving the customer experience, and regaining lost ridership. All of the agencies have conducted at least one ridership survey during the pandemic to analyze changes in travel patterns and the criteria riders value when choosing transit. The most significant lesson learned from this analysis of rider surveys and recovery efforts at other commuter rail systems was that few rail agencies conduct performance evaluations after spending significant money on marketing, service enhancements, and fare discounts to test whether changes led to an increase in ridership. While the pandemic is ongoing, none of the agencies reviewed here have done follow-up data collection to test whether investments towards marketing campaigns, service enhancements, or customer experience improvements resulted in a direct increase in ridership.

There are several new ideas that Metrolink should consider from other commuter rail agencies. Metrolink could model the “All Aboard Bay Area Transit” campaign with other public transit agencies in southern California. A one-stop website that provided regional transit information like the one in the MTC campaign would likely be useful for people to new transit, particularly visitors and those starting new jobs. Trip planning, live crowding data, and mobile ticket payment updates should be made to the Metrolink App to model those offered by agencies like the Long Island Railroad and NJ Transit, as well as updates to the Metrolink website. The myMetra magazine is also a marketing strategy that Metrolink could consider to generate ad revenue, form partnerships with community organizations, and provide more access to information to Metrolink riders. Metrolink’s own bi-monthly newsletter, Metrolink Matters, has not been published since 2020.

Metrolink should consider several of the discounted fare programs and partnerships that other agencies offer. The Clipper START pilot in the Bay Area has similarities to the LIFE Program offered by LA Metro, which could be expanded as a regional program and include other southern California transit providers like Metrolink. NJ Transit also offers a student discount program but has a well-established university partnership program to integrate transit into New Jersey schools. The NJ TRANSIT to Trails tool is another feature Metrolink should consider adding to its website given the region’s desirability for beach and recreation access.

I conclude from this analysis that few commuter rail agencies have developed a

post-pandemic ridership recovery plan. As a result, *there is no set playbook for how agencies will recover ridership lost during the pandemic*. Few agencies have taken the next step after conducting ridership forecasts to outline strategies that will be implemented to regain ridership. None can directly credit any evidence that proves that any strategies considered thus far will lead to a direct increase in commuter rail ridership.

Chapter 6 - Discussion of Findings

The race of participants is similar to the results of earlier Metrolink surveys, as seen in **Figure 18**. While the percentage of Caucasian participants is higher, this is because participants accounted for a higher percentage of the sample once over 300 blank survey responses were dropped. Before survey responses were evaluated for validity, only 34 percent of participants (556 out of 1,628) of all survey responses received were from Caucasian participants. Compared to 2018, there was an increase in Hispanic participants and a decline in Asian/Pacific Islander and African American participants. Metrolink's prior surveys did not include data from American Indian/Alaska Native participants, who were 4 percent of this sample.

Survey participants of this study reflected increased participation from lower income households, but better reflects California's population. **Figure 19** compares the household income of survey participants to data from the 2017 National Household Travel Survey (NHTS) California Add On. Metrolink's 2018 Origin-Destination Study reported that 80 percent of riders surveyed earned above $50k, compared to only 49 percent of this study (excluding riders who preferred not to answer). This is a drastic increase in survey participation response from low-income riders. Other California rail agencies, including Caltrain and BART, observed similar income decreases in their pandemic ridership surveys. There are several possibilities for the higher response rate from low-income households. It could be that the majority of riders continuing to use commuter rail during the pandemic are low-income, therefore they were more likely to be responsive to Metrolink outreach and see social media posts that promoted the survey. It could also be the inclusion of participants who have never used Metrolink, as 45 percent of the participants who never used Metrolink reported household incomes below $50k. It could also indicate a shift in the commuter rail market to more low-income riders; more data is needed as the pandemic ends to evaluate if lapsed higher-income riders will return.

The median age of participants is 51 years old, which is slightly older than the 44 years old median age reported by Metrolink survey participants in 2018. More data is needed to definitively explain this age increase, but the demographics of who uses social media and was seeing the Metrolink posts and ads promoting the survey may have influenced participation.

Figure 18: Comparison of Participants' Race to Other Metrolink Ridership Studies

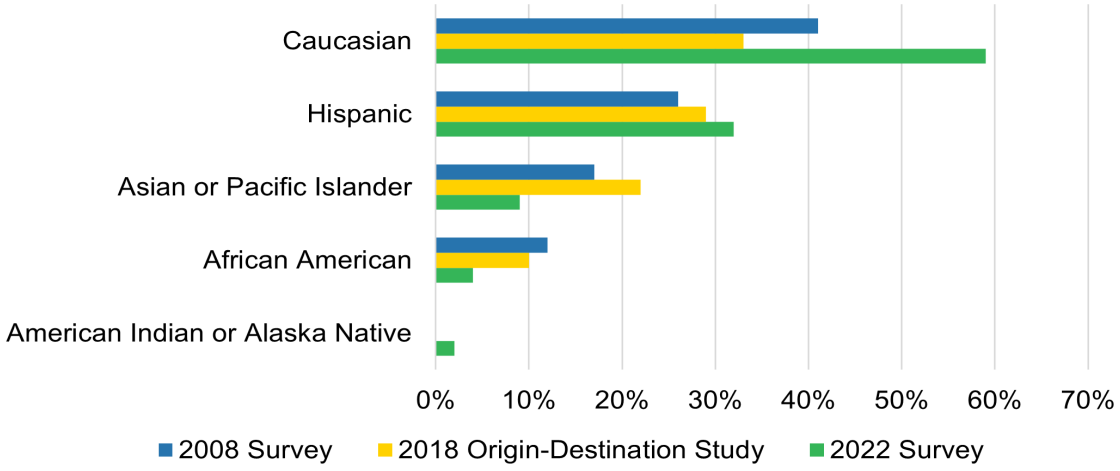
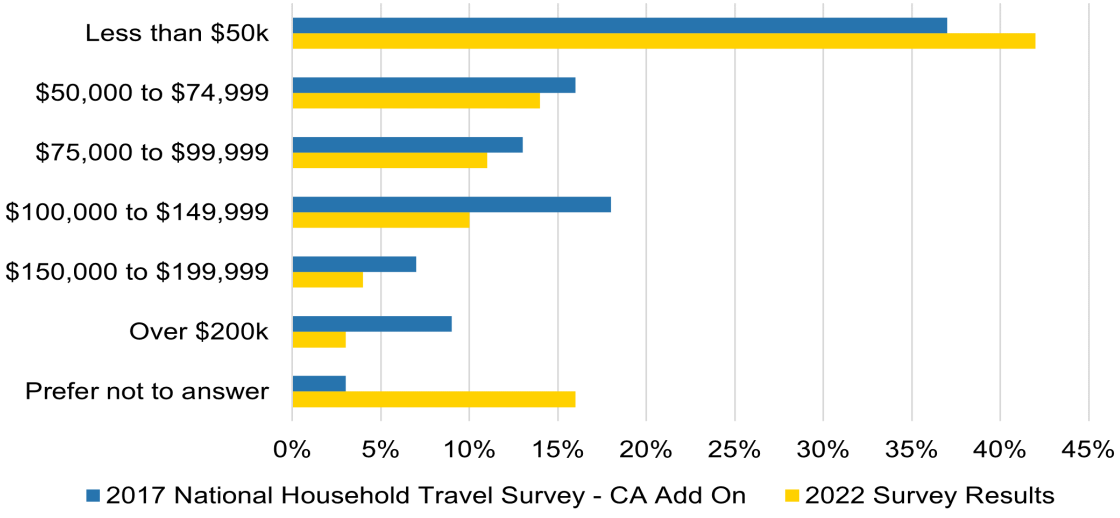


Figure 19: Comparison of Household Income Data



Metrolink has the opportunity to better serve non-work trips, since nearly half of participants used Metrolink for leisure travel or sightseeing. More data will be needed once the pandemic has ended to conclude if the decrease in reported work-related Metrolink trips is permanent, or if interest in non-work trips just temporarily account for most travel demand during the pandemic. The large interest in leisure trips may also be explained by the large number of retirees who participated in the survey and by the use of Metrolink to access regional events and other tourist destinations.

The percentage of participants who expect to return to an office five or more days per week is 28 percent lower than pre-pandemic levels. Disparities also exist by county of residence, with Orange County residents reporting the greatest decline. Metrolink's service offerings will need to respond to the decline in passengers during peak travel and evaluate if shifting some trains to off-peak service would be beneficial. Depending on the success of 2022 return-to-work plans, demand for Metrolink service may return to pre-pandemic levels but could shift to less frequent trips made by individual riders if they adopt a reduced three-day commute.

The surveys provided insights about the criteria that existing and potential Metrolink riders consider when choosing commuter rail. I found that feeling secure from crime, both onboard Metrolink trains and while waiting at stations are the most important criteria for riders in their decision to use Metrolink over other modes. This was followed by convenient train schedules, cleanliness onboard trains, and on-time performance. It is worth noting that since most participants either have never used Metrolink or have not used Metrolink recently, there may be bias in the perception of crime occurrence on public transportation and of the quality of Metrolink service within the sample. Survey data collected by BART and Long Island Railroad throughout the pandemic cite similar concerns from riders about security, station and train cleanliness, and on-time performance.

When asked if certain incentives and Metrolink improvements would increase Metrolink use, participants indicated that access to real-time train status information, more transit connections offered at stations, and more affordable fare options would be most effective. Metrolink already has a train tracker on their website, but participants may feel that it is hard to reach and less useful when waiting at station platforms. Metrolink also currently has an active social media presence that supplies frequent train status updates, but the social media platform creates access barriers for people without cell phones or social media profiles. Metrolink has already adopted policies to ease transit connections at Metrolink stations by offering free

transfers with hundreds of partnered agencies. The agency has also provided more affordable fare options through the rollout of a 5-Day Flex Pass and $10 weekend pass.

Chapter 5 outlined ridership data and recovery efforts from other commuter rail agencies. Continued ridership from low income, non-White households, and leisure travelers has represented most of the demand for transit during the pandemic. Caltrain, BART, Long Island Railroad, NJ Transit, and Metra all offer ideas for service improvement, marketing campaigns, and mode shift incentives that Metrolink should consider.

Chapter 7 - Recommendations

This research project examines the factors that motivate behavior change and the switch to commuter rail in drive-alone commuters. My goals for this study were to develop a conceptual framework for understanding mode shift, understand changes in the Metrolink ridership market during the pandemic, and collect data on riders' travel behavior that can inform strategies for post-pandemic commuter rail ridership recovery.

It is impossible to say with direct certainty that any interventions will lead to a direct increase in ridership and a return to pre-pandemic ridership levels. There is no one set of guidelines for how transit agencies can recover ridership, let alone because of the first global pandemic in a century. Research focused on how to incentivize mode shift through a behavioral science perspective has provided ideas that generally fall into three categories: "try transit" exposure programs; technologies that are either gamification-based apps or trip planning tools that provide information and rewards to people considering transit usage; and targeted marketing campaigns to attract new riders, The findings of the surveys conducted, gaps found in the literature review, and lessons learned from other commuter rail agencies can all inform Metrolink of possible improvements that would improve service quality and incentivize more frequent ridership, particularly from people who are lapsed riders or who have never considered Metrolink.

The recommendations of this report fall into three priority areas:

Priority 1: Improving existing riders' Metrolink experience and increasing access for untapped ridership markets

A) Increase fare offerings that reflect less predictable Metrolink demand

Offering more affordable fare options was cited by participants as the third most effective in encouraging more frequent usage. With expected increases in off-peak travel, the price of Metrolink fares could be lowered at off-peak times to shift demand and reward riders choosing to not use their car. Riders have indicated a decreased interest in fixed monthly or weekly passes given the uncertainty in return-to-work plans. BART hosted a pilot in 2016 called "BART Perks" where 1,900 riders were riders were offered cash rewards and Clipper smart card money for shifting their BART trip from peak to off-peak time. NJ Transit offers a flex pass that provides 20 one-way (10 roundtrip) tickets between one origin and destination at a 20 percent discount from normal tickets. All of the agencies reviewed are offering between 20 to 50 percent discounted monthly passes. If Metrolink's new five and ten-day flex passes prove successful, then this could be a model for future pass bundles. Another option to consider is a fare cap program, such as the new MTA OMNY program. The program allows NY subway riders to pay for only the first 12 rides and then remaining rides during the week are free. Metrolink could model its own program based on frequency of use or destinations

MTA Advertisement for OMNY Program. **Source**: MTA Twitter, 2021

B) Expand fare discount programs for youth, students, senior, and low-income riders

Youth, students, senior, and low-income fare discounts for Metrolink should be expanded. All of the other agencies reviewed offer 50 percent discounted youth fares, or completely free with an accompanying adult, compared to Metrolink's 25 percent discount and free rides for children five and under. Considering how few students and people under 20 years old took part in our survey, Metrolink should do further research on the youth ridership market and explore avenues for student partnerships. Metrolink could consider programs such as the NJ Transit University Partnership Program where heavily discounted monthly passes are pre-loaded onto student ID cards for affiliated schools. The existing Metrolink senior discount could also be improved; of the agencies reviewed, Metrolink has the lowest senior discount rate at 25 percent, compared to 50+ percent or free for offered by other agencies. Metrolink currently does not offer any fare discount for low-income riders, and nearly all rail agencies reviewed did not offer any discount for low-income households; Caltrain and BART are the exception to this, as they are part of the Clipper START program pilot. With low-income riders representing a large proportion of the demand for transit during the pandemic, and the uncertainty of whether higher-income commuters will return to transit, this is a major area for ridership expansion that fare pricing should reflect. Metrolink should consider further ways to decrease fares and subsidize ridership for low-income riders. One area for further research could be the development of a discounted regional fare program in LA County, similar to Clipper START or the LA Metro LIFE Program, that all transit agencies in the region could opt into.

C) Invest into technology improvements that increase access to information and improve ease of use for new and frequent riders

Access to information was repeatedly cited by participants as a barrier to Metrolink use. Improvements at Metrolink stations, onboard trains, and online should focus on providing riders with real-time information on train status updates, train crowding, and live trip tracking while onboard. The Metrolink website offers a train status page and live train tracker map, but this limits access for people without cellphone access. Metrolink stations may also benefit from need interactive wayfinding kiosks, electronic announcement boards, and frequent audio announcements that provide people waiting on platforms with updates. Metrolink does have an app available with a variety of information for riders, however nearly all of its features just link users back to the Metrolink website for information. Metrolink also does not have any trip planning tools available on its app, and the website tool does not offer roundtrip information for users who would rely on other public transit connections to reach Metrolink stations. Finally, continued expansion of fare payment technology should be a priority, which other agencies have made significant investment towards.

D) Address both concerns and public misconceptions about passenger security while onboard and at Metrolink stations

Our findings show that security is a significant concern for riders, and this is supported by findings from other rail agencies. Concerns over COVID exposure have also been a significant barrier in encouraging ridership to return across the country. Marketing and information efforts from Metrolink should focus on communicating to riders that service is both safe from crime and that the agency has made significant efforts to protect riders from COVID exposure. Other major rail agencies have made this a key message in their outreach and have even gone so far as to cite evidence on COVID safety and provide more transparent statistics on crime prevalence for riders. Metrolink could adopt similar messaging and provide frequently updated safety data available on the agency's website. Metrolink stations should also ensure that adequate lighting, emergency phone access, security camera footage, and onboard access to conductors is sufficient and well known to riders. Metrolink's app should also allow for incident reporting and station improvement requests.

Priority 2: Develop low-risk ways for people unfamiliar with transit to experience Metrolink and to reward permanent mode shift

A) Offer periodic "Try Metrolink" programs or implement a permanent program through the existing Corporate Partner Program

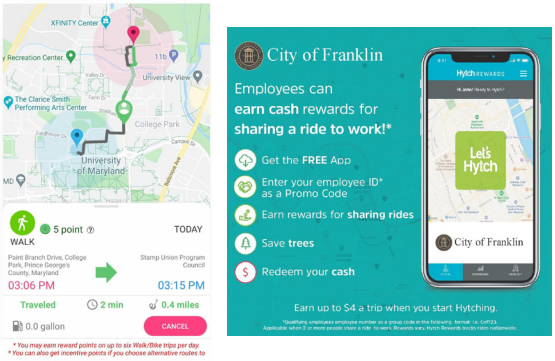
Emerging research focused on the use of behavioral science in convincing drive-alone commuters to switch to transit emphasizes the need for low risks. Research from Alta Planning + Design (2018) shows that exposing people to transit by "getting their foot in the door" may an effective strategy for encouraging the gradual development of new habits that cause permanent mode shift. Some of the "try transit" pilots reviewed in Chapter 2, including one at UCLA by Gould and Zhou (2010) ask people to turn in their employee parking pass for a transit trial period. Metrolink could implement a similar program on its own or through the Corporate Partner Program that regularly offers Metrolink "trials" for people interested in trying service.

B) Make Metrolink social and reward frequent riders with a Rider Referral Program

While participants in our surveys did not rank the ability to connect with other riders as an important consideration for using Metrolink, other research focused on behavioral science-based interventions focuses on this strategy. Riggs (2017) argued that social incentives could have an equal if not greater effect than financial incentives in encouraging mode shift amongst drivers who have an inelastic demand for driving. Alta Planning + Design (2018) lists referral programs as one possibility for encouraging increased transit ridership. Amtrak has a Guest Rewards Program that allows members to get 500 bonus points for up to 50 people they refer to Amtrak. A rider referral program could also be a periodic promotion; the Long Island Railroad offered $1 tickets for monthly passholders to bring up to four guests for weekend trips during September 11, 2021 through November 21, 2021.

C) Invest in technology that incentivizes new commute behaviors, particularly through gamification-based apps and trip planning tools

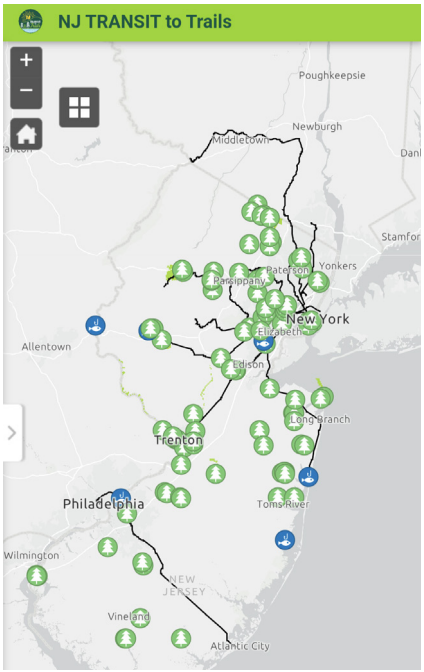
All of the existing research identified about how transit agencies can use behavioral science-based interventions to attract ridership proposed the use of technology for trip planning, gamification-based reward apps, and collecting ridership travel data. There are several apps that have been released in the past five years that focus on this. Miles is an app that provides trip planning tools and awards "miles" to users for more sustainable modes of transportation; modes like walking or biking earn the most, while driving earns the least. The app recommends various trip itineraries based on how many miles can be earned, and users can then redeem miles with various retailers and charities. The IncenTrip app is another product that is managed by a University of Maryland startup funded by grants from the U.S. Department of Energy's Advanced Research Projects Agency – Energy (ARPA-E) TRANSNET program, the Federal Highway Administration (FTA), and the National Science Foundation. It uses real-time data and machine learning to provide trip planning, traffic predictions, and reward points for trips made that can be redeemed for cash or gift cards. A final option that could be embedded into the existing Metrolink Corporate Partner Program is a program called Hytch Rewards, which is a cash incentive management platform that employers can use to reward employees for transportation costs and earn rewards. All of these programs leverage "rewards" as a way to encourage new travel behavior, but they also incorporate social competitions and interactions with friends and colleagues. Programs like Hytch also focus on environmental stewardship: users can earn "trees planted" and view data on how their commute choice affects climate change.



Screenshots of various gamification apps
Sources: Incentrip (2022), Hytch Rewards (2022)

D) Develop an official "Rail to Trails" program that serves the leisure travel market and promotes access to parks and recreation

Metrolink marketing materials have informally promoted Metrolink service for trips to the beach throughout Ventura, Orange, and San Diego counties, however no formal program exists that advertises leisure trips and offers fare promotions. Similar to NJ Transit's Transit to Trails program, Metrolink could adopt its own program focused on access to parks and recreation. The Metrolink website could host a similar interactive map that helps riders with trip planning and share knowledge about the closest beach, parks, and recreation spaces. Metrolink could also offer discounted weekend tickets to select stations, or could offer a "beach pass" fare program that supports more frequent trips throughout the summer. Metrolink stations and marketing materials should also contain promotional materials about destinations unique to the station. Metrolink's website already has a list of "8 of the Best Beaches to Visit with Metrolink", but this could be developed into a more detailed program. Metrolink could also use the program to establish stronger partnerships with city and county parks departments, local tourism and central business districts, other transit providers, and the California State Parks system.

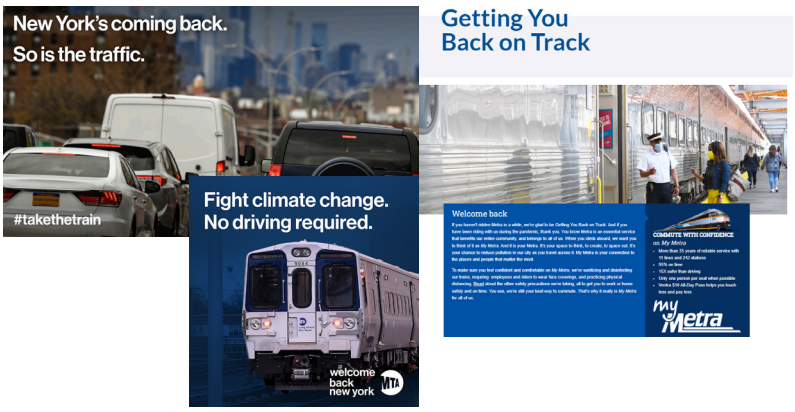


Screenshot of NJ TRANSIT to Trails map. **Source**: NJ Transit (2022)

Priority 3: Expand Outreach Efforts and Community Partnerships to Attract New Ridership

A) Marketing efforts should focus on message framing for new habits, nudge a "fresh start" to commutes, and make lapsed riders feel welcomed back after the pandemic

Research has shown that major life events and changes in routine can contribute to mode choice (Mobility Lab, 2017) (Alta Planning + Design, 2018). The pandemic and upheaval from traditional five-day commutes to work by car should therefore be considered a unique opportunity for transit agencies to encourage new sustainable habits and encourage mode shift (Roberts, 2018). Marketing and information efforts from Metrolink should focus on communicating to riders that the agency has made significant efforts to protect riders from COVID exposure, and that once the pandemic ends it will be time to once again reconsider how to commute. Other major rail agencies have made this a key message in their outreach and have even gone so far as to cite evidence on COVID safety and provide more transparent statistics on issues such as crime prevalence, on-time performance, and ridership trends to assure hesitant riders. Messaging focused on welcoming riders back and combating negative perceptions of transit were the most prevalent themes found in other rail agencies' marketing materials. Research on how to encourage mode shift from a behavioral science perspective also focused on using message framing to convince riders to adopt new habits, such as through anecdotes about time and cost savings to riders, personalized ads, and promoting the return to transit as a "welcome back" celebration that agencies look forward to.



Marketing materials. **Sources**: LIRR (2021), Metra (2022)

B) Focus on strengthening partnerships with employers, community organizations, transportation management associations (TMAs), and other transit agencies throughout Southern California to promote transit

Metrolink should be known as a gateway to the community and should be recognized as a household staple in Southern California. Metrolink connections with local transportation management associations (TMAs), universities, and various other groups in Southern California are a way to build relationships within the community and connect with potential riders. Expansion of the Corporate Partner Program, one of Metrolink's newest initiatives, is an easy way to establish relationships with local employers, particularly as people return to an office setting. The NJ Transit University Partnership program offers a model for Metrolink to adopt to formalize relations with the dozens of colleges within the service area. Working with other community organizations and transportation management associations to market service and educate potential riders on the benefits of transit and how to use service is another way for Metrolink to further reach people who do not currently use Metrolink. Finally, continued partnerships with other regional transit agencies, such as discounted Amtrak and Metro trip transfers, are effective in supporting multi-modal trips.

Chapter 8 - Conclusion

As the pandemic continues, Metrolink ridership has been slow to recover. Ridership reached approximately 28 percent of pre-pandemic levels in February 2022. Rail ridership recovery estimates vary throughout the U.S., with some such as NJ Transit expecting as low as 25 to 45 percent by the end of 2022. The future of commute behaviors is uncertain since most office employees have not yet returned to fully in-person work, and this uncertainty underscores the precarious future of American commuter rail, with most pre-pandemic rail service narrowly focused on connecting suburbs to downtown employment centers. The era after the pandemic is an opportunity to shift the agency's focus from "commuter" to "passenger" rail given the declined demand for work trips. Metrolink has an opportunity to appeal to potential riders who have never considered using Metrolink, or who previously considered Metrolink undesirable for their pre-pandemic travel.

The recommendations of this study were informed by a literature review, two surveys conducted with existing and potential Metrolink riders, and a review of other commuter rail agencies' pandemic ridership and recovery efforts. Research focused on how to incentivize mode shift through a behavioral science perspective has provided ideas that broadly fall into three categories: "try transit" exposure programs; technologies that are either gamification-based apps or trip planning tools that provide information and rewards to people considering transit usage; and targeted marketing campaigns to attract new riders. Survey participants from this study reflected higher engagement and interest in Metrolink amongst low-income households, older riders, lapsed riders, people who have never used Metrolink, and riders mostly interested in using service for leisure trips. The surveys provided insights about the criteria that existing and potential Metrolink riders consider when choosing commuter rail, including feeling secure from crime, convenient train schedules, cleanliness onboard trains, and on-time performance. Metrolink riders expressed the need for increased access to real-time information, more transit connections offered at stations, and more affordable fare options. Other commuter rail agencies such as Caltrain, BART, Long Island Railroad, NJ Transit, and Metra all have found similar ridership trends and offer ideas for service improvement, marketing campaigns, and mode shift incentives that Metrolink should consider.

Data Limitations

There are some limitations to the data collected by this study. First, survey findings reflect data from a small sample of Metrolink riders, and there is no way to verify participants' ridership status or experience using Metrolink. Second, survey findings reflect responses collected between December 2021 and February 2022, and travel behavior and opinions on commuter rail service may have since changed. Finally, the findings presented in Chapter 5 from other commuter rail agencies reflect only the materials publicly available on their website as of May 2022. Internal ridership data, strategic plans, and other materials not updated may include more current data or agency efforts that are unknown.

Next Steps

Immediate next steps after the completion of this study should be to evaluate the feasibility of the ten recommendations proposed in Chapter 7. While some, such as a marketing campaigns, a "Rail to Trails" program, and outreach efforts may be easier to implement and within Metrolink staff capability, others such as fare discounts for students and low-income riders may need more financial resources and staff support. Applying behavioral science to the study of public transportation is a relatively new concept, but no research on public transit agencies, let alone commuter rail providers, exists that have tested the effectiveness of behavioral science approaches on encouraging ridership compared to other approaches. Metrolink has an opportunity to be an innovator for this topic by being one of the first agencies to conduct this research. When pandemic conditions improve, an extended "try transit" pilot study that recruits a small group of people new to Metrolink should be developed, which were the original intentions for this project. The pilot could provide insights into travel behavior and response to various incentives. Finally, the continuation of ridership surveys focused on new and potential riders can inform future policy decisions. This was the first Metrolink ridership study conducted since April 2020, and one of the first to engage with people who had not previously used Metrolink. All of the ideas and recommendations outlined in this study can be further considered with more evaluation and input from Metrolink riders.

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Appendix Items

Appendix Item 1: Copy of Survey 1

The purpose of this survey is to understand the factors influencing Southern California residents' use of public transportation and to provide insight into post-pandemic travel behavior. This survey is part 1 of a graduate student research project conducted on behalf of Metrolink and the UCLA Department of Urban & Regional Planning. Participants who complete this full survey will be considered for a free roundtrip Metrolink ticket that can be redeemed at any Metrolink station by January 15, 2022. We appreciate your time and greatly value your feedback! For questions please contact sustainability@scrra.net.

* 1. I consent to participate in this study.

- ◯ Yes
- ◯ No

* 2. What is the name of the county where you live?

* 3. Please provide your contact information.

Name

Email Address

* 4. When was the last time you rode a Metrolink train?

- ◯ This month
- ◯ 2-6 months ago
- ◯ 7-12 months ago
- ◯ More than a year ago
- ◯ I have never taken a Metrolink train. (Not counting L.A. Metro light rail and subway trains)

* 5. What best describes the purpose of your trip when you last rode Metrolink?

- ◯ Commute to work
- ◯ Commute to school
- ◯ Personal business
- ◯ Other (please specify)
- ◯ Visit friends or family
- ◯ Leisure travel/sightseeing
- ◯ Visit events

* 6. What factors have limited your Metrolink use? (Check all that apply)

- [ ] Difficulty accessing the Metrolink station near my home
- [ ] Difficulty reaching my final destination from the Metrolink station
- [ ] Fares are too expensive
- [ ] Having to socialize with others on public transportation
- [ ] Lack of information about Metrolink
- [ ] Concerns about my personal safety
- [ ] Other (please specify)
- [ ] Train schedule is inconvenient
- [ ] Driving my car is faster
- [ ] Trains are not reliable enough
- [ ] I prefer the privacy and comfort of my own car
- [ ] I prefer the flexibility and independence of driving my car

* 7. Are you of Hispanic, Latino, or Spanish origin?

- ◯ Yes
- ◯ No

* 8. Do you consider yourself (select all that apply):

- [ ] Caucasian (White)
- [ ] African American (Black)
- [ ] American Indian or Alaska Native
- [ ] Asian or Pacific Islander
- [ ] Other (please specify)

* 9. In what year were you born?

* 10. What is your gender identity

- ◯ Male
- ◯ Female
- ◯ Prefer to self-describe:

* 11. What is your total household income?

- ◯ Less than $20,000
- ◯ $20,000 - $49,999
- ◯ $50,000 - $74,999
- ◯ $75,000 - $99,999
- ◯ $100,000 - $149,999
- ◯ $150,000 - $199,999
- ◯ $200,000 or more
- ◯ Prefer not to disclose

* 12. What is your current employment status

- ◯ Full-time employee
- ◯ Part-time employee
- ◯ Retired
- ◯ Other (please specify)
- ◯ Not employed
- ◯ Full-time student

* 13. What is the zip code for your place of work or school?

* 14. What is your home zip code?

* 15. Do you have access to a car?

- ◯ Yes
- ◯ No

* 16. How many cars does your household own?

* 17. Do you own a bicycle?

- ◯ Yes
- ◯ No

* 18. Before the pandemic, how many days per week did you commute to work or school?

- ◯ 5 days or more
- ◯ 4 days
- ◯ 3 days
- ◯ Other (please specify)
- ◯ 2 days
- ◯ 1 day
- ◯ I did not commute to work or school

* 19. Before the pandemic, what time did you arrive at work or school?

Date / Time

Time AM/PM

hh mm -

* 20. Before the pandemic, what time did you leave to return home from work or school?

Date / Time

Time AM/PM

hh mm -

* 21. Before the pandemic, on a scale from 1 to 5, how satisfied were you with your commute?

- ◯ 1 = Very Dissatisfied
- ◯ 2 = Somewhat Dissatisfied
- ◯ 3 = Neither Satisfied nor Dissatisfied
- ◯ 4 = Somewhat Satisfied
- ◯ 5 = Very Satisfied

* 22. How many days per week do you anticipate commuting to work or school in June 2022?

- ◯ 5 days or more
- ◯ 4 days
- ◯ 3 days
- ◯ Other (please specify)
- ◯ 2 days
- ◯ 1 day
- ◯ 0 – I intend to work or learn fully remote

* 23. How likely are you to try new modes of transportation for your trips to work or school in June 2022?

- ◯ Very Unlikely
- ◯ Somewhat Unlikely
- ◯ Neither Likely nor Unlikely
- ◯ Somewhat Likely
- ◯ Very Likely

* 24. Please rate your current use of each of the following transportation modes based on your current routine.

	Never	Rarely	Somewhat Frequently	Frequently	Always
Bike or scooter share	◯	◯	◯	◯	◯
Bus	◯	◯	◯	◯	◯
Carpool or vanpool	◯	◯	◯	◯	◯
Drive alone in private vehicle	◯	◯	◯	◯	◯
Personal bike or scooter	◯	◯	◯	◯	◯
Paratransit	◯	◯	◯	◯	◯
Rail: Metrolink	◯	◯	◯	◯	◯
Rail: Metro	◯	◯	◯	◯	◯
Rail: Amtrak	◯	◯	◯	◯	◯
Rideshare	◯	◯	◯	◯	◯
Walk	◯	◯	◯	◯	◯
Taxi	◯	◯	◯	◯	◯

Other (please specify)

* 25. Please rate your response to each of the following statements.

	1 = Strongly Disagree	2 = Disagree	3 = Neither agree nor disagree	4 = Somewhat agree	5 = Strongly agree
I consider my habits to be good for the environment.	◯	◯	◯	◯	◯
I consider my schedule to be flexible.	◯	◯	◯	◯	◯
My daily routine is					

predictable, I don’t like to change things.	○	○	○	○	○
I can complete most of my personal needs without access to a car.	○	○	○	○	○
I believe there are plenty of places to visit within walking distance of my house.	○	○	○	○	○
I know where the closest bus stop is to my home	○	○	○	○	○
I know where the closest Metrolink station is to my home.	○	○	○	○	○
I feel safe walking in my neighborhood at night	○	○	○	○	○
I get enough daily exercise.	○	○	○	○	○
My commute stresses me out.	○	○	○	○	○
I enjoy driving.	○	○	○	○	○
I think riding transit is more relaxing than driving.	○	○	○	○	○
I enjoy using my time on transit to do other tasks or relax.	○	○	○	○	○
I feel like my time is limited.	○	○	○	○	○
Driving my car is the only way I can reliably get where I need to.	○	○	○	○	○
I think driving my car is expensive.	○	○	○	○	○
I think taking the bus or train saves money.	○	○	○	○	○
I think transit is easy to use.	○	○	○	○	○
I am uncomfortable riding a crowded bus or train.	○	○	○	○	○
I do not feel safe on public transit.	○	○	○	○	○
COVID has made me	○	○	○	○	○

drive more than before.					
COVID prevented me from using transit.					
I use public transit when I go on trips elsewhere in the United States.					
I use public transit when I go on trips outside the country.					
My family and friends would support me if I drove less for environmental reasons.					
My family and friends would support me if I chose to use public transit more.					
I see myself not driving more or less.					
I see myself trying to incorporate Metrolink into my commute.					
I see myself trying to incorporate other modes of transportation besides Metrolink into my commute.					

* 26. If you were to try Metrolink for the first time, what would be the primary purpose of your trip? (Check all that apply)

- [ ] Commute to work
- [ ] Commute to school
- [ ] Personal business
- [ ] Visit friends or family
- [ ] Leisure travel/sightseeing
- [ ] Visit events
- [ ] Other (please specify)

* 27. What were your motivations for completing this survey? (Check all that apply)

- [ ] I am interested in trying Metrolink for the first time.
- [ ] I have not used Metrolink in a while, and a free ticket will encourage me to.
- [ ] I wish to provide my feedback to Metrolink about its service.
- [ ] I hope to contribute to research on public transportation use.
- [ ] I hope to contribute to research on post-pandemic travel behavior.
- [ ] No other motivations, I just want the free roundtrip ticket.
- [ ] Other (please specify)

28. Please use the space below if you wish to provide any additional comments.

Appendix Item 2: Copy of Survey 2

You are receiving this follow-up survey because you completed our previous rider survey. The goal of this survey is to better understand what would incentivize you to ride Metrolink more often. Participants who complete this survey by February 4, 2022, will be entered for a chance to win a free Metrolink 7-day pass. We appreciate your time and greatly value your feedback!
For questions please contact sustainability@scrra.net.

* 1. Please provide your contact information.

Name	
Email Address	

* 2. Please rate how important each of the following elements are in your decision to ride Metrolink.

	1 - Not at all important	2 - Slightly important	3 - Moderately important	4 - Very important	5 - Extremely important
Ease of purchasing a ticket	○	○	○	○	○
Station cleanliness	○	○	○	○	○
Feeling secure from crime while waiting at the station	○	○	○	○	○
Station information about Metrolink service	○	○	○	○	○
Train arriving at my destination on time	○	○	○	○	○
Travel time on train compared to driving	○	○	○	○	○
Feeling secure from crime while riding train	○	○	○	○	○
Cleanliness on board train	○	○	○	○	○
Behavior of other riders	○	○	○	○	○
Comfort while riding the train	○	○	○	○	○
Onboard Wi-Fi	○	○	○	○	○
Value of Metrolink fare compared to driving	○	○	○	○	○
Metrolink responsiveness to customer concerns	○	○	○	○	○
Ease of obtaining information at Metrolinktrains.com	○	○	○	○	○
Convenient train schedules	○	○	○	○	○
Availability of free parking spaces at the Metrolink station	○	○	○	○	○
Availability of transit connections at the Metrolink station	○	○	○	○	○
Destinations within walking distance from the Metrolink station	○	○	○	○	○

Other (please specify)

* 3. Please rate each of the following elements on how much they would increase your willingness to use Metrolink more often.

	1 – No effect	2 - Slightly effective	3 - Moderately effective	4 - Very effective	5 - Extremely effective
Information tailored to your trip purpose (commute, school, recreation, etc.)	○	○	○	○	○
Online trip planning tools	○	○	○	○	○
Information about alternative options for my daily commute	○	○	○	○	○
Information about how public transit use can save me money	○	○	○	○	○
Information about how Metrolink use reduces greenhouse gas emissions.	○	○	○	○	○
Real time train status information	○	○	○	○	○
Testimonials from other transit riders about their experiences	○	○	○	○	○
Ability to connect with other riders making the same trip as you	○	○	○	○	○
Ability to provide live feedback during my trip	○	○	○	○	○
Customer representatives onboard the train	○	○	○	○	○
Making my trip feel fun	○	○	○	○	○
More affordable fare options	○	○	○	○	○
Information about public transit connections available free with my Metrolink ticket	○	○	○	○	○
Free coffee during my ride	○	○	○	○	○
Improvements to Metrolink stations	○	○	○	○	○

Improved onboard comfort	○	○	○	○	○
Wi-Fi onboard the train	○	○	○	○	○
Improved security onboard the Metrolink train	○	○	○	○	○
Improved access to public transit service connections at Metrolink stations	○	○	○	○	○
More opportunities for active transportation (bike, walk, scooter, etc). in the areas around Metrolink stations	○	○	○	○	○
More parking spaces at Metrolink stations	○	○	○	○	○

Other (please specify)

* 4. Please indicate how frequently you see yourself using the following modes of transportation in 2022:

	Never	Rarely	Somewhat frequently	Frequently	I would like to try this mode for the first time
Bike or scooter share	○	○	○	○	○
Bus	○	○	○	○	○
Carpool or vanpool	○	○	○	○	○
Drive alone in private vehicle	○	○	○	○	○
Personal bike or scooter	○	○	○	○	○
Paratransit	○	○	○	○	○
Rail: Metrolink	○	○	○	○	○
Rail: Metro	○	○	○	○	○
Rail: Amtrak	○	○	○	○	○
Rideshare	○	○	○	○	○
Walk	○	○	○	○	○
Taxi	○	○	○	○	○

5. Please use the space below if you wish to provide any additional comments.

Appendix Item 3: Participant Recruitment

This project recruited participants using Metrolink social media, targeted ads on Facebook, and follow-up emails.

Survey 1 participants were recruited via Metrolink social media and targeted Facebooks ads. The data below shows the number of posts made by Metrolink staff and level of engagement each received.

- 6 Twitter posts: 13,018 Impressions, 629 Engagements, 284 Link Clicks
- 8 Facebook posts: 22,873 Impressions, 583 Engagements, 199 Link Clicks
- 2 LinkedIn posts: 1,231 Impressions, 45 Engagements, 28 Link Clicks

The targeted Facebook ads were sent to Facebook users who live within 5 miles of Metrolink station. The ads reached 43,792 people and resulted in 73,685 Impressions and 2,233 Link Clicks. The ads ran for 27 days during December 2021 and January 2022.

Follow-up emails were sent to elligible participants from survey 1 inviting their participation in the second survey.

The following incentives were offered to participants:

- Completion of survey 1: Promotion code for free round-trip Metrolink ticket
- Completion of survey 2: Entry into a raffle for a 7-day Metrolink pass