Sigma Six

Executive Team Report

MTA Daily Ridership (Post-pandemic)

Introduction

This report analyzes MTA ridership trends from **March 2020 to October 2024**, assessing shifts in transit usage before and after the pandemic. It identifies the most efficient transportation modes and examines key factors influencing recovery, such as major events, weather, peak hours, and fuel prices. The findings provide data-driven insights to optimize services and support strategic planning.

Overview

We have analyzed the usage of transportation mode and we found that:

- The most used transportation mode is **Subways, with 4,280M ridership**
- The least used transportation mode is **Staten Island Railway, with 7.55M ridership**

Trend Insights

Based on trend analysis for ridership over the latest years for each transportation mode, we found that :

- Drop in usage in **March 2020** because of the pandemic
- The usage returned to be increase after **July 2020** when natural life came back gradually
- **Subways and Traffic** returned for usage.
- The seasonal ridership peaks in **March and October. driven by several key factors:**
    - **March** marks the shift to spring, bringing improved weather and increased movement. With schools and universities fully active, ridership sees a notable rise.
    - **In March,** companies, shops, and offices return to full operational capacity after the winter slowdown.
    - **October is one of the most active months for education.** Ideal weather conditions encourage more travel across the city.
    - **Preparations for the NYC Marathon begin in October,** attracting participants and spectators.
    - Major concerts and many tourists also contribute to the increased ridership during **October.**

Pandemic Impact

Based on analysis for the pandemic impact on ridership over the latest years for each transportation mode, we found that :

- **Bridges and tunnels** were the fastest-recovering transportation mode by **September 2022**, **followed by Access-a-Ride.**
- **Access-A-Ride** has not only fully recovered but also surpassed its pre-pandemic levels by **120.23%**, indicating improved efficiency and increased reliance **in 2024**
- The rapid recovery was driven by increased reliance on private and personal vehicles, as remote work remained common.
- **Subways** remained the most used transit mode but had not yet fully recovered.
- **Friday** is the closest weekday to full recovery, reaching **97.72%** of pre-pandemic levels.

Performance Comparison

Based on the analysis of the performance of each mode and weekday over the latest years, we found that :

- **Weekend days recovered faster than weekdays**, despite higher weekday ridership due to work and study commitments.
- **Bridges and Tunnels retained 93.38%** of pre-pandemic ridership, driven by a shift toward private cars and Uber to avoid crowded public transit.
- **Subways account for 53.97%** of the total ridership in New York, followed by **buses at 21.66%.**
- **Wednesday** has the highest weekday ridership, while **Monday** has the lowest.
- **October, September, and March** have the highest ridership due to education, favorable weather, and numerous events in New York.

Events Impact

Pre-pandemic events were analyzed to assess their effect on transportation recovery and ridership. We found that :

- **The New York City Marathon** significantly boosted ridership, aiding recovery to normal levels.
- **On the event day in 2023**, ridership reached a **96.14%** Comparable Pandemic Percentage, the highest among all events.
- The total ridership on event days accounts for **74.01%** of pre-pandemic levels, emphasizing the significant impact of events on MTA transit usage.
- **Subways** saw the highest impact from events, accounting for **52.56%** of total event-day ridership.
- **Buses** followed, contributing **22.19%** of event-day ridership.

Fuel Price Impact

The changing price of Gasoline during the pre-pandemic period. We found that :

- Ridership increases as fuel prices rise, indicating a shift to public transit.
- **2023 Decline:** Suggests influence from remote work or economic conditions beyond fuel prices.
- **2020 Drop:** Directly correlates with COVID-19 impacts on transit usage.

Recommendation strategies

MTA Maintenance & Service Optimization Plan

- **Monday Maintenance**: Schedule maintenance on Mondays to minimize disruptions and reallocate work hours to other days for resource efficiency.
- **Peak Wednesday Services**: Enhance transit services on Wednesdays, avoid maintenance, and strengthen emergency control measures to prevent breakdowns.
- **Seasonal Adjustments:** Increase transit services during the busiest months **(September, October, March)** and avoid maintenance during peak periods.
- **Air Quality Improvement:** Implement enhanced ventilation systems for better passenger comfort.
- **Dynamic Scheduling:** Introduce flexible schedules to efficiently manage peak and off-peak hours.
- **Power Efficiency:** Reduce service hours during the least busy months to save energy while aligning with workday patterns.

Public Transit Recovery Strategies

To boost public transit adoption after the pandemic, agencies can implement the following key strategies:

- **Enhanced Safety & Hygiene:** Regular deep cleaning, touchless payments, and improved ventilation.
- **Optimized Scheduling:** Demand-based frequency adjustments, real-time tracking, and dynamic scheduling.
- **Incentives & Affordability:** Discounts, loyalty programs, and flexible fare plans.
- **Improved Connectivity:** Seamless transfers, better micro-mobility integration, and expanded routes.
- **Data-Driven Decisions:** AI-powered demand prediction, fleet optimization, and smart customer support.
- **Sustainability Initiatives:** Eco-friendly buses, green commuting incentives, and awareness campaigns.
- **Better Passenger Experience:** Station upgrades, onboard Wi-Fi, and marketing campaigns to rebuild trust.

Financial and Customer Experience Strategies

To enhance efficiency, accessibility, and financial sustainability, MTA should implement the following measures:

- **Access-A-Ride Enhancements (0.47% contribution, 120.23% recovery)**: Improve booking systems, optimize routes, upgrade accessibility features, and integrate with public transit to support its increasing demand.
- **Subway Conditions (53.97% ridership share):** Improve cleanliness and seating to enhance passenger satisfaction and experience.
- **Bus Optimization (21.66% ridership share):** Increase bus frequency, reliability and reduce overcrowding to improve service efficiency.
- **Bridge & Road Maintenance (18.41% contribution, 93.38% overall health):** Maintain high standards to ensure continued efficiency and reliability.
- **LIRR & Metro-North Adjustments (2.92% & 2.47% contribution):** Postpone enhancements and allocate resources efficiently until primary transit modes fully recover.
- **Customer Communication:** Provide real-time updates, clearer signage, and transparent service changes to build passenger trust and satisfaction.

These plans ensure a balanced approach to accessibility enhancements and financial efficiency while optimizing transit performance. By implementing these strategies, MTA can restore confidence, enhance efficiency, and encourage long-term public transit adoption.