POLICY BRIEF

Public Transit Safety During the COVID-19 Pandemic

Key Takeaways

1. Public transit has provided a vital service to move essential workers to work and home during the pandemic, and agencies have taken measures to safeguard riders and employees.

2. The latest research from international sources shows that public transit can be used safely through the use of face coverings.

3. Contact tracing in France, Austria, and Japan failed to find clusters of COVID-19 cases linked to public transit use.

There has been much discussion around the role of public transportation during the COVID-19 pandemic. Public transit has provided a vital service to move essential workers to work and home during the crisis. Transit agencies across the country have taken critical measures to safeguard riders and employees, yet there have been questions surrounding the safety of public transit during the pandemic and its role, if any, in virus transmission. The latest research from international sources shows that public transit can be used safely during the pandemic through the use of face coverings, and that shifting trips from public transportation to automobiles would have a negative impact on public health and safety in terms of traffic injuries and deaths as well as vehicle emissions.

Safety of Transit Related to COVID-19 Transmission

Heath experts have identified three elements as key risk factors in COVID-19 transmission: closed spaces, crowded places, and close-contact situations. Given these "three C's," we might expect transit vehicles to be a hotspot of COVID-19 transmission. On the other hand, cities such as Hong Kong have kept virus spread under control while retaining significant public transit ridership. For example, ridership on Hong Kong MTR lines in February were only 39 percent lower than in December 2019[i] and have recovered 18 percent since then. Comparatively, U.S. rail transit systems have seen ridership decreases of 70 to 90 percent while COVID-19 transmission increases in many states.

Several countries with extensive contact tracing programs have identified clusters of cases linked to workplaces, homeless shelters, gyms, bars, and clubs, but no clusters linked to public transportation. Of 150 clusters of new COVID-19 cases that emerged in France in May, none were linked with public transit.[ii] In Japan, cluster tracing did not identify any clusters linked to commuter trains.[iii] A similar effort in

Austria found that none of the 355 case clusters identified in April and May could be traced to transit use, as reported by the Atlantic.[iv] These findings provide strong evidence that transit use can be safe.

Several recent research studies have looked at the relationship between public transit use and COVID-19 spread. The first research study pointing to public transit as a driver of COVID-19 spread was a piece produced by a Massachusetts Institute of Technology (MIT) economist in April 2020.[v] The study, however, didn't provide any statistical analysis to show a connection between subway use and COVID-19 cases. The evidence provided for the connection between transit use and COVID-19 transmission was a visual overlay of the New York City subway map over a map of COVID-19 cases by zip code. Critics of the paper pointed out that many of the parts of New York City with the highest infection rates have no subway service.[vi]

Two further studies were released in June 2020, one by an economist at the University of Virginia, and another by two economists at MIT.[vii] Both studies used regression models to measure the correlation between COVID-19 deaths and a group of socioeconomic variables at the county level, and both found a strong correlation between deaths and pre-pandemic public transportation commuting use. There are, however, several limitations to this approach. One limitation is that the analyses can only measure a correlation between prior transit use at the county level and COVID-19 deaths and cannot determine a causal link between current transit use and COVID-19. The studies cannot distinguish if the correlation is due to transit commuting, or some other factor that is correlated with transit commuting such as the occupations of transit commuters. Another limitation is that these studies measured the correlation between prior transit commuting percentage and COVID-19 deaths, and do not consider changes in transit ridership and ridership patterns since the pandemic began. This approach has serious limitations, as some of the nation's strongest transit markets have seen greater ridership declines during the pandemic than cities with lower transit use.

In making similar comparisons with air travel, one benefit of riding transit is that transit users do not spend considerable time on any one vehicle. Some researchers had suggested based on prior airborne viruses that masks could be a major factor in reducing COVID-19 spread[viii], and more recent research suggests this is correct. The average transit trip takes 22 minutes of in-vehicle time.[ix] This means that containment measures like masks can help keep riders safe during the short time they are on a bus or train. There is considerable evidence that mask-wearing can significantly reduce the infection rate of COVID-19. One study in Germany concluded that "face masks reduce the daily growth rate of reported infections by around 40 percent."[x] The study relied on the fact that German states implemented face mask mandates at different dates to make a comparison of their effectiveness. Another study that looked at Wuhan, China; Italy; and New York City determined that "the difference with and without mandated face covering represents the determinant in shaping the trends of the pandemic worldwide."[xi]

Many transit systems in the United States are requiring passengers to wear face coverings. JR East railway in Japan has also been emphasizing the use of face coverings on their trains.[xii]

Recent polls show that a large majority of Americans are wearing face coverings. A survey of over 4,500 Americans in May found that 84 percent of respondents said they wore face coverings in public.[xiii] Mask-wearing rates were similar across political affiliations. The idea that there is a sizeable portion of Americans opposed to mask-wearing may be misguided.

Transit Safety Compared to Replacement Modes: The Larger Context

Articles and officials stoking fear of COVID-19 infection on public transit has the effect of pushing transit users to other modes, and especially toward automobile travel. Automobiles are seen as a "safe" option

because the user has their own private, "sealed" space. However, substituting transit trips for other modes like cars has the potential for a negative safety impact.

According to APTA's study *The Hidden Traffic Safety Solution: Public Transportation*[xiv], public transit has one-tenth the passenger casualty (injury and fatality) rate of automobile travel. This means an automobile passenger is ten times more likely to be injured or killed in their travels than a transit passenger.

Other APTA analysis has shown that there is a relationship between higher metro area public transit use and lower traffic fatality rates.[xv] Metro areas with more than 40 annual transit trips per capita have approximately one-half the traffic fatality rate of metro areas with fewer than 20 transit trips per capita.

Shifting trips from transit to automobiles also will increase emissions that present a health risk to the public. Previous studies cited by the Centers for Disease Control and Prevention[xvi] have shown that, for every passenger mile, public transit produces five percent of the carbon monoxide and eight percent as many volatile organic compounds as private vehicles.

In this larger context, substituting public transit trips with automobile trips will be detrimental and negatively impact public health and safety.

References:

[i] https://www.mtr.com.hk/en/corporate/investor/patronage.php

[ii] https://www.citylab.com/transportation/2020/06/coronavirus-risk-transit-france-japan-trains-subway-buses/612841/ and https://www.santepubliquefrance.fr/maladies-et-traumatismes/maladies-et-infections-respiratoires/infection-a-coronavirus/documents/bulletin-national/covid-19-point-epidemiologique-du-4-juin-2020

[iii] https://www.sciencemag.org/news/2020/05/japan-ends-its-covid-19-state-emergency and https://wwwnc.cdc.gov/eid/article/26/9/20-2272_article

[iv] https://www.theatlantic.com/ideas/archive/2020/06/fear-transit-bad-cities/612979/ and https://www.ages.at/service/service-presse/pressemeldungen/epidemiologische-abklaerung-am-beispiel-covid-19/

[v] http://web.mit.edu/jeffrey/harris/HarrisJE_WP2_COVID19_NYC_24-Apr-2020.pdf

[vi] https://www.citylab.com/transportation/2020/04/coronavirus-cases-new-york-subway-infection-riders-mta/610159/

[vii] https://www.nber.org/papers/w27407.pdf and https://www.nber.org/papers/w27391.pdf

[viii] https://www.reuters.com/article/us-health-coronavirus-masks-study/widespread-mask-wearing-could-prevent-covid-19-second-waves-study-idUSKBN23G37V

[ix] Analysis of APTA Fact Book Appendix A Tables 5 and 17.

[x] https://www.iza.org/publications/dp/13319/face-masks-considerably-reduce-covid-19-cases-in-germany-a-synthetic-control-method-approach

[xi] https://www.pnas.org/content/early/2020/06/10/2009637117

[xii] https://images.magnetmail.net/images/clients/APTA/attach/JRECOVID19countermeasureson3C.pdf

[xiii] https://thehill.com/homenews/news/499127-large-majority-says-they-have-worn-mask-in-public-poll

[xiv] https://www.apta.com/wp-content/uploads/Resources/resources/reportsandpublications/Documents/APTA-Hidden-Traffic-Safety-Solution-Public-Transportation.pdf

[xv] https://www.apta.com/wp-content/uploads/Resources/resources/hottopics/Documents/APTA%20VZN%20Transit%20Safety%20Brief%208.2018.pdf

[xvi] https://www.cdc.gov/policy/hst/hi5/publictransportation/index.html

The American Public Transportation Association (APTA)

The American Public Transportation Association is a nonprofit international association of 1,500 public and private sector organizations that represents a $74 billion industry that directly employs 435,000 people and supports millions of private sector jobs. APTA members are engaged in the areas of bus, paratransit, light rail, commuter rail, subways, waterborne services, and intercity and high-speed passenger rail. This includes transit systems; planning, design, construction, and finance firms; product and service providers; academic institutions; transit associations and state departments of transportation. APTA is the only association in North America that represents all modes of public transportation. APTA members serve the public interest by providing safe, efficient and economical transit services and products.

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APTA Vision Statement

APTA leads public transportation in a new mobility era,
advocating to connect and build thriving communities
