



Insight Series

Transportation Economics and Planning for a Post-Pandemic Era

April 2020

© EBP US, Inc.

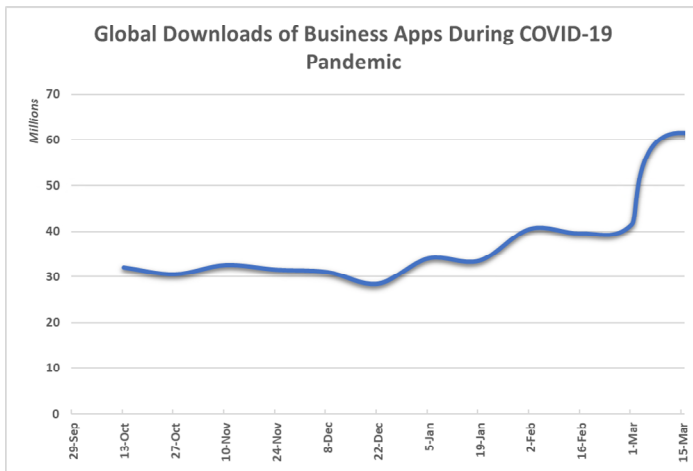
Permission is granted to reprint or reproduce all or part of this document
as long as it is accompanied by full title and authorship credit.

www.ebp-us.com

Transportation Planning’s Long Emergency. The COVID-19 pandemic is presenting transportation planners with an unprecedented set of new challenges and possibilities. While this event is distinguishable from past economic downturns because of its intensity and ability to touch all sectors of the economy, it is also notable for how widespread isolation and restrictions have led people to observe, reflect, and talk with one another about how we live and work. It has increased awareness of our values regarding health, human interactions, and the environment. As views on our personal, economic, and societal priorities evolve during this long emergency, planners will be challenged to consider the role of transportation in an evolving “new normal.” For the transportation planning profession, it is never too early to prepare for the future. Planners need to think anew about the challenges and opportunities made apparent by a global pandemic while also not overcompensating in a post-pandemic world. We at EBP have been studying these dynamics to help improve transportation planning and decision-making processes. Our insights follow.

The COVID-19 pandemic has accelerated key societal trends that directly affect transportation planning.

Social Distancing and Remote Living. From a broad perspective, there have been dramatic and obvious changes to the way we use transportation to conduct our daily lives. Many have needed to conduct their daily lives remotely, leading to substantial acceleration in our use of computer applications, e-commerce, telecommuting, telehealth where possible, and distance learning. However, many jobs cannot be conducted remotely, and millions of careers have ground to a standstill as workers are told



Downloads of business apps increased an estimated 90% from 2019 levels in March 2020.

(Data source: App Annie website, www.appannie.com.)

they cannot report for “non-essential” in-person jobs. Yet another group continues traveling to essential positions, requiring them to adjust to new travel conditions and health risks at work.

Long-term trends toward adoption of remote technologies were already underway, but the sudden and dramatic increase in their use during the pandemic has exposed many more people to their advantages and limitations. How these changes affect different populations will be a key consideration for planners.

In addition, our attitudes toward health and social distance may never be the same or take months or years to readjust, with longstanding implications for how we value avoidance of congestion and crowding on trains and buses as well as at ports, rail terminals, and airports. There may also be a persistent shift in how we prioritize policies affecting environmental quality and personal interactions in the future.

Need to Improve Planning Models to Manage Uncertainty. Transportation investment plans and policies depend on accurate and defensible travel modeling. It is imperative that our travel models and their underlying economic assumptions maintain credibility considering changes occurring around us. While modeling is always challenged to keep pace with the ongoing evolution of travel behavior, this will be particularly evident in coverage and forecasting of goods delivery vehicles. This deficiency, inherent in nearly all state and metropolitan travel demand models, will only be amplified by the acceleration of e-commerce that appears likely to continue after pandemic restrictions are lifted. Freight supply and warehouse distribution may also become more important for state and regional models.

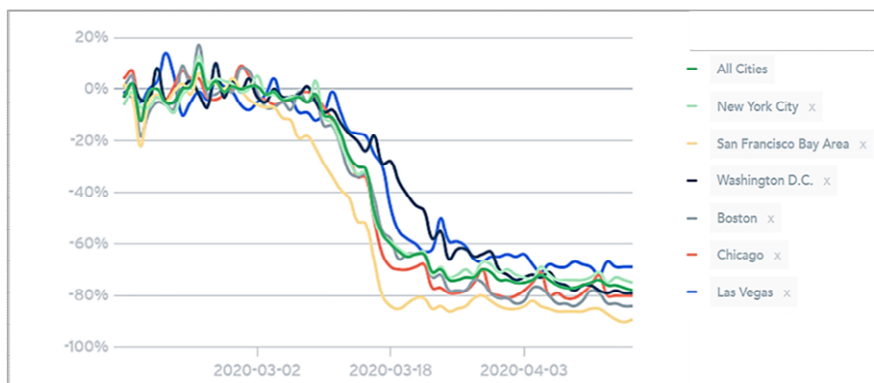
Ensuring travel data and economic assumptions are valid will help maintain travel model credibility.

Most urban travel models rely on survey data to predict peak period traffic. Surveys, however, sometimes lag behind changing trends. That reliance can leave models deficient in considering how the growth of telecommuting could shift local traffic patterns – with less rush hour commuting but more mid-day personal trips and delivery service. Shorter trips may replace the trip chaining that had occurred when people took care of errands and shopping on the way to or from work. For statewide travel, there may be a need to consider whether recreation trips may shift toward regional destinations in lieu of long-distance air travel. While the extent of lingering shifts in these demand patterns is not yet known, this possibility -- coupled with emerging technologies and mobility choices -- will make it even more important for planners to track and understand transportation system use changes that are emerging over time. This can be done by increasing use of real time traffic, ridership and system performance systems along with surveys of shifts in mobility choice decisions as new travel options emerge.

Since travel demand forecasting often depends strongly on economic conditions such as employment growth and settlement patterns, the ability of models to explore divergent future scenarios will be invaluable to agencies in preparing plans that maintain relevance as we learn more about the long-term impacts of this pandemic. This may include scenarios addressing possible shifts in transportation investment priorities as well as cost and benefit valuation factors. Some modelers are already tackling these issues and efforts are underway for advanced transportation economic models such as TREDIS to further develop their valuation of goods delivery as well as cost and spending factors for changing business, personal, and recreational travel patterns.

Changing Transit and Mobility

Services. Changes in societal attitudes regarding health and its connection to social distancing and crowding may increase the importance of quality-of-service factors, including the desire for rider space and avoidance of bus and train crowding. Transit agencies and their local, state, and federal funders are facing



Transit ridership fell over 80% nationwide since February 2020, with some systems seeing drop-offs of 90% or more. (Source: transitapp.com/coronavirus)

significant fiscal issues from reduced revenue. Pressures to reduce crowding, if they persist in the long term, could further exacerbate these challenges in the long-term. At the same time, transit may become even more critical in an environment of reduced incomes and affordability challenges.

During the pandemic, many transit agencies have modified bus routes as demand falls for trips to major office centers while it increases for 24-hour service to hospitals and medical centers. As transit agencies move forward, this experience is likely to increase awareness of the need for better late-shift services (a need highlighted in [our recent study](#) for the American Public Transportation Association), as well as access to health care facilities. More generally, this experience underscores the need for agility and nimbleness as transit agencies dynamically adapt routes and services to meet shifting needs.

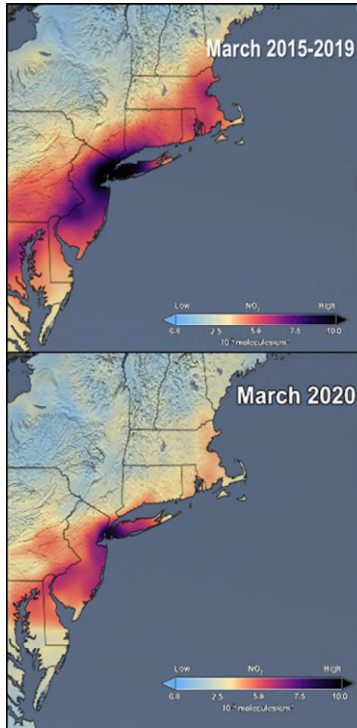
Many transit providers pursue this kind of [dynamic planning](#), facilitated by increased data availability and analytical capacity. Automated passenger counts, fare card, and vehicle location data provide transit planners with detailed ridership information, often at the vehicle or hour level. Rather than relying on surveys conducted only once per year, transit agencies can monitor ridership continuously and adapt routes and schedules, as many agencies are doing during the current pandemic. Providing this kind of adaptive services beyond this critical period can help transit agencies serve and retain riders, who expect flexible and responsive service. [Standardizing transit ITS data and analytical tools](#) can improve transit agencies ability to dynamically plan services.

Like transit agencies, transportation network companies (TNCs) that provide shared ride services have taken a financial hit from reduced demand during the pandemic. It is possible that this will increase pressure on TNCs and transit agencies to work together more closely and push cities towards a shared future of app-driven, integrated mobility services that flexibly and efficiently optimize vehicles and services to variable demand. At the same time, social distancing has compelled companies like Lyft and Uber to suspend their higher-occupancy travel options (e.g., UberPOOL), calling into question the future of these lower-cost travel options. These trends highlight the importance of multi-modal mobility planning and performance metrics to track progress in meeting future mobility needs.

Addressing Social Equity Challenges in Transportation. The economic and health impacts of the pandemic have also been particularly hard on low-income, older adult, minority, immigrant, homeless and other vulnerable groups. A key issue that has been highlighted during the nation’s pandemic response is the inequities between different socioeconomic groups in our society. For example, many of the people deemed “essential workers” are in lower-wage positions supporting critical activities, such as health care, food service, retail grocery, and distribution and logistics.

Social equity will become a more important element of transportation prioritization and planning.

These people have been facing challenging situations in which they often must report to work but, due to their economic circumstances, some have limited transportation options other than public transit, meaning this group is less able to practice the social distancing advised by health authorities. Recognition of these hardships and increased attention to social inequities has facilitated a significant increase in local community-based efforts (e.g., mutual aid groups) to help people in these groups. We believe such [equity considerations](#) will receive more attention in future transportation prioritization and long-range planning processes.



By March 2020, levels of Nitrogen Dioxide (NO₂), a pollutant from burning fossil fuels, had dropped in the I-95 Corridor of the northeastern US 30% from their average annual levels.
(Source: NASA)

Investment in Active Transportation. For a significant portion of workers in the US, staying at home during the COVID-19 pandemic has highlighted the joys of (socially distant) walking and fresh air (or at least allowed them to experience it). In addition, micromobility and bikeshare services like Boston’s Bluebikes and New York’s CitiBike have earned praise by providing a safe commuting option for transit-dependent essential workers, sometimes at subsidized rates. These experiences may bolster future demand for pedestrian amenities and facilities as well as other forms of active transportation and complete streets. In addition, the attention paid to air quality improvements during the pandemic period may persist, strengthening interest in active transportation. Planners and economists understand the personal and environmental value of active transportation, and a change in attitudes may push them to fully capture that value in planning, modeling, and prioritization processes.

Economic Impact of Airports and Aviation. The pandemic is causing airports, airlines, and other players in the aviation industry to experience some of the most severe disruptions in the history of the travel industry. The recovery of international and domestic air travel is closely tied to issues and trends discussed throughout this article, such as growth in telecommuting and changes in freight movement, along with restructuring of airline schedules that are now being discussed and reduced international travel.

A key consideration in the future of aviation will be perceptions of how effectively the air travel system can protect travelers’ health and safety going forward. In addition, it is conceivable that private aircraft may be in greater demand as people with financial means choose this option over commercial flights to minimize contact with others. As air travel and related business is reduced in the near-term and possibly altered for the longer term, airport authorities, economic development organizations, and planners may also need to revise approaches for estimating the economic contributions of airports and the roles of aviation in regional, state and national economies. Any such revisions will need to consider new data collection methods (perhaps reducing reliance on primary surveys) and modeling -- at least in the short term -- because economic models and data sets have a lag of one to two years, meaning 2020 analyses would be based on assumptions from the pre-pandemic economy.

Lingering effects of the pandemic may also mean that economic aviation forecasts recently developed as part of airport master plans, state aviation system plans,



Unused commercial airliners parked en masse during the pandemic.
(Source: Shutterstock.)

and the FAA Terminal Area Forecast may need to be reexamined based on the underlying changes now being played out. Shifts in forecasts may have significant implications for airport investment analysis and multi-modal transportation planning, as the nature and amount of demand for access to and from airports, for both people and cargo, changes in the post-pandemic world.

Changing Parking Policies. For cities, the accelerated shift toward e-commerce and delivery vehicles is likely to exacerbate shortages of short-term curb space. Conversely, growth in reliance on app-driven mobility services, e-commerce, and telecommuting may reduce long-term needs for second cars and two-car driveways and garages. These trends could reduce future needs for parking in commercial districts and reduce new home lot sizes and housing costs. [Scenario planning tools and methods](#) should be adapted to consider how these factors will affect urban development policies and infrastructure investment needs.

Highway and Road Traffic. Many transportation planning concepts, from capacity investments to right-sizing strategies for readjusting capacity, rely on forecasts of future traffic growth. An acceleration of telecommuting and e-commerce adoption may reduce peak period vehicle traffic to key commercial centers while increasing off-peak traffic in other areas. While we cannot be certain whether there will be a net increase or decrease in vehicle miles traveled, time and spatial shifts will be critical factors to consider for future road investment needs.

Permanent shifts to work-at-home patterns may significantly reduce peak period vehicle highway traffic.

Another likely trend is a shift toward relatively more truck traffic, with its own spatial shift as distribution of goods from central warehouses to homes (via light duty trucks) grows relative to deliveries to retail stores (via heavy duty trucks). The speed, magnitude, and breadth of these shifts will need to be monitored and considered in a more dynamic process for investment planning. For example, project evaluation and prioritization methods may be applied under multiple forecasts—a topic of exploration in [NCHRP right-sizing research](#) in which EBP has been involved. The need for “[adaptive](#)” right-sizing will be particularly important as agencies seek to allow for future uncertainty.

Freight Planning. Many people have experienced shortages in the availability of staple products during the pandemic. These have not generally been due to production shortages; rather, they were a manifestation of client-specific supply chains and just-in-time inventory systems that many industries have adopted in recent decades. Major retailers rarely maintain enough product stock for more than a few days of sales, particularly for bulky, low-cost goods like toilet paper. When a sudden and unprecedented surge in demand for numerous products expended their minimal stock, just-in-time supply chains were not structured to backfill the vacuum quickly enough. This experience is increasing awareness of the critical importance of [supply chain reliability and agility](#) in our economy. Going forward, there may be an opportunity to improve state and regional freight plans by partnering with economic development agencies and private industry to [understand the role of transportation planning in the sustainability and resilience of supply changes](#) for various populations and industries. This calls for advanced modeling and analytic tools, as well as accessible and robust public and private data, to identify freight dependencies and scenario impacts.

Transportation Planning and Decision Processes. Changes in the previously discussed factors will affect three aspects of transportation planning: (1) service and facility design, (2) project prioritization, and (3)

Scenario planning that accounts for changing behavioral and economic drivers will be a critical part of effective transportation planning

long-term planning. A key lesson learned from the pandemic is the importance of maintaining flexibility in adjusting both passenger and freight services to adapt to changing conditions. This is particularly important, for we know there will be future pandemics, climate change impacts, natural and manmade disasters, and dynamic social or economic events. Scenario planning can help us understand their potential impacts and then develop contingency plans or flexible response processes for facilities and services. Underlying good scenario planning is a focus on understanding behavioral and economic drivers of outcomes.

For prioritization decisions and long-range planning, there is a parallel need to develop agile, dynamic planning processes that allow for unanticipated events and supply/demand shifts. Resilience factors need to be part of these processes, to ensure the economic resilience of industries, states, and regions, as well as the resilience of physical infrastructure.

Some agencies may have increased interest in considering traveler health and safety, carbon emissions, pollution, and active transportation needs in project ranking and selection processes, requiring more robust evaluation methods. For instance, wider economic benefit valuation models and multi-criteria analysis tools can be used together to capture these factors and their use in decision-making.

Looking to the Future. The pandemic and associated mitigation policies are affecting societal behavior and attitudes in myriad ways. These changes have precipitated massive shifts in transportation demand, supply, and performance, particularly related to the speed and magnitude of trends that were already occurring or expected. While it is impossible to say which changes will endure, there can be little doubt that approaches to planning transportation systems and investments will need significant rethinking. Transportation planners will need to work with economic development organizations, human services agencies, health organizations, and others to understand how the “new normal” for transportation may evolve. With this foundation of understanding, we can reconsider our established transportation priorities and more confidently determine the best path for addressing and managing the needs of the post-pandemic world, including health protection, economic opportunity, and mobility for all sectors of the population. We believe that the pandemic has underscored the fact that major events, both predictable and unpredictable, can undercut our best efforts to manage them. The transportation community, including planners, service providers, and policymakers, must therefore embrace tools, methods, and processes for evaluating a spectrum of possible future scenarios and maximize their ability to pivot swiftly and respond to future change.

Accelerating changes require planning, prioritization, and implementation to become more agile and adaptive.

Related Links for Further Reading

Supporting Late-Shift Workers: Their Transportation Needs and the Economy

<https://www.ebp-us.com/en/projects/late-shift-workers-their-needs-and-economy>

https://www.apta.com/wp-content/uploads/APTA_Late-Shift_Report.pdf

Improving Access and Management of Transit ITS Data

<https://www.ebp-us.com/en/insights/using-new-data-improve-transit-networks>

<https://www.ebp-us.com/en/projects/improving-access-and-management-transit-its-data>

Transformational Change in Public Transportation: Future of App-driven, Integrated Mobility Services

<https://www.ebp-us.com/en/blog/transformational-change-and-future-public-transportation>

<https://www.ebp-us.com/en/blog/demand-ride-services-compelling-case-research>

Social Equity Concerns for Transportation Planning and Resilience

<https://www.ebp-us.com/en/blog/resilience-and-social-equity>

<https://www.ebp-us.com/en/blog/reflections-trb-4-transportation-equity-analysis>

Scenario Planning Tools & Methods

<https://www.ebp-us.com/en/topics/scenario-planning/scenario-planning>

<https://www.ebp-us.com/en/blog/dispatches-consortium-scenario-planning-2019-conference>

<https://www.ebp-us.com/en/blog/change-only-constant-incorporating-technology-scenario-planning>

Adaptive Right Sizing of Transportation Investment

<https://www.ebp-us.com/en/news/adaptive-right-sizing-building-and-managing-transportation-system-meet-evolving-needs>

<https://www.ebp-us.com/en/projects/right-sizing-transportation-investments-guidebook-planning-and-programming>

Sustainable Urban Freight and Supply Chains

<https://www.ebp-us.com/en/insights/planning-and-policy-approaches-supporting-sustainable-urban-freight-movement>

<https://www.ebp-us.com/en/projects/traffic-congestion-effects-supply-chains-accounting-behavioral-elements-planning-and>