National Transit Adaptation Strategy

FUTURE FORCES

Shaping the future of public transportation

IFTF
Institute for the Future

SFMTA

ABOUT IFTF

Institute for the Future is the world's leading futures thinking organization. For over 50 years, businesses, governments, and social impact organizations have depended upon IFTF global forecasts, custom research, and foresight training to navigate complex change and develop world-ready strategies. IFTF methodologies and toolsets yield coherent views of transformative possibilities across all sectors that together support a more sustainable future. Institute for the Future is a registered 501(c)(3) nonprofit organization based in Palo Alto, California.

For more information about this report, or inquiries, please contact Ilana Lipsett (ilipsett@iftf.org) or Rod Falcon (rfalcon@iftf.org).

ACKNOWLEDGEMENTS

Authors:
Ben Hamamoto
Cindy Baskin
Georgia Gillan
Ilana Lipsett
Nathalie Lopez
Rod Falcon
Sabrina Howard

Peer Review:
Brad Kreit
Nicole-Anne Boyer

Editors: Mark Frauenfelder, Andrea James, Jennifer Sandlin

Executive Producer:
Jean Hagan

Design and Production:
Robin Bogott, Trent Kuhn, Karin Lubeck, Robin Weiss

Special thanks to:
Maureen Kirchner

With additional contributions from:
Jonathan Levine
Molly Turner
Paul Angelone
Marina Gorbis
Jacob Wasserman
Gabe Klein
Hana Creger
Debs Schrimmer
Ryan Russo
Sahar Shirazi
Danielle Harris
Alun Rhydderch
Toshio Meronek
Veena Dubal
Jonathon Kass

Table of Contents

Introduction

Now is the time to anticipate the future of public transit and take bold actions to build resilience into public transportation systems.

Just as the pandemic made visible and exacerbated the cascading and intersecting crises of climate change, racial reckonings, and economic and social inequalities in society at large, it also intensified challenges that the transit industry was already facing, in terms of both ridership and financing. Ridership is the key metric for any public transit agency, and with public transit ridership declining—along with subsequent revenues—public transit agencies must identify ways to restore both trust and ridership as they shift focus from responding to the pandemic to discerning the role of public transport in a larger story of economic recovery, climate action, and social and racial justice. Work and travel patterns have shifted, some permanently, and as SFMTA and other public transit agencies nationwide look to the future of transportation, they will need to consider a range of factors affecting transportation, ridership, and trust.

ABOUT THIS PROJECT

Institute for the Future (IFTF) collaborated with SFMTA to develop a National Transit Adaptation Strategy to identify strategies to restore confidence and ridership in public transportation. Public transit ridership nationally was already declining before Covid, due to a confluence of factors including: the prominence and prevalence of ride-hail companies, aging infrastructure, reliability, and historically low gas prices. The loss of ridership in California—and the San Francisco Bay Area—was particularly acute (11% loss of ridership from 2014-2018, compared to half that for the rest of the country). The pandemic cut ridership and revenues to new lows. Working from home, health and safety concerns, and shifts in our daily routines have all pulled riders away from public transportation, leaving public transit systems and agencies in a precarious position. SFMTA engaged IFTF to explore a range of factors to consider as they look at initiatives to drive up ridership and revenue.

IFTF used strategic foresight methods, decades of research experience, and interiews with experts and stakeholders to identify critical forces that are shaping the future. We interviewed subject-matter experts in transportation, land use, climate, infrastructure, and government. We spoke with users and potential users of public transportation. We conducted workshops with SFMTA and San Francisco government workers. Through these, we uncovered insights and connections, as well as barriers and constraints, that will be key to building system resilience. The project also involved an Introduction to Foresight session for SFMTA staff to equip them with a working understanding of terms, frameworks, and tools for anticipating risk and envisioning new possible futures.

As part of the larger National Transit Adaptation Strategy project, IFTF created several reports including:

1 | **A Future Forces report** investigating the major drivers and signals of change that are demanding strategic responses from public transit agencies;

2 | **A scenario report** that builds on the Future Forces report and presents a series of provocative scenarios for public transit agencies; and

3 | **A final report** that brings the Future Forces and scenario reports together along with tools and frameworks.

These three reports together are intended for public transit agencies to use in their own strategy discussions for responding to and adapting to demands and realities of the next decade.

This current stand-alone Future Forces report presents possible directions of change in five domains. Each domain contains an overarching story that describes these directions of change, followed by three strong Future Forces within that domain. These forces don't always point in the same direction, but rather paint a picture of multiple possible futures. Each domain also looks at the forces through the lens of five impact zones (see page 9) for deeper implications for SFMTA and transit agencies broadly. These Future Forces were determined based on IFTF's research and interviews with subject-matter experts.

TAKEAWAYS

While challenges to increasing ridership and restoring trust in public transportation will continue, this next decade presents opportunities for SFMTA to demonstrate how a public transit agency can reinvent itself as a player in not just the transit system, but also in the larger ecosystems that surround public transportation. Issues connected to equity, mobility justice, the climate crisis, and concerns about safety, will all continue to impact perceptions of public transportation. SFMTA can engage in these intersecting issues that touch and are touched by public transit.

How might the agency's assets be part of larger efforts to address the climate crisis?

What role can a transit agency play in a city's circular economy?

What existing assets could be retrofitted enable them to generate renewable energy?

How can the agency support mental health and the care economy?

How can the agency monetize existing assets and form public-private partnerships as other avenues to bring in revenue?

What leverage does the agency have to advocate for people-first streets and more housing?

As you read this report, keep these questions in mind to look for opportunities within each of the challenges presented by the Future Forces.

How to use this report

From this report, governments will be able to gain a better understanding of the forces that will shape public transportation over the next decade, so that they can make future-focused decisions today to prepare for an uncertain future. The content is designed to provoke insights about how things might change to better prepare for unpredictable futures, and to provide a framework for meaningful discussions about these futures. While this report has been commissioned for SFMTA, our hope is that the frameworks contained within this report will be widely applicable to other municipalities, both urban and rural, and those with or without legacy systems, as we collectively recover from a pandemic and reimagine how the places we live—and the systems we live with—can better serve residents in equity and accessibility, physical and mental health, and economic stability.

A STEEP ANALYSIS

Public transportation is impacted by—and impacts—multiple systems. SFMTA and its services connect San Francisco Bay Area residents and visitors to work, home, shopping, school, leisure, parks, and more. To understand these interacting and mutually influencing systems, IFTF structured our research—presented in this report—around five domains, represented by the acronym STEEP (Social, Technological, Environmental, Economic, Political). As SFMTA plans for the next decade, the external changes in each of these domains will transform rider demands and expectations, so understanding those changes will be critical to SFTMA's evolution and success.

Through these domains, we can see the interactions and combinations of a broad range of forces that influence the course of change. Our research and analysis aim to inform SFMTA and other public transportation agencies about the ways in which different futures within systems present challenges and opportunities for the future of public transportation.

IMPACT ZONES

In addition to the STEEP framework that guided and structured the research, this report considers the future of transit through the following five impact zones. These impact zones were clarified through research and interviews as critical focal points for identifying threats and opportunities for transit systems.

MARKETS | Impacts on different groups of transit riders as defined by their distinct needs and patterns of mobility and movement.

SERVICES | Impacts on the portfolio of products, services, and experiences and their distinct value proposition, design, and delivery.

DECISION-MAKING | Impacts on factors that affect transit decisions: price, convenience, seamless connections, and other market alternatives.

RISKS | Impacts on the cost-benefit calculation of risk (actual and perceived), including everything from personal safety to climate risks.

FUNDING | Impacts on funding streams, financial incentives, and assets.

Following each STEEP section are insights gleaned from a workshop with SFMTA staff; these insights consider the implications of each STEEP category, and its larger story, through the lens of each of the five impact zones. These implications should not be considered directives, but rather are intended to provoke discussion about how your agency might address the insight—as a risk, or as an opportunity for change. We invite you to think about other critical impact zones, and consider the STEEP categories in the context of the impact zones you identify, for example equity, climate, or personnel. In choosing a range of impact zones, you can engage in an ongoing exploration of how outside future forces will intersect with these zones.

KEY TERMS

FUTURE FORCE

Future Forces are possible futures based on compelling evidence in the present. These are plausible, and often provocative, statements about the future. In foresight practice, these forces can be quantitative or qualitative, as long as they are grounded in present-day facts. They describe a range of plausible changes but importantly don't predict a specific outcome. The forces in this report are statements about possible futures and directions of change over the next 10 years, with a focus on those that will transform the public transportation industry as well as the ecosystems with which it interacts.

SIGNAL

A signal is an early, emergent, or local innovation or behavior that has the potential to grow in scale and geographic distribution. A signal can be a new product, service, initiative, policy, data point, or technology. Unlike more easily identifiable trends, signals turn our attention to possible disruptions before they become obvious. Signals often focus attention at the margins of society rather than the core and hint at emerging practices or technologies that may become widespread. Signals add concrete details to our understanding of what the future might look like, and act as an "early warning" or clue about things coming our way.

"It's important for a transit agency to define what the future should be, and be empowered to make investments that help make what you want to see in the community in the future."

–Expert Interview

With STEEP providing the structural backbone of the report, for each category we begin with an **overview** to lay out the main story in that domain, followed by three **future forces** with supporting **signals of change**, or hints of what the future may look like, and a discussion of what this might mean for SFMTA strategy and public transportation more broadly. Many of the signals include a strategic question that encourages discussion.

We encourage you to map out responses to each domain with your teams.

How would you prepare for a world in which the presented signals became a mainstream way of doing things?

What would you do if the direction of change took us toward the particular future described in each future force?

How would your team react?

Who would you reach out to as collaborators?

What can you keep doing? What do you need to stop doing? Start doing?

SOCIAL

Radical reshaping of human movement through urban spaces

How can public transit agencies help people connect their individual experiences to a collective greater good?

How might public transit agencies support care and healing work?

The need to heal from catalytic events from 2020, a de-prioritization of work in our lives, and evolving demographic changes will continue to shape where and how we move over the next decade.

With that shift will come a need for new transit priorities and patterns. As we reshuffle our daily lives over the next decade, transit agencies will need to act with flexibility to anticipate and react to these changes. This will include reconfiguring public transit services and/or opening markets for new private mobility services or partnerships. What does a rush hour commute look like with emptied downtowns, hybrid and flexible schedules, or new demands of a care-oriented workforce? With daily routines and rhythms still evolving, major bus lines or even express routes may decline, while residential-to-residential or leisure routes may experience increasing demand.

An aging population will present new needs to the system. The aging rider will require more attention to their mobility needs, and to their need to connect to an ever-expanding care ecosystem. At the same time, opportunities for the role of transit may expand to be a critical part of the care and healing infrastructure. Our individual and collective mental well-being will continue to weigh on our daily life decisions and choices, amplifying our needs for safety and security, social interaction, and connection.

Source: cts.umn.edu

"We should spend more time in communities, less time commuting."

–Expert Interview

COLLECTIVE HEALING

From collective trauma to recovery and re-entry

Recent history-making events—including the COVID pandemic, a global movement to support Black Lives Matter, geopolitical conflicts including the Russian invasion of Ukraine, extreme weather events, and the opioid crisis—have added to an already critical mental health crisis that will yield serious health consequences for years to come. David Rock, author and cofounder of the NeuroLeadership Institute, explains that the trauma we've experienced stems from three unmet psychological needs: certainty, control, and connectedness with others. Now two and a half years into the pandemic, people are confronted with imagining a post-pandemic life that includes living with COVID. Rock suggests that before we try to navigate what a new normal is, we must first recover from the trauma of these life-altering, stress-inducing experiences at both the individual and collective levels.

Collective healing will require an all-in approach, with agencies that are seemingly isolated from mental health being tasked with creative solutions for applying their resources and assets to address this crisis. How can public transportation agencies play a key role in restoring people's trust, control, autonomy, and social interactions in the city?

Source: hbr.org

SIGNAL

Librarians as mental health first responders

WHAT: Through an experimental pilot program, Baltimore leaders are addressing the need to heal the city that has "suffered trauma for decades, including more than 190 homicides [in 2021]." Its answer: convert libraries into community healing centers and train librarians as first responders by teaching them how to spot and assist people dealing with trauma.

SO WHAT: Mass trauma requires massive healing efforts. Baltimore's city-level, healing-centered policy and interventions could serve as a model for other cities on how to turn city facilities into places for healing and connectedness, and retrain city workers to be mental health advocates. Recognizing a pervasive need for mental health support, cities might task every agency—regardless of its core mission—with a different piece of the healing puzzle. What might it look like for transit agencies to add a mental health support lens to their plans and operations?

Source: ajc.com

COLLECTIVE HEALING (cont.)

SIGNAL

A prescription for nature

WHAT: Research has shown that time spent in nature can reduce stress and contribute to healing. To this end, doctors in Canada can now prescribe free passes to national parks for patients who might benefit from more time in nature. A similar program exists in the United States, ParkRx.

SO WHAT: Nature prescriptions signal an acceptance of out-of-the-clinic approaches to treating both mental and physical health conditions. Companies, too, might start requiring days in nature to inspire and provide rest to their workforces. In addition to improving health, there may also be benefits to the environment from more people interacting responsibly with nature, so environmental advocates might also push for required days in nature. How might public transit agencies support healing through nature, while also ensuring that the ways in which people access and experience nature have a small environmental footprint?

Source: forbes.com

Source: e360.yale.edu

SIGNAL

Forming community sanctuaries for self-determination

WHAT: Propelled to action in the wake of George Floyd's murder and a national racial reckoning, The Freedom Georgia Initiative bought land in Georgia, with the vision to develop 502 acres for "the establishment of an innovative community for environmentally sustainable-living, health & wellness, agricultural & economic development, arts & culture," specifically for Black families.

SO WHAT: With various forms of mutualism and co-housing gaining popularity, the Freedom Georgia Initiative's vision of creating their own subdivision as a safe haven for Black families is an example of how new forms of living might look. As new forms of social structures and governance develop, grassroots cities like these will eventually need infrastructure and systems such as transit for their internal use. How might public transportation agencies cater to nascent co-housing communities that are building their own cities outside of dense urban areas?

Source: thefreedomgeorgiainitiative.com

Source: msureporter.com

RE-PRIORITIZING WORK

From the dominating force to achieving life-work balance

The fundamental shifts in work during the pandemic, including remote work, health, safety, and work-life balance, have prompted individuals to re-evaluate the role of work in their lives. Whereas work and the workplace previously served as a centering place that fulfilled multiple needs—including economic security, social interactions, and purpose—the dominance of our jobs in our daily lives is being renegotiated. Rather than anchoring life around a rigid work schedule, people are re-configuring how they use their time, such as spending time with or caring for family and finding meaning and purpose. Many are choosing to quit unfulfilling, over-demanding jobs, and in some cases remaining unemployed.

Changing workers' needs and people's need for balance and self-care will alter new life and mobility rhythms. Will calls for the end of the five-day workweek translate into policy? As we renegotiate the role of work in our lives, the systems that support our commutes and daily work lives will likewise be confronted with new needs and demands.

Source: theatlantic.com

SIGNAL

Reddit 'antiwork' forum booms as millions of Americans quit jobs

WHAT: Amidst the Great Resignation, Reddit's 'antiwork' forum, r/antiwork, has ballooned from 180,000 in October 2020 to 1.9 million in April 2022 as the ongoing pandemic has led many to re-evaluate their careers. "Idlers," as members of the antiwork movement call themselves, largely believe that people should strive to work as little as possible, and preferably for themselves.

SO WHAT: A growing segment of the population is rethinking the requirement to work for a living. People are realizing that the economy runs on bad jobs and they no longer want to participate. There is a huge opportunity space for what will "fill" the time that was once taken by work, and an opportunity for transit agencies to offer services for residents looking to travel for leisure. How might transportation agencies cater to "anti-workers" or how might careers in public transportation appeal to those leaving their jobs?

Source: ft.com

Source: businessinsider.com

RE-PRIORITIZING WORK (cont.)

SIGNAL

Parents quitting jobs for more flexibility

WHAT: A multi-national study by McKinsey & Company found that parents were more likely to quit their jobs compared to their non-parent counterparts. Two of the top reasons included caring for family and ability to work remotely. To address their needs for flexibility, these parents have moved on by either starting or planning to start their own business and turning to gig work.

SO WHAT: Working parents are taking drastic and concrete actions up to and including resigning to meet personal responsibilities. New types of flexibility in both place and time may open up new daily patterns for parents and their families, including where and how they move. How might transit agencies focus on the needs of families, and anticipate what routes, services, or accessibility parents and their children might need?

Source: mckinsey.com; wsj.com; pewresearch.org

Source: unsplash.com

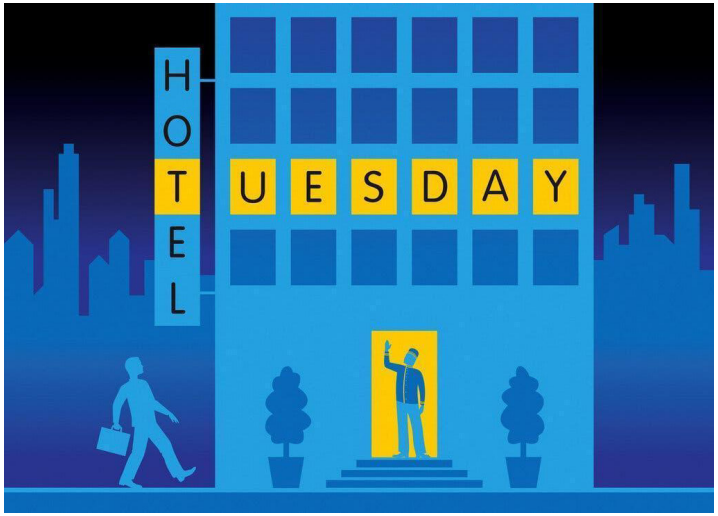
SIGNAL

Suburban super commuters splitting time

WHAT: As offices reopen, a new type of super commuter has emerged: the suburban worker who manages the hours-long commute into the city by staying at hotels for a few days midweek when they must make in-person appearances in the office.

SO WHAT: These workers point to an increase of housing choices for those who don't want (or can't afford) to live in the city center. If these super commuters were previously traveling by car, their few-day-stays in the city could present a new rider base for public transit agencies. How can public transportation agencies reach these super commuters? What partnerships (with employers, for example) might enable communication with these potential riders?

Sources: https://www.nytimes.com; theguardian.com



Source: Thomas Fuchs, NY Times, nytimes.com

FUTURE FORCE 3

CARING FOR AN AGING POPULATION

From limited demand to an expanding care ecosystem

The fastest-growing age group in San Francisco is adults 60 years and older. This group is expected to reach 27% of the city's population by 2030 (up from 23% in 2020). As this group continues to age, there will be a subsequent increase in demand for an expanding care and mobility economy, as well as an ecosystem of supportive services. These services will need to address common challenges facing older adults such as aging in place, increased social isolation, limited mobility, limited incomes in an expensive housing market, and neurological disease (1 in 6 seniors will develop Alzheimer's; 1 in 5 will develop dementia).

The lack of affordable caregiving options will pressure family members and loved ones to fill the caregiving gap. Already, 61% of family caregivers say caring has affected their employment situation, whether switching careers, downgrading to flexible part-time work, or leaving the workforce altogether. Physical or cognitive disabilities among the aging population will require access to reliable and affordable social and public services—including transportation—for older people and those who care for them. By adapting services to center the needs for an aging population, public transportation agencies can become more accessible not only for this growing population, but also for their caregivers and others who might benefit from these changes to the system.

Sources: sfhsa.org; alz.org; fortune.com; hrexecutive.com

SIGNAL

Free public transportation for seniors leads to better mental health

WHAT: Findings from one UK study on offering free public transportation "suggest that benefits from increased transport use likely stem from reduced loneliness, increased participation in volunteering activities and increased contact with children and friends."

SO WHAT: While the main purpose of transportation is to move people and things, there is the potential of public transit to be seen as a public health tool to help older adults or people facing severe social isolation. Transit systems that cater to older adults—from ensuring pedestrian safety as they access transit hubs to accessibility of vehicles, to welcoming this population and ensuring they can easily arrive at social locations (such as volunteer locations)—might have an advantage in expanding their rider base to include this subset of the population. How might public transportation systems cater to older adults to help them feel safe and to reach their desired locations?

Source: reuters.com; laketran.com

Source: politico.com

CARING FOR AN AGING POPULATION (cont.)

SIGNAL

An app for both senior companionship + transportation

WHAT: Papa, an on-demand companion and assistance service for seniors, has partnered with Uber Health to provide transportation services in a battle to decrease social isolation among older adults.

SO WHAT: This partnership highlights the fulfillment of two critical needs of seniors, logistical transportation and social interaction, which have been shown to lead to better health outcomes. Other similar programs, including GoGoGrandparent (that connects seniors to gig economy services even if they don't have a smartphone), or other "door through door" services that help seniors in and out of their destination, are typically private services. Might there be an opportunity for a public transit agency to partner with companies like these when offering para-transit or senior-focused micro-mobility options?

Source: mobihealthnews.com

Source: papa.com

SIGNAL

The Village to Village Network

WHAT: Generation X is getting involved in the Village to Village Network, which assists older people with the practical supports they need to stay independent at home and engaged in their communities. "Villages" build a sense of community and offer resources, services, programs and activities, including social and educational programs, health and wellness activities, volunteer assistance with transportation, light home maintenance, and technology coaching.

SO WHAT: A multi-generational interest in aging in place, with a network of community caregivers, could create demand for an ecosystem of services and support. Transportation options that assist aging in place with a high degree of independence will become more attractive to potential users who otherwise might turn to other travel options. How might public transit agencies increase accessibility for seniors choosing to age in place?

Source: nytimes.com

Source: vicnews.com

Impact Zones & Implications

The next decade will see major shifts in responses to critical social and community issues. These will include how we address collective healing from the trauma of the pandemic era and how to meet the demands for care for an aging population. After the dust settles from a reshuffling and reprioritization of work, there will also be new needs based on where we'll live, and where we will choose to go. In responding to these social issues and changes, public transit agencies should consider the following:

MARKETS AND RIDERS

Impacts on different groups of riders as defined by their distinct needs and patterns of mobility and movement.

The biggest challenge and opportunity for transit agencies moving forward will be how to re-envision themselves and the people they serve around a ridership that is using the system for needs other than commuting to and from work. Changing demographics, aging populations, and widespread health challenges all present shifting markets; a great deal of energy and attention will be needed in both identifying riders beyond the traditional archetypes as well as understanding how to incentivize them and meet their needs so they use the system. For public transit agencies to capture these markets, they should embrace flexibility to pivot messaging, accessibility, and routes.

SERVICES

Impacts on the portfolio of products, services, and experiences and their distinct value proposition, design, and delivery.

Transit agencies now need to operate with the non-commuter rider in mind. Service changes will need to better support non-work everyday and leisure activities, not only through route adjustments that better connect people to vital resources and entertainment, but also in providing services beyond what have traditionally been associated with public transportation. There is an opportunity to contribute to society's collective health, addressing physical and mental health needs. Just as ADA curb cuts benefit parents with strollers and other non-wheelchair-users, providing additional accessibility and services that can meet the needs of an aging, disabled population within a 15-minute "radius," for example, has the potential to benefit other populations of riders.

Impact Zones & Implications

DECISION-MAKING

Impacts on factors that affect transit decisions: price, convenience, seamless connections, and other market alternatives.

Public transit agencies will be presented with many ways to define markets and optimize service design for certain archetypes of riders, needs, and value propositions. The challenge will be to make decision-making clear and simple. For example, public transit agencies could decide to be the most economical choice among mobility options, and compete on price. But we know riders' decision-making is more complicated than optimizing for any single factor. Price isn't as important if the system is not reliable or takes too much time. Nevertheless, making the value of taking public transit clear will be critically important. Some, for example, won't pursue optimizing for any single rider archetype (e.g., commuters) and instead will focus on system improvements and reliability and pursue making public transit better for all.

RISKS

Impacts on the cost-benefit calculation of risk (actual and perceived), including everything from personal safety to climate risks.

Expect riders to be increasingly attuned to (and vocal about) the social, climate, or safety risks of transit systems and demand the city use public transit as a lever for transformation in these urgent issues. However, any attempt to make changes to the system carries inherent risk, most obvious, the risk of failure since investments and system improvements don't always translate into immediate increases in ridership or revenue, let alone progress against chronic social issues. Transit agencies will not be able to meet every need or pursue and meet every demand on the system. Systematically mapping the opportunities and risks each future force could create, and deciding which opportunities align with the agency and city's vision for transportation and mobility, will help the agency and city determine which options should be pursued.

FUNDING

Impacts on funding streams, financial incentives, and assets.

Shifting social patterns due to changing work arrangements offer new ways of reaching and incentivizing ridership. With additional movement toward hyper-localization in where and how we live, shop, and socialize, transit agencies will need to capitalize on opportunities for micro-mobility, and explore the possibilities of non-employer transit subsidy models such as through HOA's or community groups. Public transit agencies might want to consider partnering with private micro-mobility options, local businesses, or neighborhood organizations to incentivize ridership at a local level.

TECHNOLOGICAL

Cautious embrace of exponential opportunity

How might public transportation agencies balance exploring adopting new technologies with the need to focus on core capabilities and offerings?

How can existing technologies and assets contribute to climate solutions?

Over the next decade, in many cities, public spaces will become much more automated, technologically-mediated, and embedded with ambient services and surveillance.

As automation and tech become ubiquitous, we will see more attempts to humanize the technology or harness its ability to expose and address inequities. Technologies for unprecedented levels of surveillance and coordination will be widely available, but deployment will vary depending on how different localities navigate the discrimination and privacy threats that these technologies pose. Governments must be thoughtful about how technologies are adopted and implemented so that residents are served equitably.

Similarly, a number of new technologies aimed at addressing climate change will mature and become much more widely available and affordable and, as such, will be widely adopted in many places. Abundant approaches will require localities at the vanguard of sustainable infrastructure to integrate the best options that serve the region's residents.

"Don't get distracted by technology. What is your core goal? It's to move people. Not to do the most innovative, latest technology."

–Expert Interview

THE HUMAN SIDE OF TECHNOLOGY

From disruptive to responsive

Nearly everything that only humans could do can now be done by technology which is responding to our ever-changing demands. Self-checkout lines have slowly rolled out in almost every major grocery chain, customer service phone trees mostly all recognize voice commands, and most new cars on the market will let you know if you start to drift out of your lane on the road. As advances over the next decade become more ubiquitous—autonomous drones and other vehicles, holographic Alexa-like chatbots as customer service agents in physical spaces, robots doing everything from cooking to cleaning to construction work—the blurring between the human domain and assisted domains will only continue. This shift has the potential to radically reshape urban spaces, but also creates the potential for new forms of or deepened inequality and discrimination.

SIGNAL

Virtual concierge chatbots expand access and embody local character

WHAT: BeBot, a multilingual AI chatbot created specifically for travel navigation assistance, has been deployed along one of the busiest train lines in Tokyo. Such bots introduce riders to attractions, shops, and other local places they may not have visited on their own.

SO WHAT: Over the next decade, bots can offer increasingly personalized navigation assistance at scale for people with different language and other specific needs. Bots can also offer new opportunities for different localities to embody the character and values of their location and its community, such as sustainability, creativity, or social justice. Where and how might a personalized bot provide benefit to a U.S. public transit system?

Source: markets.businessinsider.com

Source: Mainichi News

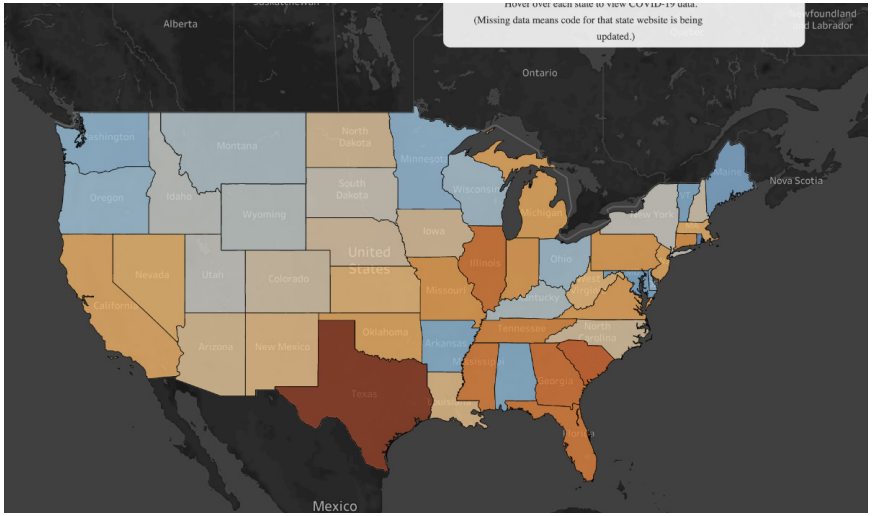
THE HUMAN SIDE OF TECHNOLOGY (cont.)

SIGNAL

Social justice technology movements

WHAT: Data for Black Lives is an organization dedicated to fighting discriminatory use of digital technologies and imagining and pursuing uses of such technology to better the lives of Black people. It is working to ensure that "COVID-19 data should not be used to inform automated decision-making systems, for example: Denying a person access to public services and benefits (i.e., public transportation).

SO WHAT: Data for Black Lives is part of a larger social justice technology movement that is gaining momentum and mainstream recognition. How might transit agencies partner with organizations such as this one to ensure that implementation of digital services is equitable, and that use of data does not discriminate or cause undue harm?



Source: d4bl.org

SIGNAL

Robot microfactory and fulfillment centers reshape transportation flows

WHAT: Automation startup Fabric has created a platform for companies to build on-site robotic micro-fulfillment centers for lightning-fast order turnaround and delivery.

SO WHAT: The advent of microfactories and micro-fulfillment centers may lead to less flow of goods into a city from outside the region, but much more rapid and distributed movement of things within a city. How might transit agencies partner with private industry such as micro-fulfillment centers to offer the ability to move things around on existing or convenient routes?

Source: techcrunch.com

Source: Fabric

ENERGY-GENERATING ASSETS

From early experimentation to explosion of options

Over the last decade, renewable energy has gone from a costly fossil-fuel alternative to an affordable one that is cheaper than oil and gas in places. We can already see this in the high rates of solar panel adoption in the San Francisco Bay Area, the electric vehicle charger stations in local parking lots, and prominent text on buses declaring "zero emission." Today, we're seeing unprecedented experimentation and funding in technologies to address climate change—in energy production and use, but also in sustainable manufacturing materials and methods, carbon sequestration, and water conservation.

Over the next decade, as many of these technologies mature and become viable, we'll see an explosion in the range of options not just for sustainable transportation and infrastructure, but for energy-generating materials and assets. Even agencies that have long ago "gone green" will need to continue to innovate and be proactive about adopting the right blend of technologies to meet their constituents' and the planet's needs. They will also have to contend with issues like "greenflation" due to rising demand for the metals and minerals used in creating renewable energy infrastructure. They will also have to maintain focus on the need for a just transition, so that already marginalized people don't bear the largest burdens of switching to sustainable solutions.

Source: qz.com

SIGNAL

Harnessing heat from trains for homes and offices

WHAT: At Geneva's Lancy-Bachet station, heat generated by trains and brakes is collected by polyethylene pipes embedded in the tunnel walls and tracks. The heat is then injected into the district heating network and used to heat nearby apartments and offices.

SO WHAT: Recent experiments in harnessing hidden externalities of travel suggest that transit may have a role to play in a regional sustainability system. Municipalities that can harness clean energy from a variety of sources will be well positioned to meet and exceed renewable energy targets. Closing the loop by redirecting otherwise "wasted" energy created by trains (and possibly buses) can provide cities with one such avenue to do so. What current waste streams might be put to use as inputs for sustainable energy generation?

Source: swissinfo.ch

Source: Guilhem Vellut flickr.com

ENERGY-GENERATING ASSETS (cont.)

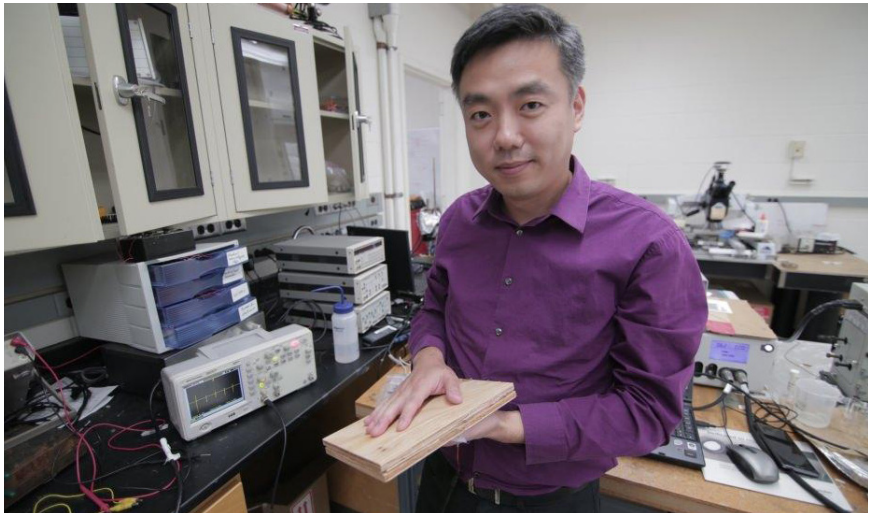
SIGNAL

Waste-wood floors convert steps into electricity

WHAT: Materials engineers at the University of Wisconsin, Madison have developed a method for chemically treating the fibers in waste wood pulp so that they produce an electrical charge when they come into contact with untreated nanofibers.

SO WHAT: Energy-producing flooring has existed for years, such as the piezoelectric mat installed at Shibuya train station. However, many such energy harvesting experiments employ prohibitively costly technologies, preventing them from being used at scale. This latest breakthrough could make such projects viable, since it utilizes a cheaply available, renewable material. What surfaces throughout the transit system might be used to harvest energy through applications such as this?

Sources: news.wisc.edu; wired.com



Source: Stephanie Precourt sciencedirect.com

SIGNAL

Solar paint could enable energy generation on every surface

WHAT: Researchers at the Centre for Organic Electronics at the University of Newcastle have pioneered a water-based solar paint, a liquid with photovoltaic (PV) properties that allows it to absorb sunlight and convert it into electricity. The paint can be printed on glass or another surface with circuitry to create a solar cell at a relatively high speed and low cost.

SO WHAT: Solar paint could greatly expand the areas in which solar power harnessing is possible and avoid some of the issues associated with conventional silicon-based cells. We might see cars, buses, trains, or bus shelters covered in this solar paint, perhaps eventually generating enough energy to power lights, ticket machines, other appliances, or even the vehicle itself. Where might your agency experiment with renewable energy sources such as solar paint?

Sources: treehugger.com; thedriven.io; iea-pvps.org

Source: newcastle.edu.au

ANTICIPATORY ENVIRONMENTS

From sporadic surveillance to real-time responsiveness

Cities have long employed surveillance technologies, mostly in the form of traffic and security cameras. And while these have been used to gather data on mobility patterns and influence planning, most people only become aware of them when they get a ticket in the mail for a toll or red light violation. Recent years, though, have seen the emergence of more sophisticated systems for collecting and analyzing data to make short- and long-term decisions around service provision and resource distribution. Over the next decade, many public spaces will use such tech to anticipate and become more responsive to people's needs. Lighting or ambient music might be provided in a public space based on human traffic. Automatic transit fare payment through facial recognition might become commonplace. But a growing body of evidence that such tech can be discriminatory and can be misused or abused to violate the rights of people of color and activists, means any government seeking to adopt it needs to be exceedingly careful about anticipating risk and eliminating any harm it might do to marginalized communities.

SIGNAL

Citizens want practical services more than shiny objects

WHAT: A 2021 "Smart City Index" report from Institute for Management Development and the Singapore University for Technology and Design contains rankings of cities based on citizens' perception of how effective adoption of smart city technologies impacts their lives. A notable finding is that the factors citizens care most about remain affordable housing, employment opportunities, health services, air quality, and school quality.

SO WHAT: The sentiment that smart city solutions are not a panacea and cannot meet basic infrastructure needs or deferred maintenance was echoed by a number of the experts interviewed. Especially in the San Francisco Bay Area, where there is a constant stream of new technologies being introduced and piloted, transit agencies will need to balance how and what they choose to adopt with maintaining basic (and high quality!) services for residents.What decisionmaking systems do you have in place to evaluate the adoption of new tech and smart city solutions?

Source: morningbrew.com

ANTICIPATORY ENVIRONMENTS (CONT.)

SIGNAL

Parking management system 'sees' available spaces in Chennai, India

WHAT: Using cameras and other sensors, the city of Chennai monitors all public parking spots and offers a service that lets residents book parking in advance of a trip. Despite a buggy initial rollout, the system has succeeded in reducing traffic while raising city revenues.

SO WHAT: This points to a future in which a city can utilize a comprehensive view of available resources and match them to needs with unprecedented efficiency. How might transit agencies take advantage of such technology to add value and convenience to residents' lives? Could they show residents which coffee shop en route to the bus stop has the shortest line? Or let riders know occupancy on incoming trains so they can adjust their plans accordingly?

Source: timesofindia.indiatimes.com

Source: deccanchronicle.com

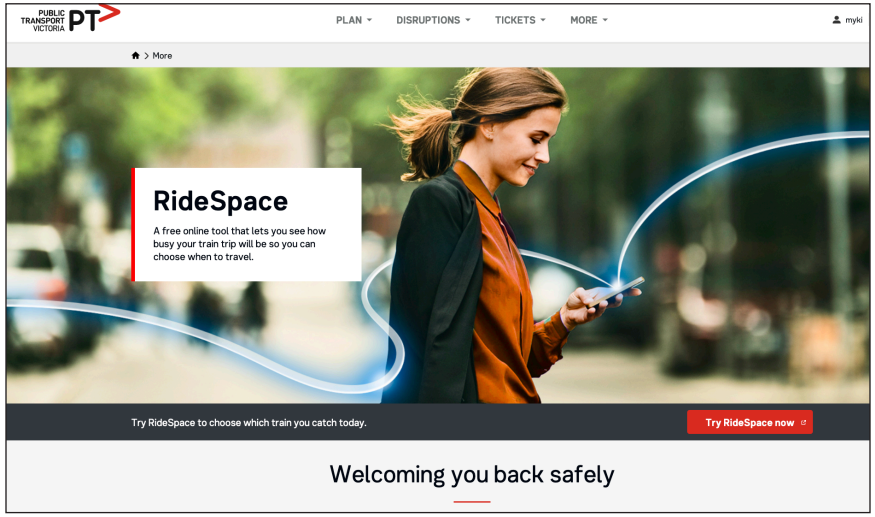
SIGNAL

Tool for riders to check train occupancy in advance using transit card data

WHAT: Melbourne's transit system uses data collected by passenger-counting sensors and its transit cards, combined with predictive modeling and machine learning, to provide riders with a tool for anticipating and avoiding crowds on trains as they return to their commutes amid the ongoing COVID-19 pandemic.

SO WHAT: This initiative provides a preview of what transition to anticipatory transit routing could look like. Additionally, it suggests that COVID-19 may change the calculus for citizens who are otherwise wary of technologies that track data in this way. In what ways do you think anticipatory routing might impact ridership?

Source: itnews.com



Source: www.ptv.vic.gov.au/more/ridespace/

Impact Zones & Implications

"Develop a public-private partnership to enable innovation on key challenges—we are experts in transportation, not IT."

-Participant in IFTF Cross Impact Matrix Workshop

From automation to ambient surveillance to an abundance of new clean tech, the line between what is the domain of human operation and what can be done sans people is becoming less clear. There is huge opportunity for drastic change, growth, advancement, and real-time responsiveness, but huge risks also come with this surveillance, unequal access and implementation of tech, and over-reliance on technology. As we move into a decade that will be defined by the ubiquity of technology in our lives, public transit agencies will need to consider the following:

MARKETS AND RIDERS

Impacts on different groups of riders as defined by their distinct needs and patterns of mobility and movement.

Technology offers potential for expanding into new markets. The ubiquity of social media will continue to grow, and it can be leveraged to reach new rider groups, including younger riders. With on-demand delivery platforms for just about everything, opportunities exist for transit agencies to partner with these platforms to expand their "rider base" to include delivery and shipping. Increased automation also offers new opportunities for transit systems to reach or create new riders. At the same time, automation and the increased ubiquity of ambient surveillance might deter some riders who prioritize protecting privacy, or who are wary of technology. As operators of public systems, transit agencies will need to consider how to harness this information to improve their services while protecting the privacy of riders and build trust in tech-enabled or automated systems.

SERVICES

Impacts on the portfolio of products, services, and experiences and their distinct value proposition, design, and delivery.

Technology can be leveraged to assess consumer experience and needs in real time, so that public transportation systems and services can be responsive to need. At the same time, the proliferation of clean tech, energy-generating infrastructure, and carbon capture advancements offer a new line of "services" that public transit agencies can offer, as they play a crucial role in helping municipalities realize climate goals. Public transit agencies would benefit from defining what new services they have the capacity to offer, and how those services will be delivered.

Impact Zones & Implications

DECISION-MAKING

Impacts on factors that affect transit decisions: price, convenience, seamless connections, and other market alternatives.

There are myriad ways technology can influence riders' decisions. From incentivizing and gamifying public transportation choices, to simplifying the rider experience with a streamlined, easy-to-use tech system with real-time information sharing—even slight technological improvements could increase overall impressions of the transit system and encourage use. For example, tech trends are creating opportunities for universally accepted mobility wallets. Municipalities or public transit agencies could own and develop these payment platforms, or they could partner with private companies. Either way, a streamlined wallet that also allows for communication with riders, or is responsive and anticipatory of their riding choices, could nudge more would- be riders toward public transportation options. Public transit agencies can expect increased demand from riders for smooth, seamless platforms and apps that allow riders to plan, see information on ride options, book travel for their full journey, and more.

RISKS

Impacts on the cost-benefit calculation of risk (actual and perceived), including everything from personal safety to climate risks.

Technology has the potential to improve ridership, but only if done thoughtfully. Transit agencies must conduct thorough research to design and implement tech that substantively and effectively improves rider experience and contributes to a more loyal/consistent rider base in the long term. Agencies will still need to focus on core services, and not adopt "tech for tech's sake," as an over-reliance on emerging technologies could hurt the system in the long term. Automating and digitizing everything can disadvantage communities and riders who don't have access to tech or are not tech literate, leading to more distrust or dissatisfaction with the system. Transit agencies will need to balance how, where, and what technologies they are adopting, doing their best to anticipate unintended consequences and impacts, particularly on already disadvantaged communities.

FUNDING

Impacts on funding streams, financial incentives, and assets.

Technology could play a huge role in increasing ridership through improving rider experience and perception. Given the high price tag on advanced technology, transit agencies might consider in-kind "investments" from large tech corporations who could design and implement systems and infrastructure.

Pilots implemented through public-private partnerships with tech companies could offer transit agencies a way to provide state-of-the-art services and technology. This might include customer focused bus or rail amenities and energy generating infrastructure, which in turn could produce additional revenue for the transit system and agency.

ECONOMY

Precarity, privatization, and competing priorities

What might it take for public transit agencies to implement permanent universal mobility programs?

What offerings can you consider privatizing while still retaining control over operations?

The COVID-19 stimulus checks from the federal government and other forms of guaranteed income prompted discussions around the affordability of basic needs in 2022, as many basic goods and services have been privatized to the point that many have no other option than to live in debt.

Significant deregulation and privatization moves in the late 1970s and 1980s propelled private sector options and shrank public sector services. Today, a very different conversation is happening around affordability, spurring conversations around everything from free childcare to free public transportation. There are now pushes for universal basic, well, everything. When the market can't solve important social problems, what constitutes a basic human right?

The ubiquity of gig work and the burgeoning creator economy allow people independence and freedom from a rigid schedule or boss, and the Great Resignation is further pushing the boundaries of traditional work structures. Cities will need to grapple with economic decisions that test their basic civil service values. Should the services that cities cannot afford be privatized? Can public transit agencies diversify their portfolios by broadening their roles to other revenue-generating activities?

"Be creative about your assets."

–Expert Interview

CONSENSUS GROWS FOR EXPANDING UNIVERSAL SERVICES

From an individual payment to a collective right

Currently, wealthy individuals are able to pay for the private version of any service—even private firefighters have been preferred to local firefighters in some instances. Similarly, private offerings have taken the place of public options with tech shuttles transporting people to and from San Francisco to the South Bay. Almost one out of every five workers in California makes less than $15/hour (OxFam, 2022). Though most of them work full-time, owning a private car is out of reach, and a lack of affordable first- and last-mile options when taking public transportation contributes to the strain. President Biden's infrastructure bill includes significant investments in transportation with four priority areas: safety, modernization, climate, and equity. Federal transportation funding to strengthen equitable service, and to provide a once-in-a-lifetime opportunity for modernization, could be transformative for agencies that choose to prioritize these areas.

In the wake of several city-wide pilot programs, universal basic income pilot programs are moving beyond income and expanding to other services as well—a Universal Basic Mobility pilot launched in several cities in California in 2021. Almost all the pilots to date have been privately funded by philanthropies or institutional grants, with a handful coming from government funding.

Sources: Jain Family Institute, jainfamilyinstitute.org; OxFam report: webassets.oxfamamerica.org

SIGNAL

Universal Basic Mobility

WHAT: Inspired by the universal basic income pilots, several cities in California are piloting a "universal basic mobility" program in order to close the unemployment and school absence gaps. Residents will be selected to participate in various city-wide studies that give subsidized access to public transportation, e-scooters, and e-bikes. The programs aim to understand how having a minimum guaranteed level of transportation could change economic outcomes for people.

SO WHAT: Lack of transportation access is a barrier for many; lower-wealth households spend more on transportation as a percentage of income than wealthier households. These pilot programs bring public, private, and nonprofit actors together to bring affordable mobility solutions to those with the greatest mobility challenges. What forces would impact your ability to pilot UBM for your city? Would you try this? Why or why not?

Source: bloomberg.com

Source: Photographer: Michael Short/San Francisco Chronicle via Getty Images

CONSENSUS GROWS FOR EXPANDING UNIVERSAL SERVICES (cont.)

SIGNAL

Transportation Bill of Rights

WHAT: Under a larger call to create a Just Transition in Washington state, 276 organizations have co-signed a campaign outlining a "Transportation Bill of Rights" pioneered by a coalition of Washington-based nonprofits, such as: Front and Centered, Disability Rights Washington, 350 Washington, and the Yakima Asian Pacific Islander Coalition. After months of interviews with underserved communities, which include many individuals who cannot drive, the coalition generated nine key principles to which legislators should commit every time they write transportation policy.

SO WHAT: If legislators adopted these guiding principles while writing policy, multiple issues would be addressed simultaneously to advance equitable mobility access and fight climate change. If this idea takes hold, might we see a federal transportation bill of rights? What would local transit agencies need to do to adapt?

Sources: docs.google.com; usa.streetsblog.org

Source: docs.google.com/forms

SIGNAL

Public-private first- and last-mile pilot program

WHAT: California's North County Transit District (NCTD) launched a pilot program with Uber, Lyft, and TripShot offering discounted rides for first and last mile connections for people either beginning or ending at two of the busiest commuter stations.

SO WHAT: Partnering with private sector companies to fill these transportation gaps is a quick solution in the short term; however, increased reliance on parties outside of a transit agency presents challenges if the private company no longer serves lower-revenue areas. How might transit agencies form public-private partnerships that ensure equitable access?

Source: gonctd.com

Source: osidenews.com

CITY BUDGETS

From discrete to coordinated funding

Over the past few decades, public services and infrastructure have been infused with narratives of low-quality services and inadequacy, which led to underfunding. Despite which political party is in power, the proportion of funding for public transportation coming from federal and state sources has been shrinking. The COVID CARES Act supported lost revenue, but it remains unclear if this trend will continue. President Biden's Bipartisan Infrastructure Law contains the largest investment in public transportation in U.S. history. Guided by the four priorities of safety, modernization, climate, and equity, the framework and proposals are well-positioned to meet the growing needs of living in the 21st century. Even though there is currently political will for massive investment, inevitable political turnover can have profound effects on city policies and long-term planning. Additionally, trust in government has been declining over the years, and some private mobility options are positioning themselves as the reliable alternatives for public transportation. Some cities have partnered with private companies to capture this value, others are using locally-based democratic processes to engage community members in deciding budget line items.

As the pandemic forces public transportation agencies to rethink priorities and budgets, the line continues to blur between which services should be private and which should be public. What is the gap and whose responsibility is it to fill it? Are new government entities needed? Or can successful regional or public-private partnerships create more resilient financing to restore trust in public transportation?

SIGNAL

PPP to capture value from underutilized assets

WHAT: Before COVID-19, Central Ohio Transit Authority (COTA) partnered with "transit tech" platform Via to launch on-demand public transit called COTA Plus. Like all public transit agencies during COVID-19, COTA had a significant decline in public transit usage, and they faced decisions about cutting underutilized routes at the expense of essential workers still using public transportation. Instead of cutting any services, leadership used the underutilized buses for the on-demand service, and they were able to improve services during COVID-19.

SO WHAT: COTA Plus demonstrates a way that public transit agencies might provide on-demand services to offer a public version of a ride hail service. As more and different types of private transit options come to the market, what are ways in which public agencies can maintain market share and offer attractive services to riders?

Source: ridewithvia.com

CITY BUDGETS (cont.)

SIGNAL

Calls for a National Investment Authority

WHAT: Cornell Professor Saule Omarova has written a proposal for a National Investment Authority (NIA). It describes a 21st-century version of the New Deal's Reconstruction Finance Corporation established in 1932—a government entity that provided financial support to state and local governments. The NIA would make loans or investments across the US to foster "sustainable, balanced, and equitable growth." The NIA would be a hybrid government agency akin to a public BlackRock that would bridge the gap between the Federal Reserve's and Treasury's collective capacities.

SO WHAT: The NIA would be a public market actor working directly with private sector business, public markets, and communities to fund the long-term public projects like transit that don't always get funded at the necessary scales to have broad and targeted impact. Its creation could assist the formation of a national economic development strategy, which would be an important step in securing funding for long-term public infrastructure projects. What would you prioritize building if an agency such as this were to exist?

Source: berggruen.org

Source: dataforprogress.org

SIGNAL

Hong Kong transit's unique "rail plus property" model

WHAT: Hong Kong's Mass Transit Railway (MTR) Corporation is a public transit agency, and it's also a real estate developer, landlord, and multinational transportation company. As the majority shareholder, the Hong Kong government grants MTR land and development rights where they build stations, giving MTR a unique "rail plus property" model. Developers build residential and commercial properties above stations, and MTR takes a share of the resulting sale or income from rental properties, giving MTR a funding source.

SO WHAT: MTR's "rail plus property" model produces a very resilient system because of its diversified portfolio—even though COVID-19 reduced ridership by around 40-50%, they were still turning a profit. While MTR is considerably newer than legacy transit systems, merging public transportation with property ownership and rent collection proves a creative way to capture value beyond ridership. What assets can your transit agency monetize?

Source: reasonstobecheerful.world; theguardian.com

Source: Martin Ng via Flickr CC BY-SA, https://flic.kr/p/6YjqCJ

CHANGING NATURE OF WORK

From commuting patterns to commuting decisions

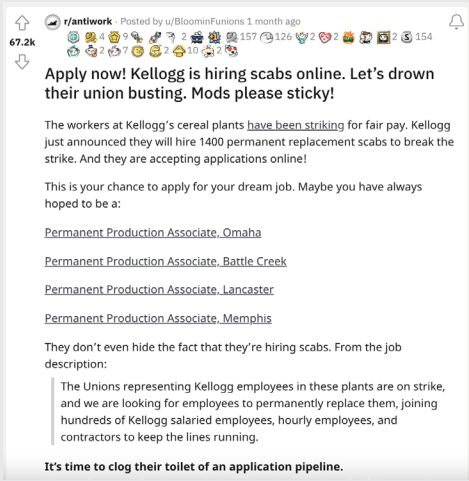
The pandemic shone a bright light on workforce inequities—the range in employee benefits and working conditions vary highly, as does the option to work from home. The proliferation of low-quality jobs in the United States has characterized the labor market over the past few decades, and the pandemic exposed just how poor working conditions in some of these jobs can be. New technologies have enabled many jobs to be atomized into task-based gig work. While gig work has its benefits, it also poses risks for workers' economic security (such as lack of paid sick leave, health insurance, and retirement). The federal stimulus payments offered workers some leverage in the labor market, which has led to modest wage gains and more generous benefit packages, though not all workers are seeing a fundamental shift that gives them a louder voice. But calls for change are loud and getting louder—Starbucks baristas and Amazon warehouse workers alike are paving the way for a higher standard of employment, inspiring others to organize in non-traditional ways as the fights for living wages pervade the country. As work becomes more remote and task-oriented, we can expect to see more policy discussions around worker protections and economic security. These decisions around how work is organized and compensated have practical implications for peak-hour schedules, affordability of fares, and geographic locations of routes that previously only served a downtown workforce.

SIGNAL

r/antiwork floods Kellogg application portal

WHAT: In December 2021, the Kellogg Company announced it would replace all of its union workers on strike with new permanent employees. In solidarity with the workers on strike, r/antiwork users flooded Kellogg's application portal with spam applications to overwhelm their system. A TikTok user posted a video on how to participate, someone on GitHub even wrote open source code to automate the application process.

SO WHAT: The growing consensus that work isn't working for people is taking hold in ways that can spur swift and successful collective action. Gen Z largely led this effort, pointing to the values younger generations hold—workers must be treated fairly. What are ways that public agencies can entice younger—or disaffected—workers and in doing so, offer a different narrative about what work can be?



Source: reddit.com

CHANGING NATURE OF WORK (cont.)

SIGNAL

The Great Resignation

WHAT: Roughly 47.4 million people quit their jobs in 2021. People have left their jobs for multiple reasons, and women, particularly mothers, have left in disproportionate numbers.

SO WHAT: COVID-19 has given people the time and space to examine how they spend their time, and how they want to live and work (or not work). Broad reassessment of how work and life are organized in people's lives is challenging the primacy of work as a given in the way we live. As this shifts, commute patterns will follow suit, as people reorient their lives. What are the ways in which transit agencies can identify and track new travel patterns among non-workers, and offer services or routes that fulfill these new travel needs?

Source: cnbc.com

Source: REUTERS/Toby Melville, weforum.org

SIGNAL

Growing prevalence of—and preference for—remote work

WHAT: One in seven jobs is currently remote, and people are twice as likely to apply for a remote job. Different municipalities and countries, from Tulsa, Oklahoma to Estonia, are offering generous relocation packages for remote workers who choose to move to those locations.

SO WHAT: While this trend is strong now, many experts anticipate a more hybrid work structure will be the eventual norm. How can public transportation become a routine for workers who come to the office only a few days a week? If remote workers lose out on the social benefits of a workplace, can there be new transit options or micro-mobility that services the after-work crowd for social gatherings?

Source: marketplace.org

Source (CC): dailysabah.com

Impact Zones & Implications

COVID-19 has been an accelerant on many levels—from increasing acceptance of Universal Basic Income programs to exacerbating municipal budget shortfalls. The changing nature of work is also changing where people live, commute, and spend time (and money), further disrupting economic patterns. From privatization to pushes for universal free transit, cities—and public transit agencies—will continue to undergo radical changes as they experiment with programs to help with economic survival, both their own and that of their residents.They will need to consider the following:

MARKETS AND RIDERS

Impacts on different groups of riders as defined by their distinct needs and patterns of mobility and movement.

Public transit agencies will need to evaluate the changing dynamics of their markets and what defines each rider and non-rider. The market will remain dynamic as will the portfolio of routes and services needed throughout most of the next decade, especially as work-from-home trends continue. Keeping a focus on new patterns of mobility will certainly be a concern. However, with lower-paid populations, including those dependent on public transportation, they will become even more price-sensitive as incomes do not keep up with costs of everyday living. For these groups, public transit agencies will need to consider how to ensure access when affordable and reliable public transit is needed the most.

SERVICES

Impacts on the portfolio of products, services, and experiences and their distinct value proposition, design, and delivery.

There are many opportunities for reimagining public transit services, some possibly as viable sources of new revenue. Public transit agencies could look for innovative ways to monetize real estate and other physical assets such as parking lots and spaces within train stations. New kinds of routes could be created to allow easier access to tourist areas or nature. Business-focused routes could also be created, ones that are optimized for on-board work, with reliable WiFi and other add-on services. Thinking explicitly about the experience of riding public transit could open up new innovation directions and seize revenue-generating opportunities in any economic climate. For example, if the 15-minute city model is taking hold in your city, holding the neighborhood as the unit of design and aligning public transit and other mobility services could bring coherence to the value and role of public transit to urban life.

Impact Zones & Implications

DECISION-MAKING

Impacts on factors that affect transit decisions: price, convenience, seamless connections, and other market alternatives.

Economics and price certainly figure into the calculus of taking public transit or not, but price is not the only factor, nor is it the most important all the time or for everyone. Programs such as universal basic mobility, combined with policies that more fully capture the full costs of car ownership and parking, could make driving a less appealing and more expensive option. At the same time, people— especially younger generations— will make decisions based on values, purpose, or the kind of impact they can have with their mobility choices, presenting a profound opportunity for transit systems to communicate the myriad non-financial benefits of public transit, from climate action to social cohesion.

RISKS

Impacts on the cost-benefit calculation of risk (actual and perceived), including everything from personal safety to climate risks.

Transit agencies will need to navigate a wide range of risks, from the impacts of people working at home, to the unaffordability of urban life, and the exodus of businesses and other forms of commerce—including the closing of restaurants and food service that drive human flows to urban centers. Some cities will experience more permanent change and long for the vibrancy of the past, while other cities will continue to attract inflows of new residents in a way that is able to make city life work. Regardless of which direction becomes the new reality, transit agencies will not escape the mandate to provide reliable public service for all. But even the conception of public service will need to be reimagined under different economic realities. For example, the imperative to grow ridership and revenue should not shut down universal basic mobility initiatives and other efforts to mitigate economic precarity in the community.

FUNDING

Impacts on funding streams, financial incentives, and assets.

Public transit agencies need to consider alternative sources of funding and revenue-generating activities. The proportion of funding coming from federal and state sources for public transportation have and will most likely continue to shrink, after one-time funding from the infrastructure bill has been spent. This includes monetizing assets, or creating value-added services for different markets of riders. Some public transit agencies will rethink their routes and see serving the entire city and not just downtown as the pathway to new and sustainable sources of riders and revenue, while others will rapidly adopt new technologies of automation and digitization to increase efficiency and rely less on human labor. Other cities and transit agencies will pursue climate-positive strategies and view carbon reduction as the primary way to account for costs and benefits.

ENVIRONMENTAL

Root problems need root solutions

How can public transportation infrastructure and assets be places that heal people and the planet?

Where can public transit agencies partner with companies and community groups to help them reduce their carbon footprint?

The climate emergency is the urgent issue of our time.

Climate change is impacting how we move around, where we choose to live, and how our systems operate. Extreme heat buckles rail lines or melts tires. Sea level rise and floods will damage or destroy critical infrastructure, and unprecedented fires cause power outages that affect our daily lives. This issue knows no geographic bounds, so even cities, communities, and agencies that are prepared for the worst of it will be affected. Planning for resilience and using multi-solving solutions can address cascading crises contributing to and exacerbated by climate change. Addressing the impacts of climate change will require not one solution, but a diverse array of innovations, technologies, justice-focused policies, new designs, and the ability to pivot quickly between them.

Finding the right levers within a circular system and taking a climate justice lens to programming and policy can also address the intersectionality of the challenges that we face.

"Climate is going to overshadow everything. There will be shocks to the system from climate that you can't ignore even if you want to."

–Expert Interview

BEYOND SUSTAINABILITY

From net zero to circular systems

As cities, residents, and businesses are forced to adapt to an increasingly extreme climate, they will need to look beyond net zero goals toward broader approaches to addressing climate change: systemic, circular models that create resilience and help lead us toward regenerative systems. Cities, states, and even the federal government are considering a suite of circular economy bills, largely focused on consumer products, such as plastic and packaging waste, or the right to repair. Given the urgency of the climate crisis, it's possible that climate-forward states like California would consider legislation mandating circular economy principles into infrastructure and transportation.

An October 2021 McKinsey report describes these principles as, "Where possible, materials should be reusable, reparable, recyclable, and recoverable," and suggests that "transport infrastructures could be planned, designed, constructed, and operated with the aim of increasing their level of climate resilience—which includes mitigating climate impact, protecting biodiversity, and minimizing pollution. Sustainable transport infrastructure should catalyze a virtuous circle."

Advances in building materials and technology have paved the way for net-negative buildings, and cities such as Seoul have weather-protected their bus stops—could public transportation infrastructure go a step further and be part of city-wide circular economy efforts? Could bus shelters be made with construction waste materials, or could tracks include rainwater capture and filtration systems?

SIGNAL

Funding for circular economy tops $1.3 billion

WHAT: A July 2021 Chatham House report found global spending on circular economy initiatives reached $1.3 billion. This report also documented the emergence of 10 corporate circular economy bonds from Morgan Stanley, Barclays, and other institutions.

SO WHAT: Financial institutions see huge potential in a circular economy, and as private (and public) equity firms make climate a stronger priority internally and for their clients, they might offer government agency borrowers an opportunity to pilot new models, developments, or programs that support a circular economy. What are the ways a transit agency, system, or assets, can participate in and support a city-wide circular economy?

Source: chathamhouse.org

Source: Photo by Jan Canty on Unsplash, unsplash.com

BEYOND SUSTAINABILITY (cont.)

SIGNAL

Firm designs "net negative" buildings

WHAT: At COP26 in November 2021, design firm SOM unveiled a vision for buildings that use direct air capture and generate biofuels to create "carbon net-negative architecture" buildings that will go beyond current net zero goals.

SO WHAT: As the built environment is among the highest contributors to GHG emissions in the world, buildings that can act as a carbon sink will go a long way to meeting emissions targets. The most innovative places will use principles of circular design to create net-negative infrastructure, including bus shelters, transit hubs, roads, and rails. They will also find ways to retrofit legacy infrastructure to be more climate-neutral. Does your agency have a plan for decreasing the carbon emissions of your infrastructure? Where and how can your assets support a move to carbon-net negative infrastructure?

Source: bloomberg.com

SIGNAL

A platform for the circular economy

WHAT: Excess Materials Exchange creates an online platform for assessing "waste" materials for their financial and ecological impact, and helps find a buyer who can use the waste as input.

SO WHAT: The circular economy has been growing steadily, and platforms such as this one will enable its acceleration. There could eventually be a marketplace for inputs for—and outputs of—large scale construction projects, and this could make it easier for infrastructure projects to reduce reliance on virgin materials. What current waste products might be upcycled elsewhere in your transit system?

Source: excessmaterialsexchange.com

ENVIRONMENTAL (IN)JUSTICE

From environmental racism to climate equity

In so many ways, 2020 made visible the inequities in our society: examinations of past racist development decisions and policy show the lingering impacts of their legacies, such as worse health outcomes and higher levels of pollution, which has been linked to higher crime. A 2018 report found that 75% of bus depots in New York City are located in communities of color, contributing to worse air quality and pollution in those areas. A national reckoning with these issues has brought the need for intersectional climate justice into mainstream policy and conversations.

In response to the Black Lives Matter protests of 2020, many cities, states, and even the federal government have added an equity lens in their planning. Nashville, for example, began a process for equitable disaster mitigation in the wake of a 2020 tornado followed by a series of disasters, in which the deep inequalities in the city were made painfully visible. This process includes a comprehensive review of city policies, ensuring information access for non-English speakers, and finding ways to help non-driving seniors in case of evacuations.

Climate equity planning might grow to include centering Indigenous communities, expanded stakeholder engagement, and focusing on marginalized communities.

Sources: sph.umn.edu/; nyc-eja.org; nextcity.org

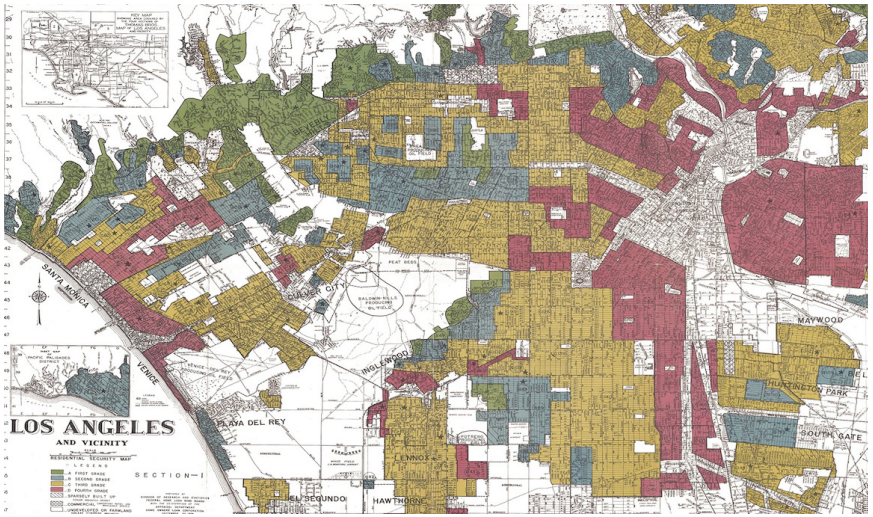
SIGNAL

Study shows climate effects of redlining

WHAT: A study of 108 urban areas in the United States showed that historically redlined neighborhoods were hotter by up to 13 degrees, showing the connection between racist housing policies and current heat exposure, which carries health impacts.

SO WHAT: A push for climate equity will need to take into account the myriad ways in which historical planning decisions continue to impact communities. Cities will be held accountable for undoing the impacts of past decisions, while also equitably preparing communities for the impacts of the future, particularly for communities that will continue to be hardest hit by climate change. How is your transit agency addressing legacies of redlining, particularly the lingering climate and related public health impacts?

Source: mdpi.com



Source: nationalgeographic.com

ENVIRONMENTAL (IN)JUSTICE (cont.)

SIGNAL

Increasing access to transportation

WHAT: King County Metro, in the state of Washington, is responding to loss of ridership by increasing access for essential workers and residents in low-income neighborhoods. They are exploring expanded partnerships with businesses to ensure employees have access to employer-sponsored or subsidized transit passes.

SO WHAT: As agencies continue to recover post-COVID-19, offering incentives to businesses to provide services and support to their employees—especially lower-paid workers—could benefit both the employees and agency budgets. What are ways you—or your partners—can expand your reach to underserved neighborhoods?

Source: fusecorps.org

SIGNAL

Climate gentrification hits coastal towns

WHAT: A report out of Florida State University outlined the potential for displacement that sea level rise will have on low-income households and renters in low-lying areas in Florida.

SO WHAT: Sea level rise will push coastal communities inland. Lower-income communities will have fewer options for relocating their lives, and they risk being forced to move to unsafe areas. Governments will need to take into account these existing inequalities, which will be exacerbated by climate change if not addressed with aggressive policies that support lower-income communities. How are you preparing for sea level rise, and how can your transit agencies help atrisk communities prepare?

Source: miami.cbslocal.com

Source: Photo by Chris Leipelt on Unsplash, unsplash.com

MULTI-SOLVING FOR CASCADING BENEFITS

From targeted responses to mutually beneficial relationships

As we quickly reach a planetary tipping point, responding to climate change will require multi-faceted approaches to address both its roots as well as its impacts, which reach into every aspect of our world. Inequality, poor health outcomes, psychological challenges of modern society: all of these intersect with and are impacted and exacerbated by climate. When cities added curb cuts to benefit people using wheelchairs, this change had unexpected wider benefits, including to parents pushing strollers. Increased walkability of a city can lead to a decrease in CO_2 emissions while improving health outcomes and decreasing pedestrian deaths. Multi-solving intentionally looks to solve multiple problems with one solution, policy, or investment, turning cascading crises into cascading benefits. Atlanta's MARTA subway system has been hosting farmers' markets in the subway* since 2015, using existing and highly trafficked infrastructure to bring healthy food directly to people, including those who live in food deserts.

Increasing pressure on all of our social and ecological systems will require us to look for innovative multi-solving solutions. Many companies are attempting to reduce their Scope 3 emissions (emissions indirectly generated: business travel, employee commutes, transportation, waste, purchased goods and services, end-of-life product disposal, etc.). Can new partnerships between transit agencies and companies ensure high quality, reliable public transportation to reduce employee transportation emissions while also increasing ridership?

Source: itsmarta.com

SIGNAL

Installing solar on underutilized assets pays off

WHAT: A school district in Arkansas bought solar panels and installed them in a vacant field to power its district—this move saved enough money to add $15,000 to each teacher's paycheck.

SO WHAT: The savings from renewable energy, the positive climate impact, and the direct improvement in teachers' salaries is illustrative of the positive cascading effects of a shift to renewable energy can have for individuals, a district, the planet, and the future of all three. We can expect to see more of these multi-solving approaches as planning for resilience becomes standard. Where can climate solutions also address other social or economic challenges your agency or city is facing?

Source: interestingengineering.com

Source: inhabitat.com

MULTI-SOLVING FOR CASCADING BENEFITS (cont.)

SIGNAL

Teaching climate change to doctors

WHAT: In response to a student-led advocacy campaign, Emory University School of Medicine in Atlanta, Georgia is adding climate change to its curriculum, requiring that all med students learn the health risks and impacts of climate change.

SO WHAT: No aspect of our lives will be untouched by climate change, and every field will need to find ways to embed climate change into their work. Expect to see more overlap between climate and professional education to prepare the next generation of workers to address climate in all aspects of our lives. Where might your employees benefit from applied climate learnings?

Source: grist.org

SIGNAL

Reducing carbon emissions and pedestrian deaths

WHAT: The London Cycling Campaign is urging elected leaders to implement "Climate Safe Streets" initiatives to get to zero carbon roads while also achieving Vision Zero safety goals.

SO WHAT: In taking a comprehensive look at road-based risks to both people and the environment, we can begin to think about integrated solutions that can have multiple benefits for our cities. What are ways that transit agencies might reimagine streets in general to make them safe for walkers and cyclists, attractive for kids to play, and inviting and convenient for people to shop, and still allow for movement of mass transit?

Source: hamhigh.co.uk

Impact Zones & Implications

Climate change touches—and will disrupt—our lives, our cities, our routines, our systems. Agencies, cities, and regions will need to work on climate solutions, from transitioning to a circular economy to addressing the lingering inequities of the past, which are linked to hotter neighborhoods, proximity to polluting industries and infrastructure, and poor health outcomes. Addressing the intersecting root challenges of climate change will require "multi-solving," and transit agencies can position themselves as a significant piece of the climate solution puzzle. In looking to a climate-impacted future, they should consider the following:

MARKETS AND RIDERS

Impacts on different groups of riders as defined by their distinct needs and patterns of mobility and movement.

Climate change and rising sea levels will accelerate climate-driven migration globally and locally, adding to the dislocation of work and commutes from urban centers. As population centers shift from coasts to inland areas, new patterns of work and movement will emerge and define distinct markets of riders and needs. Teaching climate change (and what climate action looks like) to the public is a huge challenge and opportunity. Cities looking for public engagement with climate strategies could give public transit agencies the additional mandate of public education. Teaching the public about the climate crisis will not only contribute to a city's resilience but also build the readiness and openness needed for more impactful actions such as ending car-centricity in cities and optimizing public space for people.

SERVICES

Impacts on the portfolio of products, services, and experiences and their distinct value proposition, design, and delivery.

The climate crisis will define an entirely new innovation landscape for the future of transportation and public transit agencies. Innovations that leverage the dynamics of hyper-connectivity, social justice demands, and resource sustainability could motivate a new cadre of artists, designers, makers and rider-citizens into action. Expect to see circular economy principles inform new solutions and initiatives that reimagine public transit agencies as regenerative "carbon net negative" systems where resources are radically "reusable, reparable, recyclable, and recoverable."

Impact Zones & Implications

DECISION-MAKING

Impacts on factors that affect transit decisions: price, convenience, seamless connections, and other market alternatives.

Public transit agencies need to understand where climate and environmental stewardship sit in relation to all the other factors that matter (e.g., price, convenience, seamlessness, etc.) when riders are making transit decisions. Building specific strategies to elevate the position of climate action in this calculus will be critical. Multi-solving is already a persuasive principle for addressing systemic and fundamental change. Transportation is simultaneously a climate, economic, and equity challenge—and solution—and will emerge as a critical lever for multi-solving opportunities. Public transit agencies have a huge opportunity to help riders draw a straight line from taking a ride on the bus to meeting climate action goals. Providing feedback and data on climate positive behaviors will be a source of new value and will weigh persuasively in navigating transportation choices.

RISKS

Impacts on the cost-benefit calculation of risk (actual and perceived), including everything from personal safety to climate risks.

Justice movements connect racial, environmental, and mobility concerns. Increasingly, transportation and equity initiatives will need to address the climate crisis, and climate initiatives will need to address racial and economic equity demands. Assessing risks will require intersectional thinking and anticipating the consequences of any action across multiple domains and stakeholders. Urban policies and decisions have resulted in neighborhoods with disproportionate heat exposure and health impacts. As public transit agencies implement new responses to the climate crisis, expect to see sharp and focused scrutiny on equity and the demand for human-impact audits that anticipate the outcomes on marginalized communities.

FUNDING

Impacts on funding streams, financial incentives, and assets.

Climate solutions that result in cost savings such as switching to renewable energy sources or sustainable resource management will be good for the bottom line and can support repositioning public transit agencies as forces for climate action. Doing well by doing good will be an important metric and narrative to drive further climate actions that realize savings. The housing crisis and the vision for 15-minute city life could be leveraged to reimagine public transit agency assets. Cities could repurpose parking lots and station buildings into open space, affordable housing, or vertical farms, for example, and by doing so align the use of these assets with climate goals.

POLITICAL

Identity politics fuel mobility choices

Where might you have leverage in city-wide planning to partner with agencies who do have authority to make the changes that will benefit public transportation and benefit society?

In an era characterized by heated debate reflecting increasing political polarization, everyday citizens and city leaders must reckon with just how intricately linked mobility is to the broader movement toward justice, equity, and freedom.

While improving public transit would require major shifts in areas such as housing, health, and policing/criminal justice, transit agencies do not exercise direct control in these domains. This means that there are major structural limitations to addressing the grievances of riders and potential riders in order to increase ridership. The transit systems that will be most successful 10 years from now are those that recognize the intersectional nature of transit and strategically pursue partnerships that allow for substantive changes. This might include joint ventures between transit agencies and other public and private organizations and advocacy work in non-transit specific areas.

"I worry that the general public has lost confidence in transit system over the decades that it will make it challenging to get people behind the changes we need to make...There are some things that only federal agency can do, and I hope that we can take advantage of that and deliver projects more effectively than in the past, and take advantage of it as public education movement to reinstill faith and enthusiasm in infrastructure we rely on and we all share."

–Expert Interview

BACK TO DENSITY

From single family zoning to high density, multi-use spaces

The nationwide dual crises of a housing stock shortage coupled with astronomically high rents and prices are particularly acute in California. Lingering impacts of a housing production slowdown as a result of the 2008 crash, coupled with city and state zoning policies that favor building single family homes, NIMBYism, and high land and labor costs have exacerbated the problem, especially in California cities. The effects of these policies are reflected in the fact that only 12 of America's "largest central cities had as many as 7,500 residents per square mile in 2020—the average population density for U.S. central cities in 1950." The decreasing density of American cities has major implications for housing, mobility, and equity. Implementing policies to increase density in cities not only opens up the opportunity for increasing affordable housing stock but also sets the stage to improve mobility and access for residents through building more mixed-use spaces, more businesses, and more homes located where using public transportation is convenient.

Sources: manhattan-institute.org; governing.com

SIGNAL

Senate passes bill that could increase housing stock

WHAT: In September 2021, California Governor Gavin Newsom signed two new bills designed to make it easier to build more housing in California. The first, Senate Bill 9, makes it possible to build more than one housing unit on land that was previously designated for only one unit. The second, SB 10, allows for denser development near public transit corridors, such as bus and train lines.

SO WHAT: After a string of legislative proposal losses, politicians are setting the stage to increase housing in California cities, including in proximity to transit corridors. This could provide statewide incentives—and resources—to municipalities to enhance their public transit in such corridors. How can your agency prepare for new potential development and be positioned as *the* choice for newcomers?

Source: latimes.com

BACK TO DENSITY (cont.)

SIGNAL

House passes bill aimed at encouraging affordable housing

WHAT: In March 2020, the U.S. House of Representatives passed the "Yes In My Backyard (YIMBY) Act" (H.R. 4351), a bill aimed to encourage affordable housing development and to increase transparency by requiring jurisdictions receiving Community Development Block Grants to explain why they do not implement inclusive zoning practices that can help increase housing opportunities for low- and middle-income residents. The bill later failed in the Senate.

SO WHAT: This bill reflects a growing concern over the country's housing shortage and the politics surrounding it. The fact that it was passed by a majority-Democratic House and failed in the majority-Republican Senate highlights politics as a significant barrier to increasing transit-friendly housing stock in cities. How prepared would you be to leverage new transit-oriented housing development into increased ridership or services?

Source: nlihc.org

Source: bendsource.com

SIGNAL

Working from home is here to stay in the San Francisco Bay Area

WHAT: The Survey of Working Arrangements and Attitudes (SWAA) predicts that once the pandemic is over, New York, Los Angeles, and San Francisco will see the largest reduction in people commuting into physical premises for work.

SO WHAT: While the bulk of public transit ridership has historically come from commuter traffic, the number of people commuting to offices will remain drastically reduced. Transit agencies need to think about how to encourage ridership outside of this context. Denser neighborhoods with more mixed-use spaces could increase demand for micro-mobility as residents spend more time in and near their homes.

Source: wfhresearch.com

Source: masstransitmag.com

RECLAMATION OF URBAN STREETS

From streets for cars to streets for people

Politicians and urban planners throughout the world are making efforts to reduce the number of cars driving through cities. These efforts are often rooted in concerns about pollution, traffic congestion, and pedestrian safety. The pandemic has further catalyzed the movement toward fewer car-filled streets by highlighting the lack of outdoor recreational space in many large cities. During the pandemic, many cities allowed businesses to take over portions of streets for seating. In some residential areas, the streets were barricaded against through traffic, to allow residents to walk and children to play safely. Although these changes were not permanent in many cases, these pandemic-inspired changes in conjunction with increased environmental consciousness point to the shift away from car-centricity and toward urban planning and retrofitting practices that prioritize streets for people.

SIGNAL

Pedestrian-friendly streets get city approval

WHAT: San Francisco's Great Highway was closed to car traffic during the pandemic to allow for more outdoor space. In a case filed by a group of residents against the city, a San Francisco Superior Court judge struck down efforts to reopen the Great Highway to regular car traffic seven days a week. In December 2022, the San Francisco Board of Supervisors brought this pedestrian-friendly one step closer to being permanent. The Board passed an ordinance that keeps the Great Highway car-free until December 31, 2025 as a pilot study.

SO WHAT: The Court's siding with the city sets the stage for more pedestrian-oriented urban design policy, and the Board's passing a 3-year pilot program to keep it open demonstrates growing governmental support for this popular pandemic initiative. As cities adjust to the post-pandemic world, we might see more of these car-free streets becoming permanent. How can your agency work with residents and/or your city to promote more car-free streets?

Source: sfchronicle.com

RECLAMATION OF URBAN STREETS (cont.)

SIGNAL

Culdesac, an innovative car-free neighborhood

WHAT: Culdesac, a newly designed and built neighborhood in Tempe, Arizona, requires that residents do not own a car. To support their car-free lifestyle, residents will benefit from resources such as discounts on rideshares, free public transportation, and guaranteed easy access to micro-mobility.

SO WHAT: While Culdesac is operating at the neighborhood scale, the creation of such a space points to an increasing emphasis on designing urban spaces that decentralize the car and encourage more communal, active, and sustainable forms of transportation. Would a car-free neighborhood work in your city? What systems or routes would you need to enhance to support an entirely carfree neighborhood?

Source: culdesac.com

SIGNAL

Cars to be banned in Paris City Center

WHAT: In 2021, Paris' mayor, Anne Hidalgo, announced her plan to significantly reduce car traffic in the city center by banning most vehicles from the Paris Center district. The primary motivation for this plan is to reduce carbon emissions.

SO WHAT: As urban leaders throughout the world look for ways to meet climate goals, banning cars could be a significant strategic lever. As cities experiment with car-free days or weekends and residents get used to the idea of car-free streets, how might transit agencies work with elected leaders to highlight public transportation alternatives to driving?

Sources: france24.com

Source: bbc.com

THE RISE OF MOBILITY JUSTICE

From transit in a vacuum to transit in the name of mobility justice

Public transit is increasingly being discussed within the broader context of mobility justice. This term frames mobility as a social issue that significantly shapes the lived experiences of riders. In particular, the idea of mobility justice urges stakeholders to consider the unique implications of public transit for marginalized groups. Following this approach, the interconnectedness between transit and policies related to housing, health, education, and labor becomes more visible, as do the race and class implications of having access to quality transit. As we prepare our cities for the future, it's essential to understand the important role that public transportation plays in making these spaces more equitable and creating a sense of belonging for all.

SIGNAL

Improving public transit makes it easier for people to stay healthy

WHAT: A recent study in the Twin Cities found a significant decrease in the number of no-show appointments among clinic patients who lived near the city's newly opened light-rail line, with the no-show rate dropping by 4.5% compared to before the line opened. For Medicaid patients, the no-show rate declined by 9.5%.

SO WHAT: The results of this study highlight the health implications for public transit access. Given how certain groups are more prone to negative health outcomes, understanding this intersection highlights the political stakes of having quality public transportation that is accessible for marginalized groups. What might it look like to partner with public health advocates to increase public transportation use for better health outcomes?

Source: vox.com

THE RISE OF MOBILITY JUSTICE (cont.)

SIGNAL

LA Metro pilots fareless transit

WHAT: In Fall 2021, LA Metro began piloting fareless transit, making fare free for K-12 students and community college students. The transit organization may use the data collected during this pilot to make their entire system free for everyone in the future.

SO WHAT: This signal highlights a shift from transit as a publicly subsidized good toward transit as a right for all. How can public transportation stakeholders help city leaders incorporate mobility rights into other equity efforts? How can public transit agencies harness the power of its ridership to advocate for mobility rights?

Source: metro.net

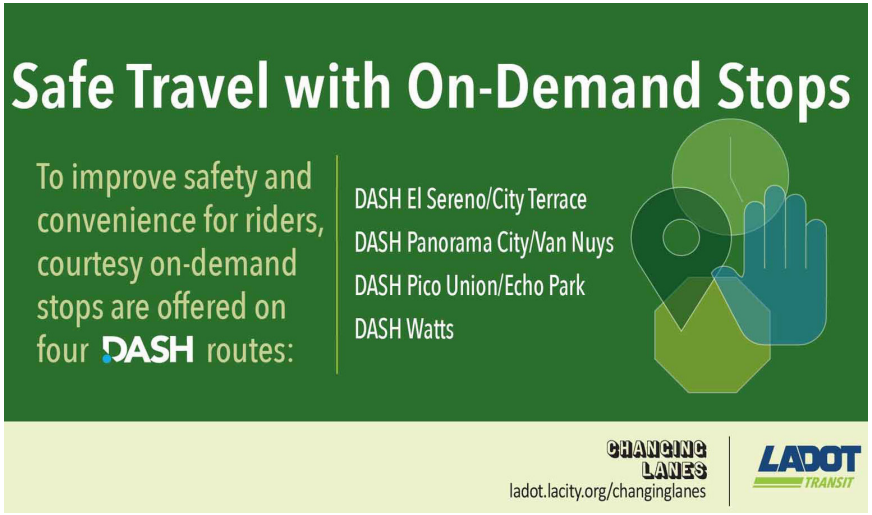
Source: commons.wikimedia.org

SIGNAL

LADOT allows on-demand stops

WHAT: In Summer 2021, the Los Angeles Department of Transportation announced a new pilot program for "on-demand stops" for its DASH bus service. The pilot allows riders to request a stop along a given bus route separate from established stop locations. This program was designed in response to a recent LADOT study that identified reasons that kept women from using transit more often.

SO WHAT: Since rider experiences are shaped by their race, class, and gender identities, how can a transit agency respond to different rider challenges? Could customizing services and routes open up new rider pools?



Sources: ladot.lacity.org; ladottransit.com/ondemandstops/

Impact Zones & Implications

"Take bold action, but with empathy and with your ear to the ground and with a willingness to iterate and adjust and where to be in terms of equity, to be a little more explicit about the fact that there are communities and people who are victims of government wrongdoing, because our systems have been inequitable. It is our obligation to have systems that are equitable ... that become more equitable. We need to test those systems with data to say, are we getting more equitable."

-Expert Interview

Mobility is part of a larger movement and struggle for justice, equity, and freedom. While addressing these issues will take systematic social and policy change beyond the scope of public transit agencies, those that wish to play a part in a broader effort for systems change will form strategic partnership and see their work beyond a silo of public transportation. Navigating an increasingly polarized society, public transit agencies will want to consider the following:

MARKETS AND RIDERS

Impacts on different groups of riders as defined by their distinct needs and patterns of mobility and movement.

Transit policies and programs that address access issues of riders and potential riders (such as making more frequent or on-demand stops to decrease last-mile distances for women) could incentivize new groups of would-be riders to consider public transit choices. As more municipalities consider car-free days, roads, or zones, closing areas to car traffic could increase reliance on public transportation for accessing those areas for workers, customers, visitors, and possibly even for commerce, as these areas prioritize public space for human interaction.

SERVICES

Impacts on the portfolio of products, services, and experiences and their distinct value proposition, design, and delivery.

Anticipating significant shifts in the urban landscape in the form of both increased housing density and permanent adoption—or modification—of slow streets, transit agencies have an opportunity to develop new services that cater to these urban changes. Higher density in different areas of a city presents a need for new routes and a diversity of options, from micro-mobility to new choices for vehicles (shuttles, bikeshare, scooters, etc.). With a push for people-first streets, transit agencies might also consider what non-traditional services (such as delivery services) they can offer to increase the usability of streets for businesses and people.

Impact Zones & Implications

DECISION-MAKING

Impacts on factors that affect transit decisions: price, convenience, seamless connections, and other market alternatives.

Public transit creates many downstream benefits in areas such as physical health, public health, and climate mitigation; agencies have the opportunity to leverage these benefits in how they create convincing narratives to choose public transit over other mobility options. To the extent possible, transit agencies could also advocate for city or state policies that help nudge people toward taking public transportation, including per-mile vehicle fees, congestion pricing, and limiting roadway capacity that could drive up demand for choosing public transportation.

RISKS

Impacts on the cost-benefit calculation of risk (actual and perceived), including everything from personal safety to climate risks.

In an increasingly politicized environment, there will be challenges and limitations to how a transit agency can respond to rider and potential rider needs. Improving transit systems may require zoning changes, policy changes with regards to policing, or increasing housing stock, all of which are currently outside the jurisdiction of what a transit agency can do. As such, agencies run the risk that their efforts to increase ridership will be deterred by external policy factors. On the flip side, expanding services based on a favorable political climate makes one subject to that climate, with the risk of changing political winds impacting services, funding, and programs. Transformation will require expanding the current mandate of public transit agencies and empowering them to see a wider range of actions within their domain.

FUNDING

Impacts on funding streams, financial incentives, and assets.

The recent federal infrastructure bill and funding from Congress offer a once-in-a-generation opportunity for needed investments, though agencies will need to rebuild public trust and enthusiasm for public transit, and for funding it. Public transportation has been underfunded for decades and is suffering because of it: less funding leads to decreased service offerings, further eroding trust and interest. Public transportation agencies can take advantage of incoming funding streams to build needed infrastructure and restore trust and confidence around transit.

CONCLUSION

A new story for public transportation

You've now read and considered the future forces—and signals of change that illustrate them—impacting the future of public transportation.

Together, these forces and signals tell the story of a world that needs public transportation more than ever. They also describe increasingly inconsistent ridership. These stories present a range of opportunities for public transportation to take on a new narrative across categories, including:

SOCIAL | for public agencies to be a solution to the mental health crisis.

TECHNOLOGICAL | for transportation systems to be part of the clean tech economy where their assets generate renewable energy.

ECONOMIC | to play a critical role in addressing economic inequality by considering Universal Basic Mobility programs, or to supplement agency budgets by monetizing infrastructure and other assets.

ENVIRONMENTAL | to be part of a region's circular system, minimizing waste or redirecting it to be a needed input.

POLITICAL | to show a viable alternative to a car-centric city, demonstrating how people-first streets can coexist with public transportation.

These opportunities represent the possibility for a new narrative about what public transportation is and does. This in turn has the potential to influence riders' transit choices—so that riding public transportation is just as much an economic choice as it is about saving the planet, performing a certain social status, or participating in a city's collective culture.

The road to a more sustainable transportation future is bumpy at best. But with this report, the accompanying scenario report, plus the map and toolkit report, our hope is that public transportation agencies feel empowered to envision—and act on—a range of possible futures that helps elevate their status, ridership, and revenues, so they can be key players in moving us all forward.