As the country prepares to open for business, our transportation systems may not be ready.

As the country prepares to open for business, our transportation systems may not be ready. Looking beyond the uncertain duration of stay-at-home restrictions, we face a transformed transportation reality, with significant demand and supply implications for our travel infrastructure. The most pressing concerns rest on several key unknowns:

- The rate at which travel demand will return to normal levels
- The impact of lingering health concerns on public transit and carpool/vanpool use
- The impact of historically low fuel prices and an expected glut of deeply discounted used cars
- The greatly reduced capacity of public transit options hit by staff reductions, collapsed budgets, and rider density restrictions

A central question emerges: how soon before an increased reliance on single-occupant vehicle (SOV) use overwhelms our transportation system? In places like Wuhan, China, where travel and gathering restrictions were lifted several weeks ago, conditions suggest that our transportation-system capacities may become significantly constrained well before peak-hour measures of travelers and miles-traveled return to normal. This presents an obvious challenge to transportation demand management (TDM) planners, as key performance measures like driving-alone mode shares and vehicle miles travelled may increase dramatically. Beyond these TDM challenges, however, workers, businesses, and the overall economy in our cities will face operational challenges in the coming weeks and months, not limited to:

- Reduced job access, resulting from increased travel times and costs, reduced non-driving travel options, and constrained parking capacities
- Reduced operating capacities and efficiencies for businesses facing the unusually high absenteeism of employees facing these challenges, as well as necessary reductions in workspace employee densities
- Increased operating costs and logistical challenges linked to ensuring that more employees can work away from the office, and/or leasing added/auxiliary office space
- Dependent-care challenges from the uncertainty of school, care facility, and summer camp operations, capacities, and schedules

The New TDM Challenge:

Flattening the Return-to-Work SOV Curve
A Disrupted TDM Toolkit

TDM programs optimize access to housing, jobs, goods, services, and social and cultural connection while minimizing vehicle miles traveled for these pursuits. Their success depends on reducing one or both of the following measures:

A. Personal miles traveled (PMT) – The sum of miles traveled by people

B. Vehicle miles traveled (VMT) – The sum of miles traveled by passenger vehicles

The first measure is primarily a product of land use and development planning, which determine the distance between people and the goods, services, connections, and experiences they pursue. Shorter distances directly reduce both PMT and VMT. They also make walking, cycling, carpooling, and public transit options more viable, further reducing VMT as more trips are completed in fewer passenger vehicles.

Most TDM plans, however, respond to established land use patterns, rather than trying to influence them. For this reason, they primarily focus on opportunities to reduce VMT, and address regional-aggregate PMT as a largely fixed measure. This focus on VMT reduction now faces a strong headwind, as fears of contagion, reduced transit capacities, cheap gas, and an expanding surplus of used cars are expected to greatly reduce average vehicle occupancies.

This will be particularly true during commute peaks when transit vehicles will be most crowded—despite being well below normal passenger densities. The solution requires a shift in focus that emphasizes opportunities to reduce PMT—primarily by facilitating work without a commute—while using every possible means to mitigate how much travel shifts to SOV modes.

A Shift in Focus: Reducing PMT as Vehicle Occupancies Fall

TDM planners must respond to this unavoidable—and hopefully short-lived—reversal on vehicle-occupancy objectives by leveraging opportunities to reduce PMT, especially peak-hour PMT. Since short-term changes to land use patterns are not possible, success will rely primarily on how many commute trips are deferred to off-peak hours or avoided altogether, while supporting businesses as they bring their operations and employment levels closer to pre-pandemic levels. Fortunately, the stay-at-home phases of the pandemic response have demonstrated the effectiveness of telework strategies once considered to be marginal TDM tools.

LEVERAGING TELEWORK GAINS

“The transition to mandatory telework due to coronavirus makes it clear that an in-home connection is vital to the functioning of the 21st century economy.” – Brookings Institute

Many people whose jobs allow for working remotely have become very familiar with working from home (WFH) every day because of the pandemic. While it has inarguably been a difficult adjustment, it has worked well enough that WFH demand is anticipated to emerge from the current phase of the COVID-19 response much higher than it was before.

Employers who may have been reluctant to support WFH as a normal part of their operations will have spent several weeks piloting it full time. The muscle memory of this will pay off for employers facing operational challenges linked to constrained travel networks and reduced operating capacities once travel and gathering restrictions are eased. Technology investments and operational practices born of necessity will help make WFH a vital tool for many businesses and employees—and transform the capacity of WFH as a central TDM tool for the coming months.

Perhaps most importantly, those most able to WFH are also those most able to increase their use of SOV modes for work travel. Looked at the other way around, the commuters most likely to intensify the SOV-curve beyond network capacities are those with the least significant barriers to working without a commute. Keeping our transportation systems from being overwhelmed will require encouraging these workers to continue to work from home rather than driving alone to work.

ALTERNATING WORK SCHEDULES TO EASE TRAVEL PEAK INTENSITIES

Working from home, however, will likely not be enough for many businesses to sufficiently reduce employee densities for safe operations. Alternative work schedules are gaining new attention for their capacity to maintain operating efficiencies while facilitating social distancing needs. This may be particularly valuable for managing reduced bus and train capacities for public transit agencies that are able to maintain sufficient spans of service—an economic necessity for our larger cities. It will also be vital for many employees whose dependent-care needs are affected by schools, camps, and daycare centers that remain closed or operate at reduced capacities well after they have to go back to work.

Alternative work schedules could provide important logistical and cost-savings benefits to employers, while giving employees more flexibility to align their work schedules with fluctuating non-work commitments. From a TDM perspective, they could reduce peak-hour PMT to ease constraints on our transportation systems at these times.
Alternative Mode Opportunities Remain

Flattening the SOV curve will require reducing VMT in a context of declining vehicle occupancy rates. The tools above represent limited, but vital, means toward achieving this, by reducing PMT—especially during times when transportation systems are most constrained by the shift to SOV modes. There remains, however, important opportunities to reduce VMT via more traditional areas of focus for TDM—promoting SOV alternatives, including a unique opportunity to facilitate growing biking demand in many cities.

EXPANDING Viable BIKING DISTANCEs & MAKING BIKING SAFER AND MORE COMFORTABLE

Like personal cars and trucks, bikes offer travel that is compatible with new social-distancing strictures and preferences. As such, bike travel demand has increased significantly in many cities over the last several weeks, and many cities have responded by strategically expanding and improving their walking and biking networks. Biking can be a viable travel mode for commutes of a few miles or less, far below the average commute distance in most cities. More of these longer commutes can be made more viable by through improved bike facilities in local and regional roads, connected bike networks, and facilitating greater adoption of electric-powered bicycles (e-bikes).

Even before COVID-19, e-bike (battery-powered electric bikes) sales had grown exponentially over the past 2-3 years, and in the last three months sales of e-bikes have spiked along with conventional bikes. E-bikes can extend the distance people are willing to ride, and they can be more accessible and less intimidating for those less fit or able. However, in most city centers, roadway and traffic conditions reduce the market appeal of this option during commute peaks. The better and safer biking conditions promised by the initiatives noted above can extend the distances people willingly travel by bike, even during heavy travel times. Even where such improvements remain lacking, many former transit and carpool commuters can be attracted to biking for its personal health and sustainability benefits, as well as its capacity to save commuters the cost and hassle of parking a car at work.

Traditional workplace benefits like secure and sheltered bike parking, showers, and lockers—as well as financial incentives—can amplify the benefits of these trends and strategic initiatives, increasing the returns of these more familiar TDM investments. In the meantime, TDM planners can help promote larger initiatives to extend and improve cycling infrastructure by surveying employees and documenting the level of increased biking that such initiatives could generate.

ADVOCATING FOR THE TRANSIT-DEPENDENT & TRANSIT PROVIDERS

Our most transit-dependent populations overlap significantly with the essential worker populations who have continued to commute throughout the past several weeks. Our buses and trains are not empty, despite the perceived and actual risks presented to their passengers. Strategies that seek to increase transit use should continue, while complemented by an increased focus on advocating for maintained service and rider health and safety. This should include advocating for increased funding and new funding sources to help maintain access to jobs for the most transit-dependent commuters, businesses, and cities—and for a faster return to full operating capacities as transit demand returns to previous levels. It should also include advocating for innovative and collaborative initiatives that can keep people who need transit connected to services—today and as demand picks back up.
PROMOTE NEW & BETTER CARPOOL/VANPOOL OPTIONS

Technology has significantly enhanced the capacity of metropolitan regions to offer trip-planning and ride-matching platforms that make finding rideshare opportunities easy for commuters. These platforms offer flexible trip schedules, frequencies, and levels of commitment to carpools and vanpools. Many platforms also allow participants to search for ride matches exclusively among those who work for the same company/organization, easing concerns about “riding with strangers.” The pace of these transformative improvements, however, has not been matched by a concomitant rise in carpool/vanpool commuting. Many commuters and planners do not realize how viable this non-SOV mobility option is in their communities. While contagion concerns are expected to reduce demand for carpool/vanpool options, these options may offer an important alternative to drive-alone commuting for those whose transit commute is no longer viable.

Traditionally, TDM initiatives to promote carpool/vanpool options try to avoid luring participants away from public transportation. But with reduced rider capacities for the foreseeable future, the functionality of most transit systems will depend on many would-be riders finding other options during travel peaks. Carpools and vanpools can accommodate a significant share of these trips, easing transit loads while slowing the shift to SOV modes. Importantly, carpool/vanpool options may be a vital access-to-jobs resource for those who may find other non-transit commute options unaffordable.

PROMOTE EVERYTHING-BUT-THE-CAR OPTIONS

Reduced carrying capacities imposed on public transit will hit our largest cities the hardest. Rush-hour trains and buses, whose passengers compete to secure six inches of pole space to grab, will be restricted to rider counts that facilitate six feet between passengers. If all the passengers who no longer fit in these vehicles drive themselves to work, the back-to-work phase will fail in our largest economic centers. Fortunately, these cities tend to offer a range of options that include but go beyond those profiled above. Some are already responding with policies, coordinating with transit and other mobility providers to reduce cost and other barriers to wider adoption of these travel modes. It will also be important to revisit—and in most cases rescind—early-phase initiatives to waive parking fees and tolls as back-to-work traffic increases—and before too many people purchase cars under the assumption that free parking is here to stay in our urban centers.

GETTING READY NOW TO MANAGE CHANGING PARKING DYNAMICS

A market shift toward greater SOV use is likely to overlap with a continued need to use curbsides and lots for non-parking activities, resulting in increased demand and fewer available spaces. Where weekday parking demand has not yet returned to normal levels, now is the time to get out ahead of the coming constraints and conflicts. The current capacity surpluses offer a brief window of ideal logistical/operational conditions for piloting transformative demand-management technologies and pricing:

- Virtual permits: Using license plate recognition cameras and virtual permitting software enables pay-as-you-park pricing. This avoids the induced-demand effect of the “sunk cost” aspect of monthly permits.

- Daily pricing options:
  - Combine daily rates with a monthly cap on the total paid to incentivize variable commuting without overly burdening the most car dependent commuters.
    - Those with more flexibility will find the daily cost incentive in this structure more compelling
    - Those without viable mode options will find their monthly cost unchanged
  - Higher rates on high-demand days—including Tuesdays to Thursdays in most contexts—can level off demand, easing supply constraints and providing further cost-savings options for commuters.

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How Scoop is enabling commuter safety

New health and safety requirements, community guidelines, and product functionality.

- Limit to only two people per car
- Symptom checker before scheduling every trip
- Passenger sits in back right seat
- Masks required
- Physical distance at all times when entering/existing
- Controlled airflow
- New capabilities to choose who you commute with

Example of carpool match service adjusting to safety concerns
• Carpool/Vanpool priority parking: In many contexts, the offer of a VIP-level parking location is a more powerful incentive than the cost savings inherent in sharing commute rides.

• Occasional-use permits: Allow those who rarely use parking options to park in priority-location spaces, such as those reserved for carpool/vanpool vehicles, a few days each month, to both reward these commuters and make it more viable for more commuters to minimize the days they drive to work.

For at least the next year, a significant share of driving commuters will not need parking every day of the work week. This presents an essential TDM opportunity to accommodate this new norm and, in the process, avoid inducing greater parking demand by allowing commuters to right-size their parking purchases and to change those purchases over time, as their needs evolve.

A New Approach

Increasing the average vehicle occupancy rate among commuters has been the core focus of our most effective TDM plans. Keeping people safe during the pandemic, however, requires keeping people safely distanced—whichever mode they use to commute. As a result, vehicle occupancy rates have plummeted over the past several weeks, and they are likely to remain well below previous norms for the foreseeable future. While traditional TDM strategies will still be essential to moderate this shift to SOV travel, our best hope for reopening our cities without overwhelming our streets will be leveraging new possibilities for reducing the travel miles linked to a return to work.

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