Pandemic Shock: Brief #3 • June 30, 2020

Active transportation with micro electric vehicles:

Emergency COVID-19 responses and the disrupted future of oil

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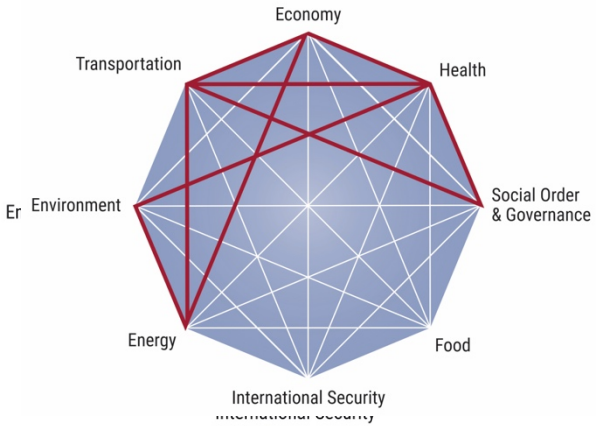

Summary

This Brief reports on the dramatic changes to urban transportation systems in the US and Canada during the pandemic and their cascading implications for the electrification of transportation, climate politics, and racial inequity.

Emerging trends

- After lockdowns cleared the streets and skies, a shift of commuting from transit to cars now threatens severe near-term traffic gridlock.
- Cities with pre-existing active transportation agendas have enabled socially distanced travel and outdoor activity by rapidly changing access on many streets from cars to pedestrians, cycling, scooters, etc.
- Electric cars are receiving economic recovery support in Europe and China; some cities and the EU, are also supporting increasingly affordable micro-EVs like E-bikes, which have an underappreciated role in displacing oil demand.
- But these trends lag in the US and Canada.
- During the pandemic, these trends are sensitive to advocacy and policy interventions as well as interactions with other crises, such as the unprecedented protests against anti-black police violence.

Implications for action

- During and after the pandemic, active transportation and micro-EVs can provide immediate and long-term benefits for health, economies, and the climate.
- They could also provide broader benefits for social and racial equity—if societies change to prioritize equity more generally.
- The time to use these tools to facilitate economic reopening and to benefit public health and social well-being is short, so programs need to be bold.
- Today's dramatic changes in North America echo the early stages of a failed effort to establish cycling as a key transportation mode in the US in the 1970s, which ultimately failed. The current opportunity may be similarly unrealized if advocates lack the resources, coalition allies, and effective strategies needed to meet the moment.

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About the Cascade Institute

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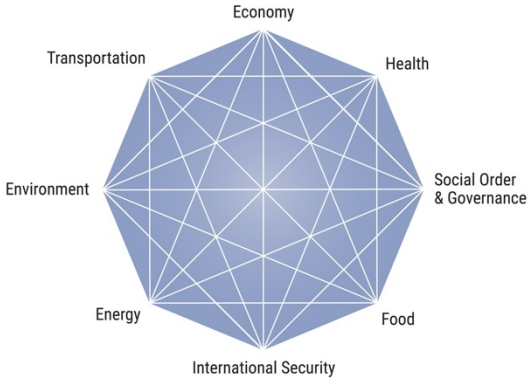
The Institute is located at Royal Roads University in British Columbia, a leader in training professionals to apply creative solutions to entrenched problems.

About the Inter-Systemic Cascades (ISC) Project

The Cascade Institute's *Inter-Systemic Cascades Project* maps causal routes through which the COVID-19 pandemic could sequentially destabilize associated national and global systems, causing cascades of change. This series of Briefs focuses on the pandemic's implications for the eight key systems highlighted around the adjacent octagon, and each Brief maps a possible causal route of destabilization among these systems. Cascades may be either "pernicious" (socially harmful) or "virtuous" (socially beneficial).



The analysis in this series starts from the assumption that societies are organized around cohesive sets of worldviews, institutions, and technologies (WITs), where:

- **Worldviews** are mental networks of concepts, beliefs, and values—often emotionally charged—that allow people to interpret things around them and plan their actions.
- **Institutions** are a community's rules governing social behaviour, including formal rules (constitutions, laws, and contracts), informal rules (customs and norms), and mechanisms of enforcement.
- **Technologies** are problem-solving tools that people create by harnessing phenomena of their physical and social environments.

WITs in this Brief

Worldviews: car culture, urbanism, racism and anti-racism

Institutions: economic markets, corporations, urban governance

Technologies: micro-EVs, oil-powered transportation

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Active transportation with micro electric vehicles: Emergency COVID-19 responses and the disrupted future of oil

Background

Over a period of roughly four weeks, from early March to early April 2020, countries around the world experienced rapid and widespread changes in attitudes and behaviours toward social distancing practices in response to the COVID-19 pandemic. (In Canada, the change occurred in about a week, from March 11 to March 18.) These changes were particularly impressive in liberal democracies that did not implement penalties to enforce compliance with social distancing rules, but instead largely relied on the strategic communication of government guidelines and the voluntary adoption of "encouraged" social distancing practices.

Behavioural change on this scale, without the threat of sanctions for non-compliance, requires both the effective communication of public health information and also the emergence and rapid dissemination of new social norms. This Brief analyzes the initial uptake of social distancing practices in these countries and the implications of those social dynamics for the future of public health communication over the course of the pandemic and beyond.

The crisis context

The COVID-19 pandemic is reinforcing already powerful links between public health, economic activity, and social inequities. Limiting the spread of the SARS-CoV-2 virus can reduce the pandemic's economic impact, while reducing this economic impact can reciprocally help protect public health (since morbidity and mortality rise during economic downturns). But because the pandemic disproportionately harms lower income neighborhoods and communities of color, limiting its spread requires that societies directly engage with, and address, social inequities.

In the context of the pandemic, the shift towards active transportation and micro-EVs in our cities (see Box 1 for definitions) could aid progress on all three fronts, by simultaneously strengthening public health and economic activity while reducing social inequities. *These quickly deployable elements of a broad urbanist agenda should be part of a holistic public policy response to the pandemic*: they can reduce COVID-19 transmission by lowering crowding on public transit, while at the same time reducing traffic gridlock (that would otherwise increase as people seek to isolate themselves in cars) and meeting the needs of more vulnerable communities. But progress so far on this front in Canada and the US could easily stall if not given more attention and resources.

Like other domains of public policy, urbanism faces a long overdue reckoning with persistent anti-black racism (Walker 2020) after the unprecedented protests following the killing of George Floyd by police. Mainstream urban planning has tended to perpetuate automobile-centric systems that disproportionately harm and segregate communities of color **(**Kruse 2019; CREA 2020; Schmitt 2020; Poon 2020**)**. But active transportation measures, including those adopted during and in the wake of the pandemic (Guse 2020), can also perpetuate injustices (Thomas 2020; Flanagan et al. 2016). If these and similar measures are to serve the needs of marginalized communities, the social beliefs, values, and behaviors that underpin urban policy and planning will need to change to ensure that people of color have equal access to safety and mobility on public streets.

From left: Electric cargo bike; Newly opened 34th Ave. in Queens; Black Lives Matter protestors block I-83 in Baltimore.

Box 1: What are active transportation and micro-EVs?

"Active transportation" refers to modes of transportation such as walking and cycling that in Canada and the US are typically considered secondary, because public roads are mainly devoted to private cars. Electric cars are hardly the only electric vehicles (EVs). "Micro-EVs," which include everything from scooters and E-cargo bikes to mopeds, are also powered by increasingly cost-effective lithium-ion batteries. These vehicles were gaining popularity before the pandemic, and that trend has continued since COVID-19 arrived in our communities (Ricker and Hawkings 2020). More than technological novelties, they are already displacing over half a million barrels per day (mb/d) of oil worldwide **(**Bullard 2020**)**, and they will only become more affordable and widely used in coming years. Policies to support active transportation and micro-EVs work in synergy: micro-EV technologies expand the possibilities for active transportation networks, increasing the range people can travel and the cargo they can carry, thus making these networks more accessible and useful to the less physically able (McElroy 2020). Together, active transportation and micro-EVs form a paradigm of *electrified active transportation* that promotes less car-centered streets within a broader policy agenda aiming for more equitable cities (see, for example, NACTO 2020; Keesmaat 2020).

The disrupted future of oil

In the context of the climate crisis, a shift to less car-centered streets could also contribute to a green recovery from the pandemic. Most importantly, this shift could play a significant (and still underappreciated) role in ending oil's dominance. World oil demand is currently experiencing strong countervailing pressures from a host of inter-connected factors (see Box 2), all powerfully affected by the pandemic. But the longer-term trend is clear: over the last decade, the oil industry's outlook has sharply deteriorated, and now the pandemic has accelerated this trend by initiating a period of extraordinary volatility in the industry. Oil demand has fallen, oil-dependent nations and sub-national jurisdictions are under extreme stress, and national subsidies for the sector are rising (Stokes and Mildenburger 2020), even as the industry's long-term profitability sours **(**IEA and CCFI 2020**)** and the tide of financial divestments swells **(**Wallace 2020).

Future oil demand is critical in this context. A rebound in demand after the pandemic could generate another boom cycle in the oil industry and re-empower its obstruction of action on climate change. Alternatively, declining demand could limit the industry's economic and political power, forcing it to finally recognize its rapidly changing role in a decarbonizing world. It could also focus public policy on securing new opportunities for the industry's workers. The apparently unstoppable decline of coal in most developed countries shows that financial and political dominos can rapidly fall as a fuel's demand peaks (Bond 2020).

Box 2: Cross-pressures on oil demand

The pandemic could *decrease* oil demand by encouraging white-collar work from home, causing long-term damage to the airline industry, and leading cities to prioritize people over cars. But it could also *increase* oil demand by lowering gas prices, causing long-term financial damage to public transit agencies, shifting preferences towards cars and SUVs, and boosting on-line shopping. The relative balance of such factors remains unpredictable, but they can be better understood when analyzed *together*, because they are interacting extensively though a myriad of still emerging relationships and feedbacks.

Analysis

The opening of streets to active transportation has abruptly become a more powerful factor affecting oil's future. Accelerating that opening could produce major short-term social and economic benefits—as well as longer-term climate benefits by reducing emissions and constraining the power of the automobile and oil industries. But a general move to more people-centered streets—with equitable benefits across genders, ages, and income levels—is unlikely to occur if systemic racism is not first addressed, in policing and more broadly, too.

A moment of acceleration and consequence

Early in the pandemic, cities from Bogotá to Paris opened as much as 10 percent of their temporarily empty public streets to non-auto uses, so that people could move around at safe distances (Connolly, 2020). The crisis accelerated previous progress achieved only through decades of painstaking advocacy. Now cities around the world are instituting "pop-up" protected bike lanes and “slow” streets with just weeks or even days of preparation, instead of the years of planning and discussion needed previously; and many cities intend to make these changes permanent (Mobycon 2020; Ricker and Hawkins 2020).

From the bottom-up, bike and E-bike sales have spiked in Europe and the US (TransAlt 2020), and as battery prices continue to decline, E-bikes will become even more popular. From the top-down, the UK, for example, has committed £2billion to new cycling and pedestrian infrastructure (UK DFT 2020). Some jurisdictions have also supported E-bikes in recognition of the functional value of cycling during the pandemic (Pardo 2020; Sutton 2020). Furthermore, EVs have featured prominently in economic recovery plans, with the EU in particular set to invest over €60 billion in this sector this decade (Krukowska and Shankleman 2020), potentially including billions in support for micro-EVs (CIE 2020). In an accentuation of a pre-existing divergence, North America lags leading regions in both EV and active transportation efforts (Table 1) and will fall even further behind without new efforts.

Table 1: North America lags leaders in EVs and opening streets

Region	EVs	Open streets, active transportation
China	Leading in EV policies; leading battery manufacturer	Cycling is still prevalent; 2 and 3 wheel micro-EVs now displace 0.5 mb/d of oil demand
Europe	EU plans to invest €60-80 billion in EVs	Many cities rapidly opening streets; UK invests £2 billion in active transportation
US and Canada	No new major or national EV policies to date	A few cities rapidly and extensively open streets. No national policies in support.

History underlines the importance of action during this critical moment of social contingency. In the wake of the first oil shock in the early 1970s, the US almost followed the Netherlands in rejecting car-dominated cities. During a remarkable bike boom, bike sales soared, and pro-cycling laws were passed at state and federal levels. But as public excitement waned and environmentalists turned their attention elsewhere, cities abandoned the thousands of planned miles of bike lanes that could have locked-in less car-centered cities (Reid 2020). During the same period, auto-centered infrastructure was used to sustain racial segregation—despite the recent repeal of laws enabling this segregation—thanks to white support for city-splitting highways and opposition to neighborhood-connecting public transit (Kruse 2019). The absence of a strong historical and cultural commitment to people-centered streets explain why, during the pandemic, cities in Europe, and some in Latin America (Moloney 2020), are moving faster and more broadly on this front than the US and Canada. Even where

the seeds of more people-centered streets do exist in North America, these seeds may not be receiving the support they should, considering the long-term benefits of such policies for both cities and the climate.

Economic benefits

During the pandemic, active transportation is an economic imperative for functioning cities. Public transport ridership has greatly declined in response to physical distancing requirements, and while questions regarding the true risks on public transport remain, declining ridership could in turn induce massive gridlock as transit commuters switch to driving (Spurr 2020; The Guardian 2020). In Wuhan China, peak rush-hour traffic is already exceeding pre-outbreak levels (BNEF 2020). Since the cost of gridlock—already $160 billion annually in the US (Weber and Winters 2015)—is likely to be amplified as economies restart, rapid and even relatively expensive measures to open streets and fund micro-EV adoption should more than pay for themselves in aggregate. But both the public health benefits (PDIC 2020) and the economic benefits depend on opening streets across entire cities and prioritizing low-income neighborhoods where the COVID-19 is more prevalent (Novakivic 2020). Higher micro-EV adoption will amplify the effect of these measures, because these technologies enable longer trips across hillier geographies while carrying more cargo—all with far less effort—thereby helping at-risk individuals avoid public transit. Making people-centered-streets permanent will also create more jobs than auto-infrastructure projects (Garret-Peltier 2011). Cities that are disinclined to encourage active transportation will face added pressure to improve if their transportation systems seize-up in the coming months.

Equity benefits: priorities and barriers

Active transportation can have multiple equity benefits, including increasing mobility options for those who cannot afford automobiles. Adding electrification can extend those benefits to elders and the less able (via E-trikes, for example) as well as to those who live further from amenities and employment (Pitane 2020).

The intersection of active transportation with race is particularly complex, but considering this intersection is also timely. COVID-19 is deadlier in communities of color, low-income communities, and especially in black communities (Pilkington 2020) due to the higher participation of their members in essential work and systemic inequalities such as greater exposure to air pollution (CREA 2020; Tabuchi 2020). Active transportation measures have the *potential* to mitigate this unequal toll, if advocacy and policy are aligned with urbanism's reckoning with racism (Ward 2020; Pitter 2020; Thomas 2020), a reckoning spurred by the unprecedented social mobilization surrounding the Black Lives Matter protests (e.g. Tapp 2020). Advocates, urban leaders and policy makers must focus on listening to these communities and *safely* serving their mobility needs (City of Oakland 2020). Building out active transportation infrastructure may not always be the best choice (Shiloh 2019); better measures might instead involve, for instance, adding dedicated bus lanes to increase bus volume for social distancing (Meyer 2020).

As cities quickly expand their active transportation networks, the speed of change makes it hard to alter the ingrained and often unrecognized patterns of racism in urbanism that marginalize communities of color. (Thomas

2020). In the past, bike lanes reinforced unequal access to public streets (e.g. Agyeman 2020), and they continue to do so: as the pandemic swept New York City, officials initially opened streets to pedestrians and bikes in wealthier, whiter neighborhoods (Guse 2020). So special attention needs to be paid to serving racialized communities rather than further marginalizing them.

If implemented well, active transportation measures—from adding sidewalks to setting up dedicated bike lanes (BtG 2012)—can address the disproportionate toll on marginalized communities of traffic injuries and deaths and of illness from air pollution (Schmitt 2020; Mikati et al. 2018), while also providing broad health and community-building benefits (Sallis et al. 2015; Marshal and Ferenchak 2019; Cherry and MacArthur 2019). But systemic racism has long impeded the political viability of these and related transportation measures. In many US cities, urban highways and lack of public transit stem in part from efforts to keep black communities segregated from white communities after the civil-rights era of the 1960s (Kruse 2019; Poon 2020). And racism continues to motivate lower support among whites for public goods like universal healthcare (Alesina et al. 1999)—and presumably for people-centered streets as well.

Direct climate benefits: both micro-EVs and active transportation are required

Even the most aggressive electric car policies will not reduce transportation emissions enough to meet climate goals. Countries such as Canada and the US must combine equally aggressive active transportation policies with increased public transport and denser metropolitan regions to have any chance of reaching their emission targets (CARB 2017; Winkelman 2019). Rising electric car sales will change the makeup of national vehicle fleets only over decades, but reduced car driving has an immediate impact on emissions. Electrifying active transportation can amplify this impact. The lower costs of micro-EVs should aid rapid scaling, as compared to electric cars. A recent study in the UK found that E-bikes alone could reduce transportation emissions by up to 50 percent (Phillips and Chatterton 2020); E-bikes are also more likely to displace car trips than conventional bicycles (McQueen et al. 2019). The underappreciated but outsized potential impact of micro-EVs is already becoming evident: these technologies account for 60 *percent* of the 1 mb/d of oil displaced by all types of EVs (Bullard 2020) (Fig. 1). In this context, the current focus on electric *cars* as a simple climate solution is misplaced.

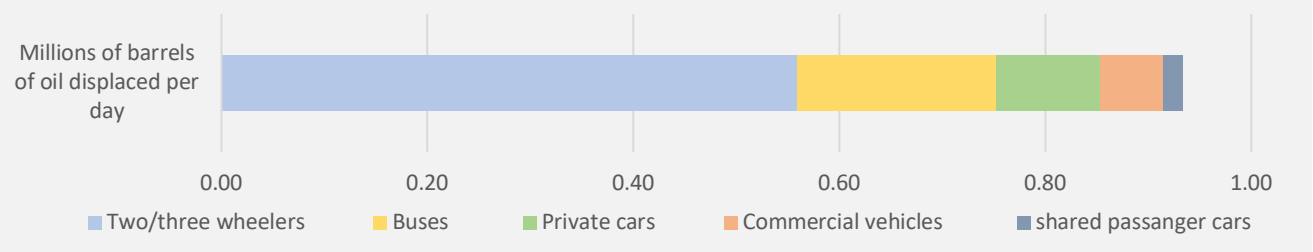

Fig. 1: Oil displaced by alternative vehicles (source: BNEF 2020)

Indirect climate benefits: greater accountability of the automobile and oil industries

The pandemic's economic fallout has caused the auto industry's sales to plummet; they are unlikely to return to pre-crisis levels for several years (BNEF, 2020). The emerging shift to less car-dependent streets is compounding this disruption. It has the potential to accelerate the movement away from oil, partly by making it easier to hold the automobile and oil industries accountable for the climate crisis. The auto industry serves as a "wing man" to the oil industry, much as utilities have protected the coal industry. While the oil industry faces well-organized and well-funded campaigns to hold it accountable, the North American auto industry does not face similar campaigns—either to hold it accountable for the climate crisis or to stop new infrastructure that expands car use and sprawl.

Sustained momentum to expand electrified active transport could increasingly constrain the oil industry's key ally. For example, automakers battling less car-centered streets may feel compelled to stake their legitimacy on fast-tracking their electrification. As the global EV industry advances rapidly but the North American industry lags, the latter risks losing the auto-sector jobs of the future. Yet, while most US automakers claim to be accelerating their shift to EVs during the COVID-19 crisis, in the absence of strong economic and policy incentives such as those in China, these automakers are actually still focusing on producing profitable SUVs (Loveday 2020). But whether they are building internal combustion or electric cars, these companies will certainly mount a vigorous defense of conventional road transportation in cities in the US and Canada.

The open streets movement, however, may already be drastically shifting public imaginations (Posaner et al. 2020). Similarly, the proliferation of micro-EVs could revolutionize our common understanding of what a "vehicle" is—at this opportune moment when battery costs are falling and electric mobility is being defined.

Implications for action in the US and Canada

Governments and civil society groups can support electrified active transportation to achieve the environmental and social benefits noted above. Here are some guiding recommendations:

- **Act now.** Actions taken and time and dollars invested this summer and fall, whether in emergency response or nurturing the seeds of change, will have impacts far beyond those achievable next year.

- **Emphasize the opportunities for electrified active transportation to serve the most vulnerable**. Focusing on equity is not a distraction from either climate change or progressive urbanist agendas. Governments should prioritize empowering and serving lower income communities. These are the places where virus deaths are concentrated, recession hardships greatest, and transportation options often fewest.

- **Build on new positive experiences with temporarily transformed streets to activate positive policy feedbacks.** New experiences with less car-dominated streets are already creating a potentially powerful constituency for limiting cars in Europe (Posaner et al. 2020). More limited changes in the US and Canada could do the same *if* accompanied by well-resourced organization to nurture those seeds and build coalitions across racial and income divides.

- **Be bold.** In a crisis, boldness itself is a best practice, while narrow, incremental policies are risky.

- **Make funding conditional on fundamental change and proof of equitable application.** Most cities that have yet to act in a serious way are constrained by car-centric political cultures, but may be moved by federal, provincial, or state funding with strings-attached (Wilson and Raktim 2020).

- **Include micro-EVs in both active transportation and EV support programs.** Electric cars are a flawed solution to the climate crisis. Governments and regulatory agencies should avoid trying to fit micro-EVs into an existing EV framework and instead take advantage of the technology's capacity to redefine both vehicle electrification and active transportation (because active transportation now need not be so "active"). Governments should support the supply of bicycles and micro-EVs where there are shortages.

- **Broaden and deepen civil society alliances to scale-up advocacy for less car-centered streets.** Urban policymakers and planning professionals are well-networked beyond the city level, but grassroot efforts are typically isolated city-by-city, lacking organizations that support the movement with resources and media capacity.[1] Potential allies are also on the sidelines; for example, unlike in Europe, in North America cycling groups focus on recreation, and EV advocates focus on cars.

- **End the common exclusion of micro-EVs and active transportation from pandemic recovery proposals and clean transportation research**. Micro-EV and active transportation measures have strong green jobs and emissions reductions benefits. In contrast to North America, in Europe the E-bike industry has placed on the table billions in EU funding for micro-EVs (CIE 2020). Green New Deal advocates can study or highlight the green jobs potential of multi-modal infrastructure and micro-EV manufacturing, the progressive potential of E-bike subsidies (relative to electric cars), and the potential challenges for auto-workers if cars become less important. Health groups that already focus on pollution and climate change should be supportive as well (Perrotta et al. 2017).

- **Encourage climate philanthropy to support networked grass-roots efforts.** Philanthropies can support coalition-building case studies, successful local media models, and continental-scale analyses of opportunity landscapes and target regions (to identify, for instance, cities on the cusp of joining the movement).

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[1] Exceptions include the California YIMBY network (C-YIMBY 2020), and the media produced by Street Films in New York (Street Films 2020).

- **Encourage groups seeking to reduce fossil fuel supply to expand their focus to the demand side**. Lowered oil demand now exerts market pressure on supply, but demand (and therefore supply) could dramatically rebound without efforts to keep a new generation of automobile infrastructure investments from locking in future emissions and car-centered power structures. Groups working on fossil fuel supply also have the resources, grassroots bases, and research assets that can fill crucial gaps in the assets of groups pushing for more people-centered streets.

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The views and opinions expressed in this Brief are those of the author and do not purport to reflect the opinions or views of the Cascade Institute, its researchers, funders, or affiliated institutions.

Citation Information

Strauch, Yonatan. 2020. “Active transportation with micro electric vehicles: Emergency COVID19 responses and the disrupted future of oil.” Inter-Systemic Cascades Brief #3, version 1.0, *Cascade Institute*: pp. 1-14.

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