

Executive Summary



Mobility, Technology and Safety: The Next 20 Years





Summary

This report was commissioned in 2021 by the National Safety Council (NSC) to understand the potential evolution of transportation technologies over the next 20 years and their implications for traffic safety in urban areas.

Recent history shows the value of such forward-looking analysis. Over the previous 20 years, waves of new technologies have disrupted urban transportation, from carshare and ride hail to e-scooters and bikeshare. Public officials (and many advocacy groups) were caught off guard by this unprecedented rate of technological change, and they were often unsure how to respond to the safety concerns that emerged. Preparing in advance for the next generation of transformative technology can save lives.


As we consider what the future of technology might bring, we must also address mobility's surge in roadway deaths. Traffic fatalities have spiked during the pandemic, with cities such as Austin and Portland setting new records. Despite the popularity of Vision Zero campaigns among elected officials, America's street safety crisis seems only to be growing worse.

In response, Congress took a crucial step toward reducing roadway deaths with its passage of the bipartisan infrastructure law (IIJA), which boosted safety-oriented spending through novel initiatives like Safe Roads for All. The Department of Transportation has also made critical progress, including issuing the groundbreaking National Roadway Safety Strategy, which for the first time committed the federal government to a goal of zero roadway deaths.


This report is intended to supplement and add momentum to these ongoing federal efforts.

The structure of the report and its principal findings are summarized on the next page.

Allstate has been promoting safe driving since the company's earliest days. As personal transportation evolves, so does our advocacy. Emerging trends and technologies compel all of us to think more broadly and boldly about what road safety is and how to best advocate for it. This report does just that by imagining the future of mobility and assessing its safety implications.



The National Safety Council is America's leading nonprofit safety advocate – and has been for over 100 years. As a mission-based organization, we work to eliminate the leading causes of preventable death and injury, focusing our efforts on the workplace, roadway and impairment. We create a culture of safety to not only keep people safer at work, but also beyond the workplace so they can live their fullest lives.





Scope and Design

The lead author for this report was David Zipper, a Visiting Fellow at the Harvard Kennedy School with a background in both technology and local government, and the author of over 75 articles about cities, transportation and technology. Research included interviews with over 25 leaders from academia, the private sector, city and federal government agencies, and street safety nonprofit organizations.

The report's scope was limited to urban surface transportation technology over the next 20 years. Potential safety issues arising from the movement of people and goods on streets, sidewalks, and dedicated lanes were all included within the analysis; aviation and rural concerns were not.

The full report is broken into four sections (this executive summary captures key conclusions):

Section 1: History of Mobility and Safety This section draws lessons from 200 years of urban mobility technology in the United States, examining patterns of safety challenges and regulatory issues spurred by the emergence of new urban transportation form factors and technical capabilities.

Section 2: Trends of the Next Two Decades This section offers an overview of technological, regulatory and business forces that will guide the development and deployment of new urban mobility technologies in the future.

Section 3: Form Factor Evolution This section describes the potential evolution of existing urban mobility form factors (cars, bikes, transit, etc.) over the next 20 years, as well as the emergence of new ones. Likely safety challenges are highlighted throughout.

Section 4: Future Conflicts Among Street Users Bringing together the previous three sections, this concluding section offers a utopian and a dystopian vision of urban transportation and safety in 2040, and then examines specific tensions that could arise within general traffic lanes, sidewalks, curbs, dedicated lanes and parking lots, respectively.

A summary of interviewees and works cited is included in the full report.

Key Conclusions

1) Motor vehicles will remain the top source of street deaths

Cars and trucks are involved with the vast majority of traffic deaths in urban areas, including virtually all deaths among cyclists, pedestrians and scooter riders. The trend toward heavier, taller SUVs and trucks is an ominous one for street safety – particularly because those vehicles will grow even heavier with electric batteries (the Hummer EV weighs over 9,000 lbs, over 2,000 more than its gas-powered version). While new micromobility devices like super-fast e-bikes will bring risks, their light weight and slower speed make them comparatively benign.

The federal government has done virtually nothing to restrain the weight and height of cars and trucks. Overdue revisions to the New Car Assessment Program (NCAP) and the Federal Motor Vehicle Safety Standards (FMVSS) that incorporate Vulnerable Road User (VRU) safety could help. VRUs are in the most need of protection, not only because they are physically exposed to motor vehicles, but also because automakers are not incentivized to protect people who are not buying their products (a longstanding challenge to street safety in the United States). Education programs targeting drivers may make sense, but those targeting VRUs risk blaming the victim.

Safety advocates should push for auto design improvements that enhance VRUs' safety, as well as stronger enforcement measures against habitually reckless drivers.

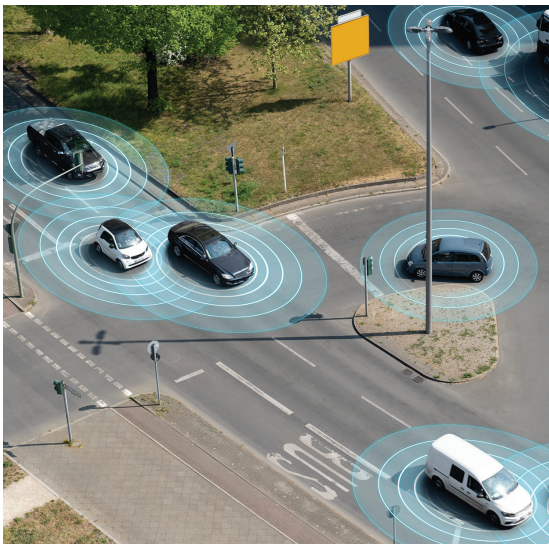
2) Widespread Advanced Driver Assistance Systems should be expected - but not autonomous vehicles

Despite corporate predictions, no one interviewed for this report expects autonomous cars and trucks to be widely available in American cities during the next 20 years. Urban environments contain too many “edge cases” – imagine a woman shooing birds away with a broom – that machine learning cannot reliably handle.

One potential way to hasten autonomous vehicle (AV) deployment would be to simplify the urban landscape by physically restricting pedestrians and cyclists from streets dedicated to cars. Such efforts bring to mind the creation of “jaywalking” as a crime 100 years ago. They should be resisted.

Although AVs have dominated popular discussion, Advanced Driver Assistance Systems (ADAS) are more likely to transform urban safety discussions in the coming years. As ADAS improves and becomes standard across American automobiles, features like automatic braking and pedestrian detection will save lives (the average American car is now 12 years old, suggesting that vehicles without ADAS will remain on our roads for many years to come – and underscoring the importance of protective urban infrastructure).

Supporting ADAS development through thoughtful NCAP and FMVSS standards should be a high priority for safety advocates; catalyzing AVs’ arrival should not.



3) Climate change will fundamentally alter urban transportation

As climate change worsens, “extreme” events like forest fires, hurricanes and blizzards will become more frequent. Evacuations will strain transportation networks, particularly if urban populations shift toward electric vehicles that require time to charge. Cities will also need to build resilience into vulnerable urban infrastructure (like the New York City subway) and ensure that residents without a car are able to evacuate safely.

Politically, climate change will fuel additional skepticism about the role of urban automobiles (transportation is the largest source of emissions in the United States). More cities may follow examples like central Oslo or New York City’s 14th Street, declaring streets and even entire neighborhoods to be car-free. Many other cities will likely take more incremental steps, like increasing the cost of parking.

Anticipating the growing saliency of climate change approaches, safety advocates should highlight specific steps that cities can take to reduce both emissions and traffic fatalities (such as building protected bike lanes or providing late night transit service to encourage mode shift away from driving).



4) Denser neighborhoods will experience faster change in urban transportation technology

Dense neighborhoods induce more short trips, and they are likelier to have high-quality networks of bike lanes and sidewalks. As a result, innovations such as trikes and sidewalk robots will scale faster in denser cities and neighborhoods (which, notably, could be in the suburbs or small towns) than in more sparsely developed communities. Parcel delivery, in particular, becomes more feasible on an e-cargo bike or drone in a dense neighborhood. Congestion at the curb could become a growing problem in such areas.

Cities are already experimenting with technologies that could improve management of on-street parking and loading zones. Safety advocates, states and the federal government should support these pilots, publicize encouraging results and codify best practices (and avoid preemptive laws that stymie the learning process).

5) Parcel delivery is poised for disruption

While ride hail and micromobility have reshaped passenger transportation across many American cities during the past 20 years, the surge in online shopping (and the growing antipathy toward delivery vans) could lead last-mile parcel delivery to be similarly upended in the coming two decades.

Especially if cities move to charge companies for curb access (or ban delivery vans outright, as has happened in Europe), technologies like cargo bikes, street delivery drones and sidewalk robots could become commonplace – especially in dense cities and neighborhoods. These new devices risk overwhelming existing street and sidewalk infrastructure.

Safety advocates should work with city and state officials to ensure that business interests are not prioritized over the safety of urban residents.

6) Urban vehicles should be regulated by size and speed (rather than form factor) to encourage safety as well as innovation

In the coming years, vehicles like 35-mph e-bikes and three-wheeled “trikes” will blur the lines between categories like “car,” “motorcycle” and “bicycle.” Rather than constantly revise their definitions, regulators and cities could set parameters based on weight and size for vehicles permitted in a given lane (such as a bike lane or arterial). As long as a vehicle is within those parameters, it can be assumed to be legal.

Such an approach would encourage innovation (since the private sector would know ex ante how a future device would be regulated) and enhance safety by reducing disparities in size and speed in the event of a collision.

Pivoting away from form factor regulation will raise a host of implementation challenges for local and state officials. Safety advocates should serve as a guide, sharing best practices, offering legislative templates and holding training sessions.





7) Street rules should not be made to promote or enable a particular technology

American cities made catastrophic mistakes in the early 20th century when they shrunk sidewalks, created the new crime of “jaywalking” and disinvested in transit – all in order to ensure automobiles could travel quickly throughout urban areas. Many city leaders today recognize the costs of those blunders and are searching for ways to mitigate them.

The history of early automobiles offers a warning about the risks of reshaping policy or infrastructure to enable new technologies, whether it be providing scarce curb space to public EV charging or restricting pedestrian access to offer autonomous vehicles simplified urban environments.

Should conflicts emerge between the interests of street users and technology companies (such as sidewalk drones that jeopardize the access of those using wheelchairs), advocates and policymakers should stand with the people whose mobility is under threat.

8) Cities should be able to manage their streets and sidewalks

Since urban mobility technologies will generally be used within city or county boundaries, local officials should determine whether and how those technologies are regulated. But during the last 20 years, companies have successfully lobbied state legislators to block cities from regulating transportation, such as ride hail vehicles and sidewalk drones. Such preemption efforts constrain cities’ ability to protect residents, particularly when business interests come into conflict with public goals. As an example, Illinois is one of the few states where cities can still regulate ride hail themselves. That power enabled the city of Chicago to impose a fee on daytime trips that occur downtown, where transit access is readily available.

Because preemption often worsens safety risks, safety advocates should push back against proposals that curtail cities’ ability to manage their right of way.



9) Revisions to infrastructure and policy will be essential to enhance safety even in the best case of technological improvement

Although exciting new mobility technologies attract media attention and investment dollars, many of the most compelling opportunities to improve urban street safety lie in mundane policy approaches like extending sidewalks, building protected bike lanes and imposing road diets. To reduce road deaths, we need better policies and street designs as well as innovative technology products like ADAS.

Private companies will ensure that government officials recognize the potential safety benefits of their products, but infrastructure and policy solutions like slow lanes may get less attention. Safety advocates should focus on those solutions that would not otherwise rise to the fore during safety discussions.

10) Protection of Vulnerable Road Users will support equity goals

In urban areas nationwide, low-income and minority households are less likely to have regular access to an automobile and are more likely to die as a pedestrian or cyclist in a crash.

By focusing on protecting Vulnerable Road Users (for whom motor vehicles are the greatest threat), safety advocates can support goals of providing safe mobility across disadvantaged communities.





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