Smart Growth America
Improving lives by improving communities

National Complete Streets Coalition

DANGEROUS BY DESIGN 2022

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The National Complete Streets Coalition, a program of Smart Growth America, is a non-profit, non-partisan alliance of public interest organizations and transportation professionals committed to the development and implementation of Complete Streets policies and practices. A nationwide movement launched by the Coalition in 2004, Complete Streets is the integration of people and place in the planning, design, construction, operation, and maintenance of transportation networks. www.completestreets.org

National Complete Streets Coalition

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Table of contents

Note: We are honored to include four special topical supplements from **Strong Towns** (pp. 13-14), **the National Assocation of City Transportation Officials** (pp. 19-21), **America Walks** (pp. 24-25), and **The Fines and Fees Justice Center** (pp. 37-38). Authors are noted with each insert.

This crisis will continue to get worse until those with the power finally make *safety for everyone who uses our roads* the top priority.

Photo by Steve Davis / Smart Growth America

I. Summary

Photo by Steve Davis / Smart Growth America

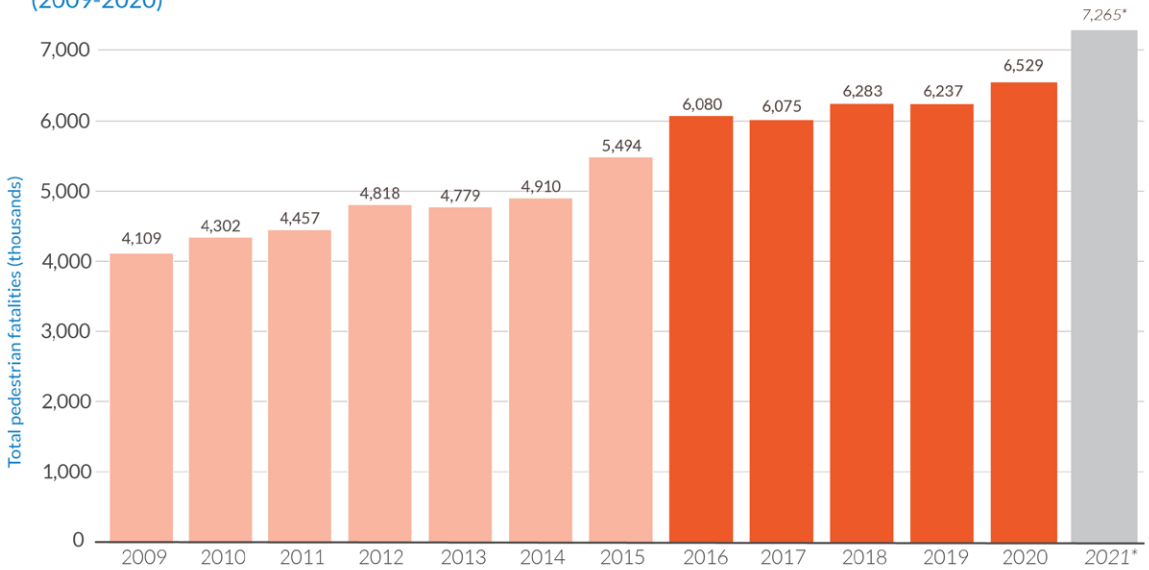
While the unprecedented COVID-19 pandemic upended many aspects of daily life, including how people get around, one terrible, long-term trend was unchanged: **the alarming increase in people being struck and killed while walking**.

The number of people struck and killed while walking has been steadily increasing since 2009, reaching another new high in 2020 and likely a historic one in 2021.

More than 6,500 people— nearly 18 per day— were struck and killed while walking in 2020, a 4.7 percent increase over 2019, even as driving decreased overall because of the pandemic's unprecedented disruptions to travel behavior.[1]

Pedestrian fatalities are up ***62 percent*** *since they began steadily rising in 2009 following years of improvement.*

U.S. pedestrian fatalities
(2009-2020)



**This estimate for 2021 is produced by applying the 11.5 percent increase for 2021 projected by the Governors Highway Safety Administration (GHSA) to the federal FARS data for 2020 used in this report.*

The pandemic magnified what we've always known: Our nation's streets are **dangerous by design**, designed primarily to move cars quickly at the expense of keeping everyone safe. The result in 2020 and 2021 was a significant increase in all traffic fatalities, even with less driving overall.

2020's record high also marks an astonishing **62 percent increase since 2009**, the year these deaths first started increasing after years of improvement. In that time period drivers struck and killed a total of **64,073** people while walking. As with past editions, this report ranks the most deadly states and metro areas, though in a new way. *See section IV for the state/metro rankings.*

This problem is growing even worse

While Dangerous by Design uses federal data that is complete only through the end of 2020, preliminary data for 2021 is jaw-dropping. According to early estimates from the Governors Highway Safety Association (GHSA) released in May 2022, 7,485 people walking were struck and killed in 2021, **which would be the highest number in 40 years and one of the biggest single-year jumps in decades.**[2] While the official 2021 number from the federal data set used in this report is likely to differ from GHSA's preliminary estimates, we expect the increase for 2021 to be between 11 and 13 percent higher than the 6,529 deaths recorded in 2020, a historic jump.

Our new approach to assessing pedestrian danger

The impact of the pandemic on the data typically used in this report, coupled with significantly higher fatality rates during the pandemic, required a new approach to assessing pedestrian danger, which also allowed us to address the unique impacts of the pandemic. One effect is that the rankings in this edition are not directly comparable to previous editions of Dangerous by Design. *See section III for more on how we changed our approach and the effect on the rankings.*

Photo by Steve Davis / Smart Growth America

"Walking" and inclusive language

The data in this report specifically examines only the deaths of people walking and tends to use the shorthand of "pedestrians" for this reason. The federal government groups people using assisted mobility devices in the same category with things like skateboards, making it challenging to isolate the impact on people with disabilities. We fervently believe that making our streets safer for everyone absolutely means for people of all ages and abilities, whether walking, biking, or using assistive devices like wheelchairs or walkers. We continue to look for ways to better incorporate data that includes the danger that people with disabilities face on our roadways. Across the board, better data are required to assess the impact of current infrastructure. *See our data recommendations in section II.*

How design produces danger

Roadway design has a strong impact on how people drive, often more influential on driver behavior than the posted speed limit. While speed limit signs may only be posted every few blocks or miles, the road's design is ever-present, continually providing guidance and visual cues. While there are myriad factors involved in these deaths, our streets are **dangerous by design**, designed to move many cars quickly at the expense of safety for everyone who uses them.

How did this become so commonplace? In the 1950s, we started building a system of separated highways to move vehicles quickly over long distances, removing intersections and other points of conflict, development, and pedestrians because speed was not compatible with the complexity of cities and towns. But somewhere along the way, we started applying this same high-speed highway design within complex urban environments, while keeping all of the conflicts and complexity in place, and the result has been unmitigated carnage.

When roads are wide and straight, lanes are wide and plentiful, and intersections are infrequent or non-signalized, people feel safe and comfortable driving faster—even when the speed limit is low—as the visuals of Union Avenue in **Memphis, TN** illustrate on the following two pages.

Higher speeds make conflict harder to spot and avoid and crashes more deadly. The higher the speed, the narrower the driver's field of vision, making it harder to see and anticipate potential problems by responding and slowing down or stopping the vehicle. And the higher the speed, any crashes that do occur are far more likely to lead to serious injury or death.

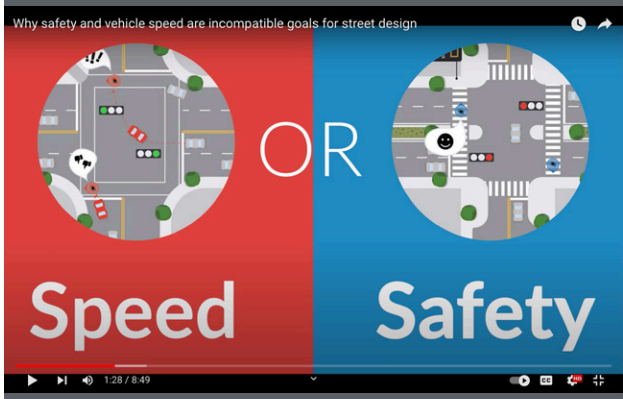
We send drivers two conflicting messages with low speed limits but designs that nudge them toward high speeds. And then, when drivers fail and strike someone walking or crossing the street, we rush to blame the driver or person walking in spite of the fact that the transportation agency should be held responsible for their design choices.

Read an insert from the National Association of City Transportation Officials (NACTO) on page 19-21 for more on safer street designs.

WATCH: Visualizing safety vs speed

For a richer, visual explanation of how street design impacts the speed of vehicles and why we have to choose between **speed or safety**, do not miss this video from Smart Growth America and the National Complete Streets Coalition explaining why prioritizing both safety and keeping cars moving quickly—outside of limited access roads like interstate and freeways—is impossible.

smartgrowthamerica.org/safety-vs-speed



Typical arterial roadway design

The design of Union Ave., located in the heart of **Memphis, TN is typical of the most dangerous roads** for people on foot within metro areas: **60 percent of all 2020 deaths occurred on non-interstate arterial highways like this one**.[a] (They are most often designed and controlled by the state DOT, rather than the city or locality.) At right are five ways that speed is prioritized on Union Ave. at the expense of safety, and the contradictory messages sent to drivers: *expect to see and yield to people outside of vehicles*, and *expect to travel fast all the time.*

Even the signalized intersections on Union near here don't always have crosswalks on all sides.

a Pedestrian Traffic Fatalities by State: 2021 Preliminary Data. Governors Highway Safety Association, 2022. www.ghsa.org/resources/Pedestrians22

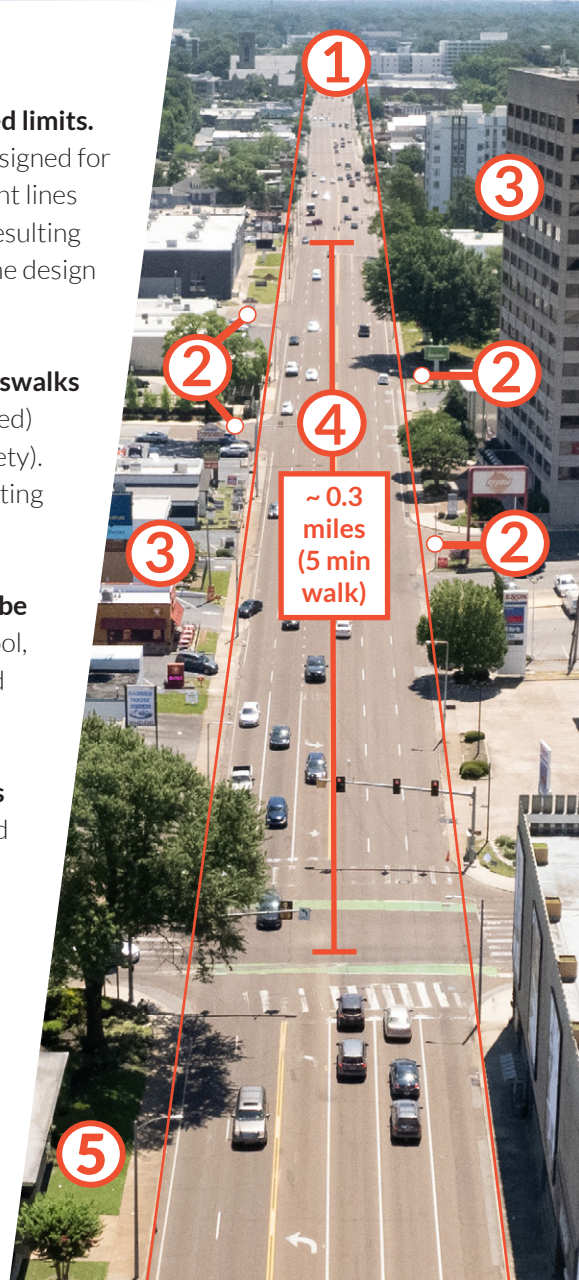
1. **Design can be more influential on behavior than speed limits.** Though the limit ranges from 25-35 mph, this road is designed for much higher speeds. It's long and straight, with clear sight lines and five travel lanes for maximum vehicle throughput, resulting in higher speeds. And though the speed limit changes, the design never does.

2. **Other streets regularly intersect Union, but lack crosswalks or signals,** because keeping vehicles from stopping (speed) is prioritized ahead of providing frequent crossings (safety). There are also numerous curb cuts and driveways, resulting in dozens of intersections for people walking.

3. **Numerous destinations means that more people will be present.** There are grocery stores, a college, a high school, a hospital, shops and stores, and hundreds of homes and higher density apartment buildings.

4. **Marked, signalized crosswalks are located as much as 0.4 miles apart**, potentially requiring a 10-minute round trip to reach a destination that's directly across the street. Multiple bus stops are also located in between these distant signalized crosswalks.

5. **Sidewalks exist, but as an afterthought.** They are narrow with numerous curb cuts for turns and frequent obstructions, and no buffer between people walking and vehicles moving at high speeds.



Photos by Forever Ready Productions

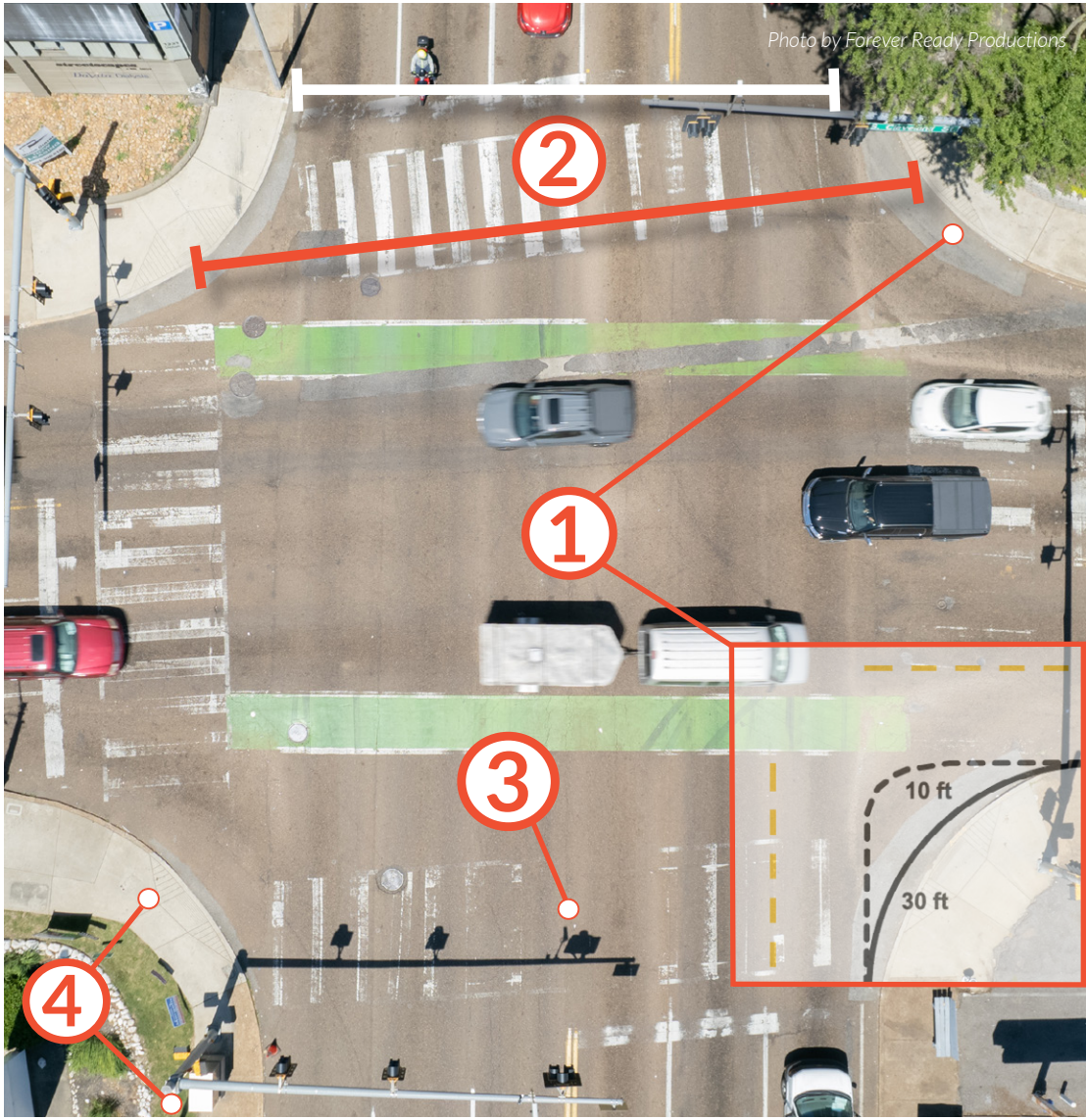
Most fatalities on Union Avenue occur at intersections

1. **All four gently rounded corners allow right turns at high speeds**, precisely when pedestrians have the right-of-way. Sharper turns require drivers to slow down and turn more slowly. In fact, a recent study shows that a 30-foot turning radius vs. a 10-foot radius will probably result in 30 percent more pedestrian crashes.[a] (See inset at bottom right.)

2. **These sweeping corners—which exist for speed rather than safety—increase the distance required to cross on foot**, putting people in harm's way for more time, or making it impossible to cross in time for the young, old, or disabled.

3. **Existing crosswalks are faded or invisible**. When signalized intersections are far apart, as they are on Union, it's even more vital that they be highly visible.

4. **Sidewalks also have obstructions (utility poles, boxes, etc.)** and lack rubberized or high-visibility markings to help all people safely cross. For people in wheelchairs or pushing strollers, sidewalks with obstructions can force them into the street to pass.



a State Smart Transportation Institute. "Tight corners save lives." https://ssti.us/2022/06/13/tight-corners-save-lives/

The pandemic exacerbated existing disparities

Although everyone is affected by dangerous street design in some way, not everyone shares this burden equally. Despite other changes, the pandemic perpetuated existing disparities in who is being killed: Black and Native Americans. Older adults and people walking in low-income neighborhoods were also struck and killed at much higher rates than other populations in 2020, as with past years.

The conditions people face when they want to walk or bike—whether to work or for recreation—are not the same for all Americans. Low-income communities are significantly less likely to have access to parks and other opportunities for safe recreational walking and are less likely to have sidewalks, marked crosswalks, and street design to support safer, slower speeds.[3,4] Lower-income neighborhoods are also much more likely to contain major arterial roads built for high speeds and higher traffic volumes at intersections, exacerbating dangerous conditions for people walking.[5] *Read more about the inequality of this deadly epidemic in section V.*

The pandemic had profound impacts on travel behavior that are likely here to stay

One of the most noticeable changes during the pandemic's onset was the decrease in vehicle traffic across America's cities. In many communities, the air became cleaner and quieter, and many cities temporarily returned space to pedestrians and cyclists. Yet many places saw a significant spike in deaths, even as driving dropped precipitously. This drop in driving likely contributed.[6]

Photos by Steve Davis / Smart Growth America

Overall in 2020, **all traffic fatalities were up 6.8 percent** (including pedestrians, drivers, and others using our streets). This increase is even more notable in light of the significant drop in driving.[7] Our traffic deaths *per mile driven* increased by 21 percent compared to the 2019 rate, reaching the highest death rate per mile driven since 2007.

Seeing driving go down and deaths go up should call into question the long-held conventional wisdom among policymakers and transportation professionals that traffic fatalities are inextricably linked to the amount of driving, which is one of the reasons the GHSA and others have traditionally reported fatalities per mile driven. But during the large decrease in driving during COVID, congestion evaporated, speeds increased dramatically, and more people were killed.

It was incredibly ironic: **Congestion, something transportation agencies spend billions to eliminate, seems to have been slowing traffic and reducing deadly crashes.**[8] According to recent studies, there was a significant increase in speeding and even reckless driving during the pandemic, contributing to the severity of crashes and the number of lives lost on our roads during 2020.[9]

The US is an outlier when it comes to these trends. It's also worth noting that, although driving went down almost everywhere around the world during the pandemic, the US was one of the only countries in the developed world that saw an increase in the deaths of people walking when that dip in driving occurred. Most peer countries have seen continuous *drops* in fatality rates over the past three decades. However, the US has had much higher fatality rates *and* the number of deaths has increased since 2009.[10,11]

A study from the International Transport Forum found that the US was one of the only three of their 63 member countries that saw an increase in fatalities during the pandemic.[12] The other two, Ireland and Switzerland, saw smaller increases and started from a much lower baseline.

Seeing driving go down while deaths went up should call into question the long-held belief that traffic fatalities are inextricably linked to the amount of driving.

More people walked more in 2020, but that didn't lead to more deaths in all metro areas

While some metro areas did get marginally less deadly in 2020, **pedestrian deaths increased overall in 67 of the 100 largest metro areas and 33 states** when compared to the four years prior to the pandemic. There are many lessons that we can draw from both groups.

The pandemic unleashed significant untapped demand for more walking in nearly every community across the country. New, first-time analysis in this year's report using information from a company called **StreetLight Data**—based on anonymized information from cell phones and mobile devices—shows that walking trips (for all purposes) increased during the pandemic in every state and metro area we analyzed, regardless of climate or geography.

But for the most part, the metro areas that were on average already more deadly and where a lower share of people walked to work before the pandemic are the ones where death rates increased the most. Walking trips also increased the most in these metro areas, indicating significant untapped demand for more walking in these places. Over in the metro areas that were less deadly before the pandemic—also where higher shares of people were walking to work on average—death rates decreased or only increased slightly during the pandemic on average, even with the increase in walking.

This underscores the fact that these tragedies are preventable. More walking does not have to equal more deaths, if streets are designed with safety as the top priority. *Read Section VI for more about how we used StreetLight Data to analyze changes in walking and the impact on metro areas.*

What are we waiting for?

Too many agencies and decision makers with a hand in building our transportation system have been asleep at the switch, believing (or just hoping) that safety will improve while only making incremental changes to a deadly status quo. The result will continue to be ever-increasing and record deaths of people walking and rolling, and we'll continue in this "Groundhog Day" loop until those with the power to do so take an active role in making safety for all people the top priority of every dollar spent. To do so, they will have to unwind the deeply embedded, invisible yet powerful emphasis on speed, which is completely incompatible with safety.

Photos by Steve Davis / Smart Growth America

Traffic engineers do not share your values

By Charles Marohn, Founder, Strong Towns

When American engineers design streets, they start the process using the values of the engineering profession.

The engineer doesn't stop to consider that their values might be questioned by others, that their core values might, in fact, be rejected by most of society. It doesn't cross their minds—not because they are immoral—but because they don't recognize their values as values.

For the engineer, it's just the way things are done. It's standard practice. When an engineer sits down to design a street, they begin the process with the design speed. I've been in countless meetings where engineers presented design plans and even preliminary studies for a street project. Never, and I mean never, was any elected official or any member of the public asked to weigh in on the design speed.

Never once did I hear one of my fellow professional engineers say, "So, what are you trying to accomplish with this street in terms of speed?" No. The design speed is solely the purview of the engineering professional. Why?

Choosing a design speed is, by its nature, an application of core values. When we pick a speed, we are selecting among different, competing priorities. Is it more important that peak traffic move quickly or is it more important to maximize the development potential of the street? Do we compromise the safety of people crossing on foot to obtain a higher automobile speed, or do we reduce speeds in order to improve safety for people outside of a vehicle?

These are policy decisions. Shouldn't public officials be given the broad range of options and be allowed to weigh them against each other? Of course they should! So, why aren't they?

Many of my engineering colleagues will reply that they, the engineers who design streets, don't control the speed at which people drive and that speeding is an enforcement issue. Such an assertion should be professional malpractice. It selectively denies both what engineers know and how they act on that knowledge. For example, professional engineers understand how to design for high speeds. When building a high-speed roadway, the engineer will design wider lanes, more sweeping curves, wider recovery areas and broader clear zones than they will on lower-speed roadways. There is a clear design objective

(high speed) and a professional understanding of how to achieve it safely.

There is rarely any acknowledgement of the opposite, however: **that slow traffic speeds can be obtained by narrowing lanes, creating tighter curves, and reducing or eliminating clear zones**. High speeds are a design issue, but low speeds are an enforcement issue. That's incoherent.

The other pushback often given by professional engineers for why they, and not public officials, should set the design speed is that non-professionals are not qualified to do so. In 2016, I wrote *"Engineers Should Not Design Streets,"* an article for which many of my fellow professionals accused me of being gratuitously provocative. I was not.

The design of streets begins with the establishment of priorities. It begins with an application of core values. Engineers generally lack the background, training, and understanding to make such a complex decision. Indeed, I think engineers have become uniquely unqualified to do so.

For local streets, setting the design speed is something that should be done only by policymakers and only after a broad and deep dialogue with the community about values and priorities. This is not a decision to be made through the myopic prism of one professional silo. It is too important for that.

If you are an elected official, demand that you and your elected colleagues set the design speed on your streets. Not the enforcement speed (that is often set by state law and can be difficult to get a waiver for) but the speed at which 85 percent of traffic will naturally flow at or below. You have this power. Exercise it.

If you are an engineering professional, recognize that establishing the design speed for a particular street is something you have an obligation to discuss with, at a minimum, the elected officials in the community.

You must give them options and inform them of the full range of alternatives and tradeoffs. Humble yourself to serve their priorities and resist the temptation to bully them into following yours.

If you are a member of the public concerned about the health and safety of your community, demand that the design speed of your streets be part of the conversation. You have all the expertise you need to be part of a dialogue about core values. And you have the right; don't let anyone take it from you. Setting these priorities—imposing a set of values—should not be the engineer's responsibility. It should be the responsibility of the entire community.

(Strong Towns adapted this supplement from an essay in the book Confessions of a Recovering Engineer, by Charles Marohn. Learn more at StrongTowns.org)

STRONG TOWNS

II. Addressing the problem: What can be done?

Photo courtesy of Scott Crawford

Improving safety isn't a mystery, but inertia is hard to overcome

We know many of the factors responsible for these deaths, but we choose to continue designing and operating streets that prioritize the speedy movement of vehicles at the expense of safety for all people who use our streets. It's impossible to prioritize both safety and keeping cars moving quickly outside of limited access roads like interstate and freeways. On every other street in mixed-use environments where there are turns, curb cuts, and people walking, biking, or otherwise getting around outside of a car, safety and speed are fundamentally incompatible goals. We have a choice to make, and unfortunately for more than 55,000 Americans who were killed while walking over the last ten years, their safety has not been the top priority.

Changing these depressing outcomes requires a transportation paradigm shift within nearly every aspect of our current approach to designing, building, and operating our streets and roads, an approach that is deeply embedded in our policies, practices, standards, manuals, and professional cultures. Fundamental components of accepted street design actively put people at risk and increase the likelihood that people walking and moving actively using assistive devices such as wheelchairs, walkers, sight canes, prosthetics, and scooters will continue to pay the—often deadly—price. These practices also can set drivers up to fail by making mistakes more common and the consequences more deadly, even when following the rules.

Unlike last year, there has since been a massive new infusion of federal transportation spending through 2021's infrastructure law, the Infrastructure Investment and Jobs Act (IIJA).[13] This new law has been touted as a way to improve safety, but it merely allows more spending on safety. This cuts both ways, as this flexibility also allows less spending on safety, at the discretion of state and local leaders.

The following pages include a wide range of recommendations, from addressing the dangers of vehicles that are getting larger and heavier, to the measures and models that lead states to build unsafe streets in the first place, spanning national actions USDOT should take, all the way down to practical steps that cities, towns, and residents can take to make safety the top goal.

DATA

We can't properly evaluate safety without better, more comprehensive and timely data.

The only national dataset on traffic fatalities, the Fatality Analysis Reporting System (FARS), has numerous limitations. First, the 10-16 month lag in data makes it impossible to evaluate current or even very recent conditions. In a typical year, FARS data for the previous year is released sometime in the fall of the following year. This year, 2020 data took until April of 2022 to be released. Second, FARS data also fails to properly account for fatalities involving people with disabilities. While the National Highway Traffic Safety Administration recently made some improvements here, wheelchair and scooter users are still inappropriately grouped with road users like skateboarders and roller skaters. It's incredibly hard to evaluate safety with data that are never current and which fail to capture the full picture of who is harmed, where, and how. Local crash reporting that feeds into FARS has major issues too, such as a significant share of fatalities without race or ethnicity recorded, making it difficult to evaluate disparities with who is at greatest risk.

The pandemic also showed that we need better data on walking trips overall.

Transportation agencies focus almost exclusively on trips to work. But the work trip is a small minority of trips—even more so since COVID-19. Collecting comprehensive data on walking (similar to data from StreetLight Data we tap in this report) would help us measure the extent to which pedestrians are exposed to traffic danger. We can't say we care about a group of travelers that aren't counted.

FEDERAL & CONGRESS

Federal agencies must lead and use every tool at their disposal to improve safety and remove barriers to safety—especially those for which they are responsible.

First, USDOT should adopt the position that safety and speed are incompatible goals in cities, towns, villages and anywhere with many conflict points and vulnerable users; and they must stop allowing transportation agencies to claim safety benefits from congestion reduction projects because higher speeds on surface streets lead to more crashes and more deaths. Nor should USDOT use its "value of time" guidance to allow higher vehicle speeds to be credited as travel time savings, especially while failing to quantify the negative impacts on safety or increased time commuting for those traveling outside of a vehicle.

Second, NHTSA made progress by finally including pedestrian safety in their New Car Assessment Program proposed rule. However, additional improvements should be made to ensure that vehicle design does not impede direct vision of people in front of the car and incorporate pedestrian survivability into the ratings.

Third, FHWA should update design standards, like those in the Manual on Uniform Traffic Control Devices (MUTCD), to stop prioritizing vehicle speed over safety. Also, FHWA can release stronger clarifying enforcement on federal rules like those on the protection of nonmotorized transportation traffic (23 USC 109(m)).

USDOT should steer more funding toward improving safety, and provide transparent reporting on state spending.
USDOT must prioritize safety with the $200 billion in discretionary competitive grants that they control from the the Infrastructure Investment and Jobs Act (IIJA). And then USDOT should steer the funding that goes out to states and metropolitan planning organizations to safety too. They could do this by monitoring and reporting on how much state funding is spent on improving safety for vulnerable users. And when states go through the required process of setting annual targets for improving safety, USDOT should use their bully pulpit to praise the states that are setting strong targets and meeting them, and they should point out the states that are taking federal taxpayers' money and setting targets for more people to die. Lastly, to make sure the local projects funded by new programs—like the Complete Streets set-aside within the Metropolitan Planning Program—contribute to reducing pedestrian fatalities, FHWA should include the best practices of a Complete Streets approach, including how to build equity, implementation, and other key tenets into their plans.

Congress should fully fund all programs intended for combating the rising rates of pedestrian fatalities.
The Healthy Streets Program and the Active Transportation Infrastructure Investment Program were created by the IIJA for protecting pedestrians, but these grant programs have so far remained unfunded by Congressional appropriators, so localities cannot take advantage of them. Congress should have made safety, and not state flexibility, the priority in the IIJA. Until they revisit the transportation program, they should at the very least fully fund these programs and others like RAISE that support safety improvements. If Congress truly cares about safety, they will not wait five more years until the next transportation authorization is due to make changes to the federal transportation program as a whole to ensure there is no flexibility to undercut or underfund clearly needed safety improvements.

In addition, **Congress should enable stronger federal action by directing USDOT and FHWA to release stronger rules and guidance on protecting vulnerable road users.**

States must make safety the top priority governing all street design decisions.

Instead of prioritizing moving vehicles faster in a one-size-fits-all approach to nearly every type of road, states should prioritize safe access to destinations for people walking on streets in developed areas, whether big urban areas or rural villages. This means the default approach should be building good, protected sidewalks and paths, and slowing traffic down to speeds that are appropriate for the inherently frenetic environment in busy corridors. (And prioritizing throughput only on limited access or separated highways.) It also means working with local land-use authorities to better connect communities and shorten the distances between key destinations. With walking trip rates increasing, the pandemic uncovered a massive unmet demand for walking for all purposes, including transportation. Many states need to change their mindset to treat walking and biking as important modes for everyday transportation, not merely leisure activities.

States must use the enormous freedom and flexibility of federal highway funds to prioritize safety.

State DOTs tend to fund safety projects with small, safety-specific programs while spending their remaining billions of federal highway dollars on roadway projects that increase vehicle speed and undermine their safety-focused spending. This is counterproductive. Safety is not an add-on feature or only the purview of other smaller programs. A real commitment to safety over speed means using every available dollar to fund safety projects like traffic calming, slower road design, and pedestrian infrastructure. It does not mean just tacking pedestrian facilities onto otherwise dangerous high-speed roads. The flexibility given to states means the responsibility for safety improvements and the accountability for the safety performance of their transportation system falls to them.

Cities and towns can lead the way on prioritizing safety, and they should pressure their states to follow suit.

First, one notable change in the 2021 infrastructure law: For federally funded projects, cities are allowed to adopt and use safer street design guidelines approved by the FHWA, such as those from the National Association of City Transportation Officials (NACTO), even if a state has prohibited cities from doing so. The American Association of State Highway and Transportation Officials (AASHTO) also provides newer guidance on street designs for bicyclists and pedestrians, which can be used by cities or states.

Second, cities should adopt and implement their own Complete Streets policies and NACTO design guidance to prioritize the safety of all road users and set safe speed limits on their roadways. Safety investments should be targeted in the most deadly places—for instance, low-income neighborhoods and communities of color—where people are more likely to be struck and killed.

Finally, local and regional agencies must consider the impacts of land use on pedestrian safety, namely the requirements that homes be placed far from jobs, groceries, retail, banks and other essentials. Land use and zoning rules should prioritize development patterns that make it possible for more people to live closer to essential goods and services.

Photo by Forever Ready Productions

How to redesign your city's most dangerous streets to save the most lives

By Alex Engel and Kate Fillin-Yeh, National Association of City Transportation Officials

Far too many people walking, biking, and waiting for the bus die on North America's streets. They don't have to. Proven tools—from safer speed limit setting to safer street designs—have proven to save lives, and can quickly stem America's traffic safety crisis. Here's how.

(1) Analyze where the worst streets are and who needs to be in the room for change.

While nearly every street in the U.S. could be designed to be safer, by far the most dangerous streets are the big, fast, wide streets designed for cars to run at expressway speeds through busy cities and towns. Transportation engineers call these streets "arterials," but these car-focused streets are also where people live, work, go to school and shop.

In urban areas, arterials make up 15% of all roads but are where a whopping 67% of pedestrian deaths occur.

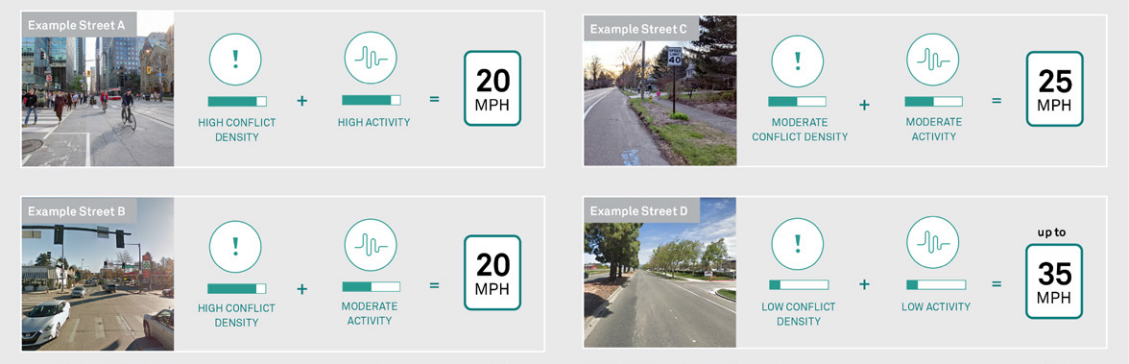
High Crash Network Map, from Hoboken, NJ's Vision Zero Action Plan. The city of 60,000 has not had a traffic death in more than four years.

These streets are disproportionately in lower-income communities of color, and are also disproportionately owned by states. In fact, over half of traffic fatalities in urban areas occur on state-owned roads, meaning that cities and states must work together (sometimes with an assist by advocates) to stem this deadly crisis.

By starting with the simple step of analyzing where the most dangerous streets in a city are (and overlaying it with analysis that fatality numbers by themselves may miss, like access to destinations and racial equity metrics), practitioners and policymakers gain two valuable tools. First, a ready-made prioritization list of where to save the most lives and improve equitable outcomes and, second, data-based evidence that can be presented to decision-makers to outline the case for redirecting resources where they are most needed.

(2) Reset speed limits to be compatible with human life.

Speed is the primary factor determining whether someone will live or die in a traffic crash. Yet, most speed limits in the United States are set using an oversimplified and outdated method: tracking 100 drivers going as fast as they want (without traffic) and setting the speed limit at the 15th-fastest driver.



Examples of speed limits set using conflict density and activity analyses, from NACTO City Limits. An increasing number of cities nationwide are tossing the 85th percentile and instead using modern approaches to speed limit setting.

This deeply flawed approach rewards the fastest drivers with increasingly-high speed limits incompatible with safety for everyone else (including other drivers). And because we build roads to support speeds above the posted speed limit, there will always be a substantial number of drivers traveling above the already-too-high speed limit, escalating speeds further.

Modern approaches, like NACTO's peer-reviewed City Limits, offer a contextual, holistic approach to speed limit setting using multiple methods. City Limits provides a framework for holistically setting safe speed limits in urban areas, in contrast to common yet outdated approaches that result in unsafe streets. Practitioners can reset speed limits using either recommended default speed limits on many streets, or set corridor speed limits on dangerous high-priority streets through a safe speed study.

Safer speed limits, even in the absence of other interventions, can improve safety. However, safer speed limits open up an even more powerful tool: street design. In many places, options for how a street can be configured are limited by the posted speed limit of that street. Setting a safer speed limit is the first step to a safer street design.

(3) Use proven street designs that save lives and make places more vibrant.

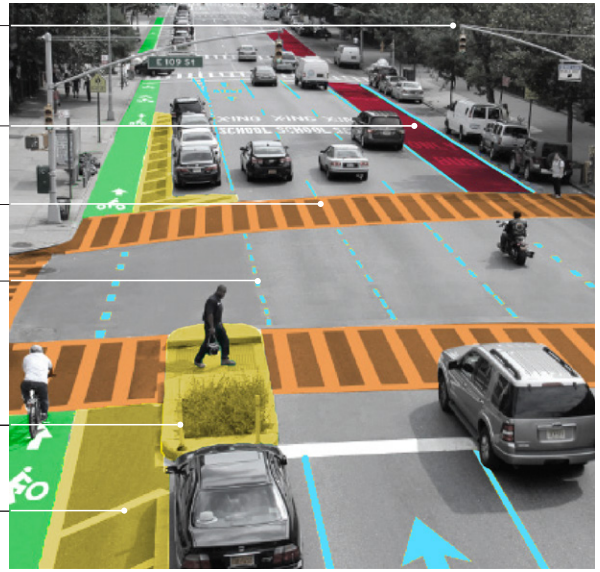
As cities across the world have found, there is a robust, proven toolbox of design approaches that they can use to make streets safer. These include: narrowing traffic lanes and turn radii, adding curb extensions, safety islands, and high-visibility crosswalks, ensuring sidewalks and bike networks are robust, connected, and accessible. In most places, these safety enhancements produce almost immediate results—cities see significant drops in fatalities and injuries in the places where they have redesigned the street.

Another street design strategy that improves safety includes prioritizing transit—the safest travel mode—with dedicated space for buses, safe places to walk to the bus stop, and comfortable places to wait for the bus.

Design guides like the *NACTO Urban Street Design Guide* and the *Ohio Department of Transportation's Multimodal Design Guide* offer safety-focused alternatives to the outdated design guides that still use highway engineering principles for streets shared with all users.

Manhattan
First and Second Avenues

BEFORE



Traffic Signals
Synchronize traffic signals to slower, safer speeds to discourage speeding

Bus Lane
Dedicate lane for buses

Crosswalks
Add crosswalks where pedestrians want to cross

Lane Designation
Clarify who belongs where; Use appropriate lane widths: 10 feet wide in urban areas, with 11-foot lanes (one per direction) on bus and truck routes

Pedestrian Safety Islands Shorten the crossing distance

Parking Protected / Buffered Bicyclist Lane
Provide greater separation between users reducing conflict

AFTER

Where the DOT has made changes, fatalities are down 34%.

(4) Document results, iterate, and share them out.

The country's streets will not be redesigned all at once. While the most dangerous streets should be prioritized, routine maintenance—repairing or repaving a street—provides an opportunity to evaluate and improve the design of the street under repair, stretching limited construction budgets.

Documenting the conditions on a street, including before-and-after photos, traffic speeds, the number of people walking and biking on a street, transit ridership, crashes, severe injuries, and fatalities (especially when compared to citywide or statewide trends), can build the case to engineers, residents, and officials alike for design interventions that make streets calmer, safer, and more pleasant places to be.

These evaluations can also be used to iterate and improve on a street's designs. Streets are always evolving to some degree. Successful street redesigns often attract more people walking, biking, and taking transit. Revisiting street redesigns helps accommodate these new users, and make previously-inhospitable environments even safer and more vibrant.

- *NACTO City Limits Guide:* https://nacto.org/safespeeds/
- *NACTO Urban Street Design Guide* https://nacto.org/publication/urban-street-design-guide/
- *Ohio Department of Transportation Multimodal Design Guide:* www.transportation.ohio.gov/working/engineering/roadway/manuals-standards/multimodal

At left, an example of a street redesign; photos courtesy of NYC DOT.

III. The pandemic changed how we measure walking and danger

Photo by Forever Ready Productions

The COVID-19 pandemic fundamentally changed traditional commute and travel patterns, as individuals and organizations transitioned to remote or hybrid work and schedules changed overnight. When it comes to how people get around, as well as walking rates, many of these shifts are here to stay and future years will likely look more like 2020 than they do like 2019. The impact of these shifts on the data we have relied upon in the past, coupled with significantly higher fatality rates during the pandemic, made it difficult to assess pedestrian danger in the same way as past reports, compelling us to reconsider how we measure danger and rank states and metros to address the unique impact of the pandemic.

After more than a decade of calculating pedestrian danger in the same way, **this edition of Dangerous by Design ranks states and metro areas based on deaths per 100k residents** (instead of factoring in how much people are walking) **over a five-year timeframe** (instead of 10 years.) **These two significant changes mean that the rankings in this report are not directly comparable to previous editions.** We look forward to being able to once again compare editions of this report to another in future years, but these methodological updates will allow us to better examine the dangers and deaths that occur on our streets in light of the permanent transformations brought by COVID-19.

Previously, we compared the relative danger of states and metro areas using the **Pedestrian Danger Index (PDI)**, an equation that takes into account deaths per population and walking rates derived from U.S Census data on the share of people walking to work. This index allowed us to compare places that have a higher number of fatalities because of the large population and huge number of walking trips—like **New York City**—with metro areas that have fewer fatalities or people but a far greater exposure to danger per walking trip—like **Jackson, MS.** But the dramatic changes in commuting brought by the pandemic necessitated a shift away from this data.

Up until the pandemic shut things down in March 2020, the share of people walking to work was a good, if limited, proxy for the amount of overall walking in a region or state. With a huge share of work trips evaporating and commuting patterns indefinitely changed, this was no longer the case. For example, what about people who did not travel to work in person in 2020 due to

childcare needs, unemployment, or new remote work schedules? Though walking trips for commuting went way down during the pandemic, other data sources showed that walking overall actually increased during the pandemic. So this year's report includes a brand new section *(IV)* that taps some new walking data from other sources to gain a better understanding of how and where people walk and how that affected fatalities, providing a deeper look into what happened on our streets in 2020.

The second notable change in the methodology is a shift to rank states and metro areas based on five years of data rather than 10. Using 10-year time periods has allowed each report to be compared to the previous edition, which also allows the public to easily see how states or metro areas are getting more or less deadly. Unfortunately, as noted above, the pandemic's impact on walking data was going to make this continuity impossible, which gave us the chance to depart from the ten-year horizon and begin assembling state and metro rankings in this 2022 edition using a five-year time period, from 2016 to 2020 in this edition.

The changes brought by COVID aren't just a blip—commuting and travel patterns have been permanently transformed. Shifting to five years allows us to both more heavily weigh what happened in the pandemic year of 2020, while also drawing a sharper focus on current and more recent conditions. Additionally, USDOT, states, and metro areas also typically operate on five-year cycles for spending, planning, and performance measurement, making it a logical timeframe.

Despite variation in deaths from year to year, this report also draws some limited comparisons between a single year (2020) and the previous four years to see which areas had the most significant changes during 2020. Nationally, fatalities rose 4.5 percent between 2019 and 2020, and preliminary estimates show an even higher increase in 2021.

When it comes to design, we must also consider the deadly impacts of ever-larger vehicles

By Mike McGinn, Executive Director of America Walks, former Seattle Mayor

While this report focuses on how our streets are "dangerous by design," the increasing size and weight of personal vehicles are also having an impact on the steadily increasing number of people struck and killed while walking. In addition to designing safer streets, improving vehicle design along four main criteria is also critical for reducing pedestrian fatalities:

Weight: Heavier vehicles like trucks and SUVs, which make up a growing share of both the current fleet and new vehicle sales each year, are more dangerous to both pedestrians and people inside of other vehicles.[a] Their increased weight, combined with higher speeds, increases the likelihood of death. A 2015 study by the Department of Transportation found that "pedestrians are 2-3 times more likely to suffer a fatality when struck by an SUV or pickup truck than when struck by a passenger car."[b]

Size: Vehicle size can also increase the likelihood of a pedestrian fatality in what should be obvious ways. Pedestrians struck in the lower body by a sedan are more likely to roll over the vehicle and survive the crash. Those struck directly in the pelvis, chest, or head by today's much taller vehicles are more likely to die upon impact or be pulled under the vehicle and crushed by the wheels.[c]

Photo by Steve Davis / Smart Growth America

Visibility: Taller vehicles decrease the visibility of people walking, increasing the likelihood of a crash. Today's typical passenger pickup trucks and SUVs have significant front blind spots caused by large hoods and bumpers that can blind the driver to pedestrians in their path, especially those who are shorter, like children.[d] Large a-pillars (the frame of the car between the windshield and the driver and passenger windows) are wider and larger on trucks and SUVs, contributing to lower visibility while making turns. In fact, when pedestrians are killed by a turning vehicle, the driver is far more likely to be behind the wheel of an SUV or pickup truck.[e] So if someone walks out into a crosswalk in front of or near a pickup truck or SUV, even if the pedestrian has the right of way, the driver is less likely to see the pedestrian, increasing the odds of a deadly crash.

a https://academic.oup.com/restud/article-abstract/81/2/535/1517632
b www.govinfo.gov/content/pkg/FR-2015-12-16/pdf/2015-31323.pdf
c www.consumerreports.org/car-safety/the-hidden-dangers-of-big-trucks/
d www.motorbiscuit.com/why-pickup-trucks-blind-spots-much-bigger-suvs/
e www.iihs.org/news/detail/suvs-other-large-vehicles-often-hit-pedestrians-while-turning

Like the roadway design practices discussed in this report, these vehicle designs set drivers up to fail—to not see people walking until it is too late—and both people walking and drivers pay the price.

Psychology and marketing: Low visibility and high weight create an intimidating and powerful-looking vehicle—a fact not lost on the drivers of these vehicles and leveraged by automobile manufacturers and their marketing efforts. Advertising campaigns for Ford, Hummer, and Jeep rely on militarized language that contributes to a paramilitary aesthetic and aggressive driving mentality.[a]

The evolution of each of these four design elements is producing more danger, and is likely a major culprit in our growing rate of traffic fatalities. Truck sales are increasing as a percentage of the US vehicle market share.[b] Front blind zones continue to grow.[c] Electric vehicles, which are taking up an ever-larger share of the passenger car market, are much heavier than cars with internal combustion

Photo by Steve Davis / Smart Growth America

engines.[d] **Is anyone in charge of protecting the safety of the traveling public paying attention?**

The pending update to the New Car Assessment Program (NCAP), a federal program that rates new cars on safety metrics, had the opportunity to penalize vehicles that perform poorly on the above metrics.[e] But USDOT decided to focus on pedestrian-sensing technology in new vehicles. While technology can help avoid some crashes—and the fact that NCAP finally mentions pedestrians at all is unfortunately an improvement—technology alone will do nothing to make crashes that do occur with these vehicles any less deadly for pedestrians.

Passenger vehicles that are proven to increase the likelihood of a pedestrian fatality should not receive five-star safety ratings. NCAP must change this or these ratings will remain useless to slow or stem the tide of pedestrian fatalities.[f] And safety ratings alone are not sufficient, since they simply provide information. We must update vehicle performance standards to require safer vehicle design for pedestrians. America Walks, among others, has been beating the drum on this, as should everyone interested in pedestrian safety.[g]

AMERICA WALKS

a https://popula.com/2019/02/24/about-face/
b www.statista.com/statistics/199980/us-truck-sales-since-1951
c www.bloomberg.com/news/articles/2021-03-11/the-dangerous-rise-of-the-supersized-pickup-truck

d www.washingtonpost.com/business/energy/electric-vehicles-are-getting-bigger-and-heavier-why/2022/02/07/a8d55e68-87ea-11ec-838f-0cfdf69cce3c_story.html
e www.regulations.gov/document/NHTSA-2021-0002-0001

f www.vice.com/en/article/4ade9p/the-us-invented-life-saving-car-safety-ratings-now-theyre-useless
g https://americawalks.org/america-comments-vehicle-safety/, https://americawalks.org/new-federal-vehicle-safety/, https://americawalks.org/advocate-for-pedestrian-safety/

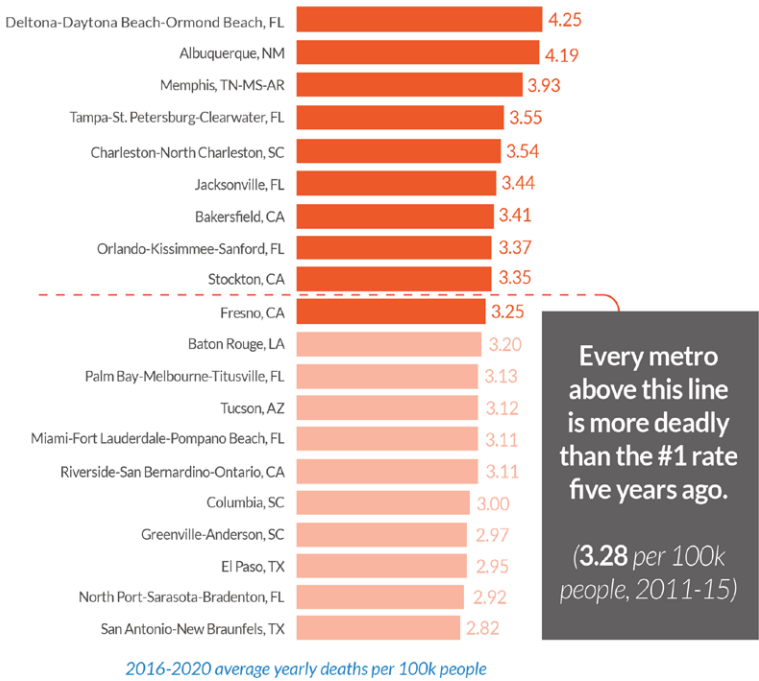
IV. The most dangerous places to walk in the United States

The top 20 most dangerous metro areas

This map highlights the 20 most dangerous metropolitan areas in the United States for people walking between 2016 and 2020, ranked by average yearly deaths per 100,000 people.

As in previous versions of this report, metro areas within the southern half of the US account for a sizable portion of the top twenty most dangerous metro areas in the nation. The top 20 list includes 15 of that region's major metro areas, including seven from Florida.

The ninth most deadly metro in 2022 would have topped this list five years ago



Rankings shift around, but all of the most deadly metros are getting worse

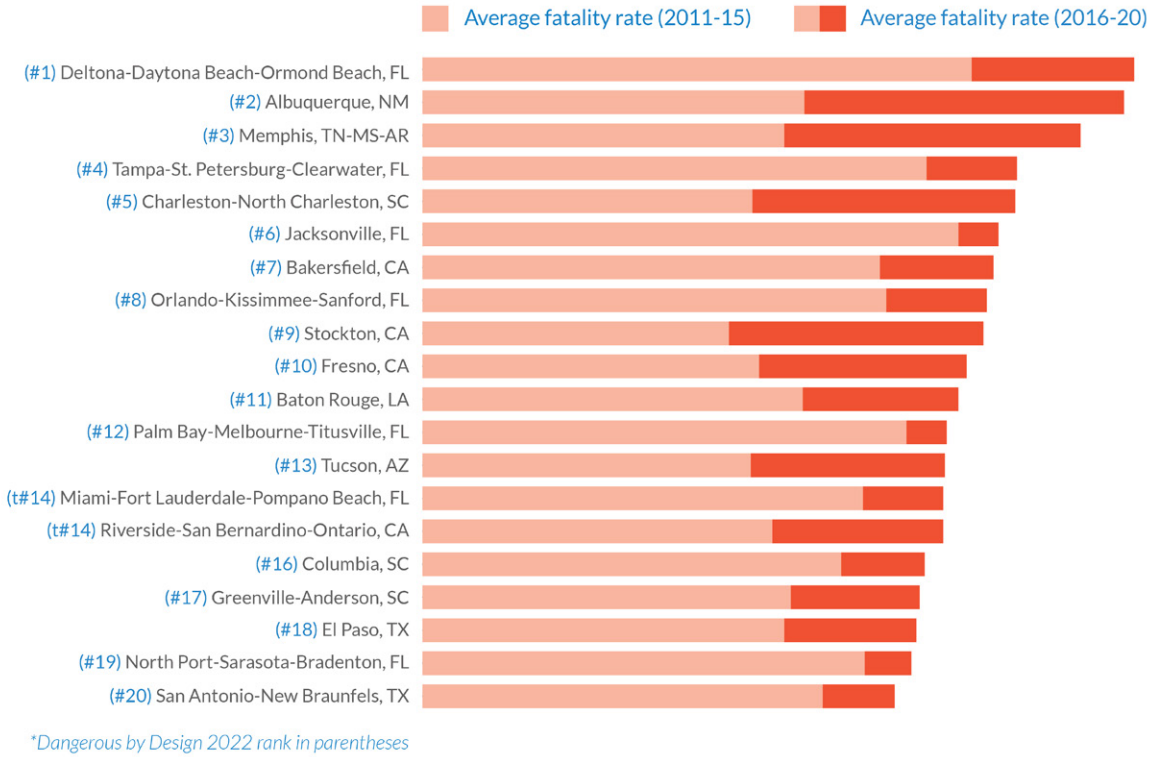
The rankings within each edition of this report shift and metro areas may slide up and down, but **every single one of the 20 most deadly metro areas has grown more deadly over the last decade**. As the graphic on the previous page shows, a fatality rate that would have topped these rankings five years ago is only good enough for ninth-most deadly this time around.

No top 20 metro area that improved their position in this edition achieved that feat because they reduced their fatality rate. All 20 have grown more deadly. (See the graphic at right.)

The metros that have slid down ("improved") in the rankings have done so not because they have gotten safer, but because other metro areas have grown more deadly at astonishing rates, such as **Albuquerque, Memphis, Charleston, Stockton,** and **Fresno**. (See the graphic on the following page.)

No metros in the top 20 are improving

All have gotten significantly more deadly



**Dangerous by Design 2022 rank in parentheses*

Have any metro areas been trending safer over the last decade?

As deaths have been on a steady and alarming increase nationally, have any metro areas been trending in the opposite direction, getting safer over the last decade? Comparing an average fatality rate for the past five years (2016-20) with the previous five years (2011-15) we found that only a handful of metro areas (19 of 100) were bucking the national trend, albeit with only marginal gains, at best. Looking closer, the other 81 metro areas were growing far more deadly than these 19 metro areas were improving (see graphic at right). The average *increase* in the fatality rate in these 81 metro areas was 4.5 times greater than the average *improvement* within the 19 metro areas that were trending marginally safer over the decade.

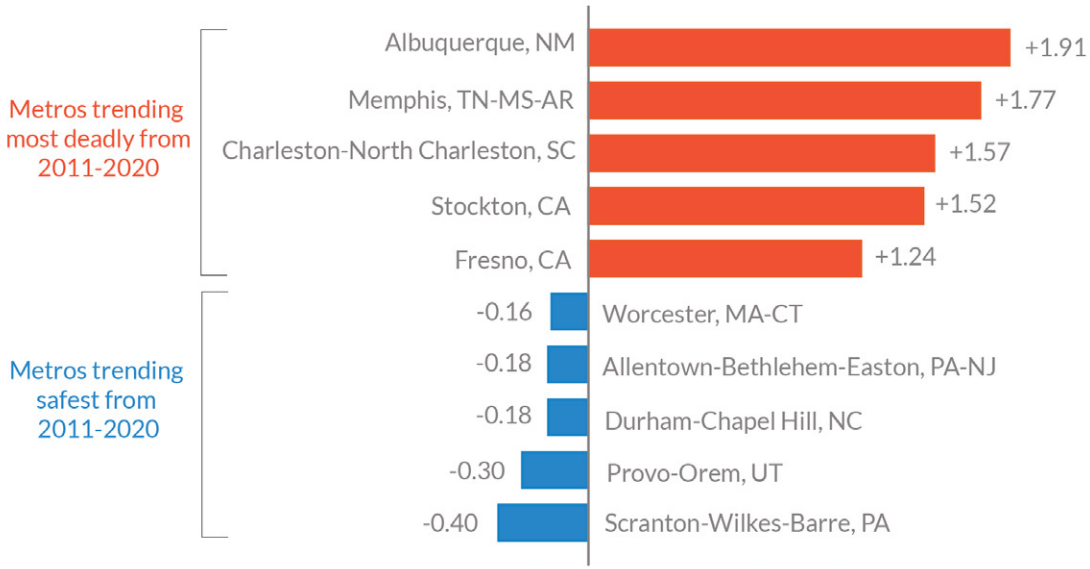
There are plenty of examples of successful safety improvements that have reduced fatalities on specific corridors within many of these largest 100 metro areas. **But these metro areas have built 70 years of dangerous roads to retrofit, and these improvements, while welcome and needed, are the exception and not the rule.**

For this reason it has failed to lead to meaningful reductions in deaths across metro areas, states, and the nation. And at the same time states and cities are improving safety on specific corridors or intersections, many are building new roads with all of the same old issues. **We need a transformation in the entire system**—the task is monumental, and the effort needs to be sustained for years at the scale of this enormous problem.

We will fail to reverse this tragic trend until we fundamentally change the status quo of how we approach planning, designing, and operating our roads across every transportation project.

Long term trends in fatalities:

Which places have been trending safer or more deadly over the last decade?



Comparing average fatality rates for the past five years (2016-20) with the five years previous (2011-15)

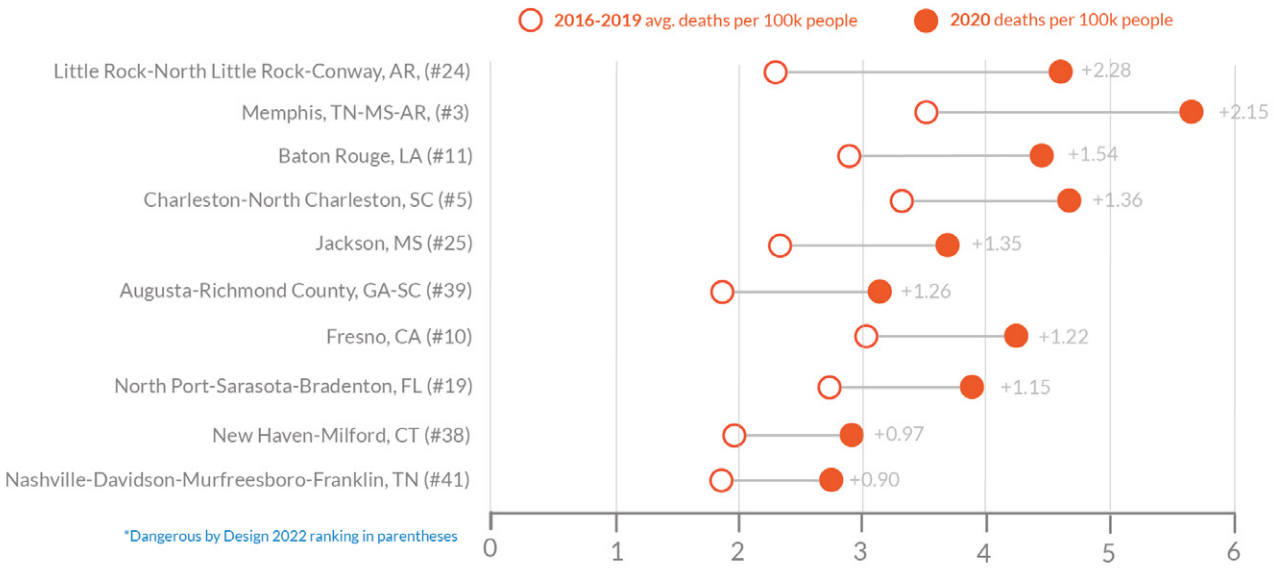
What happened during the pandemic in these metro areas?

Even as the amount of driving dropped overall, 67 of the largest 100 metro areas saw increases in the deaths of people struck and killed while walking during the pandemic, compared to the previous four years. While some variation is expected from year to year—which is why we don't typically compare a single year of data, outside of the unprecedented circumstances brought by the pandemic—these 2020 increases were significant in a number of metro areas. The ten metro areas with the highest increases (comparing 2020 with an average rate for 2016-2019) are depicted in the graphic below. These ten metro areas with the biggest increases are all also among the top 40 most dangerous in the country.

Unfortunately, only 33 metro areas saw their fatality rates decrease during the pandemic, and most of those changes were marginal, especially when compared to the increases in other metro areas.

Section VI later in this report examines the metro data, finding that metro areas where a large share of people were walking to work before the pandemic (because the infrastructure and land use support it) experienced lower increases in death rates.

Largest increase in pre-pandemic vs 2020 death rates



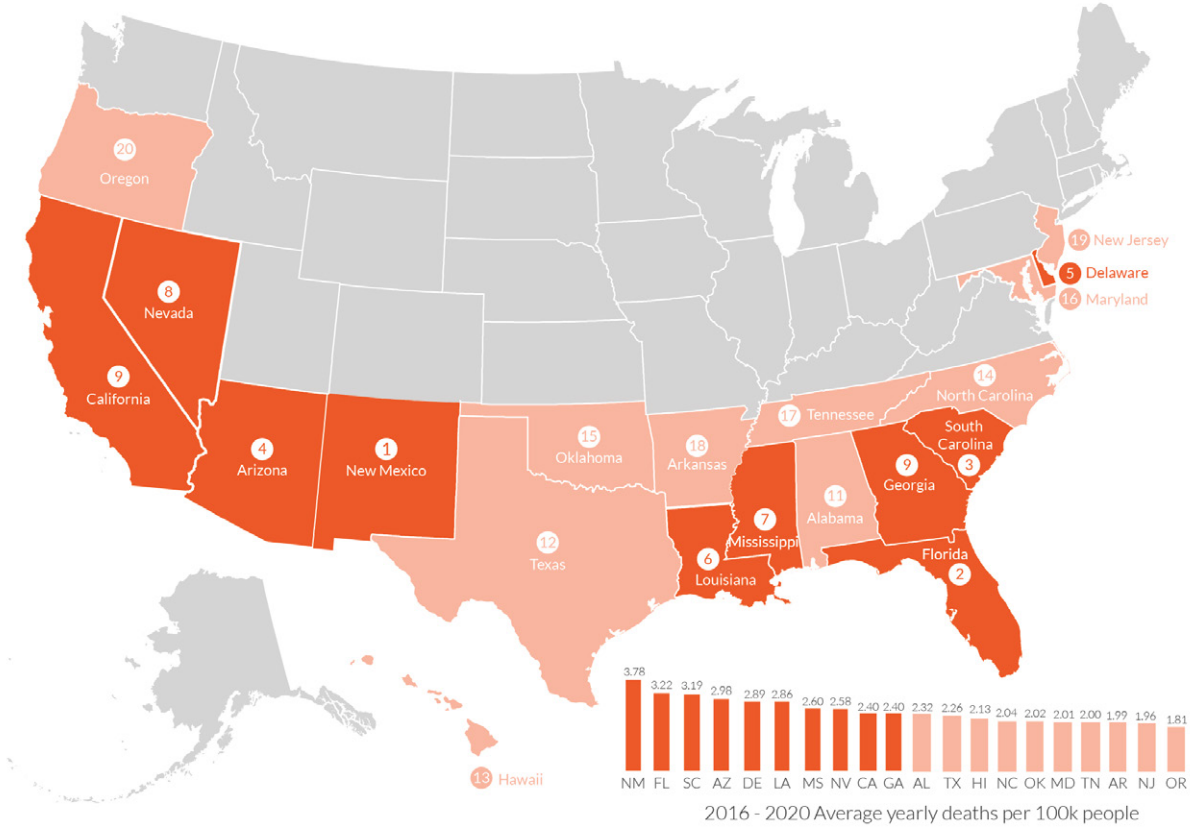
The top 20 most deadly states for pedestrians (2016-2020)

The graphic at right depicts the top twenty states with the highest number of pedestrian deaths.

States in the southern half of the US are again overrepresented in the top ten most dangerous states, which is not surprising. The bulk of the growth and development in these regions has taken place in an era (post-1960) where low-density sprawling land uses and high-speed, multi-lane arterial highways have been the dominant form, with historic amounts of state and federal transportation funding poured into street designs that are deadly for everyone, especially people walking.

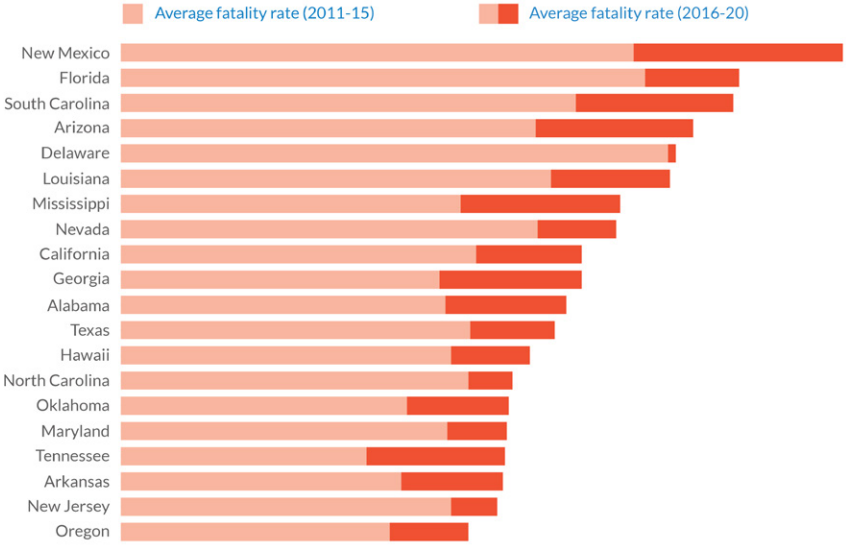
THE TOP 20

Most dangerous states for pedestrians (2016-2020)



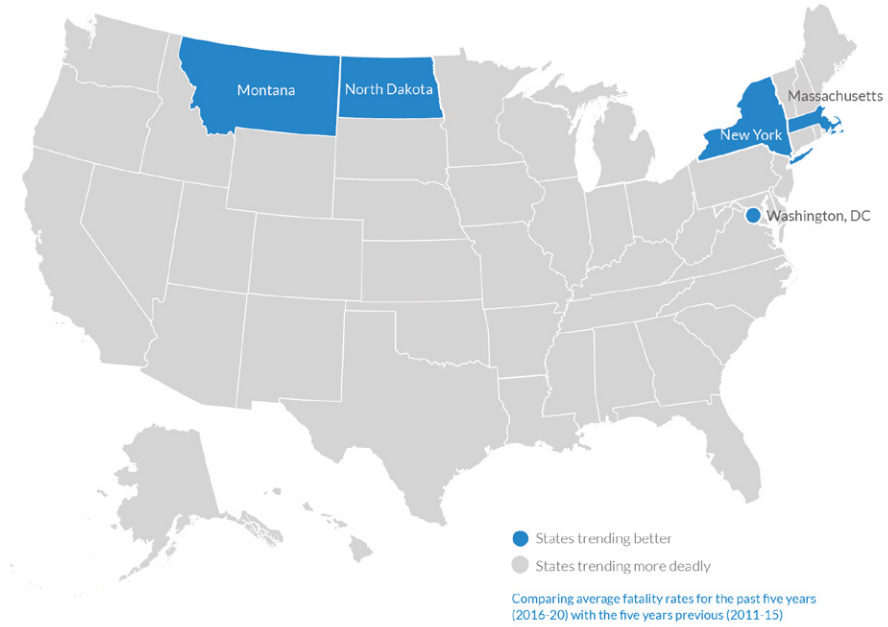
No states in the top 20 are improving

All have gotten significantly more deadly



Long term trends in fatalities

Have any states been improving over the last decade?



Have any states been trending safer over the last decade?

This year, the rankings for the deadliest states for pedestrians changed slightly. Previous #1 **Florida**—where it should be noted that overall deaths still increased significantly in 2020—was surpassed by the increase in **New Mexico**, which is now the most dangerous state for pedestrians. **No state that improved their position in this top 20 list achieved that feat because they reduced their fatality rate.** All 20 have grown more deadly with a higher fatality rate compared to their average rate for 2011-2015.

Have any states managed to reduce their fatality rate and buck the national trend over the last decade? Have any states been trending safer? The answer is *almost* "no"—46 states have been in lock step with the national trend, growing yet more deadly over the last decade.

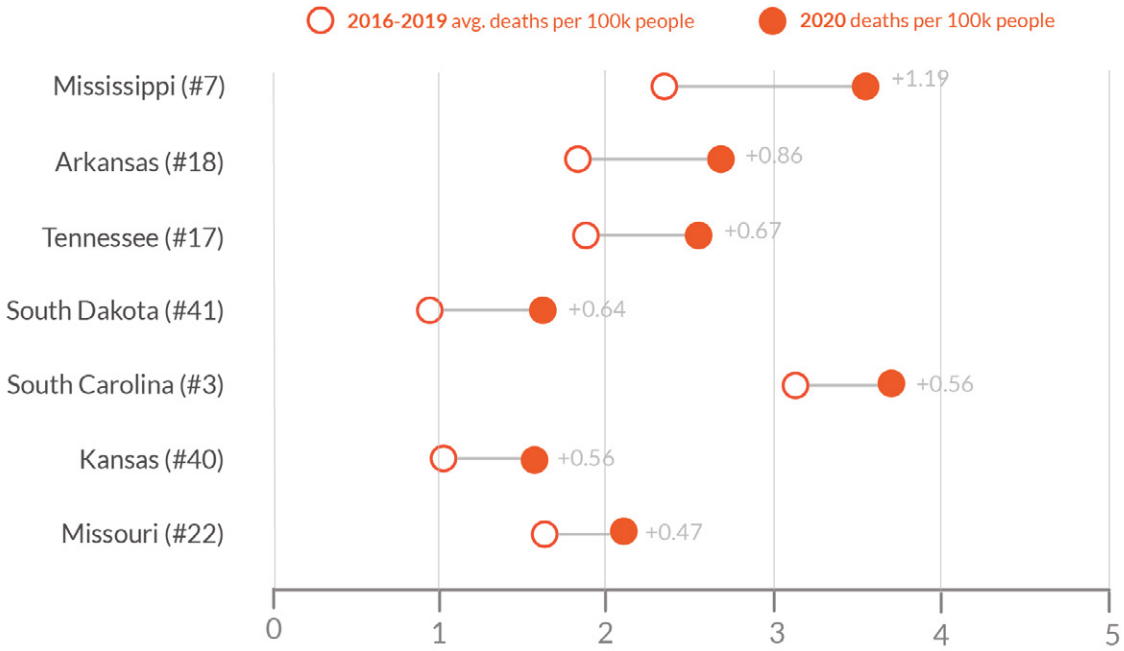
Comparing average fatality rates for the past five years (2016-20) with the five years previous (2011-15) we found that only four states, **New York, North Dakota, Massachusetts**, and **Montana** (plus the **District of Columbia)**, managed to lower their fatality rates.

What happened during the pandemic at the state level?

Unfortunately, even though driving overall dropped precipitously, only 18 states saw their fatality rates decrease during the pandemic (compared to the previous four years) and, similar to our findings in metro areas, those decreases were mostly marginal.

Mississippi, Arkansas, Tennessee, and **South Dakota** saw the biggest increase in the rates of death during the pandemic compared to the previous four years. These states are also among the top twenty most dangerous states overall.

Largest increase in pre-pandemic vs 2020 death rates



*Dangerous by Design 2022 ranking in parenthesis

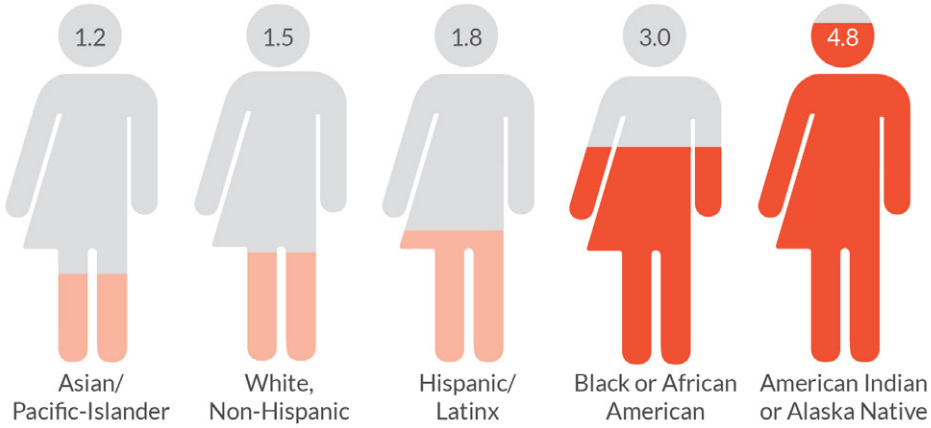
V. Most vulnerable populations

Photo by Forever Ready Productions

The COVID-19 pandemic perpetuated existing disparities in terms of who is most likely to be struck and killed while walking. Although people of all ages, races, income levels, and abilities are affected by dangerous street design, certain populations bear the brunt of the burden. People of color, low-income residents, and older adults are much more likely to die while walking, and the many people who exist at the intersections of these identities are even more vulnerable.

Decades of structural racism have included prioritizing travel to and from wealthier, whiter communities, forced displacement, disinvestment or neglect, a focus on building new rather than repair, and spending a greater share of transportation dollars elsewhere. The results have been a greater share of poorly designed streets that lack even the most basic pedestrian safety features like crosswalks, signals, and refuges, and are frequently divided by wide, high-speed roads that create life-threatening conflicts for people walking.

Pedestrian deaths per 100,000 by race & ethnicity (2016-2020)



Non-drivers also face significant disparities, particularly those who rely on assisted mobility devices such as wheelchairs, walkers, prosthetics, and scooters. Existing streets lack consistent sidewalks, curb cuts, and safe intersections, making it difficult for nondrivers to navigate their communities and reach key destinations.[14]

Race and ethnicity

People of color, particularly Native and Black Americans, are more likely to die while walking than any other race or ethnic group, as illustrated in the graphic on the previous page. Despite making up a smaller proportion of the population, people of color are overrepresented in the percentage of pedestrian deaths.

It's worth noting that race and ethnicity are some of the most inconsistently reported components of federal fatality data. **11 percent of all pedestrian fatalities we examined failed to report race or ethnicity.** A handful of states are particularly egregious offenders on this count, including Connecticut (43% of pedestrian deaths missing race data), New York (39%), Pennsylvania (39%), California (29%), Maryland (28%) and Hawaii (24%).

With this point in mind, the disparities we see nationally in deaths by population could be even worse in reality. With 1,381 of 4,729 pedestrian fatalities lacking race/ethnicity data, California has the largest absolute number of fatalities in this category. Consider: If Hispanic/Latinx people make up the same share of those ~1,300 deaths as they do of California's population overall (40 percent) the **national** fatality rate for Hispanic/Latinx people would significantly increase, from 1.8 to 2.0.

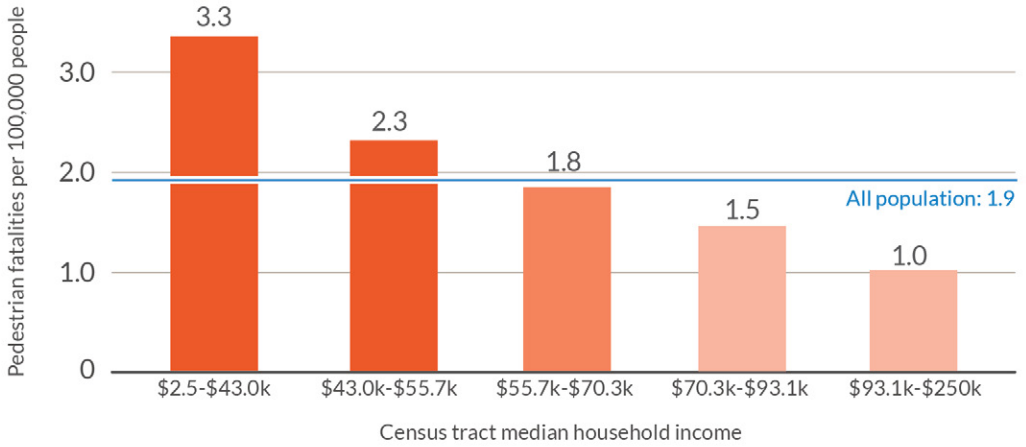
The existence of dangerous, auto-centric infrastructure in communities of color is a result of "urban renewal" projects like the construction of the interstate system, which was intentionally sited through many Black and Brown communities, displacing millions of people and causing catastrophic damage for decades to those left behind, like increased exposure to pollution, worse access to jobs and services, and devastated local economies.[15]

Photo by Forever Ready Productions

Black and Brown neighborhoods also tend to have more high-speed roads, poor visibility, and heavy traffic volume, and a lack of facilities for people walking.[16] In many cities, communities of color house a disproportionately high share of the most deadly roads, devoid of pedestrian infrastructure. For example, in Philadelphia, a full 46 percent of the most dangerous roads are in poor areas mostly populated by people of color.[17] And Black pedestrians are more likely to be subject to inequitable traffic enforcement and are more likely to be stopped, ticketed, and arrested for jaywalking and other walking violations.[18]

This continues to occur as transportation agencies spend enormous sums to make trips for people traveling through these communities faster and easier at the expense of those places. As just one example, this can be seen in how agencies positively assess the impact of a potential new road on congestion, while failing entirely to consider the impact on people in that community who will no longer be able to safely or easily travel from one side of the road to the other.

Pedestrian fatalities per 100,000 people by census tract income



Low-income communities

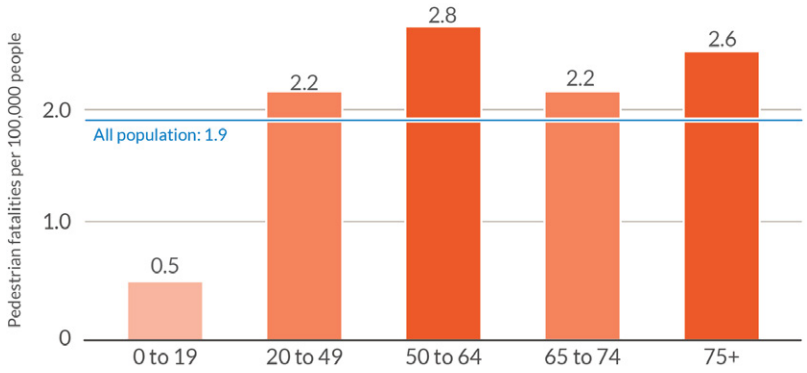
While the federal database of fatalities does not include the household income of people struck and killed while walking, we do know where individuals were walking at the time of death. And the data is clear: the lower the income of the census tract, the more likely a person is to be struck and killed while walking there. Despite accounting for only 17 percent of the population, lower-income neighborhoods (those with a median household income of $2,500-$43,000) are where more than 30 percent of all pedestrian deaths occur.

Poor walking infrastructure and a lack of safety features put people walking in low-income neighborhoods at higher risk, and many lower-income households do not have access to a vehicle and must rely on walking or public transportation to get around.

Older adults

People between the ages of 50 and 65, and people over 75, are also more likely to be killed on our streets. Considering that the U.S. Census Bureau projects this segment of the population to continue growing, with 1 in every 5 Americans aged 65 or older by 2030, these deaths are likely to increase absent other changes.[19]

Pedestrian fatalities per 100,000 people by age (2016-2020)



A survey from AARP also found the majority of older adults want to age in place in their homes and communities.[20] To do that, they need safe and accessible streets that allow them to move around independently and access essential services in order to age in place comfortably. If they can't safely walk, they may experience severe social isolation, which can negatively impact their physical and mental health.

Photo by Steve Davis / Smart Growth America

Traffic enforcement cannot do the job of better roadway design

By Priya Sarathy Jones, Fines and Fees Justice Center

After reading a report like this, some reporters, residents, and local leaders may be tempted to reach for increased traffic enforcement and financial penalties as an obvious solution. But relying on enforcement and financial penalties to solve issues that stem from street design cannot solve the epidemic of traffic fatalities. And even a simple traffic ticket can trap working families in a vicious cycle of poverty and punishment if they can't afford to pay the stiff fines and fees that jurisdictions often impose.

Design, on the other hand, is an upstream solution. When streets are designed with safety in mind, people intuitively drive more slowly, making them able to notice and process important signals from their environment, preventing dangerous behavior before it occurs, and focusing efforts on safer systems rather than individual behavior.

When streets are designed primarily to move as many cars as possible as fast as possible, and people are not provided the infrastructure they need to walk and bike safely, enforcement often punishes travelers for *behaving logically*. It is no mistake that one of the most common forms of speed limit enforcement is called a "speed trap." When a road looks and feels like a highway and is designed for 45mph or more but has a speed limit of 35 mph or less, many drivers are not aware they are making a mistake—until it's too late. The result of that is frequently issued citations, but not a change to overall driving behaviors.

And for state and municipal governments, using fines and fees as the primary mode of enforcement often leads to over-reliance on ticket revenue to fund basic government services, which can distort law enforcement priorities and erode trust between communities and police.[a]

Leaning so heavily on enforcement to manage *individual* behavior—while neglecting the more powerful *systemic* tool of designing streets that produce safer, slower driving overall—can increase the likelihood of abuse and exacerbate the existing disparities and inequities that people living in Black and Brown and low-income neighborhoods already face, all without reducing crashes.

According to the Bureau of Justice Statistics, traffic stops and car crashes account for at least 66 percent of contact between police and the public in the last decade, making dangerous streets the most frequent place for incidents of police brutality, particularly for low-income and minority residents.[b] In addition to often being overpoliced and being more likely to face police violence, Dangerous by Design shows how communities of color also disproportionately bear more of the burden of poor street design. This combination of factors creates a uniquely dangerous situation in these communities which requires systemic changes.

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a https://finesandfeesjusticecenter.org/articles/investigation-ferguson-police-department/

b Thompson, D. (2020, June 11). Unbundle the Police. The Atlantic. www.theatlantic.com/ideas/archive/2020/06/unbundle-police/612913/

Tickets may even be given to people walking in places where there aren't any sidewalks, as with this road. Photo courtesy of Scott Crawford.

And this problem is not unique to driving, as enforcement has also become a major component of so-called "pedestrian safety" initiatives, which also tend to place a greater emphasis on communities of color.[a] Between 2012 and 2017, Black pedestrians in Jacksonville, Florida constituted 55 percent of all ticketed pedestrians despite making up only 29 percent of the population.[b]

Though several factors are likely at play, infrastructure is a key aspect. Pedestrian infrastructure tends to be least available in Black and Brown communities, while car ownership is less common. And in low-income communities, the financial penalties of traffic enforcement create economic hardships and financial burdens that can include life-altering consequences: late fees, license suspension, loss of employment, and a vicious debt cycle.

Automated enforcement (like speed cameras) is another way to enforce behavior, but without transparency and clear guardrails about how it's deployed, it can be subject to the same biases as human enforcement, further perpetuating inequities, and deepening government reliance on fines and fees for revenue. After all, decisions about *where* to place enforcement equipment, how much a fine is for each ticket, and what fees to add on, are still being made by state or local officials.

For example, after a recent initiative to install traffic cameras in Chicago, Black and Brown zip codes were ticketed at roughly twice the rate of white neighborhoods, leading to significant financial hardship and even bankruptcy.[c] And when Chicago changed its speed camera program in early 2021 to issue citations at 6 mph over the speed limit, the city generated $89 million in fines in one year—raising the daily tickets issued from 1,100 to 9,000. Meanwhile, the number of pedestrian fatalities in Chicago increased in 2021.

As a biker and pedestrian myself who lives with young children in a major city, I think about street safety every time I step outside my home. I understand the temptation to deal with growing traffic violence with expanded enforcement efforts. But enforcement alone will fail to solve the fundamental problem: streets *designed* for the very behavior that enforcement is trying to eliminate. The best strategy for more effective and equitable enforcement is to reduce how much it's needed, by redesigning streets that make safer behavior easier, more intuitive, and ultimately more likely.

Learn more:
https://finesandfeesjusticecenter.org

a The Eno Center for Transportation. (2020, June 19). Op-Ed: Transportation and the Police Part 2: The Enforcement Problem in Pedestrian and Bicycle Safety. www.enotrans.org/article/transportation-and-the-police-part-2-the-enforcement-problem-in-pedestrian-and-bicycle-safety/

b Equal Justice Initiative. (2017, November 30). Analysis Finds Tickets Disproportionately Issued to Black Pedestrians. https://eji.org/news/analysis-finds-tickets-disproportionately-issued-to-black-pedestrians

c www.propublica.org/article/chicagos-race-neutral-traffic-cameras-ticket-black-and-latino-drivers-the-most

VI. What pandemic walking rates tell us about making streets safer

Photo by Steve Davis / Smart Growth America

The U.S. Census provides data on the share of people who walk to work, but as noted in section III, this data focused on work trips experienced major disruption during 2020. In this expanded new section for this edition of Dangerous by Design, we chose to look at overall walking trip rates across metro areas using data provided by StreetLight Data. Their data help show how much more overall walking is taking place, and potentially how much additional demand there is, compared to using only the U.S. Census data limited to only commute trips. Combining the Census data on walking commutes with this new set of walking indicators from Streetlight Data allows us to better understand how changes in walking during the pandemic impacted safety.

StreetLight leverages anonymized information from cellphones and mobile devices to provide us with an index of walking trips for each metro area and state analyzed in this report. These index numbers are most valuable for comparing the amount of walking trips in different places and changes over time, rather than providing an actual count of all trips.

But they also have their limits. StreetLight Data include walking trips of all purposes, both to essential places like work or grocery stores as well as walking trips for recreation or exercise that might occur in parks, in gated communities, on trails, and even on beaches. These are wonderful community amenities, but trips away from vehicle traffic are not useful in judging the relative safety for pedestrians exposed to vehicles across metro areas and states.

Four things we learned about the pandemic's increase in walking and deaths

For this portion of the analysis we used walking data from both the U.S. Census and StreetLight to examine the impact of increased walking during the pandemic. We grouped metro areas into two categories by their death rates from 2016 to 2020 (more deadly, less deadly) and discovered **four basic trends:**

1. **StreetLight's data shows that walking increased everywhere during the pandemic, but those increases only led to more deaths in certain metro areas.**

2. **In 2020, fatality rates increased the most on average in the metro areas that were already more deadly and had lower shares of people walking to work before the pandemic.** In short, the more deadly metros also saw the biggest increases in fatality rates. Walking rates also increased the most in these metro areas, illustrating a pent-up demand for walking in the most unwelcoming and unsafe places.

3. **In 2020, fatality rates decreased (or increased the least) on average in the metro areas that were less deadly and had higher shares of people walking to work before the pandemic.** The places where more people choose to walk to work tend to be places that also have the street design and land use that make it safe to do so.

4. **More walking doesn't have to result in more deaths.** We can get more people walking to more places without seeing deaths increase, if we prioritize their safety from the ground up. This tracks with the worldwide trend—increases in walking and drops in driving only led to more deaths in the US and two other developed countries. Most got safer.

We explain more about the process and the methodology for these four findings in the following detailed section.

Separating the more deadly from the less deadly metro areas

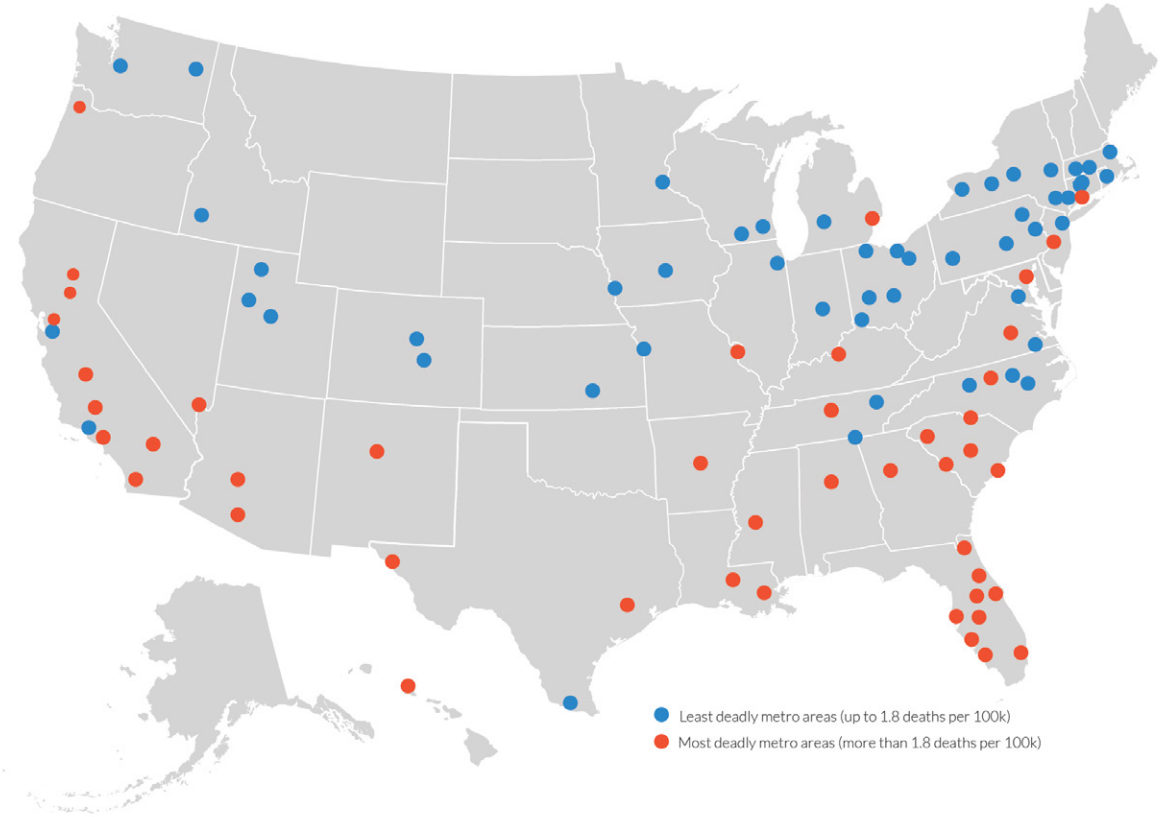
To get a better understanding of whether increases in walking during the pandemic led to increases in deaths, we divided the 100 largest metro areas into two groups, or clusters. One group consisted of more deadly cities (more than 1.8 deaths per 100k) and a second group consisted of less deadly cities (up to 1.8 deaths per 100k). These groups are roughly equal in size, with about 50 cities included in each. We then compared the changes in death rates and differences in walking between the two groups. There was a large difference in average death rates for 2016-2020 between these two groups: 2.7 annual deaths per 100,000 people on average in the more deadly Group 1, versus 1.3 in the less deadly Group 2.

Fewer people walk to work in the more deadly places

Looking at these two groups of metro areas, clear patterns emerged. A considerably larger share of people walked to work before the pandemic in the less deadly metro areas (Group 2, shown in blue): 2.6 percent of commuters on average versus 1.7 percent in the more deadly group of metro areas (red). There is also a clear cutoff between the two groups when it comes to walking commuters: almost all cities in the less deadly group had a higher share of people commuting by walking than any of the metro areas in the more deadly group.

These two groups have less pronounced but still noteworthy differences in walking overall, as shown by the walking trip index values provided by StreetLight Data for 2016-2020. Overall, metro areas in the more deadly group have higher walking trip indexes, averaging 2.9, whereas the average walking trip index for the less deadly metro areas is 2.6. However, some of the most deadly cities like **Orlando** and **Las Vegas** had exceptionally high walking trip index values (greater than 4.) These cities have a large population of tourists walking in parks, beaches, and other tourist-oriented areas, which could account for these high walking index values, but are also generally heavily car-oriented in much of their surrounding regions, likely contributing to high death rates.

Grouping metro areas by fatality rates to measure the impact of walking rates during the pandemic



Many metro areas with the highest walking trip indices were also in states like **Florida** and **California** where private development often includes trails and other off-street amenities for walking recreationally in places with no exposure to cars or fast-moving traffic.

More walking only made certain metro areas more deadly in the pandemic

MSAs in the more deadly Group 1—those with lower walking to work rates—saw a significantly larger increase in death rates on average during the pandemic: 15 percent. By contrast, MSAs in the less deadly Group 2 with higher walk to work rates on average actually saw a 1.4 percent decrease in death rates on average.

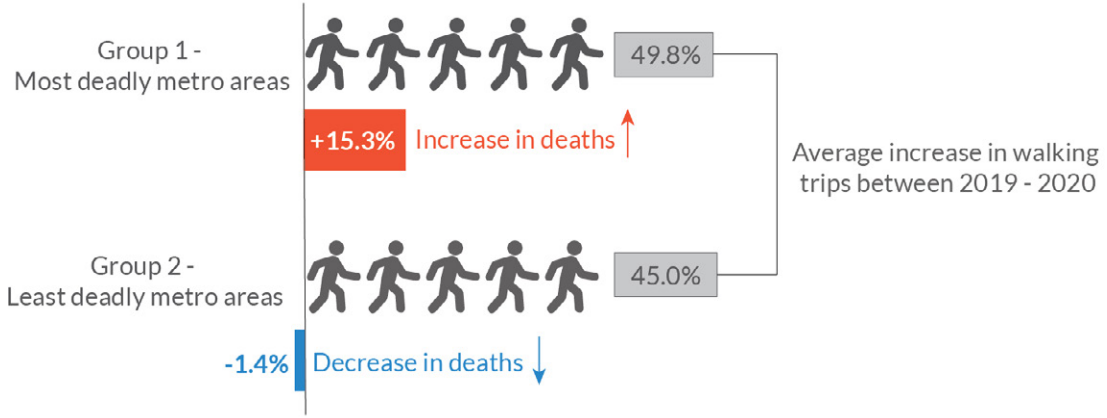
Did stark differences in the amount of walking contribute to the different death rates between these two groups of metro areas during the pandemic? For many cities, the answer seems to be no. The average changes in walking trip rates in each group of metro areas were relatively comparable, but the effect was not the same.

This phenomenon is best characterized by metro areas on the extreme end of the spectrum in the more deadly group like **Little Rock, AR**, **Augusta, GA**, and **Jackson, MS,** where a 60 percent increase in walking trips or larger corresponded with a similar increase in death rates. For especially deadly cities like Jackson, MS, which has consistently scored near the top of our Pedestrian Danger Index, this increase is particularly concerning.

These trends can tell us a lot about how to make communities safer

These patterns are not a coincidence. It makes sense that places where people often walked to work before the pandemic would not see a significant increase in deaths when people started walking more during the pandemic, because places where people walk to work frequently also tend to be places that are better designed to support safer walking trips of all kinds. Communities that were

More walking during the pandemic led to more deaths only in the group of more deadly metro areas (on average)



more comfortable and more welcoming to walk in before the pandemic had more streets designed with pedestrians in mind. Infrastructure that protects people walking or using wheelchairs (like crosswalks and sidewalks) is more common, and these additions also lead to naturally slower vehicle speeds, so crashes are less likely to be fatal.

Places where people walk to work less frequently (where people might commute more often by car, for example) also tend to lack the infrastructure pedestrians need to stay safe. These communities got more dangerous when traffic evaporated on roads already designed primarily for moving cars through at high speed. A sudden increase in walking coupled with fewer cars on the road in these places likely contributed to a perfect storm of conditions and an increase in deaths. No amount of additional walking can overcome a roadway design that is fundamentally dangerous.

The dramatic increase in walking rates across the country during the pandemic shows that there is latent, unrealized demand for more opportunities to safely walk, even in places where the infrastructure is lacking. We should be striving to meet that demand by making it so people can safely walk to destinations like work, but also grocery stores, school, healthcare, and other daily needs.

Photo by Steve Davis / Smart Growth America

Endnotes

1 All pedestrian fatality data for the report are from: National Highway Traffic Safety Administration. (2020). Fatality Analysis Reporting System. Available from www.nhtsa.gov/research-data/fatality-analysis-reporting-system-fars

2 Governors Highway Safety Association (2022.) Pedestrian Traffic Fatalities by State: 2021 Preliminary Data. www.ghsa.org/resources/Pedestrians22

3 Schmidt, Susan. (2021.) "Fresh data show the disparities in access to parks." Star Tribune. www.startribune.com/fresh-data-show-the-disparities-in-access-to-parks/600065374/

4 Gibbs, K., Slater, S.J., Nicholson, N., et al. (2012.) "Income Disparities in Street Features that Encourage Walking." Bridging the Gap Program, University of Illinois at Chicago. Available from www.bridgingthegapresearch.org/_asset/02fpi3/btg_street_walkability_FINAL_03-09-12.pdf.

5 Schmitt, Angie. (2012). "Study: Low-Income Neighborhoods Much More Likely to Have Dangerous Roads." Streetsblog. https://usa.streetsblog.org/2012/04/24/study-low-income-neighborhoods-much-more-likely-to-have-dangerous-roads/

6 National Safety Council. (2020). "Motor vehicle fatality rates rose 23.5% in May, despite quarantines." www.nsc.org/in-the-newsroom/motor-vehicle-fatality-rates-rose-235-in-may-despite-quarantines

7 National Highway Traffic Safety Administration. (2022). "NHTSA Releases 2020 Traffic Crash Data." www.nhtsa.gov/press-releases/2020-traffic-crash-data-fatalities

8 Transportation for America (2020). The Congestion Con: How more lanes and more money equals more congestion. https://t4america.org/maps-tools/congestion-con/

9 Domonoske, Camila. (2021). "'Tragic': Driving was down in 2020, but traffic fatality rates surged." National Public Radio. www.npr.org/2021/03/05/974006735/tragic-driving-was-down-in-2020-but-traffic-fatality-rates-surged.

10 Estimated road traffic death rate (per 100 000 population). World Health Organization. www.who.int/data/gho/data/indicators/indicator-details/GHO/estimated-road-traffic-death-rate-%28per-100-000-population%29

11 Buehler, R. & Pucher, J. (2020). "The growing gap in pedestrian and cyclist fatality rates between the United States and the United Kingdom, Germany, Denmark, and the Netherlands, 1990–2018." Transport Review. Available from: www.tandfonline.com/doi/full/10.1080/01441647.2020.1823521

12 International Transport Forum. (2021). Road Safety Annual Report 2021: The Impact of Covid-19, OECD Publishing, Paris. See page 28: www.itf-oecd.org/sites/default/files/docs/irtad-road-safety-annual-report-2021.pdf

13 View a full suite of resources about the Infrastructure Investment and Jobs Act from Smart Growth America's Transportation for America program: https://t4america.org/iija/

14 Disability Rights Washington (2021). Transportation Access for Everyone. www.disabilityrightswa.org/transportation-access-for-everyone-research-paper-release/

15 King, Noel. (2015). "A Brief History Of How Racism Shaped Interstate Highways." National Public Radio, as heard on Morning Edition. www.npr.org/2021/04/07/984784455/a-brief-history-of-how-racism-shaped-interstate-highways

16 Hamann, C., Peek-Asa, C. & Butcher, B. Racial disparities in pedestrian-related injury hospitalizations in the United States. BMC Public Health 20, 1459 (2020). https://doi.org/10.1186/s12889-020-09513-8

17 Brod, R. (2018). "Philly's most dangerous roads clustered in black and brown neighborhoods." PlanPhilly. https://whyy.org/articles/phillys-most-dangerous-roads-clustered-in-black-and-brown-neighborhoods/

18 Sanders, T., Rabinowitz, K. & Conarck, B. (2017). "Walking While Black Jacksonville's enforcement of pedestrian violations raises concerns that it's another example of racial profiling." ProPublica. https://features.propublica.org/walking-while-black/jacksonville-pedestrian-violations-racial-profiling/

19 United States Census. (2018). "Older People Projected to Outnumber Children for First Time in U.S. History." www.census.gov/newsroom/press-releases/2018/cb18-41-population-projections.html

20 Davis, M. (2021). "Despite Pandemic, Percentage of Older Adults Who Want to Age in Place Stays Steady." AARP. www.aarp.org/home-family/your-home/info-2021/home-and-community-preferences-survey.html

Appendix A: Methodology

This report evaluates fatality data over five years (2016-2020) using Fatality Analysis Reporting System (FARS) data from the National Highway Traffic Safety Administration. The most recent data available from 2020 became available in Spring 2022.

The impact of the pandemic on the data we typically use, coupled with significantly higher fatality rates during the pandemic, required a new approach to assessing pedestrian danger, which also allowed us to address the unique impact of the pandemic. After more than a decade of calculating pedestrian danger in the same way—in part so that rankings could be compared over past editions to allow the public to see how places were getting more or less deadly—this edition of Dangerous by Design includes two significant changes: 1) a five-year time frame for pedestrian death rankings rather than ten years, and 2) removing any normalization by walking rates to generate a "Pedestrian Danger Index" and instead reporting on deaths per 100,000 people.

All pedestrian fatalities are reported within the five-year timeframe of 2016 to 2020 which differs from the 10-year time frame used in previous versions of the report. The pandemic's impact on walking data was already going to make continuity with previous editions impossible, giving us the chance to depart from the ten-year horizon and begin assembling state and metro rankings in this 2022 edition using a five-year time period. Shifting to five years allows us to both more heavily weight what happened in the pandemic year of 2020, while also drawing a sharper focus on current and more recent conditions. Additionally, USDOT, states, and metro areas also typically operate on five-year cycles for spending, planning, and performance measurement, making it a logical timeframe.

While previous versions of the report all used the Pedestrian Danger Index which normalized the pedestrian fatalities per 100,000 people further by walking rates, this report only uses pedestrian fatalities per 100,000 people for all comparisons. In the last report, the Pedestrian Danger Index used journey-to-work trips from the Census American Community Survey (ACS) data. Up until the pandemic shut things down March 2020, the share of people walking to work was a good, if limited, proxy for the amount of overall walking in a region or state, but with shifts in travel behavior that are likely to be somewhat permanent, this was no longer the case.

This year's report includes a brand new section (IV) analyzing how the pandemic impacted walking rates in the 100 largest MSAs using both the ACS walk to work data and StreetLight Data. To gain a better understanding of how and where people walk and how that affected fatalities, we divided MSAs into two groups: dangerous cities (more than 1.8 deaths per 100k) and safer cities (up to 1.8 deaths per 100k) to analyze and compare the average walking commute rates and StreetLight walking indices between the two groups and how death rates and walking rates changed during the pandemic on average in each group.

All population, race, age, and ethnicity data are from the 2016-2020 American Community Survey 5-year estimates, to ensure the most up-to-date information at the time of this report. NHTSA FARS data do not include information about the household income of individuals who are

struck and killed while walking; however, they do reveal where people are walking when they are killed. To analyze where pedestrian fatalities occur relative to median household income of the surrounding area, fatalities were joined using GIS to census tracts. The median household income of census tracts was grouped into quintiles to determine high- and low- income communities. Pedestrian deaths were then aggregated into these five tract types, and normalized by the population of the tracts. While FARS data do not include individual-level household income data, this analysis serves as a method to determine whether pedestrians die disproportionately in low-income areas. To calculate the number of fatalities by MSA, a spatial join was performed with the longitude and latitude as reported by FARS.

Appendix: Metro data

Rank	Metro area	Average ped deaths/100k people per year	Pedestrian deaths (2016 - 2020)	Difference in average daily walking trips, 2019 to 2020*	Pandemic change in fatality rate (Avg. 2016-19 vs 2020)	Long term trend in fatality rate (Five-year averages for 2011-15 vs 2016-20)
1	Deltona-Daytona Beach-Ormond Beach, FL	4.25	140	61%	0.68	0.97
2	Albuquerque, NM	4.19	192	35%	-0.48	1.91
3	Memphis, TN-MS-AR	3.93	264	49%	2.15	1.77
4	Tampa-St. Petersburg-Clearwater, FL	3.55	559	50%	-0.41	0.54
5	Charleston-North Charleston, SC	3.54	140	56%	1.36	1.57
6	Jacksonville, FL	3.44	264	60%	0.19	0.24
7	Bakersfield, CA	3.41	152	31%	0.06	0.68
8	Orlando-Kissimmee-Sanford, FL	3.37	431	22%	-0.72	0.6
9	Stockton, CA	3.35	126	44%	-0.74	1.52
10	Fresno, CA	3.25	161	24%	1.22	1.24
11	Baton Rouge, LA	3.2	137	58%	1.54	0.93
12	Palm Bay-Melbourne-Titusville, FL	3.13	93	60%	-0.39	0.24
13	Tucson, AZ	3.12	162	44%	0.77	1.16
14	Miami-Fort Lauderdale-Pompano Beach, FL	3.11	954	34%	-0.01	0.48
14	Riverside-San Bernardino-Ontario, CA	3.11	716	35%	0.41	1.02
16	Columbia, SC	3	125	69%	-0.03	0.5
17	Greenville-Anderson, SC	2.97	135	79%	0.09	0.77
18	El Paso, TX	2.95	124	34%	-1.76	0.79
19	North Port-Sarasota-Bradenton, FL	2.92	120	71%	1.15	0.28
20	San Antonio-New Braunfels, TX	2.82	354	47%	0.46	0.43
21	Lakeland-Winter Haven, FL	2.81	99	71%	0.67	0.48
22	Phoenix-Mesa-Chandler, AZ	2.8	681	50%	-0.16	0.94
23	Cape Coral-Fort Myers, FL	2.78	105	61%	0.59	0.43
24	Little Rock-North Little Rock-Conway, AR	2.75	102	71%	2.28	1.01
25	Las Vegas-Henderson-Paradise, NV	2.62	292	9%	0.03	0.41
25	Jackson, MS	2.62	78	58%	1.35	0.37

* Via Streetlight Data, based on information from cellphones and mobile devices. Includes an expansive amount of walking trip data not limited to streets and sidewalks.
** Streetlight Data did not have information for metro Honolulu, HI.

Rank	Metro area	Average ped deaths/100k people per year	Pedestrian deaths (2016 - 2020)	Difference in average daily walking trips, 2019 to 2020*	Pandemic change in fatality rate (Avg. 2016-19 vs 2020)	Long term trend in fatality rate (Five-year averages for 2011-15 vs 2016-20)
27	Atlanta-Sandy Springs-Alpharetta, GA	2.53	752	43%	0	0.82
27	Sacramento-Roseville-Folsom, CA	2.53	296	36%	-0.04	0.74
29	New Orleans-Metairie, LA	2.48	158	24%	0.14	0.38
30	Louisville/Jefferson County, KY-IN	2.47	156	55%	0.36	0.84
31	San Diego-Chula Vista-Carlsbad, CA	2.45	407	20%	0.13	0.57
32	Los Angeles-Long Beach-Anaheim, CA	2.4	1586	6%	0.08	0.53
33	Oklahoma City, OK	2.3	161	66%	0.5	0.83
34	Birmingham-Hoover, AL	2.28	124	82%	0.36	0.75
35	Richmond, VA	2.25	144	48%	0.29	1.09
36	Houston-The Woodlands-Sugar Land, TX	2.23	779	51%	0.12	0.39
37	Austin-Round Rock-Georgetown, TX	2.2	239	43%	0.53	0.44
38	New Haven-Milford, CT	2.15	92	43%	0.97	0.92
39	Baltimore-Columbia-Towson, MD	2.11	295	28%	-0.09	0.43
39	Augusta-Richmond County, GA-SC	2.11	64	73%	1.26	-0.13
41	Nashville-Davidson--Murfreesboro--Franklin, TN	2.09	199	53%	0.9	0.88
41	Tulsa, OK	2.09	104	71%	0.14	0.43
43	Urban Honolulu, HI	2.06	101	**	-0.53	0.33
44	Dallas-Fort Worth-Arlington, TX	2.04	761	53%	0.35	0.55
44	Charlotte-Concord-Gastonia, NC-SC	2.04	265	58%	0.4	0.42
46	Philadelphia-Camden-Wilmington, PA-NJ-DE-MD	1.98	604	31%	-0.21	0.22
46	Greensboro-High Point, NC	1.98	76	57%	0.11	0.31
48	Detroit-Warren-Dearborn, MI	1.86	401	46%	0.28	-0.01
49	San Jose-Sunnyvale-Santa Clara, CA	1.84	183	11%	-0.04	0.2
50	Portland-Vancouver-Hillsboro, OR-WA	1.83	226	38%	0.02	0.61
51	St. Louis, MO-IL	1.82	255	55%	0.63	0.34

* Via Streetlight Data, based on information from cellphones and mobile devices. Includes an expansive amount of walking trip data not limited to streets and sidewalks.
** Streetlight Data did not have information for metro Honolulu, HI.

Rank	Metro area	Average ped deaths/100k people per year	Pedestrian deaths (2016 - 2020)	Difference in average daily walking trips, 2019 to 2020*	Pandemic change in fatality rate (Avg. 2016-19 vs 2020)	Long term trend in fatality rate (Five-year averages for 2011-15 vs 2016-20)
52	Syracuse, NY	1.75	57	40%	-0.07	0.93
53	Indianapolis-Carmel-Anderson, IN	1.73	177	56%	0.75	0.23
54	Denver-Aurora-Lakewood, CO	1.67	245	35%	-0.02	0.33
54	Bridgeport-Stamford-Norwalk, CT	1.67	79	42%	-0.5	0.8
56	San Francisco-Oakland-Berkeley, CA	1.61	378	4%	0.06	0.13
57	Raleigh-Cary, NC	1.6	109	54%	0.35	0.2
58	Harrisburg-Carlisle, PA	1.57	45	45%	-1.32	0.6
59	McAllen-Edinburg-Mission, TX	1.56	67	65%	-0.36	-0.08
60	Durham-Chapel Hill, NC	1.54	49	41%	0.21	-0.18
61	New York-Newark-Jersey City, NY-NJ-PA	1.52	1468	20%	-0.11	-0.09
62	Salt Lake City, UT	1.51	92	53%	-0.57	0.09
63	Knoxville, TN	1.49	64	78%	0.16	0.32
63	Winston-Salem, NC	1.49	50	73%	-0.76	0.11
65	Kansas City, MO-KS	1.46	157	68%	0.02	0.31
65	Dayton-Kettering, OH	1.46	59	56%	0.18	NA
65	Toledo, OH	1.46	47	59%	0.31	0.14
65	Chattanooga, TN-GA	1.46	41	71%	-0.28	0.31
69	Washington-Arlington-Alexandria, DC-VA-MD-WV	1.45	452	19%	0.2	0.21
70	Colorado Springs, CO	1.44	53	56%	0.05	0.56
71	Columbus, OH	1.43	150	50%	0.1	0.36
72	Scranton--Wilkes-Barre, PA	1.41	39	60%	0.05	-0.16
73	Seattle-Tacoma-Bellevue, WA	1.38	271	27%	0.32	0.47
73	Virginia Beach-Norfolk-Newport News, VA-NC	1.38	122	40%	-0.39	-0.01
75	Chicago-Naperville-Elgin, IL-IN-WI	1.36	644	39%	0.03	0.3
75	Spokane-Spokane Valley, WA	1.36	38	48%	0.29	0.28
77	Milwaukee-Waukesha, WI	1.31	103	55%	-0.37	0.18

* Via Streetlight Data, based on information from cellphones and mobile devices. Includes an expansive amount of walking trip data not limited to streets and sidewalks.
** Streetlight Data did not have information for metro Honolulu, HI.

Rank	Metro area	Average ped deaths/100k people per year	Pedestrian deaths (2016 - 2020)	Difference in average daily walking trips, 2019 to 2020*	Pandemic change in fatality rate (Avg. 2016-19 vs 2020)	Long term trend in fatality rate (Five-year averages for 2011-15 vs 2016-20)
77	Hartford-East Hartford-Middletown, CT	1.31	79	43%	0.03	-0.02
79	Providence-Warwick, RI-MA	1.3	105	46%	0.54	0.17
80	Rochester, NY	1.29	69	48%	0.14	0.31
81	Wichita, KS	1.28	41	62%	0.16	0.31
82	Cincinnati, OH-KY-IN	1.22	135	57%	0.28	0.36
83	Albany-Schenectady-Troy, NY	1.2	53	38%	-0.52	-0.03
84	Springfield, MA	1.17	41	21%	-1.1	-0.13
85	Oxnard-Thousand Oaks-Ventura, CA	1.16	49	40%	0.33	-0.15
86	Ogden-Clearfield, UT	1.13	38	78%	0.25	-0.06
87	Grand Rapids-Kentwood, MI	1.1	59	65%	0.01	-0.08
88	Cleveland-Elyria, OH	1.08	111	45%	0.11	0.44
89	Omaha-Council Bluffs, NE-IA	1.06	50	70%	0.12	0.35
90	Allentown-Bethlehem-Easton, PA-NJ	1.05	44	60%	0.33	-0.3
91	Buffalo-Cheektowaga, NY	1.01	57	34%	-0.15	-0.1
91	Boise City, ID	1.01	37	63%	-0.61	0.43
93	Akron, OH	1	35	59%	0.01	0.32
94	Boston-Cambridge-Newton, MA-NH	0.96	233	20%	-0.09	-0.05
95	Pittsburgh, PA	0.92	107	43%	-0.18	0.03
96	Worcester, MA-CT	0.91	43	54%	-0.48	-0.4
97	Poughkeepsie-Newburgh-Middletown, NY	0.89	30	51%	0.19	NA
98	Des Moines-West Des Moines, IA	0.81	28	70%	0.24	-0.15
99	Minneapolis-St. Paul-Bloomington, MN-WI	0.8	145	50%	-0.18	0.17
100	Madison, WI	0.79	26	52%	0.15	0.06
101	Provo-Orem, UT	0.57	18	67%	0.06	-0.18

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** Streetlight Data did not have information for metro Honolulu, HI.

Appendix: State data

Rank	State	Average ped deaths/100k people per year	Pedestrian deaths (2016 - 2020)	Difference in average daily walking trips, 2019 to 2020*	Pandemic change in fatality rate (Avg. 2016-19 vs 2020)	Long term trend in fatality rate (Five-year averages for 2011-15 vs 2016-20)
1	New Mexico	3.76	394	39%	0.01	1.09
2	Florida	3.22	3,420	48%	0.02	0.49
3	South Carolina	3.19	811	72%	0.56	0.82
4	Arizona	2.98	1,070	53%	0.08	0.82
5	Delaware	2.89	140	50%	-0.42	0.04
6	Louisiana	2.86	668	53%	0.28	0.62
7	Mississippi	2.6	388	82%	1.19	0.83
8	Nevada	2.58	391	17%	-0.01	0.41
9	Georgia	2.4	1,261	59%	0.29	0.74
9	California	2.4	4,729	19%	0.13	0.55
11	Alabama	2.32	567	90%	-0.33	0.63
12	Texas	2.26	3,231	57%	0.15	0.44
13	Hawaii	2.13	151	NA**	-0.81	0.41
14	North Carolina	2.04	1,060	63%	0.17	0.23
15	Oklahoma	2.02	399	78%	0.15	0.53
16	Maryland	2.01	606	34%	0.17	0.31
17	Tennessee	2	677	68%	0.67	0.72
18	Arkansas	1.99	300	86%	0.86	0.53
19	New Jersey	1.96	870	40%	0.03	0.24
20	Oregon	1.81	377	46%	-0.13	0.41
21	Kentucky	1.8	401	66%	0.3	0.54
22	Missouri	1.71	524	72%	0.47	0.38
23	Alaska	1.6	59	NA**	0.2	0.26
24	Connecticut	1.56	278	45%	0.02	0.45

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** Streetlight Data did not have data for Hawaii or Alaska

Rank	State	Average ped deaths/100k people per year	Pedestrian deaths (2016 - 2020)	Difference in average daily walking trips, 2019 to 2020*	Pandemic change in fatality rate (Avg. 2016-19 vs 2020)	Long term trend in fatality rate (Five-year averages for 2011-15 vs 2016-20)
25	Michigan	1.55	773	58%	0.2	0.08
26	Colorado	1.48	420	43%	0.05	0.37
27	District of Columbia	1.4	49	-36%	0.01	-0.02
27	Indiana	1.4	468	69%	-0.02	0.27
29	Montana	1.39	74	64%	0.24	-0.01
30	Virginia	1.37	585	49%	-0.1	0.38
31	New York	1.35	1,314	21%	-0.2	-0.18
32	West Virginia	1.34	121	69%	-0.42	0.08
33	Washington	1.32	494	39%	0	0.34
34	Rhode Island	1.27	67	41%	0.43	0.23
34	Illinois	1.27	808	49%	0.14	0.23
36	Pennsylvania	1.26	804	45%	-0.17	0.06
37	Ohio	1.18	686	60%	0.23	0.31
38	Utah	1.17	184	67%	-0.17	0.03
39	Wyoming	1.14	33	64%	-0.13	0.24
40	Kansas	1.13	165	74%	0.56	0.36
41	South Dakota	1.07	47	86%	0.64	0.29
42	Massachusetts	1.06	365	24%	-0.32	-0.08
43	Maine	1.03	69	60%	-0.45	0.16
44	Nebraska	0.98	94	80%	-0.05	0.32
45	Vermont	0.93	29	-5%	0.44	0.04
45	New Hampshire	0.93	63	66%	0.31	0.25
45	Wisconsin	0.93	269	72%	-0.09	0.09
48	Idaho	0.86	75	70%	-0.09	0.15
49	North Dakota	0.82	31	65%	0.29	-0.09
50	Minnesota	0.82	230	59%	-0.03	0.22
51	Iowa	0.73	115	86%	0.16	0.03

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