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Transportation

A COMMUNITY DRIVER OF HEALTH

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About this report

In February 2020, a Health Policy Leadership Summit was held in Washington, D.C., where experts in the fields of public health and health care discussed research and analyses on economic and social conditions that influence health. Experts also discussed evidence-based policy opportunities to improve the health of communities. This paper represents transportation and health discussions at the 2020 Policy Leadership Summit and subsequent updates made by the authors in the autumn of 2020 and spring of 2021.

The views and opinions expressed herein do not necessarily represent the official views of the summit sponsors and should be attributed to the authors rather than to American Public Health Association, AcademyHealth, or Kaiser Permanente.

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*Emiko Atherton served in this role until July 2020.

Summary

Transportation decisions affect everyone, by influencing where they live, how they can get to work and school, whether they can easily access health and other essential services, how they socialize with family members and friends, and ultimately if they can thrive in a physical environment that supports healthy outcomes.

Accessible, affordable, and reliable transportation is essential for everyone — but decades of policy decisions and infrastructure investments, coupled with racist land use policies,[1] have resulted in serious transportation inequities in the United States, and have made it increasingly clear that transportation is a social determinant of health.[2,3,4,5,6,7]

Communities of color and poor white communities, whether urban or rural, are more likely to rely on public transit systems and are more directly affected by lopsided infrastructure investments.[8] Historically, 80 percent of federal investments go to roads, bridges, and highways, and less than 20 percent goes to public transit systems.[9] Transportation plays a direct role in providing access to resources for many vulnerable populations, including communities of color, older adults living independently, veterans, people living with disabilities, and low-wealth rural, urban, and tribal communities, making comprehensive federal policies and leadership critical to improving transportation equity for individuals, communities, and tribes throughout the country.

Transportation is part of our critical infrastructure, and its workers are considered essential. The sense of urgency about improving transportation infrastructure has been heightened during the novel coronavirus pandemic. While many states temporarily suspended parts of their economies to slow the exposure to the disease, resulting in decreases in ridership on subways and buses, transportation workers were deemed "essential" and were required to show up for work so that other frontline workers, such as health professionals, grocery store workers, delivery workers, first responders, and others could continue to get to work. Racial and ethnic minority populations are disproportionately represented in essential worker positions and industries, increasing susceptibility to the coronavirus and contributing to COVID-19 racial and ethnic health disparities.[10]

In October 2020, the NYU School of Global Health reported that 25% of transit workers had contracted COVID-19 because of heightened exposure to the public and the lack of safety measures.[11] The demographics of survey participants in this pilot study mirrored that of the Local 100 chapter of the Transport Workers Union of America, which represents approximately 41,000 workers in New York City transportation systems. Survey participants were predominately male identifying, Black and Hispanic, and averaged 51 years of age.[12,13]

The national conversation about racial equity needs to include transportation. Transportation decisions impact people's access to health care, their ability to enjoy physical activity and time outdoors in their daily lives, their opportunities to spend time with family and friends, and whether they feel safe on their streets and in their neighborhoods. According to Smart Growth America, states have recently been raising, not lowering, the allowable "target" numbers for deaths and injuries among vulnerable road

users, such as people walking, biking, using wheelchairs, and riding scooters and other non-motorized vehicles. A disproportionate number of those fatalities occur in urban neighborhoods of color.[14]

Successful decision-making and implementation strategies for building healthier, safer, more equitable transportation systems do exist — active transportation and health advocates emphasize the importance of reframing the narrative to draw attention to the importance of transportation equity and engage community members and elected officials in the process of promoting it. By building understanding around the direct links and health inequities that tie together transportation policies and dominant issues like climate, national security, and the economy, we can refocus dollars. Strategic investments and policy changes that increase transportation choices, safety, and infrastructure, like the adoption of the Complete Streets Act of 2021[15] or adopting flexible guidance for engineers on building roads that are safe, will save lives and improve health equity in the United States.

Introduction

> "Research continues to show that transportation in particular can both positively and negatively impact our health. And yet time and again transportation decision-makers have set plans and policies in motion, and built projects that have furthered health inequities in the U.S."
>
> – Smart Growth America, *The State of Transportation and Health Equity*[16]

Transportation is something most people living in the United States use every day. We walk, drive, or ride on wheels to access our jobs, schools, food, health care, or social networks. In fact, in a typical year, the average American makes over 1,500 trips or 4.1 trips a day on our public streets.[17]

Recently, our public streets have alternately been ghost towns, devoid of (non-essential) people at the height of stay-at-home orders in response to the spread of COVID-19, and epicenters of public protests over the murder of George Floyd and systemic racism in American policing. We have seen massive reductions in transit service across the country; and while more people are walking and biking, more cars are speeding up. People trying to keep safe distances while walking or exercising during the pandemic have been forced to flee too-narrow sidewalks and compete for road space with cars and other motorized vehicles, which is very risky.

In response, as of spring 2021, many cities are opening streets up for people to create safe spaces for socially-distanced activities, including outdoor dining; however, this shift has only further highlighted existing inequities, as higher-income areas tend to benefit more from street closures, and accessible routes to essential services and job centers are not routinely considered when streets are redesigned to incorporate socially-distanced activities. Additionally, critical network connections that depend on privately owned micro-mobility services,[18] low-speed shared vehicles operated by users themselves, such as shared bicycles or electric scooters, are breaking, thereby emphasizing the importance of building a sustainable, equitable, and affordable transportation system that is designed to serve everyone's needs.

The country is grappling with the revelation of the deep inequities that continue to persist due to systemic racism, exposed not only by the recent attention to police brutality but proven even further by the disparity of impacts of COVID-19 on Black and brown communities. While a new Congress moves to respond to the crisis that is unfolding, there is uncertainty about whether political capital in the new Administration will be sufficient to advance health equity through transportation. Many transportation analysts and advocates are apprehensive about whether future stimulus infrastructure investments will prioritize new roadway projects that do little to address health or equity concerns, over transit and active transportation systems that have the potential to positively impact health, equity, and the environment.

Layered with the multiple crises facing communities, people continue to experience transportation differently depending on where they live. An individual living in a middle- or high-income neighborhood may be able to afford a car more easily, making most destinations easy to access. In addition, these communities typically have access to safe sidewalks, bike lanes, crosswalks, and destinations reachable by foot or wheels, as well as affordable public transit options.

On the other hand, an individual living in a low-income neighborhood or community of color, including tribal communities, may not have the same level of access to bicycle and pedestrian infrastructure, reliable public transit, or destinations they can access by foot or wheels. These disparities in transportation create drastic differences in income, health, and well-being contributing to longstanding systemic racism. Ironically, transit and other essential workers are more likely to live in low-income neighborhoods farther away from their jobs and without reliable and affordable public transit.

Transportation is a key social determinant of health. The social determinants of health are defined as "conditions in which people are born, grow, live, work and age that shape health." These determinants of health include factors such as socioeconomic status, education, built environment, housing, employment, social networks, and access to care.[19]

> "In the United States today, a person's ability to live a healthy life is dramatically affected by where he or she lives. Someone's subway stop or neighborhood block can mean the difference between living like it's 2017 or 1917."
>
> – Graham and Bernot, Health Affairs Blog, 2017[20]

Among the social determinants of health, transportation is most directly linked with built environment factors (otherwise known as the neighborhood and physical environment); however, transportation also affects our abilities to access jobs, education, healthy food, social engagements, faith-based institutions, and health care. Researchers and practitioners have identified several evidence-based strategies to address built environment factors related to the social determinants of health. Governments, private entities, and non-profit organizations, in turn, have deployed these strategies at the national, state, and local levels.

The American Rescue Plan passed in early March 2021 will provide $30.5 billion in emergency federal assistance for public transit agencies to restore service cuts due to the pandemic, which will have a direct impact on transit workers, ensure people can get to vaccination sites, and help to accelerate the

pandemic response. The funding includes dedicated support for rural transit, transit service for elderly and disabled people, and transit on Tribal lands. An additional $1.7 billion in funding will be provided for Amtrak to restore long-distance service, including state funding to restore state-supported routes, and $8 billion in additional funding will go to airports for operations, personnel, and cleaning.[21]

To fully appreciate the magnitude and potential impact of these investments on the public, it is important to understand how transportation evolved in this country. This paper will describe: 1) the history of transportation and land use in the U.S.; 2) the status of transportation and land use in the U.S.; 3) the impact of transportation on vulnerable populations; 4) evidence-based strategies to increase transportation options; 5) areas for further exploration and research; and 6) recommendations for public interventions and investments.

This paper primarily focuses on urban and suburban environments. For more information about transportation as a social determinant of health in rural communities, please visit the Rural Health Information Hub and toolkit funded by the Federal Office of Rural Health Policy at the Health Resources and Services Administration, US Department of Health and Human Services.[22] Also see National Congress of American Indians resources on tribal transportation priorities.[23]

History of transportation and land use in the United States

While highways, suburbs, and cul-de-sacs now seem synonymous with American life, they are in fact creations of the last 70 years, designed to perpetuate and maintain residential segregation. Although they are not the only factors that created deep health disparities across neighborhoods and races, this legacy infrastructure continues to perpetuate inequities.

History of the highway and land use

President Eisenhower signed into law the Federal-Aid Highway Act of 1956 with the intent to create almost 40,000 miles of uniform roadway in the United States. This laid the groundwork for an unprecedented amount of investment in the infrastructure of the country.

However, the structural racism and racial bias that existed at the time dominated how and where these dollars were used, allowing policymakers, engineers, planners, and private business to use discriminatory practices to:

- **Destroy neighborhoods:** To build the highway system, engineers and policymakers repeatedly tore down urban African American and Latinx neighborhoods to allow for the new construction. The projects cut communities in half, separating African American communities from the rest of their cities and the new economic prosperity of post-WWII America. The practice had actually started decades earlier. Robert Moses, a famed urban planner in New York City during the 1920s, had African American and Latinx neighborhoods bulldozed to make way for parks in white neighborhoods and built freeway overpasses whose clearance was too low for buses carrying Black and brown city dwellers to get to Long Island beaches.[24]

- **Allow for urban sprawl:** Housing developers and banks actively invested in the new middle class and wealthy suburbs. However, housing covenants and redlining practices systematically kept people of color out of these neighborhoods. Public and private institutions then invested in these new communities, creating places rich with resources such as healthy food, health care, and parks. Conversely, the now-destroyed urban neighborhoods were left with very few resources and faced decades of disinvestments and intentional neglect. Some predominantly white suburban areas, such as those around Atlanta and other cities with large Black populations, have separate transit authorities from those cities.[25]

In addition, these policymakers promoted policies that:

- **Increase the reliance on the personal automobile and decrease access to opportunity:** The rise of highways and suburbs coincided with a rise in personal automobile ownership. In 1940, 60% of Americans owned cars. Today, 95% of Americans own cars. Auto-centric communities decreased people's access to many destinations through active transportation, such as walking and biking.[26]
- **Increase in traffic and carbon emissions:** The development of highways and suburbs created an environment where more people needed cars to access destinations farther away, creating more traffic and, consequently, more carbon emissions.[27]

At the same time the federal government was building highways across the United States, local governments and developers were building new types of communities. Historically, urban communities in the United States were built using a grid layout with a mix of many uses, including jobs, housing, food, faith-based institutions, and health care. Because these cities were built before the personal automobile, these destinations were designed to be accessible by foot.

However, at the beginning of the 20th century, local governments sought to have more control of the use of their land through municipal zoning. The aim was to separate undesirable land uses, such as factories and high rises with multiple families, from open space and single-family housing. In addition, this practice allowed governments to segregate white people from other races. This structural discrimination in the housing market was compounded by redlining, "the systematic practice of denying or limiting private, public, and government services to neighborhoods based on racial and ethnic composition."[28] Neighborhoods with sizeable Black populations were outlined in red ink on maps to indicate neighborhoods in which mortgage lenders should not invest.[29] Investigations found these decisions were based on race and ethnicity alone and that lenders would make loans to lower-income white people, but not middle- to upper-income Black people. Moreover, racist housing covenants were embedded in property deeds to keep people who were not white from buying or even occupying land.[30]

Unwanted uses, such as industrial factories, waste-processing plants, and toxic refineries, were then deliberately placed in African American communities, subjecting those residents to greater risks of air and water pollution, soil contamination, and other toxins and causing disproportionate health risks. There are examples from all around the country, but one of the most notorious is "Cancer Alley" in Louisiana, which is filled with oil refineries and chemical plants.[31]

These land use policies allowed for the continued residential segregation[32] of whites from other races, as well as segregation of resources. Businesses invested in all-white communities, raising their property values, and, consequently, their tax bases. Meanwhile, African American communities received little to no outside investment, causing property values to decline and tax bases to nosedive. Over time, other communities of color started to populate these disinvested communities. This further compounded the inequities between neighborhoods.

Transportation and land use today

Rise of the city

The first part of the 2010 decade marked a resurgence of people returning to large cities.[33] According to the National Community Reinvestment Coalition (NCRC), this trend was driven in large part by a shift in preference toward walkable communities.[34,35] This shift toward gentrification drove up urban housing costs and other cost of living expenses in cities, consequently also driving racialized displacement for Black and brown residents who were forced to leave before they could benefit from the benefit of increased property value and other investments. The lower-wealth families living in cities relocated into auto-centric suburbs where the cost of living was less but where reliable, affordable access to transit was hard to find. As a result, these low-wealth families now living in the suburbs experienced barriers to employment in these car-dependent communities.

Reversal in trends

2017 U.S. census data has pointed to population shifts back to suburbs, exurbs, and rural areas, as well as a migration from the northern to the southern part of the United States. In addition, the Census data also indicated growth in mid-sized cities in the middle of the country.[36,37] Because the data is so new, much remains to be learned about how this shift could impact the social determinants of health.

Changing transportation preferences

Today, more people in the United States desire to bike and walk than ever before, but the patterns of preferences for bicycling vary for white, Black, and brown individuals. According to Smart Cities, people of color, including immigrants, are more likely than white people to bicycle because they don't own a car.[38] Repeated surveys by the National Association of Realtors and others demonstrated the demand for walkable communities, but those communities also command a price premium in the market — both in terms of residential and office space. This is causing the private sector to develop more walkable, bikeable places, but mostly at market prices that are unaffordable for many people of color.[39,40]

Technology

Over the last five years, shifts in the entire transportation system, including new technology like ride sourcing, demand-responsive transportation, car-sharing, bike-sharing, scooter-sharing, delivery robots, and autonomous vehicles were rapidly altering the way individuals interact with transportation. There has been limited academic research on the impact of transportation technology on the social determinants of health, and even less on the impact of the pandemic.[41]

One of the most promising trends in ridesharing services is as a source of non-emergency medical transportation (NEMT). One example of this is the Federal Transit Administration's Rides to Wellness Program which aims to improve the coordination of NEMT to help increase access to health services for transportation disadvantaged communities through the Innovative Coordinated Access and Mobility (ICAM) pilot grants program.

Moreover, Lyft began developing partnerships with hospitals, health systems, and Medicaid agencies a few years ago to transport patients to and from medical appointments. Studies of Lyft and other ridesharing services such as Uber have found lower no-show rates and decreased use of emergency transit (e.g., ambulances) as vulnerable individuals no longer have to navigate inconvenient public transit schedules and get to and from locations that may be far away from where they live.[42]

Lyft is also partnering with Epic,[43] a leading vendor of electronic health records, to make it easier for hospital and health system personnel to use their electronic health records to schedule rides for patients, people with disabilities, and others with mobility issues, such as older adults. A similar partnership has been struck by Uber with Cerner Corporation, the second largest EHR vendor, to integrate the Uber Health app with Cerner's EHR platforms.[44] Ridesharing partnerships such as these also help meet public health and safety goals, e.g., don't drink and drive.[45]

Changes in land use

Over the last decade, many cities started to adopt policies to end zoning policies that promoted separated uses, sprawl, and auto-centric communities. For example, in 2019 the city of Minneapolis and the state of Oregon both passed laws to end single-family zoning. Pre-pandemic, other cities had begun to lower parking minimums for developers, instead allowing them to increase the number of units in developments and offer bus passes or bike parking to their tenants.

To design and build more equitable transit systems, it is important to realize how transportation fits into larger economic and environmental planning. Redlining, highway location, pollution, and lack of investment in valuable neighborhood resources (e.g., banks, grocery stores, clinics, location of bus and subway stops) cannot be undone without electing officials and other decision-makers who reflect the priorities of people who live in these communities.[46]

Impact on vulnerable populations

Transportation and access to opportunity

Transportation plays a direct role in providing access to resources, such as job opportunities, health care services, and open spaces and infrastructure to support physical activity for many vulnerable populations, including communities of color, older adults, people living with disabilities, veterans, Native and indigenous communities living in remote areas, and other low-wealth communities.

Transportation and access to jobs

Reliable transportation is a key factor in whether an individual can attain or hold a job. According to a 2013 study conducted by the Board of Governors of the Federal Reserve Bank, "inadequate public transit and car affordability emerged as significant barriers to attaining and maintaining employment."[47] Without reliable transportation, employees may be limited to working certain shifts, may not show up to work on time, or may not be able to show up at all.

For most people, reliable transportation means having access to a car.[48] However, car ownership places an undue burden on low-wealth households, as the average annual cost to own a car is $8,449.[49] This leaves these low-income households in a precarious and vulnerable position that is further compounded in many low-wealth neighborhoods that lack multi-modal transportation choices. Without access to transportation options like public transit, walking and rolling, or biking, those who live in auto-centric communities are more likely to fall into poverty due to transportation-related emergencies. These challenges are further exacerbated for people living in rural communities, including tribal communities, with no access to public transit and long distances between destinations, often on dirt or poorly paved roads.

Transportation and access to health care

Transportation is also cited as a barrier to accessing health care, causing patients to reschedule or miss appointments, delay care, and miss or delay medication use.[50] In 2017, approximately 5.8 million people living in the United States missed or delayed essential, non-emergency medical care because of transportation barriers, with the chronically ill, women, veterans, the elderly, Black, brown, and indigenous people, and low-income individuals facing the largest transportation burdens.[51,52]

For those living in urban and suburban areas, ridesharing services such as Uber and Lyft are developing partnerships with health systems to provide non-emergency medical transportation that has been shown to reduce medical costs, such as the use of ambulances to get to appointments, and to improve access to primary care when needed. However, individuals living in rural areas and indigenous people living on reservations, which are designated as healthcare provider shortage areas (HPSAs),[53] still continue to lack adequate transportation access to care. Telehealth use has increased during the pandemic, helping address the problem, but broadband infrastructure is not well enough developed yet to cover many of these geographic areas. In January 2021, The U.S. Department of Health and Human Services provided $8 million to address gaps in rural telehealth,[54] and The American Rescue Plan includes over $7 billion to reimburse schools and libraries for providing free broadband.[55]

Transportation and access to physical activity

Almost 40% of the American population are overweight or obese, resulting in elevated risk for heart disease, stroke, type 2 diabetes, and certain types of cancer, which are some of the leading causes of preventable, premature death. Physical activity is a key contributor in preventing premature deaths associated with such diseases. However, only one in four Americans get the physical activity they need to help reduce and prevent chronic diseases.[56]

Unfortunately, many communities do not have the outdoor infrastructure to support safe walking and biking to everyday destinations. Evidence shows very limited public investments are made in low-income communities to improve roads, sidewalks, lighting, and other transportation infrastructure that would improve people's everyday mobility, physical activity, and safety. A Bridging the Gap study of income disparities in street features that encourage walking found that streets with street and/or sidewalk lighting, traffic calming, and marked crosswalks were significantly more common in higher-income communities than in middle- and low-income communities.[57]

Transportation and safety

Overall, bicycle and pedestrian fatalities are on the rise in the United States.[58] In the past decade, the number of people struck and killed by a car, truck, or bus while walking increased by 35%.[59] Furthermore, even when controlling for differences in population size and walking rates, older adults, people of color, and people walking in low-income communities are disproportionately represented in fatal crashes involving pedestrians (see Figure 1).

People ages 50 and up, and especially those 75 and older, are particularly overrepresented in deaths involving pedestrians.[60] This age group is more likely to experience challenges seeing, hearing, or moving, and if these trends are any indication, far more attention should be devoted to the unique needs of older adults and people with disabilities when designing our streets.

Figure 1. Relative Pedestrian Danger by Race and Ethnicity (2010-2019)

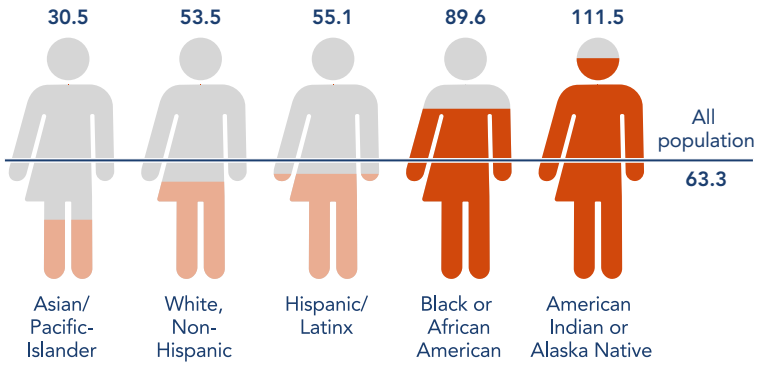
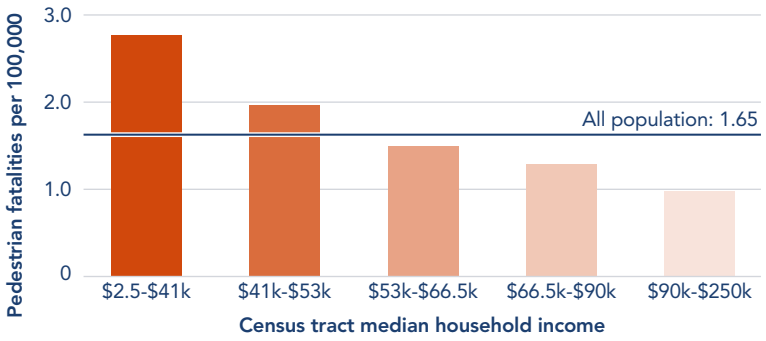


Figure 2. Pedestrian fatalities per 100,000 people by census tract MHI (2010-2019)



Drivers also strike and kill people walking in low-income neighborhoods at much higher rates than in high-income neighborhoods (see Figure 2) because those in low-income neighborhoods often lack safe places, designated walking lanes, and adequate lighting to walk or roll. Road crashes involving wheelchairs are particularly dangerous for people who use wheelchairs, who have been found to have substantially higher mortality rates than other pedestrians.[61]

Strategies and action steps

Focus on evidence-based strategies

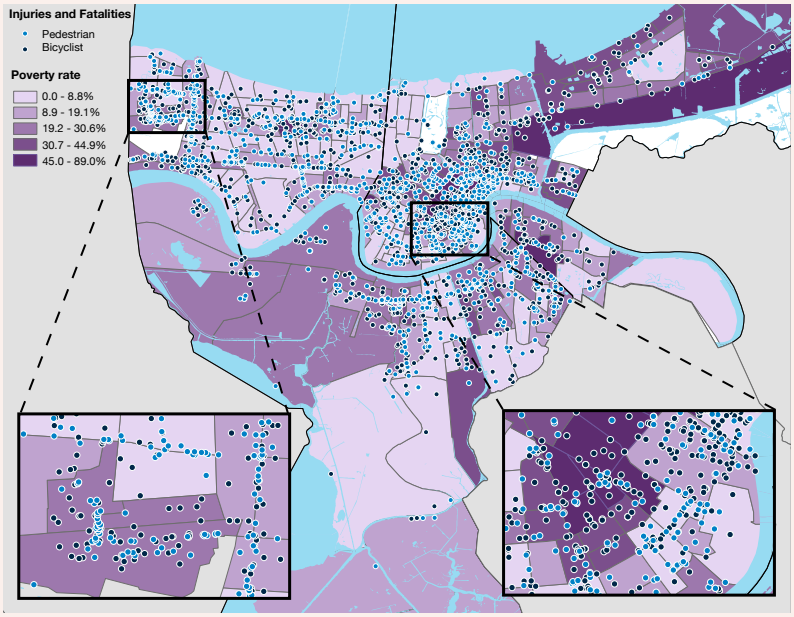
Transportation and public health professionals have identified evidence-based strategies to help improve the social determinants of health in built environments. These strategies focus on community design, street design and land use policies that make it easier for people to access physical activity, jobs and other essential services, and on the engagement of stakeholders in planning decisions.

Case Study: New Orleans and Jefferson Parish

Smart Growth America, in partnership with Bike Easy, authored Complete Streets for Health Equity: An Evaluation of New Orleans and Jefferson Parish. The report found that both low-income communities and communities of color experienced worse overall health outcomes, including higher rates of chronic diseases such as diabetes and asthma, as well as decreased average life expectancy. People in these same communities were also more likely to be struck and killed by motorized vehicles while walking or biking and tended to live in places without adequate sidewalks and crosswalks, due in part to decades of discriminatory housing and transportation policies.

While biking infrastructure helps provide some people with opportunities for physical activity, the report found that New Orleans' bicycle network is mostly concentrated in and around the downtown area, focusing on tourists and higher-income neighborhoods, and that gaps exist in high-poverty areas and communities of color. The report also found that in New Orleans and Jefferson Parish, people living in high-poverty census tracts experienced a disproportionate number of biking and walking crashes.

Figure 3. Location of pedestrian and bicycle crashes relative to poverty rate, 2004-2016 (N=3,009)



In New Orleans and Jefferson Parish, 36% of people live in high-poverty census tracts yet over 67% of crashes involving people biking or walking occur in these places.

(Data sources: Lousiana Department of Transportation and Development, American Community Survey 5-year estimates)

The Community Preventive Services Task Force has developed a comprehensive group of evidence-proven strategies to help promote physical activity and community, as listed below:[62]

Pedestrian and bicycle transportation system intervention components:

- Street pattern design and connectivity
- Pedestrian infrastructure
- Bicycle infrastructure
- Public transit infrastructure and access

Land use and environment design intervention components:

- Mixed land use
- Increasing residential density
- Proximity to community or neighborhood destinations
- Parks and recreation facility access

The Task Force is an independent, non-federal panel of public health and prevention experts with professional staff support at CDC. The guidelines they develop are based on a careful review of published evidence, such as research by the Federal Highway Administration (FHWA), which has evaluated the efficacy of these specific countermeasures to improve safety, including interventions like sidewalks and mid-block crossings.[63] Additional studies have measured an increase in biking and walking after the installation of such infrastructure and are available in the Task Force report.

Promote and use effective implementation strategies

While practitioners, researchers, and policymakers generally agree upon the strategies listed above, they almost uniformly cite the implementation of those strategies as the largest barrier to improving health equity. While evidence-based and practitioner-identified implementation strategies are essential, political will and adequate financial resources are also required. Many of these strategies were identified in a report published by Smart Growth America titled The State of Transportation and Health Equity[64] and highlighted in several other reports.[65,66,67]

Reframe the transportation narrative

The narrative around transportation still supports auto-centric solutions to congestion, accessibility, and safety. Said plainly, many people still believe widening highways or adding more roads will improve transportation. In addition, many drivers still see the addition of bike lanes or crosswalks as a nuisance.

Most advocates of multi-modal transportation use messages in their work that reflect their own values, but do not resonate with the audiences they are trying to influence. Instead, transportation messages should be reframed to relate to everyday people and elected officials. Advocates should link transportation to the topics that voters most care about, including jobs, housing affordability, education, and, most recently, environmental impact and climate change.

In addition, environmental health, physical activity, and multi-modal transportation advocates should team up to promote public and media awareness about the role transportation plays in people's lives. The media plays a major part in shaping the public's understanding of transportation. However, media reports rarely explain transportation's role in the economy, health or well-being of a place, and instead

mostly focus on traffic. There are tremendous opportunities for public health messages to build public support for new infrastructure investments that engage communities in decision-making.

Refocus dollars on increasing transportation choices and infrastructure

The federal transportation program has not been overhauled in 70 years, and as a result, state departments of transportation continue to do what they were originally chartered to do: build roads. The majority of transportation dollars are still spent on building new roads and highways.

Federal government

In fiscal year 2020, the federal government distributed $45 billion to states for highways. Only $850 million, or less than .02% of highway spending, was set aside for transportation alternatives. The American Rescue Plan passed in March 2021 will invest $30.5 billion of federal funding in public transit to restore service cuts and help ensure more people can get to vaccination sites. The size of this investment signals a change in federal policy from the new Administration.[68]

Advocates recommend the federal government require states to link their federal dollars to outcomes beyond building new roads, such as providing access for all users of the system to jobs and other essential destinations, including schools and health care facilities. States such as Virginia and regions such as Madison, Wisconsin, Los Angeles, California, and Houston, Texas, have started measuring the performance of their transportation systems based on how well they connect people to essential services. Examples of helpful tools the federal government can encourage states to utilize are as follows:

Health Impact Assessment is an interdisciplinary approach and a useful tool for assessing equity issues that makes health benefits of a transportation project visible to metropolitan planning organizations, project managers, elected officials, public health officials, community members, and other stakeholders. Health impact assessments can be used to determine whether vulnerable communities are more likely to be impacted by projects. Funders can help improve decision making and promote systemic changes that could advance health equity by making health impact assessments a requirement of receiving funds.[69]

Use of other measurement tools is increasing, such as the Integrated Transport and Health Impact Model,[70] which can model projected health effects of a project through resulting changes to physical activity, air pollution, and injuries, translating it into deaths averted, and cost savings. Geographic Information System (GIS) software is becoming more affordable and accessible to local agencies for planning purposes, particularly when they pair with local universities and research teams.

In addition to linking dollars to these kinds of equitable health outcomes, the federal government and partners need to change guiding transportation policies and procedures. President Biden signed a 30-day extension of highway funding into law after the federal transportation bill expired at the end of September 2021. When reauthorization debates resume, Congress should prioritize transportation accessibility in the federal transportation bill, by adopting the Complete Streets Act of 2021,[71] introduced by Sen. Ed Markey, D-Mass., and Rep. Steve Cohen, D-Tenn. Additionally, the U.S. Department of Transportation (USDOT) should adopt flexible policy and guidance to achieve beneficial public health

outcomes. This could include, for example, using its role on the National Committee on Uniform Traffic Devices to push for increased and flexible guidance for engineers on building roads that are safe and meet the context of the surrounding community, versus merely designing for higher speeds.

States and metropolitan planning organizations

Healthy transportation advocates recommend that states and metropolitan planning organizations, or MPOs, be held accountable for meeting safety targets that reduce fatalities for vulnerable users. Through the Highway Safety Improvement Program (HSIP), each state adopts "safety" targets for the number of deaths and serious injuries they will experience on their roadways.

Beginning in 2018, states adopted targets for the number of non-motorized deaths and serious injuries combined, which includes people walking, biking, using wheelchairs, and riding scooters and other non-motorized vehicles. Eighteen states set higher targets allowing for **more** vulnerable people to be killed and injured compared to the most recent year of data reported at the time.[72] Advocates recommend requiring states and MPOs to set negative safety targets and to prioritize their spending on safety if they are not meeting those targets.

Case Study: Smart Scale — Performance-based project scoring framework

In 2014, the Virginia Department of Transportation updated the way it selects transportation projects for funding with the creation of Smart Scale. Smart Scale uses six factors — congestion mitigation, economic development, accessibility, safety, environmental quality, and (in areas with a population over 200,000) coordination with land use — to select projects for investment. This data-driven approach has helped VDOT select the transportation projects that best address their goals and values. As a result of this approach, VDOT is funding more Complete Streets projects because the Smart Scale framework ranks those projects as high value compared to their costs.

Learn more about Smart Scale at vasmartscale.org

Diversify transportation leadership

Most transportation agencies are still predominantly run by white decisionmakers. Therefore, those making decisions about transportation dollars and projects may be least likely to acknowledge or understand the needs of transportation-deficient communities or of communities facing higher burdens of chronic diseases. There is an opportunity at all levels of government to hire and engage more diverse decisionmakers, require diversity and equity training for transportation professionals and decisionmakers, and meaningfully engage with community leaders in all decision-making affecting their neighborhoods and communities.

Create more opportunities for collaboration and inclusion

Transportation decisions are typically made based on congressional funding, with decisionmakers including the federal Department of Transportation (DOT), state DOTs, metropolitan planning organizations, local city and county governments, and engineering firms. Historically, however, relatively few people of color, including tribal leaders, have been involved

in the transportation and environmental fields. Moreover, transportation professionals, public health practitioners, community groups, and other stakeholders tend to operate within silos of expertise and rarely include representatives of the communities that will be affected by their decisions.

American Association of State Highway and Transportation Officials (AASHTO) A Guidebook for Communications between Transportation and Public Health Communities aimed at improving collaboration, inclusion, and advancing health equity.

Deb Haaland, the 54th U.S. Secretary of the Interior, made history when she became the first Native American to serve as a cabinet secretary, which was an important step in the march towards achieving diversity and appropriate representation in the political process. Nonetheless, much more needs to be done to ensure that decisionmakers are reflective of the communities that will be most impacted by their actions. More inclusive and interdisciplinary approaches are needed for healthy transportation planning to address the complex and multi-level determinants of health in individuals and communities.

An example of a cross-sector collaborative approach to addressing the social determinants of health is Health in All Policies (HiAP). The goal of HiAP is to ensure policymakers and decision-makers are informed of the health and equity consequences of various policy options. HiAP brings together stakeholders and representatives from different sectors to discuss policy challenges, helping to promote efficiency by allowing a diverse set of agencies, advocates, and professionals to share resources, reduce redundancies, uplift community voices, and best meet community needs. The HiAP approach has been widely used in California and continues to be implemented in additional cities nationwide.[73,74]

Public transit is vitally important to low-income people and people of color, who tend to live farther away from living-wage jobs and tend to have more than one job to make ends meet. Given the nation's decaying infrastructure, these inclusive approaches need to emphasize that public transit is better for the environment and can also stimulate local economies, since retail stores and businesses choose to be located near transportation. More work on transportation equity has been done by The Center for Social Inclusion, which has now merged with Race Forward.[75] For example, the Racial Equity Assessment Toolkit has been used by local governments around the country to prevent and remediate inequities as they make budget decisions.[76]

Prioritize vulnerable communities in transportation decision-making

Communities of color experiencing higher burdens of chronic disease typically are under-represented in the transportation decision-making process. Generally, their needs and expertise are not recognized or acknowledged in most transportation planning and funding decisions.

As of early in 2021, governments using federal dollars are only required to engage with the community through the National Environmental Protections Act[77] after major details of the projects are determined. Governments, including tribal nations, should create meaningful opportunities for underserved communities to drive transportation planning that affects them and engage them early in the planning phase, similar to the Transportation Decision-Making Pilot Project. At the local and tribal levels, this

should be done as governments both decide what projects to fund and how those projects should be designed.

Finally, transportation decision-making can be complicated, opaque, and difficult to understand. It's rarely clear how decisions are made, so many stakeholders believe it to be a completely political process determined by influence, and rarely by evidence. Decision-making processes need to be more accessible, which means simplifying, avoiding jargon and working closely with "translators" — people or groups who can act as connectors between other sectors, communities and transportation professionals. This is especially important when setting long-term transportation goals and plans.

For example, the number one emitter of greenhouse gas in the U.S. is transportation. To address this challenge, many proposals focus on electrification solutions, such as electric vehicles, ignoring the fact that electric vehicles are expensive and would not resolve the inherent inequities in auto-centric communities.

Advocates state that providing more public transit and activity-friendly infrastructure would be a cost-effective way to reduce emissions and improve access to physical activity, jobs, and other essential services. It is exactly these types of solutions that public health leaders can promote with the new Administration.

Case Study: Breaking down the transportation decision-making process

The U.S. Department of Transportation created the Every Place Counts Leadership Academy to break down the transportation decision-making process for everyday people. When the academy was first released, USDOT held a number of in-person workshops across the country. While they are no longer providing those in-person trainings, they host several related resources on their website, including a toolkit and a facilitator guide for holding your own leadership academy.

Learn more about Every Place Counts at www.transportation.gov/leadershipacademy

Areas for further research

While there is significant research on the role of the built environment in the social determinants of health and specific interventions that improve the built environment for health, there is still a very limited body of work on how to successfully implement those interventions. Said another way, we know from case studies across the country that installing infrastructure like sidewalks, crosswalks, and pedestrian bridges works, but we don't know exactly how to get that infrastructure built most effectively in the communities most in need. Political will, fear, and misallocated dollars keep many good projects from being funded or built.

The 2019 Menino Survey of Mayors found that over 75% of American mayors agree or strongly agree that cities are too car-focused. However, many of the mayors "appear unwilling to implement or are unaware of best practices in transportation planning." In addition, the same survey found that only 28% of mayors

strongly agreed that cities should make their roads safer for bicyclists, even if it means sacrificing driving lanes and/or parking.[78]

Therefore, more implementation research is needed to understand the barriers to implementing and supporting these proven interventions at the state and local level. In addition, while the public is generally supportive of better transportation, transportation advocacy includes stakeholders with disparate and contradictory perspectives, including car culture, non-drivers (e.g., biking and walking), and public transit.

Coalition-based approaches featuring shared values are more likely to be effective, and community-based participatory research models, such as those used by public health systems researchers, have much to offer here.

A federal opportunity

Context

The American Rescue Plan of 2021 will make significant federal investments in the nation's transportation infrastructure to help restore cuts to service and make it easier for people to get vaccinated. These unprecedented investments are considered critical emergency funding to restore and expand services affected by the pandemic.

This level of investment and attention is unprecedented. At the national level, Congress, the major decisionmaker and funder for transportation infrastructure, typically engages on transportation policy only once every five years when the transportation bill is up for reauthorization. Therefore, they and their staff often lack understanding about the federal transportation program. Transportation votes are rare, and discussions about transportation are superficial because they happen rarely, and only in the context of the legislative process. Further, Capitol Hill offices and the White House are staffed around the budget and appropriations process, but transportation legislation advances through a different process. Therefore, Congressional offices and the executive branch agencies are usually light on transportation expertise as well.

As a result, the national discussion rarely dives beneath spending more money and building projects faster to examine whether we are building the right projects in the first place. During September 2020, just before the Fixing America's Surface Transportation (FAST Act) expired, Congress passed a one-year reauthorization of the FAST legislation as part of the House Continuing Appropriations Act 2021, to avoid a government shutdown. The bill allocated less than 2% for active transportation (walking and biking), 17% for public transit, and 80% for roads and interstate highways. By perpetuating outdated spending priorities, Congressional leadership also largely shut down a larger policy discussion on changing priorities and the relationship of transportation to public health, the environment, and the economy.

Opportunity

The transition to a new Administration and a new Secretary of Transportation provides an opportunity to highlight federal strategies to improve transportation access and safety for increased health equity.[79] As cities are emerging from the pandemic, car traffic is increasing faster than transit ridership and federal

investments in public transit have been frozen. Previously, the integral role of transportation in terms of critical infrastructure and issues such as climate change, national security and the economy was not addressed directly. However, these larger policy discussions now have major opportunities to support transportation and build intersectional environmental policies, which are often some of the cheapest and most effective ways to improve the climate, national security and our economy.

During the 2020 presidential campaign, some candidates released infrastructure plans that address Complete Streets, Vision Zero,[80] increasing funding for transit, connecting transportation projects to jobs and other essential services, and reducing speed limits. These proposals can be used as starting points to begin a larger discussion about the role of the Biden-Harris Administration in shaping the future of transportation.

Discussions will take place as the nation is facing an aging infrastructure, a growing population, and a major shortfall in transportation funding during the global pandemic. According to one estimate, rural transportation systems will have a $211 billion funding backlog for repairs and improvements because of the previous federal funding stalemate and reductions in state revenues during the pandemic.[81]

Public health can play a vitally important role in this discussion by highlighting the role transportation plays as a social determinant in health and health equity. At the community level, whether urban, rural, suburban, or tribal, inclusive transportation decision-making, planning, operations, and investment can consider the impact of transportation on improving health by using decision tools like the Transportation Health Impact Assessment Toolkit.[82] Developed by the Centers for Disease Control, the HIA Toolkit is tied to the Healthy People 2030 goal of promoting safe and active transportation.[83] It uses data from the Environmental Public Health Tracking Network for 25 states and one city and allows public officials and stakeholders to estimate the health impact of various decisions.[84,85]

Ultimately, to elevate built environment solutions in this Administration, public health leaders and champions will need to link transportation equity strategies to messages the American people care about. This increased level of engagement will require developing better messaging around these solutions, case studies to show successful examples, and more focus group research to understand how to message to different audiences. Done properly, there is a major opportunity to shape the Administration's discussions around transportation solutions that can promote economic opportunity and racial equity.

Case Study: Complete Streets Act

Introduced by legislators in 2019, the Complete Streets Act of 2019, which has been reintroduced as the Complete Streets Act of 2021, would require states and metro areas to design and build safer streets for everyone. Specifically, it would require states to set aside federal highway funds for Complete Streets projects, create a statewide program to award the money (and provide technical support), and adopt design standards that support safer Complete Streets. This legislation would reallocate existing federal funding to communities of all sizes, regardless of their tax base, to build Complete Streets projects.

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