



Quick Bites

Transportation as a Determinant of Health

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Transportation is much more than mobility; it is a social determinant of health (SDOH). Social determinant of health is a framework that recognizes that an individual's health status is influenced by factors at many levels. One such factor is the design of cities and communities, including transportation infrastructure. In fact, place is so influential for health status that an individual's [zip code is a greater predictor of life expectancy](#) than his or her genetic code.

That this generation of American children has a lower life expectancy than their parents^{1 2} underscores the urgent need for change. To see significant improvements in health, it is not enough to rely on promoting change at an individual level. Transportation is an essential component for creating better health; that is, population health cannot be improved without creating healthy transportation systems.

Transportation affects health in a number of ways, including the following:

- **Access to Health-Promoting Destinations.** Transportation enables access to health-promoting destinations, such as employment, schools, grocery stores, and healthcare services. Access includes land use and how affordable transportation is.
- **Traffic Safety.** Thousands of people are killed or seriously injured on U.S. roadways every year. Pedestrians and people of color are disproportionately impacted.³
- **Active Living.** Transportation facilitates active living, or, alternatively, encourages sedentary lifestyles that increase the risk for chronic disease.⁴ 35 percent of the coronary heart disease deaths can be traced to lack of physical inactivity.
- **Air Pollution.** Exposure to traffic-related pollution is linked to respiratory disease, the development of childhood asthma, and cardiovascular disease.⁵
- **Noise Pollution.** Noise from traffic leads to stress and sleep disturbances, both of which can lead to a higher risk for Type 2 diabetes.⁶ Transportation noise is associated with myocardial infarction (i.e., heart attacks), premature death, stroke, and hypertension. Exposure to chronic noise affects learning and affects children's cognitive development.
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¹ Olshansky J.S., et al.. "A Potential Decline in Life Expectancy in the United States in the 21st Century," *New England Journal of Medicine*, 2005; 352:1138-1145. <https://www.nejm.org/doi/full/10.1056/NEJMSr043743>.

² Woolf S.H., Schoemaker H. "Life expectancy and mortality rates in the United States, 1959-2017," *Journal of the American Medical Association*, 2019; 322(20): 1996-2016. https://jamanetwork.com/journals/jama/article-abstract/2756187?casa_token=04TAZQ2Zi9AAAAAA:KuzBakD7X0qK7kJ_oa6PL0QeTQM4UZ_bQUjCmAPwFPf18lzLMnsCDZJ9vr5DBqNVkcQqE0dCbA.

³ NHTSA. "Traffic Deaths Decreased in 2018, But Still 36,560 People Died," n.d. <https://www.nhtsa.gov/traffic-deaths-2018#:~:text=36%2C560%20people%20were%20killed%20in,a%202.4%25%20decrease%20from%202017&text=The%20decrease%20in%20traffic%20deaths,VMT%20decreased%20by%20over%203%25>.

⁴ Frank F.D., Iroz-Elardo N., MacLeod K., Hong, A. "Pathways for Built Environment to Health: A Conceptual Framework Linking Behavior and Exposure-Based Impacts." *Journal of Transport & Health*, 2019; 12: 319-335. <https://www.sciencedirect.com/science/article/abs/pii/S2214140518303360>.

⁵ "Traffic-Related Air Pollution: A Critical Review of the Literature on Emissions, Exposure, and Health Effects," Health Effects Institute, Special Report 17, January 2010. <https://www.healtheffects.org/publication/traffic-related-air-pollution-critical-review-literature-emissions-exposure-and-health>.

⁶ Sørensen M., et al. Long-Term Exposure to Road Traffic Noise and Incident Diabetes: A Cohort Study. *Environ Health Perspectives* 2013; 121:217-222.

- **Greenhouse Gas Emissions.** The transportation sector is one of the largest contributors to greenhouse gas emissions in the U.S. The greatest threat to global health is climate change,⁷ which will increase heat-related illnesses and deaths, increase food-, water-, and vector-borne disease, and increase cardiovascular and respiratory illnesses. Children, older adults, low-income communities, and some communities of color are especially vulnerable to the effects of climate change.⁸
- **Equity.** Opportunities to live in healthy environments and make healthy choices differ by socio-economic status. The benefits or burdens of transportation investments have been uneven among different populations. For example, many communities of color have been severed by freeways and have higher exposures to air and noise pollution.⁹

What is healthy transportation? Healthy transportation maximizes community health by providing people with options for active travel, minimizes exposure to harmful pollutants, supports mental health, and supplies affordable and accessible travel options for people to reach essential goods and services.

Transportation professionals can do the following to create transportation systems that support healthy communities:

- **Re-conceptualize health.** Transportation professionals are accustomed to thinking of health as injury prevention. However, we need a definition of health that includes not only health protection but also health promotion. The social determinants of health are a useful framework for conceptualizing health. Indeed, some [researchers](#) argue that the social determinants of health are a good way to define and measure livability.
- **Collaborate with public health professionals.** Public health professionals are vital to transportation plans and projects—they know the health-related data sources, metrics, evidence-based best practices, and perhaps most critically, ask the right questions to help advance health.
- **Integrate health into each step the transportation process.** Health can be integrated into transportation needs statements, goals and objectives, and evaluation criteria. Use [this guide](#) from FHWA to learn how to do so.
- **Create infrastructure for health:** Walking and cycling infrastructure increases physical activity. Transit is also a proven strategy for increasing physical activity as well as reducing vehicle miles traveled, which reduces air and climate pollution.
- **Prioritize safety over speed.** Speed kills all types of road users; drivers, pedestrians, and cyclists. A small reduction in speed translates into significantly fewer fatalities and serious injuries.

⁷ World Health Organization. Climate Change and Human Health, 2020. <https://www.who.int/globalchange/global-campaign/cop21/en/#:~:text=Climate%20change%20is%20the%20greatest,to%20current%20and%20future%20generations>.

⁸ Crimmins A., et al. "The Impacts of Climate Change on Human Health in the United States: A Scientific Assessment." 2016. Eds. U.S. Global Change Research Program, Washington, DC, 312 pp. <http://dx.doi.org/10.7930/JOR49NQX>

⁹ Frank F.D., Iroz-Elardo N., MacLeod K., Hong, A. "Pathways for Built Environment to Health: A Conceptual Framework Linking Behavior and Exposure-Based Impacts." *Journal of Transport & Health*, 2019; 12: 319-335. <https://www.sciencedirect.com/science/article/abs/pii/S2214140518303360>.