Connecting Transportation & Health:

A Guide to Communication & Collaboration

Prepared for

AASHTO Committee on Environment and Sustainability

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The information contained in this report was prepared as part of NCHRP Project 25-25, Task 105, National Cooperative Highway Research Program.

SPECIAL NOTE: This report IS NOT an official publication of the National Cooperative Highway Research Program, Transportation Research Board, National Research Council, or The National Academies.

Contractor's Final Report
April 2019

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1.0 INTRODUCTION

1.1 Project Background

Transportation agencies and public health agencies and advocates are working together more now than ever before. This collaboration has its roots in early urban planning, civil engineering, and landscape architecture efforts dating to the 1800s when these professions each contributed to improving communities and public health, faced with major threats of the day such as communicable diseases and poor sanitation. More recently, the National Environmental Policy Act of 1969 and related laws and regulations, as well as federal-aid highway regulations, further outlined the interrelationships between the built environment and human health. Despite a long history of linkages between public health, transportation, and urban planning, the fields have diverged in practice and have operated relatively independently reflecting differences in the missions and goals, funding sources, planning and development processes, partnerships and performance metrics for each sector. However, in recent years, the need for transportation, health, and other stakeholders to work together more closely to improve public health outcomes has been increasingly recognized.

Notable transportation and health collaborations include efforts involving the U.S. Department of Transportation (USDOT), the Centers for Disease Control and Prevention (CDC), state Departments of Transportation (DOTs), state health agencies, regional and local health departments, non-profits, and advocacy groups. These collaborations have yielded state and federal policy efforts; broader initiatives in related sectors (e.g. Plan4Health), topic-based initiatives (Vision Zero, Complete Streets, Safe Routes to School, etc.); and national tools to support collaboration such as the USDOT-CDC Transportation and Health Tool and the Federal Highway Administration (FHWA) Health in Corridor Planning Framework. Yet, while the transportation and health communities have begun working together more than they have in the past, there remains a need to foster more widespread and improved communication and coordination.

A Transportation and Public Health Peer Exchange held by the American Association of State Highway Transportation Officials (AASHTO) in 2014 brought to light a number of challenges state DOTs experience incorporating public health into transportation decision-making. Communication-related challenges identified in the peer exchange included determining the optimal timing in the transportation planning process; addressing health processes, terminologies, and other communication barriers; and acquiring relevant data for project analyses. This report identifies additional opportunities such as building on existing best practices, addressing rural and suburban settings, expanding the transportation and health topics considered, moving from policy development into supporting practices, and developing improved communication tools and guidance.

1.2 Research Objective

The goal of this project, produced under NCHRP 25-25 Task 105, is to provide an accessible, practitioner-ready communications guidebook and set of tools and resources that help USDOT, state DOTs, metropolitan planning organizations (MPOs), and local transportation professionals achieve successful policy, planning, and project outcomes through effective collaboration with health stakeholders. Although the guidebook is geared towards transportation practitioners, it may also serve as a helpful reference for public health practitioners who wish to learn more about the transportation process and opportunities for contributing to transportation

efforts. For those interested in further details on the development process of this guidebook, there is an accompanying summary report. The report, a Quick Reference containing the tools in this guidebook, an overview brochure, a presentation with speaker notes, and a recorded online presentation are available at http://bit.ly/TransportationHealthCommunicationsGuidebook.

The guidebook is geared to a broad transportation audience, including those who are new to transportation and health coordination efforts. More advanced users may already be familiar with the background information material provided in the guidebook, while novices may need this information for a general orientation on transportation and health communications.

1.3 Research Approach

The guidebook was developed following four key steps:

1. Review of literature and resources.
2. Solicitation of expert input.
3. Preparation of the guidebook and tools.
4. Development of resources to support implementation and active use of the guide.

The literature review included a comprehensive scan of journals, publications, clearinghouses, toolkits, and websites from a variety of agencies, professional organizations, research organizations, non-profits, and private entities in the areas of transportation, health, and related fields. The scan helped to identify current communication strategies in these fields and assess their effectiveness. From 168 resources inventoried, 64 were identified as key resources containing more in-depth guidance, tools, metrics or case studies relating to communication and collaboration strategies for integrating transportation and health efforts. In addition, a scan of DOT websites for all 50 states, the District of Columbia, and Puerto Rico identified the range of ways that transportation agencies are currently considering health in their processes.

Following the review of literature and resources, the project team conducted two web-based meetings to gather input from nationally recognized transportation and health experts. Through facilitated exercises, these experts provided input on the effectiveness of identified communications and collaboration techniques, insight on opportunities for integration between transportation and health processes, and feedback on content and resources to emphasize in the guidebook.

Students and teachers from Weslaco High School in Hidalgo County, Texas, show off a freshly painted crosswalk between the school and South Texas College. The crosswalk was identified by students as an area that experiences high pedestrian traffic and has problems with vehicles yielding for pedestrians. The crosswalk paint was funded by a CDC grant to Texas A&M University for approaches to increase physical activity in regions with high obesity risk. The crosswalk was approved by City Council and the Public Works Department, and the painting effort was supported by local police.

Photo by Mark Fenton

1.4 Guidebook Organization

This guidebook is organized to help transportation practitioners step through the process of collaborating on health issues. The process covers understanding how these issues relate to transportation, identifying health stakeholders, selecting communications techniques, and assembling organizational and data resources to support collaborative efforts.

The guidebook uses visual cues to help the reader find information. Icons, shown in Figure 1-1, identify various types of information, including: tips, tools and resources for planning and carrying out communication steps; transportation and health process descriptions and opportunities to integrate between processes; fundamental goals, definitions and concepts; and brief case examples illustrating how others have approached the topics within each section.

Figure 1-2 on the following page illustrates the main steps of the communication process (corresponding to sections of the guidebook), along with key questions for each step. The guidebook is designed to serve a range of users, from those who are highly familiar with the intersections between transportation and health to those who are new to the subject matter. For beginning users, it provides background and context to support communication in Section 2. Section 3 introduces health stakeholders and provides guidelines for initiating contact with them. Section 4 focuses on establishing a foundation for communication, including establishing a common language, and touches on the subject matter intersections introduced in Section 2 to illustrate how they can support communication. Section 5 is the culmination of the framework; it identifies a range of communication techniques for different levels of engagement (inform/educate, coordinate, and collaborate) and provides tips for choosing the most appropriate technique or combination of techniques to achieve desired outcomes.

Sections 6 and 7 provide resources, data, and tools to support communication efforts.

The colors shown in Figure 1-2 are used throughout each section of the guidebook to remind the reader to which step in the transportation and health communication framework the information relates. To provide further guidance within each step, the key questions identified in Figure 1-2 for each step are presented in call-out boxes within each section along with information and resources that help answer those questions and move through the corresponding step in the process.

Figure 1-1: Icons Used in the Guidebook

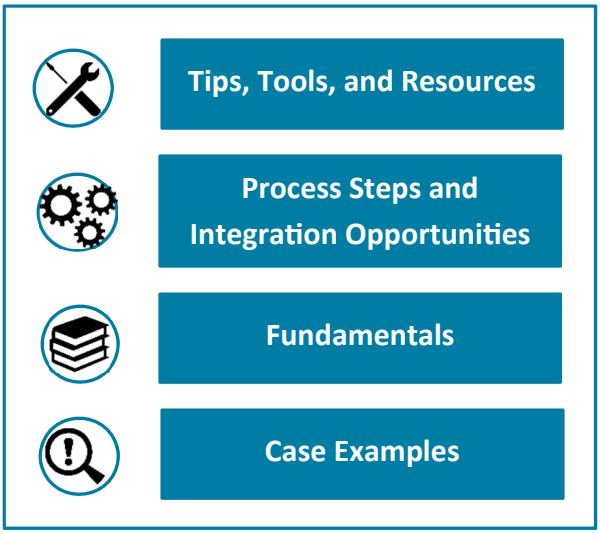
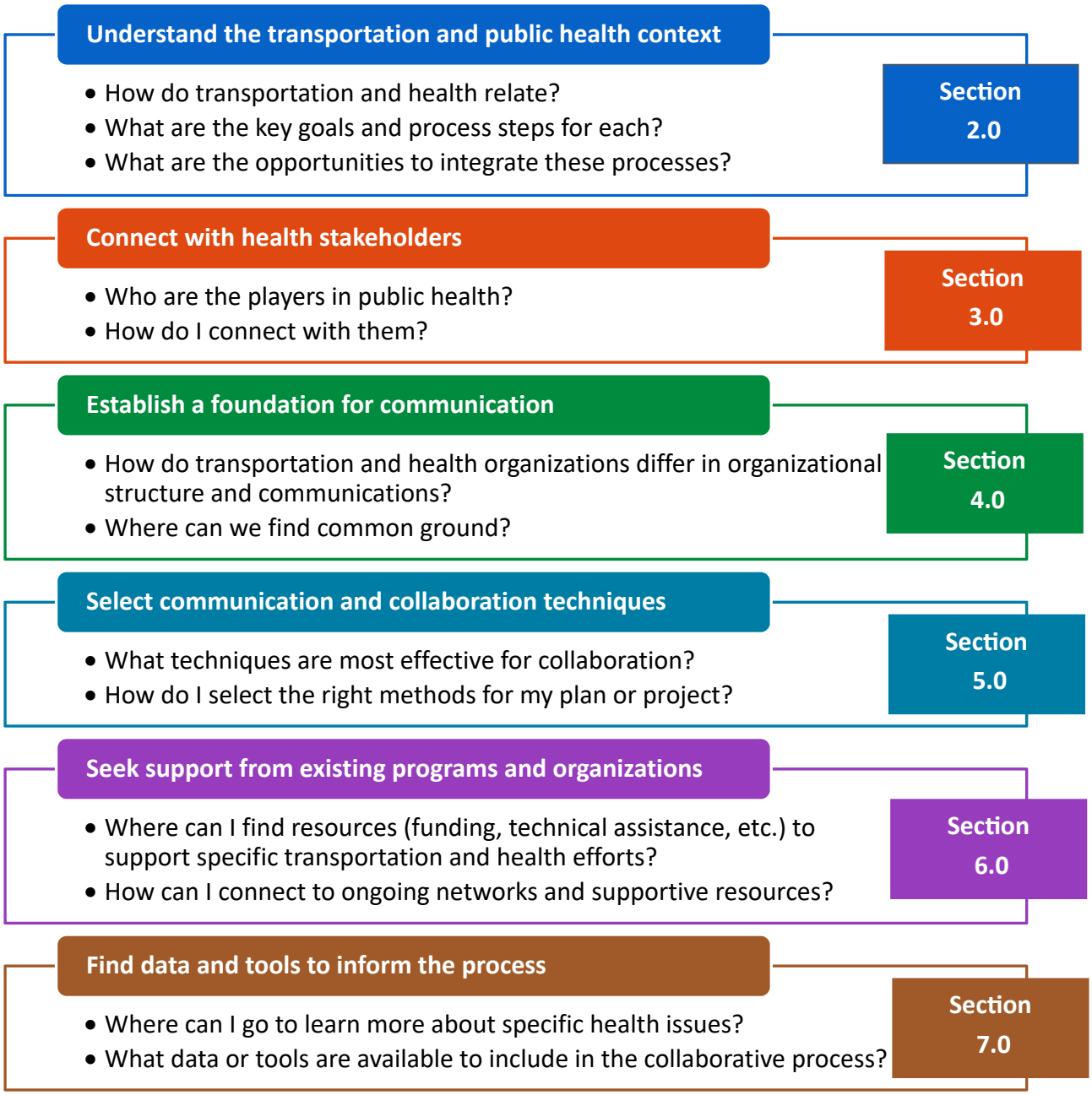


Figure 1-2: Transportation and Health Communication and Collaboration Steps and Guidebook Sections



2.0 TRANSPORTATION AND PUBLIC HEALTH CONTEXT

Multi-sector collaborative efforts are most effective when all parties understand one another's missions, goals, and objectives. An understanding of the goals and processes for the fields of transportation and public health will help to identify opportunities to integrate health in a streamlined manner. There are key points in the transportation decision-making process where health-related considerations can provide relevant input to a decision, and there are points where transportation decision-making outcomes will inform the evaluation of health effects.

2.1 Intersections between Transportation and Health

How do transportation and health relate?

Although overall transportation and public health agency core missions differ, a number of goals and values overlap. Transportation is considered to be one of the economic and social factors that influences community health[1]. In addition, the effects of the built environment on public health have been documented, and a number of pathways have been identified as to how transportation systems may impact health outcomes.[2] The FHWA Health in Transportation website recognizes these key areas of connection and notes USDOT's commitment to considering health outcomes in transportation decision-making. Table 2-1 describes the key connecting pathways that have been recognized between transportation and public health.

FHWA Health in Transportation Objectives

USDOT's commitment to promoting better consideration of health outcomes in transportation focuses on the following objectives:

- Promote safety,
- Improve air quality,
- Respect the natural environment through context sensitive solutions,
- Improve social equity by improving access to jobs, health care, and other community services,
- Create additional opportunities for the positive effects of walking, bicycling, public transportation, and ride- and vehicle-sharing,
- Conduct research on transportation's role in improving quality of life.

https://www.fhwa.dot.gov/planning/health_in_transportation/

In addition to the key intersections between transportation and health that have been identified that frequently arise for transportation initiatives, there are a number of other topics that interrelate with health and that may apply to a particular effort. Some of these include noise, stress (physical and mental), access to nature, access to healthy foods, social infrastructure, and overall well-being. For example, continued

[1] (Robert Wood Johnson Foundation, 2012)

[2] (U.S. Department of Transportation, 2015)

exposure to traffic noise can have negative effects on health and well-being, so a project with traffic noise impacts may consider the health effects of that noise. Transportation access to parks, greenspace, public lands, and recreation opportunities can affect physical and mental health. Access to healthy food is another important topic for both sectors, that intersects with issues of access and equity. Minority and low-income populations are often located far from sources of fresh, healthy food. These populations tend to be more dependent on transit and other non-automobile modes. Providing sufficient access requires consideration of all modes of transportation.

Both transportation and health organizations can benefit from integrating communication with one another into their regular processes. Institutionalizing the value of communication can help ensure that efforts to address transportation and health continue, even when facing staff turnover and resource limitations.

Other emerging issues may provide additional opportunities for collaboration, including climate change, greenhouse gas analysis, and disruptive technologies (including shared ride services, automated vehicles, and connected vehicles). While this guide does not go into detail regarding such issues, a strong foundation for communication between transportation and public health practitioners should enable them to carry the dialogue forward into addressing new and emerging topics.

Stakeholders support development of the Transportation and Health Tool (THT) at a workshop in Greensboro, North Carolina. More information about the THT is available in the case study on page 35.

Photo by Planning Communities

Table 2-1: Transportation and Health Intersections

Intersecting Issue	Description
Safety and Injury Prevention	Safety has been one of the primary areas for transportation and health collaboration to date and has the most direct overlap. Efforts led jointly or by either field have included campaigns promoting the life-saving use of seat belts, bicycle or motorcycle helmets, or car seats or efforts to discourage distracted or impaired driving. Joint outreach campaigns and collaborations are already underway. A key collaborative effort around safety in recent years with international roots is Vision Zero, which aims to eliminate traffic fatalities and severe injuries. Vision Zero efforts typically begin with a partnership that may include transportation and public health departments, among others, and draws from both sectors' experience. Towards Zero Deaths is a related initiative to guide the U.S. achieving similar goals as an extension of existing safety programs. The Road to Zero Coalition, managed by the National Safety Council, is a related stakeholder group dedicated to achieving zero roadway fatalities. Road to Zero is led by FHWA, National Highway Traffic Safety Administration (NHTSA), Federal Motor Carrier Safety Administration (FMCSA), and National Safety Council in partnership with CDC.
Physical Activity/ Active Transportation	Transportation and public health collaborations are relatively common for active transportation efforts and reflect overlapping goals. Transportation-focused efforts to expand bicycle and pedestrian facilities and enhance multimodal safety can support health goals relating to physical activity and overall health. Making walking and cycling safer and more attractive encourages people to take more active transportation trips. Transportation agencies and health professionals have worked together to develop trails and multi-use paths, improve non-motorized networks, implement bike share programs, encourage walking and cycling, build on-street bicycle and pedestrian infrastructure, and implement Safe Routes to Schools programs.
Air Quality	Transportation agencies' efforts to improve air quality and address compliance requirements (such as transportation conformity) connects to the public health goals of reducing chronic diseases that are related to air pollution, including heart and cardiovascular diseases such as asthma, chronic obstructive pulmonary disease, and lung cancer. Coordination between sectors on transportation air quality health effects has been primarily related to research efforts. However, development and support of enhanced active transportation systems, transportation demand management systems, clean vehicle technologies and other strategies that have air quality benefits can support public health goals. Greenhouse gas analysis is a related effort that may be supported through collaborative efforts.
Connectivity and Access	Transportation agencies address connectivity and access issues but may not explicitly address their relationship to public health. Access to daily destinations including grocery stores, medical services, parks, greenspace, public lands and other recreation opportunities, and employment opportunities whether by personal

	vehicle, transit, bicycling or walking is vital for supporting complete health. Transportation network connectivity for all modes is needed to ensure that all people have the ability to reach destinations. Transportation and health collaborations may focus on land use and transportation or expansion of multimodal networks.
Evacuation and Emergency Response	Both transportation and public health agencies mobilize in response to emergencies and natural disasters, often as part of a larger response team, and there is a natural overlap in goals for both fields. As emergency preparedness and planning receive increasing focus in many states and local communities, there are opportunities for collaboration with public health agencies in the planning process and not just following events. This may include evaluating natural disaster risks and needs for vulnerable populations.
Equity	Equity is a concern for both transportation and public health practitioners. Equity relates to each of the other intersecting issues, and may be addressed in combination with other topics, and either topic may be the focus. For example, a project addressing connectivity and access will likely address equity concerns, while an equity taskforce would likely consider a variety of factors, including connectivity and access. Equity in transportation focuses on the fairness with which impacts (benefits and costs) are distributed. Health equity focuses on whether people of all ages and abilities have a fair and just opportunity to be healthy. Vulnerable community members, including minorities, children, persons with disabilities, older adults, and those with lower incomes, tend to be most impacted by negative health effects associated with the transportation system such as air quality effects. Households in low-income areas tend to have higher transportation costs, fewer vehicles, and longer commutes. These inequities in the transportation system lead to inequities in access to health-related destinations (medical services, healthy foods, fitness and recreation facilities). For activities receiving federal assistance, both sectors must work to protect people from discrimination based on race, color, and national origin under Title VI of the Civil Rights Act of 1964. Additional related laws and executive orders extend discrimination protections to other groups on the basis of age, disability, and income. Although each sector has independent requirements to comply with these laws, there is potential for mutually beneficial coordination.

2.2 Transportation Process

At its most basic level, transportation is about the safe and efficient movement of people and goods. Yet, while the transportation sector is focused on movement, the transportation network also plays a critical role in shaping the world and affecting quality of life and the economic, physical and social well-being of communities. The transportation system helps to shape communities, but also must respond to outside factors, such as land use decisions and political decision-making processes. The transportation network exists at all scales

What are the key goals and process steps for transportation?

simultaneously, with neighborhood paths and streets feeding into a larger roadway network that eventually connects with all modes of transportation in a vast, global network. Developing and operating transportation systems requires many people, working across many entities, on many different aspects of the system. Given the scale of the transportation sector, it should come as no surprise that there are many different goals and focus areas for those working in transportation. However, as a sector, there are common themes and process elements.

Transportation practitioners focus on a streamlined decision-making process linking planning products directly to the prioritization and delivery of transportation projects. Many agencies and entities are involved in delivering transportation projects, each of which has its own detailed processes and procedures with associated terminology. Even within the transportation sector, communication gaps may arise from process differences among entities.

For this guidebook, it is important to have a shared high-level understanding of the key entities involved (Table 2-2) and the common steps of the transportation process.

At the highest level, the transportation process consists of six basic steps as illustrated in Figure 2-1. Policy planning underpins all subsequent phases of the process. Long-range planning leads to programming, which leads to corridor planning, then project development, which is followed by implementation, operations, and monitoring. This process operates as a cycle. As transportation infrastructure ages, information from implementation and monitoring feeds back into policy and long-range planning for the next iteration of system improvements. The following section briefly introduces the major stages of the transportation process.

Common Transportation Goals

- Safety
- Mobility and access
- Freight/goods movement
- Economic opportunity
- Environmental stewardship
- Air quality
- Quality of life
- Evacuation/response

Table 2-2: Key Transportation Agencies and Entities

Organization	Description
U.S. Department of Transportation (USDOT)	The USDOT is the overarching federal agency that sets transportation policy, allocates funding, and provides oversight of the nation's transportation system. It consists of nine operating administrations, including the Federal Highway Administration (FHWA) and the Federal Transit Authority (FTA).
State Departments of Transportation (DOT)	State DOTs coordinate transportation for all modes within a state and work with many of the modal administrations within USDOT. State DOTs are responsible for delivering highway, bicycle, and pedestrian projects. Their roles for other modes (such as transit) are more variable ranging from oversight and coordination to direct project delivery. Federal funding is distributed to State DOTs by formulas established by Congress in the current transportation bill.
Metropolitan Planning Organizations (MPOs) and other Regional Planning Organizations	Urbanized areas with populations over 50,000 are required to have an MPO to carry out the metropolitan transportation planning process. MPOs are generally governed by policy boards consisting of representatives of local governments. State and federal transportation agencies, transit providers, and other transportation entities may have voting representatives or serve in an advisory role, depending on state and local laws. Urbanized areas with populations over 200,000 are referred to as Transportation Management Areas (TMAs), and MPOs in these areas have additional responsibilities. Other regional planning organizations may exist depending on state laws and may include Regional Planning Organizations or Rural Planning Organizations and Councils of Government. Roles and responsibilities may vary widely from state to state. Federal funds are apportioned to MPOs through State DOTs based on formulas established by Congress.
Transit Agencies and Transit Providers	Transit is typically provided at the local or regional level and may include a mix of local agencies, private companies, and nonprofit groups. Federal Transit Administration (FTA) funding is provided in the form of grants, rather than direct apportionments. These grants are dispensed through a variety of programs utilizing either competitive or formula funding.
Railroads, Ports, and Airports	Rail corridors are typically privately owned and operated, while ports and airports may be public or private. The Federal Aviation Administration (FAA), Federal Railroad Administration (FRA), and Maritime Administration (MARAD) provide regulatory oversight and coordination of rail and airspace systems, but these modes operate fairly independently compared to the non-rail ground transportation system.
Local Governments	Local governments, including counties and cities, typically have their own street networks, with the proportion of local versus state roads varying by state and individual jurisdiction. Local governments may include transit agencies, airports, and ports. Local governments work closely with other transportation entities to deliver safe and efficient local transportation.

Non-profits, Research and Private Entities	Non-profit and non-governmental organizations provide technical assistance and advocacy related to transportation issues. Research organizations and centers provide transportation expertise and innovation. Private industries (automobiles, aviation, bike share, construction, shared ride, toll operators, etc.) are also involved in delivering and operating the transportation system.

Figure 2-1: The Transportation Process

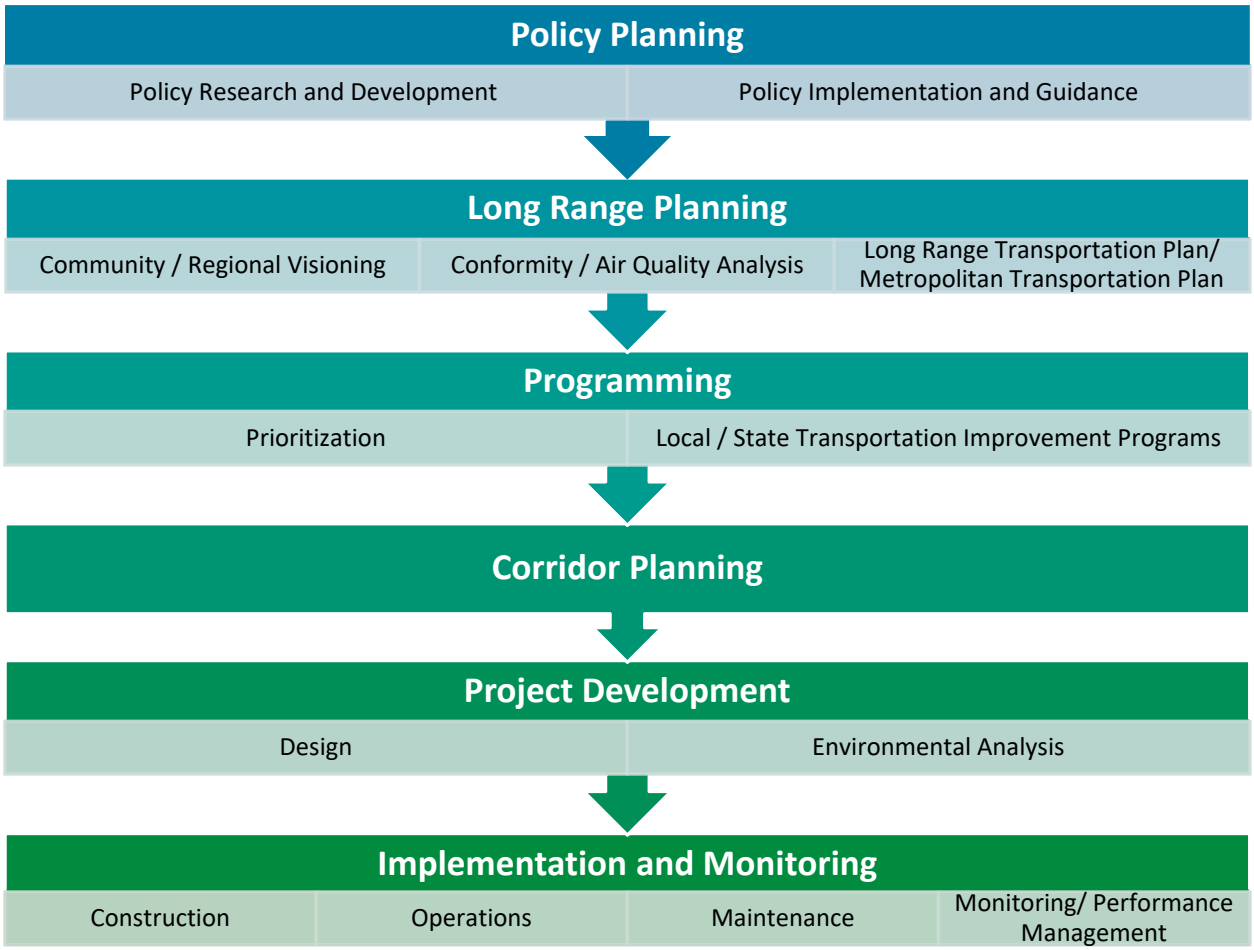


Figure adapted from FHWA and FTA's The Transportation Planning Process Key Issues (www.planning.dot.gov/documents/briefingbook/bbook_07.pdf) and PlanWork's Decision Guide (https://fhwaapps.fhwa.dot.gov/planworks/DecisionGuide)

2.2.1 Policy Planning

Each agency or organization sets policy that shapes all other activities carried out by the agency. Policy development is often a separate process, but it sets the basis for the transportation delivery process. Policy development requires research, refinement, and gaining feedback and buy-in prior to adoption. Implementing a new policy typically requires formal approval or adoption, and then delivery of guidance and training to ensure the policy is carried out as intended.

Health Integration Opportunities

- Health impacts of policies and programs
- Health policies

2.2.2 Long-range Planning

Long-range planning is conducted at the state, regional, and local levels. Nationwide and statewide goals and policies influence how planning is carried out by regional and/or local planning organizations. Local and regional planning usually begins with a visioning process, which creates a shared understanding of the desired future of the community. Community engagement is an important component of the planning process, from visioning through completion of the plan. The information gathered during visioning leads to preliminary identification of transportation projects that will address community needs and move the transportation network towards the desired vision. Based on the identified projects, planning organizations model the future transportation network to analyze how well the system will

Health Integration Opportunities

- Data on health and vulnerable populations for Long Range Transportation Plan / Metropolitan Transportation Plan
- Health-related community needs (active trips, access, etc.)
- Input on goals to promote health

Case Example: MetroPlan Orlando Health in All Transportation Policies

MetroPlan Orlando is the MPO in the greater Orlando, Florida area. MetroPlan has adopted a Health in All Transportation Policies approach. Five health focus areas are applied to the decision-making process in long range planning, prioritization, and programming: Physical Activity, Environmental Quality, Access to Medical Care, Safety, and Access to Food. The USDOT-CDC Transportation and Health Tool has been used to identify projects that support the focus areas and to develop performance measurement to monitor implementation. Three of the four MetroPlan board's policy priorities relate directly to health, focusing on connectivity to transit hubs, Complete Streets, and access to regional trails. Incorporation of health as a guiding principle in the planning process has shaped the way projects are identified and selected for development in the region.

This case study shows how proactive policies can be carried forward into and through the planning process.

https://metroplanorlando.org/programs-resources/health-transportation/

handle transportation demands and evaluate scenarios. In areas where air quality is of concern, information from transportation models feeds into air quality analysis models to assess how the proposed transportation network, in combination with other factors such as assumed changes in vehicle mix, will affect overall air quality. The proposed transportation network is analyzed, and the planning organization seeks public input before adopting the shared vision for the future transportation system into a plan. This is referred to as the Metropolitan Transportation Plan (MTP) when adopted by an MPO, and the Long-Range Transportation Plan (LRTP) by state planning entities. Some planning organizations adopt a Regional Transportation Plan (RTP) or a Rural Transportation Plan (also RTP), which serve similar functions to the MTP. The MTP or LRTP establishes general policy and is the comprehensive framework for transportation improvements. The plan often establishes performance goals. It is also generally the basis for how transportation funding is to be used in that timeframe. Long-range plans can also incorporate health-related considerations or metrics. These plans have a planning horizon year of 20 or more years into the future but are updated approximately every 5 years.

Health Integration Opportunities

- Health measures/criteria
- External funding/partnerships

2.2.3 Programming

Long range plans establish the framework for transportation improvements, but programming is the first step that moves projects towards implementation. It begins with prioritizing the projects identified in the long-range plan. Prioritization processes are highly variable among states and local and regional planning organizations. Some use very structured prioritization processes, while others use only general guidelines. As performance-based planning becomes more common, prioritization processes increasingly tie more directly to how well projects meet performance targets. Prioritization processes are another step where health considerations may be integrated into the transportation process. Prioritization determines which projects will be funded, or programmed, based on available funding levels. Higher priority projects are more likely to receive funding, since it is highly unlikely that sufficient funds are

Case Example: Caltrans Smart Mobility Framework

In recent years, DOTs have moved towards incorporating a performance-based approach that ties decisions to data and outcomes based on specified goals. Federal transportation law requires States to set performance targets relating to safety, congestion, and infrastructure condition, and some DOTs use additional performance measures and targets, some of which pre-date the Federal requirements. Caltrans tested a Smart Mobility Framework to demonstrate the use of smart growth principles, guidance, and performance measures. Health and safety is one of the primary principles included in smart mobility. The performance measures included in the framework are expected to support positive health outcomes.

http://www.dot.ca.gov/transplanning/ocp/sm-framework.html

available for all the projects a community identifies. The result of the regional programming process is a Transportation Improvement Program (TIP), which lists upcoming transportation projects covering a period of at least four years (most commonly four or five years). A TIP must be fiscally constrained, meaning that available funding must be identified for each project included. The TIP is formally adopted by the MPO or other local planning organization. The process for adopting the TIP is established by the planning organization and can vary. Regional and local TIPs are rolled up (and in some cases, supplemented with additional projects) to create the Statewide Transportation Improvement Program (STIP), which is also formally adopted by the state DOT following its procedures.

2.2.4 Corridor Planning

A corridor plan is a type of long-range plan that identifies needed improvements in a transportation corridor and prioritizes implementation of those improvements over a long time period. All of the analysis involved in long-range planning and programming is based on network-level information. The corridor planning process begins to look more specifically at the corridor itself. Additional studies are done to understand local traffic patterns and conditions.

FHWA Health in Transportation Corridor Planning Framework Steps

1. Define transportation problems and public health issues
2. Identify transportation and health needs, resources, and priorities
3. Develop goals and objectives that promote health in the community
4. Establish evaluation criteria that include public health
5. Develop and evaluate alternatives and their health impacts
6. Identify alternatives that support health in the community

https://www.fhwa.dot.gov/planning/health_in_transportation/planning_framework/the_framework/step00.cfm

Health Integration Opportunities

- Corridor level health needs
- Support for public outreach

Corridor plans are not developed for every project and may be developed by DOTs or MPOs. They are often used for multimodal efforts. Corridor planning may be combined with project development, or the phases may be tied together through planning and environmental linkages (PEL), meaning that studies done during the corridor planning phase can be used to support or even serve as the initial steps for the environmental studies during project development.

2.2.5 Project Development

Project development and environmental analysis is a decision-making process that examines the potential project's direct, indirect, and cumulative impacts on the natural and human environments.

Environmental analysis follows the National Environmental Policy Act and related laws and regulations for federally funded projects and state environmental review and compliance procedures where no federal funding is involved. Specific environmental review requirements depend on the nature of the project, funding source(s) used, and applicable state requirements. Public involvement is a key component of project development. While public involvement begins in early planning phases and

Health Integration Opportunities

- Identification of scoping issues
- Project-level health-related needs
- Health data/impacts
- Support for public outreach
- Design input

should continue throughout the process, it is particularly emphasized during project development.

The environmental process begins with scoping, when stakeholders and the public are invited to provide input on the parameters for analysis. Potential impacts of alternatives being considered are compared to inform a decision on which an alternative should proceed. The environmental process considers impacts on cultural resources, natural resources, and the human environment, including air quality, noise, and visual impacts. Additional analysis may be required to confirm that the project conforms to planning assumptions related to air quality. During project development, health issues are most often incorporated into environmental analysis.

This phase also includes additional detailed engineering analysis and project design. Once an alternative is selected, the project moves into detailed design, where project plans and specifications are developed. At this point, designers may work with interested parties to flesh out details. A common example is working with property owners on specifics for driveway locations or other access issues. The design process also specifies how construction is to be carried out, so it may include identifying specific methods of construction or restrictions to which construction crews must adhere.

2.2.6 Implementation and Monitoring

The first phase of implementation is construction. Construction practices can support health goals by ensuring supportive access during construction by maintaining access to sidewalks and bicycle lanes and ensuring compliance with the Americans with Disabilities Act (ADA). Appropriate handling of construction noise, vibration, dust, and idling during construction can also support health goals. After a project is constructed, it moves into operations. Operations responsibilities vary greatly depending on the type of transportation project and state/local variations in responsibilities. For most roads and bicycle and pedestrian facilities, the transportation agency's operational oversight generally focuses on keeping the roadway clear and safe through incident management, debris removal, snow removal, etc. Operations responsibilities are much more complex for transit systems, railways, airports, or managed road facilities like dynamically-priced tollways. Maintenance refers to keeping the transportation system in good operating condition. Concurrent with operations and maintenance, transportation agencies conduct monitoring, which ties into performance management. Monitoring means collecting data relating to how well the system is performing. Monitoring and performance measurement offer opportunities to work with public health partners,

Health Integration Opportunities

- Multimodal accessibility (including ADA) during construction
- Health data collection and analysis
- Post-project assessments of health-related outcomes

especially when health-related performance objectives have been adopted. Both transportation and public health communities already collect transportation-related data, which may include traffic volumes, counts of pedestrians and bicyclists using a facility, and crash statistics, including fatalities and severe injuries, when available. Health agencies collect additional data that can be helpful to transportation agencies. Such data may include: general health figures like leading causes of death; community health needs assessments specific to regions served by area hospitals highlighting health trends; and individual-level data such as emergency room visits, heart disease, and asthma rates. There are opportunities to share data and even collaborate on data collection efforts to bolster performance monitoring in both sectors.

2.3 Health Processes and Initiatives

What are the key goals and process steps for health?

The health sector is also vast, with many different components. Public health refers to that part of the overall health sector focused on promoting and protecting the health of people and their communities. Public health is separate from health care: while public health focuses on prevention at a population level, health care is focused on delivering services to individuals. Health care organizations, however, may also have a connection to public health. For example, while a hospital's primary focus is on caring for individual patients, many hospitals also have associated foundations or outreach missions that work more in alignment with public health. Public health may also provide services to individuals, such as vaccination.

Common Public Health Goals

- Promote population health
- Prevent injuries
- Encourage physical activity
- Increase food access/security
- Reduce chronic disease
- Prevent infectious disease spread
- Protect vulnerable populations
- Respond to emergencies

Public health includes an array of different fields that also work at many different scales. Some public health professionals focus on individual behavior, whether encouraging people to make healthy lifestyle choices or working with individuals suffering from or at risk of a specific disease. Others focus on creating a healthy environment, through issues such as sanitation, health inspection of food service facilities, or through public policy. Public health also includes people working in research, epidemiology, education, and other aspects of the broader health field. As with transportation, there are many different focus areas with their own goals and objectives. But also, like transportation, there are common themes and key goals for the sector.

Public health encompasses a broad range of activities, which have their own processes and practices rather than a single, large process. These activities are carried out by a range of organizations, such as county health departments, hospitals, or non-profit organizations. From the perspective of transportation practitioners, there are several processes and initiatives to be aware of. Section 3.2 provides additional information on public health organizations and stakeholders.

2.3.1 Health in all Policies

Health in All Policies (HiAP) is a collaborative approach that integrates and articulates health considerations into policymaking across sectors. The goal is to ensure that decision-makers are informed about the health and equity consequences of options during policy development. HiAP usually involves a task force or steering group that brings together representatives of different sectors to discuss policy challenges. The HiAP approach has been adopted broadly at the state level in California. Several other states have developed workgroups or implemented HiAP in a more limited fashion. Several cities have also adopted HiAP. In some jurisdictions, a similar approach has been adopted with equity as the central theme rather than health. Equity is an important issue in both health and transportation as described in Table 2-1.

2.3.2 Community Health Needs Assessment (CHNA)

Who typically leads?

Non-profit hospitals or local health departments

With the passage of the Affordable Care Act (2009), hospitals with non-profit foundations are required to collect the needs of the community they serve and report them. Community Health Needs Assessments (CHNA) aim to identify major community health concerns. Health care providers, public health departments, and community members are the major partners involved in the CHNA. In some areas, the CHNA is carried out by a local health department through a funding partnership with the local hospital. The key steps of a CHNA are shown on this page. Community engagement is an important component of CHNA development throughout the process.

CHNAs are regularly available via hospital network websites and provide information about the general health of the served population. These may include health-specific needs of a population organized by race, gender or age groups. Transportation themes may include rates of physical activity, traffic crashes, and transportation barriers to accessing care. CHNAs also offer an opportunity for transportation organizations to partner to include survey questions such as rates of walking and bicycling, transportation infrastructure barriers, and transit service utilization for health-related purposes.

CHNA Process Steps

1) Engaging stakeholders,
2) Defining community,
3) Collecting data,
4) Prioritizing community health issues,
5) Communicating the results,
6) Planning and implementing strategies, and
7) Evaluating progress.

Case Example: Intersecting Transportation and Health Plans in Clackamas County, OR

In 2012, Clackamas County created Oregon's first Transportation Safety Action Plan (TSAP). The plan was developed with the collaboration of the County Health, Housing and Human Services Department, Safe Communities, and Sheriff's Office. This TSAP had the primary goal of reducing transportation related deaths and injuries and employed a 5E's approach (engineering, education, enforcement, emergency medical services, and evaluation activities).

Further collaboration in 2014, spearheaded by the Oregon Public Health Institute, yielded a Road Safety Audit on a major regional roadway. The audit identified six primary health determinants that intersect with transportation including: multi-modal safety; opportunities for physical activity; exposure to air pollutants; access to health supportive resources (employment, affordable housing, healthy foods, parks, recreation facilities); effects on low-income and minority households; and noise.

Continued collaborations supported development of the County's Active Transportation Plan in 2015, which was coordinated with development of the 2017 CHIP. The CHIP builds transportation into its priority areas, including goals for safety, active transportation, and access. An update to the TSAP was underway in 2018.

https://www.clackamas.us/transportation/tsap.html

2.3.3 Community Health Improvement Plan (CHIP)

Who typically leads?

Local public health departments and/or non-profit hospital foundations

A Community Health Improvement Plan (CHIP) is a long-term systemic effort to address public health issues of a given community. A CHIP is typically developed following or in concert with the CHNA by a county or local health department in collaboration with community partners. CHNAs and CHIPs have similar approaches and may be developed together, but they differ in focus. The CHNA is focused on identifying the needs, while the CHIP is focused on addressing those needs. The steps to prepare a CHIP are shown on this page.

CHIP Process Steps

1) identifying and engaging partners,
2) defining a shared community vision and common values,
3) collecting and analyzing community data,
4) prioritizing critical issues in a community,
5) developing goals and strategies, and
6) taking actions and linking planning, implementation, and evaluation.

A CHIP identifies public health issues within a community, establishes a vision, sets priorities, outlines policies and defines actions to promote health. It may include analysis of strengths, weaknesses, opportunities and challenges to community health conditions. Robust engagement ensures broad participation of

stakeholders and community partners. The CHIP provides a roadmap for how to make inroads for the top health priorities determined through the CHNA. Typical priorities include transportation-related topics such as increasing rates of physical activity, improving air quality, or reducing traffic crashes. CHIPs are typically updated every three to five years.

2.3.4 Health Impact Assessment (HIA)

Who typically leads?

Varies, including health agencies, transportation agencies, non-profits

Health Impact Assessment (HIA) is a process to evaluate the potential positive or negative health effects of a plan, project, or policy. The steps to conduct an HIA are shown below. An HIA often makes practical recommendations to mitigate risks and explores opportunities to promote health. HIAs are used to help communities, decision-makers, and practitioners make choices to improve public health, and the point in the process at which an HIA has been applied has varied across agencies. HIAs can support different types of decisions, which influences the most appropriate timing for them. The HIA is a tool that can be used from transportation policy planning through project development.

HIA Process Steps

1) screening,
2) scoping,
3) assessment,
4) recommendations,
5) reporting, and
6) monitoring and evaluation.

HIAs have been used to evaluate many transportation decisions and are often used to communicate with high-level policy- and decision-makers. A modified, less resource-intensive approach may be used to incorporate the elements of an HIA into existing transportation processes rather than preparing a full, stand-alone HIA. By coordinating or incorporating HIA elements into existing studies such as Community Impact Assessment or other analyses within then NEPA process, efforts can be streamlined and duplication minimized.

2.3.5 Infrastructure Projects

Both public and private funding can be applied towards infrastructure projects that aim to improve health. Although federal, state, and local public health agencies do not typically fund transportation infrastructure, grantmaking organizations may provide support for some infrastructure projects. Health-related grant funding for infrastructure was historically focused on sanitation and water treatment but has expanded to encompass facilities that support active transportation. Private health foundations are taking an interest in active transportation and may also provide funding for projects like trails and sidewalks. One example is from the Boise, Idaho region where the Blue Cross Foundation of Idaho paid for the City of Caldwell's federal match portion for a new pathway segment. The new segment will extend the existing Indian Creek Trail from downtown to the northern portion of the city so that residents can further experience a natural riparian area close by. In El Paso, a 3.4-mile trail was constructed thanks to the Paso Del Norte Health Foundation. The Foundation was created in 1995 specifically to "leverage and invest in initiatives, programs and policies to promote health and prevent disease in the Paso del Norte region."

Case Example: Wabasso, Florida Community Infrastructure Improvements

Florida's Department of Health began to adopt and promote use of the National Association of County and City Health Official's Protocol for Assessing Community Excellence in Environmental Health (PACE EH) by local public health agencies in 2002. In 2004, the Indian River County Health Department began implementing the PACE EH in Wabasso, a community with limited infrastructure including lack of county water connections, sidewalks and streetlights. Partnerships were created between the health department, public works, county commissioners, community development, and law enforcement and a steering committee was formed. Investments in public health encouraged other local agencies and non-governmental organizations to contribute to the overall community improvement effort. The resulting projects included: sidewalks, streetlights, and a walking trail, as well as park, housing and water infrastructure improvements.

https://www.cdc.gov/nceh/ehs/ceha/docs/pace-eh-post-project.pdf

https://www.cdc.gov/nceh/ehs/ceha/pace_eh.htm

2.3.6 Health Districts

Health districts are typically partnerships between several communities and their local public health agencies that coordinate efforts related to preventative health services and supporting healthy lifestyle choices in a defined service area. How health districts are organized and operate varies between states. The term health district has also emerged to refer to efforts by planners to connect community and healthcare to support health improvement in a portion of a community.

2.3.7 Health Campaigns

Public health practitioners operate a wide variety of educational and outreach campaigns on health topics. Some campaigns focus on encouraging healthy choices, while others focus on treating and preventing specific diseases. These campaigns typically involve a variety of methods for reaching the target audience. A number of public health campaigns lend a natural fit for working together with transportation professionals, such as those involving injury prevention which can include promoting seatbelt and helmet use, and preventing impaired and distracted driving, or promoting active transportation. Public health campaigns are planned and structured to deliver

Case Example: Spokane Regional Health District

This health district has dedicated staff and programming towards health integration mostly involving active transportation. The staff has been the principal author of a Complete Streets analysis and policy, works on active transportation plans, and regularly meets with transportation and land use staff working for the many cities, the DOT, and transit authority in the area. The District also continues to help grow the influence of public health in transportation decisions by occasionally sponsoring transportation experts to help train and educate staff, by sharing information, and participating in numerous transportation processes.

https://srhd.org/

tailored messages to targeted audiences to encourage individuals and groups to make choices that have been demonstrated to improve health.

Wabasso residents and stakeholders take a physical assessment of accessibility and connectivity for bicycles in their community.

Photo by Florida Department of Health and Julianne Price

2.4 Transportation and Health Process Integration Summary

Getting the right input at the right point in the process is critical for successfully integrating transportation and public health. Table 2-3 summarizes how transportation practitioners can contribute to cross-sector efforts, as well as opportunities for the transportation and public health sectors to come together and develop key components of their work jointly.

Table 2-3: Integrating Transportation and Health Processes

Transportation Process Phase	Integration Opportunities	Relevant Health Process(es)
Policy Planning	• Assess health impacts of policies and programs • Develop health policies/ frameworks	Health in All Policies Health Impact Assessment (HIA) Public health campaigns
Long-range Planning	• Include data on health and vulnerable populations in LRTP/MTP/long range plan development • Identify health-related community needs (active trips, health access, etc.) • Solicit input on goals to promote health	Community Health Needs Assessment (CHNA) Community Health Improvement Plan HIA
Programming	• Incorporate health measures/criteria • Develop external funding/partnerships	Infrastructure projects (health funding, joint)
Corridor Planning	• Determine corridor level health needs • Assist with public outreach	Health district plans HIA
Project Development	• Identify scoping issues • Determine project level health needs • Assess potential health impacts • Assist with public outreach	Health district plans Infrastructure projects (health funding, joint) HIA
Implementation and Monitoring	• Review multimodal accessibility during construction • Collect and analyze health data • Provide feedback on performance related to health	Public health campaigns CHNA

3.0 CONNECTING WITH PUBLIC HEALTH STAKEHOLDERS

Transportation agencies reach out to multiple sectors of a community throughout the transportation process. Although engaging diverse stakeholders is not new, specific focused efforts to use public health representatives' input to inform project decisions is still an emerging area. Thus, transportation practitioners may not be familiar with the public health sector and the kind of information it can provide. This section outlines the public health sector representatives to engage, how to reach out to them, and how to solicit input that can be used to inform a process.

3.1 Identify Health Stakeholders

Who are the key public health

As a sector, public health is immense. Similar to transportation, public health includes state agencies, regional or county agencies, and city or local agencies, as well as a wide variety of healthcare-related organizations. These agencies and organizations are described below and the roles and types of transportation efforts they may support are presented in Table 3-1. Each entity oversees multiple programs, initiatives, funding, communication and outreach, prevention, and much more. Specific programs and resources available to support transportation and health efforts are described in Section 6.1. Data sources and tools offered by several of these organizations to support transportation and health collaborations are presented in Section 7.

State Health Agencies. State health departments oversee state-level policy implementation as authorized by statutory authorities and are direct recipients of federal program funding through CDC. State health agencies fund regional and local health agencies or departments, guide programs and prioritization for these agencies, and may develop state-level initiatives on issues such as health and built environment or active transportation for regional and local health departments to carry out. Such initiatives may tackle a variety of health issues that relate to transportation such as health and built environment or active transportation.

Regional, County, and City Health Departments. Local health agencies are generally organized at a county or regional level. They are typically overseen by a local health board, which may be elected or appointed. City health departments are typically found in very large cities and have been some of the leading organizations in studying transportation and health linkages and carrying out HIAs on transportation projects. These local agencies also provide direct service through health clinics as well as administering programs such as Women, Infants, and Children (WIC).

Health/Healthcare Foundations. Non-profit hospitals are required to have a community health foundation tasked with expanding the hospital's work in the broader community beyond providing healthcare services. State health insurance providers may also have foundations engaged in public outreach and initiatives. These foundations have boards and executive directors tasked with carrying out the foundation's strategic plan.

Health Non-Profits or Institutes. There are state and local-level non-profits, as well as institutes, that focus on a variety of health topics. They may provide state-level policy advocacy,

conduct independent evaluations of health policy or related efforts, or focus on a single interest such as increasing access to care.

Advocacy Organizations. Active transportation and health advocacy groups are growing with local and state organizations focused on specific topics or the health interests of a specific population, such as a race- or culture-specific group or persons with disabilities.

Private Hospitals and Healthcare Providers. Private health providers may also have an interest in transportation-related issues. Private hospitals and healthcare providers include for-profit hospitals, clinics, doctors' offices, rehabilitation centers, and other healthcare facilities.

Selecting Health Stakeholders to Engage. For state departments of transportation working on prioritization, statewide plans, multimodal policies, or intergovernmental relationships, incorporating public health counterparts at the state level may be appropriate. For DOTs, MPOs or local transportation planners working on transportation plans or projects at a regional

Case Example: East Central Wisconsin Regional Planning Commission

The East Central Wisconsin Regional Planning Commission's (ECWRPC) Health in Planning program seeks to incorporate consideration of potential health impacts into community planning. EPWRPC works with several regional partnerships and initiatives to address community health concerns. Examples of these efforts include:

- Fox Valley Thrives is a regional alliance of transportation planners, public health professionals, and others dedicated to advancing health equity. Fox Valley Thrives uses creative community engagement techniques to dispel myths, identify issues and opportunities, and collect data to inform policy decisions.
- The Weight of the Fox Valley is a three-county initiative (Calumet, Outagamie, and Winnebago) to reduce obesity and chronic disease through a number of strategies, including active transportation and healthcare. This program includes individuals from over 25 organizations covering a variety of disciplines. Weight of the Fox Valley is directly supported in Outgamie County's 2014 Community Health Improvement Plan (CHIP). This CHIP identifies "physical activity and active living" as a primary objective; recommendations towards this end include building more bicycle and pedestrian infrastructure, building public health and transportation partnerships, and encouraging employers to incentivize the use of public transportation.
- Safe Kids Fox Valley, part of the worldwide organization Safe Kids, is a coalition formed in 1996 led by Outgamie County Health and Human Services – Public Health Division serving the three-county area. Supported by partners including the East Central Wisconsin Regional Planning Commission, key areas of focus include vehicle safety (ranging from proper use of child seats to distracted driving) and active transportation (for example, participation in International Walk to School Day).

http://www.weightofthefoxvalley.org/

https://www.cows.org/_data/files/Kim_Biedermann_LCAH_Transportation_11.8.2017.pdf

http://www.outagamie.org/Home/ShowDocument?id=31003

https://www.safekids.org/coalition/safe-kids-fox-valley

http://www.ecwrpc.org/programs/health-in-planning/

or local level, engaging with public health stakeholders working at the same geographic scope is generally the best approach. The types of transportation efforts supported shown in Table 3-1 should serve as a guide to identifying the appropriate agencies and organizations to begin the process of health communication and collaboration.

Table 3-1: State and Local Health Stakeholders

Organization	Roles and Responsibilities	Types of Transportation Efforts Supported
State Health Departments	• Set state health policy and funding priorities • Develop state health plans • May manage state social service programs and funding allocations • May coordinate with healthcare organizations on data collection, access to care, or resource equity	• Statewide transportation plans • State-level funding and policy development • Share regional and local health department contacts • Provide regional, county, and local data on health conditions • Coordinates data collection efforts with CDC and/or local health departments, as appropriate • Training and technical assistance • Identify CDC funding sources to support transportation and health efforts
Regional, County, and City Health Departments	• Monitor communicable disease outbreaks • Ensure water quality • Oversee health inspection of businesses • Manage prevention campaigns with partners • Offer health screenings with health providers • Initiate physical activity and nutrition programs • Pursue grants through state health departments • Provide clinical care and identify needs for low-income populations	• Regional long-range transportation plans, major project/corridor studies, and active transportation efforts • Identify vulnerable population needs and barriers for Environmental Justice analysis • Link social determinants of health census data (e.g. income, race, vehicle access) to transportation needs and outcomes • Conduct and share local health surveys • Share and interpret state, federal and other health data • Coordinate health planning (Community Health Needs

	• City health departments often focus on populations and neighborhoods of highest need	Assessments and Improvement Plans) with transportation planning • Serve as liaisons to local communities, especially vulnerable and Limited English Proficiency populations
Health and Healthcare Foundations	• Strategic planning • Provide healthcare services • Fund initiatives • Public outreach and campaigns	• Identify needs for increased physical activity related to chronic disease prevention and long-term healthcare needs • Fund specialized transportation services (grocery shuttles, transit passes, hospital guaranteed ride home programs) • Fund HIAs (active transportation, corridor studies, etc.) • Fund educational campaigns
Health Non-Profits or Institutes	• Provide policy advocacy • Evaluations of health policy or related efforts • May focus on single health topic/interest • May be engaged by local governments to delve into specific health topics	• Assist transportation and health policy efforts, possibly topic-specific • Support Health Impact Assessment based on subject matter • Conduct health impact assessments on state or local initiatives
Advocacy Organizations	• Provide advocacy • Efforts generally focused around a particular topic or needs of a particular group	• Promote policy efforts • Participate in health impact assessment • Support analysis related to their topic of interest (e.g. bike/ped, transit, environmental justice) • Support joint transportation and health safety campaigns (e.g. safe driver programs, car seat checks, helmet distribution) • Serve as a liaison to their target audience

3.2 Connect with Health Partners

How do I connect with public health stakeholders?

Once appropriate health organizations have been identified, transportation practitioners will want to reach out with initial contacts to seek input and begin to build the foundation for communication and collaboration discussed further in Sections 4.0 and 5.0. Tips for reaching out to new partners are listed to the right and include understanding their goals, determining where there are shared interests, and planning for how their input will be considered in transportation decision-making.

3.2.1 Make Initial Contacts

Getting members from the public health field involved might be as simple as making a couple of phone calls. The field is currently changing many of its historic approaches to health interventions. For many years, public health outreach meant health fairs and one-on-one counseling. However, more evidence points to the need to engage a broader population base through more holistic and comprehensive approaches, the result being agencies engaged in policy making, community design, and broad-based programs. More and more health agencies are doing this by adopting a HiAP approach.

Key takeaway: Health organizations want to be at the table with transportation agencies when they see the linkages, so it's best to engage them early in the process and be equipped to share why their participation is relevant.

Tips for Reaching Out to New Health Partners

1) Do your background research

   Identify the health organizations you want to reach out to for your work.

   Review their website(s) or social media pages to gain insight on their organization.

   Take some time to understand their goals and how they might align with your efforts. What might make them want to get involved? What might hold them back?

2) Get connected

   Now that you've got some context, look for the specific area(s) or individuals to connect with.

   If you have a mutual connection, ask for an introduction.

3) Cultivate relationships

   Start by asking about their efforts and priorities. Then listen.

   Make it as simple as possible for them to take specific steps to support transportation and health efforts.

   People can contribute in different ways. Tailor your ask so they can meaningfully contribute to your partnership.

4) Consider what's in it for them

   There must be some benefit to partners to join your efforts. What is the potential benefit to the individual or organization you're reaching out to?

Adapted from: http://www.countyhealthrankings.org/take-action-to-improve-health/partner-center

The Public Health Stakeholder Contact Guide below will help in outlining specific stakeholders to reach, determining potential health effects and topics of interest, identifying health data needs, and defining how they can play a role in the process prior to reaching out. This guide is meant to help transportation practitioners prepare for outreach and shape the discussion to get effective input. Beyond direct outreach, a number of additional means are possible to connect transportation and public health professionals. Options to begin connecting include conferences, trainings, presentations, project kick-offs and scoping meetings (see Section 5).

Two people walk across a busy, multi-lane divided road without a crosswalk in Clackamas County. See how Clackamas County is addressing transportation and health in the case example on page 18.

Photo by Clackamas County Department of Transportation and Development

Public Health Stakeholder Contact Guide

The Public Health Stakeholder Contact Guide is a worksheet to help transportation practitioners prepare to reach out to public health stakeholders. Completing this worksheet will help to identify the appropriate public health contact(s) and ensure that the transportation practitioner has sufficient information available for a productive conversation with public health stakeholders.

With the information completed below, reach out to the appropriate public health entity to connect with the staff member(s) who can provide needed information or input. Relevant positions may include epidemiologist, public health surveillance researcher, program manager (e.g. Women, Infants, and Children (WIC) or Supplemental Nutrition Assistance Program (SNAP)), environmental health expert or inspector, physical activity coordinator, or school health coordinator. Depending on the structure of the state, district, or county health department, other staff positions may also be relevant.

Contacting both the local public health entity and the state department of health will be important. Often, state health agencies will house experts and information not available at a local level. Exploring what the state can offer may provide critical considerations useful to improve a final project, plan, or policy.

Information to Complete Prior to Contacting Public Health Entities

Prepare an overview of the project: _____

What is the timeline of the planning process: _____

Is on-going input needed or a single conversation/meeting? _____

Does your state use County Health Departments or Health Districts? Yes / No

Given the project boundaries noted above, do you need input from one or multiple County Health Departments, one or multiple Health Districts? Other health organization(s)? _____

Are there geographic parameters of the project? If so, are they local, regional, or statewide? _____

What populations will most likely be affected by the project and how might they be affected? _____

Are these populations broad, specific to a neighborhood, transit users, pedestrians, etc.? _____

Will access be enhanced, diminished, or removed from community services such as

Employment centers? _____ Transit connections? _____

Educational institutions? _____ Health services? _____

Food Supply? _____ Recreational opportunities? _____

Active transportation facilities? _____ Green/open space? _____

Other services? _____

What public health information would be useful to inform the project?

- General health data, statistics, or maps
- General population health and the built environment perspective
- Specific subpopulations like children and mothers
- Vulnerable populations around income, age, race, or ability
- Chronic disease like asthma, heart disease, and cancer
- Toxic exposure or prevention like radon, water quality, lead paint, asbestos, and local air quality
- Other information not included above

3.2.2 Know What They Seek

Researching the various sectors of public health that might be part of a transportation project will yield a better and clearer understanding of the intentions. Section 2.1 introduced health goals and described the intersections of these goals with transportation goals. This fundamental grasp of these connections and applicable health interests is essential so that the right questions are asked, the right answers given, and expectations are known in advance. Virtually every department of health is currently leading efforts and initiatives to improve health, increase activity, reduce traffic crashes, and improve access to healthy food. One example is in Utah, where the State Department of Health is using traffic crashes to help decision making and steer public outreach campaigns. As part of the "Zero Fatalities" program, data is collected, shared, and used by department staff to help craft public campaigns to continually educate Utah drivers and citizens. Tapping in to these existing efforts is a matter of finding the right contacts. The Public Health Stakeholder Contact Guide helps in identifying the appropriate health contacts and health topics for discussion..

3.2.3 Establish Shared Interests

Successfully embarking on a collaborative process and forging strong relationships is often built on a foundation of commonalities. This is no different for the fields of transportation and public health. Both sectors are trying each day to improve the lives of the people in the communities they serve. Early research to determine areas of common interests and concern will galvanize the collaboration process when seeking public health input, participation, data availability, and understanding of desired outcomes. For any transportation agency or staff member, knowing what the common ground is before reaching out to health agencies will strengthen the case for why their participation is valued and their time commitment appreciated. Section 4.3 provides more details on the common ground between transportation and health to help frame conversations based on an early understanding of the key concerns of the specific stakeholders involved. A simple way to gain this understanding is to conduct research on the prevailing issues and concerns in a given area and how public health is attempting to intervene. Section 2.1 gave an overview of the ways in which transportation and public health connect. At the local level, it is important to understand the individual health department's priorities and concerns. Transportation practitioners may wish to review Community Health Needs Assessments, Community Health Improvement Plans, and local Department of Health websites to gain insight into the specific issues of concern to the department they are seeking to connect with. Refer to Section 2.3 for

Understanding Healthcare Provider Needs

Connecting with healthcare providers differs from engaging public health agencies and requires understanding how transportation issues affect their bottom line. Transportation, especially rides to healthcare, affects costs for healthcare providers. These costs include:

- Cost of missed appointments (operational)
- Cost of missed opportunities to improve patient care and outcomes
- Costs of diverting patients to other facilities

Understanding how transportation can help healthcare facilities improve their bottom line can help transportation practitioners find opportunities to benefit both parties.

Adapted from Resource Guide for Conversations between Transportation and Healthcare Professionals (https://nationalcenterformobilitymanagement.org/wp-content/uploads/2014/09/NCMM_Healthcare_Business_Case_Conversation_Starters.pdf)

more information on common health department initiatives and goals.

3.2.4 Be Prepared to Deliver

Including the voices and expertise of public health experts can be invaluable for any transportation process. The inclusion of public health members implies that adjustment, revisions, or mitigation may occur on a plan or project. Public health professionals may also provide insight on additional perspectives, especially those that may be experiencing disparities. For example, if health stakeholders are invited to participate in developing a regional plan, the resulting plan may need to include more provisions for active transportation than it might have without their input. Health stakeholders participating in a corridor project may expect the resulting project to be more of a Complete Street that benefits all users than an automobile-oriented road widening. This is of critical importance as there is an expectation as with any participating group, that their insight and contributions will be considered and possibly used to forge the final product. Simply stated, if public health is sought to contribute, their input needs to be incorporated and the outcome should be inclusive of their needs.

The remaining sections of the guidebook provide the communication tools and supportive resources to meet these aims. Section 4.1 deals with overcoming communication challenges to ensure that transportation and health practitioners reach a shared understanding of expectations. Once expectations are established, transportation professionals must select appropriate communication and collaboration techniques (see Section 5) to support the desired outcomes. Sections 6 and 7 of the guidebook explain where transportation practitioners can find support and resources for their efforts to incorporate public health perspectives into transportation plans, projects, and programs.

Case Study: Southern California Council of Government

The metropolitan planning organization housed within the Southern California Council of Governments (SCAG) has a network of interested personnel from SCAG and other agencies who comprise The Public Health Working Group. The group regularly meets and contributes input into the transportation decision making occurring within SCAG's many initiatives, functioning as an advisory group to SCAG. The group was established to "provide a forum for various public health stakeholders throughout the region to convene and provide comments and recommendations for the promotion of public health in transportation and land use planning…"

http://www.scag.ca.gov/programs/Pages/PublicHealthWorkingGroup.aspx

4.0 FOUNDATIONS OF COMMUNICATION

This section describes differences between transportation and health organizations in terms of organizational focus, structure, and responsibility, as well as terminology and perspectives. The different focus areas, user perspectives, and associated responsibilities of each sector lead to the use of different health-related terminology, communication approaches, and measures of collaboration success/effectiveness. The intent of this section is to inform the reader of key differences between the health and transportation sectors that shape stakeholder communications, provide a set of transportation and health terms and definitions, and illustrate how using the shared and overlapping goals described in Section 2.0 can help transportation and health practitioners find common ground and build a foundation for accomplishing individual and mutual goals.

4.1 Communication and Organizational Structures

Communication involves the exchange of information, as well as opinions and attitudes, and reflects individual communication preferences as well as organizational communication styles, overarching goals, and processes within which an individual operates. Communication styles, language, and decision-making frameworks derive from organizational structures put in place to accomplish efforts either internally or externally, working with other entities to achieve mutual or agreed-upon goals.

How do transportation and health organizations differ in organizational structure and communications?

There are key differences in the way that transportation and health agencies are structured based on what they are mandated to achieve and differences in policy priorities, funding sources, process approaches and requirements, partnerships, and metrics of success. Following is a brief overview of some of these differences. As a result, transportation and health agencies typically have distinct structures for coordinating efforts internally and communicating and coordinating externally, often with unique sets of stakeholders. The means by which they exchange information, overall communication styles, coordination approaches, and organizational frameworks differ substantially. Understanding, respecting, and learning how to navigate organizational and communication differences is vital to supporting effective communication and coordination.

4.1.1 Transportation Agencies

Transportation agencies are structured to identify, fund, and deliver infrastructure investments for the benefit of moving people and goods safely and efficiently. Success is primarily measured by outcomes that reflect end results of investment priorities. Each phase of transportation decision-making (described in Section 2.2) links directly to the next phase, and products completed in one phase inform the next. Consequently, most state transportation agencies have separate planning, environmental, design, and right-of-way business units followed by the implementing arms of the agency, which construct, operate and maintain infrastructure (usually at a regional or county level). At the regional and local level there is wide variation in the structure of MPOs and local transportation departments generally based on the size of a community and its transportation system; but separation is typically

found between departments and staff that carry out planning and environmental functions and departments that design, construct, operate, and maintain transportation facilities. Transit also is typically overseen by a separate agency or department. Funding for transportation is complex and varies by state but is predominantly driven through public investment from the federal, state, and local levels, usually dependent on vehicular user taxes with the exception of transit investments which may be supported through sales taxes and other financing mechanisms. Transportation agencies have long-term planning horizons based on 20-year demographic and land use projections. Key stakeholders of the transportation decision-making process include federal, state, and local officials; resource agencies; and elected officials. The general public is also a key stakeholder, and public involvement is required by federal planning and environmental laws, regulations, and executive orders. The communication styles and preferences of transportation agencies are influenced by all these organizational and contextual elements.

Because transportation projects affect most aspects of individual and community quality of life (including health), transportation agencies also focus on developing solutions that support sustainable, livable community outcomes through a context-sensitive solutions approach. As discussed in Section 2.1, transportation agencies address health issues through a focus most heavily on safety, while also addressing other issues that pertain to health outcomes

Case Example: Healthy Environments Collaborative, North Carolina

The *NC Communities Putting Prevention to Work* project, which began in 2010 and ended in 2012, was established with the goal of assisting four state agencies in addressing policy issues that would improve and increase access to places for physical activity—such as sidewalks, bike lanes, greenways and parks—throughout the state. Initial funding was awarded under the American Recovery and Reinvestment Act to develop this interdepartmental policy initiative, referred to as the *Healthy Environments Collaborative*. The project was facilitated by the Physical Activity and Nutrition Branch in the NC Division of Public Health working in collaboration with three other state agencies (NCDOT, Department of Environment and Natural Resources, and Department of Commerce).

Through the collaborative, each agency identified feasible short- and long-term policy items to help improve the policy climate for physical activity environments. Policy items that pertained to NCDOT included: the need to work better together to collect and share data on active transportation infrastructure; limited funding for built environment improvements; and, the finding that NCDOT engineers prefer a standard template-approach to design and do not have the experience or level of discretionary authority to flexibly adjust designs. Potential solutions to these issues included: amending select programs and/or processes to include data collection; developing a mechanism to promote agency funding that could increase facilities for physical activity; revising funding information to include health goals; and creating mechanisms to assign accountability to engineers and division offices for implementing multimodal planning, design, and prioritization.

This case example demonstrates the ability of a program to focus interagency communication to implement effective design and suggest feasible policy- and program-level solutions to resolve issues affecting the agencies.

https://www.ncbi.nlm.nih.gov/pubmed/23033716

including air quality, emergency services and response, and multimodal travel.

4.1.2 Health Agencies

Public health agencies are structured to improve the health of populations, influence individual behavior, and reduce the risk of certain diseases, injuries, or fatalities. Performance is measured with respect to population health outcomes, along with operational measures (service volumes, healthcare costs and free clinic volumes). Health care administered by public health agencies is focused on determining the metrics for understanding community health (e.g., disease incidence, population risk characteristics) and developing ways in which to serve those communities. Contrary to the more linear transportation process, the public health sector is more of a spoke and wheel system with many different policies, partners, and funding sources funneling into an overarching goal to improve individual and community health. Public health agencies receive a combination of federal, state, and local funds with federal and state funds which are generally allocated through discretionary, competitive grant opportunities organized around health issues, rather than project-based funding. Frequently, the public health sector focuses on single-issue problems (e.g., heart disease, diabetes, smoking cessation), and funding is often tied to metrics that reduce population percentages with associated health risks or conditions. Public health agencies are also heavily reliant on partnerships to accomplish their goals and objectives. Frequent partners include private health providers; hospitals; other local, state, and federal agencies and elected officials; and local and national non-profit institutions and associations, who may themselves be recipients of federal or state funding awards. Working across private, public, and non-profit sectors to accomplish health goals and objectives presents unique opportunities and challenges for the public health sector. As with transportation, the public is a vital stakeholder in the process, although there is wide variation in the level and nature of outreach for specific public health initiatives. Ongoing public health communication involves working closely with individuals and private and public health and social services providers. Health agencies often exchange information with community members through health services and at a local level through health departments. The unique aspects of the public health sector combine to create organizational structures that are quite different from transportation agencies, but that offer promise for collaboration since the public health context requires working in partnership and through collaborative approaches.

Health professionals have increasingly recognized the role of transportation in public health in recent years. The sector has shifted from paradigms focused on treating health outcomes and providing education to influence health behaviors and choices at the individual or community level towards public health approaches focused on health “upstream” to look at the influence of the built environment. Whether expressed through concepts such as impact “pathways” or paradigms on the roles of

The Policy, Systems, and Environmental Paradigm

Policy, systems, and environmental change approaches seek to go beyond programming and into the systems that create the structures in which we work, live, and play. This paradigm is based on implementing multiple approaches in these areas that work together to achieve greater results. For example, a community may implement local funding for bicycle and pedestrian facilities and coordinate this action with the implementation of a Complete Streets policy and guidelines, generating a combined greater impact to physical activity.

Food Trust, 2012.

policy, systems and (natural and built) environment, health professionals are looking with a broad lens at how transportation actions may influence health outcomes by shaping the environments in which communities and individuals travel to work, school, and other destinations (by car, transit, bike or foot); access health-supportive resources; and are subject to environmental exposures (e.g. air quality, noise).

4.2 Speaking the Language

How do we create a shared vocabulary?

Effective communication that leads to mutually positive outcomes requires a shared understanding of key terms and definitions. For transportation practitioners to initiate a meaningful and productive dialogue, it is important to identify key language and terms used by the public health community and transportation terms that may need to be defined for public health professionals. For example, terms such as typical section, level of service, and vehicle to capacity ratio are regularly used by transportation practitioners, and terms such as risk exposure, vulnerable populations and social determinants are used daily by public health professionals. Both sectors also use many acronyms, which can be similar. For example, AASHTO (American Association of State Highway and Transportation Officials) and ASTHO (Association of State and Territorial Health Officials) are familiar organizations to each sector, but the use of the acronyms could lead to miscommunication between sectors because of their similarity.

Terms that are used by both sectors but may have different meanings are also important to clarify; in many cases, this is even more applicable for seemingly simple or straightforward terms. For example, the public health sector uses “environment” to describe physical changes or impacts. For transportation professionals, the word environment communicates a different mindset involving natural and human conditions surrounding a transportation action, resource agency coordination, and compliance with environmental laws and regulations. The public health sector would thus describe Complete Streets as an “environmental” solution, while the transportation sector might describe it as a design solution. Another example of a term frequently used by both sectors but defined differently by each is “mobility.” In transportation terms, mobility refers to the movement of people and goods. In public health terms, mobility refers to one’s ability to move their body, move from place to place, and sit down and stand up.

Appendix A provides a quick reference table as a stand-alone glossary of terms commonly used in the community planning and public health realm and among transportation agencies. This appendix is a tool to equip transportation practitioners with the proper vocabulary to stimulate a productive conversation to build a strong communication foundation with public health organization and agencies. A robust, searchable glossary that contains additional built

Social Determinants of Health

A phrase that is likely unfamiliar to most transportation practitioners, but that is of vital importance to public health professionals, is “social determinants of health.” Social determinants of health are factors that promote health or present risk factors; generally speaking, they reflect the economic, social and biological conditions in which people live, work, and play. Social determinants of health are key in evaluating equity of health exposures and outcomes, and health professionals have been working to improve how this concept is communicated to health-related audiences.

environmental and public health terms is available from the *Georgia Tech Built Environment and Public Health Clearinghouse* at http://www.bephc.gatech.edu/glossary.

At the start of any transportation and health collaboration to determine the relevant topics, identify key terms, convey a basic understanding of these terms with health partners (using the glossary provided in this guide or other relevant references), and develop shared meanings for key terms and concepts as they apply to the current process. Agreeing on how words are to be used in the collaborative effort ensures that participants have a common understanding of what is discussed. Whether at the level of an individual plan or project or at an interagency level, developing this common vocabulary provides the foundation for communicating around issues to support collaborative efforts.

Case Example: FHWA "Health in Transportation" Working Group

In 2012, FHWA established an in-house working group of staff from 11 offices to explore how the agency addresses health-related issues and requests. Although FHWA has no formal policy on health, agency officials recognize that public health is an integral part of transportation planning and program delivery and must be considered as part of decision-making in the public interest.

The working group's accomplishments included: defining health in transportation; identifying FHWA programs related to health; developing an annotated bibliography of health resources; and creating a health response team to address inquiries from state and local agencies. The FHWA working group evolved into a broader USDOT working group involving the Office of the Secretary of Transportation, the Federal Transit Administration, and the National Highway Traffic Safety Administration, and the Federal Aviation Administration.

The working group also created a "Health in Transportation" webpage provided on FHWA's Office of Planning, Environment, and Realty website. The site is a comprehensive resource on the linkages between transportation and health, with answers to frequently asked questions and links to related publications and training opportunities. The working group also supported development of the Transportation and Health Tool (THT), which was jointly developed by USDOT and CDC, and the Health in Transportation Corridor Planning Framework. The THT provides data on transportation and health indicators for state and metropolitan areas that reflect how transportation affects safety, active transportation, air quality, connectivity, and equity, transportation and health references and strategies to improve public health through transportation planning and policy. The Health in Transportation Corridor Planning Framework supports efforts to incorporate health into corridor planning studies by identifying considerations and helpful data, tools, and resources.

This case example demonstrates how a federal working group is advancing the ability of state and local agencies to understand transportation and health issues and intersections and access resources that support effective communications.

https://www.fhwa.dot.gov/planning/health_in_transportation/

4.3 Finding Common Ground Where Health and Transportation Intersect

Where can we find common ground?

Once a shared vocabulary is formulated, the next step is to identify the shared and overlapping issues and goals that apply to a particular effort and look at how those are approached from the differing perspectives of the fields of transportation and health. Transportation and public health agencies serve the public, and agencies in both sectors work to support the quality of life in communities, even when focused on different elements of those communities. This shared purpose combined with increasingly overlapping and connected goals creates opportunities for transportation and health agencies and professionals to collaborate. Starting with shared and connected goals helps to create a foundation for collaborating around specific transportation and health goals and objectives. Table 2-1 identified core areas where transportation and health goals overlap or intersect.

To gain understanding of the specific transportation and public health organizations' or agencies' goals, interests and responsibilities for a particular initiative, begin with a perspective of what driving questions each sector may ask related to the key intersections between transportation and health. Table 4-1 provides examples of many of the central questions that frame the unique perspectives of each sector. Review of these key questions reveals overlaps and similarities that can aid in establishing a foundation to build a strong relationship for shared decision-making.

As discussed in Section 2, other topics for which transportation and health interrelate include noise, stress, mental health, social infrastructure, and overall well-being, which may apply to a particular initiative or collaboration. A host of unique questions may apply across these topics with transportation practitioners generally focused on socioeconomic impacts to communities and health practitioners focused on physical, social and emotional health outcomes.

Stakeholders provide input into the development of the THT at a workshop hosted by Delaware Department of Transportation.

Photo by Planning Communities

Table 4-1: Understanding Intersections between Transportation and Health

Intersections	Key Questions	
	From a Transportation Perspective	***From a Health Perspective***
Safety and Injury Prevention	• What can we do to reduce injuries and fatalities? • How can we improve the walking and bicycling network? • What laws, programs, promotions or campaigns can be implemented to get users to act safer? • How are we monitoring the system for needed safety improvements? • What type of design cross-section is safest for the projected vehicular and non-vehicular traffic? • What type of maintenance or operational improvements can we implement to reduce the potential for vehicular, pedestrian or bicycle crashes?	• What can be done to lower mortality rates and increase lifespans of individuals in the region? • What strategies can be employed to reduce injury-related deaths, specifically, automobile-related deaths? • How can we build roads to allow safer movement for walkers and bicyclists? • What are the exposure risks to vulnerable populations?
Physical Activity/Active Transportation	• What type of design considerations are important for providing adequate facilities for all roadway users? • What does the pedestrian and bicyclist network look like and where is it located? • How do we navigate non-motorized traffic through construction zones and/or detour routes? • How will a proposed land use influence the users of a transportation route including walkers and bicyclists? • How will the location of transit stops affect the infrastructure design to properly integrate pedestrians and bicyclists?	• How do we get more people moving and active? • What are the barriers to people being able to and choosing to walk or bike? • In what ways can we influence and increase physical activity? • How do we make the healthier choice the easier choice? • What can be done to lower rates of chronic diseases? • How are mobility impaired individuals' transportation needs being addressed by the road design?

Intersections	Key Questions	
	From a Transportation Perspective	***From a Health Perspective***
	• How are mobility impaired individual needs being accommodated by infrastructure design requirements?	• Does this transportation investment improve the physical health of community residents? • How can we reduce public health costs in our community?
Air Quality	• How does our transportation system impact regional air quality? • Do long term system improvements change air quality enough to comply with standards (state implementation plans)? • Do we have 'hot spots" of unhealthy levels of emissions or particulate matter?	• What can be done to lower rates of chronic diseases such as asthma? • What are the air quality issues among older adults, children, and people with compromised immune systems? • What are COPD rates among local populations? • How many emergency room visits were attributed to bronchial chronic diseases? • Are there vulnerable populations adjacent to highways or major intersections?
Connectivity and Access	• What are the optimal transportation options to access employment, medical, and other key destinations? • Will this project improve access by walking, bicycling, or transit to community resources and centers of employment? • Is the Level of Service for all users of this project improving? • What level of access points and access management is appropriate for the type of facility to maintain the desired level of mobility for facility users?	• Do all individuals, regardless of race/ethnicity, age, gender, income and ability, have equal access to health care? • Can a person walk to a nearby grocery store? Are they located in an identified food desert? • How do we make the healthy choice, the easy choice? • Can mobility impaired individuals' safely access the transportation facility? • Do all members of the community have equal access to quality of life amenities such

Intersections	Key Questions	
	From a Transportation Perspective	***From a Health Perspective***
	• What is the economic benefit of the transportation investment to all populations groups?	as parks, recreation opportunities, greenspace, public lands, nature walks, spiritual and faith-based organizations, etc.?
Evacuation/ Emergency Response	• What alternative routes can we use in the event of major shutdown of transportation corridors or services (transit, rail, etc.)? • How can we use technology to minimize the effects from a major emergency or event? • What are our key evacuation routes out of a populated area? • How do we plan for emergency service access?	• How do we minimize loss of life? • How can we prevent the spread of infectious disease outbreaks? • How can emergency supplies, personnel, and services reach affected populations?
Equity	• Does our transportation network allow for equal access for all individuals, including low-income residents, zero vehicle households, and communities of color? • Is our transportation program or policy having a disproportionate impact on any one particular population segment over another? • Does our plan or project improve a neighborhood by increasing safety, efficiency by all modes, and ease of access or will it create negative impacts through increased traffic volumes, noise, pollution, or a barrier effect? • What are the benefits and burdens associated with our project? • What are the financial implications to low income transit or road users from policy decisions, including tolling or pricing solutions?	• Does the built environment impose the same health impacts on all individuals, including low-income residents and communities of color? • What transportation interventions are proven to positively affect low socioeconomic status (SES) neighborhoods? • What can be done to level the playing field for all users when it comes to our transportation system? • Where are vulnerable populations and how might their health be affected from a transportation investment?

5.0 COMMUNICATION AND COLLABORATION TECHNIQUES

This section introduces communication and collaboration techniques that transportation practitioners can use to engage with the public health sector. Techniques are described, along with factors to consider when choosing a technique, and keys for successful communication. A Communication and Collaboration Technique Matrix provides an easy comparison of techniques and tools to help practitioners select those that are most appropriate for their situation.

5.1 Communication and Collaboration Techniques

Communication and collaboration between transportation and health stakeholders can take many forms. Effective communication forms the basis for collaboration, which is a step beyond coordination. In a coordinated process, stakeholders with different goals work together to create complementary efforts to achieve defined goals, perhaps making tradeoffs between conflicting or competing goals. In a collaborative process, participating stakeholders and organizations work together to create a shared understanding of a process and develop mutual goals through the process.

What techniques are most effective for communication and collaboration?

Transportation practitioners have many options for communicating with and engaging the public health community and should have a good understanding of the full range of techniques. Table 5-1 briefly defines the broad techniques which then can be implemented in a variety of ways and customized for each situation.

Walk audit facilitators and participants converse in Kauai County. For more information on Kauai County Transportation and Health efforts, see the case example on page 48.

Photo by Mark Fenton

Table 5-1: Communication and Collaboration Techniques

Technique	Definition
Advisory groups/ committees	An advisory group provides recommendations and/or analysis to a decision-making body. Advisory groups often represent a range of perspectives and expertise.
Coalitions	A coalition is a group of diverse organizations that form an alliance and work together to reach one or more common goals.
Collaboration tools	Collaboration tools can take a variety of forms. These tools support collaboration for any purpose (e.g., the Collaboration Multiplier) and do not focus on transportation or health.
Communication with elected officials	Communication with elected officials can take several forms. This technique broadly refers to efforts to establish regular communication with elected officials and/or involve them in transportation and health efforts.
Conferences	Conferences are formal meetings that combine instruction, discussion, and networking opportunities.
Consensus building	Consensus building strategies are intended to build general or widespread agreement for a goal, plan, project, etc. Consensus building focuses on inclusiveness and consulting interested parties.
Cross-funded positions/ rotations	Cross-funded positions or rotations refer to several strategies that directly engage individuals with one background in the work of a different discipline. For example, a transportation agency may hire a person from a public health background (or vice versa); one agency may directly fund a position at a different agency; or agencies may implement rotation programs that allow staff to gain exposure to work in both areas.
Expert interviews	Expert interviews are a method of accessing knowledge outside of an entity's field. They are often used to develop or evaluate proposed policies, programs, or projects.
Focus groups	Focus groups assemble diverse groups of people to participate in guided discussion to gather helpful information relating to a particular issue.
Healthcare summit or forum	Healthcare summits or forums gather senior decision-makers and leaders to discuss challenges and solutions related to healthcare.
Interdisciplinary leadership teams	An interdisciplinary leadership team brings together decision-makers from different entities and fields to guide actions that may involve one or more of those entities.
Interdisciplinary networking events	Interdisciplinary networking events are opportunities for professionals from different backgrounds to connect with one another.
Joint policies/ programs	Joint policies or programs refer to initiatives undertaken by multiple entities working together to establish overarching policies or establish programs consisting of several related efforts.

Technique	Definition
Joint projects	Joint projects are managed and delivered by an interdisciplinary team representing multiple entities working together.
Knowledge transfer/ research	Knowledge transfer refers to sharing of expertise, skills, and information between parts of an organization or between organizations. Research may also be shared or undertaken jointly to advance the knowledge base between organizations.
Multidisciplinary planning	Multidisciplinary planning broadly refers to methods that include multiple disciplines and perspectives. Examples include developing plans jointly, involving professionals from public health and other sectors in transportation plan development, or involving transportation, land use, or other professionals in preparing a community health improvement plan.
Panels	A panel is a small group of people brought together to discuss a particular issue. Panels may or may not have decision-making authority.
Partnering meetings	Partnering meetings typically focus on setting priorities or goals and focusing efforts. Partnering is generally a voluntary effort.
Small group meetings	Small group meetings are typically convened to focus on a specific topic, project, or other effort. One-on-one meetings may be held with select stakeholders based on schedule or topic focus.
Special events	Special events are typically focused on members of the public and may include health fairs or other community events. Both the transportation and health sectors use special events to perform outreach. These efforts can foster cross-sector communication when undertaken jointly.
Stakeholder outreach and collaboration measures	Stakeholder outreach/collaboration measures refer to the use of metrics to assess the effectiveness of outreach or collaboration, including both qualitative and quantitative measures. Quantitative measures may include number of participants/organizations involved or response rates, and qualitative measures can focus more on perceptions and attitudes.
Standing committees	Standing committees are ongoing committees that meet regularly.
Surveys	Surveys can be informal or formal. They are often used to assess public opinion or knowledge related to transportation and/or health efforts but can be targeted for stakeholders.
Task forces	A task force is a group brought together to accomplish a specific task or objective.
Topic-based action teams	A topic-based action team is a group focused on work relating to a specific topic. Teams may be subsets of larger groups engaged in broad efforts.
Training/cross-training	Training and cross-training are opportunities for transportation or health professionals to gain knowledge and learn from one another.

Technique	Definition
Transportation and health evaluation and data tools	A number of data and evaluation tools are available, and notable ones include the USDOT-CDC Transportation and Health Tool, FHWA Health in Corridor Planning Framework, H+T® Affordability Index, Sustainable Communities Index, and Tool for Health & Resilience In Vulnerable Environments (THRIVE). These tools not only provide data that facilitate technical evaluations, but they communicate transportation and health data to support stakeholder collaboration; some include visualization of data and issues.
Visioning	Visioning is a process for stakeholders and communities to develop goals and a shared vision for the future. Visioning exercises help to create an understanding of the results of a successful effort and how they might be measured.
Walking and bicycling audits	A walking or bicycling audit is an examination/evaluation of the walking or bicycling environment. They help assess the walkability or bikeability of an area and identify concerns, such as safety, comfort, accessibility, and convenience, as well as solutions, including engineering, education, enforcement or policy. They often consider a variety of perspectives, including people of all ages and abilities.
Workshops	A workshop is a meeting in which participants are actively engaged in a learning process around a particular topic, project or other focus. It typically involves facilitated group discussions, hands-on activities, and exercises.

5.2 Choosing Techniques

Choosing the right technique, or combination of techniques, for a particular effort depends on a variety of factors, including:

- stage of the transportation process,
- desired level of engagement,
- scope and scale of the effort,
- stakeholders involved,
- applicable public health topic(s), and
- resource constraints.

The Communication and Collaboration Techniques Matrix shown on the following page identifies the general effectiveness of each technique at supporting a desired level of communication and collaboration in each stage of the transportation process. Techniques in the matrix are grouped into methods to inform, educate, or communicate; coordinate; and collaborate and are listed alphabetically within each grouping. The following sections walk through the process of considering the various factors and how to use the matrix to assist with selecting techniques. Examples are provided to illustrate a variety of methods and engagement levels.

How do I select the right methods for my plan or project?

Determining how to select and tailor techniques also requires undertaking the foundational work outlined in Section 4 to understand the organizational context and framework for communication for the public health entities involved and to identify applicable terminology, topics, and intersecting issues and key questions.

Communication and Collaboration Techniques Matrix

	Communication Techniques	Policy Planning	Long Range Planning	Programming	Corridor Planning	Project Development	Implementation and Operations	Monitoring and Performance Management	Collaboration Attributes⊕ Shared Interests	Level of commitment	Participant Stability / Continuity	Decision-making influence
INFORM/EDUCATE/ COMMUNICATE	Conferences	◑	◑		◑	◑	◑		*			
	Communication with elected officials	●	◑	◑	◑	◑			*			■
	Expert interviews	◑	◑		◑	◑		◑	*			
	Interdisciplinary networking events	◑	◑		◑	◑			■		*	
	Knowledge transfer / research	●	◑		◑	◑		●	■	*		
	Surveys		◑		◑	◑		◑	*			
	Training / Cross-Training	◑	◑		◑	◑			■	■		
	Transportation and health tools/data (e.g. THT, H+T Index, THRIVE, Sustainable Communities Index, etc.)	◑	●	◑	●	●		◑	■	■		
COORDINATE	Advisory groups	◑	◑	◑	◑	◑		◑	■	■	*	*
	Cross-funded positions / rotations	●	●	◑	●	●	◑	◑	■	■	■	
	Focus groups	◑	◑		◑	◑			■	*		
	Healthcare summit or forums	◑	◑						■	■		
	Panels	◑	◑	◑	◑	◑			■	■		■
	Partnering meetings	◑	◑	◑	◑	◑		◑	■	■		*
	Small group meetings	◑	◑		◑	◑	◑	◑	*	■		
	Special events (participating in or co-sponsoring community health events, campaigns, etc.)	◑					◑	◑	■	■		*
	Walking / bicycling audits	◑	◑		●	●	●	●	■	■		*
	Workshops	◑	◑	◑	◑	◑			■	*		
COLLABORATE	Multi-disciplinary planning	●	●	◑	●	●	◑	◑	■	■	*	*
	Joint projects		◑	●	●	●	◑	◑	■	■	■	*
	Joint policies/programs	●	●	◑	◑	◑		◑	■	■	■	■
	Topic-based action teams	◑	◑		◑	◑	◑	◑	■	■	*	*
	Interdisciplinary leadership teams	●	●	◑	●	●	◑	◑	■	■	■	■
	Stakeholder collaboration and outreach measures	◑	◑	◑	◑	◑	◑	●	■	■	*	*
	Task forces	◑	◑	◑	◑	◑	◑	◑	■	■	*	*
	Consensus building	●	●	◑	●	●	◑	◑	■	■	■	*
	Collaboration tools (e.g. Collaboration Multiplier)	◑	◑	◑	◑	◑	◑	◑	■	■	■	■

⊕*Collaboration attributes adapted from SHRP 2 C01: A Framework for Collaborative Decision Making on Additions to Highway Capacity: Dynamics of Collaboration*

LEGEND

Effectiveness		Supports Collaboration	
●	Highly Effective	■	Applicable
◑	Somewhat Effective	*	May Support

5.2.1 Stage of Transportation Decision-making

Some techniques are better adapted to a given phase of the decision-making process than others. For example, visioning is most likely to be used in early stages while developing overall goals for an effort. On the other hand, joint projects typically come about after communication has been established through other means. Highly effective and effective techniques for each transportation process stage introduced in Section 2.2 are shown in the Communication and Collaboration Techniques Matrix.

5.2.2 Desired Level of Engagement

Transportation and public health communities may communicate for many purposes. The desired outcome and corresponding needed level of engagement of the effort will play a key role in selecting the appropriate technique. The techniques presented in the Communication and Collaboration Techniques Matrix cover a range of levels of engagement and are organized in the following broad categories:

- *Information, Education, and/or Communication Techniques*—including both one-way and two-way communication methods, generally with the aim to convey, obtain or exchange information (learning about health issues or gathering health data or input, providing education about a transportation effort or issue)
- *Coordination Techniques*—including a variety of ongoing as well as one-time group meeting approaches, as well as events (summits, workshops, audits); these methods aim at identifying the interests of each sector, defining shared interests, and creating structured efforts to achieve goals for each (which may be complementary or even completing)
- *Collaboration Techniques*—including active joint/team efforts and tools to support or measure collaboration; these methods bring participating individuals and entities together to develop shared perspectives and understanding and establish mutual processes and goals

Case Example: California Health in All Policies Collaborations

The Health in All Policies (HiAP) approach incorporates health considerations into decision-making across all sectors and policy areas. The state of California adopted the HiAP approach and established a HiAP Task Force that includes 22 state agencies. Each of these agencies incorporates health into its decision-making processes. Caltrans, the DOT, is a participating agency. The statewide transportation plan reflects the influence of HiAP in its goals, especially in promoting more and safer walking and bicycling trips. Caltrans has had success in using this approach where health considerations are built in up front and considered programmatically across all actions, while others might perform Health Impact Assessments (HIAs) focused on the potential health impacts of a single proposed action or program Participation in the Task Force has created opportunities for up-front collaboration between health and transportation practitioners.

This case example demonstrates how broader stakeholder collaborations can influence transportation planning.

https://www.cdph.ca.gov/Programs/OHE/Pages/HIAP.aspx

Communications techniques at each level of engagement drive at different outcomes. Establishing a line of communication is very different than actively collaborating with a team to deliver a program or project. However, a range of techniques may be applicable in a collaborative process because there will be the need at different stages of the process and with different audiences to communicate information compared with other points in the process or core stakeholders with whom collaboration is undertaken.

The selection of specific techniques will also be informed by the scope and scale of the transportation effort, the health topics and stakeholders, and available resources as described in the following steps. The specifics compiled on each of these factors can be combined with information on the level of engagement desired and applied to refine the selection of techniques using the information on the **collaboration attributes** that may be supported by each technique as shown in the Communication and Collaboration Techniques Matrix. Attributes to consider are shaped by the relationships between the stakeholders and interests involved, along with the scope of the efforts, and include: the need to identify shared

Case Example: Northeast Iowa Safe Routes to Schools Coordination

In 2011, the governor of Iowa launched the "Healthiest State Initiative." Iowa DOT has taken a decentralized approach to supporting health, allowing individual offices to focus on their constituents' specific health needs. In Northeast Iowa, a six-county region roughly the size of Connecticut, the Iowa DOT Office of Systems Planning has taken a creative approach to supporting physical activity.

Northeast Iowa Safe Routes to Schools (SRTS) efforts began in 2008, led by the Upper Explorerland Regional Planning Commission (UERPC). In 2010, the Northeast Iowa Food and Fitness Initiative (funded by the W.K. Kellogg Foundation Food & Community Program) began working closely with SRTS after an assessment determined that schools were a key community asset related to health.

UERPC and the Food and Fitness Initiative applied for grant funds to create a full-time SRTS liaison position. At the time, most SRTS coordinators worked in urban or suburban contexts, and the Northeast Iowa program adapted the model to a rural context. Many traditional SRTS approaches were not suited for the longer distances found in dispersed, rural communities, so the partners worked together to create a mix of approaches. In towns, traditional SRTS methods such as the "walking school bus" may be used, while creative approaches are used in situations involving more distance. For example, buses may drop children off farther from school, allowing children to combine their bus trip with walking or bicycling.

The Northeast Iowa SRTS program and Food and Fitness Initiative also work with communities to build support for active transportation infrastructure to address region-wide physical activity needs. The program serves as a model for other rural areas. Iowa DOT also created a statewide SRTS education and encouragement program in partnership with the Iowa Bicycle Coalition.

This case example shows the value of building and sustaining working relationships using an existing transportation program approach (SRTS) to reinforce different entities' efforts connected to related interests.

https://northeastiowarcd.org/safe-routes-to-school/

interests; the level of commitment needed from individual and organizational stakeholders; the timeframe of the effort and need for ongoing involvement from committed participants; and the degree of decision-making influence needed or desired. These attributes have been adapted from the Dynamics of Collaboration identified in the *Strategic Highway Research Program Project C01: A Framework for Collaborative Decision Making on Additions to Highway Capacity*.

5.2.3 Scope and Scale of the Effort

Techniques should be appropriate for the proposed action and overall anticipated effort. If the transportation agency's goal is to include some educational information about the health benefits of active transportation on its website, all it needs is simple knowledge transfer or an expert interview. If the transportation agency is working towards including health issues in its high-level goals and decision-making processes, the agency will likely need to use a variety of techniques to build a strong, ongoing working relationship with dedicated public health counterparts who are authorized to make or secure decisions for the organizations they represent.

5.2.4 Topics and Stakeholders Involved

More complex topics and/or more stakeholders will generally require more intense and structured effort than simple ones with few stakeholders involved. Techniques that focus on blending informed participation with the committed and ongoing participation of key health stakeholders are necessary to support these more complex initiatives.

5.2.5 Resource Availability

Staffing and budget availability also affect the choice of communication techniques. Different techniques involve different levels of resource commitment. For example, cross-training is less likely to be supported when budgets are tight. Limited staff availability means that an agency is less likely to be able to commit to participate in time-intensive efforts. Very small transportation agencies may be particularly challenged in this area and approaches may have to be adapted to scale efforts and leverage work by outside partners to a greater degree. Resource availability is important for all parties involved. If there is a mismatch between entities, approaches may need to be adapted to suit the party with the least resource availability.

5.3 Keys for Success

Choosing the right techniques alone does not guarantee success. The resources and references contained in this guidebook include specific information demonstrating how to use these techniques successfully. However, there are a few key elements for success that apply no matter which techniques are used.

5.3.1 Build Relationships

Experienced practitioners from both sectors have found that relationship-building is a critical factor for successful communication between sectors. While techniques like interdisciplinary networking events and conferences may not be enough to establish communication alone, they may be effective for building relationships in combination with other techniques. Many successful efforts start by building on just a few key relationships.

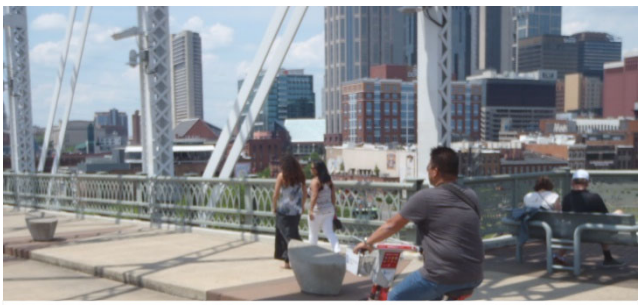
Case Example: Kauai County, HI Walk Audit Facilitator Training & Community Engagement

The Kauai Department of Public Works and the Kauai Department of Planning have committed to increasing community engagement as part of land use and transportation planning in the county, with a focus on increasing quality of life, public health and safety, and environmental quality for all residents. The State Department of Health launched the Healthy Hawaii Initiative over a decade ago with a mission of environmental and policy approaches to reducing tobacco use, improving nutrition, and increasing physical activity. These three agencies are now collaborating to engage a broad range of community members in hopes of creating "healthier" outcomes and increased active transportation infrastructure. One goal is to have more underserved populations engaged in these processes, beyond just established experts and advocates.

Two specific tactics have been used: train interdisciplinary teams to facilitate community walk audits and create a short video to encourage broader participation in community planning. The goal of the walk audit is to explore the environmental supports for active transportation. These audits are most effective when professionals from infrastructure, planning, health, economic development, and other disciplines participate, and even better if they help to facilitate. A multi-day facilitator training was provided for a group representing these fields and interdisciplinary teams are now leading walk audits as part of community planning processes. These partners also teamed up to develop a brief video for local broadcast, for YouTube, and to be shown at community events to challenge residents to think about how they want their communities to grow and develop, and to join on-line and live community planning events.

Kauai Community Planning outreach video:

https://www.youtube.com/watch?v=jGT6olQwKi0



Once designed for motor vehicles, the John Seigenthaler Bridge in Nashville was converted to bicycle and pedestrian use only in 1998. Here, a cyclist utilizing Nashville's bicycle share system crosses the bridge.

Photo by Mark Fenton

5.3.2 Sustain Efforts

Long-term, sustained communication tends to be more successful than isolated, "one-off" efforts. Sustained communication reinforces relationships and provides opportunities for building on successes. Methods that support sustained efforts with continuity of participation and higher levels of commitment tend to be more effective than those that represent only a single point in time.

Ideally, sustained efforts can evolve so that each party gains an understanding of one another's strengths. This can afford opportunities for entities to leverage one another's expertise to ensure that resources are used as efficiently as possible. For example, public health practitioners may be more experienced at developing health metrics and evaluation

strategies. As transportation agencies increase emphasis on performance-based planning and health issues, transportation practitioners can leverage the expertise of health stakeholders while supporting health outcomes. Working together to align metrics and targets is an opportunity for both sectors to benefit.

5.3.3 Integrate into Existing Process

Initiatives that create substantial additional efforts may be less successful or not something that transportation agencies and health partners can repeat or sustain in the long term. Both transportation and health practitioners already have numerous procedures to follow and face high demands with resources that may fall short of the level of those demands. Integrating communications and coordination with health stakeholders into meetings and communications that are already in place or planned and including transportation and health considerations into existing processes that rely on the same or related socioeconomic data within planning analyses greatly increases the likelihood of success.

Integration into existing processes is essential to institutionalize transportation and health efforts into regular practice. This also increases the likelihood that the effort will continue even when staff turnover occurs.

5.3.4 Continue to Use a Common Language

Section 4.2 of the guidebook establishes that language barriers are a hindrance to communication efforts. Not only is it important for transportation and public health professionals to adopt a common language early in their communication efforts, but it is vital to continue to use that common language, check in, and make adjustments as an effort progresses. When possible, avoid jargon completely. In the words of Albert Einstein, "if you can't explain it simply, you don't understand it well enough."

MetroPlan Orlando provides frequent presentations and updates on their transportation and health efforts to elected officials and key community stakeholders. The agency emphasizes that using consistent language is a key focus, and that this language is often adopted by the elected officials for other uses in their public duties.[3] The adoption of a language with minimal jargon and shared understanding supports communication not only with key public health stakeholders, but also with the broader community around health issues.

5.3.5 Measure Effectiveness of Communication

To date, performance measures and metrics for transportation and health efforts have focused on the technical outcomes and the range and level of stakeholders participating, rather than measuring success of the communication itself. However, as discussed in Section 4, there are substantial differences in communication frameworks and preferences and thus also differences in the perception of communication efforts between fields. In other words, transportation practitioners and public health practitioners may have different opinions of the quality and the value of the exact same interaction even if transportation agency meeting objectives are met.

[3] (E. Whitton, personal communication, August 16, 2018)

Improving the effectiveness of communication requires ensuring satisfaction of the participating parties and being on the same page—before, during, and especially following any communication. At the start of the communication process, transportation practitioners should work with health partners to define the measures of success both for technical outcomes and process or coordination outcomes. Stakeholder collaboration and outreach measures are noted as key tools to support collaboration in the Communication and Collaboration Techniques Matrix. These measures allow for monitoring of collaboration effectiveness during the process and following specific events or activities. Evaluation forms can be used at or following meetings or events that include questions about perceived effectiveness and opportunities for improvement. This feedback will provide useful qualitative measures that can be used to improve communication over time, thus improving the value of the efforts to everyone involved.

Case Example: Nashville Area MPO Bringing it Together through Collaborations

One of the leaders in bringing transportation and health together for the purposes of making informed decisions, the Nashville MPO has been an innovative voice on the subject for years convening local experts to contribute to research, policy, long range transportation planning, evaluation criteria, and active transportation plans. Health-related initiatives include:

- Regional Bicycle and Pedestrian Studies, 2009, 2014
- Expanded multimodal policies and options, 2035 and 2040 Regional Transportation Plans
- Development of health-related prioritization criteria incorporated into the regional Transportation Improvement Plan
- Dedicated funding & new Active Transportation Program
- Middle Tennessee Transportation and Health Study, 2013
- Integrated Transportation and Health Impact Model to monetize health impacts of shift to active transportation

When Nashville region residents were surveyed in 2014 about transportation issues, residents identified lack of sidewalks and lack of transit options as the top two issues to solve. The 2035 and 2040 Long Range Transportation Plans outline a vision that entails: expanded and modernized transit options; more active and walkable communities; and reimagined corridors with integrated technology. One important net result of these efforts has been a significant increase in the percentage of active transportation projects prioritized in the Regional Transportation Plan.

http://www.nashvillempo.org/

6.0 SUPPORTIVE NETWORKS AND RESOURCES

Where can I find resources to support transportation and health efforts?

Many resources are available to assist transportation practitioners in their efforts to address health effects. Although this guidebook focuses on national networks, some regions and local areas also have established networks that support health and transportation efforts. Transportation professionals can increase the effectiveness of their health involvement by ongoing engagement with multiple levels of these networks.

6.1 Tapping into Organizational Resources

Existing transportation and health organizations and programs promote cross-sector exchanges, provide channels for information and resource sharing, and offer programs that can directly support transportation and health collaboration. Table 6-1 presents national health-related organizations and programs that can support transportation professionals in their communications with health practitioners by providing data resources, guidance, technical assistance, and funding opportunities.

Case Example: Smart Growth America - National Complete Streets Coalition

The National Complete Streets Coalition is an example of an organization that provides a range of resources for practitioners.

National Complete Streets Coalition Mission

"[P]romote the development and implementation of policies and professional practices that ensure streets are safe for people of all ages and abilities, balance the needs of different modes, and support local land uses, economies, cultures, and natural environments."

Available Complete Streets resources

The National Complete Streets Coalition, a program of Smart Growth America, offers technical assistance and resources to support state and local agencies in addressing the needs of all transportation system users and developing and implementing effective policies and procedures. Technical assistance and resources offered include free and paid workshops, webinars, presentations, reports, case studies, fact sheets, model policies, guides, toolkits, and technical assistance.

Partners network

Coalition members represent a broad range of organizations and professionals from across the country, including entities working on general and specific transportation and health-related issues such as Active Transportation Alliance, America Walks, American Public Health Association, American Public Transportation Association, Association of Pedestrian and Bicycle Professionals, AARP, Institute of Transportation Engineers, Trust for America's Health, and Voices for Healthy Kids, as well as state and local DOTs and the National Association of City Transportation Officials.

https://smartgrowthamerica.org/program/national-complete-streets-coalition/

Table 6-1: Health Organization and Program Resources that Support Transportation Practitioners

Organization/ Program	Description	Resources Publicly Available
Active Living Research www.activelivingresearch.org	Active Living Research is a research center administered by the University of California, San Diego. It offers consulting resources and grant funding related to increasing opportunity for physical activity in communities.	Case studies; Consulting services; Research papers and article summaries; Tools and surveys; Webinars, videos, and presentations
American Public Health Association www.apha.org	APHA is a nonprofit representing public health professionals from more than 40 countries. APHA coordinates with a network of state and regional health associations or APHA Affiliates. Members participate in specific scientific or health topic sections.	Advocacy resources; Conferences; Continuing education; Fact Sheets; Networking opportunities; News releases; Policy statements; Publications and Periodicals; Research reports; Videos and webinars
Association of State and Territorial Health Officials (ASTHO) www.astho.org	ASTHO is a nonprofit representing state and territorial public health agencies. ASTHO established Health in All Policies: A Framework for State Health Leadership, a short guide including the history and key elements of Health in All Policies (HiAP) and how it can be applied for cross-sector collaboration	Conferences; Policy guidance; Research reports; Videos and webinars
Centers for Disease Control and Prevention (CDC) www.cdc.gov	The CDC is broadly focused on health, with a wide variety of programs and centers. The CDC oversees federal funding to state and local health departments and funds grant programs that support transportation and health efforts.	Grants and funding opportunities; Information services and product library; Research and data; Training and education
Institute of Transportation Engineers (ITE) https://www.ite.org/technical-resources/topics/transportation-and-health/	ITE is an international membership organization of transportation professionals. It promotes professional development for its members, as well as supporting education, research, and information exchange.	Guides, benchmarking reports, papers, tools

Organization/ Program	Description	Resources Publicly Available
National Association of County and City Health Officials (NACCHO) www.naccho.org	NACCHO is an organization serving all of the nation's more than 13,000 local health departments through tools and resources in various program areas including equity, healthy communities, communications, and more.	Advocacy resources; Consulting services; Networking and community building resources; Searchable collection of health toolkits
National Center for Mobility Management (NCMM) https://nationalcenterformobilitymanagement.org/	NCMM is an FTA-funded technical assistance center that promotes mobility strategies to advance health, economic and community goals. NCMM also has grant programs.	Grant and funding opportunities; eLearning and in-person training; Links to state and local organizations; Networking information; Webinars
Plan4Health http://plan4health.us/	Plan4Health is a collaborative initiative of the American Planning Association (APA) and APHA to build local capacity and cross-sector coalitions for inclusion of health in planning.	Funding; Peer Learning Network; Resource libraries; Toolkits
PlanWorks https://fhwaapps.fhwa.dot.gov/planworks/Home	PlanWorks is a web resource developed by FHWA that supports collaborative decision-making for transportation plans and projects.	Decision guide; Interactive assessment tools; Information on applications; Resource library
PolicyLink https://www.policylink.org/	PolicyLink is a national research and action organization focused on advancing racial and economic equity. It offers a variety of health equity resources.	Papers, guides, training courses, toolkits, videos, and other media
Rails to Trails Partnership for Active Transportation https://www.railstotrails.org/partnership-for-active-transportation/about/	Coalition network of organizations working to promote safer trail, walking and bicycling networks to facilitate greater physical activity through active transportation.	Guides; Links to partner resources; Networking opportunities; Reports
Robert Wood Johnson Foundation www.rwjf.org	The Robert Wood Johnson Foundation is a non-profit organization dedicated to health. It provides grants related to its focus areas, including healthy communities. In addition to grants, it provides	Education resources; Grant and funding opportunities; Policy and practice assistance; Research programs

Organization/ Program	Description	Resources Publicly Available
	resources to inform policies and participates in collaborative efforts.	
Safe Routes to School National Partnership www.saferoutespartnership.org	National non-profit that supports healthy, active communities through local Safe Routes to School efforts that promote youth walking, bicycling and physical activity.	Consulting services; Fact sheets; Grant and funding opportunities; Technical assistance; Toolkits; Webinars; Workshops and training
Smart Growth America: National Complete Streets Coalition https://smartgrowthamerica.org/program/national-complete-streets-coalition/	The National Complete Streets Coalition fosters the development and implementation of policies and professional practices to advance the design of the city streets to improve safety, expand active transportation participation, promote transit use, and optimize land use.	Case studies; Fact sheets; Model policies; Reports; Technical assistance; Toolkits; Webinars; Workshops
TRB Health and Transportation Subcommittee www.trbhealth.org	The TRB Health and Transportation Subcommittee advances research, education, and professional practice in public health and transportation.	Links to related subcommittees; Listserv; Research resources; Young professional resources
Vision Zero Network https://visionzeronetwork.org/	A non-profit collaborative campaign supporting local Vision Zero efforts. Vision Zero strategies focus on reducing to zero traffic fatalities and severe injuries, as well as enhancing safe, healthy, equitable mobility for all users.	Case studies; Communication guides; Interactive maps; Links to national and international resources; Reports

6.2 Maintaining Connections

Transportation professionals can search for professional networks operating in their area as a starting point for more localized resources. Health foundations, non-profit organizations, and other non-governmental organizations often operate at the local level and may have supportive resources for transportation and health activities.

Benefit from joining existing health professional networks. Transportation professionals should consider joining health professional networks to better inform their projects and processes. Benefits include the ability for transportation officials to quickly exchange information, acquire leading-edge examples and data, and rapidly alter the trajectory of a project for the greater public health. Local health organizations and health advocacy groups provide a starting point for making connections with health practitioners.

Encourage public health professionals to join transportation professional networks. It can be intimidating and complex for public health professionals to understand the transportation process and vast array of transportation professional networks. Thus, it can be beneficial to invite public health professionals to participate in transportation professional networks. By joining transportation professional networks, public health professionals can better understand the numerous technical inputs and tradeoffs that go into transportation planning, development, and delivery, allowing these professionals to use that knowledge to better determine where interventions are most necessary to influence public health in a positive way.

Develop individual professional support networks. For individuals with a strong interest in transportation and health, support can also come from individual professional networks. Inclusion of cross-disciplinary contacts within a personal professional network can help to support broader health and transportation efforts. Formal and casual conversations often yield information previously unknown. The continual exchange of information within networks is invaluable. Learning about successes, barriers, opportunities, methods, and other attributes of a strong partnership is part of the value of belonging.

How can I connect with ongoing networks and supportive resources?

Through the use of tools such as webinars, websites, blog posts, white papers, conferences, and other media, keeping professionally up to date on the latest happenings in public health is easy. Social media networks offer another way for professionals to familiarize themselves with cross-sector information. If one peruses transportation and health-related social networks on services such as Twitter, a vast information exchange of research, articles, and best practices can be found by network participants to build greater capacity for understanding what is possible in the transportation world.

Commit to "giving and gaining" through transportation and health networks. A healthy network of professionals is one where each party that's involved understands their importance in the network and feels like a valued partner in that network. Participants have an understanding of what they can contribute to the effort and what they can gain from it. An exercise that is sometimes deployed on health initiatives is called a "give-gain" exercise that acknowledges that each stakeholder in a relationship or common endeavor is expected to "give" something to that partnership while also expecting to "gain" something from it. Partners are often invited to participate based on what they can give, such as financial resources, staff expertise, data or technical support. It can be more difficult to articulate to a prospective

partner what they can expect to gain. Section 2.1 provided a starting point for understanding the interests of both transportation and health practitioners. Building on that information is a way to describe gives and gains for partnership opportunities.

Case Example: Healthy Eating, Active Living Idaho

Housed within the Idaho Department of Health and Welfare, the Healthy Eating, Active Living coalition is a network comprised of multiple community-based members and other sectors with a strong interest in public health. One of the subcommittees is "Healthy Transportation". The subcommittee meets regularly to provide updates on programs, initiatives, policies, and funding opportunities that will encourage and foster active transportation options and safer overall user conditions.

This Case Example is an example of a regional network that benefits participants from the transportation and health sectors.

https://healthandwelfare.idaho.gov/Health/HEALIdaho/tabid/1586/Default.aspx

7.0 TRANSPORTATION AND HEALTH DATA SOURCES AND TOOLS

Where can I go to learn about specific health issues? What data or tools are available to support collaboration?

Many information sources and tools are available to support effective communication and collaboration between transportation and health professionals. Transportation practitioners; public health professionals; and non-profit, advocacy, and other related professionals can use pertinent datasets and tools to enhance their understanding of transportation and health issues, creating more meaningful interdisciplinary dialogue. Issues facing cities and counties, and their neighborhoods and communities, continue to change and become more complex, making effective coordination of transportation and health planning even more essential. Transportation and health tools and datasets are a vital element in ensuring community needs, goals, and objectives are fully understood during transportation and health processes. Table 7-1 provides an overview of data sources and tools to support practitioners. In addition to these resources, state and local departments of health typically provide data and insight on local priorities and initiatives.

Table 7-1: Transportation and Health Data Sources and Tools

Title of Resource	Resource Description	Website
Public Health and Transportation/Built Environment (general)		
AARP Livable Communities	AARP has collected a wealth of information on livable communities in general, including both transportation and health topics (as well as housing, planning, etc.).	https://www.aarp.org/livable-communities/
Built Environment and Public Health Clearinghouse	Resource for training and relevant news about the intersection of health and place. Also, includes links to datasets and funding opportunities.	https://www.planning.org/nationalcenters/health/bephc/
CDC Healthy Places	Although this site is archived and no longer maintained, it provides a great deal of information on designing for healthy communities, terminology, planning tools, and case studies.	https://www.cdc.gov/healthyplaces/

Title of Resource	Resource Description	Website
FHWA Health in Transportation website	A collection of resources and links related to the connection between transportation and health such as The Framework for Better Integrating Health into Transportation Corridor Planning.	https://www.fhwa.dot.gov/planning/health_in_transportation/
Measuring What We Value: Prioritizing Public Health to Build Prosperous Regions	Case studies that discuss a variety of strategies that metropolitan area planning agencies can implement to improve public health outcomes and promote social equity.	http://t4america.org/2016/09/22/measuring-what-we-value-prioritizing-public-health-to-build-prosperous-regions/
State Health Agencies and Local Public Health Departments	Most local health departments develop an annual report on the state of health in their community. Examples of data available include community health assessments, births, deaths, mortality rates, chronic disease rates, and more. The amount and type of data varies by agency.	State health and environmental agencies https://www.epa.gov/home/health-and-environmental-agencies-us-states-and-territories Local health departments - https://www.naccho.org/membership/lhd-directory
Transportation and Health Tool	This USDOT-CDC tool provides data and profiles on transportation and health indicators for states and metropolitan areas. It also includes strategies to address health in transportation, and resources to help users understand the connection between transportation and health.	https://www.transportation.gov/transportation-health-tool
EPA State and Local Transportation Resources	Laws, regulations, policy guidance, models, and calculator tools relating to air quality and greenhouse gasses.	https://www.epa.gov/state-and-local-transportation
Transportation Mobility Programs		
FTA Rides to Wellness Demonstration and Innovative Coordinated Access and Mobility Grants	Descriptions of FY 2016 project grants with information on state, sponsor, and partners.	https://www.transit.dot.gov/funding/grants/fy-2016-rides-wellness-demonstration-and-innovative-coordinated-access-and-mobility

Title of Resource	Resource Description	Website
Rails to Trails Partnership for Active Transportation	Resources include publications, news articles, communications to industry leaders, and an active transportation pledge for local officials.	https://www.railstotrails.org/partnership-for-active-transportation/about/
Safe Routes to Schools National Partnership	Resources offered to support safe walking and bicycling to school include consulting, coaching, technical assistance, workshops, trainings, and webinars. Website includes a section dedicated to healthy communities.	https://www.saferoutespartnership.org
Vision Zero Network Resource Library	Resources related to Vision Zero, an international effort to eliminate fatalities and serious injuries, include case studies, existing plans, webinars, and references.	https://visionzeronetwork.org/resources/
Health Data		
National Environmental Public Health Tracking Network	Datasets, tables, infographics, toolkits, videos and other resources on environments and hazards, health effects, and population health.	https://ephtracking.cdc.gov/showHome.action
Behavioral Risk Factor Surveillance System	Datasets, analysis tools, questionnaires, publications, factsheets, and more based on national telephone surveys regarding health-related risk behaviors, chronic health conditions, and use of preventive services.	https://www.cdc.gov/brfss/index.html
County Health Rankings	Provides an annual snapshot of health for each county through map-based dashboard.	http://www.countyhealthrankings.org/
Resources for Rural Communities		
Rural Health Information Hub	Case studies, data visualizations, toolkits, news stories and other rural health resources.	https://www.ruralhealthinfo.org/library
Rural Transportation Toolkit	Toolkit providing stepped guidance, models and resources for developing, implementing and sustaining rural transportation programs.	https://www.ruralhealthinfo.org/toolkits/transportation

Title of Resource	Resource Description	Website
Health Impact Assessment Resources		
Health Impact Assessment	California-focused HIA information including publications, training and links.	http://www.ph.ucla.edu/hs/health-impact/
Health Impact Assessment Resources	Archived sites with HIA related resources (training, policy, fact sheets, tools, etc.). HIA resources are addressed broadly, with a portion of the site specifically focused on transportation HIAs.	https://www.cdc.gov/healthyplaces/hiaresources.htm

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APPENDIX A: KEY TERMS

Term	Definition	Source
Access	In public health terms, access means the ability to obtain needed health care services. In transportation terms, access refers to people's ability to reach goods, services and activities, which is the ultimate goal of most transport activity. Access may also refer to connections between land parcels and roadways, as in access management.	American Planning Association (APA). Public Health Terms for Planners and Planning Terms for Public Health Professionals. Litman, 2008 https://ops.fhwa.dot.gov/access_mgmt/what_is_accsmgmt.htm
Accessibility	From a transportation perspective, accessibility refers to people's ability to reach goods, services and activities, which is the ultimate goal of most transport activity. From a public health and transportation perspective, accessibility is the extent to which facilities, including transit vehicles, are free of barriers and can be used by people who have disabilities, including wheelchair users.	National Center for Mobility Management glossary of key terms Litman 2008
Accessible	Easy for persons of all abilities to approach, enter, operate, participate in, and use safely and with dignity; for example, a site, facility, work environment, service, or program may be accessible.	Why Public Health and Transportation: Setting the Stage" (TR News: September-October 2015)
Active living community	A community designed to provide opportunities for people of all ages and abilities to incorporate physical activity into their daily routines.	Why Public Health and Transportation: Setting the Stage" (TR News: September-October 2015)
Active transportation or active travel	Active transportation is any self-propelled, human-powered mode of transportation, such as walking or bicycling.* Transportation agencies and their partners can create opportunities for people to build physical activity into their daily routine by providing and improving bicycle and pedestrian or active transportation facilities.** A related concept is physical activity from transportation which measures the percentage of all trips	*CDC https://www.cdc.gov/healthyplaces/transportation/promote_strategy.htm **THT https://www.transportation.gov/mission/health/active-transportation

	made by foot or by bicycle that are at least 10 minutes long.***	***THT https://www.transportation.gov/mission/health/physical-activity-transportation
Aging in place	Remaining and living independently in the same community while growing older and coping with changing needs.	Why Public Health and Transportation: Setting the Stage" (TR News: September-October 2015)
Built environment	Settings designed, created, modified, and maintained by human efforts, such as homes, schools, workplaces, neighborhoods, parks, roadways, and transit systems.	Why Public Health and Transportation: Setting the Stage" (TR News: September-October 2015)
Chronic Disease	Chronic diseases are defined broadly as conditions that last 1 year or more and require ongoing medical attention or limit activities of daily living or both.	National Center for Chronic Disease Prevention and Health Promotion (NCCDPHP)
Community character	Community character is the image of a community or area as defined by such factors as its built environment, natural features and open space elements, type of housing, architectural style, infrastructure, and the type and quality of public facilities and services.	American Planning Association (APA). Public Health Terms for Planners and Planning Terms for Public Health Professionals.
Community design (also called urban design)	Community design is the process of giving form, in terms of both function and aesthetic beauty—to selected urban areas or to whole cities. It is concerned with the location, mass, and design of various urban components and combines elements of urban planning, architecture, and landscape architecture.	American Planning Association (APA). Public Health Terms for Planners and Planning Terms for Public Health Professionals.
Complete Streets	Complete Streets are streets designed and operated to enable safe use and support mobility for all users, including pedestrians, bicyclists, motorists, and transit riders of all ages and abilities.	Complete Streets Coalition
Environmental health	Environmental health is the discipline that focuses on the interrelationships between people and their environment, promotes human health and well-being, and fosters a safe and healthful environment.	American Planning Association (APA). Public Health Terms for Planners and Planning Terms for Public Health Professionals.

Epidemiologist	A person who has received advanced training in healthcare epidemiology. Epidemiology is the study of the distribution and determinants of health-related states or events (including disease), and the application of this study to the control of diseases and other health problems.	World Health Organization http://www.who.int/topics/epidemiology/en/
Equity	Equity in transportation is generally evaluated as the fairness with which impacts (benefits and costs) are distributed. Health equity means that everyone has a fair and just opportunity to be healthier.	Litman 2002 Robert Wood Johnson Foundation. What is Health Equity?
Exposure rate	Exposure rate is the relative risk of an individual experiencing injury or death in a traffic collision while traveling on a given mode of transportation. Rate is calculated by determining the total number of traffic fatalities or serious injuries in a given time period and dividing the rate by the total trips for a given mode (often by using commute mode share). In addition to modes, exposure rates may be analyzed by individual demographic characteristics, such as age, sex, and race or ethnicity, as well as income status.	https://www.transportation.gov/mission/health/road-traffic-fatalities-exposure-rate https://academic.oup.com/aje/article/166/2/212/98784
Health disparities	Health disparities indicate the difference in the incidence, prevalence, mortality, and burden of diseases and other adverse health conditions that exist among specific population groups.	American Planning Association (APA). Public Health Terms for Planners and Planning Terms for Public Health Professionals.
Healthcare district	Healthcare Districts are public entities that provide community-based health care services to residents. They respond to the needs in their District by providing a range of services, which may include a hospital, clinic, skilled nursing facility or emergency medical services; as well as education and wellness programs.	http://coalingamedicalcenter.com/achd-definition-of-a-healthcare-district/
Health indicator	A measurable characteristic that describes: – the health of a population (e.g., life expectancy, mortality, disease incidence or prevalence, or other health states); – determinants of health (e.g., health behaviors, health risk factors, physical environments, and socioeconomic	https://www.cdc.gov/nchs/ppt/nchs2012/li-18_churchill.pdf

	environments); – health care access, cost, quality, and use. There are also resources that define transportation and health indicators, and which may even be focused on a particular topic.	
Health outcome	A change in the health status of a population, group, or individual that is attributable to a policy or program or to a legal or environmental intervention, whether the intervention was intended to change health status or not. Health outcomes are usually assessed through health indicators.	Why Public Health and Transportation: Setting the Stage" (TR News: September-October 2015)
Health	A state of complete physical, mental, and social well-being—not merely the absence of disease or infirmity.	Why Public Health and Transportation: Setting the Stage" (TR News: September-October 2015)
Injury prevention	Injury prevention strategies focus primarily on environmental design (e.g., road construction that permits optimum visibility), product design, human behavior, education, and legislative and regulatory requirements that support environ-mental and behavioral change.	American Planning Association (APA). Public Health Terms for Planners and Planning Terms for Public Health Professionals.
Level of Service (LOS)	(1) A qualitative assessment of a road's operating condition. For local government comprehensive planning purposes, level of service means an indicator of the extent or degree of service provided by, or proposed to be provided by, a facility based on and related to the operational characteristics of the facility. Level of service indicates the capacity per unity of demand for each public facility. (2) This term refers to a standard measurement used by transportation officials which reflects the relative ease of traffic flow on a scale of A to F, with free-flow being rated LOS-A and congested conditions rated as LOS-F.	FHWA Planning Glossary https://www.fhwa.dot.gov/planning/glossary/glossary_listing.cfm
Mobility	In public health terms, mobility means the ability to move body parts, and the ability to move from place to place as well as sitting down and getting up. In transportation terms, mobility is the movement of people and goods.	https://studymoose.com/definition-of-mobility-essay# Litman 2008

Pedestrian friendly	In basic terms, pedestrian friendly describes a street or area that has sidewalks on both sides of the roadway and has safe street crossings. Designs incorporate elements to enhance safety, security, comfort and mobility of pedestrians. In broader terms, it denotes a street, neighborhood, or city that supports, through planning and zoning, the location of stores, offices, residences, schools, recreational areas, and other public facilities within walking distance of each other. Such areas also often feature narrow streets, slow traffic, lower traffic volumes, street trees, awnings, covered transit shelters, benches, brick paving or other less conventional paving types, among other elements.	American Planning Association (APA). Public Health Terms for Planners and Planning Terms for Public Health Professionals.
Population health	The health outcome of a group of individuals, including the distribution of such outcomes within the group.	CDC.gov: https://www.cdc.gov/pophealthtraining/whatis.html
Public Health	The science and the art of preventing disease, prolonging life, and promoting physical health and mental health and efficiency through organized community efforts toward a sanitary environment; the control of community infections; the education of the individual in principles of personal hygiene; the organization of medical and nursing service for the early diagnosis and treatment of disease; and the development of the social machinery to ensure to every individual in the community a standard of living adequate for the maintenance of health.	CDC.gov: https://www.cdc.gov/nphpsp/PDF/Glossary.pdf
Public Health Surveillance	Public health surveillance is a series of ongoing systematic activities, including collection, analysis, and interpretation of health-related data essential to planning, implementing, and evaluating public health practice closely related to the dissemination of data to those who need to know and linked to prevention and control.	CDC: https://www.cdc.gov/od/science/integrity/docs/cdc-policy-distinguishing-public-health-research-nonresearch.pdf
Quality of life	In planning terms, quality of life means the attributes or amenities that combine to make an area a good place to live. Examples include the availability of political, educational, and social support systems; good relations among	American Planning Association (APA). Public Health Terms for Planners and Planning Terms for Public Health Professionals.

	constituent groups; a healthy physical environment; and economic opportunities for both individuals and businesses.	
Risk exposure	Risk exposure is the chance of harmful effects to human health from exposure to environmental conditions, such as air and water quality where individuals live, work, and go to school. Research finds differences in exposure to environmental risks based on socioeconomic status, with low-income individuals and communities more likely to be exposed to multiple environmental risk factors and experience negative health effects.	https://www.epa.gov/risk/about-risk-assessment https://www.annualreviews.org/doi/full/10.1146/annurev.publhealth.23.112001.112349
Safety	From a transportation perspective, safety is a measure of performance based on: the number of motor vehicle crash-related serious injuries and fatalities; the number of serious injuries and fatalities of non-motorized users; and the number of serious injuries and fatalities per vehicle miles traveled (VMT). From a public health perspective, safety refers to a judgment of the acceptability of risk (a measure of the probability of an adverse outcome and its severity) associated with a given situation or setting.	https://safety.fhwa.dot.gov/hsip/spm/state_safety_targets/ http://www.who.int/kobe_centre/ageing/ahp_vol5_glossary.pdf
Shared-Use Mobility	Transportation services that are shared among users, including public transit; taxis and limos; bikesharing; carsharing (round-trip, one-way, and personal vehicle sharing); ridesharing (car-pooling, van-pooling); ridesourcing (such as Uber and Lyft); scooter sharing; shuttle services; neighborhood jitneys; and commercial delivery vehicles providing flexible goods movement	National Center for Mobility Management glossary of key terms
Social capital	The interpersonal processes that establish networks, norms, and social trust and that facilitate coordination and cooperation for mutual benefit.	Why Public Health and Transportation: Setting the Stage" (TR News: September-October 2015)
Social Determinants of Health	Social and mental health conditions which directly or indirectly influence overall health status and individual and community quality of life.	https://www.cdc.gov/nphpsp/PDF/Glossary.pdf

Social infrastructure	Social infrastructure includes facilities and services that help individuals, families, groups, and communities meet their social needs, maximize potential for development, and enhance community well-being. Such facilities or services may include healthcare, education, housing, employment, arts and culture, public safety, or transportation. Social infrastructure also includes soft infrastructure such as communication networks, social capital, community engagement, and other community networks and activities.	https://vancouver.ca/people-programs/social-infrastructure-plan.aspx https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3898563/ https://www.sciencedirect.com/science/article/pii/S0277953612005953
Stakeholders	Members of the public involved in decision making who, although not formal decision makers, have a large role in representing the interests of local citizens and providing decision makers with a point of contact that can be depended upon to stay engaged.	Federal Highway Administration PlanWorks Stakeholder Portal
Transit-Oriented Development (TOD)	A transit-oriented development (TOD) is a mixed-use community within an approximate 2,000-foot walking distance of a transit stop and core commercial area. TODs mix residential, retail, office, and public uses in a walkable environment, making it convenient for residents and employees to travel by transit, bicycle, foot, or car.	American Planning Association (APA). Public Health Terms for Planners and Planning Terms for Public Health Professionals.
Traffic calming	Traffic calming means a strategic set of physical changes to streets to reduce vehicle speeds and volumes. It refers to the use of street design techniques, such as curb extensions, traffic circles and speed humps, to slow and control the flow of automobile traffic.	American Planning Association (APA). Public Health Terms for Planners and Planning Terms for Public Health Professionals.
Transportation control measures (TCMs)	Local actions to adjust traffic patterns or reduce vehicle use to reduce air pollutant emissions. These may include HOV lanes, provision of bicycle facilities, ridesharing, telecommuting, etc.	National Center for Mobility Management glossary of key terms
Transportation demand management (TDM)	Programs, projects or activities that provide travelers, regardless of whether they drive alone, with travel choices, such as work location, route, time of travel and mode. In the broadest sense, demand management is	https://ops.fhwa.dot.gov/plan4ops/glossary.htm#q

	defined as providing travelers with effective choices to improve travel reliability.	
Transportation disadvantaged	A term used to describe those people who have little or no access to meaningful jobs, services, and recreation because a transportation system does not meet their needs. Often refers to those individuals who cannot drive a private automobile because of age, disability, or lack of resources.	National Center for Mobility Management glossary of key terms
Typical section	The typical section is a picture, with dimensions, of how the cross-sectional view of the roadway would appear after the construction is completed. A cross section is how the view of the road would look if cut from side to side.	Georgia Department of Transportation “Basic Highway Plan Reading"
Vulnerable population	A group put at risk of adverse health effects by such factors as lack of income, place of residence, health, age, functional or developmental status, ability to communicate effectively, presence of chronic illness or disability, or personal characteristics.	Why Public Health and Transportation: Setting the Stage” (TR News: September-October 2015)