ITE’s Role in Integrating Transport & Public Health

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What Is ITE’s Role in Integrating Transport and Public Health?

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Introduction

The Institute of Transportation Engineers (ITE) has always recognized the relationship of transportation to quality of life objectives. ITE has constantly supported the goal of improving public health by providing a safer transportation system that reduces injury to users. In recent years ITE has supported both “Vision Zero” to reduce the number of crashes on our transportation system, and the “Complete Streets” vision of urban streets that accommodate pedestrians, cyclists, transit, and autos. With increases in heart disease and obesity occurring world-wide, health organizations have realized that the way we travel is a contributing factor to these public health epidemics. Research by both health and transportation organizations has recognized the nexus of transportation and public health, and goals to increase walking and bicycling have been advocated by the health organizations as well as by transportation agencies.

The purpose of this White Paper is to provide background on transportation and public health trends around the world, and to propose a series of actions that ITE should undertake to support improved public health. Of all the goals that we have as a society, the health and well-being or our citizens must be at the top. It is obvious that our growing dependency on travel by motorized vehicles and use of fossil fuels is contributing to millions of early or unnecessary deaths in every country. A wide variety of organizations and agencies need to be partners in this effort to address the cross-cutting disciplines required to address this public health epidemic. ITE will need to collaborate with medical research, public health, public policy, and urban design professionals to address this critical issue.

ITE is well-positioned to be a major contributor to the effort to improve public health through transportation changes. With separate councils focused on safety, transportation planning, systems management, traffic engineering and complete streets, ITE can be a leader in a transforming our transportation system to provide options to personal vehicle and contribute to a healthier society.
**Trends**

As the world changes, so does transportation. These changes necessitate transportation professionals to identify and integrate public health factors into their projects and programs. The following highlights projected changes in the United States that may have an impact on both transportation and public health.

**Increased Urbanization**

The US population is projected to grow by 70 million people (roughly 20%) by 2045. By 2050, emerging megaregions could absorb 75 percent of the U.S. population; rural populations are expected to continue declining. Given this, existing infrastructure might not be able to accommodate this level of demand.

Another element that increased and sprawling urban development brings is increased economic segregation. With that economic opportunity and social mobility decreases. This is why transportation choices can make or break a family struggling to survive. Proximity to job centers is correlated with their likelihood of employment and the length of their job searches when unemployed. Researchers at Harvard University have also found that children showed less upward mobility if they grew up in neighborhoods where residents had longer commutes. They found that residents of sprawling cities with high levels of race and income segregation had less social mobility than their peers. A similar study found that residents of more sprawling metropolitan areas faced higher transportation costs, had higher obesity rates, and experienced less social mobility. These studies suggest that sprawling development patterns support racial and income segregation and reduce access to opportunities for low-income families to get ahead.

In addition, low-income neighborhoods have more than double the fatality rate from traffic collisions as high-income neighborhoods. The reason can be traced, at least in part, to the lack of the basic infrastructure that wealthier communities often take for granted. Another study, out of the University of California, Berkeley's Safe Transportation Research & Education Center, found significant health disparities in transportation safety, with African-American, Native American, and Latino drivers facing higher traffic-related risks related to seatbelt use, impaired driving, and pedestrian safety. Further,
research has shown that limited access to transportation creates health inequities, as well as decreased access to education, employment, and opportunities for recreational activities for older adults and people with disabilities. vii

As congestion grows, Americans are increasingly using transit and showing more interest in living in transit-rich neighborhoods. Increasingly Americans believe in the value that transit services have in attracting amenities, shortening commutes, and improving the quality of life of a neighborhood. This increased interest is contributing to development patterns where wealthier residents are moving into transit-rich neighborhoods, driving up rents, and displacing minority and low-income residents into less desirable areas with longer commutes and less access to social services. Gentrification can also drive down transit ridership as car-owning residents replace transit-dependent residents. One study of 42 neighborhoods found that in more than 70 percent of those neighborhoods automobile ownership increased after a rail transit station was built there. viii As the range of costs of sprawl and auto-dependency become apparent—time lost in congestion, soaring rates of obesity, rising costs of maintaining existing infrastructure, and increasing inequality—societal attitudes are again changing. More people want to live in walkable, livable communities—integrated areas rich in amenities and transportation choices. Regions experiencing this change in attitudes are now faced with the challenge of improving the livability of cities while ensuring the affordability of traditional low-income and minority communities—so that those that suffered from decades of underinvestment and neglect aren’t now pushed aside by rising costs of living. ix

A group of investigators at UCLA recently conducted a health impact assessment (HIA) of possibly redirecting of “spillover” funds for transit (budget cuts to transit) to the general state fund. The HIA found that state transit budget cuts would primarily affect smaller transit agencies and those they serve—the poor, children, seniors, and the mobility impaired. Cutting back on these services could have considerable impacts on the health of these populations. Other findings from the HIA confirmed the health benefits of providing balanced transit options and helping to decrease reliance on driving. Benefits included improved air quality, increased physical activity, improved mental health, and a boost in social capital ix

Many MPOs are becoming concerned about the effects of their plans and programs on public health. Regional plans like the one published in 2010 by the Chicago Metropolitan Agency for Planning now call for "pursuing opportunities for more compact, walkable, and mixed-use development," and making "significant, criteria-based investments in parks and open space" to achieve "major benefits . . . including enhanced quality of life" and "improved public health through the promotion of active lifestyles." xi

Changes in travel behavior
It is possible that Americans, particularly millennials, will continue—as a matter of preference—reducing trips by car in favor of more trips by transit and intercity passenger rail. xi Online shopping is driving up demand for small package home delivery, which could soon substitute for many household shopping trips. xii Automation and robotics will affect all modes of transportation, improving infrastructure maintenance and travel safety, and enabling the mainstream use of automated vehicles. xiv Technological changes and innovation may transform vehicles, infrastructure, logistics, and the delivery of transportation services. xv
Aging Population
By 2045, there will be nearly twice as many older Americans as now; they will need quality connections to medical care and related services. Changes in the age of our population will have a lasting effect on how much we drive. Older Americans drive less on average than other Americans. On average, Americans over the age of 65 drive half the amount of Americans aged 25 to 64. That said, Americans are living longer and healthier lives and they are retiring later in life. Over the next 30 years, older Americans may work later in their lives and travel for work and leisure more often. Older Americans are more likely to have physical limitations, and, as they age, cognitive limitations that create challenges for driving, walking, and using traditional, fixed-route transit. In fact, older people who suffer from limitations related to health must often cease walking or using traditional public transit before they are forced to cease driving. Half of Americans over the age of 65 report having some form of disability, and one in three reported having trouble getting the transportation that they need.

Where transportation infrastructure is designed to accommodate or even encourage nonmotorized transportation, such as through complete streets policies, it can have a positive effect on public health. In its research report, Planning Complete Streets for an Aging America, AARP notes that "the ability to live closer to daily destinations is an important factor in maintaining mobility among older people who cannot drive or whose driving is limited. People 65 and over living in areas where houses are built closer to shops and services are less likely to stay home on a given day, and are more likely to use public transportation and walk to get around."

Emissions
Transportation also is a source of pollution, generating air, soil, water, and noise pollutants, including particulate matter, carbon monoxide, nitrogen oxide, and carcinogens. Reports by the American Public Health Association and others have linked air pollution to negative health outcomes, including asthma, respiratory illness, heart disease, poor birth outcomes, cancer, and premature death.

Federal fuel economy standards are slated for light-and heavy-duty cars and trucks to rise to the equivalent of 54.5 miles per gallon by 2025. In addition, sales of hybrid and plug-in electric vehicles are growing rapidly and have the potential to greatly reduce transportation emissions. However, Trucking is the single largest contributor to freight-related air pollution nationally. Compared to cars, heavy trucks emit large amounts of air pollutants—including hydrocarbons, particulate matter, and nitrogen oxides. While trucks have made great strides in reducing emissions, the average diesel-fueled
heavy truck emits 50 percent more hydrocarbons per mile and 12 times as many nitrogen oxides per mile as the average passenger car. These emissions can impact human health, particularly in neighborhoods adjacent to heavily trafficked freight corridors. A recent medical study suggested a possible linkage between living next to a major highway and dementia due to the exposure of pollutants. There must also be consideration for the environmental and health implications of ports and associated freight traffic for neighboring communities and identifies strategies for mitigating those impacts. By 2045, freight volume will increase by more than 40 percent.

Research

In recent years, public health organizations have been tracking the correlation between public health and transportation choices. According to the Centers for Disease Control and Prevention (CDC), about one-third of the adult population in the U.S. is obese, and the World Health Organization has reported similar results around the world.

In the U.S. the CDC, FHWA and various state and local organizations have developed specific programs to encourage active transportation. (see FHWA report entitled “How does Transportation Affect Public Health?)

In the United Kingdom, the Chartered Institution of Highways and Transportation identified strategies for changing transport policy to promote public health.

Current Initiatives

ITE has embarked on multiple initiatives associated with public health during the last few years. Examples of selected current or past ITE activities include:

1. Vision Zero

ITE has taken a lead role in Vision Zero initiatives in the United States. ITE joined the US DOT and the National Safety Council in formation of the Road to Zero Coalition. In 2016 ITE formed a “Technical Working Group” to help guide ITE’s Vision Zero efforts. ITE included Vision Zero sessions at the annual meeting in 2016 and has held multiple Vision Zero related webinars for its membership. ITE compiled a Safety Resources Toolbox with hundreds of links to safety related information resources.

Traffic safety efforts are one of the most visible ways ITE membership can impact public health, however it is a realm that is already well explored, advocated, and widely included in our ‘standard practice’. Moving forward it will be necessary for ITE to widen the understanding of public health within the community of transportation professionals.

2. Creation of a Public Health and Transportation Task Force

ITE has created a Transportation and Public Health task force to help guide ITE policy and efforts on the linkage between health and transportation. Future activities of the task force will focus on the development of tools that will allow health considerations to be considered during the transportation decision-making process.

3. Active living web page
The Active Living website appears to be a dead initiative; however, it does illustrate that ITE has exhibited in the past a willingness to push the health and transportation linkage towards wider adoption and awareness. It is important that ITE build upon current momentum and efforts such that the issue remains at the forefront of Institute efforts.

4. Transportation’s Role in Reducing Childhood Obesity

In 2010, the Institute of Transportation Engineers (ITE) received a grant from the Robert Wood Johnson Foundation (RWJF) to explore the role transportation can play in reducing childhood obesity. ITE’s stated goal in the project was “to inform, motivate, and advocate for change in the implementation and behavioral habits of transportation decision makers to create healthier communities.” This goal holds true today with the efforts of the public health and transportation task force as well as ITE’s Vision Zero efforts.

Form Partnerships

The following partners have been identified as organizations that ITE should potentially partner with in order to have the greatest amount of impact in improving the linkage between transportation and public health. Some of these organizations have well developed public health emphasis areas, others have practitioner groups that should be leveraged to assist in ITE’s efforts:

- American Planning Association (APA)
  - APA has developed metrics for planning healthy communities and web based training to assist in the information transfer and education of their membership. APA has multiple published case studies related to public health and transportation that should be considered by ITE.
- Association of Metropolitan Planning Organizations (AMPO)
- American Public Health Association (APHA)
- Association of American State Highway Transportation Officials (AASHTO)
  - AASHTO periodically holds a Transportation and Public Health Peer Exchange. Practitioners from across the country gather for a transportation and public health conference to share experiences and ways the various State DOTs are incorporating, or improving the consideration of public health, within their decision-making processes. The AASHTO public health peer exchange is an exemplary area to obtain anecdotal evidence from State DOT agencies.
- NACTO
- American Public Transit Association
- Center for Disease Control
  - CDC has published a Health and Transportation Tool and a Health Impact Analysis Toolkit.
- USDOT
  - CDC partnered with USDOT in the development of the Health and Transportation Tool. USDOT has been a vocal advocate on other public health issues within transportation such as active transportation, equity, and equality.
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- National Academy for Arts and Sciences
- Congress for New Urbanism
- Urban Land Institute

The challenge of fully incorporating public health into transportation will need to involve the collaboration of many players, not just the transport engineering/planning world or just public health professionals.

What Role Should ITE Play

The public health and planning professions have completed a significant amount of research linking health and transportation. Since ITE encompasses a wide range of transportation professionals, the organization can make an impact across various aspects of the transportation project lifecycle, from transportation planning and design decisions through construction and implementation. The following are key areas where ITE can best advance connections between public health and transport given our position in the industry:

- Planning
- Evaluation
- Design
- Education
- Policy

Developing cross-cutting partnerships with organizations detailed above that are already advocating for developing health transportation options will provide the greatest benefit to the initiative now, and these partnerships will enable ITE to continue to be a leader within the transportation community. The following provides a detailed description of the actions ITE should take within each of the key focus areas.

Planning
Transforming the transportation system to improve public health will require transportation planners to collaborate with land use planners, public health organizations, and healthy transportation advocates when developing urban and suburban plans. There are many cities around the world where pedestrian, bicycle and transit usage contribute to a healthier community. To understand the linkages between these healthy communities and the transportation system, ITE will need to partner with organizations who can provide expertise and data related to public health. The Transportation Health Task force has already established relationships with many of these organizations, so ITE can build on this to promote dialogue between the different disciplines.

ITE should initiate three specific actions related to integrating public health into transportation planning to inspire practitioners and encourage inter-disciplinary cooperation:
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1. **ITE should use examples and resources to develop a “State of the Practice” report.** The report will describe the conditions and process by which these communities provide facilities and encouragement to their citizens to use healthy transportation choices.

2. **ITE should build on the relationships within the Transportation Health Task Force** to link the appropriate organizations with the transportation and health objectives.

3. **ITE should organize an annual forum bringing experts from the various fields together to discuss best practices and research needs.** ITE has organized multi-disciplinary panels at conferences and this should be expanded to a full-day event.

**Evaluation**

The ability to measure the outcome, be it success or failure, of a project is crucial in engineering. Evaluation will be a critical component to achieve the integration of public health and transportation. Five action items are recommended to encourage the consideration of public health during the planning and design of transportation projects.

1. **Compile Existing Research Metrics and Evaluation Tools**

Many organizations have published research papers on the relationship of public health and transportation, on the health and air quality effects of active transportation policies and designs, and on traffic safety programs. ITE must acknowledge the existing body of knowledge and not waste effort trying to reinvent the wheel. It is paramount for ITE to compile existing metrics available today for use in the evaluation of transportation projects and community designs. Compiling a resource list of metrics and tools to use in project evaluation, similar to the process done with Vision Zero and the Traffic Safety toolbox, should be one of ITE’s next steps in furthering the linkage between transport and help.

2. **Participate with the Health Community to set up Research Studies of Previous Healthy Community Projects to Define Metrics**

Building on work already done by experts in the public health community is a better use of ITE resources than the development of completely new metrics or evaluation tools. Additionally, people within the public health community are more experienced with epidemiological studies that will likely be required to either validate or quantify the health impacts of transportation improvements.

The CDC and Department of Transportation have already developed one such tool, the *Transportation and Health Tool* and have developed a *Health Impact Analysis Toolkit*. The toolkit
provides a framework for stakeholders to evaluate the health impacts of proposed transportation projects, plans, and policies.xxx

3. **Obtain Transportation and Health Data from Communities That have Implemented Improvements (e.g. bike lanes) and Work to Derive Metrics from the Data**

ITE should work with the CDC, APHA, APA, and other entities to facilitate the development of metrics applicable to health impact assessments from communities

4. **Publish Metrics**

ITE should publish via website, or other publication method, the metrics and evaluation tools compiled so that practitioners can obtain, understand, and utilize the available tools in an efficient manner.

5. **Train Professionals (Public and Private) on Implementing Metrics**

ITE as an organization will need to provide training in the form of webinars, annual meeting sessions or workshops that help instruct transportation professionals on the use of the selected and preferred metrics for forwarding public health through transportation. APA has already developed a planner training course to communicate the metrics for planning healthy communities xxx. ITE could consider modeling some training efforts off this endeavor or even co-branding the APA materials and offering the on-demand course to ITE membership.

**Design**

To ensure that transportation design projects complement and incorporate short- and long-term planning efforts for healthy communities, it is necessary for those projects to follow the latest guidelines and standards within the industry. A successful design process involves the early involvement of key stakeholders. It is necessary to obtain buy-in from these stakeholders on the proposed design and to have a design that the stakeholders feel support their needs and is within available funding constraints. A helpful way to obtain stakeholder buy-in on a design that is different than what they are used to seeing is to share success stories of a similar design from other projects that are within a similar context. As a leader in the development of Complete Street design guidance, ITE is in a key position to share success stories of these projects.
ITE should lead in the development of a document that provides specific examples of how public health was considered in a variety of design projects within different phases of design and context. To assist in the development of the document, the following action items are recommended for ITE:

1. Task each ITE Technical Council with soliciting stories of projects that successfully implemented transportation designs intended to provide public health benefits.
2. Using the metrics developed as part of the evaluation focus area, evaluate the health benefits of the successful transportation design projects.
3. Complete additional outreach to ensure that success stories are available for a breadth of projects that include a variety of transportation modes, cover all phases of the project cycle, and are located with urban, suburban, and rural contexts.
4. Publish guidance document with success stories and the project evaluations showing the benefits the project can or has had on public health.

**Policy**
Policy can help to ensure that our transportation profession is directed to catering for people’s health and not just ensuring efficiency and convenience of vehicle movement. The main objective here is to identify policy goals for creating a transportation network that supports healthy communities. When identifying potential policy action items, it is important to recognize constraints and opportunities that make up the reality of the transportation community. One constraint is that rural areas have much fewer options for healthy transportation alternatives than urban areas. Another key constraint is the existing urban infrastructure that was built based on the knowledge and mindset from past generations. A complete overhaul of the existing infrastructure is not realistic, but there are opportunities to retrofit with existing transportation projects. Another key opportunity is the projected
increase in new urban areas over the next few decades. This does provide an opportunity to build new infrastructure from scratch that prioritizes healthy communities. Given this, the following action items proposed build off the current momentum of ITE’s complete streets effort.

1. **The Complete Streets Council should continue to advocate for greater adoption of complete street policies to improve both new and existing transportation infrastructure to provide a healthy transportation system.**

   Given that the Complete Streets Council has already made substantial efforts in outreach, it is recommended that the council continue their momentum and look for opportunities to expand their audience in both the engineering and planning communities. This can include activities such as updating design policies.

2. **The Transportation Planning Council should collaborate with the planning sections of public and private entities to develop policies that integrate complete streets policy with zoning, land use, site, and design policies for both urban, suburban, and rural context.**

   The transportation planning community has made been involved in linking transportation and public health for the last decade. There are existing cross-cutting groups, like the USDOT Health in Transportation Working Group, that would benefit from having the perspective of ITE, when crafting policies and guidance.

**Educating Transportation Professionals About Public Health**

It’s imperative to capture the interest of health specialists, urban planners, and engineers to work together and create new policies and guidelines that will help transform our existing cities into a more inclusive and fair environment for all users to have more options and towards a more active community.

Currently, the university curriculums are focused on each discipline individually, but not the relationships and effects they have on one another. There’s a need to create new interdisciplinary curriculums with the objective to be more inclusive and integrated (health, planning, and engineering). This will provide a comprehensive background to the new generation of professionals and result in increasingly healthy communities. We need to provide the new generation of students with opportunities to take minors related to Transportation and Public Health while completing their bachelor’s degrees in their respective fields.

In terms of the existing professionals, ITE needs to work to create platforms for collaboration between health specialists, urban planners, and engineers on the relation between transportation and public health. As part of this action, ITE needs to identify partners like LTAP, and other professional organizations that provide seminars and continue education credits to incorporate Transportation and Public Health in their curriculums.

The paradigm of providing priority to private vehicles first needs to change, the utilization of existing right of way needs to be modified, and the utilization of Road Diets to accommodate all users in a cohesive environment will result in a more active community. ITE needs to partner with nonprofit organizations (i.e. AARP, among others) that are currently taking the lead in promoting complete streets promoting better mobility among all roadway users.
ITE should initiate the following actions related to educating transportation professionals about public health:

1. **Create a presentation on the link between health and transportation** that
   - ITE members to provide to student chapters
   - Can be presented by ITE members (students or professionals) as part of K-12 outreach programs

2. **Work with the Transportation Health Task Force to identify and provide a list of potential speakers** for student chapters from the public health community

3. **Develop a prepared lesson/lecture that discusses transportation and health linkages**

4. **Coordinate with ITE Transportation Education Council to develop input that can be given to universities to incorporate healthy community outcomes within their curriculum**

5. **Continue outreach and education to ITE membership on the link between transportation and public health**
   - Through webinar series currently being planned with the Transportation Health Task Force and sessions at future ITE meetings
   - Develop targeted approaches for each Technical Council (verify that this encompasses planning, safety, design, operations, etc.)

**Conclusion**

A combination of global trends has contributed to a world-wide increase in health problems such as obesity, cardio-vascular disease, and depression. Health experts attribute many of these problems to our transportation system and our increasingly sedentary lifestyle.

ITE can play a significant role in improving public health through the talents in our community of transportation professionals working in partnership with other public health organizations. The topic of public health cuts through many disciplines, and the focus areas described in this paper align with established ITE councils related to planning, design, engineering, policy, and education. The Transportation and Public Health Task Force should serve as the forum to create a cross-cutting subcommittee that can educate and inspire our members to address this global challenge.
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