

At the Intersection of Public Health and Transportation Policy

Introduction

The connections between the domains of public health and transportation are manifold, based on evidence pertaining to physical activity, air quality, safety, and access to goods and services that support improved health. It is becoming increasingly accepted that the integration of health into transportation policy has the potential to prevent and reduce chronic diseases, decrease motor vehicle-related fatalities and serious injuries, and improve environmental health. While the issues are complex and multidisciplinary, transportation agencies are realizing the value of communicating and, even more so, working with public health departments. Albeit at different stages of their respective planning processes and to varying degrees, a growing number of collaborations are in progress.

This case study will address the relationship of health and transportation policy as demonstrated in the state of Massachusetts. It will document how landmark transportation reform legislation, signed into law in June 2009, mandated the connection between the Department of Transportation and Executive Office of Health and Human Services (in which the Department of Public Health resides). While other transportation agencies across the country are beginning to act on the value of collaborating, after studying the successes of multiple states and municipalities, as well as discussions with representatives of the aforementioned departments, the policies and practices of Massachusetts have been deemed to stand out as those from which others can learn and may elect to adapt to their own jurisdiction and activities. The following statement, from the website of the Massachusetts Department of Transportation (MassDOT or DOT), represents a philosophy that exemplifies this choice: Adopt best practices to increase efficiency to achieve positive health outcomes through the coordination of land use, transportation and public health policy.ⁱ

Issue

It is widely accepted that transportation can impact population health in numerous ways, such as:

- Access to goods, services and opportunities – Transportation systems can support individuals in leading healthier lives by improving access to recreational opportunities, healthy foods, shopping and health care, as well as jobs, education and other necessities that improve quality of life.
- Air quality – Transportation planning can help to reduce vehicle emissions and, thereby, improve the air quality for all.
- Physical activity – The incorporation of active transportation infrastructure and facilities can help to promote physical activity. There is strong evidence that physical activity can lower the risk of type 2 diabetes, heart disease, stroke, high blood pressure and premature death.ⁱⁱ Further, it has been shown to prevent weight gain, reduce depression and improve cognitive function in older adults.
- Safety – Application of safety countermeasures and encouraging safe behaviors by users of all transportation modes can reduce the number of serious injuries and fatalities, especially for bicyclists, pedestrians and older adults.

While this study is not focused on the social determinants of health, per se, research has demonstrated that the conditions where people live, learn, work and play affect a range of health risks and outcomes. These conditions or factors include socioeconomic status, education, the physical environment, employment and social supports. As health inequities are mostly attributed to these factors, it is



incumbent upon decision makers to address the social determinants in the development of policies and programs.

The issue and subject of this study is that which constitutes an effective and sustainable model whereby transportation plans and policies have the potential for profound influence on the conditions in which we live, learn, work and play and, thus, on the population's health. According to Richard Jackson, MD, MPH, formerly director of the National Center for Environmental Health of the Centers for Disease Control and Prevention (1994-2003), "We must be alert to the health benefits, including less stress, lower blood pressure, and overall improved physical and mental health, that can result when people live and work in accessible, safe, well-designed, thoughtful structures and landscapes."ⁱⁱⁱ

Hypothesis

It is reasonable to postulate that a jurisdiction in which a legislative body mandates the connection and collaboration of health and transportation is well-positioned to adopt substantive policies and programs and, ultimately, enhance the livability of its communities – whether a state or local municipalities – and yield a positive impact on the health of the population.

Discussion

While several states and municipalities were reviewed and considered in preparing this case study, the experience of Massachusetts was deemed to be one that stands out as representative of effectively integrating health and transportation policy. In fact, Massachusetts has been included in case studies of multiple jurisdictions. To some extent, this is a meta-analysis of previous studies that have been reviewed coupled with findings from recent interviews with individuals who have been engaged with the efforts that are discussed.

The state of Massachusetts has made the shift from legislation and policy to action. The following chronology of events – which highlights the legislature's creation of a structure for agencies of diverse disciplines whose activities have a considerable impact on health to work together on a multi-faceted approach – is presented to illustrate the relevant outcomes.

Chronology of Significant Events

2006

Capitalizing on the emerging connection between health and transportation, MassDOT became one of the first state transportation agencies in the country to adopt a complete streets philosophy through the issuance of its Project Development and Design Guide. The guide established a "Complete Streets Policy and Design Approach" calling for roadways to be built from the outside in, thereby ensuring that the safety and mobility of bicyclists and pedestrians would be considered equally throughout all phases of project development and design under its oversight.

2009

The Massachusetts legislature: i) consolidated multiple transportation agencies into a single, multi-modal transportation agency under a strong secretary for the purpose of a more holistic approach; and ii) created the Healthy Transportation Compact (HTC), an integrated group co-chaired by the secretary of Transportation and the secretary of Health and Human Services to improve public health through the coordination of land use, transportation and public health policy. The legislature



specifically required that the new agency work with private, state and federal partners to establish healthy transportation policy.^{iii,iv,v}

This inter-agency initiative was designed and continues to facilitate transportation decisions that balance the needs of all transportation users, expand mobility, support a cleaner environment, improve public health and, thereby, create stronger communities. Therefore, in addition to being co-chaired by the two secretaries, the HTC includes the secretary of Energy and Environmental Affairs, MassDOT transit administrator, commissioner of Public Health and, more recently, the secretary of Housing and Economic Development.

In accordance with the transportation reform law, the following are among the charges of the HTC:

- Promoting inter-agency cooperation to implement state and federal policies and programs that support healthy transportation;
- Reducing greenhouse gas emissions, improving access to services for persons with mobility limitations and increasing opportunities for physical activities;
- Increasing bicycle and pedestrian travel;
- Working with the Massachusetts Bicycle and Pedestrian Advisory Board to implement a policy of complete streets for all users consistent with the Project Development and Design Guide;
- Implement health impact assessments (also, conducted by the HTC) to be utilized by planners, transportation administrators, public health administrators and developers to help determine the effects of transportation projects on public health and disparate populations; and
- Developing goals for the Compact and measuring progress toward these goals.

The health commissioner at the time that the HTC was formed espoused the belief that historic approaches to the obesity epidemic were not working. With his influence, the HTC enabled the development of Mass in Motion – a statewide movement that promotes opportunities for healthy eating and active living in the places people live, learn, work and play. What was considered to be a vanguard approach, Mass in Motion called for the building of relationships that include economic development, housing, transportation, health and any other agencies with potential impact on the previously referenced social determinants of health.^{vi,vii,viii}

2010

MassDOT launched its GreenDOT Policy Initiative – encompassing health, smart growth and emissions.^{ix}

2011

MassDOT and partners held workshops throughout the state on Health Impact Assessments, conducted by the HTC, and on the implementation of its 2006 Complete Streets Guide.^x

2012

MassDOT finalized the GreenDOT Implementation Plan, including a goal to triple the amount of travel by foot, bicycle and public transit between 2012 and 2030.^{xi}

2013

A Healthy Transportation Policy directive was issued, requiring that all new MassDOT projects serve all travel modes and all MassDOT funded or designed projects to actively promote healthy modes – walking, bicycling and public transit – as defined by GreenDOT policy. MassDOT-funded or designed projects that fail to provide facilities for healthy transportation modes require sign-off by the secretary and chief executive officer of Transportation prior to advancing the project.^{xii,xiii}



2014

The Governor of Massachusetts signed a Transportation Bond Bill, which authorizes \$50 million in complete streets funding.

2015

The Separated Bike Lane Planning & Design Guide – a resource for considering, evaluating and designing separated bike lanes as part of a complete streets approach for providing safe and comfortable accommodations for all roadway users – was issued. A letter from the secretary of DOT, introducing the Guide – the first of its kind by a state transportation agency, reflects MassDOT’s continuing commitment to complete streets, sustainable transportation and creating safer and more convenient transportation options. In an introductory letter to the publication, Massachusetts Department of Transportation Secretary and CEO (2015-present) Stephanie Pollack stated: "MassDOT is committed to providing Massachusetts residents and visitors with a variety of safe and convenient transportation choices; for us, incorporating facilities that encourage walking and bicycling trips into projects is no longer the exception but the rule."^{xiv}

2016-17

Mass in Motion remains an active and vital program of the Department of Public Health (DPH) aimed at promoting wellness and reducing obesity through active living and healthy eating in communities throughout the commonwealth. In addition to state funds, Mass in Motion receives support from Community Transformation Grants, foundation partners and private industry. Its activities are further testimony to the state’s translation of policy to program implementation with its allocation of funds to local communities. Each community develops and implements a strategy such as developing local complete streets policies, creating opportunities for physical activity, establishing active design standards for land use reviews, organizing farmers’ markets or healthy corner stores and improving safety. For example, a grant received from the Council on Aging enabled Mass in Motion to fund senior walking clubs. Further, in addition to funding, Mass in Motion enlists organizations, such as Walk Boston, to provide technical assistance to its communities. Essential to its strategy is raising awareness and helping communities build capacity so that they choose to implement healthy options – transportation or otherwise. At the time of this writing, 60 of the 351 municipalities in Massachusetts are part of Mass in Motion.^{xv}

As of fall 2016, municipalities began to submit applications to DOT under the aforementioned complete streets program of the Transportation Bond Bill of 2014. Grants of up to \$400,000 will be made available to selected communities. Proposed complete streets policies will be reviewed and scored with eventual acceptance by DOT. Policies must include a plan, including how funds will be spent. A structure has been put in place to oversee implementation. These checks and balances further reflect the shift from policy to reality.

MassDOT’s collaboration with DPH extends to program evaluation. DPH is currently in the throes of developing an evaluation plan for Mass in Motion, which shall be based on health outcomes as well as risk factors. The metrics for the outcomes will include transportation-related measures, such as vehicle miles traveled. It should also be noted that DPH assists MassDOT by providing quantifiable objectives to be applied when planning local transportation projects.

Health Impact Assessments (HIAs), one of the tools used to inform transportation projects of health considerations, are being conducted by the HTC and with greater frequency. That said, sentiment is that HIAs should not be regulated.



While the preceding timeline illustrates the numerous successes that have resulted from a state legislature that acted far sooner than all others, this study would be remiss if it did not mention that it took diligent orientation and advocacy on the part of many. Walk Boston, an organization that has been in existence for 27 years, worked assiduously along with others to educate the legislators about the connection of transportation to health and the benefits that would accrue from formal legislation. The forward thinking legislature understood and acted on the criticality of policy as the means to effectuate change, acknowledging that formalizing the ideals that were brought to their attention was essential. Given the progress that has been made, elections resulting in a changing legislative body and numerous other factors influencing the decision makers, the advocates remain dedicated to ongoing communication with and education of elected officials – both local and state.

Challenges

With all of the successes, there have been, and there will remain, challenges. The following are some of the challenges encountered in Massachusetts and those that other states or municipalities might face when implementing similar sustainability initiatives:

- A change in administration can be expected to result in a change in priorities. While the legislation in Massachusetts remains intact and staff of both the departments of Public Health and Transportation remain committed to all that the legislation put in place, it is a given that the allocation of resources are subject to change with elections of new governors and/or appointments of new secretaries.
- Complexity and size of agencies can, also, make a difference. In Massachusetts, the Department of Public Health operates within the Executive Office of Health and Human Services, which consists of numerous departments and divisions. Structurally, the Department of Transportation is not as complex and, thus, is able to operate at a different pace.
- Influencing individuals' travel behavior and mode choice are definite challenges. MassDOT is invested in healthy modes, traveler outreach through MassRIDES, complete streets trainings, support for smart growth development and other initiatives. However, other methods that could help to make the transportation system more sustainable, such as land use policies and pricing strategies, are not controlled by MassDOT.
- The 2014 GreenDOT report focuses on developing a performance management system and identifying data sources to support the performance measures. However, certain types and sources of data are difficult to obtain. A particular challenge is in the measuring pedestrian and bicycle travel. While motor vehicle travel and public transit travel have established robust measurement systems, this is a significant challenge as it relates to developing purposeful measures of mode split.
- In general, compatibility of data is an issue. Typically, both the departments of Public Health and Transportation collect and manage a plethora of data. However, the data sets are not necessarily of the same scale or units and, thus, cannot be easily integrated. This issue is not confined to the state of Massachusetts; it is one that is common, regardless of geography.

Recommendations

Recognizing that transportation agencies – whether state or municipal – are at various stages in their introduction and incorporation of health into policies and programs, this discussion would be remiss to



not include recommendations of others, as well as provide tools and/or alternatives leading to or in lieu of formal legislation for consideration.

In 2007, representatives of the Centers for Disease Control and Prevention (CDC) created a Transportation Policy Group to develop a more comprehensive approach to identifying and addressing issues related to transportation and health. Their efforts extended to include working with the U.S. Department of Transportation, as well as non-federal partners such as the American Public Health Association (APHA) and the Healthy Eating, Active Living Convergence Partnership (Convergence Partnership).

In November 2008, CDC, APHA and the Convergence Partnership, in coordination with other government and non-government organizations, hosted Linking Transportation Policy and Public Health, a meeting of representatives from agencies with interest in transportation and/or health issues. The purpose of the meeting was to begin the process of helping these professionals learn more about the intersection of their two fields of discipline.

Work by CDC's Transportation Policy Group and the individual programs within CDC, coupled with input received during and after the Linking Transportation Policy and Public Health sessions and discussions with other federal agencies, resulted in the issuance of Recommendations for Improving Health through Transportation Policy.^{xvi} The recommendations, published in 2010, are intended as a framework for policymakers to consider in order to strengthen transportation policies and programs by including public health and safety. Most of CDC's recommendations, if not all, are incorporated in the programs and policies of MassDOT and DPH and warrant consideration in the development of the same by other transportation agencies. Following are some of the broad goals and select examples of interventions cited among CDC's recommendations for considering public health in transportation-related issues:

- Reduce injuries associated with motor vehicle crashes. Examples of interventions include:
 - Community designs that promote reduced traffic speeds in neighborhoods; and
 - Roadway safety issues through community design and policies.
- Promote active transportation. Examples of interventions include:
 - Well-lit sidewalks, shared-use paths, and safe roadway crossings;
 - Bicycle-supporting infrastructure, such as protected bikeways and programs that reduce motor vehicle traffic and vehicle speed on neighborhood streets (e.g., bicycle boulevards);
 - Safe pedestrian and bicycling connections to schools, public transportation, and public park and recreation areas;
 - Comprehensive street design measures, such as “complete streets”; and
 - Utilization of the federal guidelines for inclusion of active transportation infrastructure in building and development efforts.
- Improve air quality. Examples of interventions include:
 - Traffic congestion mitigation and air quality programs;
 - Promotion of transportation choices that reduce emissions and foster stricter emission standards;
 - Promotion of active transportation, including public transportation; and
 - Reducing vehicle miles traveled per capita.
- Expand public transportation by:



- Increasing transit funding;
 - Providing more transportation funding flexibility; and
 - Improving bicycle and pedestrian connectivity to stops and stations.
- Encourage healthy community design by:
 - Modeling land use and transportation policies that encourage dense networks of connected streets that serve the needs of all transportation modes (e.g., complete streets);
 - Designing street networks that facilitate active transportation and public transportation by increasing connectivity;
 - Locating destinations so that children can reach them without having to cross busy streets; and
 - Ensuring that all people have access to safe, healthy, convenient and affordable transportation options.

The following are tools that have been developed or are under development by the CDC and relevant to the integration of health and transportation policy:

- Transportation and Health Tool – Developed in partnership with USDOT, the Transportation and Health Tool is an online tool that uses data from transportation, health and policy sectors to allow users to examine the health impacts of transportation systems to compare their jurisdiction’s performance on 14 indicators to that of other states and metropolitan areas.
- Integrated Transport and Health Impact Model (ITHIM) – This model considers three health pathways related to transportation to transportation (air pollution, physical activity and time spent in traffic), offering a comprehensive picture in that it considers both positive and negative impacts. CDC assisted the Nashville Area Metropolitan Planning Organization with conducting an analysis of different scenarios using this tool. The tool suggested that even modest changes to walking and biking in Nashville could save approximately 70 lives per year and defray \$30 million in health care and lost productivity costs per year. The MPO’s Regional Transportation Plan 2035 calls for 70% of the adopted roadway projects to include sidewalks, bicycle lanes or shared-use lanes.

Notable related policy statements pertaining to the built environment, recently issued at the federal level, include:

- Policy statements on transportation: The CDC has supported several healthy transportation policy statements related to reducing injuries from motor vehicle crashes, expanding public transportation, promoting active transportation and other areas.
- Surgeon General’s Call to Action to Promote Walking and Walkable Communities: Announced in September 2015, this call to action acknowledges the importance of design in creating a safe and accessible space for people of all ages and abilities to walk.
- National Prevention Strategy: This strategy is mandated through the Affordable Care Act and includes a variety of recommendations for health issues, including some that are related to transportation.

Again, knowing that not all states are in positions to enact legislation like that of Massachusetts that of Massachusetts or that to do so might require multiple years to occur, a memorandum of understanding

(MOU) – like that of the Oregon Department of Transportation and the Public Health Division of the Oregon Health Authority – might serve some jurisdictions as a viable alternative (temporarily or otherwise). The Oregon MOU formalizes a relationship of the two agencies and explicitly states their shared objectives, which include:

- Maintaining ongoing communication and planning: This includes holding regular meetings and providing periodic updates, as well as coordinating outreach efforts to support relationships between key local partners in health and transportation sectors.
- Encourage safe and active transportation: Both agencies have an interest in improving safety and increasing physical activity by reducing injuries and fatalities in all modes and encouraging bicycling and walking.
- Collaborate on research and data analysis efforts: The agencies will coordinate their research efforts, share data sources when appropriate and identify tools for analyzing health and transportation data.
- Leverage opportunities: The agencies will identify potential funding opportunities and leverage their collaboration if/when applying for joint funding.

Conclusion

The premise and finding of this study suggest that policy enacted by a governing body plays a significant role, if not critical, to the likelihood of implementation. As well intended as parties may be, formal authority enables them to act – especially with funding attached to the legislation. While a growing number of health and transportation departments are communicating and collaborating, without enacted legislation, they may not be as compelled to act as their respective priorities emanate from different directives.

The Robert Wood Johnson Foundation defines “Culture of Health” as dependent on government, individuals, organizations and businesses working together to build healthier, more equitable communities.^{xvii} This is what has been created in Massachusetts; multiple sectors are committed to working together to create communities – at both the local level and statewide – that optimize the opportunity for healthy living with focus on the conditions on which they deem can be impacted. There is no doubt that legislation is that which structured the collaboration, as well as the foundation for checks and balances in Massachusetts. A commitment was born and continues within both the departments of Transportation and Public Health, whereby they are influencing the culture of health – statewide as well in local communities. As mentioned in the discussion, the aim is to impact communities by modifying the systems. This is being done, for example, by Walk Boston providing technical assistance to communities interested in reducing the speed limit to 35 miles per hour; commissioning a study so that the most effective approach to developing and implementing complete streets and vision zero policies will be in accordance with characteristics of the respective communities; and by measuring adherence to design guidelines when evaluating state-funded transportation projects.

Finally, based on this review of health and transportation policy in Massachusetts, it can be concluded:



- The ideal environment for health to be addressed – either directly by or in conjunction with transportation policy – is one that is supported by legislation, organizational structure and leadership and formalized multi-agency collaboration.
- Design for health – the intentional approach to designing and building new facilities (or improving existing facilities) with the goal of boosting physical activity levels of its users – should be adopted just as “health in all policies” should be considered.
- It is almost automatic that decision-making or the planning of policies and programs, such as complete streets and safe routes to schools, will facilitate the discussion of health. That said, health should be more than an implicit result; rather, it should be given explicit consideration.
- Departments of transportation should integrate health in specific goals of their long-range transportation plans, evaluations of plans and programs, and criteria applied to review applications for funding.
- State departments of transportation should encourage regional and local entities (e.g., metropolitan and rural planning organizations, planning departments) to include health issues and active transportation in their comprehensive plans.

In conclusion, Massachusetts exemplifies the shift of policy to reality. With legislation in place, the departments of Transportation and Public Health have been well-positioned and, thus, have developed innovative and relevant programs and policies that protect and promote health while accomplishing primary transportation objectives.

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<http://www.massdot.state.ma.us/planning/Main/SustainableTransportation/HealthyTransportation/HealthyTransportationCompact.aspx>

ⁱⁱ 2008 Physical Activity Guidelines for Americans. U.S. Department of Health and Human Services, pp. 9-12 and 14.

<https://health.gov/PAGuidelines/pdf/paguide.pdf>.

ⁱⁱⁱ <https://www.cdc.gov/healthyplaces/about.htm>

^{iv} An Act Modernizing the Transportation Systems of the Commonwealth (2009), Chapter 25. The 190th General Court of the Commonwealth of Massachusetts.

^v https://www.fhwa.dot.gov/planning/health_in_transportation/resources/statewide_healthy_communities/page03.cfm#Toc372612317

^{vi} Statewide Transportation Planning for Healthy Communities, April 2014. Prepared by: U.S. Department of Transportation John A. Volpe Transportation Systems Center.

^{vii} Conversation with Director, Office of Community Health Planning and Engagement/Division of Prevention and Wellness, Bureau of Community Health and Prevention/Massachusetts Department of Public Health. January 2017.

^{viii} Healthy Transportation Compact, MassDOT.

<http://www.massdot.state.ma.us/planning/Main/SustainableTransportation/HealthyTransportation/HealthyTransportationCompact.aspx>



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- ^{ix} Statewide Transportation Planning for Healthy Communities, April 2014. Prepared by: U.S. Department of Transportation John A. Volpe Transportation Systems Center.
- ^x *ibid*
- ^{xi} Institute of Medicine, 2014. *Applying a Health Lens to Decision Making in Non-Health Sectors: Workshop Summary*. Washington, DC: The National Academies Press.
- ^{xii} Leading the Nation in Transportation Excellence; www.mass.gov/massdot, April 9, 2014.
- ^{xiii} Conversation with Director, Office of Community Health Planning and Engagement/Division of Prevention and Wellness, Bureau of Community Health and Prevention/Massachusetts Department of Public Health
- ^{xiv} SEPARATED BIKE LANE PLANNING & DESIGN GUIDE 2015, Massachusetts Department of Transportation. <https://www.massdot.state.ma.us/highway/DoingBusinessWithUs/ManualsPublicationsForms/SeparatedBikeLanePlanningDesignGuide.aspx>
- ^{xv} Conversation with Executive Director, Walk Boston. January 2017.
- ^{xvi} CDC's Recommendations for Improving Health through Transportation Policy, Centers for Disease Control and prevention, 2010. <https://www.cdc.gov/transportation/docs/final-cdc-transportation-recommendations-4-28-2010.pdf>
- ^{xvii} <http://www.rwjf.org/en/culture-of-health.html>

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