

# A Public Health Framework for Transportation Safety is the Safe Systems Pyramid

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## Abstract

Several health impact modelling techniques have been created in response to the requirement to link changes in the built environment and transportation system operations to health outcomes. These tools provide results in terms of health impact measures like mortality, morbidity, and years of life with a disability adjusted for disability; in certain cases, they also provide economic metrics like willingness to pay and the monetary cost of health outcomes (such as mortality decreases). These models rarely and never take equality into consideration, according to an assessment of them. Many of them simply concentrate on evaluating the effects of one of these aspects or are only able to evaluate changes connected to specific modes, such as walking and bike projects. Additionally, there are limitations in area resolution and considerable calibration efforts needed. In order to understand the health implications of projects, plans, and policies, involve the affected populations, and inform decision-making toward health-improving policies, plans, and projects, health impact assessment (HIA) studies use a variety of models, tools, and other qualitative and quantitative techniques.

**Keywords:** Public health • Transportation safety • Pyramid

## Introduction

Although HIAs have been successful in bringing together transportation and health experts and raising public awareness of health issues, their real influence on transportation decision-making is still only marginally greater in some situations. Their potential to influence outcomes is strongly influenced by the participation of interested parties, the appropriate timing and alignment with predetermined goals, as well as the accessibility of resources. The documenting of results and consistency in HIA approach has both been suggested as ways to increase HIA success rates [1].

The ranking and prioritisation of projects is an alternate method of incorporating health into transportation decisions. Numerous state and local organisations have created such procedures in an effort to guarantee decision-making is transparent and to meet federal criteria for performance-based transportation planning. Recent initiatives have taken into account the effects of transportation on health and have included pertinent criteria. After reviewing eight project score and prioritisation frameworks, the following conclusions might be drawn: Frameworks for project scoring and prioritising include a number of categories of scoring criteria, such as mobility, safety, economic impact, etc., each of which is given a certain weight. The ultimate scoring result and the typical types of projects are substantially impacted by the weighting elements and measure's magnitude. This framework's broad consideration of variables, which includes elements of all five health-related factors, is a benefit. Additional benefits include the framework's simplicity and low degree of redundancy. Incorporating health outcomes directly has limitations, though. Only the reduction of GHG emissions is used to measure air quality, which is a criterion better suited for measuring climate change than the effects

of air pollution on human health. Furthermore, crash rates or numbers are not examined individually for walkers and bikers, and crash severity is not recorded. There is no direct mention of exercise. Numerous variables are evaluated based on whether or not an improvement is substantial, which introduces subjectivity into the evaluation process [2].

Three parts make up the research methodology. The first involved a thorough analysis of the literature that has been published and the documentation of public agencies on HIAs, health impact modelling tools, project prioritisation and scoring procedures, and performance metrics that have been applied to health assessment. As previously stated, the emphasis was on five categories of scoring criteria and performance indicators, namely: accessibility, air quality, equity, physical activity, and safety, as these were thought to be both directly and indirectly associated to a range of health outcomes. Telephone interviews with representatives of state DOTs, DPHs, and MPOs were the second phase of this technique, and they were used to learn more about how these departments have incorporated health into their work [3].

## Discussion

In order to identify trends in project scoring and prioritisation technique development, data from the study's literature research and interview components were combined. Understanding and summarising the performance metrics and criteria used to evaluate the air quality, accessibility, equity, physical activity, and safety of transportation initiatives were given priority. This made it possible for the team to gather evidence regarding the various criteria that can best capture the effects of transportation on health, as well as the benefits and drawbacks of various criteria, performance metrics, and data used to evaluate such criteria. Two criteria were presented by the team, one for each of the eight categories previously listed, with the exception of air quality (which included two air-quality performance measurements) and physical activity, which each had a single requirement. Health Impact Assessment (HIA) studies examine the health effects of projects, plans, and policies from many economic sectors, including housing, transportation, and energy, utilising a variety of models, tools, and other qualitative and quantitative methodologies. These investigations are carried out in an effort to comprehend the health consequences, include the impacted people, and direct decision-making toward the inclusion of health considerations as a means of enhancing policies, strategies, and initiatives [4].

HIAs are thorough analyses that can take into account a wider range of

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exposure paths and characteristics than modelling tools, which often have fewer present output options. Additionally, by frequently applying health impact models and other modelling techniques, they are able to capture overlapping and indirect processes of project impacts on health. In the 52 nations of the WHO European Region, traffic accidents are a serious public health issue. On European roads, an estimated 2.4 million people are injured and 127 000 people are thought to be killed annually (or around 10% of all traffic fatalities worldwide). Other detrimental transport-related health effects, such as those brought on by air pollution, global warming, noise, increasingly sedentary lifestyles, and disruption of communities, are exacerbated by this enormous health burden. The burden is also unequally distributed throughout the region, with low- and middle-income nations in its eastern and southern halves suffering more adverse effects than its high-income nations in its western half. Effective preventative measures are available, but they must be implemented through multispectral plans that include the health sector [5].

## Conclusion

The majority of transportation HIAs in the United States has been volunteer initiatives, frequently funded by public health organisations, foundations, or federal funds (such as the Centres for Disease Control, Robert Wood Johnson Foundation, and Pew Charitable Trusts). Rarely have HIAs been institutionalised. Through the Healthy Transportation Compact in 2013, Massachusetts was the only state to institutionalise HIAs for use in transportation decision-making, which resulted in the Grounding McGrath Highway HIA. Another legally required HIA was carried out for the replacement of the SR-520 Bridge in Seattle. The outputs and models used to evaluate the selected exposures of interest are all described in the next two subsections. The management of transportation networks, land use, and urban growth by civilizations depends on how they balance their overall health and safety goals with economic, social, and environmental concerns. The transition from public transportation, walking, and bicycling to private vehicles and powered two-wheelers for passenger transportation has signalled a change toward modes and means of transportation that have relatively greater costs for society. When

compared to shipment through rail, sea, or interior waterways, the number and distances travelled by heavy trucks have increased due to decentralised production, sophisticated logistics, and market globalisation. This poses a greater risk to other road users.

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## Conflict of Interest

None.

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