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Health Impact Assessment of Transportation Projects and Policies: Living Up to Aims of Advancing Population Health and Health Equity?

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Abstract

Health impact assessment (HIA) is a forward-looking, evidence-based tool used to inform stakeholders and policy makers about the potential health effects of proposed projects and policies and to identify options for maximizing potential health benefits and minimizing potential harm. This review examines how health equity, a core principle of health impact assessment (HIA), has been operationalized in HIAs conducted in the United States in one sector, transportation. Two perspectives on promoting health equity appear in the broader public health research literature; one aims at reducing disparities in health determinants and outcomes in affected populations, whereas the other focuses on facilitating community participation and self-determination. Variations in how these perspectives are applied in HIA informed our typology of five ways of addressing health equity in HIA. Transportation HIAs commonly included two of these—selecting vulnerable populations for the focus of the HIA and stakeholder engagement, seen in

more than 70% of the 96 HIAs reviewed. Fewer than half of the HIAs assessed current health disparities or changes in their distribution. Only 15% of HIAs addressed equity by focusing on capabilities development or empowerment. Routinely assessing and reporting how an HIA aims to address health equity might better manage expectations and could make HIA practitioners and users more conscious of how an HIA can realistically be used to advance health equity.

AIM OF THIS REVIEW

Health equity principles, along with related concerns for disparities reduction, protection of vulnerable populations, and respect for human agency, have been a cornerstone of health impact assessment (HIA) (43, 52, 53). The emphasis on health equity in HIA reflects influences from the health promotion approach articulated in the Ottawa Charter (51), population health concepts (23), and social determinants of health (27). This review examines how health equity concerns have shaped HIA in one sector, transportation, where HIA has been particularly active in the United States. This review examines why health equity has been emphasized in HIA guidance documents, how it is operationalized in practice, and whether there is a gap between practice and expectations.

HIA is a systematic process for identifying and communicating the potential health-related impacts of proposed projects and polices and formulating recommendations to maximize potential health benefits and minimize potential harm (33, 52). Although HIAs may utilize assessments of current conditions and evaluations of previously implemented projects and policies, they are primarily forward-looking, aiming to provide insights into what is likely to happen under different implementation scenarios. HIAs also tend to focus more on changes in determinants of health, such as air pollution and the availability of healthy foods, and less on corresponding health outcomes, such as rates of respiratory disease and heart disease, that are affected by numerous other causal factors and may not manifest until decades in the future. Although not yet routine, the use of HIA in the United States has become widespread since first being introduced nearly 20 years ago (13, 32).

HIA most often focuses on proposed projects and policies outside of the health sector, such as transportation, land use, and economic policy, where potential health effects are not considered, are underrecognized, or are poorly understood (11). Advocates of increased use of HIA see it as a vehicle for facilitating intersectoral collaborative action and promoting transparency and public engagement on issues affecting the public's health (33). Hundreds of HIAs have been completed in the United States on a broad range of projects and policies from housing and energy projects to labor policy. Proposed policies and projects in the transportation sector are one of the most active areas of HIA (32).

As with HIAs in other sectors, transportation HIAs are highly varied. Each HIA confronts a unique decision context, set of resource constraints, and mix of practitioners and stakeholders involved in conducting the HIA. Accordingly, there is no one approach to addressing health equity. In some HIAs, equity analysis is front and center; in others, equity may play only a background role. How transportation sector HIAs address equity may also be influenced by standards and norms in transportation policy analysis and by legal mandates.

In this review, we examine the concept of health equity and how it has been defined and operationalized in the field of HIA, and then we summarize the scope, characteristics, and trends of health equity approaches in transportation-related HIAs in the United States. In addition to

clarifying approaches to health equity in HIA practice, this examination provides a lens for understanding and confronting the challenges of advancing health equity in other areas of public health practice.

HEALTH EQUITY IN GUIDANCE DOCUMENTS

Health equity has figured prominently in the HIA field since its inception. HIA and the concept of health equity have common roots in the health promotion approach articulated in the 1986 Ottawa Charter on Health Promotion (51), which emphasizes social justice (3) and the upstream determinants of health (27). Both HIA and the health promotion approach proposed in the Ottawa Charter tacitly recognize that many of the causes of poor health spring from social and economic disparities that are unjust but also amenable to change (27). The same concerns for addressing health disparities and actionable, population-level determinants of health provide the foundation for population health that emerged in tandem with HIA in the United States (23).

Definitions of Health Equity

Numerous authors, commissions, and organizations have debated the meaning of health equity and put forth their own definitions (6, 7). One of the earliest definitions of health equity comes from Margaret Whitehead, who stated that health equity is "concerned with creating equal opportunities for health, and with bringing health differentials down to the lowest level possible" (50, p. 434). In a similar vein, Paula Braveman defined health equity as "the principle underlying a commitment to reduce—and, ultimately, eliminate—disparities in health and in its determinants, including social determinants" (7, p. 6). Both of these definitions of health equity appear to equate health equity with efforts to reduce health disparities.

Other authors emphasize that the difference between health inequities and health disparities is the degree to which the former are systematic and avoidable. Higher cancer rates among the elderly compared with the young are an example of a health disparity according to Charbonneau et al. (9) because these are not the result of systematic, avoidable causes. In contrast, these authors assert that decreased life expectancy due to higher incarceration rates among African Americans compared with white Americans is an example of a health inequity. By inference then, health equity is the reduction of these avoidable differences.

Some see health equity as encompassing reduction in health disparities as well as the meaningful participation of affected populations in decision processes. Participation and engagement of affected communities are normative practices in HIA (30, 34, 43). Engaging community members in decisions that affect them is seen as a valuable tool for improving the quality of an HIA as well as a fundamental part of health equity (16, 22). From this perspective, health equity can be seen as a process, as well as a state. It is a state in which avoidable systematic differences in health are minimized and potential well-being is maximized. It is also a process of actively and meaningfully involving individuals and communities in decisions and actions affecting their health. This conceptualization of health equity as both a state and a process is similar to the "capabilities approach" articulated by development economist Amartya Sen (44) and philosopher Martha Nussbaum (35). According to Sen, well-being includes the realization of one's full potential to be and to do (44).

Although disparities in health risk exposures and health outcomes can be reduced through top-down means, achieving health equity requires improving individuals' ability to individually and collectively choose and act on the conditions that affect their health (42). As asserted by the World Health Organization's Committee on Social Disparities, "Health equity depends vitally on the empowerment of individuals and groups to represent their needs and interests strongly and

effectively and in so doing, to challenge and change the unfair and steeply graded distribution of social resources" (27, p. 155). Achieving health equity requires affected populations to have the capacity to effectively engage individually and collectively in policy decisions that affect health risks and resources (41).

Elements of Health Equity in HIA

The two strands of health equity, self-determination and disparities reduction, are both addressed in the Gothenburg Consensus Paper released by early proponents and practitioners of HIA in 1999 (52). They asserted that both "democracy" (i.e., the right to participate in formulating, implementing, and evaluating policies) and "equity" (i.e., assessment of the distribution of impacts in a population) are core values of HIA.

Themes of stakeholder engagement and analysis of distributional effects have been repeated in subsequent HIA guidance documents produced by professional associations, public agencies, and industry groups. Hebert et al. (19) reported that 43 of the 45 HIA guidance documents internationally emphasized the role of HIA in addressing equity and health inequalities. The Merseyside guidelines issued in 2001, one of the earliest HIA guidance documents, called for a focus on vulnerable and disadvantaged populations, inclusion of the subjective perspectives of affected individuals on potential health impacts, and participation of affected communities at every stage of the HIA process (43).

As the HIA field evolved in the early 2000s, several distinct HIA approaches arose to deal with different scales of proposed projects and policies subject to HIA analysis and different decision contexts. In their review of HIA guidance frameworks, which were at that time mostly from the United Kingdom, Mindell et al. identified several different approaches to equity analysis, including analysis of the projected distribution of anticipated impacts, potential impacts on vulnerable populations, and assessment of potential changes in health inequalities (31). They found that guidance on community participation varied greatly, ranging from minimal participation for high-level policy HIAs to assertions, such as those in the Merseyside Guidelines, that community participation should be central to HIA (31).

In Australia, where the state of New South Wales in particular was an early adopter of HIA, the equity focus in HIA emerged as a central concern. By 2007, Australian HIA practitioners had released several guidelines for "equity-focused health impact assessment" (18, 25, 45, 53). Although these guidelines suggest stakeholder engagement, health equity is framed in terms of assessing and reducing health disparities.

Health equity was discussed only briefly in the 2011 report on HIA from the US-based National Research Council (NRC). When health equity was addressed in the NRC committee's report, it was generally equated with disparities reduction. The report did, however, extensively address stakeholder engagement and participation in HIA, emphasizing that inclusion of affected stakeholders should be standard practice in HIA (33).

The most extensive guidance on including health equity considerations in HIAs is from the US-based Society of Practitioners of Health Impact Assessment (SOPHIA). In 2012, members of SOPHIA initiated a consensus process aimed at developing a set of process and outcome metrics for assessing and promoting equity through HIA. In the guidance reported by Heller and colleagues (20), the SOPHIA group identified four sets of metrics to assess health equity in HIA. The first set of metrics addressed whether the HIA focused on vulnerable groups, assessed the distribution of health and equity impacts, and provided recommendations that were responsive to community concerns. Metrics in the second set were aimed at assessing the meaningful participation of affected communities and the development of their capacity to influence decision

making. The third and fourth sets of metrics focused on outcomes, whether the HIA led to a reduction in health inequities and whether it increased the influence of affected communities on decision-making processes. While outcomes are important, it is crucial to understand the context in which an HIA was conducted (17) because outcomes may change or not change irrespective of the quality and procedures of the HIA.

As a counterpoint to the prescriptive health equity metrics provided by SOPHIA, others have suggested that merely raising awareness of community health concerns can be an important standalone outcome (14). Iroz-Elardo & McSharry McGrath (22) have noted that a particular health equity approach may not be suitable for all types of HIAs and that HIA can help develop community capabilities even when levels of community participation in an HIA are relatively low.

Assessing Equity in the Transportation Sector

The transportation sector has its own approaches for assessing equity impacts. Transportation policy analysts have long recognized the potential for transportation policies and projects to affect economic and social equity, and well-being more generally (38). Access to efficient, well-functioning transportation systems is an important social determinant of health, supporting health through improvements in household employment and earnings, access to goods and services, and the ability to participate in social, cultural, and political aspects of society (24, 46). Transportation systems can also produce harmful externalities, such as air pollution, noise pollution, and traffic injury (37), as well as cobenefits, such as physical activity in active transportation (26). Inequities are produced when transportation projects, policies, and investments discriminate against or neglect marginalized populations (29). In addition, marginalized populations often face barriers to participating in the planning process and in giving voice to their concerns, a situation that further contributes to transportation inequities (24).

Federal Policies

Equity issues related to transportation policies and projects are addressed in a wide variety of federal laws, executive orders, and regulations. HIAs that are conducted as part of a federally mandated environmental impact statement or are otherwise subject to federal transportation regulations are likely to address equity in ways that are congruent with these laws. Antidiscrimination laws, including Title VI of the Civil Rights Act of 1964 (42 U.S.C. § 2000d) and the Age Discrimination Act of 1975 (42 U.S.C. Chapter 76), prohibit discrimination on the basis of race, color, national origin, or age in programs and facilities receiving federal funding.

Another federal policy addressing equity issues in transportation is Executive Order 12898 [Exec. Order 12898, 59 F.R. 7629 (1994)] on environmental justice, which directed federal agencies to assess whether their actions had disproportionately high and adverse human health or environmental effects on minority and low-income populations, especially when conducting environmental impact studies mandated under the National Environmental Policy Act (NEPA) (42 U.S.C. Chapter 55). No approach has been agreed upon for evaluating environmental and other forms of distributive justice in transportation policy (36). Jurisdictions tend to utilize publicly available data to implement analyses that are descriptive and focus on relative distributions between groups or geographies or on whether transportation is sufficient in terms of basic needs (8, 36, 38). It can be difficult to identify measures that address community concerns and are feasible to calculate. Many agencies appear to perceive that analyzing and addressing the secondary and cumulative equity impacts are beyond their capacity and control (8).

Equity concerns are also central to federal transportation funding bills. The term equity appears in several of the federal transportation funding bills that are revised and reauthorized every five years, including the 1998 Transportation Equity Act for the 21st Century (TEA) (Pub. L. 105–178, 112 Stat. 107) and the 2005 Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) (Pub. L. 109–59, 119 Stat. 1144). Equity concerns in federal funding bills address distributional disparities in benefits and burdens. And, as with health equity, far fewer metrics appear to assess process elements of transportation equity, such as community participation and development of capabilities (38).

RISE OF HIA IN THE UNITED STATES

The first HIAs in the United States were completed around 2000, following the emergence of the field in Europe and Canada in the mid- to late 1990s. Since then, hundreds of HIAs have been completed in the United States, focusing on a wide range of proposed projects and policies, ranging from municipal living-wage ordinances to the permitting of oil and gas extraction projects (13, 19). These HIAs have been conducted by public agencies; nonprofits working with community-based organizations; consultants working with public, nonprofit, and for-profit entities; and universities. Most of these HIAs have been conducted as freestanding reports, but some, particularly those focused on mineral extraction, have been integrated into environmental impact assessments mandated by state or federal laws (5, 12, 40).

Most HIAs conducted in the United States and worldwide are released as gray literature reports, appearing on organization and agency websites (47). While peer-reviewed journals are not a typical outlet for HIA reports, a number of surveys and evaluations of HIAs have appeared in them (14). In a diverse and rapidly evolving field with many types of HIAs and HIA practitioners, these reviews, which may be published years after their reviewed HIAs have been conducted, may not adequately represent the current state of the art. Another valuable resource for tracking HIAs in the United States are several HIA clearinghouses, including the list maintained by the Pew Charitable Trusts' Health Impact Project (39) and the University of California Los Angeles (UCLA) HIA Clearinghouse Learning and Information Center (HIA-CLIC; **http://hiaguide.org/**). The scan reported here of HIAs in the transportation sector is based on records from the HIA-CLIC site, which was recently updated by cross-referencing records from the other clearinghouses and from web searches for HIAs completed in the United States.

TRANSPORTATION-RELATED HIAs IN THE UNITED STATES

On the basis of a review of records in the UCLA HIA-CLIC database, we found that nearly one-quarter of the 423 of the HIAs completed in the United States between 2000 and 2017 have focused on proposed projects and policies in the transportation sector. The only sector with more HIAs than transportation was land-use planning, which was the focus of 32% of HIAs in the United States. As shown in **Figure 1**, the majority of 96 transportation-sector HIAs focused on assessing proposed projects (57%), such as proposed roadway modifications and rail projects. HIAs of plans, such as county and city mobility plans, comprised 29% of transportation-sector HIAs. HIAs examining policies, such as changes to state gas taxes, made up only 14% of transportation-sector HIAs. The number of project-based HIAs seems to have dropped off since 2014. Whether this drop-off is due to a difficulty in finding more recent HIAs in a field with an increasingly large, diverse pool of practitioners, integration of project HIAs into environmental impact assessments (EIAs), or an actual decrease in the number of these HIAs being conducted is unclear.

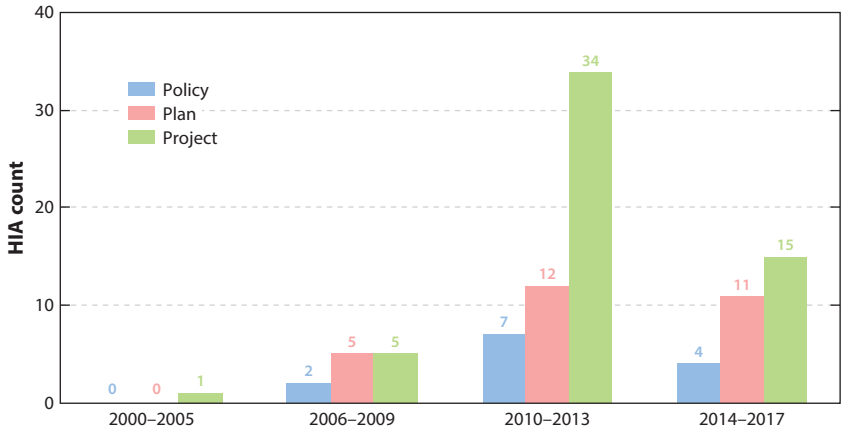

Figure 1

Number of transportation health impact assessments (HIAs) in the United States 2000–2017 by year completed. Data from the UCLA HIA-CLIC database (**http://www.hiaguide.org**).

HOW HEALTH EQUITY IS ADDRESSED IN TRANSPORTATION-RELATED HIAs

Various meanings have been given to the terms equity and health equity in HIAs over the past 20 years. Health equity is expressed in terms of outcomes assessed by HIAs and as part of the process of conducting HIAs. On the basis of a review of guidance documents and assessments of health equity in HIA, we developed a typology of health equity in HIA that captures the range and diversity of practice. Because health equity is not defined in only one way, a typology such as this can be useful for identifying health equity in HIAs and for improving understanding of which approach is employed.

Health equity appears to be addressed in HIAs in five, nonmutually exclusive ways (see **Table 1**):

1. Select vulnerable and high-risk populations as the focus of the HIA: HIAs may focus their analysis on particular vulnerable or high-risk populations, recognizing that these populations are at risk for or bear a high burden of health inequities (31, 33, 43). These populations include the elderly, the very young, the poor, racial/ethnic minorities, and other historically disenfranchised populations. This approach does not necessarily involve an analysis of any potential changes in the distributions of impacts. An example of health equity being addressed this way is the Portland to Lake Oswego Transit Project HIA (49), which examined whether the proposed project would disproportionately affect the region's vulnerable populations, including elderly, youth, low-income folks, and people with disabilities.
2. Assess health disparities or distributional impacts: HIAs may assess current levels of health disparities, evaluate the potential impact of proposed actions on these disparities, and/or compare the distribution of potential benefits and harm on different population groups (31). For example, the Central Oregon Regional Transit HIA (2) assessed the extent to which a coordinated regional transit system could reduce health disparities and impact overall community health in Central Oregon. The HIA also provided recommendations aimed at reducing those disparities.
3. Report stakeholder views: By assessing and reporting concerns of community stakeholders, HIAs can give voice to the views of disenfranchised communities (4, 16, 43). This type

Table 1 Typology of ways to address health equity in health impact assessment (HIA)

	Category of health equity assessment	Specific elements and procedures
Outcomes	1. Focus on vulnerable, high-risk populations	■ Stated rationale for HIA framed in terms of concern about potential effects on vulnerable or high-risk populations
		■ Assessment of potential impacts on vulnerable or high-risk populations
	2. Focus on health disparities or distributional impacts	■ Assessment of health disparities in affected populations
		■ Estimates of change in the level of health disparities
		■ Estimates of change in the distribution of health risks compared to baseline
	3. Report on stakeholder views	■ Surveys of stakeholder concerns and priorities
		■ Assessment and reporting of both objective analysis and subjective perspectives of stakeholders
Process	4. Engage stakeholders	■ Opportunities for stakeholder involvement, particularly stakeholders from vulnerable or high-risk populations, at least in the scoping and reporting stages
	5. Develop capacity building	■ Recommendations framed to create opportunities for community action
		■ Assessment of organizational and community capacity to participate in policy change
		■ HIA process integrated with community organizing efforts
		■ Workshops to develop organizational and community capacity to effect change

of assessment may or may not involve the active engagement of community stakeholders. For Washington County's Bicycle and Pedestrian Facility Design HIA (48), the HIA team conducted a randomized survey of more than 1,300 county residents. These surveys, in conjunction with listening sessions and key informant interviews, provided quantitative and qualitative data on perspectives concerning barriers to active transportation in Washington County.

4. Engage stakeholders: Stakeholder participation is considered standard practice in health impact assessment (33, 43), but the level of participation is highly variable (16, 22). Some HIAs go beyond the minimal solicitation of stakeholder input on the scope and reporting of the HIA. Community-led HIAs, which are most often seen in the assessment of proposed projects, involve community-based organizations directing and taking ownership of every aspect of an HIA. Although managed by a public agency, high levels of community engagement were central to conducting the Bernalillo County Pedestrian and Bicyclist Safety Action Plan HIA (1). The entire process was community driven, stemming from residents' concerns regarding the safety and accessibility of Second Street, particularly for the most vulnerable populations. The HIA team received stakeholder input across the span of 18 different meetings with partnered community organizations. Additionally, the team conducted and videotaped individual interviews with community members, including those belonging to vulnerable groups.

5. Develop capabilities/build capacity: While difficult to assess without contextual and follow-up information, some HIAs contribute to developing individual, organizational, and community capabilities to engage in policy making and tackle other health issues of concern. A high level of community engagement was built into the process for conducting the I-710 Corridor Project HIA (21). The HIA team held repeated advisory roundtables with agencies and representatives from community organizations such as East Yard Communities for a Better Environment and Breathe LA. These advisory roundtables guided every step of the HIA. As a result of community collaborations and evidence gathering throughout the HIA process, community organizations created a coalition to formulate and present their own health-centered project alternative (10); their efforts persisted even after the HIA was terminated upon encountering bureaucratic roadblocks. The I-710 HIA example illustrates the difficulty in identifying ways in which HIAs may promote capabilities development. Other authors have viewed this HIA as an instance of an agency exercising its power to thwart development of community capabilities by halting the HIA and limiting expressions of concerns (22).

Several recent reviews have assessed the scope of practices in transportation-related HIAs. Two of these reviews focused on transportation-related HIAs in the United States (15, 28), and one review included transportation HIAs conducted worldwide (47). The review by Dannenberg et al. (15) included 73 HIAs conducted in the United States from 2004 to 2013. Waheed et al. (47) conducted a somewhat systematic review and quantitative analysis of HIA practices of 158 international HIAs completed between 2000 and 2016. Around this same time, McAndrews & Deakin (28) reviewed 59 HIAs conducted in the United States from 2005–2016.

While the reviews summarized in **Table 2** did not include in-depth analysis of health equity, they all examined at least one of the five components of health equity addressed in HIA. All three reviews assessed whether HIAs involved stakeholder participation. Although levels and types of stakeholder participation varied, stakeholder participation is typically seen in the HIAs that were reviewed (15, 28, 47). Waheed et al. (47) also assessed whether the analysis specifically examined vulnerable populations. Eighty-five percent of the transportation HIAs worldwide reviewed by Waheed et al. identified impacts on vulnerable populations as a concern. They noted, however, that assessment of impacts was typically qualitative, which would limit comparisons between groups and policy scenarios. Even the qualitative discussion did not include a clear discussion of how the proposed project or policy would impact vulnerable populations. None of the reviews reported whether HIAs assessed potential changes in health disparities nor how the HIA may have been

Table 2 Recent reviews of transportation HIAs

Authors (year)	Scope	Number of HIAs	Focus of review	Elements of health equity
Dannenberg et al. (2014) (15)	US transportation–based HIAs[a] completed 2004–2013	73	Scope, methods, impacts assessed	Participation of community members
Waheed et al. (2018) (47)	International transportation HIAs 2000–2016	158	Focus, scope, and methods	Stakeholder involvement, focus on vulnerable populations
McAndrews & Deakin (2018) (28)	US transportation–based HIAs 2005–2016	59	Type of HIA, decision context, including linkage to EIA	Type and level of public participation

Abbreviations: EIA, environmental impact assessment; HIA, health impact assessment.

[a]Included HIAs of zoning and other land-use decisions adjacent to transportation infrastructure (e.g., corridor redevelopment plan).

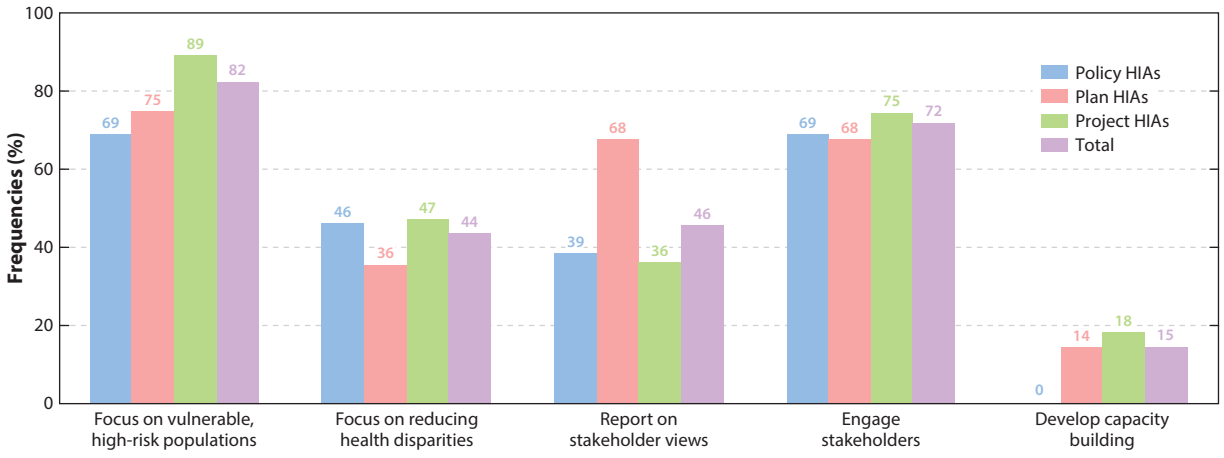

Figure 2

Frequencies of ways to address health equity in transportation health impact assessments (HIAs) among policy, plan, and project HIAs completed in the United States 2000–2017. Data from the UCLA HIA-CLIC database (**http://www.hiaguide.org**).

used to advance community capacity. Community capacity building was assessed in Iroz-Elardo and McSharry McGrath's 2016 examination of community social learning through HIA, but their review was limited to 12 HIAs, 5 of which examined transportation projects or policies (22).

Because none of these reviews of transportation HIAs provided a detailed comparison of the different ways that health equity is addressed in transportation-related HIAs, we used this five-category typology to categorize transportation-sector HIAs according to how health equity was addressed. Transportation HIAs in the UCLA HIA-CLIC database (**http://hiaguide.org/**) were reviewed by one author and verified by a second author to identify elements and procedures listed in **Table 1** that corresponded to specific ways of addressing health equity in HIA. Finding information on whether the analysis examined the distribution of impacts, focused on vulnerable populations, and discussed the ways and extent to which affected stakeholders participated in the assessment process was fairly clear. Identifying whether the HIA process included, or was integrated into, other capacity-building activities was more problematic. This determination often included examining other documents, such as published reports and commentary about the HIA. As such, this aspect of health equity in HIA may be underestimated.

Of the 96 transportation HIAs conducted in the United States from 2000 to 2017 in the HIA-CLIC database, 82% addressed impacts on vulnerable and high-risk populations (see **Figure 2**). These HIAs may have included a focus on impacts on these populations or presented concerns about these populations as part of the rationale for the HIA. It was much less common for HIAs to assess levels of health disparities or calculate how a proposed project or policy might change the distribution of health disparities, which was done in only 44% of the reviewed HIAs. This difference likely stems in part from the lack of predictive quantitative analysis in the HIA that would facilitate comparisons between groups, over time, and across alternative scenarios.

Evidence of stakeholder engagement was seen in 72% of the reviewed HIAs. Stakeholder engagement may have involved high levels of participation in community-led HIAs, which were more common among project-based HIAs, or may have been limited to community member participation in scoping and reporting workshops, which was more common among HIAs focused on transportation policies. Reporting stakeholder views showed quite a different pattern. Whereas having some stakeholder engagement was fairly consistent across all types of HIAs, reporting

stakeholder views expressed in interviews, focus groups, and surveys was seen among 68% of HIAs of transportation plans but only 39% of policy HIAs and 36% of project HIAs.

Efforts to build capacity and develop capabilities were the least common way for HIAs to address health equity. HIAs that explicitly addressed these issues included workshops on using the HIA results for advocacy or community organizing, developing new coalitions, and training community members in data collection and analysis methods. These activities were identified in 15% of the HIAs, mostly project HIAs. None of the policy HIAs included capabilities development, perhaps because of the larger geographic scale of many policy HIAs, which may have limited the depth of engagement.

CONCLUSION

Even with few statutory mandates (15), nearly 100 HIAs of proposed transportation projects and policies have been conducted since HIAs first emerged in the United States in the early 2000s. Virtually all of the 96 US-based transportation HIAs that we identified included one of the five health equity elements that we gleaned from the literature on health equity. Given the varied nature of transportation HIAs, it is not surprising that approaches to equity would also vary. While about two-thirds of the HIAs focused on vulnerable populations and had some community participation, fewer than half assessed health disparities or the distribution of impacts. Even less common was a focus on developing individual and community capabilities through engagement in the HIA process.

The relative rarity of HIAs addressing capabilities and related issues of empowerment and community development is not surprising. Bureaucratic, legal, or resource constraints make it difficult to engage in long-term, strategic approaches that involve the development of community capabilities. The relative scarcity may also signal, however, that HIAs are not adequately focused on addressing the larger issues that can most effectively advance health equity. Adherence to prescribed procedures for HIA should not be confused with more substantive change. Robust, meaningful participation of members of affected communities in the HIA process may be instrumentally valuable for improving the quality of the process and the product, but it does not necessarily advance community capacities (22). Efforts to advance health equity, even with vigorous community participation, will bear little fruit without development of community capabilities and empowerment that enable greater autonomy and agency (41).

These goals place significant expectations on HIA—an underresourced, jury-rigged tool that is usually without legal mandate. As den Broeder and her coauthors (16) state,

> it seems improbable that one stand-alone HIA could empower a community when no other actions are taken. It is also striking that, where community participation is concerned, procedures do appear to be pragmatic rather than systematic, while HIA itself is claimed to be systematic and evidence-based. (p. 41)

Even if HIA had the capacity to better advance health equity, prescribing a single path forward would be ineffective, if not counterproductive. One step might be to explicitly assess and report which ways a particular HIA is and is not addressing health equity. This approach might better manage expectations and would make both HIA practitioners and users more conscious of how HIA can be used as a tool to advance health equity.

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