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INCORPORATING HEALTH EQUITY IN THE POTENTIAL THIRD CROSSING BETWEEN SAN FRANCISCO AND OAKLAND: FROM PLANNING TO EVALUATION

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INTRODUCTION

The explicit inclusion of equity, and health equity, are often absent from planning procedures for transportation projects, aside from legally mandated requirements. This is particularly relevant for large transportation infrastructure projects, which can have the potential to transform an entire region and can have significant direct and indirect public health implications. Due to the scale of the health impacts stemming from transportation infrastructure projects – for example, decreased life expectancy, mental health issues, asthma, displacement, restricted access to opportunities and social services (I-II) – this paper argues that a health equity framework must be integrated into all phases of megaproject planning and development. The authors develop a framework based on a literature review, stakeholder interviews, and focus groups. This framework is then applied to the potential project to construct a third crossing of the San Francisco Bay between Oakland and San Francisco. This case study is used to demonstrate how a megaproject could lead to beneficial health outcomes for communities of color and low-income communities, populations that have typically experienced disproportionately negative health outcomes due to large-scale transportation projects.

METHODOLOGY

Building from an academic and professionally-focused literature review, semi-structured stakeholder interviews, and focus groups, the authors develop a health equity framework that focuses on improving health outcomes for vulnerable communities and suggest an evaluation strategy capable of determining specific population needs. The framework considers all phases of a project's lifecycle - planning, constructing, and operating - and proposes indicators by which to track a variety of health outcomes. The framework centers around the perspective that affected communities should be actively involved in project governance through a Community Advisory Board (CAB), in the construction and operations through fair labor practices, and in the ongoing evaluation through the development of metrics and subsequent monitoring (12–14). The authors apply the framework to the theoretical case of the third crossing, using specific examples within the Bay Area context to explore concepts with wider applicability.

FINDINGS

A universally accepted approach for how to determine whether a transportation policy, program, or project broadly achieves equity does not exist. In the transportation sector, three types of equity are typically used – market, opportunity, and outcome – across three units of analysis – geography, group, and individual (15). Legislative districts, counties, and states are examples of geographic units (15), whereas group units are based on grouping individuals by characteristics, including race/ethnicity, socioeconomic status, age, disability status, or travel mode choice (16).

Transportation professionals working to advance equity often support applying a group level unit of analysis (15) to outcome equity, pursuing the ideal that all individuals should have reliable access to their employment, education, and services regardless of their sociodemographic status. However, public officials consistently allocate public transit funding based on the geographic unit of analysis, often regardless of how the funds will be spent (15), seemingly promoting opportunity equity. Allocating funds in this manner often results in the promotion of new public transportation infrastructure that prioritizes attracting potential new, typically more affluent, rail transit riders, over providing and maintaining adequate service to existing bus riders, who are more likely to not own a car and be public transportation dependent (15). Public transit investments that result in the deterioration of bus service have health

implications, as bus service cuts can leave riders experiencing reduced access to health-promoting activities and destinations and increased adverse mental health outcomes (3).

Health equity can be understood as outcome equity that specifically focuses on health outcomes, and is most frequently applied at a group unit of analysis. The World Health Organization defines health equity as "the absence of avoidable or remediable differences [in health outcomes] among groups of people" including the absence of differences in structural determinants of health and access to "resources needed to improve and maintain health" (17). Figures 1 and 2 depict different theories for how public health interventions impact population health. The two bell curves in Figure 1 represent the hypothetical distributions of a health risk in a population before and after a population-wide intervention. The shift of the population distribution curve to the left after the hypothetical intervention demonstrates Rose's theory that if a change to a ubiquitous exposure is made within a given society, some people will still experience high levels of the risk, but everyone's risk will be reduced and, ultimately, fewer people will suffer from serious health conditions (18).

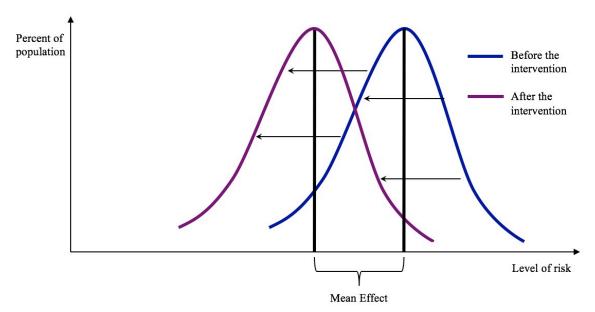


FIGURE 1 Hypothetical homogeneous effect on the distribution of risk in a population from an overall population approach intervention [Adapted from Frohlich and Potvin (19)]

Because health gains from actual interventions are not distributed evenly across entire populations as the theory depicted in Figure 1 suggests, focusing only on a shift in the overall population results in magnifying disparities in health between vulnerable populations at the far right end of the health distribution curve and those in the middle of the bell curve (19). Figure 2 demonstrates this theory and highlights how those on the right end of the distribution experience a concentration of health risks, whereas those on the left end of the distribution experience a concentration of health benefits.

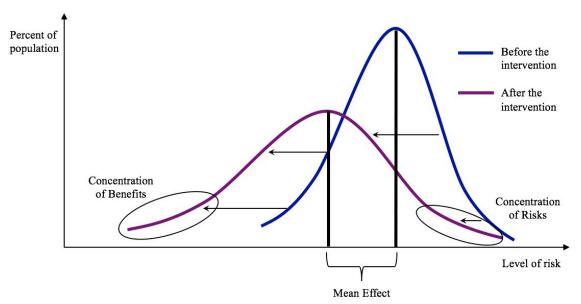


FIGURE 2 Depiction of a potential disparity in health benefits received from an overall population approach intervention [Adapted from Frohlich and Potvin (19)]

Often, health opportunities and burdens associated with transportation are not distributed equitably, disproportionately affecting low-income communities and communities of color. For instance, the residents of West Oakland, living near the Port of Oakland and multiple freeways, including the approaches to the existing San Francisco Bay crossings, are "exposed to three times more diesel particles than the rest of the Bay Area" (1) and experience some of the highest regional rates of emergency department visits due to asthma (2).

In addition to health outcomes related to transportation networks, there are also a number of health outcomes related to land use changes that occur due to transportation infrastructure projects. Low-income communities and communities of color have been negatively impacted by direct displacement from the construction of transportation infrastructure projects as well as indirect displacement due to public transportation investments. For instance, Chapple (20) analyzed gentrification in the Bay Area between 1990 and 2000 and found that convenient access to transit for commuters was one of the most significant factors associated with whether a neighborhood experienced increased property values and subsequent displacement of existing residents. Involuntary displacement disrupts lives as people are forced to move to areas with more environmental health and safety issues, fewer health care facilities, and longer commutes to employment centers (7). A recent example demonstrated that San Francisco workers earning less than \$1,250 per month experienced the largest increase in commute distance of any wage group and a new low-wage worker in San Francisco had to travel an average of about four times further than a new high-wage worker (21).

To effectively address the health needs of vulnerable populations, Frohlich and Potvin argue that members of these populations must be involved in the definition of the health problem, the development of the appropriate intervention, and the evaluation of the intervention (19). Without this insight, decision-makers will likely not have the information needed to effectively serve vulnerable populations (19). Based on findings in health equity academic research and best practices used in transportation infrastructure development, infrastructure

projects that comprehensively address health outcomes involve impacted communities over and above what is legally required (5, 12, 22–24).

Beginning with the project's conception, governing agencies must move beyond traditional public outreach procedures. Instead, agencies need to be willing to work directly with affected communities to seek meaningful conceptual and design input (25, 26). A Community Advisory Board (CAB) is an effective way to represent the needs of often overlooked stakeholders: low-income communities, communities of color, and nonprofits and small businesses that serve these communities. Extending this concept to the third crossing necessitates developing health outcome metrics in collaboration with affected communities that should 1) be able to be tracked over time, 2) represent the interests/needs of the community, and 3) be compared across communities (23).

Major transportation infrastructure projects can often take years to construct, and frequently suffer from schedule delays (27–29), significantly impacting regional accessibility to social services, employment centers, and residential areas, and subsequently negatively impacting health outcomes. This limited access can impact low-income, transit dependent individuals more significantly because these groups often heavily rely on social services, and work in employment sectors that are less flexible in terms of geographic location and work hours. By ensuring that 1) accessibility during the construction phase is not disproportionately limited, 2) impacted residents are compensated, and 3) the project employs local workers, governing agencies can work to mitigate negative outcomes during lengthy construction timelines. Once new transportation facilities are operational, the CAB can help to oversee operations and maintenance, monitor the performance of the infrastructure project against health equity metrics, work with the governing agency to address negative health outcomes that do occur, and continue to develop countermeasures to improve health outcomes related to the project.

Table 1 summarizes findings from the literature review, interviews and focus groups, using the third crossing as a case study, with a focus on the operations phase of the potential project. Findings have been grouped into four categories: ways in which the project can 1) improve regional accessibility, 2) address increased land use changes related to the project, 3) improve access to social services, and 4) provide employment opportunities.

TABLE 1 Potential health equity benefits that could be incorporated into the third crossing project

Improve Regional Accessibility

Adding a third crossing would add a major regional link to the Bay Area's transportation network.

Strategies for a third crossing project

- Provide frequent bus service to rail from low-income communities during peak and offpeak hours to increase access to the region's existing and new rail network.
- Guarantee that the third crossing will provide overnight rail service across the San Francisco Bay to increase access for those most underserved by the current transit system.
- Use the project as a stimulus to **initiate an equitable regional transit fare structure** to simplify connections between modes, particularly for customers not using credit cards, lowering another barrier to accessing the transit network.
- **Provide discounted bridge tolls for low-income motorists** on all bridges across the Bay to remove a barrier to accessing the transit network.

Health-Related Outcomes Supportive Research, Policies, and Programs Increases in transit reliability With funding from MTC's Lifeline Transportation could reduce levels of stress Program, Contra Costa County is aiming to preserve the for riders (3). existing frequency of seven bus lines that link residents in Reduced commuting time by Communities of Concern to jobs, services, retail, schools, vehicle or transit is linked to health care, and BART stations (31). higher physical activity levels Blumenberg & Pierce (32) found that low-income individuals were more likely to find employment when they and reduced obesity rates (4). Exposure to air pollution from had consistent access to an automobile compared to when vehicular traffic is associated they only had transit access, even in dense metropolitan with respiratory disease, certain areas. types of cancer, cardiovascular disease, and consequently chronic stress (30).

Housing Costs, Gentrification and Indirect Residential Displacement

Pairing a third crossing with a large investment in land development would align with California Senate Bill 375's call to Metropolitan Planning Organizations to link transportation and land use in regional planning.

Strategies for a third crossing project

- To combat displacement, the CAB and governing agencies can work to provide incentives for cities with existing and new rail transit stations to adopt rent stabilization and just cause eviction ordinances.
- To increase the supply of affordable housing, provide incentives to cities with existing and
 new rail transit stations to adopt policies that expedite the review process for housing
 development projects that include affordable housing.
- New public lands may be targeted for development as a result of a third crossing project. Establishing a percentage of newly available land to be included in a community land trust can help to ensure the supply of affordable housing increases.
- Another method to grow the affordable housing stock using existing housing parcels is by
 incentivizing cities with existing and new rail transit stations to adopt policies that support
 the development of Accessory Dwelling Units (ADUs).

Health-Related Outcomes

- Recent studies have found that displacement in the Bay Area has negative health impacts; approximately 30% of displaced households report some level of homelessness after being displaced; many households move to areas with more health and safety concerns and fewer healthcare facilities after being displaced; many households had longer commutes after being displaced (7)
- Experiencing the process of displacement itself can compromise mental health (7).

Supportive Research, Policies, and Programs

- California could address the affordable housing supply shortage in jurisdictions that have not successfully zoned or planned for increases in affordable housing by adopting policies similar to The Massachusetts Comprehensive Permit Act, per Reid et al. (33). The laws included in this Massachusetts Act enable "qualified" developers to have an expedited review process for projects that include affordable housing units (33).
- Community land trusts are non-profit organizations that work to provide affordable housing in perpetuity (34).
- ADUs are dwelling units on single-family properties that are independent of the primary dwelling unit. They provide an inexpensive way for jurisdictions to increase their housing supply (35).

Access to Social Services

Using new and existing rail stations to cluster community-relevant services improves access to social services for those who are transit dependent.

Strategies for a third crossing project

• Community involvement during the planning process can result in new and existing transit stations becoming hubs of supportive services, including education, healthcare, and social services. Rideto-Health-Care-Provider Programs further extend access to those with limited mobility.

Health-Related Outcomes

- Increased access to healthcare is found to establish a better link between providers and patients, and could increase the likelihood of preventative care provision.
- Increased access to resources, including affordable grocery stores, education centers and recreational facilities is associated with better mental and physical health outcomes (δ).

Supportive Research, Policies, and Programs

• The Unity Council's community involvement during the planning process for the Fruitvale Village at the Fruitvale BART station led to the development including community-relevant education, health, and social services including a Head Start program, a high school, and a children's health clinic (36).

Provide Employment Opportunities

Pairing a third crossing project with policies and projects specifically aimed at protecting or generating job opportunities for low-income communities, communities of color, and/or nonprofits and small businesses that serve these communities.

Strategies for a third crossing project

- Offering training for skilled and technical positions created by the third crossing project in low-income communities and communities of color could actively extend opportunities to populations traditionally harmed by large-scale transportation infrastructure projects.
- Establishing "ban the box"/fair chance hiring policies and considering a program to actively employ formerly incarcerated people for construction and permanent jobs created by the third crossing project could extend employment opportunities even further.
- To prevent non-residential displacement, developments resulting from a third crossing could establish affordable workspaces for nonprofits, small businesses, work centers, and industry guilds for low- and moderate-wage private sector jobs.

Health-Related Outcomes

Access to stable employment has been shown to lead to better levels of health for employed individuals, such as decreased stress related to future employment status or earnings (9, 10).

• Increased access to, and levels of, employment amongst parents has been shown to lead to positive outcomes for children, such as fewer emergency room visits or days of school missed due to sickness (11).

Supportive Research, Policies, and Programs

- BART currently runs a training and skills development program called The Transit Career Ladders Training Program. It is a partnership with community colleges and Regional Workforce Investment Boards and aims to promote careers as electricians in the transportation sector in low-income communities and among people of color, veterans, and women (37).
- In their Economic Prosperity Strategy to improve economic opportunities for low- and moderate-wage workers in the Bay Area, SPUR et al. recommend eliminating the check box on job applications where prospective employees are asked if they have been arrested or convicted of or pled guilty to a crime (38).
- SPUR et al. argue that work centers and industry guilds should be supported because employees that are organized are better equipped to work with employers to establish minimum wages and job standards (38).

CONCLUSION

To substantively incorporate a health equity approach throughout planning, governing, construction, and operation of a third crossing project, stakeholders must first acknowledge the current and historical harms that have been inflicted by the transportation system on low-income communities and communities of color and embrace the need to use a project with such transformative potential as a means of rectifying these wrongs. Additionally, stakeholders must understand that public transit projects do not inherently promote equity in health outcomes, and such projects could actually widen the existing disparities in access and health.

Large transportation infrastructure projects have typically been conduits through which low-income communities and communities of color have been made to disproportionately experience reductions in access and health. Incorporating a health equity approach to the development of a third crossing project would serve as a means of developing a new model for how future megaprojects could help transform a region's transportation and land use systems to achieve more equitable outcomes for its most underrepresented communities.

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