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TRANSPORTATION INEQUALITY IN INFRASTRUCTURE PROTECTIONS AGAINST SEA LEVEL RISE

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ABSTRACT

Waterfront communities are facing unprecedented challenges with global Sea Level Rise (SLR) becoming a reality. The households in these communities are likely to be inundated, and the inundation of links in the urban transportation system will bring more interruptions to the communities. Some residents will not be able to access their workplaces or education if the transportation system is interrupted. Among these waterfront communities, many are considered disadvantaged communities that have concentrations of minority and low-income families. Residents in these communities are more vulnerable because they tend to be less able to relocate to other neighborhoods with lower risks of SLR.

Many of the proposed protection strategies against SLR are at regional levels, and their goals are usually to achieve the greater good for the whole region. However, the distribution of the benefits or burdens may be unequal across different communities. The present paper utilizes detailed hydrodynamic simulation and activity-based transportation simulation to quantify the impact of potential protection strategies on different communities. The San Francisco Bay Area is the geographical region analyzed. Important insights from the analysis are obtained: improvements of mobility, resulting from protecting the shore of the West Bay, are often less in disadvantaged communities than others. A great proportion of disadvantaged communities are negatively impacted by the protection strategy that brings benefit to the whole region. Additional measures should be taken on relieving these disadvantaged communities to reduce transportation inequality.

* The asterisk denotes the presenting author.