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Identifying environmental justice communities for transportation analysis



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ABSTRACT

Environmental justice (EJ) refers to policy and advocacy intended to achieve equitable protection from environmental harms and access to benefits across demographic groups. Research has shown that low-income communities and communities of color are often exposed to greater harms and enjoy fewer benefits from transportation systems than the general population. However, federally-mandated EJ analyses rarely conclude that projects could result in disproportionate impacts to these communities. This paper investigates the methods used to define EJ communities—a key analytical step for which there is little specific guidance—as a potential driver of variation in observed EJ outcomes. Using a case study of transit accessibility in Fresno County, California, the paper contrasts three methods for the identification of EJ communities: (1) a commonly used threshold-based approach that groups geographic areas using demographics, (2) a population-weighted approach that calculates weighted means of performance measures, and (3) community-based identification of EJ areas. The analysis indicates that the first method is appropriate for targeting transportation investments but not for assessing EJ outcomes, while the second two methods are appropriate for assessing EJ outcomes. Importantly, the method used to define EJ communities can substantially affect the analytical outcome, potentially shifting a finding of inequity from null to positive or vice versa. These results have important implications for transportation planning agencies and transportation service providers that conduct EJ and equity analyses, as a finding of inequity may lead to design changes or mitigations.

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1. Introduction

Environmental justice (EJ) refers to policy and advocacy intended to achieve equitable protection from environmental harms and access to benefits across demographic groups. Prior work has illustrated that low-income people and people of color are exposed to poor air and water quality, deleterious land uses and infrastructure, and noise at rates that exceed those expected based on their portion in the general population (Chavis and Lee, 1987; Mohai et al., 2009). These same populations often suffer from delayed remedial action once problems are identified. Furthermore, low-income people and people

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of color often lack access to environmental benefits such as parks and open space, nutritious food, affordable and quality housing, and living wage jobs. Compounding these problems, residents who confront the worst environmental injustices often lack the economic, political, and social resources to shape decisions that affect these conditions. Eliminating disparities in the distribution of environmental hazards and benefits and building community power to achieve these ends has been the ongoing project of the EJ movement (Cole and Foster, 2001; Sze and London, 2008). Although initially focused on stationary sources of air pollution and undesirable land uses, transportation infrastructure and its effects on community health and well-being have received increasing attention in the EJ literature and activism over the past two decades (Bullard and Johnson, 1997; Martens et al., 2012; Schweitzer and Valenzuela, 2004).

Justice in transportation can be conceptualized in terms of the distribution of costs and benefits (Schweitzer and Valenzuela, 2004). Costs accrue from exposure to mobile source air pollution and noise (Forkenbrock and Schweitzer, 1999). These harms are greater near busy roads, where people of color and low-income people are overrepresented (Rowangould, 2013). The benefits of transportation infrastructure are often operationalized using accessibility – the ease with which desired destinations can be reached (Martens, 2012). EJ analysis of accessibility in individual cities has demonstrated that people of color often enjoy less access to certain destinations than the general population (Grengs, 2015; Helling and Sawicki, 2003). The “spatial mismatch” between a relatively concentrated low-income and non-white (and often transit-dependent) population in US cities coupled with suburbanization of job openings has been identified as one cause of these outcomes (Ihlanfeldt and Sjoquist, 1998; Taylor and Ong, 1995).

Leaders in communities of color and low-income communities across the United States are calling attention to disparities in access stemming from spatial and modal inequities in transportation funding. Several lawsuits have addressed the potentially discriminatory effects of transportation plans and programs (Golub et al., 2013a; Grengs, 2002; Mann, 2004). Federal and state regulations require transportation planning agencies and service providers to analyze the impacts of their plans. A finding of inequity could potentially lead to revision or rejection of a plan. In contrast to the academic literature, agency assessments routinely find no evidence of disparities in access or other indicators of transportation performance (e.g., Federal Highway Administration/Federal Transit Administration, 2000; SCAG, 2012). However, this result may reflect methodological shortcomings inherent in the types of analyses agencies typically employ (Duthie et al., 2007; Karner and Niemeier, 2013; Martens et al., 2012).

This paper assesses a potential driver of variation in observed EJ outcomes – the methods used to define EJ communities. The analysis demonstrates that different community definitions can substantially affect analytical outcomes; potentially shifting a finding of inequity from null to positive or vice versa. Contemporary practice among metropolitan planning organizations (MPOs) usually relies upon a single definition of an EJ community or population. Alternative definitions are rarely tested and sensitivity analyses are generally not conducted (e.g., Council of Fresno County Governments, 2009; Federal Highway Administration/Federal Transit Administration, 2000; MTC/ABAG, 2013). We demonstrate the effect of different community definitions on EJ outcomes within an MPO-type analysis using modeled travel data from California’s San Joaquin Valley (SJV), a largely rural agricultural region containing several large cities located in the center of the state. Because this type of sensitivity analysis rarely appears in the literature or practice, these insights are relevant to academic researchers, transportation planners and EJ advocates.

2. Review of literature and practice

The origins of the EJ movement in the United States have been traced to two formative events. One was the community organizing and later, academic analyses, that contested the concentration of hazardous waste sites in and around African American communities in the Southeast (Bullard, 1990). The other was the critique of the mainstream environmental movement’s focus on wildlife and wilderness conservation rather than human health and social justice, which was articulated forcefully at the 1991 People of Color Environmental Leadership Summit. The EJ movement brought together civil rights, labor, grassroots community organizing networks, anti-toxics groups and other movements into new and diverse coalitions (Faber, 2007). The movement has used a variety of tactics, including civil disobedience, direct action, policy advocacy, and litigation to pursue three strands of justice (Cole and Foster, 2001; Sze and London, 2008). These are: (1) distributional justice (ensuring that no community is over-burdened by environmental hazards and that all have access to environmental benefits); (2) procedural justice (ensuring that those suffering from environmental injustices have a meaningful voice in shaping public policy and corporate actions); and (3) recognition (ensuring that diverse kinds of knowledge are considered legitimate when shaping policies and plans) (Schlosberg, 2007).

Additional impetus for conducting EJ analyses of transportation plans and programs comes from Title VI of the 1964 Civil Rights Act. Under the Act, entities receiving federal funding are prohibited from distributing that funding in a manner that discriminates on the basis of race, color, or national origin. President Clinton’s Executive Order 12898, signed in 1994, provides similar protections to low-income populations. As recipients of federal funds, MPOs have been a focal point for EJ policy and advocacy activity. The US Department of Transportation, Federal Highway Administration and Federal Transit Administration have all promulgated guidance in this area (Federal Highway Administration, 2012; Federal Transit Administration, 2007, 2012a, b; US Department of Transportation, 1997; US Department of Transportation Office of the Secretary, 2012). Despite the proliferation of guidance, specific analytical techniques are generally not prescribed for the

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