JOURNAL OF URBAN AFFAIRS
https://doi.org/10.1080/07352166.2023.2211273

Routledge
Taylor & Francis Group

No justice, no streets: The complex task of evaluating environmental justice on open streets in three U.S. cities

Dani Slabaugh[a], Alessandro Rigolon[b], and Jeremy Németh[a]

[a]University of Colorado Denver; [b]The University of Utah

ABSTRACT

In this paper, we study open street initiatives through a holistic definition of environmental justice, shedding light on three potential paradoxes of such initiatives: the engagement, hegemony, and displacement paradoxes. We use a mixed-methods approach integrating interviews and spatial analyses, focusing on three cities with permanent programs: Denver, Oakland, and Seattle. Our findings for the engagement paradox show that cities with existing equity planning relationships were better suited to address procedural justice tensions between the need to act swiftly due to the COVID-19 pandemic and the necessity to adequately engage racially/ethnically minoritized communities in planning open streets. For the hegemony paradox, we find a tension between distributional and recognitional justice, wherein open streets might have been available in minoritized communities but such streets did not meet their needs. In the displacement paradox, respondents suggested that green gentrification concerns were a barrier to the equitable implementation of open streets.

KEYWORDS

Urban planning; race; land use; pedestrianization; environmental justice

Introduction

In response to the public health risks and economic impacts of the COVID-19 pandemic, cities around the world have implemented open street initiatives that limit vehicle access of streets and encourage bike and pedestrian activity. Most active transportation and sustainability advocates have enthusiastically received these open street programs (King & Krizek, 2020). Yet, some equity advocates have raised concerns about whether these programs respond to the needs of communities impacted by not only the COVID-19 pandemic but also by historical and ongoing structural and environmental injustices (Descant, 2020; Kramer, 2020; Nzinga, 2020; Thomas, 2020).

To date, much of the empirical research on open streets programs has focused on their impacts on physical activity, human health, and businesses, and much of this literature has been conducted in a pre-pandemic context (Kuhlberg et al., 2014; Salazar-Collier et al., n.d.; Zieff et al., 2016). The academic planning literature on open streets that has examined their environmental justice implications has been limited to the lens of distributional justice—i.e., measuring physical proximity to open streets (Firth et al., 2021; Fischer & Winters, 2021; Parra et al., 2021; Scott, 2021). These analyses of access to open streets across socioeconomic differences in neighborhoods show mixed findings: in some cities, low-income racially and ethnically minoritized neighborhoods have more or equal access as neighborhoods with higher shares of white and high-income residents[1] (Firth et al., 2021; Fischer & Winters, 2021; Scott, 2021), and in other cities, low-income racially and ethnically minoritized groups are disadvantaged compared to more privileged groups (Fischer & Winters, 2021; Parra et al., 2021).

We build on these studies by conducting a more holistic examination of environmental justice implications of open streets, or an evaluation of the equity dimensions of such programs (Descant,

CONTACT Dani Slabaugh dani.slabaugh@ucdenver.edu College of Architecture and Planning, University of Colorado Denver, 1250 14th St., Denver, CO 80202.

2020; Thomas, 2020; Yasin, 2020). Environmental justice goes beyond issues of distribution to include procedural, interactional, and recognitional justice (Fraser, 1995; Low, 2013; Rawls, 1971; Schlosberg, 2004). These three additional aspects of environmental justice relate respectively to: how decisions are made and by whom; how interpersonal interactions reflect distributions of power and oppression; and the longer trajectory of both oppression and community strength, resistance, and resilience. Further, when examined from the perspective of these four conceptualizations of justice, equitable open streets planning becomes complex and sometimes contradictory, inviting planners into a deeper level of engagement with the lived experiences and histories of low-income minoritized residents (Slabaugh et al., 2022).

In this paper, we build on important work concerned primarily with distributional justice, or questions of "who gets what," and rely instead on more holistic framings of environmental justice to examine open street initiatives through four lenses of environmental justice—distributional, procedural, interactional, and recognitional—that reveal six potential challenges to environmentally just open street programs (Slabaugh et al., 2022). Three of these paradoxes deal with the interplay between distributional, procedural and recognitional justice, and are the focus of this paper. In the process, we address our central research question: How have cities engaged environmental justice concerns about open streets implemented during the COVID-19 pandemic? A complementary research question guides specific parts of our empirical analysis: To what extent did open streets programs reflect these three paradoxes of environmental justice on open streets, and how did cities navigate these tensions, if at all? These questions invite a reevaluation of planning for environmental justice, including the importance of holistic and contextual efforts toward that goal.

We use a mixed-methods approach that integrates qualitative case studies of open streets implementation with GIS mapping of distributional justice outcomes in three cities: Oakland, Denver, and Seattle. The case studies involved semi-structured interviews with transportation and equity planners as well as open streets advocates to illuminate the site-specificity of equity planning challenges that have been shaped by historical context, physical form, and displacement risks. Our investigation reinforces the importance of taking a holistic approach to environmental justice analysis that moves beyond the easily quantifiable dimensions of distributional justice, arguing instead that distribution only constitutes one of the criteria for evaluation. We conclude with suggestions for equity-minded planners working on open streets and other active transportation initiatives that help them embrace broader conceptions of environmental justice.

The paradoxes of equity planning for open streets and beyond

As urbanist ideals of density and walkability have increasingly become commonplace goals within city planning, a robust body of literature has developed regarding cyclist- and pedestrian-related equity considerations (Auchincloss et al., 2019; Barajas, 2020, 2023; Braun, 2020; Brown, 2016; Brown & Blickstein, 2016; Coughenour et al., 2017; Goddard et al., 2015; Lubitow, 2017; Lubitow & Miller, 2013; McCullough et al., 2019; Roberts et al., 2019). After March 2020, this literature broadened to include pandemic-related open streets programs. A recent paper defined six paradoxes that emerged from a cross-cutting analysis of open streets initiatives through distributional, procedural, interactional and recognitional justice frameworks (Slabaugh et al., 2022). Further, many concepts within these frameworks are alternatively expressed in and critically connected to the idea of spatial justice (Soja, 2010). Spatial justice integrates concepts of distributional, procedural, and other justice analysis into a critique of the power as it plays out in space.

Within Slabaugh et al.'s (2022) four framework analysis, three of the six paradoxes that emerge frame the findings of this study: the engagement paradox, hegemony paradox, and the displacement paradox. The remaining safety paradox, stigma paradox, and white spaces paradox largely deal with interactional justice and—in the case of stigma—personal meaning-making. These aspects of environmental justice on open streets would need to be assessed through interviews with racialized open street users, and therefore are outside of the scope of this paper.

The engagement paradox embodies tension between procedural and recognitional justice. Some believe that minoritized communities, frequently historically excluded and harmed by planning processes that affect their neighborhoods, should have more say in contemporary planning processes (Bullard, 1993; Wilson, 2018). At the same time, many individuals in these communities are struggling to juggle existing obligations, and expecting significant amounts of unpaid labor from these individuals can be both unrealistic and unjust (Arnstein, 1969; Butler & Moore, 2021). In the "state of emergency" felt during the early weeks of the pandemic, planning departments that implemented open streets programs worked with urgency and a necessarily top-down approach that short-circuited any robust community input or feedback before implementation (Descant, 2020; Thomas, 2020).

The hegemony paradox sits at the intersection of recognitional and distributional justice. Although communities with larger shares of white and high-income residents—the majority of whom were not essential workers—lauded the ability to exercise on their closed residential streets, pandemic-related contexts and needs were quite different for many residents of primarily minoritized neighborhoods (Badger, 2020; Descant, 2020; Krieger, 2020). Essential workers were less enthusiastic about street closures further complicating their lives and commutes, while cuts to bus services and limited or nonexistent financial assistance for undocumented individuals, mixed-status households, and gig workers exacerbated economic precarity (Levin, 2020). In this context, open streets programs came off to some as out of touch, centering a white, more affluent pandemic context (Descant, 2020).

The displacement paradox emerges at the intersection of recognitional, interactional, and distributional justice. Bike lanes are often perceived to be a precipitating factor in gentrification earning the derisive nickname "white lanes" among some (Gould & Lewis, 2017; Hoffmann, 2016; Stehlin, 2015). Although the percentage of minoritized cyclists is increasing, cyclists remain a predominantly white group (League of American Bicyclists & Sierra Club, 2013). On an interactional justice level, minoritized residents may feel the impact of increased displacement anxieties as they watch recent, wealthier, and often white neighbors pedal through their communities on increasing miles of freshly striped lanes. Even though these lanes are generally part of an attempt to provide comprehensive citywide bicycle and pedestrian access—addressing distributional justice issues—when imposed upon long-term residents without consultation, these investments can constitute procedural *injustices* (Low, 2013). They also fail to recognize the historical context of planning for, rather than planning with, such communities, the resentment and trauma that is evoked from those community memories, and the socioeconomic context of gentrification (Fullilove et al., 2016; Goodman, 1971; Sandercock & Lyssiotis, 2003).

Although these tensions are evident in the literature surrounding open streets and bicycle and pedestrian infrastructure more generally, how these tensions play out in various geographic, political, and cultural contexts across the country remains underexamined. In this article, we explore the complexity of environmental (in)justice through three paradoxes that emerge from a holistic framework of environmental justice. We apply this framework in three empirical case studies of bicycle and pedestrian open streets implemented in three U.S. cities after the first COVID-19 lockdown in March 2020.

Data and methods

We employed a mixed-method research design that helped us triangulate our findings between multiple sources of qualitative and quantitative data. From September 2020 to September 2021 we followed case studies in Denver, Seattle, and Oakland continuously through non-peer-reviewed professional literature, media coverage, policy documents, and press releases to understand some of their long-term outcomes, implications, critiques, and perceptions.

Case selection and description

After determining data availability for the location of open streets in large to mid-sized cities throughout the U.S. based on a worldwide database of such projects (Combs et al., 2020), we selected

Table 1. Open streets programs in the three selected cities.

City	Agency	Program Name	Built upon	Description
Denver	DOTI	Shared Streets	Neighborhood Equity Index—GIS analysis	Traffic calming efforts on common bicycle routes in the urban core, some streets restricted to local traffic
Seattle	SDOT	Stay Healthy Streets	Neighborhood Greenway Plan	Local traffic only, implemented on city streets
Seattle	Seattle Parks and Recreation	Keep Moving Streets	Within Parks and Recreation jurisdiction only	Local traffic only, implemented on streets within Parks and Recreation jurisdiction
Seattle	SDOT	Stay Healthy Blocks	Resident initiative	City permitted but resident built and maintained, Block by block DIY (do it yourself) implementation of open streets concepts
Oakland	OakDOT	Slow Streets	Lets's Bike Oakland! Bicycle Master Plan	Local traffic only, restricted streets
Oakland	OakDOT	Slow Streets: Essential Places	Engagement with community advocates	Traffic calming efforts deployed in East and West Oakland after community pushback to initial slow streets design. Focused on high injury crossings near grocery stores, COVID-19 testing sites, and other "essential places"

three of these cities based on announced intent (or in the case of Denver, suspected likelihood) to transition these temporary open streets into a long-term permanent presence. All three are midsized cities (Denver had 715,522 residents in 2020; Oakland had 440,646; and Seattle had 737,015), whereas Oakland has the largest share of people of color (71.5%), followed by Denver (45.1%) and Seattle (37.4%).

Between Denver, Seattle, and Oakland, there have been six different iterations of open street concepts (see Table 1). Different terms—such as *slow streets, shared streets* and others—have been used in the three cities to describe streets where vehicular traffic was limited to promote street use for pedestrians, cyclists, and other non-motorized modes. Although Denver's Shared Streets program was the city's only iteration, Seattle created three separate programs. Oakland responded to pushback from its initial Slow Streets implementation by deploying a second effort called Slow Streets: Essential Places.

Qualitative data collection and analysis

We conducted and recorded nine total interviews via Zoom with three individuals involved in open streets planning, outreach, or advocacy in each of the three chosen cities. In each city, we spoke with a planner focused on community engagement and equity, a transportation planner involved in that city's open streets program, and a nonprofit bicycle and pedestrian advocate. We found initial transportation planner interviewees through purposive sampling based on news articles and municipal websites, and used snowball sampling to find second and third interviewees. We used this approach in order to triangulate perspectives on each city's programs, challenges, and successes. In each city, the interviewees we talked with provided a wide variety of perspectives about such programs.

Interviews lasted between 30 and 60 minutes. Questions generally pertained to the four lenses of justice, as well as emergent equity critiques of open streets, open space, and bike and pedestrian planning from both academic and non-peer review literature. We recorded and transcribed interviews using a combination of automated transcription within Zoom software and transcription by the interviewer. These transcriptions were then coded, checked by a second research team member, reaching acceptable (>80%) inter-coder reliability. We used the paradoxes as a guiding framework for our deductive analysis, and supplemented this approach with inductive coding focused on key framings that emerged from the data (Bryant & Charmaz, 2019; Leech & Onwuegbuzie, 2007).

Quantitative data collection and analysis

We used GIS analysis to examine open street distribution in relationship to variables that emerged from both interviews and existing literature examining distributional justice for open streets (Firth et al., 2021; Fischer & Winters, 2021; Scott, 2021). To study distributional justice, we examined whether independent variables describing socioeconomic status and race/ethnicity were associated with the presence of open streets in U.S. Census block groups. We also included several control variables based on the aforementioned interviews and literature (see Table 2).

We first conducted independent-sample t-tests to determine whether, in each city, there were differences in socioeconomic status and racial/ethnic composition between Census block groups with and without open streets. We then ran a separate logistic regression for each city to determine what predicted the odds of Census block groups having at least one open street within its boundaries. For each regression, we initially included all independent and control variables described in Table 2, and had to remove some of such variables due to multicollinearity (Variance Inflation Factor >4). Before running the regressions, we standardized the continuous variables listed in Table 2 to facilitate the comparison of the odds ratios for these variables. We ran all tests in R (version 4.0, Vienna, Austria). We present the results of all such tests in the Results section focused on the hegemonic paradox.

Positionality

Given our focus on aspects of environmental justice, we find it appropriate to name our various positionalities and lived experiences as they relate to our situated knowledge of open streets and

Table 2. Variables used in the quantitative analysis.

Variable	Description	Type	Data source(s)
Open street in block group	Presence of at least one open street within the boundaries of a census block group	Dependent	GIS data from the three cities (City of Oakland, 2022; City of Seattle GIS Program 2022; Denver Parks and Recreation, 2022; Open Street Map, 2022; Seattle Department of Transportation, 2020; U. S. Census Bureau, 2020)
Median household income	Median household income in 2020 U.S. dollars	Independent	2016–2020 American Community Survey (US Census Bureau, 2020)
Percent college	Percent college graduates among >25-year-old people	Independent	2016–2020 American Community Survey (US Census Bureau, 2020)
Percent non-Hispanic white	Percent non-Hispanic white residents	Independent	2016–2020 American Community Survey (US Census Bureau, 2020)
Percent non-Hispanic Black	Percent non-Hispanic Black residents	Independent	2016–2020 American Community Survey (US Census Bureau, 2020)
Percent Latinx	Percent of Hispanic or Latinx residents	Independent	2016–2020 American Community Survey (US Census Bureau, 2020)
Percent non-Hispanic Asian	Percent of non-Hispanic Asian residents	Independent	2016–2020 American Community Survey (US Census Bureau, 2020)
Percent transit	Percent of >16-year-old people commuting via transit	Control	2016–2020 American Community Survey (US Census Bureau, 2020)
Population density	People per 1,000 square meters	Control	2016–2020 American Community Survey (US Census Bureau, 2020)
Park distance	Distance to the closest park in meters	Control	GIS data from the three cities (City of Oakland, 2022; Denver Parks and Recreation, 2022; City of Seattle GIS Program, 2022)
Percent arterial streets	Percentage of arterial street in a census block group	Control	Open Street Map (Open Street Map, 2022)
Mean slope	Mean slope of streets in a census block group	Control	National Elevation Dataset 1 arc-second DEM (USGS, 2022)

environmental justice (Haraway, 1988). All three authors, to varying degrees, rely on bicycling as a form of transportation, recreation, or both. Two of the authors are tied to an academic institution in one of the three cities where open streets advocacy is ongoing and involves several university staff. All three authors are white, and have been protected from the most challenging impacts of the COVID-19 pandemic by working from home, maintaining pre-pandemic employment levels and incomes, and engaging in activities with limited risk of COVID-19 exposure. Finally, all three authors have personally benefitted from access to open street facilities throughout the pandemic.

Because our positionality is likely to privilege hegemonic worldviews, we have attempted to compensate for these gaps in awareness by centering perspectives on open streets from minoritized individuals. This centering includes the literature review, where we include non-peer review literature mostly authored by Black and Latinx individuals, and our interview subject selection, as in each city we sought perspectives on open streets focused on equitable community engagement.

Results

We organize our results according to the three cities examined and the three key paradoxes introduced earlier: the engagement paradox, the hegemony paradox, and the displacement paradox. After presenting the three case studies, we synthesize the high-level findings for each paradox. We integrate the quantitative results into our analysis of the hegemony paradox.

Denver

Engagement paradox

In Denver, planners from the Department of Transportation and Infrastructure (DOTI) took the urgent nature of the pandemic as a mandate to forgo community outreach. Instead, they engaged in a relatively technocratic, top-down process to the exclusion of independent engagement from other city departments and community-based bike and pedestrian advocates. DOTI emphasized their "data-driven approach" that focused primarily on locating open streets according to population density and park adjacency. Planners then augmented these selections with a number of open streets with high social vulnerability scores (Denver Department of Public Health & Environment, 2020).

This data-driven approach was corroborated by an interviewee from the city's Community Planning and Development (CPD) department who felt that DOTI "kind of ignored [community engagement carried out by open streets advocates and other city planners] and just placed them where they thought best." Both interviewees from Denver's bicycle and pedestrian advocacy group and from CPD described a fairly extensive community engagement used to evaluate the performance of open streets once implemented:

> Well, I mean we've been partnering with them all along. They're not necessarily interested in giving us credit [even though] we give them an opportunity to provide input on the survey questions that we're asking. We share all of the survey data with them. We've been partnering with the city to do bike and pedestrian counts . . . But that's all on our initiative. Like the city's not approaching us and asking us to help them, we're saying: "Here we are, we're helping you. Please take our help." (Denver bike/pedestrian advocate)

This account of community engagement and partnership with DOTI differs significantly from the response given by a DOTI engineer who said:

> It is 100% a city program . . . we do it all internally, so we have been coordinating with our advocacy groups, you know they are equally supportive of this and constantly push us to be better in these regards. But you know we - we took that big first step, without needing them to poke us, like other projects. We've just kind of been in lockstep around some of this. They have helped on some random requests around data capture, or getting out surveys - things like that, but really I feel like we've done such a wonderful job [in providing] resources to this day, we don't have a lot of qualms, unlike some other projects.

The DOTI interviewee first stated that Shared Streets is exclusively a city program, then referred to community partners as being "in lockstep"—suggesting collaboration and partnership consistent with accounts from the other two interviewees from Denver (CPD and pedestrian/cycling advocacy group). He concluded his commentabout community engagement with a change of tone, referring to advocates' contributions with the minimizing language of "random requests," before refocusing credit for Denver's shared streets program on DOTI.

The DOTI interviewee's inconsistencies with the other two interviewees from Denver continued throughout his interview. He went on to explain his department's lack of community engagement in terms of the pandemic as a barrier to any and all community engagement other than some English language signage on barricades used to close streets.

Hegemony paradox

In Denver, interviewees reported that the placement of open streets was largely based on park adjacency and residential density, meaning that most open streets were located in high-density areas of downtown and adjacent to large parks with high traffic (see Figure 1). These reports from interviewees partially align with the quantitative analysis, as both t-tests and the logistic regression show that open streets are more likely to be located in higher-density areas, but not in areas located closer to parks (see Tables 3 and 4). Additional open streets were located in "equity areas"—areas identified as facing socioeconomic and health disparities based on a multivariate indicator developed from Census data by Denver's Department of Public Health. Nevertheless, as the DOTI engineer noted, open street facilities in these neighborhoods were not well utilized. When asked about equity concerns with the program, he replied, "I don't—I wouldn't say we've had real equity concerns. The

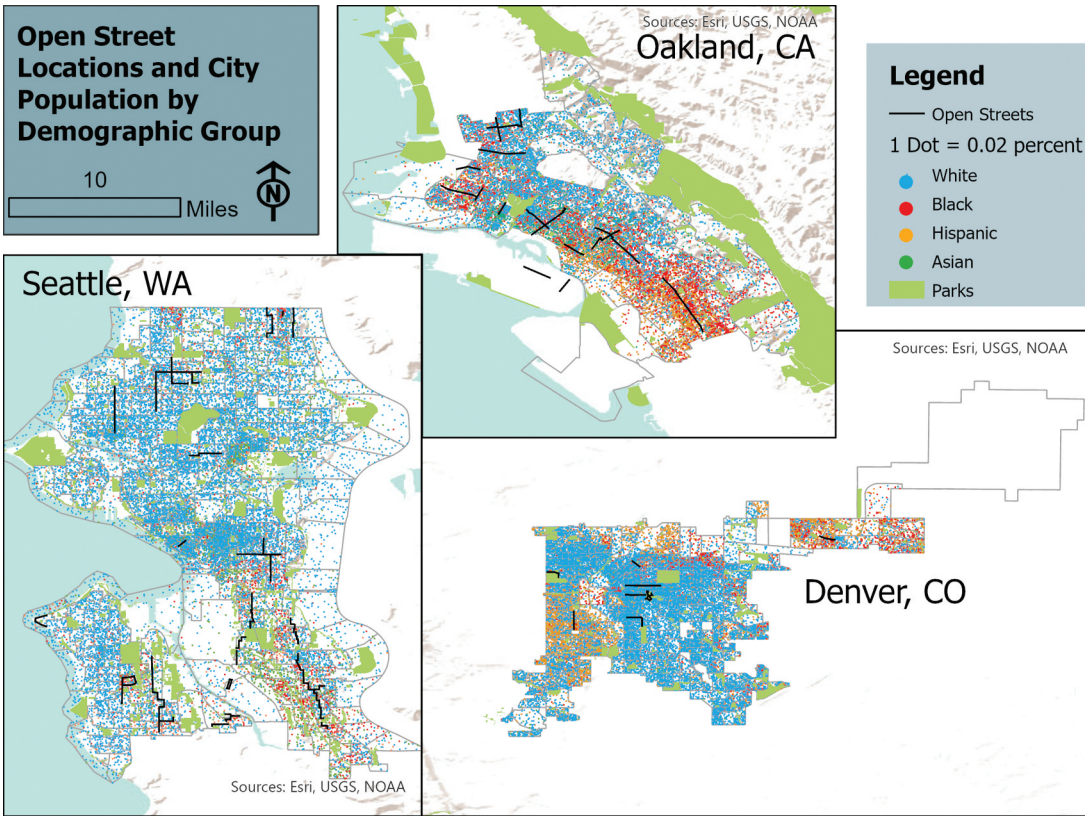

Figure 1. Location of open streets and city population by demographic group.

Table 3. Independent-samples t-tests to determine differences in census block groups with and without open streets.

	Denver			Oakland			Seattle		
	No open street	Has open street	*p* value	No open street	Has open street	*p* value	No open street	Has open street	*p* value
Median household income ($)	$86,412	$76,577	.169	**$100,126**	**$73,813**	**<.001**	**$110,247**	**$95,789**	**<.001**
Percent college	46.44%	52.24%	.169	**44.29%**	**36.98%**	**.007**	**60.76%**	**54.76%**	**.001**
Percent NH White	57.77%	65.44%	.114	**32.63%**	**24.25%**	**.001**	**64.91%**	**53.58%**	**<.001**
Percent NH Black	7.83%	7.73%	.954	21.27%	24.16%	.164	**5.74%**	**10.18%**	**.001**
Percent Latinx	27.08%	21.95%	.214	23.78%	27.96%	.112	**6.41%**	**9.91%**	**<.001**
Percent NH Asian	**3.29%**	**1.99%**	**.024**	15.27%	17.45%	.294	16.00%	18.04%	.149
Percent transit commuters	6.47%	6.60%	.938	**20.59%**	**25.02%**	**.003**	20.43%	20.33%	.919
Population density (pop./m^2)	**3.53**	**5.52**	**.002**	**5.84**	**7.53**	**.003**	6.462	5.541	.191
Distance to the closest park (meters)	739.34	681.61	.386	**572.11**	**417.82**	**<.001**	380.55	376.16	.889
Percent of arterial roads	**45.86%**	**52.51%**	**.03**	32.86%	33.13%	.887	35.21%	31.66%	.063
Mean slope	**1.80%**	**1.61%**	**.04**	**4.93%**	**2.05%**	**<.001**	**3.61%**	**2.76%**	**<.001**

NH = non-Hispanic. Sample sizes are as follows. Denver, n = 561. Oakland, n = 353. Seattle, n = 534. Values in bold represent statistically significant differences ($p < .05$).

Table 4. Logistic regressions to predict the odds of a census block group having at least an open street in its boundaries.

	Denver			Oakland			Seattle		
Characteristic	OR[a]	95% CI[a]	*p*-value	OR[a]	95% CI[a]	*p*-value	OR[a]	95% CI[a]	*p*-value
Median household income	0.67	0.38, 1.12	.15	0.77	0.47, 1.26	.309	0.85	0.61, 1.18	.334
Percent college	1.12	0.59, 2.36	.64	–	–	–	1.14	0.83, 1.58	.421
Percent NH White	1.11	0.57, 2.23	.756	1.14	0.71, 1.82	.578	–	–	–
Percent NH Black	0.92	0.53, 1.45	.744	1.06	0.76, 1.47	.726	**1.36**	**1.06, 1.74**	**.016**
Percent Latinx	–	–	–	–	–	–	**1.63**	**1.29, 2.06**	**<.001**
Percent NH Asian	0.62	0.31, 1.06	.129	1.18	0.87, 1.62	.293	1.30	0.99, 1.69	.051
Percent transit commuters	0.64	0.35, 1.05	.113	1.23	0.90, 1.69	.187	0.87	0.66, 1.15	.336
Population density	**1.73**	**1.31, 2.31**	**<.001**	1.05	0.81, 1.37	.703	0.84	0.58, 1.14	.297
Distance to the closest park	1.49	0.83, 2.62	.168	0.81	0.52, 1.20	.326	0.96	0.75, 1.18	.672
Percent of arterial roads	1.04	0.70, 1.51	.839	**0.72**	**0.53, 0.97**	**.033**	**0.68**	**0.50, 0.90**	**.009**
Mean slope	0.79	0.50, 1.17	.272	**0.27**	**0.13, 0.50**	**<.001**	**0.49**	**0.36, 0.67**	**<.001**
Nagelkerke's R squared		34.72%			27.58%			26.09%	

[a]OR = Odds Ratio, CI = Confidence Interval. NH = non-Hispanic. Sample sizes are as follows. Denver, n = 515. Oakland, n = 331. Seattle, n = 497. Values in bold represent statistically significant odds ratios ($p < .05$). Odds ratios not shown in certain regressions are for variables removed due to multicollinearity. Independent variables were standardized before running the regressions.

biggest topic, and what we've been focused on in the more equity locations, is just a lack of usership." This engineer attributed the lack of users to low levels of awareness of open streets in these neighborhoods. The Denver bicycle and pedestrian advocate we interviewed told a different story about low usage, largely tied to recognitional justice issues:

> We did outreach . . . [and] there wasn't a lot of interest. I think for some very good reasons, you know a lot of the people who live in those neighborhoods are essential workers who still have to go into the office . . . and a lot of them depend on driving to get to and from work . . . they were much more concerned about food access and other things.

Denver's bike and pedestrian advocacy organization had long-standing relationships with community leaders in minoritized neighborhoods. Instead of pushing for open streets, they helped immigrant-owned restaurants and small businesses apply for outdoor dining permits and acquire street furniture and enact other COVID-19 related adaptations (Denver Streets Partnership, 2021; National Association of City Transportation Officials, 2020). Through a broader justice assessment, this organization included advocacy for many different types of street use and transportation goals that reflect recognitional justice. They also described adding their voice to calls to reinstate transit service to normal capacity in minoritized communities, and stop fare enforcement that disproportionately

impacts people in these communities. This recognitional justice adaptation was enabled by ongoing equity-focused work that includes relationship building with leaders in low-income minoritized neighborhoods who may not traditionally be associated with bicycle and pedestrian advocacy.

Displacement paradox

Denver's DOTI engineer dismissed questions of gentrification noting that, at the time of the interview, DOTI had no public plans to make open streets permanent. Alternatively, the two other Denver interviewees acknowledged the threat of gentrification due to cycling and pedestrian infrastructure, but quickly dismissed them, both with claims that improving walkability and bikeability in every neighborhood would negate gentrification risk. Although there is no evidence that equal distribution interrupts the property speculation cycle tied to displacement, these two interviewees offered some consideration of the long-term implications of gentrification related to open street programs.

Oakland

Engagement paradox

In Oakland, planners appear to have either approached engagement in the era of COVID-19 as a challenge to be met with sustained effort or have been pressed into this challenge by equity advocates and community leaders. OakDOT planners made an iterative set of design changes to address concerns raised by community advocates from the majority Black and Latinx areas of East and West Oakland.

The city used a 2019 bicycle and pedestrian plan to identify streets for their Slow Streets initiative. This plan, multiple interviewees noted, paid particular attention to equity issues, and involved significant community engagement processes that involved sustained relationship building with residents, particularly in the minoritized areas of East and West Oakland.

Oakland's Slow Streets were met with two very loud, yet polarized, sets of feedback within a day of their implementation. They were well received in neighborhoods with high percentages of white and high-income people, but neighborhood leaders in East and West Oakland expressed outrage regarding the priorities the program reflected, the lack of input from residents who lived in areas with the highest levels of COVID-19 vulnerabilities, and the largest number of essential workers as well as fear that the city was seeking to make permanent changes without any public process (Thomas, 2020). City transportation planners and staff from the mayor's office initiated a series of meetings with concerned community leaders to better understand residents' objections.

These city representatives listened to community feedback, and after weeks of conversations came to a better understanding of the source of these residents' outrage. Pedestrian safety was a concern for these residents, but Slow Streets did not fit their community context or daily needs. Through this feedback process, the group identified challenging pedestrian crossings that were a barrier to accessing resource hubs like food pantries, COVID-19 testing centers, and grocery stores. The Slow Streets program was relaunched in West and East Oakland as Slow Streets: Essential Places, with a focus on using barricades to mitigate the risks pedestrians encounter on dangerous arterial crossings, a disproportionate number of which exist in these more industrialized, formerly redlined areas of Oakland. Although imperfect, planners reflected on the importance of taking this feedback, listening to frustrated community leaders, and demonstrating flexibility and responsiveness:

> I'd say some lessons learned include just showing up to the meeting every single time to get yelled at. and I mean that quite sincerely, that there is a history of city planners and government officials going and getting yelled at, and then they never come back. . . . Keep having that dialogue, no matter how challenging it might be. The second is demonstrating the ability to change things quickly, even if it's small tweaks. (Mayor's office representative)

Within the limited lens of procedural justice, Oakland's DOT and mayor's office responded by dedicating significant staff resources to listening and responding to neighborhood leaders' concerns, thus pivoting their program to meet community needs related to transportation safety. Their

commitment to right their wrongs by listening and responding to community advocates goes beyond procedural justice commitments observed in either Denver or Seattle.

Hegemony paradox

Oakland has a combination of flat and hilly terrain that plays out along demographic and socio-economic lines. The city's hillier neighborhoods are generally home to more affluent, predominantly white communities, while the "lowlands" house most lower-income minoritized neighborhoods (see Figure 1). Thus, Oakland's topography forced many open streets to be located in more minoritized neighborhoods, as it would have been less feasible to create open streets in the upscale hilly neighborhoods full of steep streets. Reports from interviews are reflected in our quantitative analysis, which finds that block groups with lower street slopes are more likely to have open streets, and that minoritized neighborhoods have better access to open streets, at least in t-tests (see Tables 3 and 4). Yet this impulse toward distributional justice was not well received by community leaders in these primarily Black and Latinx neighborhoods:

> One of the first things we also heard from our neighbors in deep East Oakland was, "why are you focusing on that, when we are, when our community is really struggling with housing, with economic stability, with even COVID testing." (Community bicycle/pedestrian advocate)

At the root of residents' frustration, planners relayed, was that open streets reflected limited understanding of their neighborhood contexts, pandemic-related needs, and local priorities:

> People, I think, were focused on the pandemic and people were focused on moving fast. I think what happened is that really this program was conceived based on the needs of middle-class telecommuters with kids—like me—looking out their windows and seeing what they needed in their daily lives. (OakDOT planner)

As planners from the Oakland mayor's office and OakDOT engaged in regular meetings with frustrated community advocates, it became clear that not only were these advocates frustrated by the lack of notification or consultation of new open streets, but also because these did not address actual community concerns regarding street safety. These neighborhoods, multiple interviewees explained, are characterized by a disproportionate number of arterial roads, heavy industrial traffic, and high-speed driving (up to 100 miles an hour on residential streets).

Rather than dismiss these concerns, the Oakland mayor's office and OakDOT changed their program to better recognize the social and economic realities of its minoritized neighborhoods, relaunching the program as Slow Streets; Essential Places. This revamped program used the same tools—A-frame barricades and traffic cones—to improve dangerous arterial crossings by creating pedestrian bulbouts along routes to critical resource hubs like grocery stores, food banks, and COVID-19 testing sites. The Essential Places interventions respond to both recognitional and distributional justice; when combined, the slow streets and essential places interventions were spread relatively equally across the city.

Displacement paradox

In Oakland, some critical feedback was tied to displacement anxieties on the part of East and West Oakland residents who felt that slow streets were a sign that Oakland was "trying to kick out all of the Black people," in the words of a transportation planner in the mayor's office. This tension runs through efforts to enact distributional justice while respecting community context. Rather than dismiss these concerns, the Oakland mayor's office interviewee pointed to the need for ongoing and persistent anti-displacement efforts in these areas: "We should always be mitigating those pressures, irrespective of what other kinds of capital improvements we're putting in. Because absent any stop signs [or] any sort of traffic improvements, whatever—the force of displacement is still present."

Seattle

Engagement paradox

In Seattle, comprehensive bicycle and pedestrian planning for Neighborhood Greenways—bike and pedestrian priority routes—served as a scaffold for open streets planning, despite parallel community-based processes to identify potential open streets. Seattle had completed technocratic, top-down planning and subsequent outreach process for its Neighborhood Greenways program in 2014. Seattle's plan focused largely on locating open streets in neighborhoods with slope and traffic speeds that lent themselves to easier bicycling. Yet the Seattle plan was not intentional about addressing socioeconomic, racial, and ethnic disparities. A Seattle bicycle and pedestrian advocate explained the implications of this equity-blind approach: "We're like 25 bodies of water connected by these massive hills. And a lot of parts of Seattle, where the topography is like, much more grid-like and a lot easier to handle, are like the wealthier whiter neighborhoods."

In the initial advocacy phases for open streets, community advocates completed a participatory mapping process to identify 130 miles of suitable locations for open streets, leaning on relationships with neighborhood organizations and their local knowledge of street function and community needs. The streets identified through the neighborhood leaders' crowdsourced map differed from those identified by the Seattle Department of Transportation (SDOT) through their technical Neighborhood Greenways process. Selection criteria used by neighborhood leaders reflected community needs, the context of COVID-19, greenspace access, and street volume and slope considerations that contributed to the neighborhood greenway selection process. Over time, SDOT attempted to remedy distributional and procedural justice gaps in their street selection and engagement process by identifying neighborhoods without access to open streets and working with neighborhood leaders to implement additional city-run Stay Healthy Streets.

SDOT also initiated a do-it-yourself (DIY) open streets program called Stay Healthy Blocks. This program relied heavily on neighborhood leadership and had a set of procedural justice challenges of its own largely tied to a heavy participatory burden and requirements placed on residents expected to purchase materials and construct their own wooden A-frame barricades and large format waterproof signs. The Stay Healthy Blocks program shifted after its initial launch and began requiring workers to remove and re-install barricades each day, storing them on private property. This created obvious challenges. Not only were residents being asked to make a daily commitment to administer a city program, there were also class barriers to participation along lines of housing tenure and physical ability. Most apartment dwellers did not have any easy storage space for the barricades. When the city began enforcing these restrictions and penalizing neighborhood volunteers sometimes with tickets for hundreds of dollars, the program faltered and was eventually discontinued, leaving frustrated and mistrustful residents in its wake.

This outcome builds on another theme from Seattle interviews: mistrust stemming from a history of poor procedural justice. Interviewees noted that, due to past procedural injustices in Seattle's low-income minoritized neighborhoods, community trust was nearly non-existent. An interviewee explained, "the message is like 'we don't actually really care what you're doing or what you think.'"

Hegemony paradox

In Seattle, interviewees reported that topography might have played a role in limiting distributional justice. Recent planning efforts—specifically the Neighborhood Greenways program—have focused on building bike infrastructure in the city's more affluent—and flatter—neighborhoods. Seattle was the only city where interviewees reported a strong demand for open streets in some minoritized neighborhoods. The underlying topography of Seattle drove distributional injustice, and a bicycle and pedestrian advocate described the steeper areas as largely lower-income and more minoritized. These reports are somewhat similar to the results of the quantitative analysis, showing that lower-income areas (t-tests), minoritized neighborhoods (t-tests and regression), and

flatter areas (t-tests and regression) have higher odds of having open streets than other neighborhoods (see Tables 3 and 4).

At the same time, conflicts between distribution and recognitional justice remained salient in certain minoritized neighborhoods. For example, the hilly Rainier Valley in South Seattle, where arterials from more affordable southern suburbs faced challenges made them poorly suited for open streets. Despite this mismatch, some interviewees doubted that they would be removed by SDOT for political reasons, as doing so would violate principles of distributional justice. Conversely, interviewees noted that the success of one widely embraced open street in Lake City, a predominately Latinx neighborhood, was due to the flat topography of the area as well as limited access to sidewalks and open space.

Displacement paradox

Gentrification anxieties also shaped some of the response to Seattle's Stay Healthy Streets. Like Oakland, planners and advocates expressed concern about green gentrification—or demographic and socioeconomic changes to neighborhoods as a result of investments in parks, public spaces, or other green infrastructure—and acknowledged that it contributed to underlying tensions between community members and transportation planners. An SDOT planner described the way these anxieties played out in one gentrifying, historically Black neighborhood, saying that due to local frustrations with the open streets program, this specific location would not be considered for permanent implementation.

The Seattle bicycle and pedestrian advocate expressed hope about community land trust models that are investing in nonprofit community control of land with hopes of mitigating gentrification. These groups, she felt, would allow residents to welcome investments and improvements to their communities without having to fear displacement. She also described gentrification as a major contributor to poor community engagement:

> When people come in and they start talking about, like, transforming a neighborhood, as soon as the zoning changes or there's a big transformational transportation project or land use project or whatever it is that starts the gentrification machine. People can tell, you can. You have that little displacement sense, and you immediately start losing your interest in your neighborhood's future.

A general concern regarding displacement ran through several of our interviews, and spoke to the need for planners working on open streets to tend to the wider context of the communities they serve.

In the subsequent sections, we synthesize the similarities and differences of the three paradoxes across Denver, Oakland, and Seattle. These sections provide higher-level findings about the three paradoxes, including the results of our quantitative analysis of distributional justice.

Engagement paradox: Rapid response for a long emergency

Some equity-oriented advocates have criticized the urgency with which open streets were implemented without public engagement (Thomas, 2020; Yasin, 2020). At the same time, planners were responding to unprecedented conditions in a literal "state of emergency," and they arguably had a public responsibility to act swiftly. Our results show that cities with preexisting equity planning commitments and relationships were better able to address these tensions within the procedural justice milieu. Although rapid program deployment was the norm in all three cities we studied, implementation was influenced by the quality of prior community engagement, bicycle master plans, and community partnerships. Specifically, Oakland and Seattle relied on contemporary or prior community engagement to determine the location of open streets, whereas Denver used a top-down approach wherein the limited community engagement conducted did not inform open street locations. These differences in how community engagement shaped the temporary programs have implications for the programs' transition to permanent infrastructure.

Of note, Seattle's Stay Healthy Blocks program placed a significant engagement burden on residents, and tended to exclude renters, lower-income residents, residents with limited mobility, and residents who were not able to work from home and faced challenges to moving barricades on a strict schedule. Soja (2010) exposes this increasingly common form of injustice in his theorizations of spatial justice.

Hegemony paradox: Conflicts between distribution and recognition

In all three cities, a major underlying challenge of equitable open streets was tension between recognitional justice and distributional justice, particularly conflict about neighborhood needs and goals that were not reflected in open streets programs. Our quantitative analysis shows that all three cities demonstrate statistically similar proximity to open streets for minoritized communities (as discussed below), even as these facilities were sometimes welcomed and other times met with push-back. In Seattle, some minoritized neighborhoods demanded more access to open streets, while others protested their implementation, fearing that these programs targeted newcomers, who are often white and have higher incomes. In Denver, the few Shared Streets placed in low-income minoritized neighborhoods in the name of environmental justice went largely un-used, but did not draw vocal opposition. In Oakland, Slow Streets were a source of frustration in East and West Oakland, presenting a challenge for a city government that held equity as a guiding value.

We present the results of our quantitative analysis of distributional justice in Tables 3 and 4. Overall, our results show that the distribution of open streets is fairly equitable across the three cities. T-tests reveal that in Oakland and Seattle, people of color and of lower socioeconomic status have better access to open streets than more privileged groups, whereas no significant differences are observed in Denver (see Table 3). Socioeconomic and racial/ethnic differences were particularly strong in Oakland, where, for example, the median household income of Census block groups with open streets was approximately 26% lower than the income of block groups without open streets.

In logistic regressions, we examined whether demographic variables predict the odds of a Census block group having at least one open street while controlling for built environment variables known to affect the location of open streets (see more details in the Data and Methods section). We found that demographic differences in open street access disappear in Oakland, whereas Seattle's Census block groups with larger shares of Black or Latinx residents have higher odds of containing an open street (see Table 4). In Oakland, Census block groups with a lower percentage of arterial roads and a lower mean slope are statistically significantly more likely to have an open street. These results suggest that, at least in Oakland, the location of open streets might be more a result of street design (i.e., arterial roads) and topography (i.e., mean slope) than of demographics.

Displacement paradox: Underlying anxieties about open streets

Concerns about green gentrification were present in each of the three case studies and were more likely to arise in the context of permanent open streets efforts. Planners and bicycle and pedestrian advocates described how displacement anxieties contributed to tensions permeating their work. Nearly half (44%) of the interviewees named displacement pressures as a key barrier to successful equity planning. Suggestions on how to address these pressures varied, but respondents in each city expressed the need to ease these pressures to enable equitable transportation outcomes and community trust.

Discussion

Through semi-structured interviews and GIS analysis of open street distribution in Denver, Oakland, and Seattle, we found that claims about environmental justice are often situated and contextual. Engaging in quests for totalizing narratives will not resolve the sticky issues of environmental justice,

and the complexity of environmental justice concerns in these three cities shows there is no single way forward.

Aspects of three paradoxes of environmental justice for open streets were clearly at play in each context. How these paradoxes played out in each city depended on local factors and institutional culture. Further analysis of these findings suggests several lessons for planners and environmental justice scholars alike.

Lessons for equity in open streets programming

Engagement in a crisis will reflect engagement under normal conditions

Community engagement across all case studies built on existing plans, relationships, and administrative culture. In Oakland and Seattle, existing plans were used to locate open streets. In Denver, DOTI relied on top-down technocratic planning using the city's Neighborhood Equity Index. Bicycle and pedestrian advocates in Seattle and Denver both relied on preexisting relationships with neighborhood community leaders to field initial questions and feedback about the needs and priorities of specific neighborhoods. In the disorienting weeks after the emergence of COVID-19 and the first stay-at-home orders, planners used existing tools and resources, be they plans on the shelf or connections in their contact list. Organizations long focused on equity issues seemed better positioned to address equity concerns even under the pressure of the pandemic. The city of Oakland relied on a plan developed with high levels of community engagement and a deep focus on social equity. Bicycle and pedestrian advocates in Denver contacted collaborators and leaders in minoritized communities with disproportionate rates of essential workers to learn what their priorities were and if open streets were of interest. These actions were only possible because of preexisting efforts to incorporate social equity into their work.

Engage pushback and/or perceived disinterest as an opportunity to listen, learn, and iterate the program to meet neighborhood needs

In every case study, but in Oakland in particular, planners and advocates committed to equity work did not give up when met with pushback or disinterest. Oakland planners spent several weeks "showing up to get yelled at," and from this process built and repaired some trust with residents. Eventually, they developed a traffic safety response that came closer to meeting the needs of East and West Oakland residents. In Denver, when the city's bicycle and pedestrian advocacy organization learned that their open streets ideas were not relevant to neighborhood priorities, they listened for what *was* relevant and found a way to act on those issues. These organizations and individuals remained engaged when it may have been uncomfortable or inconvenient to do so.

Build a collaborative culture and break out of departmental silos to address the larger context

Planners from Denver, Oakland, and Seattle noted that equitable transportation projects required changes to the broader context of their work, particularly around issues of gentrification and housing. In Denver, two departments within the city government had challenges simply relaying community input regarding open streets, much less addressing larger-scale contextual environmental justice concerns. Meanwhile, bicycle and pedestrian advocates in all three cities, but especially Denver and Seattle, noted that through collaboration and wide networks of civic partners, they were able to rapidly develop responses and plans that addressed several equity concerns. Oakland's planners described an equity structure that has encouraged and enabled inter-departmental collaboration through their Mayor's office with equity planning incorporated as a foundational aspect of this effort, rather than as an afterthought. This model, which rests on the political will to make social justice an integral city value, may have enabled more positive procedural and recognitional justice outcomes in Oakland than either Denver or Seattle.

Evaluate environmental justice through a holistic lens

Whereas statistical analysis found that none of the three cities showed significant distributional injustices in open street access, clear environmental justice issues were still at play. Denver's open streets in low-income neighborhoods went largely unused. Open street programming in West and East Oakland sparked outrage from resident leaders because they failed to incorporate recognitional justice concerns. Even in Seattle, where distributional justice was perceived to be an issue by some bicycle and pedestrian advocates, open streets became contentious in at least one gentrifying historically Black-majority neighborhood because the program missed important aspects of recognitional justice. Evaluating the equity of the built environment simply through distribution can be an overly simplistic approach that can mask larger issues related to procedural and recognitional justice. More than a half-century ago, Arnstein (1969) bemoaned perfunctory community participation in planning processes that served to obscure power. Indeed, relying solely on a distributional justice analysis has enabled technocrats to enact programs and policies that may not always reflect a just planning agenda (Sotomayor & Daniere, 2018).

Study limitations

This analysis presents only three case studies out of hundreds of cities throughout the U.S. and the world that implemented open streets programs as a response to the COVID-19 pandemic. Many of our data collection limitations relate to operating in the first year of the COVID-19 pandemic. Our interviews largely engaged professional planners, and did not capture the experiences or direct reflections of minoritized residents regarding open streets, which would have required extensive in-person observation and interaction. In this paper, we are unable to assess interactional justice dimensions of open streets and the paradoxes that interactional justice analyses make visible. In addition, none of the planning departments and bicycle and pedestrian advocacy organizations with whom we engaged had any comprehensive critiques of their own work regarding open streets through an equity lens; thus, the evaluation and critique offered here are limited to our second-hand account of these programs. Many of these programs were developed rapidly, with only a handful of city staff and advocates shepherding their implementation. Our sample size of nine interviews reflects this limitation. In an effort to create a more robust understanding of dynamics potentially missed due to this small sample size, we have included secondary coverage of these case studies.

Conclusion

This paper explores the environmental justice considerations of open streets programs launched in the wake of the COVID-19 pandemic in three U.S. cities: Oakland, Seattle, and Denver. Through mixed-methods analysis using semi-structured interviews with transportation planners, bicycle and pedestrian community advocates, and other stakeholders, we confirm the validity of three of six potential paradoxes identified as potential challenges to equity planning for open streets: the hegemony paradox, the engagement paradox, and the displacement paradox (Slabaugh et al., 2022). Quantitative analysis of open street location showed that while distributional injustice is only statistically significant in one of these three cities (Seattle), other aspects of environmental justice, in particular recognitional and procedural justice, were barriers to equitable planning outcomes in all three cities.

We conclude with a discussion of four lessons for equity planners and scholars that arise from this investigation. First, community engagement in a crisis will reflect engagement under normal circumstances. Second, planners can choose to engage pushback or disinterest as an opportunity to listen, learn, and iterate the program and meet neighborhood needs, rather than use them as an excuse to withdraw from outreach or programming. Third, planners should seek to build a collaborative planning culture and break out of departmental silos. Finally, planners and policymakers should

evaluate environmental justice impacts of planning and the built environment through a holistic lens that incorporates considerations beyond distributional justice. By working within a more contextually grounded model of environmental justice, planners and open streets advocates open the door to more transformative possibilities that are inclusive of, and responsive to, the lived experiences of those who are habitually excluded from shaping the cities they live in.

Note

1. We follow the style guidance of the Associated Press regarding capitalization of racial categories (Daniszewski, 2020).

Acknowledgments

The authors wish to acknowledge the technical support contributions of Brenn Anderson Gregson, as well as the support of the Office of Research Services at the University of Colorado Denver.

Disclosure statement

No potential conflict of interest was reported by the author(s).

About the authors

Dani Slabaugh is a PhD candidate in the Department of Urban and Regional Planning at the University of Colorado Denver.

Alessandro Rigolon is an assistant professor in the Department of City and Metropolitan Planning at The University of Utah.

Jeremy Németh is a professor of Urban and Regional Planning and the director of the PhD in Geography, Planning, and Design at the University of Colorado Denver.

ORCID

Alessandro Rigolon http://orcid.org/0000-0001-5197-6394

References

Arnstein, S. (1969). A ladder of citizen participation. *Journal of the American Institute of Planners*, *35*(4), 216–224. https://doi.org/10.1080/01944366908977225

Auchincloss, A. H., Michael, Y. L., Kuder, J. F., Shi, J., Khan, S., & Ballester, L. S. (2019). Changes in physical activity after building a greenway in a disadvantaged urban community: A natural experiment. *Preventive Medicine Reports*, *15*, 100941. https://doi.org/10.1016/j.pmedr.2019.100941

Badger, E. (2020, July 20). The pandemic has pushed aside city planning rules. But to whose benefit? *The New York Times*. https://www.nytimes.com/2020/07/20/upshot/pandemic-city-planning-inequality.html

Barajas, J. M. (2020). Supplemental infrastructure: How community networks and immigrant identity influence cycling. *Transportation*, *47*(3), 1251–1274. https://doi.org/10.1007/s11116-018-9955-7

Barajas, J. M. (2023). Perceptions, people, and places: Influences on cycling for Latino immigrants and implications for equity. *Journal of Planning Education and Research*, *43*(1), 196–211. https://doi.org/10.1177/0739456X19864714

Braun, L. (2020, September 14). *Geographies of (dis)advantage in walking and cycling: Perspectives on equity and social justice in planning for active transportation in U.S. cities* [Doctoral Dissertation, University of North Carolina at Chapel Hill Graduate School]. Carolina Digital Repository. https://search.proquest.com/docview/2059295107/abstract/D46E0C983E804F33PQ/1/

Brown, C. (2016). Fear: A silent barrier to bicycling in Black and Hispanic communities. *ITE Journal*, *86*(9), 22–24. https://njbikeped.org/wp-content/uploads/2016/09/Fear_A-Silent-Barrier-to-Bicycling-in-Black-and-Hispanic-Communities_Sept2016.pdf

Brown, C., & Blickstein, S. (2016). *Bicycling among Black and Hispanic women: Focus group summary report*. Rutgers University. https://njbikeped.org/bicycling-among-black-and-latino-women-2016/

Bryant, A., & Charmaz, K. (Eds.). (2019). *The SAGE handbook of current developments in grounded theory* (2nd ed.). SAGE. https://doi.org/10.4135/9781526436061

Bullard, R. D. (Ed.). (1993). *Confronting environmental racism: Voices from the grassroots* (1st ed.). South End Press.

Butler, T., & Moore, J. G. (2021). The emotional labor of participation: Tamika L. Butler and Justin Garrett Moore in conversation. *Open Space*, *16*. https://openspace.sfmoma.org/2021/02/the-emotional-labor-of-participation-tamika-l-butler-and-justin-garrett-moore-in-conversation/

City of Oakland. (2022). *East Bay regional parks* [Dataset]. https://data.oaklandca.gov/Environmental/East-Bay-Regional-Parks/f4af-gmsw

City of Seattle GIS Program. (2022). *Public and open spaces in Seattle* [Dataset]. City of Seattle. https://data.seattle.gov/dataset/Public-and-Open-Spaces-in-Seattle/v67f-c76a

Combs, T., Pardo, C. F., Streetplans, Epiandes, MobilityWorks, & MobilityWorks. (2020). *Shifting streets COVID-19 mobility dataset*. [Dataset]. Pedestrian and Bicycle Information Center. https://www.pedbikeinfo.org/resources/resources_details.cfm?id=5235

Coughenour, C., Clark, S., Singh, A., Claw, E., Abelar, J., & Huebner, J. (2017). Examining racial bias as a potential factor in pedestrian crashes. *Accident Analysis & Prevention*, *98*, 96–100. https://doi.org/10.1016/j.aap.2016.09.031

Daniszewski, J. (2020, July 20). *Why we will lowercase white*. Associated Press. https://blog.ap.org/announcements/why-we-will-lowercase-white

Denver Department of Public Health & Environment. (2020). *Denver neighborhood equity index scores and historic redlining grades* [Dataset]. https://www.denvergov.org/files/assets/public/public-health-and-environment/documents/equityindexandredlining_withexplanations_9.24.20.pdf

Denver Parks and Recreation. (2022). *Parks* [Dataset]. City and County of Denver. https://www.denvergov.org/opendata/dataset/city-and-county-of-denver-parks

Denver Streets Partnership. (2021). *From parking lots to patios*. https://denverstreetspartnership.org/from-parking-lots-to-patios/

Descant, S. (2020). Not all neighborhoods want slow streets. Here's why. *Governing*. https://www.governing.com/community/Not-All-Neighborhoods-Want-Slow-Streets-Heres-Why.html

Firth, C. L., Baquero, B., Berney, R., Hoerster, K. D., Mooney, S. J., & Winters, M. (2021). Not quite a block party: COVID-19 street reallocation programs in Seattle, WA and Vancouver, BC. SSM. *Population Health*, *14*, 100769. https://doi.org/10.1016/j.ssmph.2021.100769

Fischer, J., & Winters, M. (2021). COVID-19 street reallocation in mid-sized Canadian cities: Socio-spatial equity patterns. *Canadian Journal of Public Health*, *112*(3), 376–390. https://doi.org/10.17269/s41997-020-00467-3

Fraser, N. (1995). From redistribution to recognition? Dilemmas of justice in a "post-socialist" age. *New Left Review*, *1*(212), 68–93. https://newleftreview.org/issues/i212/articles/nancy-fraser-from-redistribution-to-recognition-dilemmas-of-justice-in-a-post-socialist-age

Fullilove, M. T., Peterson, C. F., & Bassett, M. T. (2016). *Root shock: How tearing up city neighborhoods hurts America, and what we can do about it* (2nd ed.). New Village Press.

Goddard, T., Kahn, K. B., & Adkins, A. (2015). Racial bias in driver yielding behavior at crosswalks. *Transportation Research Part F: Traffic Psychology and Behaviour*, *33*, 1–6. https://doi.org/10.1016/j.trf.2015.06.002

Goodman, R. (1971). *After the planners*. Simon and Schuster.

Gould, K., & Lewis, T. (2017). *Green gentrification: Urban sustainability and the struggle for environmental justice*. Routledge.

Haraway, D. J. (1988). Situated knowledges: The science question in feminism and the privilege of partial perspective. *Feminist Studies*, *14*(3), 575–599. https://doi.org/10.2307/3178066

Hoffmann, M. L. (2016). *Bike lanes are white lanes: Bicycle advocacy and urban planning*. University of Nebraska Press.

King, D. A., & Krizek, K. J. (2020). The power of reforming streets to boost access for human-scaled vehicles. *Transportation Research, Part D: Transport & Environment*, *83*, 102336. https://doi.org/10.1016/j.trd.2020.102336

Kramer, J. (2020, August 18). Do D.C.'s slow streets benefit everyone? *Washington City Paper*. https://washingtoncitypaper.com/article/303481/do-dcs-slow-streets-benefit-everyone/

Krieger, N. (2020). ENOUGH: COVID-19, structural racism, police brutality, plutocracy, climate change—and time for health justice, democratic governance, and an equitable, sustainable future. *American Journal of Public Health*, *110*(11), 1620–1623. https://doi.org/10.2105/AJPH.2020.305886

Kuhlberg, J. A., Hipp, J. A., Eyler, A., & Chang, G. (2014). Open streets initiatives in the United States: Closed to traffic, open to physical activity. *Journal of Physical Activity and Health*, *11*(8), 1468–1474. https://doi.org/10.1123/jpah.2012-0376

League of American Bicyclists, & Sierra Club. (2013). *The new majority: Pedaling towards equity*. https://bikeleague.org/report-the-new-majority-is-pedaling-toward-equity-2/

Leech, N., & Onwuegbuzie, A. (2007). An array of qualitative data analysis tools: A call for data analysis triangulation. *School Psychology Quarterly*, *22*(4), 557–584. https://doi.org/10.1037/1045-3830.22.4.557

Levin, S. (2020). *No insurance, no savings, no support: What happens when LA's least privileged get Covid*. The Guardian: Web Edition Articles (London, England). http://infoweb.newsbank.com/apps/news/openurl?ctx_ver=z39.88-2004&rft_id=info%3Asid/infoweb.newsbank.com&svc_dat=WORLDNEWS&req_dat=F315C07FFB2E485EA0025329B6EF8FC8&rft_val_format=info%3Aofi/fmt%3Akev%3Amtx%3Actx&rft_dat=document_id%3Anews%252F17AF4F778501E028.

Low, S. (2013). Public space and diversity: Distributive, procedural and interactional justice for parks. In G. Young & D. Stevenson (Eds.), *The Ashgate research companion to planning and culture* (pp. 295–310). Ashgate Publishing.

Lubitow, A. (2017). *Narratives of marginalized cyclists: Understanding obstacles to utilitarian cycling among women and minorities in Portland*, OR. TREC Final Reports. https://doi.org/10.15760/trec.171

Lubitow, A., & Miller, T. R. (2013). Contesting sustainability: Bikes, race, and politics in Portlandia. *Environmental Justice*, *6*(4), 121–126. https://doi.org/10.1089/env.2013.0018

McCullough, S. R., Lugo, A., & van Stokkum, R. (2019). *Making bicycling equitable: Lessons from sociocultural research* [white paper]. Pacific Southwest Region University Transportation Center. https://www.metrans.org/assets/research/ucd-17-09_mccullough_final-report.pdf

National Association of City Transportation Officials. (2020, August 25). *NACTO announces awardees of streets for pandemic response and recovery grant program*. https://nacto.org/2020/08/12/nacto-announces-awardees-of-streets-for-pandemic-response-and-recovery-grant-program

Nzinga, A. (2020, April 22). Oakland residents skeptical of 'Slow Streets' project. *Oakland Voices*. https://oaklandvoices.us/2020/04/22/oakland-slow-streets-gentrification-displacement/

OpenStreetMap. (2022). *Road network data* [Dataset]. https://www.openstreetmap.org/#map=5/38.007/-95.844

Parra, D. C., Adlakha, D., Pinzon, J. D., Van Zandt, A., Brownson, R. C., & Gomez, L. F. (2021). Geographic distribution of the Ciclovia and Recreovia programs by neighborhood SES in Bogotá: How unequal is the geographic access assessed via distance-based measures? *Journal of Urban Health*, *98*(1), 101–110. https://doi.org/10.1007/s11524-020-00496-w

Rawls, J. (1971). *A theory of justice*. Harvard University Press.

Roberts, J. D., Mandic, S., Fryer, C. S., Brachman, M. L., & Ray, R. (2019). Between privilege and oppression: An intersectional analysis of active transportation experiences among Washington D.C. area youth. *International Journal of Environmental Research and Public Health*, *16*(8), 1313. https://doi.org/10.3390/ijerph16081313

Salazar-Collier, C. L., Reininger, B., Gowen, R., Rodriguez, A., & Wilkinson, A. (n.d.). Evaluation of event physical activity engagement at an open streets initiative within a Texas–Mexico border town. *Journal of Physical Activity and Health*, *15*(8), 605–612. https://doi.org/10.1123/jpah.2017-0112

Sandercock, L., & Lyssiotis, P. (2003). *Cosmopolis II: Mongrel cities in the 21st century*. Continuum.

Schlosberg, D. (2004). Reconceiving environmental justice: Global movements and political theories. *Environmental Politics*, *13*(3), 517–540. https://doi.org/10.1080/0964401042000229025

Scott, R. P. (2021). Shared streets, park closures and environmental justice during a pandemic emergency in Denver, Colorado. *Journal of Transport & Health*, *21*, 101075. https://doi.org/10.1016/j.jth.2021.101075

Seattle Department of Transportation. (2020). *Stay healthy streets*. https://www.seattle.gov/transportation/projects-and-programs/programs/stay-healthy-streets

Slabaugh, D., Németh, J., & Rigolon, A. (2022). Open streets for whom? Toward a just livability revolution. *Journal of the American Planning Association*, *88*(2), 253–261. https://doi.org/10.1080/01944363.2021.1955735

Soja, E. W. (2010). *Seeking spatial justice*. University of Minnesota Press.

Sotomayor, L., & Daniere, A. (2018). The dilemmas of equity planning in the global south: A comparative view from Bangkok and Medellín. *Journal of Planning Education and Research*, *38*(3), 273–288. https://doi.org/10.1177/0739456X17700495

Stehlin, J. G. (2015). *Business cycles: Race, gentrification, and the production of bicycle space in the San Francisco Bay Area* [Doctoral dissertation, UC Berkeley]. https://escholarship.org/uc/item/3mq6f0ct

Thomas, D. (2020, June 8). 'Safe streets' are not safe for Black lives. *Bloomberg CityLab*. https://www.bloomberg.com/news/articles/2020-06-08/-safe-streets-are-not-safe-for-black-lives

U.S. Census Bureau. (2020). *2016-2020 American community survey*. https://data.census.gov/cedsci/

USGS. (2022). *National elevation dataset 1 arc-second DEM* [Dataset]. https://apps.nationalmap.gov/downloader/

Wilson, B. B. (2018). *Resilience for all: Striving for equity through community-driven design* (2nd ed.). Island Press.

Yasin, A. (2020, June 18). Whose streets? Black streets. *The Tyee*. https://thetyee.ca/Analysis/2020/06/18/Whose-Streets-Black-Streets/

Zieff, S. G., Chaudhuri, A., & Musselman, E. (2016). Creating neighborhood recreational space for youth and children in the urban environment: Play(ing in the) Streets in San Francisco. *Children and Youth Services Review*, *70*, 95–101. https://doi.org/10.1016/j.childyouth.2016.09.014