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Not quite a block party: COVID-19 street reallocation programs in Seattle, WA and Vancouver, BC

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ABSTRACT

The COVID-19 pandemic has exposed mobility inequities within cities. In response, cities are rapidly implementing street reallocation initiatives. These interventions provide space for walking and cycling, however, other mobility needs (e.g., essential workers, deliveries) may be impeded by these reallocation decisions. Informed by mobility justice frameworks, we examined socio-spatial differences in access to street reallocations in Seattle, Washington and Vancouver, British Columbia. In both cities, more interventions occurred in areas where people of color, particularly Black and Indigenous people, lived. In Seattle, more interventions occurred in areas where people with disabilities, on food stamps, and children lived. In Vancouver, more interventions occurred in areas where recent immigrants lived, or where people used public transit or cycled to work. Street reallocations could be opportunities for cities to redress inequities in mobility and access to public spaces. Going forward, it is imperative to monitor how cities use data and welcome communities to redesign these temporary spaces to be corridors for their own mobility.

Introduction

The COVID-19 pandemic is amplifying mobility inequities and injustices and restricting activity. In response, cities have rapidly increased street space for exercise and active transportation by restricting vehicle access to sections of roadway through programs like "Stay Healthy Streets" or "Slow Streets" (Seattle Department of Transportation, 2020c; Shape Your City, 2020). Such street reallocation interventions seek to address lack of or narrow sidewalks, relieve crowding in dense neighborhoods, and increase mobility and connections to amenities (Federation of Canadian Municipalities, 2020).

But unlike block parties - community-driven temporarily closed streets - municipally-driven street reallocations are not guaranteed to have local community support, and in some cases may actually be restricting mobilities in marginalized communities (Untokening, 2020). As street reallocations support slower, often non-motorized movement, essential workers whose jobs necessitate rapid mobility, such as delivery workers, may be impacted. Marginalized groups, who are more likely to be essential workers unable to work from home (Figueroa et al., 2020; Kantamneni, 2020), may benefit from street reallocations if it increases opportunities for movement, but may also be negatively impacted if it affects their ability to get to work or essential businesses.

Street reallocations *could* help address mobility needs of marginalized populations and advance mobility justice, if guided by a mobility justice framework. Mobility justice addresses barriers to mobility by exploring why people move the way they do; tackling the wide range of barriers imposed upon communities and individuals (Untokening, 2017; Munoz, 2020). Distinct from transportation justice, which focuses on issues related to the movement of people and goods at the individual and network-level, a mobility justice approach means redressing injustices embedded in government policies, actions, and advocacy (Untokening, 2017; Sheller, 2020b; Verlinghieri & Schwanen, 2020) that prevent

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people from moving freely, and having access to transportation options that are reliable and connect to where they need to go (Sheller, 2018). For street allocations to advance cities towards mobility justice, one important step is to understand which types of neighborhoods and which communities have access to street reallocations, in order to document mobility injustices (Sheller, 2020a). This initial step focuses on distributional equity (Karner et al., 2020); where an equitable distribution of street reallocations may mean that across neighbourhoods, areas where more people from racialized communities and other marginalized groups live, should receive the most resources due to their needs and potential to benefit (EQUITICITY, 2019).

In April 2020 both Vancouver and Seattle launched street reallocation programs with the goal of reducing COVID-19 transmission and promoting time outdoors. In both cities, traffic barriers and signs were added to select streets to deter car traffic. Since the launch of these programs, both cities have spoken toward making permanent roadway changes, but it remains unclear which interventions will be made permanent. This project analyzes street reallocation programs in Seattle WA ("Stay Healthy Streets") and Vancouver BC ("Slow Streets"), peer cities in the Pacific Northwest, 140 miles apart, with distinct historical, political, and social contexts. We seek to identify socio-spatial differences in access to street reallocations (e.g., how street reallocations are distributed through neighborhoods), as well as how reallocations relate to existing infrastructure (e.g., are they extensions of existing cycling networks, or new mobility corridors) within each city and contrast findings between Vancouver and Seattle. The goal of this work is to highlight how temporary road reallocations instigated by COVID-19 might be used to transform public spaces in pursuit of mobility justice in North American cities.

Study data and methods

Data sources

Street reallocations. In April 2020, Seattle committed to reallocate over 20 miles (32+ km) of roadway to 'Stay Healthy Streets' (Seattle Department of Transportation, 2020c) and Vancouver committed to closing off at least 40 km of roadways for 'Slow Streets' (City of Vancouver, 2020b). We developed a geodatabase of street reallocations that were implemented during April to August 2020. We mapped reallocations, overlaid with census data and cycling infrastructure. Our geodatabase of street reallocations was compiled by collecting data on routes as they were reported on Seattle websites and Twitter feeds and subsequently traced segments in ArcGIS Pro to create map-based data (i.e. shapefile) of street reallocation interventions in each city.

Cycling infrastructure. Existing cycling infrastructure data and their corresponding shapefiles were downloaded from city-managed open data portals (e.g. https://data.seattle.gov/, https://opendata.vancouver.ca/pages/home/). Prior to COVID-19, Seattle had 407 km (1.9 km per km^2) and Vancouver 360 km (3.1 km per km^2) of cycling infrastructure (Table 1). We used a cycling typology to classify the types of cycling infrastructure in both cities, grouping similar route types (Winters et al., 2020). For instance, a Vancouver 'Local Street' and Seattle 'Neighborhood Greenway' are both residential streets with roundabouts and signage to indicate that cyclists are sharing the roadway.

Table 1
Length of cycling infrastructure in Seattle WA and Vancouver BC, 2020.

Seattle		Vancouver	
Infrastructure type:	km	Infrastructure type:	km
Protected Lane/Multi-use paths	62	Protected Lane	112
Neighborhood Greenway	66	Local Street Bikeways	184
Climbing Lane	138	Painted Lanes	46
Sharrows	141	Shared Lane	18
Stay Healthy Streets	45	Slow Streets	38

Data sources: City of Seattle and City of Vancouver open data portals.

Census data. To describe neighborhood population characteristics we used the most current available data - the 2013–2017 5-year American Community Survey (United States Census, 2018) and the 2016 Statistics Canada census (Statistics Canada, 2020) - at the census tract (CT) level. Each CT contains about 4000 people (Statistics Canada, 2011; United States Census, 2019) and approximates a neighborhood area (Sperling, 2012). We used similar indicators in Vancouver and Seattle to represent marginalized populations (Untokening, 2017) and active transportation behaviors (Table 2).

Analysis

We summarized total lengths (km) of street reallocations, their integration within existing cycling infrastructure, and described implementation strategies in each city. We mapped intervention locations, and calculated the length of street reallocations within each CT. Where they coincided with the boundaries of CTs, that length was attributed to each neighboring boundary CT. We present findings as the distance of street reallocations, comparing across quartiles of each census measure. For household median income, the scale was flipped (quartile 4: lowest income; quartile 1 highest income).

Results

Street reallocation programs

By April 2020, Seattle committed to reallocate over 20 miles (32+ km) of Neighborhood Greenways to 'Stay Healthy Streets' that closed streets segments off from vehicle travel (Seattle Department of Transportation, 2020c). Neighborhood Greenways are residential corridors, along relatively flat roadways, with enhanced safety features and street calming measures (speed humps, roundabouts) (Seattle Department of Transportation, 2020a). Neighborhood Greenways are not common in

Table 2
Marginalized populations and active transportation measures, Seattle WA and Vancouver BC.

Number of census tracts	Seattle 135		Vancouver 117	
	Median	**25th –75th percentile**	**Median**	**25th –75th percentile**
Youth (<15 years old) (%)	15%	10%–18%	8%	5%–10%
Older adults (65+ years) (%)	12%	9%–15%	16%	13%–18%
People of color (%)	28%	20%–47%	50%	37%–72%
Black, African American (%)	5%	2%–14%	1%	0%–1%
Indigenous (%)	2%	1%–3%	2%	1%–2%
People with disabilities (%)	0.2%	0%–0.4%	–	
Newcomers to Canada (%)	–		6%	4%–7%
Household median income ($)	$46,100	$34,874–$54,306	$67,840	$59,959–$77,894
Households who use food stamps (%)	1%	1%–2%	–	
Low income cut off (LICO) (%)	–		16%	14%–20%
Rental housing (%)	20%	12%–32%	45%	38%–62%
Active transportation:				
Walk to work (%)	4%	2%–10%	6%	3%–16%
Cycle to work (%)	3%	1%–5%	5%	2%–9%
Public transit to work (%)	20%	16%–26%	29%	26%–33%

Data sources: Marginalized populations and active transportation measures from 2013 to 2017 5-year American Community Survey estimates and 2016 Statistic Canada, at the census tract level.

high income areas because higher income households tend to live at higher elevations within the city (Yifan et al., 2016). In addition, the city's website states that the placement of 'Stay Healthy Streets' was informed by the map-based race and social equity index, a composite measure that combines information on race, ethnicity, socioeconomic status, and poor health outcomes to aid in program planning and investment priorities (Canzoneri, 2020).

At the same time, Vancouver implemented their 'Slow Streets' program to aid in reducing virus transmission and promote active transportation. The city committed to closing off at least 40 km of roadways for 'Slow Streets'. The selection of these street reallocations were informed by existing traffic volume and access to green space and community amenities (City of Vancouver, 2020b). Unlike Seattle, there is no public information that indicates Vancouver used a map-based equity tool to inform the locations of their interventions. Similarly, while Vancouver did not explicitly use existing Local Street bikeways to inform the locations of street reallocations, half (50%, 19.1 km) of the 'Slow Streets' were implemented on Local Street bikeways.

WHO has access to street reallocations?

By design, street reallocations were installed on residential, low traffic streets, outside the city center (Fig. 1). These interventions are concentrated in areas south of downtown Seattle and South/East of downtown Vancouver; neighborhoods with their identities rooted in rich cultural diversity, home to recent immigrants, low income families, and folks who have been priced out and displaced from central city neighborhoods (Balk, 2019; City of Vancouver, 2018). Because of where populations live in both cities, street reallocations were likely to be installed in areas where marginalized populations live, regardless of whether cities prioritized equity in their decisions around street reallocations.

Despite historical and political differences between British Columbia and Washington State, street reallocations were more common in areas where people of color lived, particularly where more Black and Indigenous people lived in Seattle and Vancouver (Fig. 2). In both cities, these same areas are home to more lower income households. We found that areas in South Seattle–home to more people of color than other parts of the city (68% compared to 36% citywide (Balk, 2019))–and South Vancouver–also home to more people of color than other areas in the city (76% compared to 54% (City of Vancouver, 2018))–had more street reallocations.

In Seattle, there were more street reallocations in areas where more people lived with disabilities and households who used food stamps (Fig. 3). Areas where at least 10% of the population were children had more street reallocation compared to areas with fewer children. Older adults had less access to streets reallocations. We did not find that areas with more rental housing or areas where people were more likely to walk, cycle, or use public transit to get to work corresponded with more street reallocations.

Street reallocations in Vancouver corresponded to where more newcomers to Canada lived (e.g., immigrated in the past five years) (Fig. 4). Unlike Seattle, in Vancouver there was no clear pattern between street reallocations and amount of rental housing or age of residents. Street reallocations were more common in areas where more people reported cycling or taking public transit to work, although there was no pattern with walking to work.

Discussion

Initiatives like street reallocations can temporarily address the needs for more space to reduce virus transmission, but permanent roadway changes can have lasting impacts on mobility. Because both Seattle and Vancouver committed to making some permanent roadways changes as part of street reallocation programs, it is imperative to understand where these temporary interventions were implemented and identify which neighborhoods may benefit or be harmed by lasting changes. Going forward, it will be necessary to evaluate the impacts that roadway changes have on neighborhood mobility, economic stability, and population health over time. Street reallocations were instigated by the

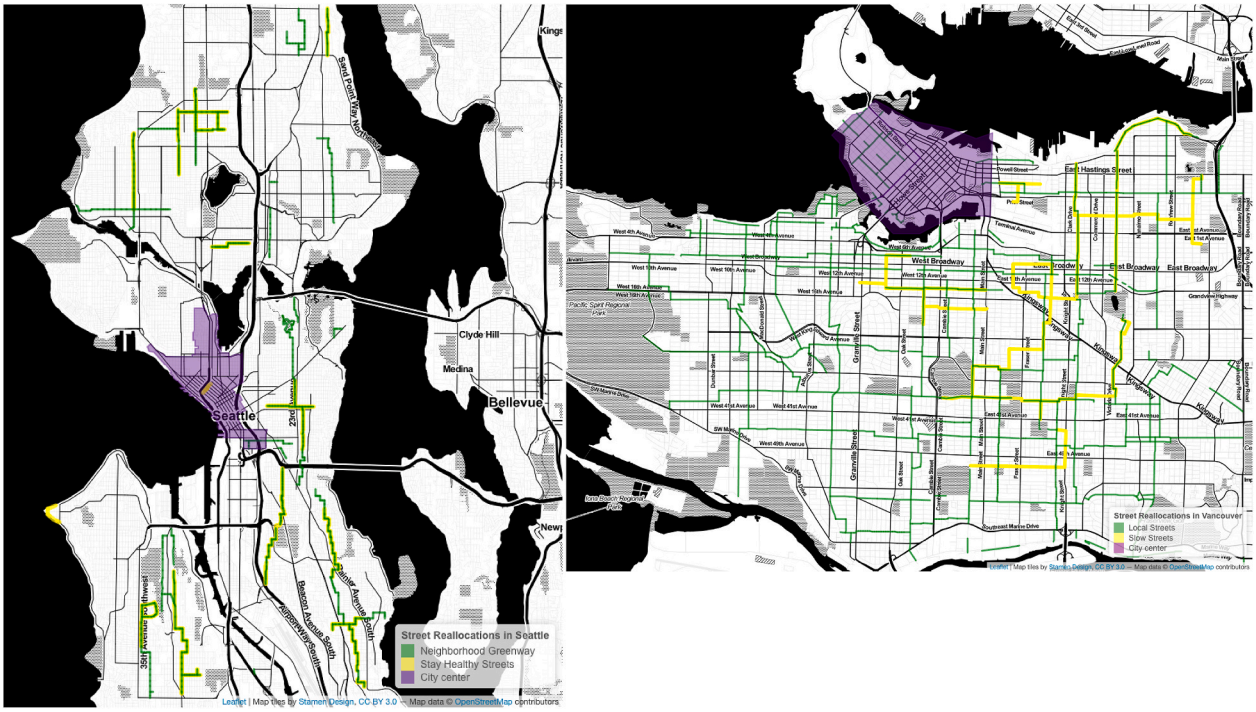

Fig. 1. Street reallocations: 'Stay Healthy Streets' in Seattle WA and 'Slow Streets' in Vancouver BC, 2020.
Data sources: 'Stay Health Streets' and 'Slow Streets' from geodatabase created by research team and 'Neighborhood Greenway' and 'Local Street Bikeways' from City of Seattle and City of Vancouver open data portals.

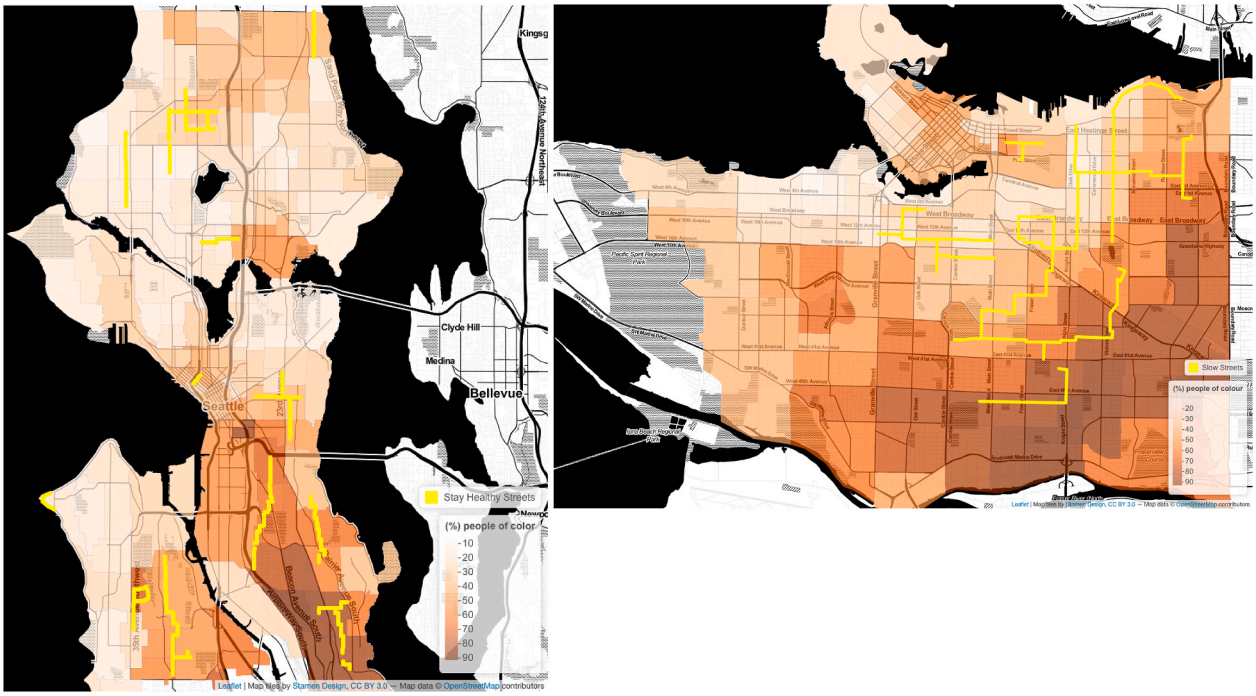

Fig. 2. Street reallocations and People of Color in Seattle WA, and Vancouver BC, 2020.
Data sources: Stay Health Streets' and 'Slow Streets' from geodatabase created by research team in August 2020 and People of Color from 2013 to 2017 5-year American Community Survey estimates and 2016 Statistics Canada at the census tract level. (For interpretation of the references to color in this figure legend, the reader is referred to the Web version of this article.)

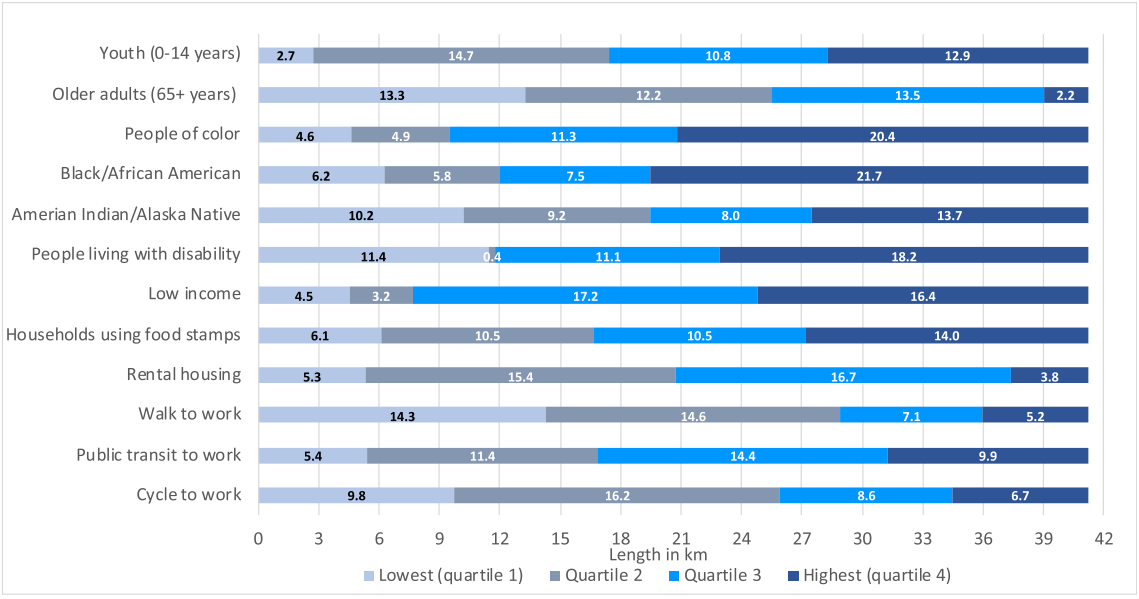

Fig. 3. Length of street reallocations by marginalized populations and active transportation quartiles, Seattle.
Data sources: Marginalized populations and active transportation behaviors from 2013 to
2017 5-year American Community Survey estimates at the census tract level. Street reallocation data from geodatabase created by research team.

COVID-19 pandemic but can be used to move cities towards mobility justice.

To further investigate mobility justice implications, we looked to complementary data that can shed light on community experiences with street reallocations. The city of Seattle's 'Stay Healthy Streets' survey, administered July to August 2020, sought to understand how people were using street reallocations and where to make permanent upgrades (Seattle Department of Transportation, 2020b). Preliminary results found that one in five respondents did not use a Stay Healthy Street; among those who did, more than half used them for walking or exercise and one third of respondents used them for transportation. Unfortunately, published results have yet to disaggregate by neighborhood or demographic groups; such data are essential to understanding how different populations are affected. Vancouver also launched a 'Slow Street' survey in September 2020 with a focus usage and challenges with the program. As of January 2021, survey results have not been

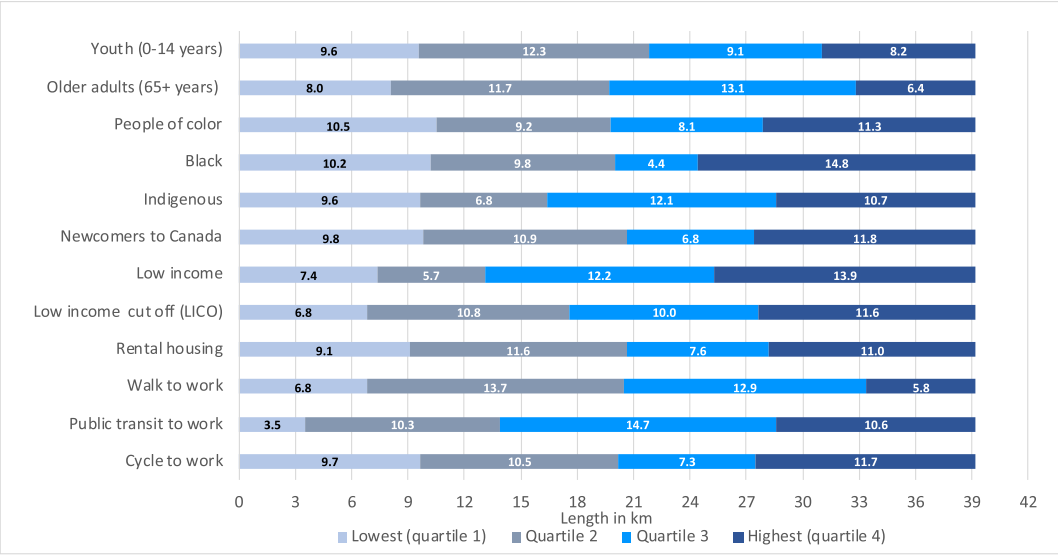

Fig. 4. Length of street reallocations by marginalized populations and active transportation quartiles, Vancouver.
Data sources: Marginalized populations and active transportation behaviors at the census tract level from Statistics Canada 2016 census. Street reallocation data from geodatabase created by research team.

published. Outside of the Pacific Northwest, the city of Oakland, California administered a survey for their 'Slow Streets' program and found that not all residents were benefiting from the new street reallocations: support for the program was highest among higher income and white residents, but essential workers and Deep East Oakland residents—a predominantly Black and Latinx area of Oakland– felt the program did not meet their needs and conflicted with public health messaging (City of Oakland, 2020). Results from Oakland's survey highlights the need for Seattle and Vancouver to assess how perceptions and use of the street reallocation interventions vary by population groups and neighbourhoods. In Vancouver, street reallocation is seen as contributing to broader initiatives: supporting the Climate Emergency Response, expanding All Ages and Abilities cycling routes (City of Vancouver, 2020b), and working towards reallocating 11% of road space for active transportation (City of Vancouver, 2020a). Vancouver has already added permanent traffic calming features to some reallocated streets, even without considering results of their 'Slow Street' survey, with plans to continue adding infrastructure through 2021 (City of Vancouver, 2020b).

According to public documents, street reallocations were not intended to only benefit cyclists, rather, they were intended to make it easier for people to exercise, spend time outdoors, and access essential businesses and services (Seattle Department of Transportation, 2020c; Shape Your City, 2020). The majority of respondents to Seattle's 'Stay Healthy Streets' survey used the streets for walking (65%) and far fewer reported cycling (43%) (Seattle Department of Transportation, 2020c). However, the implementation patterns suggest that existing cycling infrastructure informed the placement of street reallocations. In Seattle this was explicit: reallocations were along 45 of its 66 km of Neighborhood Greenways (Fig. 1), cycling routes in residential areas informed by previous citizen engagement. In Vancouver, city documents did not make an explicit statement on co-locating 'Slow Streets' along existing routes. Yet 19 km of Slow Streets were along Local Street Bikeways. These observations suggest both cities adopted pre-existing cycling infrastructure to inform locations, rather than a people-centered approach, as part of participatory decision-making, that would have considered the mobility needs for different populations and neighborhoods. People-centric urban design, centers the voices of community members as 'data' integral to the design and success of interventions (de la Peña et al., 2017; Hester, 2006; Jacobs, 1961), and is considered an essential practice for resilient and healthy cities (Gehl, 2013; Hester, 2006). The pace in which street reallocations happened in the COVID context presented challenges for engaging communities; however, some cities did leverage and implement established active transportation plans that had undergone thorough community engagement (Fischer & Winters, 2021). One example is Halifax, Nova Scotia, where street reallocations were done along routes in their approved Integrated Mobility Plan, which had been designed in community consultation prior to COVID-19 (Fischer & Winters, 2021).

Our analytical approach provides a framework to identify socio-spatial differences in access to street reallocations, who has access to them, and how reallocations relate to existing active transportation infrastructure. Specifically, our approach examined socio-spatial differences for populations that have experienced mobility injustices in the City of Seattle and Vancouver, B.C. These analytical methods can be adapted for other cities examining how inequities in infrastructure contribute to mobility injustices. This work is important to do in other cities, as investment patterns depend on local historical, political, and social context, land use practices, and advocacy.

This analysis draws on public data, which carries caveats. First, we did not assess multiple population characteristics simultaneously. For instance, areas where more children live may not be the same areas with the most rental housing. Second, our study considers area-level population characteristics and access to street reallocation interventions. We measured access by calculating the length of interventions within each census tract. By using census data to describe population characteristics, we are unable to determine whether people living near street reallocations are actually using them. Not being able to measure who uses or benefits from these interventions has equity implications. It is not safe for Black Americans to exercise in public spaces (Baquero et al., 2020) or navigate spaces in predominately white areas (Anderson, 2018) because of interpersonal and structural racism embedded in the ways cities are governed and designed and how policies and programs are implemented and enforced. For example, Black and Indigenous people are more likely to be stopped by the police in public spaces, for example, the inequitable enforcement of "jaywalking" policies (Zimmerman et al., no date; Balk, 2017; Sanders et al., 2017; Davis, 2019; Agyeman, 2020).

Street reallocations for mobility justice: where do we go from here?

Cities are rapidly adapting and implementing programs to mitigate effects of COVID-19 while recognizing racial injustices and oppressive

systems embedded within their own policies and programs. What was missing in these case studies is an understanding of how communities were engaged: in decision making processes, designing these programs, using these programs, and how cities will use data and community input to make changes. This leaves little in terms of early insights on how these programs have impacted mobility for different populations. As Destiny Thomas, city planner and community organizer, put it: "Without that genuine engagement, I feared that pandemic-induced pedestrian street redesigns would deepen inequity and mistrust in communities that have been disenfranchised and underserved for generations" (Thomas, 2020). Going forward it will be necessary to monitor how cities involve and develop relationships with communities to co-create and adapt roadway changes, in pursuit of mobility justice. These programs are opportunities for cities to redress inequities in mobility and access to public spaces, and welcome communities to redesign these temporary spaces to be corridors for their own mobility. Instead of installing new barricades or painting more white lanes, it is time to take care of, improve, and re-imagine spaces with the people who use them every day.

Author statement

Caislin Firth: conceptualization, data curation, methodology, analysis, writing -original draft. **Barbara Baquero**: conceptualization, writing -review & editing. **Rachel Berney**: conceptualization, writing -review & editing. **Katherine Hoerster**: conceptualization, writing -review & editing. **Steve Mooney**: data curation, writing -review & editing. **Meghan Winters**: funding acquisition, analysis, writing-review & editing.

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