

Incorporating equity into transportation plans: The case of pedestrian master plans

by

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A REPORT

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Abstract

Equity is a long-recognized concern within the transportation sector, but there are no requirements for municipalities to address equity and no clear guidance for how to do so. This paper reviews fifteen pedestrian master plans to assess the equity considerations and to derive a tripartite framework for systematically incorporating equity into transportation plans: The Three A's of Equity. This framework consists of Acknowledgement, the recognition of equity as a value; Accountability, the establishment of a commitment to advance equity; and Application, the steps to move toward equity. The research evaluates the existing plans using the proposed framework and finds that cities inconsistently incorporate equity into pedestrian plans, seldom include Accountability, and rarely include race in their equity considerations. The application of the Three A's of Equity is not restricted to PMPs and is recommended for all transportation plan types to thoroughly incorporate equity and influence more equitable plan outcomes.

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Chapter 1 - Introduction

Transportation connects people to their communities and makes it possible for people to perform essential tasks, like grocery shopping, getting to work, and accessing healthcare (1–4). Because of transportation’s significance to people’s lives, ability to connect people to opportunity, and its history of discriminatory development (1, 5), transportation inherently has equity impacts and is therefore considered a civil rights issue (1, 3, 6). Within this research, transportation equity is defined as providing equal transportation access across race and income levels by considering the unique circumstances impacting community members.

Over the last several decades, policymakers and transportation professionals have identified transportation equity as a key value. Much federal legislation has been passed to address these inequities, yet there is little guidance for municipal transportation agencies to address them through their work and therefore they are often left out of their efforts. Additionally, there is little research on active transportation equity, and, at the time of this paper, there is limited research that looks at equity within pedestrian master plans specifically.

This research reviewed fifteen recent pedestrian master plans (PMPs) from the largest U.S. municipalities to assess the existing consideration of equity in PMPs and derive a structured framework for incorporating equity into all transportation plans. This research builds on the transport equity literature to propose a tripartite framework for incorporating equity into transportation plans. This framework, the Three A’s of Transportation Equity, recommends three equity elements:

- Acknowledgement, the recognition of equity as a value of the plan;
 - Accountability, the establishment of a commitment to advance equity through that plan;
- and

- Application, the planned actions to increase equity.

This research finds that PMPs vary in how consistently and thoroughly they incorporate equity. 73% of plans Acknowledge equity, 80% Apply equity, but 67% do both, and only 33% include Accountability components. Fortunately, newer plans appear to be increasingly incorporating equity, and the proposed framework can continue this trend by demonstrating how cities can incorporate equity into transportation plans.

Chapter 2 - Literature Review

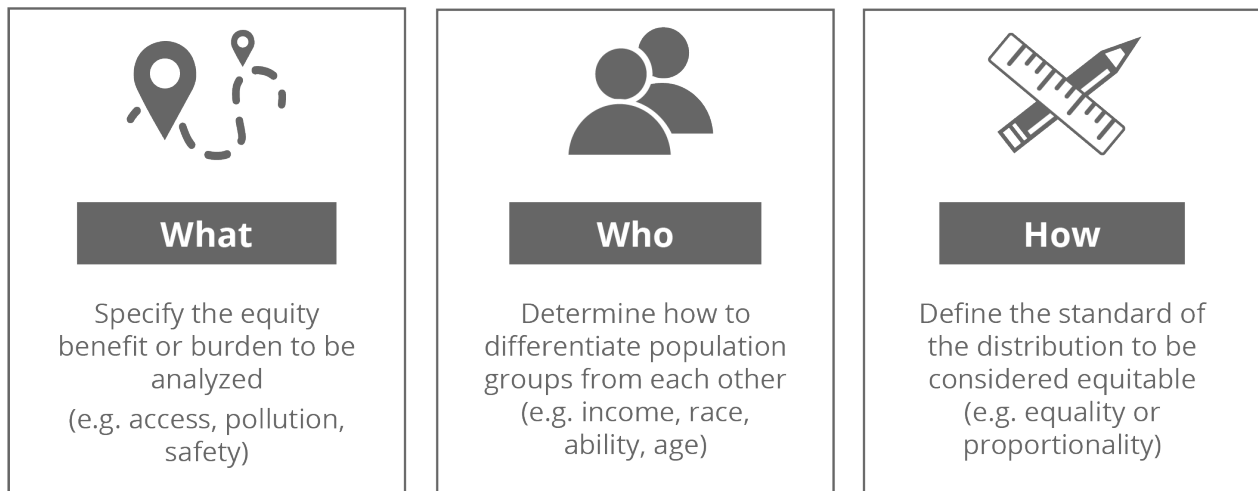
Transportation Equity: Concept and Application

Transportation equity is a robust field of research that recognizes transportation as a basic right that is essential for many human needs, such as grocery shopping and getting to work (1–4). But, underserved populations are faced with socioeconomic, cultural, discriminatory, and physical barriers that constrain their access to safe, convenient, and affordable transport options (2, 7). Transportation equity seeks to provide and improve conditions for population groups who disproportionately experience transportation disbenefits, such as those who are unable to drive or have disabilities (8) and distribute transportation resources to ensure that all community members have transportation choices that are safe, convenient, accessible, and affordable (4, 9–14). This research applies a definition of transportation equity derived from relevant literature (1, 4, 10, 11): providing a fair allocation of transportation resources among race and income groups by considering the unique circumstances impacting community members, and preventing or correcting the inequitable disparities facing them.

Literature on transportation equity indicate that there are different ways to conceptualize and measure equity. Firstly, inequities can be categorized as *procedural*, whether the process in which transportation decisions are made in a fair and inclusive manner; *geographic*, whether the distributive impacts of transportation decisions result in unequal access, services, benefits, or burdens; or *social*, whether particular social groups disproportionately experience transportation benefits or burdens (1). Secondly, transportation equity can be understood as either *horizontal equity* or as *vertical equity* (13, 15, 16). Horizontal equity, or egalitarianism, assumes that individuals are equal in ability and needs, and therefore they shall receive equal proportions of resources and pay equal costs for those resources (13, 15). Alternatively, vertical equity is a

social justice perspective that examines the distribution of impacts between individuals and groups, and compensates them accordingly in an attempt to reduce gaps between the advantaged and disadvantaged groups (13, 15, 16). Vertical equity can be addressed through the concept of *distributive justice*, which comprises three factors, as illustrated in Figure 2.1 (4, 8).

Figure 2.1 Three factors of measuring equity through a *distributive justice* lens



Derived from Lucas et al., 2019 and Martens et al., 2019

A Lack of Equity Guidance

Much federal legislation has been passed over the last decades in an attempt to remedy transportation injustices, including those addressed through environmental justice efforts (1, 17–19). These efforts include Title VI of the Civil Rights Act of 1964, the Transportation Equity Act for the 21st Century, and President Clinton’s executive order 12898 (1, 10, 18). Despite these efforts and decades of transportation equity literature, there is little guidance for transportation agencies to address equity. Environmental justice legislation recommends avoiding inequitable outcomes when possible (12, 18). Similarly, USDOT’s transportation equity guidance recommends including “all segments of the population” in the transportation planning process (7). The *American Institute of Certified Planners’* code of ethics encourages planners to seek

social justice by recognizing a responsibility to underserved groups (20). These proclamations do not recommend *how* to achieve these ambitions. Despite equity becoming more important to planners, particularly in the transportation sector, there has been little enforcement and an insufficient establishment of standards, goals, or performance measures for realizing equity (21–23).

Achieving transportation equity requires a radically different focus than what exists today (2, 19, 21, 24). Although some might argue for an egalitarian approach to transportation, such an approach is insufficient to achieve fairness because of existing inequities among demographic groups and across geographies (23–25). Transportation planning that has not set explicit equity goals will not lead to progress in achieving equity (22), and “socially-neutral” approaches to transportation reinforce and may even exacerbate disparities (17, 23). Though it has been a nationwide concern for over half a century, transportation inequity is a growing area of concern that has yet to be fully and meaningfully addressed.

Barriers to Incorporating Equity

Though the lack of federal-level equity guidance can result in absent or insufficient considerations for equity in transportation planning, there exist additional barriers to incorporating equity in practice and within transportation planning’s broader political context. Transportation plans are commonly evaluated through their monetary impacts (26) and traditionally prioritize automobile travel time and operating costs without accounting for social impacts (13). Further, equity is commonly considered intangible and difficult to measure, common methods to measure transportation concepts are inadequate for measuring equity, especially within active transportation (6, 16, 17, 26). Though there is a range of literature about

how to measure equity, provided in Table 2.1, there are no established methods of assessment nor standards of fairness. Another barrier is that the extent to which equity is included in transportation planning is related to the agency's capacity and resources (9, 27), as well as zoning and development decisions, funding, and support from local leaders (28).

Policymakers and practitioners do not have clear definitions of "equity," and therefore it is flexibly interpreted and applied within transportation policy and planning (27, 29). Even when policymakers are expected to consider equity, it does not always significantly factor into policy formation (29). Even objective analyses have been found to be selectively manipulated, ignored, or blocked to reflect the political goals of elected officials and therefore repress informed decision-making on transport equity (30). In addition, diverse representation in transport decision-making is lacking (18), and many engagement processes are "empty rituals" that maintain the status quo (31). Groups who experience transportation inequities are often given restrictive labels, such as "the marginalized," which reinforces their marginalization, reduces their identity to their disadvantages, and denies their agency to participate in planning decision-making (32). To ultimately eliminate transportation inequities, these barriers must be overcome, which will require a shift in all aspects of transportation planning.

Table 2.1 Literature about measuring transportation equity

Authors	Proposed Approach
<i>A conceptual framework to formulate transportation network design problem considering social equity criteria</i> Behbahani et al., 2018 (13)	Transportation network modeling
<i>A spatially-explicit method for analyzing the equity of transit commuters' accessibility</i> Ben-Elia and Benenson, 2019 (16)	The Traveler's Accessibility Loss and the Absolute Loss of Accessibility
<i>Looking beyond the mean for equity analysis: Examining distributional impacts of transportation improvements</i> Bills and Walker, 2017 (5)	Activity-based travel demand models, equity indicators
<i>Facing equity in transportation Network Design Problem: A flexible constraints based model</i> Caggiani et al., 2017 (15)	Equity-based network design
<i>Planning for transportation equity in small regions: Towards meaningful performance measurement</i> Karner, 2016 (9)	Quantitative travel model-based performance measures
<i>Approaches for inequity-averse sorting</i> Özlem Karsu, 2016 (33)	Multi-criteria sorting
<i>Integrating social equity into urban transportation planning: A critical evaluation of equity objectives and measures in transportation plans in North America</i> Managh et al., 2015 (17)	Multi-criteria decision making (MCDM)
<i>Substance precedes methodology: on cost-benefit analysis and equity</i> Martens, 2011 (34)	Cost-benefit analysis (CBA)
<i>Exploring transportation equity: Development and application of a transportation justice framework</i> Oswald Beiler and Mohammed, 2016 (35)	Transportation Justice Threshold Index Framework (TJTIF)

Active Transportation Equity

Automobile-oriented development has significant equity impacts, including high household travel costs and greater barriers to employment (18). Low-income communities and people of color heavily rely on active transportation (1, 6, 10), though their neighborhoods receive fewer active transportation investments (3) and experience greater bicycle and pedestrian fatalities (36, 37). Although investment in active transportation is believed to reduce inequities (3, 5, 10), equity is frequently overlooked in active transportation planning practice (3).

There is limited research on equity specifically within pedestrian plans, though there is some research on equity within active transportation plans (3, 38). McLeod (38) sought to document how agencies address equity in active transportation plans and found that plans frequently do not define equity and that performance measures were mostly related to infrastructure. Lee et al. (3) assessed active transportation plans, critiqued the extent of their equity considerations, and then made recommendations to address equity concerns more broadly in active transportation planning. They conclude that efforts to incorporate equity into active transportation plans are inconsistent, with some plans directly addressing equity and others leaving it out entirely (3). This current research builds upon these studies by examining and providing recommendations for incorporating equity throughout a pedestrian master plan.

Chapter 3 - Methodology

This research applied an inductive approach to analyze municipal pedestrian master plans (PMP) for their incorporation of equity. This methodology follows the inductive approaches from earlier qualitative transportation studies in which conclusions are drawn based on observations of planning documents (3, 38–43). This method of analysis was chosen for this research for two primary reasons. The first is that the research seeks to observe and understand how cities incorporate equity into their pedestrian master plans. Secondly, this study's responsive approach to assessing the plans enabled the range of equity approaches employed by the sample cities to be captured, which would not have been fully possible with a quantitative and defined approach that would set limitations on the equity considerations the researcher looked for.

This research first began by defining and selecting the research sample. Then, in light of the reviewed transportation equity literature, the sample plans were examined for their equity considerations via a manual highlighting approach. These considerations were recorded in a notebook to document the findings in one location. To identify equity considerations, equity was defined as providing a fair allocation of transportation resources among race and income groups by considering the unique circumstances impacting community members and preventing or correcting the inequitable disparities facing them; This definition is derived from Lucas et al., Sandt et al., and Sanchez et al. (4, 10, 11). Though PMPs commonly consider differences among mode types, age groups, and ability, this research is specifically concerned with low-income populations and communities of color.

In addition to highlighting each instance of the word “equity” that occurred, similar language was highlighted to identify additional equity considerations. These included, but were not limited to, the terms listed in Table 3.1.

Table 3.1 Terms used to identify PMP's equity considerations

Terms	What it identifies
Equity, Social justice, Environmental justice, Equality	Equity or similarly motivated statement
Disparities, Inequities, Injustices, Inequality	Unfair benefit or burden
Vulnerable populations, Disadvantaged populations, Underrepresented populations, Communities of concern, Environmental justice populations	Population group under consideration for equity
Income, Low-income, Poverty, Impoverished	Population based on income
Carless households, Unable to afford a car, Public housing, Affordable housing	Proxies for income
Race, Black, Non-white, Latino, Ethnicity, other race or ethnicity identifiers	Population based on race or ethnicity
Communities of color, People of color, Black and Brown neighborhoods	Area of interest based on race or ethnicity
Limited English Proficiency, Immigrant populations, Foreign-born populations	Can be proxies for race or ethnicity
Everyone, For all, Every person	Equal treatment, Horizontal Equity

Note: This list is not exhaustive but covers a broad range of terminology that could have potentially identified an equity consideration.

As PMPs were examined, themes emerged among the plans' equity considerations. These emerging themes were:

- Variation in the use of the word “equity”
- Unclear terminology
- Varied language
- Outreach strategies
- Genera and performance measures
- Tools and measures
- Prioritization and implementation

As the observation process continued, these themes were categorized to make sense of the equity considerations in a way that reflected the typical features and organization of PMPs.

These categories – Recognition, Development, and Prioritization – were later redefined and used to develop the proposed equity framework: The Three A’s of Transportation Equity.

After the proposed framework was developed, the sample PMPs were reviewed once again to assess in what ways they meet the framework’s recommendations. With guidance from transportation equity literature, this assessment comments on the challenges and successes of the sample plans in incorporating equity and considers how plans’ considerations of equity have changed over the past decade.

Sample Selection

The research sample included the 15 most populous US cities whose citywide PMPs were published after 2010 (44–58). The sample selection cutoff year was 2010 to observe cities’ contemporary equity strategies and because both equity and pedestrian planning have emerged as increasingly important issues in transportation since then.

A webpage featuring a list of the most populous U.S. cities (59), in order of greatest population to least, was used to guide the sample selection. Each city’s website was accessed to obtain its most recent pedestrian master plan, starting with the most populous city (New York City) and then moving down the list until a total of 15 plans published after 2010 was obtained. If the PMP was not easily accessible from the city website, then a Google search containing the city name and “pedestrian master plan” was used to locate the document. In some cases (46, 50, 54, 56), other municipal transportation plans were included if they contained a section dedicated to pedestrian planning. Municipal plans were the focus of this research because many city transportation agencies are incorporating equity on their own without federal guidance, and these cities have the capacity (and obligation) make more equitable transportation planning decisions.

Neighborhood, county, regional, and state plans were not included in this research because the focus is on municipal plans; MPOs and states have explicit requirements from the federal government for addressing environmental justice, but given the small sample size, it would be inappropriate to compare equity considerations between agencies that have been long required to include equity and cities that forge their own equity strategies. The largest U.S. cities were selected because they may have a greater capacity to devote resources to exploring equity and because their work can be translated to guidance for smaller agencies.

Table 3.2 below lists the selected plans and Figure 3.1 displays the sample cities in a map of the United States. Unless otherwise stated, plans are listed in order of publication date.

Table 3.2 Research sample

City	Date	Plan Name	Source	2010 Population
New York, NY	2010	<i>The New York City Pedestrian Safety Study & Action Plan</i>	(44)	8,175,133
Chicago, IL	2012	<i>Chicago Pedestrian Plan</i>	(45)	2,695,598
Philadelphia, PA	2012	<i>Philadelphia Pedestrian and Bicycle Plan</i>	(46)	1,526,006
Raleigh, NC	2012	<i>Raleigh Pedestrian Plan</i>	(47)	403,892
San Francisco, CA	2013	<i>San Francisco Pedestrian Strategy</i>	(48)	805,235
Fort Worth, TX	2014	<i>Walk Fort Worth Pedestrian Plan</i>	(49)	741,206
Washington D.C.	2014	<i>Move DC LRTP: Pedestrian Element</i>	(50, 60)	601,723
San Diego, CA	2015	<i>City of San Diego Pedestrian Master Plan Vol 1</i>	(51)	1,307,402
Austin, TX	2016	<i>Sidewalk Master Plan / ADA Transition Plan Update</i>	(52)	790,390
Charlotte, NC	2017	<i>Charlotte Walks Pedestrian Plan</i>	(53)	731,424
Jacksonville, FL	2017	<i>Jacksonville Bicycle and Pedestrian Plan</i>	(54)	821,784
Seattle, WA	2017	<i>City of Seattle Pedestrian Master Plan</i>	(55)	608,660
Oklahoma City, OK	2018	<i>bikewalkokc: moving toward a healthy future</i>	(56)	579,999
Milwaukee, WI	2019	<i>Milwaukee Pedestrian Plan</i>	(57)	594,833
Portland, OR	2019	<i>PedPDX: Portland's Citywide Pedestrian Plan</i>	(58)	583,776

*All plans are pedestrian master plans or pedestrian-oriented plans, with exception of the following: Philadelphia, Jacksonville, and Oklahoma City (46, 54, 56) are active transportation plans and Washington D.C. (50) is part of the city's larger long-range transportation plan (60).

Note: City population comes from 2010 Census data (61) and represents the city, not its metropolitan region.

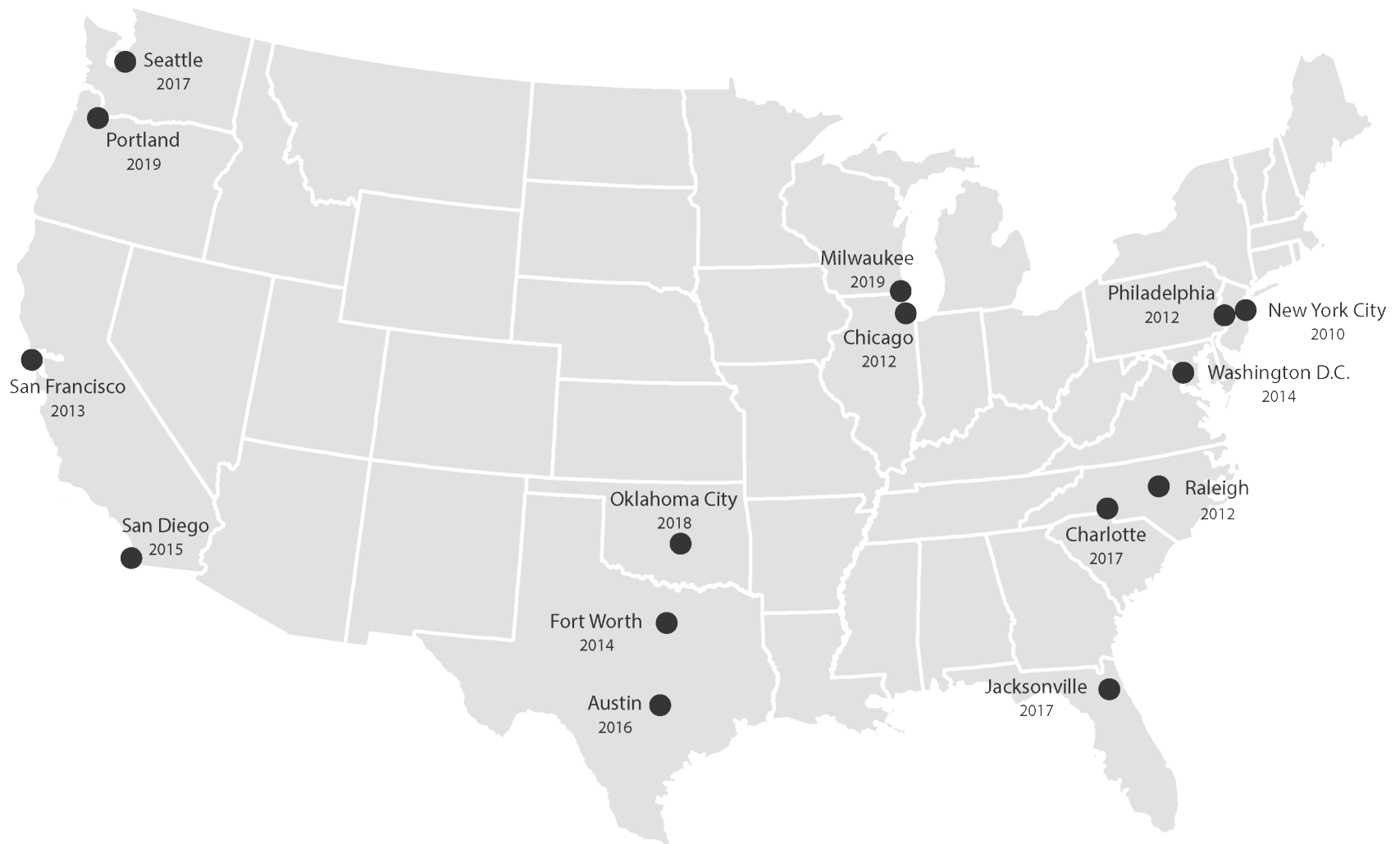


Figure 3.1 Map of research sample

Chapter 4 - Analysis and Framework

A review of the sample finds cities struggle to sufficiently incorporate equity into their PMPs. Considering this issue, this paper proposes a framework to guide cities in incorporating equity into transportation plans. The Three A's were derived from the manual scan of the sample PMPs and supported by the reviewed transportation equity literature. The Three A's are composed of three sequential elements: Acknowledgement, Accountability, and Application.

Acknowledgement recognizes that equity is important to the plan and that there are transportation inequities to be eliminated. Accountability establishes equity measures to be achieved by the transportation plan. Application identifies the steps, policies, and projects that will be implemented to help achieve equity. Each element is comprised of components, which are the emergent equity considerations identified in the manual scan process. Each element is intended to build the foundation for the next, as illustrated in Figure 4.1 below. The following sections illustrate this framework with excerpts from the sample.

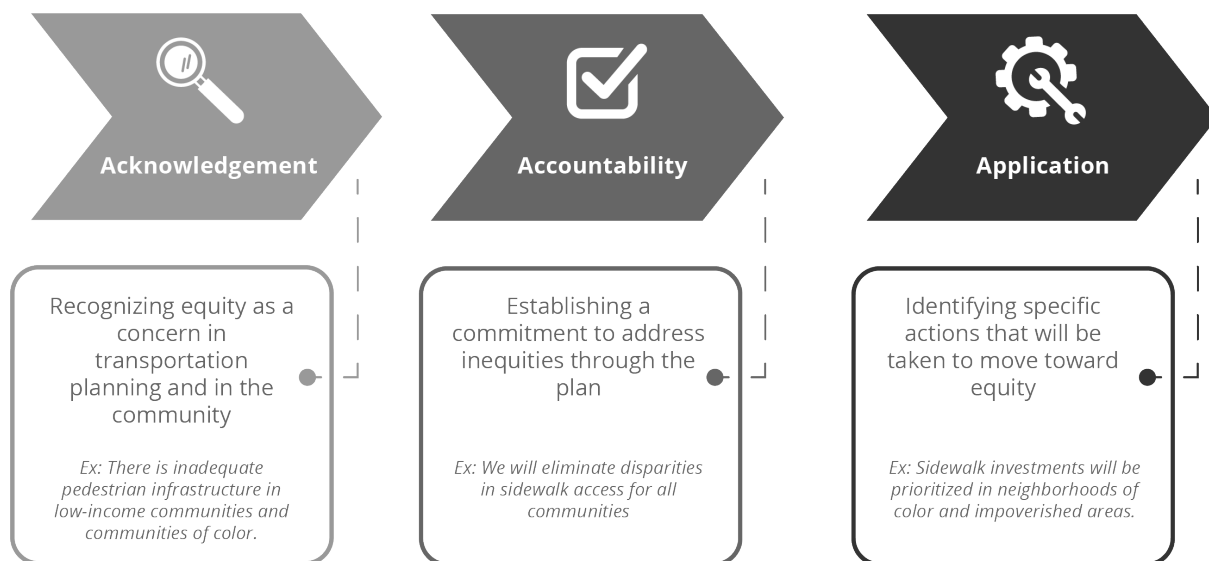


Figure 4.1 The Three A's of Transportation Equity

Acknowledgement Element

Acknowledgement recognizes equity as a value to be addressed in the transportation plan, observes how costs and benefits of the existing transportation system are distributed differentially among population groups, and sets the tone for incorporating equity into the PMP. Identifying any existing inequities sets the groundwork for planners to realize equity through the plan's other components.

Acknowledgement involves three components: mentioning equity, defining equity within context of the plan, and identifying what disparities exist within the transportation system. Table 2 at the end of this section displays these factors and examples of each from the sample.

Equity Mention

Mentioning the term “equity” is a simple way to include equity in a plan. Doing so signals to the reader that equity will be one of many values addressed by the plan. Equity can be mentioned by stating how it is relevant to the PMP, although a common issue is that some plans allude to equity by using similar language while other plans explicitly use the term equity without having addressed it in the plan.

Ten of the fifteen PMPs from the sample mentioned equity (44, 45, 48–50, 53–56, 58). These PMPs commonly did so by simply expressing that equity is important. A typical example is to state “...a walkable city matters for...equity” (48). This equity mention and others like it explicitly use the term “equity” and describe how it is relevant to the PMP, thus communicating that inequities will be addressed.

Alternatively, plans may use relevant language without explicitly using the term “equity.” Terms like “social justice” or “vulnerable populations” can reasonably be used to discuss

inequities in the transportation system but must be clearly defined (38). A common example is that a concern for the safety of the “most vulnerable” would be raised, but there was no clarification on *who* is vulnerable (46, 53, 57). Within a PMP “vulnerable” typically refers to pedestrians rather than underserved groups, but the latter is true within equity contexts and EJ literature. Making this distinction clarifies who they are planning for, which is important because these groups have different needs within the transportation system. Similarly, the geographic units used within the plan, such as “high priority areas,” should be defined to determine their relevance to equity, especially if they are being used to measure equity.

Other plans used “equality” language (e.g. everyone, for all) in place of “equity” language. This was commonly used to say that streets should be safe for everyone (44). Such statements ignore existing disparities that need to be addressed by the plans. “Equality” language should not be used *in place of* “equity” language in order to ensure that existing disparities are addressed by the plan.

Plans may still attempt to address equity even if the term is never mentioned in the plan. Three plans included factors related to equity (e.g. income, race, ability) in their goals, performance measures, and prioritization without having expressly used the word “equity” within the plan (51, 52). Ideally, however, equity considerations would be explicit and consistent throughout the entirety of the plan.

Simple equity mentions, like stating that it is important, are commonly found among plans but do not sufficiently communicate what should be addressed by the plan in terms of equity. Some PMPs use the word “equity” but do not incorporate it throughout the rest of their plan (44, 46, 53), and as a result never truly address equity. To set the foundation for a plan’s

equity considerations, plans should state what equity means and why it is relevant to the PMP specifically.

Equity Definition

Defining equity clarifies how the city conceptualizes equity. A strong equity definition states what benefit or burden is being distributed, who is impacted by the distribution, and how the distribution will be measured to determine whether it is equitable (4). Cities can define equity in a way that reflects its unique characteristics so that equity considerations are relevant to what the community can achieve (38). Strong equity definitions make it clear whether other statements within the plan are in reference to equity issues. They can also eliminate flexible interpretations from policymakers and practitioners that would otherwise inhibit equitable progress (27, 29). Equity definitions directly inform other parts of the plan, such as plan goals (38), help determine the relevance of performance measures to equity, and determine the appropriate way to measure and evaluate progress towards an equitable transportation system (4).

Despite the importance of such a definition, within the sample, only Portland defined equity: “In Portland, inadequate pedestrian infrastructure and traffic safety concerns disproportionately impact low-income communities and people of color” (58, p. 11). High-quality definitions like this clarifies how equity is conceptualized within the plan (e.g. horizontal equity or vertical equity) and also sets the tone and creates expectations for incorporating equity in the PMP. No other plan provided a high-quality definition of equity or related terms. Equity definitions like Portland’s remove any chance for confusion or certainty when the concept is addressed in the plan.

Disparities

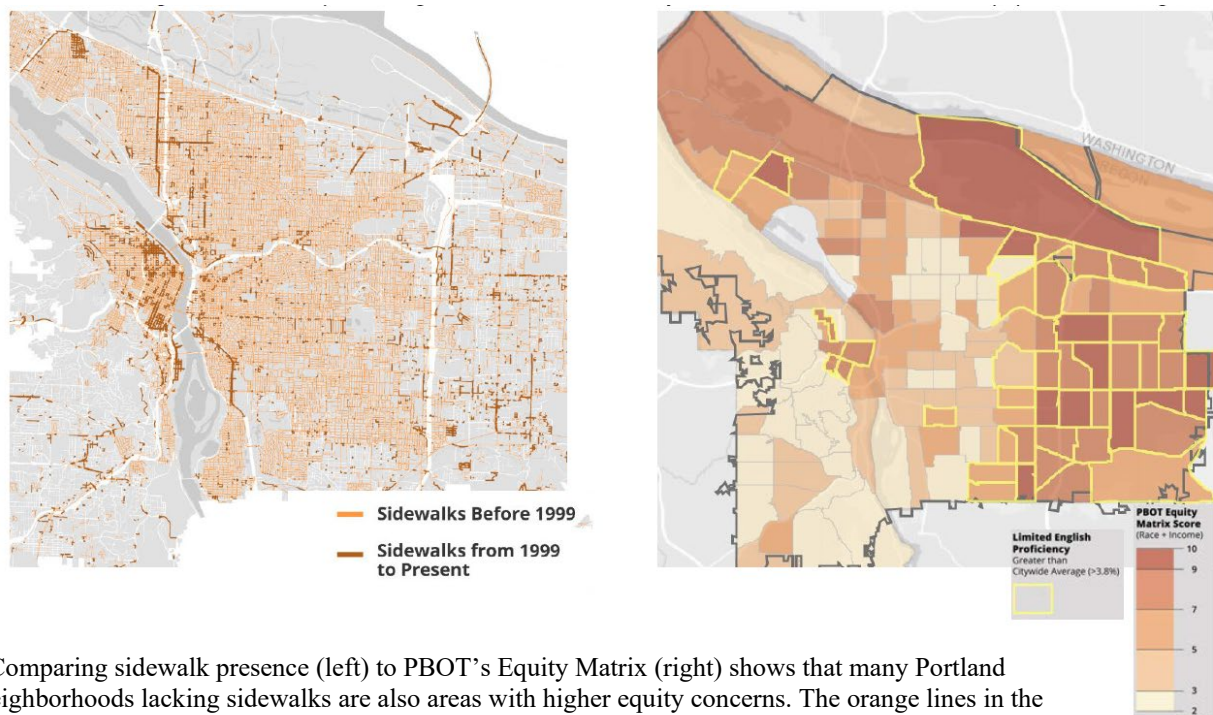
Identifying the disparities in the city's transportation system places the concept of equity into a local context and is the first step of any equity analysis (62). This can determine which issues will be addressed by the PMP, influences how equity will be measured, establishes a baseline to improve from, and informs the plan's implementation strategies. Transportation disparities can be identified by establishing impacted groups, conducting spatial analyses, and calculating and comparing transportation impacts among groups. Nine PMPs identified disparities in their PMPs (44, 46, 47, 50, 53–55, 57, 58).

Seven PMPs identified demographic groups who are impacted by transportation inequities (44, 46, 47, 50, 53–55, 57, 58). This tactic specifies who is impacted by a disparity and describes what that disparity is. For example, Jacksonville acknowledged that walkability is especially important for low-income households who may be unable to afford a car (54); this example specifies walkability as the benefit being distributed and low-income households as the social group impacted by its disparate distribution. Transport poverty could be measured among other characteristics as well, such as race or foreign-born populations (44). Ideally, the identified disparities would be linked to equity as a value, such as by saying that a disparity will be mitigated to ensure equal access, although not all PMPs present them this way (46, 57). This method of identifying disparities is broad and imprecise, and therefore a more specific analysis is recommended.

Spatial analysis is a more specific strategy of identifying disparities. This involves mapping the city's demographic populations and existing pedestrian infrastructure. This method may also include other equity indicators, such as pedestrian crash rates and transit stop access (3, 10). Portland compared two maps side-by-side, one of the city's sidewalk presence and the other

of the city's low-income and non-white neighborhoods (58, p. 24). Washington D.C. overlaid its low-income Census Tracts with the plan's proposed sidewalk locations, as well as identified pedestrian destinations (50, p. 19). Both PMPs' maps, shown in Figure 4.2 and Figure 4.3 , illustrated socioeconomic disparities that exist spatially in their cities, which later informed their implementation strategies (50, 58). One shortcoming of this strategy is that it does not necessarily describe *how* population groups are affected by proposed projects (9).

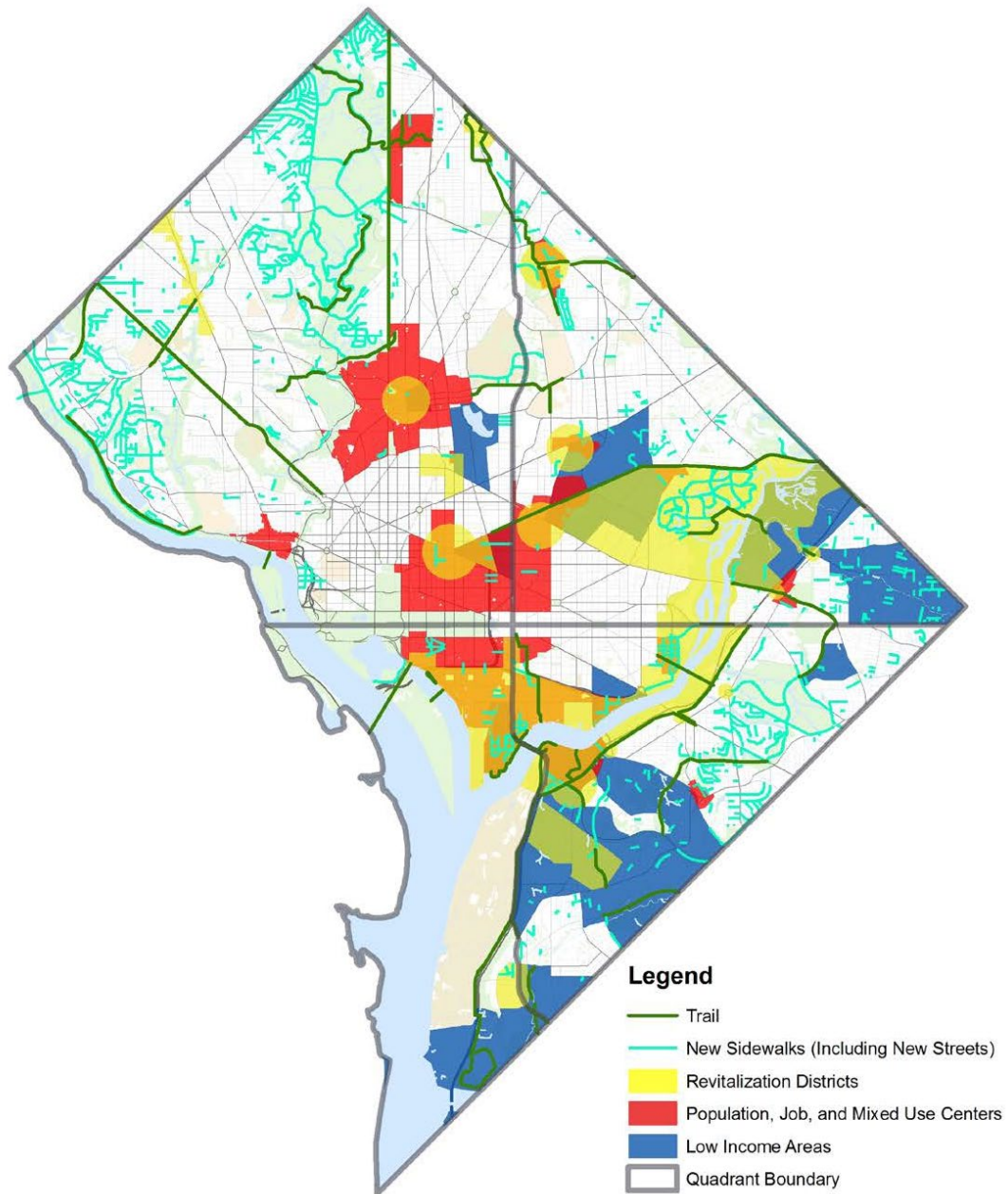
Figure 4.2 Maps comparing sidewalk presence to equity locations in Portland



“Comparing sidewalk presence (left) to PBOT’s Equity Matrix (right) shows that many Portland neighborhoods lacking sidewalks are also areas with higher equity concerns. The orange lines in the map at the left show where sidewalks exist in Portland. The darker orange areas in the map on the right indicate areas of the City where low-income and non-white populations are highest.”

Source: (57, p. 24)

Figure 4.3 Washington D.C.'s pedestrian accessibility map



Source: (50)

Another method is to assess the differences in outreach responses by population groups. Doing so can inform planners how different population groups perceive and experience being a pedestrian in the city. After conducting their “Walking While Black” focus groups, Portland compared the focus group participants’ survey responses to the responses of the entire city (58). As Figure 4.4 shows, Portland’s black pedestrians differed from the rest of the city in what their concerns with walking in the city, and they reported having a greater concern for all walking issues than citywide respondents did (58). Disaggregating the survey responses by race revealed that different strategies than what may typically be considered are necessary to make walking easier for all the city’s pedestrians.

Figure 4.4 Comparison of survey responses between Portland's Black pedestrians and citywide respondents



Source: (57, p. 37)

Calculating and comparing the transportation disparities between population groups is the last suggested strategy of identifying disparities. New York City used this method to calculate

pedestrian crash rates across demographic factors, like race and income (44). This identified what travel behaviors and challenges exist between groups, such as greater pedestrian crashes in neighborhoods with high black and Hispanic populations (44). Figure 4.5 shows table of the city's pedestrian fatality rates by race and age and Figure 4.6 compares fatality rates among educational attainment status to their population makeup. New York City's PMP did not present data in the same manner for each population comparison – some data was displayed in tables and other data was displayed in charts. This inconsistency could potentially obscure the city's disparities, though some statistics may be better suited for different methods of presentation, and therefore mindful selection of data visualization methods is recommended. Calculating and comparing disparities attempts to make equity more tangible and measurable (17), while also establishing the current conditions to improve upon.

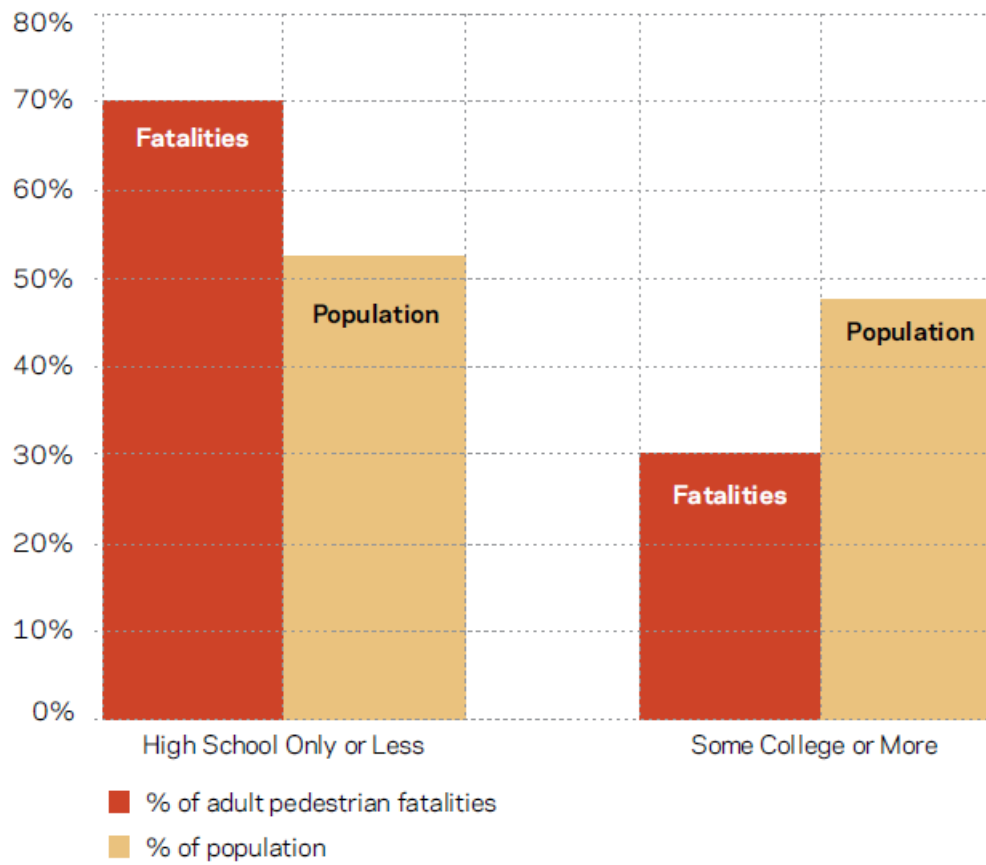
Other methods of identifying disparities can involve demographic analyses of travel demand models (10); identification of current needs among transport users (62); and studies of travel behavior, travel impedance, and infrastructure quality (3).

Figure 4.5 Comparison of New York City's pedestrian fatality rates by race and age

Pedestrian Fatality Rate by Race/Ethnicity & Age				
Age	White	Black	Asian	Hispanic
Under 18	0.83	0.70	0.34	0.33
18 to 64	1.03	1.17	1.19	1.15
Over Age 65	4.68	2.16	7.81	4.03
All Ages	1.69	1.13	1.50	1.08

Source: (44, p. 28)

Figure 4.6 New York City's adult pedestrian fatalities and population by education



Source: (44, p. 28)

Table 4.1 The sample's Acknowledgement considerations

Component	City	Example
Mention: Indicate that equity is value for the transportation system	New York City	“Traffic fatalities and injuries have wide impacts on the city in terms of economic, equity, environmental and quality-of-life costs.” (44, p. 9)
	Chicago	“Ensure equitable distribution of geographic sites in the Make Way for People Program.” (45, p. 88) “...a tool was developed...to help make data-driven decisions, equitably and fairly.” (45, p. 110) Equity is a dataset category (45, p. 110)
	San Francisco	“Reduce inequities among neighborhoods in serious injuries to pedestrians” (48, p. 2)
	Fort Worth	“Equity issues such as populations dependent on walking must be considered when making funding decisions.” (49, p. 7)
	Washington D.C.	“...the District recognizes that strategic investments in the vehicular transportation network are beneficial to mobility, livability, equity, health, and safety.” (50, p. 3) “Many people expressed concern about equity in accessing these facilities, fairness about being charged to travel within the District, and the impacts that could result on local streets due to diversion.” (50, p. 46)
	Charlotte	“From growth management to public health to social equity, walkability is a key part of the puzzle for Charlotte’s future.” (53, p. 22) “Walkability also advances social equity by reducing the time and money spent on driving, which impacts the lives of low-income community members the most.” (53, p. 56) “[Switching to a multimodal lifestyle] has been nothing short of transformative, not only in our pocket books and waistlines, but more deeply in our understanding of equity, inclusion and community living.” (53, p. 22)
	Jacksonville	“Equity is a key principle in the development and implementation of Vision Zero policies.” (54, p. 124) “The various projects and programs were developed around high-crash locations, based on demand and professional judgement, and with an eye to equity issues, safety, access and public input.” (54, p. 125)
	Seattle	“Make Seattle a more walkable and accessible city for all through public engagement, service delivery, accessibility, and capital investments that promote equity” (55, p. 4) “The principal updates to the PMP include: ...An updated prioritization framework, to better align with Plan goals, community priorities, and City policies, including racial equity and social justice.” (55, p. 5) “We targeted our outreach to neighborhoods with low response rates, translated the survey, and held focus groups to reach non-English speaking residents.” (55, p. 6)

“The City has a commitment to address issues of race and social justice, and the design and implementation of pedestrian projects is no exception.” (55, p. 13)

Equitable services and investments provide the same opportunities for all people and strive to correct the historical inequities that exist in our society. This may require more investment in areas that have non-existent or deficient facilities, especially in areas where a greater share of the population rely most on our sidewalks and crossings. By providing all people safe and comfortable pedestrian facilities for transportation and recreation, Seattle will be well on the way to becoming the most walkable and accessible city in the U.S.” (55, p. 13)

“The four core values of Seattle’s Comprehensive Plan are: ...Race and Social Equity: Limited resources and opportunities must be shared; and the inclusion of under-represented communities in decision-making processes is necessary” (55, p. 16)

“The Seattle Trails Upgrade Plan builds from the Seattle Pedestrian and Bicycle Master Plans and supports safety, social equity...” (55, p. 22)

Oklahoma City

“This plan is a collection of capital improvement projects, but it also has recommendations for City policies and ordinances, with the goal of improving safety and equity for people taking non-motorized trips.” (56, p. 147)

Portland

“Pedestrian safety and access is an equity issue.” (58, p. 11)

“PedPDX reflect changes to pedestrian policy and design best practices that have emerged since the original Pedestrian Master Plan was adopted. These include an emerging understanding of transportation equity...” (58, p. 12)

Definition:

Clearly specify who is included in the plan’s equity considerations and how they are affected

Portland

“In Portland, inadequate pedestrian infrastructure and traffic safety concerns disproportionately impact low-income communities and people of color.” (58, p. 11)

Disparities:

Identifies gaps in transportation service, access, opportunity, or cost

New York City

“Traffic fatalities and injuries do not impact all people equally; certain demographic groups are threatened more by road safety problems than others, requiring solutions tailored to reach and protect specific populations.” (44, p. 11)

“The study’s modeling results show that, after controlling for other factors, areas of the city with higher percentages of Black and Hispanic residents had higher likelihoods of pedestrian KSI crashes.” (44, p. 27)

“Asian Americans over 65 had nearly twice the average fatality rate for seniors (7.8 vs. 4.3 per 100,000).” (44, p. 28)

“...foreign-born residents are more at risk than others, accounting for 36% of residents but 51% of fatalities among residents. It is likely that there is significant overlap between this category and other high-risk groups, such as older Asian Americans, Hispanics and those with a high school education or less.” (44, p. 28)

Philadelphia	“Walking and bicycling...are especially important modes of transportation for children, the elderly, and people who cannot afford to own and maintain a car...one-third of all households in the City of Philadelphia are zero-car households.” (46, p. 1) “Transit access is particularly important for the young and elderly population, who have less access to vehicles.” (46, p. 10)
Raleigh	“Average household income is more varied throughout the City, with the lowest averages in the southwest, southeast, and eastern neighborhoods...” (47, p. 7) “Persons of black or African American heritage accounted for slightly less than half (46 percent) of the Raleigh area pedestrian collisions, though they only account for 29 percent of Raleigh’s overall population. Persons identifying as Hispanic accounted for about 11 percent, with whites accounting for roughly 39 percent and Asian and other groups accounting for two percent.” (47, p. 33)
Washington D.C.	“Some people must travel out of their communities to meet daily needs such as accessing high performing schools or fresh food options, making trips not required in other communities.” (50, p. 7) “The experience and needs of travelers in the District vary and are influenced by who the person is; where they live; where they work, shop, and play; how old they are; their income; and many other conditions.” (60, p. 41) “Potentially vulnerable populations, from a demographic perspective, often could benefit most from improved access, more transportation choice, and community investment.” (60, p. 96) “...areas with high concentrations of potentially vulnerable populations were identified...As projects are developed from the moveDC plan’s recommendations, additional analysis and evaluation will be necessary to ensure that populations in these areas, as well as others, are not subjected to disproportionate negative impacts.” (60, p. 96)
Charlotte	“Not everyone drives a car...For those people, and others, walkability is the key to mobility, independence, and quality of life.” (53, p. 25)
Jacksonville	“Jacksonville also has a sizable population...for whom the costs of driving are a significant economic burden.” (54, p. 8) “Fatal and serious crashes typically disproportionately affect populations already underserved by the transportation system; and enforcement strategies must be addressed with extreme sensitivity in economically distressed communities, communities of color, and neighborhoods with a high percentage of immigrant populations.” (54, p. 124)
Seattle	“...a quality pedestrian network is...essential for...people living in places with fewer transportation choices, including many low-income people and people of color.” (55, p. 2) “Disparity factors include: Income level; Disability; Race; Physical activity rates (self-reported); Obesity rates; Diabetes rates” (55, p. 71)

Milwaukee	“...many people choose to walk or do not have access to other forms of transportation. Safe and comfortable places to walk provide independence and allows everyone to reach important destinations...” (57, p. 5) “Walking is particularly important for seniors, people with disabilities, and people with lower incomes who have fewer opportunities to participate in sports or formal exercise programs.” (57, p. 27)
Portland	“Figure 5 highlights how sidewalks are more often missing in areas with a higher equity concern, particularly in the outer neighborhoods of East Portland...” (58, p. 24) “Traffic citations can sometimes have a regressive impact. While a flat fine or fee for a traffic violation may not substantially impact a middle- or high-income person, the same fine can sometimes significantly impact a low-income person.” (58, p. 203) “...Black male pedestrians were passed by twice as many cars as, and waited 32% longer than, White male pedestrians...At marked crosswalks, drivers were more likely to stop for Black pedestrians. When they did stop, they were more likely to stop closer to the Black pedestrian.” (58, p. 263)

Accountability Element

Accountability establishes a commitment to address the identified inequities through the transportation plan and its process. Accountability demonstrates a commitment to equity by striving to do something about the disparities identified in the Acknowledgement element, defining what equity outcomes they are seeking, and holding themselves accountable in reaching those outcomes. Cities can apply Accountability by adopting an equity approach within plan outreach, setting equity goals, and establishing performance measures. Five PMPs included Accountability factors, which are defined and exemplified in Table 3 at the end of this section.

Outreach

Ideally, outreach informs the development of a plan so that it reflects its community's needs (6). Plans that value equity should be developed through a planning process that includes equitable methods of public engagement (10). Commonly, community members with more privilege, such as white able-bodied men, are often capable of participating in planning processes more than other community members, and therefore many planning decisions are made from their perspective (32). Planners must deliberately and meaningfully include disempowered groups from the start of a plan's formation. Doing so establishes equity considerations that represent various community perspectives from the beginning of the planning process while also giving citizens the power to influence the plan (3, 18, 24, 31). There exists extensive literature about conducting equitable and inclusive outreach, and Table 4.2 lists potential outreach strategies that cities can employ in the development of their plans, though this is by no means an exhaustive list.

Equity outreach requires going beyond traditional engagement processes to deliberately include underserved groups. This may involve enclave deliberation, planning events with flexible hours to prevent conflicts, and spending more time on outreach to get detailed input (10, 32, 63). Oklahoma City, Portland, and Seattle employed equity approaches in their PMPs' outreach (55, 56, 58). Oklahoma City had both English and Spanish versions of its outreach event postcards (56). Seattle targeted neighborhoods with low response rates, hosted focus groups for non-English speaking residents, translated surveys into non-English languages, and met with the city's Immigrant and Refugee Commission (55).

To decide how to conduct equitable outreach, planners can reflect on the issue at hand and who is impacted by it. They may consider the political power of those impacted; what role outreach has in formulating the plan; the approach to and number of individuals to engage in order to avoid tokenism; strategies to encourage interaction between target groups with other stakeholders and public officials; the audience of the groups' conclusions; and how individuals can be invited to take action within the community and its institutions (32, pp. 27-28). Planners may consider whether the demographic makeup of their outreach participants reflects that of their city and adjust accordingly (62); this approach led to Portland's "Walking While Black" focus groups to understand the specific needs of its black pedestrians (58).

The plan's outreach processes should be identified and described in the planning document. This will communicate to the reader how outreach was conducted, how the participants' input was considered, what collaborative relationships were built to conduct the outreach, and how that outreach influenced the plan. Detailing the PMP's outreach improves transparency, clarifies whether that outreach was in line with equity goals, and minimizes vagueness about the plan's overall equity efforts.

Table 4.2 Potential outreach strategies for pedestrian master plans

Action	Equity Benefit
Hire a third-party facilitator to aid with difficult or potentially uncomfortable conversations (10)	Make outreach inviting
Provide engagement opportunities in informal settings, such as neighborhood community centers, religious institutions, or coffee shops, in addition to government buildings (10)	Make outreach inviting
Partner with nonprofit or community groups when hosting events as well as to share and solicit information (10)	Build relationships, Make outreach inviting
Integrate enclaves into and throughout planning processes rather than as a singular event (32)	Avoid tokenism, Build relationships
Conduct enclave deliberation in which many individuals from the same group or having the same perspective are engaged (32)	Avoid tokenism
Hold public meetings within neighborhoods and enclaves rather than in a central location like City Hall, which may be inconvenient or intimidating (32)	Reduce barriers
Share outreach information through various media to ensure people receive the information. This may include posting flyers, connecting with community organizations, using social media, among other methods (10)	Reduce barriers
Make public information (such as meeting notices and project information) available in electronically accessible formats (10)	Reduce barriers
Provide opportunities for residents to participate during weekday and weekend times (10)	Reduce barriers
Give surveys in multiple languages (10)	Reduce barriers
Provide childcare at meetings or making events family-friendly (10)	Reduce barriers, Compensation
Host “pizza party” meetings, which can engage families and feed them at the same time (10)	Reduce barriers, Compensation
Compensate outreach participants for their time to acknowledge their financial and temporal sacrifice to participate	Reduce barriers, Compensation
Accommodate participants with mobility limitations by conducting outreach in locations with wheelchair accessible entryways, providing directions to the event via transit, and reducing obstructions at the event venue	Reduce barriers, Make outreach convenient for participants

Accommodate participants who are blind or have low by providing outreach in physically accessible formats, such as tactile maps, audible formats, and image descriptions that can be read by reading machines	Reduce barriers, Make outreach convenient for participants
Co-host events with community groups or table at existing events to reach people attending those events	Make outreach convenient for participants
Host events at schools, when parents and guardians can drop by after picking up their children (10)	Make outreach convenient for participants

Goals

Equitable plans require explicit equity goals to demonstrate an understanding of and a concern for existing inequities as well as a commitment to address them (22). Ideally, goals influence other plan components, such as implementation strategies, and therefore equity goals should result in other plan components to be equity-oriented as well. Equity goals describe the plan’s aims in terms of equity and influence how equity should be measured within the plan. Four PMPs included equity goals (48, 50, 55, 58).

Generally, goals describe the plan’s aspirations (64), and equity goals describe the equity aspirations of plans. They may specify how its proposed actions are related to equity. For example, one of Portland’s goals is to “Prioritize Investment in areas with...historically underserved populations...” (58, p. 15). This indicates that some implementation strategies will be directed toward building more pedestrian infrastructure in underserved communities with the intent of creating a more equitable pedestrian network.

Equity goals can clarify what indicators are most appropriate for measuring equity throughout the plan (6). For example, progress toward Washington D.C.’s goal to “reduce financial barriers to the lowest-income transportation system users” may be measured by assessing transportation costs of its residents (50). Accurate and relevant metrics best inform planners of their progress toward reaching equity goals.

Performance Measures

Performance measures are methods of using system data to guide investment and policy decisions (65). They are frequently included in plans to set interim objectives to achieve over time in pursuit of plan goals (9). Similarly, plans should include equity performance measures that measure equity and gauge progress toward equity goals (38). Doing so ensures that equity issues are addressed and not lost within the planning process (66). Performance measures should be specific and measurable, address previously identified disparities, relate to equity goals, and consider equity's multidimensional nature. Of the seven PMPs who had plan performance measures (46, 49, 50, 52, 54, 55, 58), four of these PMPs included equity performance measures (50, 54, 55, 58).

Almost all performance measures can be translated into equity performance measures (62). This can be achieved by quantifying transportation efforts and then applying an equity lens (62). Equity performance measures should also clearly specify what benefit or burden is being distributed and the population group that is impacted by it. For instance, to increase sidewalk access with consideration for equity, a performance measure might track the number of sidewalk miles (the benefit being distributed) that are built in low-income neighborhoods (the population group).

Performance measures should refer to the disparities identified in the Acknowledgement element. Three of the four PMPs that included equity performance measures used their measures to address disparities identified in their plan (50, 55, 58, 60). If the plan determines there is a disparity between crashes involving black and white pedestrians, then the plan should establish performance measures to monitor the number of crashes as well as the demographics of crash victims, and then compare these to the demographic makeup of the city. Performance measures

that are connected to the Disparity component can streamline the robust data collection process that is necessary for successful performance measurement.

Equity performance measures would ideally relate to and measure progress toward the plan's equity goals (64, 66). Because Washington DC's PMP had a goal to make transportation more available to low-income populations, one of their performance measures included the number of low-income Census Tracts that receive new trails or sidewalks (50). The performance measure in this case (the number of Census Tracts with sidewalk access) directly measures progress toward the equity goal (transportation availability).

Lastly, one should consider the multiple dimensions of equity when developing a plan's equity performance measures so as not to overlook the nuances of a given situation. To illustrate, a common performance measure is to increase the number of people who walk (55). However, this measure insufficiently evaluates equity because it is not specific and is not clearly tied to equity. An increase in people who walk may overall indicate that the city is more walkable (17), but this measure does not differentiate who is walking or why they are choosing to walk; it erroneously counts people who walk because they cannot afford a car as an indicator of equity, and therefore does not sufficiently measure equity. In addition, proposed projects may appear equitable when it is measured in a given way, but may be deemed inequitable when measured by a different metric or scale (4). Establishing multiple performance measures or disaggregating the data collected for a given measure can help resolve this issue and ensure a more precise measure of equity.

Table 4.3 Potential equity performance measures for pedestrian master plans

Metric	Example Associated Goal	Example Performance Measure
Geographic equity	Every neighborhood has adequate pedestrian infrastructure to reduce geographic disparities	Percent of quality pedestrian network miles per neighborhood
Facility quality	Provide high-quality, accessible pedestrian infrastructure on every street	Percent of each neighborhood's curb ramps that meet ADA standards
Safety	Make the pedestrian network safer for all	Reduce pedestrian fatalities in predominantly non-white neighborhoods by 50% by 2025
Engagement	Conduct more inclusive public engagement	Increase the percent of city's non-native English speakers who attend outreach events
School accessibility	Every student can walk or bike to school from their neighborhood	Grow the share of students who walk among underserved neighborhoods
Environmental quality	Reduce environmental disparities across neighborhoods by improving air and water quality	Reduce the exposure to vehicle emissions per neighborhood

Table 4.4 The sample's Accountability considerations

Component	City	Example
Outreach: Public engagement used to form the plan; a more inclusive outreach process can lead to more equitable plan outcomes	Seattle	"We targeted our outreach to neighborhoods with low response rates, translated the survey, and held focus groups to reach non-English speaking residents." (55, p. 6)
	Oklahoma City	"Hundreds of postcards were distributed around the city in English and Spanish." (56, p. 10)
	Portland	"PedPDX Community Advisory Committee: ...committee members were selected for their demographic and geographic diversity..." (58, p. 32)
		"The Walking Priorities Survey...was available online and in paper form in English, Spanish, Chinese, Vietnamese, and Russian – the top languages spoken citywide. Staff worked with Spanish, Chinese, Vietnamese, and Russian Community Engagement Liaisons..." (58, p. 33)
		"To evaluate whether the project team heard from a representative sample of Portlanders, staff compared survey responses to the racial and geographic distribution of the city's population...staff worked with community organizations to reach out to people of color and residents of East Portland..." (58, p. 34)
		"In recognition of the low recorded response rate from African and African American Portlanders...the project team hosted two focus groups to more intentionally elevate the voice of Black Portlanders...which the survey results show is different from the experience citywide." (58, p. 36)
		"PBOT staff worked with community partners from the Portland African American Leadership Forum (PAALF), Black Parent Initiative (BPI) and Immigrant and Refugee Community Organization (IRCO) Africa House to host two focus groups." (58, p. 36)
		"The focus groups being held at Black-owned/operated community spaces and dinner being provided by Black-owned catering businesses." (58, p. 36)
		"Participants were provided with \$25 gift cards for grocery stores and a local Black-owned restaurant in appreciation of their time and contributions. Partnering organizations received a small donation for their assistance with outreach." (58, p. 37)
		"The input received at these focus groups directly informed the strategies and actions in the PedPDX Toolbox." (58, p. 37)
Goals: Statement about the aims of the plan in terms of equity	San Francisco	"Reduce inequities among neighborhoods in serious injuries to pedestrians." (48, p. 2)
	Washington D.C.	"Reduce financial barriers to the lowest-income transportation system users." (50, p. 17)
		"Increase transportation availability to economically challenged or targeted redevelopment areas." (50, p. 18)
	Seattle	"Make Seattle a more walkable and accessible city for all through public engagement, service delivery, accessibility, and capital investments that promote equity" (55, p. 4)
	Portland	"Equitable + Inclusive: Make Portland walkable and accessible for all, no matter who you are or where you live." (58, p. 14)
		"Prioritize Investment in areas with the greatest historic underinvestment in pedestrian infrastructure and with historically under-served populations to reduce disparities in access to safe pedestrian facilities." (58, p. 15)

Performance Measures: Specific, measurable milestones to be achieved through plan implementation to reach equity goals	Washington D.C.	“Metric: Increase transportation availability to economically challenged or targeted redevelopment areas” (50, p. 18) “Performance: New trails or sidewalks accessing 30 out of 33 low-income Census Tracts and 17 designated redevelopment areas.” (50, p. 18)
	Jacksonville	“The Plan identifies the following performance measures that should be monitored and reported annually...Pedestrian and Bicycle-related Output: ...Percent of the Jacksonville population living within an area serviced by the SNAPP program.” (54, p. 12)
	Seattle	“City investment toward top-tier projects in high priority areas” (55, p. 44)
	Portland	“Percentage of the Pedestrian Priority Network with sidewalk gaps citywide and in areas identified through PBOT’s Equity Matrix with high concentrations of communities of concern” (58, p. 321)

Application Element

Application outlines the specific actions that will be taken to move toward equity and are often included in a plan’s implementation strategies. Application addresses and acts on inequities in the transportation system through the plan’s recommendations. These recommendations should address the equity considerations identified in Acknowledgement and Accountability. There are three common ways that equity may be addressed through Application: project prioritization and policy and program recommendations. Twelve PMPs included Application factors (44, 45, 49–58), examples of which are listed in Table 4 at the end of this section.

Project Prioritization

Project prioritization is a common component of PMPs that determine which proposed improvements will be implemented first. Typically, prioritization is formulated using relevant data to rank projects according to how well they are expected to achieve plan goals. Plans that are not prioritized using equity factors, such as through efficiency- or complaint-based schemes, can inadvertently perpetuate existing inequities (10). Project prioritization should address

disparities identified in the Acknowledgement element and could be streamlined by the development of tools.

The disparities identified in Acknowledgement can determine the equity factors to be prioritized and how to prioritize them. Of the 10 PMPs that include equity prioritization (45, 47, 49–52, 54–56, 58), five also identified disparities and addressed them through their project prioritization (47, 50, 54, 55, 58). Demographic factors, like median household income or percent of non-white residents, may be used to identify and prioritize infrastructure improvements to be in line with equity goals. Alternatively, transportation analysis zones, sometimes dubbed “high priority areas” within plans, may be identified based on the geospatial distribution of these equity factors and then prioritized for improvements; For example, if an identified disparity is that households without vehicle access live in neighborhoods without pedestrian infrastructure, the plan might prioritize transportation analysis zones that have high percentages of carless households.

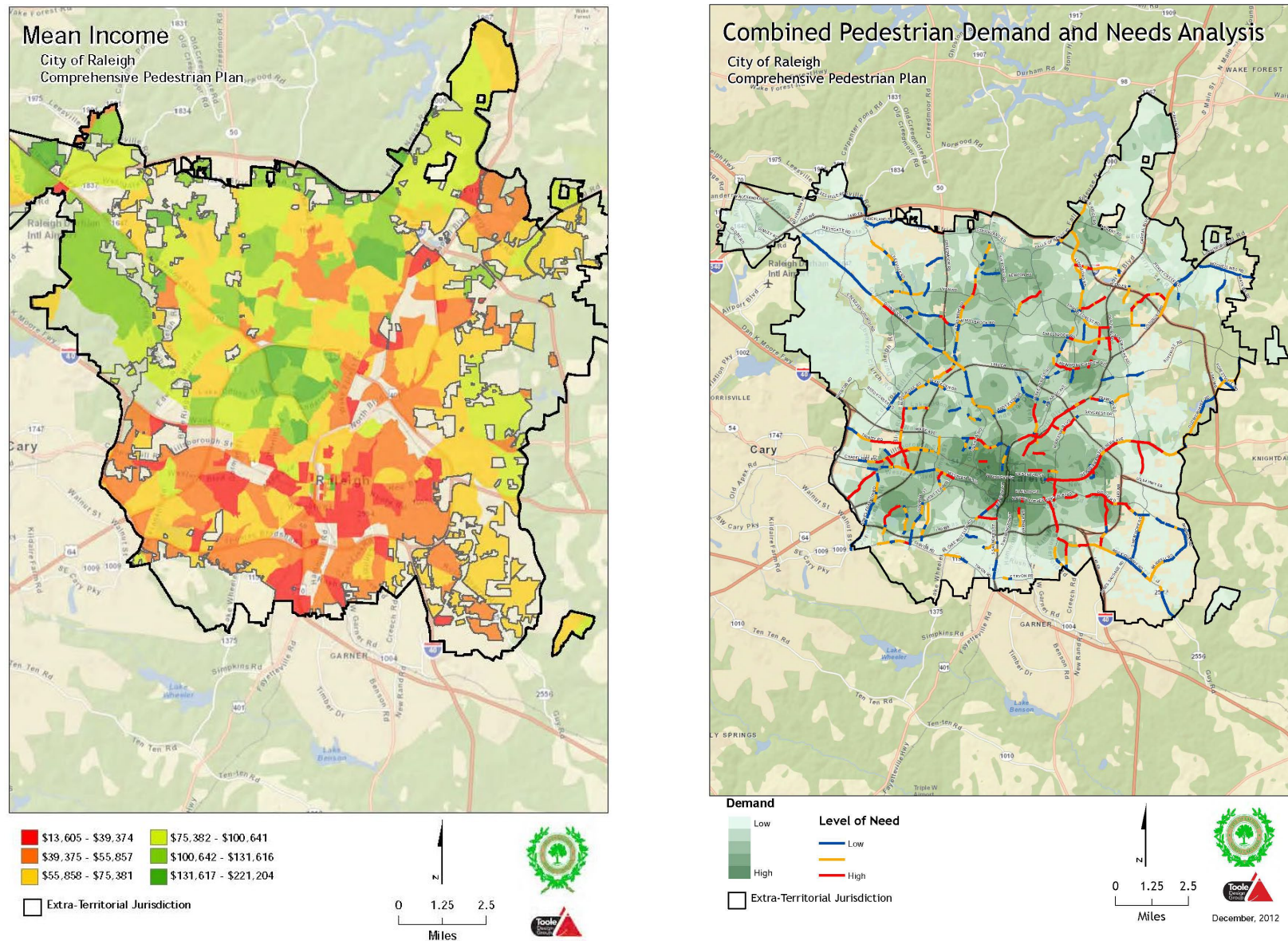
Detailed descriptions of a plan’s project prioritization improve clarity for the reader and transparency about how the city is addressing equity issues. Stating that improvements will be “reviewed and prioritized accordingly” (49, p. 54) is insufficient for communicating a real commitment to reducing inequities in the pedestrian network, nor does this statement specify what should be done for equity. Income is sometimes included in project prioritization without clearly linking to equity considerations (47, 51, 52) and therefore it is unclear if income was prioritized to account for equity, a finding that reiterates Lee et al.’s conclusions (3).

Cities often create maps to visualize their project prioritization. Raleigh mapped their various characteristics across the city, such as income, and used this data to develop a Demand and Needs Analysis that prioritized their sidewalk improvements (47), shown in Figure 4.7.

Some cities create tools in which they input plan variables to aid in the prioritization of their PMP's proposed improvements (45, 55, 58). Such tools can streamline project prioritization and make it easier to determine where projects should be built. Seattle has their Priority Investment Network (PIN), shown in Figure 4.8, which is a tool that is developed within ArcGIS by attributing specific data to the city's road segments. Portland has a similar tool, the Pedestrian Priority Network, which is available through the PMP's public-facing webpage as an interactive map, as shown in Figure 4.9 and Figure 4.10 (68). Both tools include income and race data; Portland's network also includes other sociodemographic data, like disability rates; Seattle's tool includes proximity factors, like distance to schools (55, 58). Seattle found that 79 percent of the pedestrian projects their Department of Transportation built between 2009 and 2017 were located within the PIN, possibly indicating that the PIN may be a relatively reliable method for keeping pedestrian improvements in line with equity and other plan goals (55, p. 34).

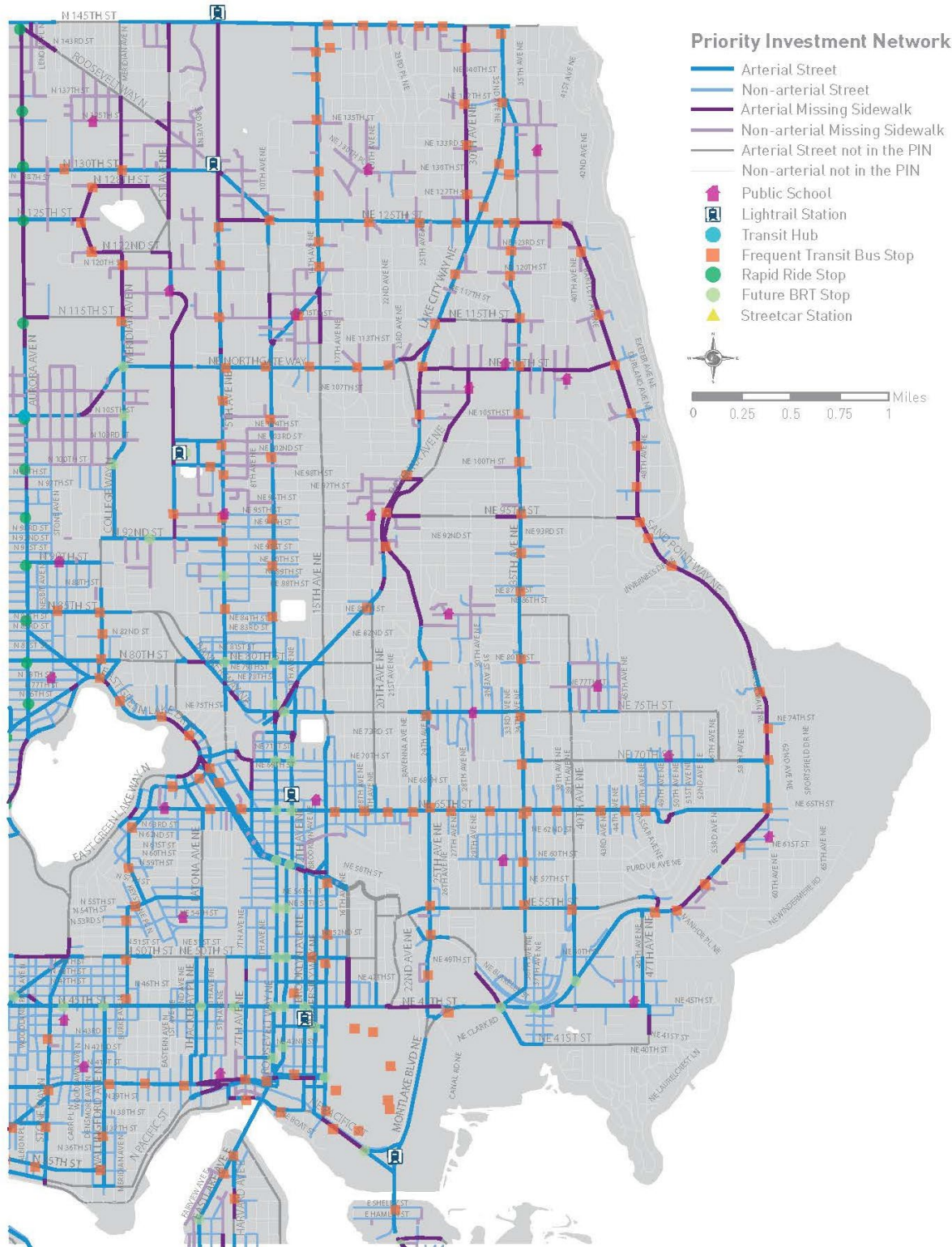
No cities used project prioritization or evaluation methods to assess the potential equity impacts of new transportation projects as a result of the plan. Such an assessment, in conjunction with an evaluation of current needs based on identified disparities, is recommended to conjure new ideas for improving equity (62).

Figure 4.7 Comparison of mean income in Raleigh and its PMP's Demand and Needs Analysis



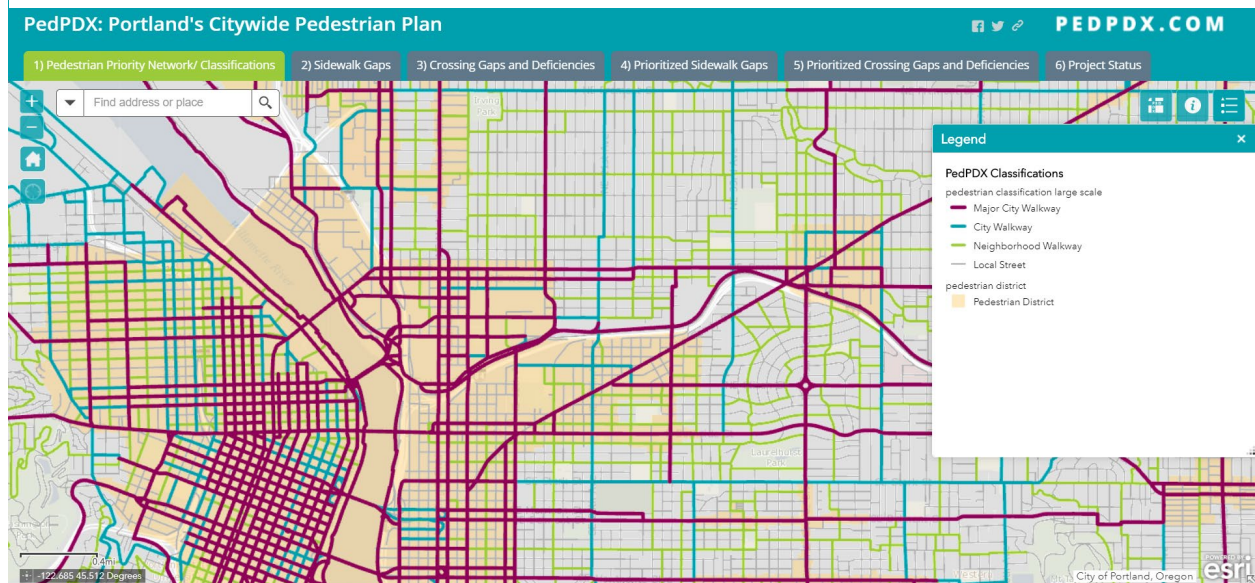
Source: (47, pp. 9, 21)

Figure 4.8 Seattle's Priority Investment Network



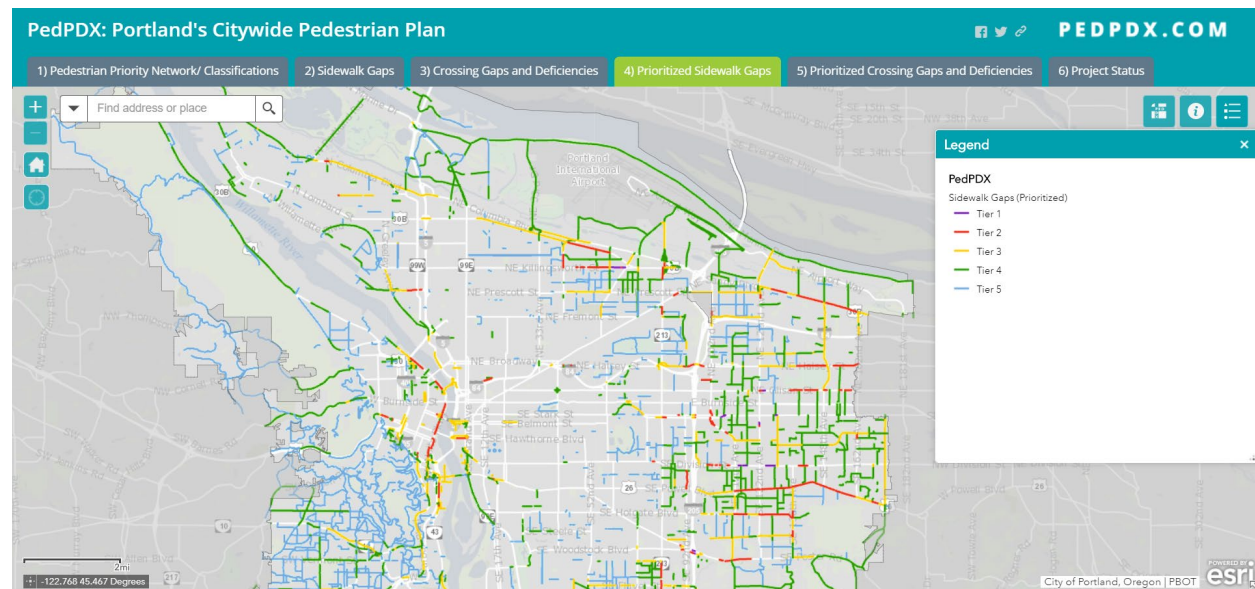
Source: (55)

Figure 4.10 Portland's sidewalk classification system, as shown in the PMP's online interactive map



Source: (68)

Figure 4.9 Portland's prioritized sidewalk gaps, as shown in the PMP's online interactive map



Source: (68)

Policies

Within a transportation plan, policies may be proposed to influence a more pedestrian-friendly transportation system. Policy recommendations help cities address systemic or institutional inequities, such as racial profiling, a lack of political representation, or travel cost burdens. Policies can help influence the development of pedestrian infrastructure over the long-term, such as crosswalk marking policies and curb ramp designs. Policies can also influence the pedestrian realm in ways that infrastructure cannot do alone, such as jaywalking ordinances and enforcement.

Safety for pedestrians involves more than just protection from vehicle collisions. Within public spaces, underserved groups can be exposed to unique risks like sexual harassment and disproportionate policing (24). Only one PMP from the sample included a policy recommendation. Portland recommended exploring the city's traffic citation policy to address inequitable fines on its low-income people (58).

Programs

Like policies, a plan's program recommendations address inequities that cannot be alleviated with infrastructural improvements alone and can enable the city to address equity in ways that are not part of the built environment. Programs differ from policies in that they may be focused on a specific issue, have a specific start and end or are recurring activities, and they may be intended to change the culture of behavior within the transportation network. Four plans had program recommendations to address equity (44, 56–58). These recommendations should be clearly defined, as exemplified by excerpts from the research sample in Table 4.

Proposed programs should be specific about what they are trying to address or achieve. Plans should indicate which groups they intend to work with, who they are targeting their programs for, what they intend to study, etc. in as much detail as possible.

For example, Milwaukee’s plan recommended making education and enforcement culturally appropriate, but left out details like how this might be carried out, for which populations this should be done for, or why this is important (57). For those who are implementing the plan, it may be unclear what “culturally appropriate” means or why it is important, and therefore this recommendation may never be implemented or may be carried out inadequately.

Alternatively, Portland recommended coordinating with researchers to continue research on racial bias and driving behavior to better understand how to make walking safer for its non-white pedestrians (58). From this recommendation, it is clear what should be studied (driving behavior), what the inequity being addressed is (racial bias), and who is impacted by the recommendation (black pedestrians). This recommendation has a specific and clear course of action, and therefore it will be easier to carry it out as intended.

Table 4.5 The sample's Application considerations

Component	City	Example
Project Prioritization: The method used to prioritize pedestrian infrastructure improvements as a result of the plan	Chicago	“The tool can be used to compare different locations to help make data-driven decisions, equitably and fairly. It can be used to inform the prioritization of future projects...” (45, p. 110) “Equity: Areas of low income, percent population with a disability, percent walk/bike/take transit to work, population density, automobile ownership rates” (45, p. 110) “The datasets were organized into five categories: ...[including] equity. The categories relate to the overall goals of the plan.” (45, p. 110)
	Raleigh	“Pedestrian demand and needs analysis was conducted in order to help identify areas in Raleigh’s pedestrian network where there is relatively high demand for pedestrian travel...” The needs analysis included “Average household income” (47, p. 19)*

Fort Worth	“Census blocks with low automobile ownership rates...and low-income housing units should be reviewed and prioritized accordingly.” (49, p. 54)
Washington D.C.	“This figure shows District-designated revitalization districts...and low-income areas based on U.S. Census data in the context of moveDC pedestrian network recommendations. This information was used in plan performance evaluation.” (50, p. 19)
San Diego	“The Pedestrian Priority Model...inputs included: Population density; Employment density; Other demographic indicators of subgroups with high rates of pedestrian activity including Median Household Income, Census Mobility, Age, and disability status.” (51, p. 46)
Austin	The sidewalk prioritization methodology includes “Median Household Income: Within a census tract at or below Median Household Income” and “Income Restricted Affordable House Secured [through] City and Federal Programs for every 25 units” as prioritization elements (52, p. 10)
Jacksonville	“Strategic Neighborhood Action Program for Pedestrians (SNAPP): ...Create Maps of Priority Areas using Council District boundaries. Starting with Council District boundaries, use readily available Geographic Information Systems (GIS) data to establish priority zones. It is recommended that the following data be used: pedestrian and bicycle crashes, schools, transit stations/bus stops, percent of seniors, percent disabled, percent in poverty, percent of households without vehicle access, and residential/commercial density.” (54, p. 37) “Four potential Statement Projects stand out as capturing the essence of the plan. These Statement Projects ... affect neighborhoods that have traditionally been underserved by the transportation system and have been over-represented in the crash statistics.” (54, p. 125)
Seattle	“To help prioritize where we should focus sidewalk and crossing improvements within the PIN, the City will assess...Equity and health factors that look at underlying socioeconomic conditions, including...race...so the City can provide pedestrian improvements in areas with the greatest need.” (55, p. 68) “Improvements on non-arterial streets within the PIN will be prioritized using only the equity and health analysis.” (55, p. 68)
Oklahoma City	“Prioritize improvements that serve people without access to a motor vehicle (low to moderate income, elderly, the disabled, etc.) within areas that connect them to the transit system.” (56, p. 61) “...to ensure an equitable distribution of improvements that focuses on the needs of the people who rely on being a pedestrian the most. These include: 1. Those without access to a motor vehicle; 2. Those in poverty...this analysis identified hot spots across that city that led to the selection of 10 high-priority areas within which to plan improvements for the pedestrian realm.” (56, p. 87)
Portland	“Prioritize investment in areas with the greatest historic underinvestment in pedestrian infrastructure and with historically under-served populations to reduce disparities in access to safe pedestrian facilities.” (58, p. 15) “The PedPDX prioritization framework will guide pedestrian investments. It is based on the factors Portland residents say are most important to them: Equity, Safety, Pedestrian Demand.” (58, p. 18) “The Pedestrian Priority Network directly reflects these demand-based priorities. Public priorities relating to ... equity needs (“Areas that serve people who need to rely on walking the most”) are overlaid on the Pedestrian Priority Network as part of the PedPDX prioritization framework...” (58, p. 75)

“...a data-based approach to prioritizing sidewalk and crossing needs helps ensure that we provide needed improvements in an equitable manner across the city, rather than responding to individual requests which may not always be where demands of safety, equity...” (58, p. 103)

“To inform our work, guide our investments and work to achieve the Citywide Racial Equity Goals and Strategies, PBOT has created an Equity Matrix, or equity ranking index, that can be used to help rank many of our internal lists that relate to projects, programs and even procedures. PBOT has developed this standardized Equity Matrix based on national best practices, so that moving forward we can have more consistency in how we use an equity matrix, and what the equity matrix measures. PedPDX applies the PBOT Equity Matrix to the Pedestrian Priority Network to identify locations in the city where there are potential concerns about equity outcomes.” (58, p. 107)

“PedPDX will prioritize pedestrian investments in these locations with high equity needs.” (58, p. 108)

“By using race and income data, the Equity Matrix accounts for the intersectionality of other important considerations, including persons with disabilities, affordable housing, and persons with limited English proficiency, all of which are highly correlative with race and income.” (58, p. 108)

Policies: Proposed policies intended to influence a pedestrian-friendly transportation system

Portland

“Explore traffic citation policy and structural changes to address inequitable impact of fines and fees on people with lower-incomes.” (58, p. 136)

Programs: Proposed programs intended to make being a pedestrian in the city more accessible and equitable as a result of the plan

New York City

“Expand non-English outreach programs and education efforts, targeting neighborhoods that face a higher risk for pedestrian fatalities.” (44, p. 39)

Oklahoma City

“Study the impact of plan implementation on responsive or vulnerable populations. Evaluate potential health outcomes and incorporate findings to ensure projects and policy changes have positive impacts.” (56, p. 149)

Milwaukee

“Work with community partners to ensure education and enforcement is culturally appropriate.” (57, p. 43)

Portland

“Engage and work with community partners to co-promote events that help people take ownership over investments and use new infrastructure...pedestrian safety improvements should be seen as investments in existing residents, rather than forces for displacement.” (58, p. 246)

“Partner with other agencies and City bureaus to advance the well-being and personal security of vulnerable communities as they use Portland transportation infrastructure.” (58, p. 260)

“Continue research on racial bias and driving behavior.” (58, p. 260)

“PBOT Signals and Street Lighting staff developed new street lighting guidelines, as part of PedPDX. These new guidelines respond directly to safety and visibility concerns raised by residents during the PedPDX public outreach process, particularly during our ‘Walking While Black’ focus groups.” (58, p. 303)

*It is unclear whether “Average Household Income” led to greater priority for areas with lower or higher incomes, though it can be inferred that prioritization was given to areas with lower incomes given that the Demand and Needs Analysis led to greater project prioritization in areas that also showed lower household incomes (Figure 4.7).

The Three A's of Equity – Acknowledgement, Accountability, and Application – provide guidance for identifying, planning for, and taking action on equity issues through transportation plans. Each element and its associated components are summarized in Figure 4.11 below, and a summary of equity considerations from the sample is presented in Table 4.6.

Figure 4.11 Summary of the Three A's of Equity

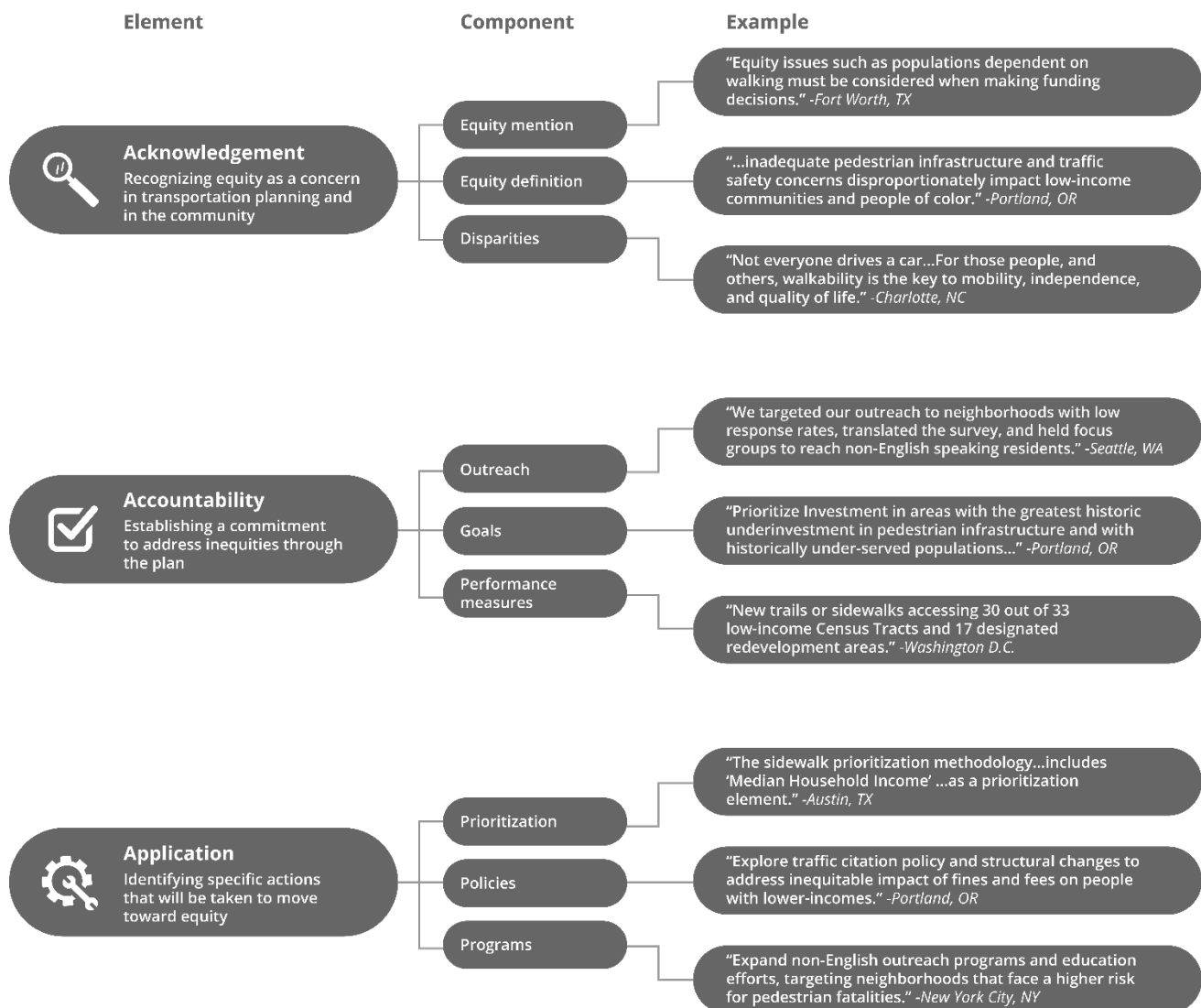


Table 4.6 Equity considerations by research sample

Element		Acknowledgement			Accountability			Application			Total
Component		Mention	Definition	Disparities	Outreach	Goals	Performance Measures	Project Prioritization	Policies	Programs	
New York City	2010	•		•						•	33%
Chicago	2012	•						•			22%
Philadelphia	2012			•							11%
Raleigh	2012			•				•			22%
San Francisco	2013	•				•					22%
Fort Worth	2014	•						•			22%
Washington D.C.	2014	•		•		•	•	•			56%
San Diego	2015							•			11%
Austin	2016							•			11%
Charlotte	2017	•		•							22%
Jacksonville	2017	•		•			•	•			44%
Seattle	2017	•		•	•	•	•	•			67%
Oklahoma City	2018	•			•			•		•	44%
Milwaukee	2019			•						•	22%
Portland	2019	•	•	•	•	•	•	•	•	•	100%
Plan share by component		67%	7%	60%	20%	27%	27%	66%	7%	26%	

Note: 73% of plans included at least one Acknowledgement component; 33% included at least one Accountability component; 80% included at least one Application component

Chapter 5 - Discussion

Although many plans mentioned the importance of equity to their planning, only four of the fifteen PMPs addressed equity through the use of all Three A's of Equity (44, 50, 55, 56); One plan included all equity components from all three A's (58); no plan was completely absent of equity considerations, though the quality and clarity of these considerations varied. Some cities' equity considerations were ambiguous and their level of commitment to equity was up to interpretation. These findings echo Lee et al.'s conclusion that equity is inconsistently applied to transportation plans (3).

Two plans that had Application factors neither included Acknowledgement or Accountability (51, 52). Both plans prioritized projects according to neighborhood income, though neither explicitly indicated that income was prioritized to account for inequities. Leaving out equity goals, performance measures, or existing disparities could possibly indicate a lack of commitment to equity issues or may lead to erroneous or unsuccessful equity outcomes. Even when Application is used to advance equity in a plan, the Acknowledgement and Accountability elements clarify how planning decisions were informed and how projects were prioritized.

Nine of the fifteen plans included Acknowledgement but did not also include both Accountability and Application. Acknowledgement without the other elements present may be reflective of the overall lack of equity guidance and the uncertainty of cities trying to implement it. Alternatively, it may be indicative that Arnstein's argument about public participation can apply to equity in transportation plans today; equity is mentioned because it is "applauded by virtually everyone" but decisionmakers do not want to deliberately plan for the "have-nots" (31, p. 216). It is a positive finding that cities are apt to mention and acknowledge equity as a value,

but incorporating Accountability and Application into a plan can help cities carry this value throughout the rest of the plan and into tangible outcomes.

The sample's persistent representation of Acknowledgement components but general absence of Accountability and inconsistent use of Application demonstrates that establishing steps to achieve equity is an area for improvement for cities. Municipalities appear more comfortable Acknowledging equity than coming up with robust and meaningful Accountability and Application measures. Though at least one Application component is present in twelve of the plans, they seldom included policies or programs, and ten of these plans did not explicitly account for race. No plans measured long-term equity impacts of proposed projects. The sample's Application components are a step toward more equitable transportation systems, but they indicate that cities still struggle to accomplish the "final and most difficult step" that Lucas et al. describe:

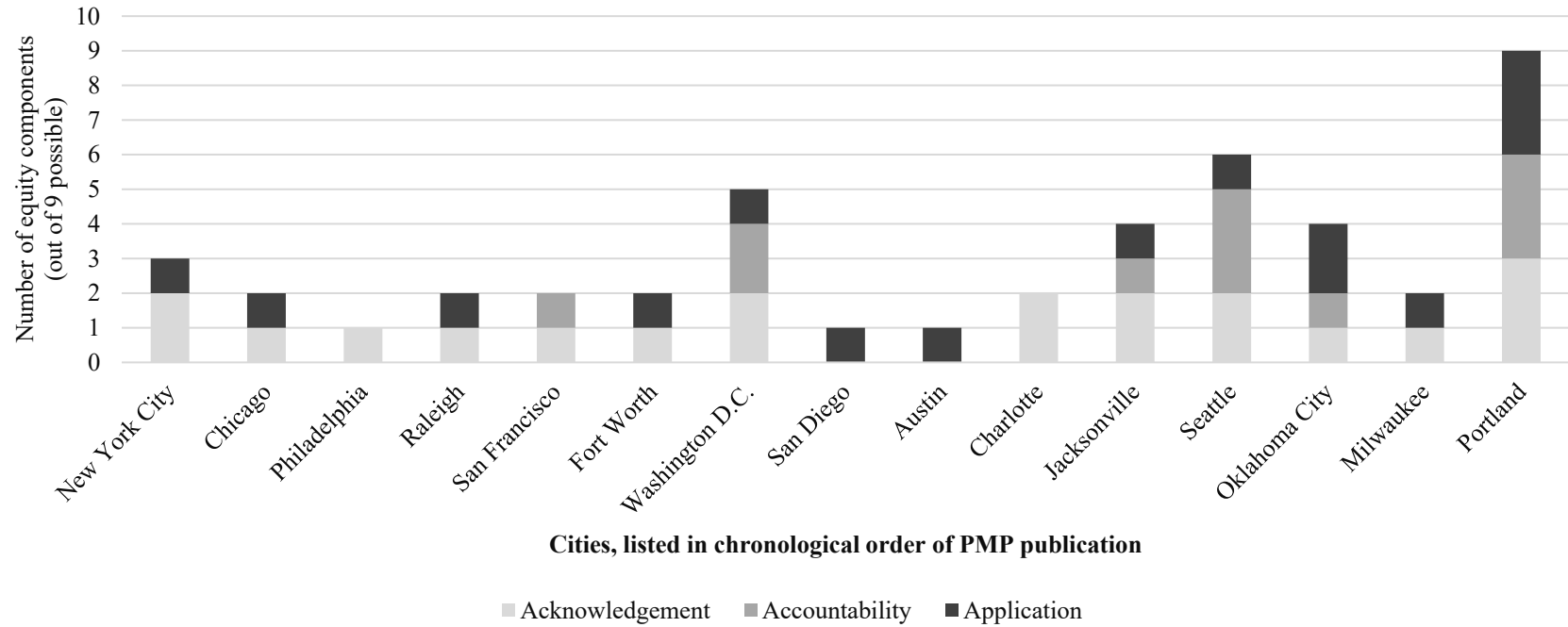
"The final, and perhaps most difficult step, is to move from the observation of inequities to policies and interventions addressing inequities so as to promote greater fairness and justice. This will often imply painful choices that maybe at odds with traditional and still dominant preconceptions regarding the primary economic purpose of transport planning and policy." (4, p. 6)

Only four cities incorporated considerations for race in their plans (44, 47, 55, 58). Two of these plans included race in their project prioritization (55, 58), while the other two only included race in their Acknowledgement elements (44, 47). This is concerning because there is an inherent and well-documented racial geography in cities, but the transportation disadvantages that result from this will never be eliminated if race is not explicitly addressed in plans (23).

Nonetheless, equity seems to be incorporated into plans more often over time. Figure 5.1 shows the number of components from each element that each city included in its PMP. Acknowledgement and Application are present throughout the decade, but Accountability has become more present in later years. Though this research sample only covers a single decade and small sample size, this general trend may indicate that more PMPs are increasingly incorporating equity over time.

Lastly, all research possesses limitations, and this current research is limited by its inductive approach and selection of recently published PMPs. Though the inductive approach allowed the research to occur organically and capture a breadth of possibilities, the proposed framework and recommendations exhibit strategies that have already been employed by the sample and therefore leave out potential strategies that cities have not yet conducted. The selection of plans from the last decade enabled cities' most current and perhaps most innovative equity approaches to be used as a precedent for other municipalities, however the plans have been published so recently that their implementation cannot fairly be evaluated for equity outcomes. Future research can evaluate cities' adherence to specific equity recommendations and measure how well they have addressed their identified disparities years after plan adoption.

Figure 5.1 Equity is increasingly included in PMPs over time



Chapter 6 - Conclusions

This research claims that existing equity approaches in transportation plans fall short in achieving equity, and that this is, in part, because of a lack of guidance on how to effectively address transportation inequities. To guide cities in effectively incorporating equity into transportation plans, this paper provides a framework that consists of three elements: Acknowledgement, Accountability, and Application. These Three A's of Equity are intended to consider equity thoroughly throughout the entirety of the plan to influence more equitable plan outcomes. Though this framework was developed through an analysis of pedestrian plans, the nature of walking as a mode and the types of equity considerations present allows for the proposed framework to be applicable to transportation plans more broadly.

The proposed framework can aid transportation agencies in incorporating equity into their plans by considering equity throughout all components of a plan, from Introduction to Implementation. Because the Three A's of Equity were developed from what is currently included in Pedestrian Master Plans, the framework is based on what cities are already doing and therefore adopting the framework can easily be incorporated into a plan's existing structure and process. Though this research finds that cities generally value equity but struggle to consistently and thoroughly incorporate equity, the proposed framework presents an opportunity for cities to continue their efforts and better address inequities through their transportation plans.

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