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Who is Planning for Environmental Justice, And How

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Abstract

Problem, research strategy, and findings: Environmental justice (EJ) seeks to correct legacies of disproportionately burdening low-income and Black, Indigenous, and people of color (BIPOC) communities with environmental hazards that contribute to health inequalities. Federal and state policies increasingly require plans to assess and incorporate EJ principles. The current lack of accessible data and plan evaluation on EJ has been a barrier to policy setting and benchmarking. We created a framework for analyzing content across a large corpus of plans by using quantitative text analysis on 461 California city general plans, also known as comprehensive plans. To verify results and identify specific policies, we conducted content analysis on a subset of seven plans. Demonstrating the broad applicability of EJ principles in planning, policies spanned all required elements of general plans: housing, circulation, land use, health, safety, open space, air quality, and noise. We found that the most headway in EJ planning has been made in cities with a majority population of color and well before the 2018 California state mandate to address EJ. Policies were primarily focused on preventing adverse exposures as opposed to correcting for legacies of inequality. Further, although all policies address vulnerable populations and places, very few specifically addressed race or racism. Thus, EJ has been largely operationalized as health equity.

Takeaway for practice: We identified 628 EJ policies focused on vulnerable populations across the seven city plans included in content analysis. The smorgasbord of policy approaches provided fodder for cities across the United States to incorporate an EJ approach to planning. Gaps in focus areas reveal room for policy innovation (e.g., emphasis on language justice, formerly incarcerated individuals, and noise ordinance policing). We invite planners and community advocates to search across California's plans for EJ policy inspiration, and to use the appendix of EJ policies cataloged in this research as a benchmark of city-level innovation.

Keywords

Environmental Justice; Health in All Policies; health equity; machine learning

Introduction

Land use planning is increasingly focused on environmental justice (EJ), a term coined by Dr. Robert Bullard in 1980 to describe a broad social movement that began with a focus on racial segregation and the siting of environmentally hazardous facilities in low-income and Black, Indigenous, and people of color (BIPOC) communities (Bullard, 1990; Massey & Denton, 1993; Mohai & Saha, 2006). Early efforts and court cases emphasized that land use planning affected multiple causal pathways in the social determinants of health (SDoH) with long-lasting place-based outcomes. For example, a 1979 court case found that the placement of a hazardous waste site would "affect the entire nature of the community, its land values, its tax base, its aesthetics, the health and safety of its inhabitants" for generations to come (Bean v. Southwestern Waste Management Corp., 1979, p. 677). EJ asks policymakers to acknowledge such health impacts of development, undo the damage from past actions, and prevent new disparities from occurring.

Local initiatives in EJ have been buoyed by federal and state support with mandates, data, and funding. For example, the U.S. Department of Transportation (1997), the Federal Highway Administration (1998), and the Transportation Equity Act for the 21st Century (TEA-21; 1998) have all created administrative orders and mandates to incorporate EJ in plans drafted by state departments of transportation (DOTs), metropolitan planning organizations, and other agencies involved in the transportation planning process. Most mandates draw from the presidential proclamation in 1994 under President Clinton to define EJ as:

> the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income, with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. This goal will be achieved when everyone enjoys the same degree of protection from environmental and health hazards, and equal access to the decision-making process to have a healthy environment in which to live, learn, and work [EPA, 2014].

More recently, an increase in extreme weather events associated with climate change has spurred forward-thinking EJ policy to mitigate the effects of wildfires, hurricanes, drought, and flooding. A study by the Federal Emergency Management Agency (FEMA) noted that a community's ability to recover from a natural disaster was highly correlated with social vulnerabilities and community resilience (FEMA, 2020; Frank, 2020). As a result, FEMA's new hazard risk index included socioeconomic variables to troubleshoot EJ concerns like the prolonged recovery and displacement of low-income Black communities in the wake of the 2005 Hurricane Katrina. Such efforts have also broadened EJ scholarship from focusing on hazard prevention with waste siting to issues such as gentrification and displacement (Anguelovski, 2016). Although researchers and state agencies have developed numerous methods to measure exposure (Forkenbrock & Schweitzer, 1999; Chakraborty, 2006), many

scholars have noted that there are few specific guidelines to incorporate EJ principles into the planning process (Liu, 2001; Mills & Neuhauser, 2000). Recent reports on dozens of pioneering local efforts have sought to address such shortcomings (Baptista, 2021; Baptista et al., 2019).

To ground such efforts, our study is the first EJ-focused plan evaluation to our knowledge. We sought to understand where and how cities have addressed EJ in relation the broader health equity movement and current scholarly frameworks. In states with strong land use planning policies, comprehensive plans offered a critical policy lever for fulfilling such EJ policy efforts (Early, 2015; Fulton & Shigley, 2018). We focused on such comprehensive plans, which represent years of considerable public input through public meetings, charrettes, and advisory committees culminating in community value statements about EJ in both the presence of policy *and* the absence. A better understanding of land use policies already in use and gaps in policy attention could inspire efforts to address EJ while helping planning scholars, advocates, and state agencies provide guidance based in existing practices. Moreover, we compared plan content with theories of how EJ was operationalized and city demographics, hypothesizing that cities that were majority BIPOC would have greater representation of BIPOC community members and include more EJ content.

To achieve this goal, we first frame EJ efforts in their broader history as a social movement. We then describe scholarly concept models and how such frameworks have been operationalized in policy. Then, we use a California use-case to demonstrate methods for recognizing the upwelling of local efforts from majority BIPOC communities and how they respond to both the EJ movement and academic conceptual models of EJ. We then present our results, highlighting gaps in practice and theory, and conclude with a set of policy exemplars to inform practice.

Background: Environmental Justice as a Planning Goal

Environmental Justice as a Social Movement

EJ is both a social movement focused on land use planning, a growing academic discipline (Washington & Strong, 1997), and a policy effort rooted in the practice and study of public health, planning, and law (Agyeman et al., 2003; Bullard, 1990; Sze, 2007). The EJ social movement has a complex array of actors and objectives. Many scholars have traced the EJ movement back to Southern Black social activism (Mohai et al., 2009; Sze, 2007; Warner, 2002) and the use of civil rights lawsuits in the 1960s (principally Title VI of the 1964 Civil Rights Act) to prevent siting hazardous waste facilities. The success of such lawsuits and advocacy spurred the rise of allyship networks rooted in communities of color (Perkins, 2021; Taylor, 2000), such as the Indigenous Environmental Network, the Black Environmental Justice Network, the Asian and Pacific Environmental Network, and the Southwest Network for Economic and Environmental Justice (representing primarily Latino communities). A much longer history of collective action in opposition to racism and White supremacy in land use predates coining the term EJ. For example, indigenous efforts to re-occupy and manage land connect to a longer history (Blansett, 2018; Gilio-Whitaker, 2019; Middleton, 2011, 2013; Perkins, 2021).

At the same time, predominantly White groups also have used the EJ term in efforts to reduce environmental burdens, such as White women in Appalachia (Bell, 2013). To explain the occurrence and necessity of such complexity, David Scholsberg (2007) in *Defining Environmental Justice* stated, "The environmental justice movement can be unified but it cannot be uniform. An insistence on uniformity will limit the diversity of stories of injustice, the multiple forms it takes, and the variety of solutions it calls for…unity without uniformity" (p. 535). In part, the interchangeability of the term *environmental justice* with *health equity* represents a convergence of movements: one, the civil rights EJ efforts; the other, the urban health environment movement that is more aligned with Rachel Carson's 1962 work, best represented in her book *Silent Spring* (Frumkin, 2005). Importantly, EJ has not been a given subset of health equity, but an addendum, particularly where health equity is conspicuously defined without mention of *race* or *racism* (e.g., Braveman & Gruskin, 2003), thereby omitting the systemic, historic patterns of intentional oppression.

Conceptual Frameworks in Scholarship

In scholarly literature, EJ has been typically characterized with two main components: procedural and distributional justice (Schlosberg, 2007). *Procedural justice* refers to efforts to increase the access of all populations to environmental decision-making processes. Distributional justice refers to the placement of development in relation to historically disadvantaged communities (Schlosberg, 2007). Process-wise, efforts to increase procedural justice feed into distributive justice outcomes. For example, Loh and Kim (2021) Click or tap here to enter text. evaluated 48 local plans in Michigan and found that plans that had been developed with greater representation and community engagement placed more focus on equity. Similarly, Fitzgerald (2022) followed the planning process in five U.S. cities, noting that achieving equity-oriented policies depended on planning staff fostering representative justice with trust-building and anti-racism training to welcome underrepresented groups to the process and meaningfully value their input. Ultimately, evaluating the outcomes of distributive justice hinges on what constitutes an amenity. Housing, energy infrastructure, and even natural hazard sites can be alternately considered amenities or dis-amenities depending on community values and design standards (Kim et al., 2017). In some cases, even an amenity may be considered a dis-amenity (e.g., greenspace spurring displacement; (Wolch et al., 2014). Because of the debates over what constitutes an amenity or dis-amenity, efforts to address distributional justice have often pivoted on the definition of who constitutes a disadvantaged community and how that community exerts power over the process.

Some scholars have added two additional lenses to EJ: recognitional justice and capability (Fraser, 1995, 1998; Schlosberg, 2007; Svarstad & Benjaminsen, 2020). *Recognitional justice* is the acknowledgement of—and respect for—difference, often a prerequisite for procedural and distributional justice. The capability approach emphasizes the multidimensional aspects of wellbeing where distributional justice should consider not only environmental dis-amenities (e.g., prisons), but also amenities (e.g., walkable neighborhoods) in relation to community values (Robeyns, 2005).

Environmental Justice Operationalized in Planning

California stands out as the first state that has built data tools, funded programs, and made policy mandates to include EJ in planning. The passage of Senate Bill 1000 (Leyva) in 2016 (Cal. Gov. Code, Sec. 65302(h)) required that general plans formally address EJ in new adoptions beginning January 1, 2018. Unlike climate action plans or other voluntary planning documents, California's general plans are required for every city, and zoning must be horizontally and vertically consistent such that policies in the housing element agree with those in the open space element, for example (Gov. Code Sec. 65300.5). Further, every general plan must address the mandated elements of land use, circulation (transportation), housing, conservation, open space, noise, and safety. Of these elements, housing and transportation are required to be updated most frequently. Ultimately, adoption of a new element, usually the housing element, triggers the mandatory revision of several other components of the general plan, including identifying disadvantaged communities (Gov. Code Sec. 39711) and the state mandate to address environmental kustice (Gov. Code Sec. 65302(h)).

Guidelines for incorporating EJ from the Governor's Office of Planning and Research (OPR, 2020) require both distributional and procedural EJ focus through identifying disadvantaged communities within the planning area and creation of objectives and policies to:

> 1) "reduce the unique or compounded health risks in disadvantaged communities by means that include, but are not limited to, the reduction of pollution exposure, including the improvement of air quality, and the promotion of public facilities, food access, safe and sanitary homes, and physical activity," 2) "promote civil engagement in the public decision-making process," and 3) "prioritize improvements and programs that address the needs of disadvantaged communities" (Gov. Code Sec. 65302(h)).

As noted in the EJ conceptual framework section, efforts to address both procedural and distributional justice pivot on the definition of *disadvantaged communities*, which in California are defined as "areas disproportionately affected by environmental pollution and other hazards that can lead to negative public health effects, exposure, or environmental degradation" and "areas with concentrations of people that are of low-income, high unemployment, low levels of home ownership, high rent burden, sensitive populations, or low levels of educational attainment" (California Gov. Health and Safety Code [HSC] Sec. 39711). The state created the CalEnviroScreen mapping tool to identify such communities and several of their socioeconomic, health, and environmental characteristics (California Environmental Protection Agency [CEPA], 2021).

Keen readers will be quick to notice that race has been absent as a key motivating variable for both defining a disadvantaged community and prescribing an EJ policy focus, whereas other population attributes, like sensitive age groups and low education rates have been added (CEPA, 2021). In addition, the operationalized definition of disadvantaged communities as mapped through CalEnviroScreen is place based, not people based. One can be disadvantaged and not live in a disadvantaged community. In such cases, people-based policies may help target individuals in need, such as the unhoused population residing in

relatively more affluent areas. In sum, California has created a policy framework where local jurisdictions can meet EJ requirements without addressing racial equity. To understand if local policy aligns more with the state framework or the social movement roots, we framed our analysis of California EJ policies to differentiate between place-based policies and people-based policies, with an emphasis on which sensitive groups are prioritized.

Last, and most important, although general plans undergo California Environmental Quality Act (CEQA) review for environmental impacts, there is no mandated review of adopted plans for their impact on racial equity nor human health (Jackson et al., 2011). The housing element is the only chapter of the plan that undergoes review by a state agency, and that review is specific to state housing mandates to address how housing quotas will be feasibly met. At present, there are no penalties for failing to include EJ policies, nor are there funding incentives for meeting the state mandate. Cities can volunteer updates to the state through the Annual Planning Survey (APS). Half of all cities volunteered responses in 2020. Of these 252 respondents, most reported the least staff and funding capacity for health and racial equity efforts as well as the greatest demand in these two subject areas compared with other topics such as greenhouse gas emission reductions and affordable housing programs (Governor's OPR, 2021). In sum, California has provided an encouraging planning environment for locally initiated EJ efforts but lacks strong regulation for addressing the racial components on EJ. In response, our plan evaluation focused on efforts that predate the state EJ mandate to benchmark the headway made at the local level before the state-level EJ guidelines took effect. In reviewing California local EJ policies, we asked if local efforts aligned with the resulting state policy in largely sidestepping racial equity.

Plan Evaluation

Case study research has noted that both the upwelling of local policies in plans, as well as the manifestation of state mandates, are the result of long-time advocacy efforts rooted in communities of color (Corburn, 2009; London et al., 2008; Sze et al., 2009; Sze & London, 2008). Such studies have highlighted that recognitional justice is a prerequisite for both procedural and distributive justice. In support, London et al. (2008) Click or tap here to enter text. followed the arc of progress in California state mandates to include EJ, finding that "environmental justice policy in California is implemented primarily as a function of improving participation" (i.e., to achieve procedural justice; p. 257). We expected to similarly find that communities of color have pioneered the greatest EJ content.

Yet, we also expected that EJ content in plans would be rare, requiring the review of a large sample of plans. Previous research conducted at the national level in the United States has noted that EJ content is rare in plans (Loh & Kim, 2021). For example, Warner (2002) Click or tap here to enter text. found that though 33 of 77 U.S. cities with populations larger than 200,000 in 1990 had sustainability plans at the end of that decade, only five of them (15%) included EJ components. Similarly, Saha and Paterson (2008) Click or tap here to enter text. surveyed 209 medium and large cities in the United States, finding that 74% (155 cities) incorporated sustainability goals in their comprehensive plans, and of these only 63% mentioned equity as important to achieving sustainability goals.

For comparison, there have been few plan evaluation studies overall. In their meta-analysis of plan evaluation, Berke and Godschalk (2009) Click or tap here to enter text. noted only 16 plan evaluation studies over a 20-year period from 1997 to 2007. In addition, most studies have compared tens of plans (Berke & Conroy, 2000; Conroy & Berke, 2004; Mui et al., 2021). In explanation, many plans are several hundred pages in length. Qualitative coding is limited and requires incredible academic labor when coding large sample sizes. Building on general calls for plan evaluation and practical frameworks (Baer, 1997; Talen, 1996), the quantitative methods we used are novel and open pathways for evaluating a large corpus of plans.

Methods

In this study, we asked to what extent and in what ways cities have included EJ goals and recommendations in their comprehensive plans. To investigate this question, the methods we used included: a) exploratory quantitative text analysis on a corpus of 461 adopted California city general plans; and b) identification and content analysis of a subset of seven general plans based on high EJ content and input from nonprofit partners with technical EJ planning experience (Figure 1). In this manner, we used an information-oriented approach to plan evaluation (as opposed to a convenience sample). Further, our in-depth plan content analysis helped to verify the quantitative model. We also used findings in the content analysis to reflect across the wider planning corpus accessible through a web-based portal (Antonio et al., 2021).

Topic Model

Because there is no central database of plans, the research team under direction of the first author gathered a corpus of 461 machine-readable PDFs of California city plans (Brinkley & Stahmer, 2021). This corpus covered 95% of city jurisdictions, with 24 missing cities resulting from the inability to locate a plan or a machine-readable PDF of a plan. Text was extracted using the readPDF function of the R *tm* package v0.7–6 (Feinerer, 2018). We created a semantic topic model using the R *lda* package (Chang, 2015). Topic modeling first establishes clusters of frequently co-occurring words in the corpus (the topics) and then maps the presence of these clusters in individual documents across the corpus (data: https://datalab.ucdavis.edu/text-reports/archive_text_reports/ city_planning_data-20190530/ldavis.html#topic=58&lambda=0.22&term=). For example, we found that the following words frequently occurred together in many individual plans: *health, justice, food, obesity, diabetes, wellness, asthma, hospitalization, nutrition, positional, linguistic, stroke, tobacco, school-based.*

These words occurred most in one of the 60 identified topics. We labeled this topic "EJ" and explored the likelihood that this topic was present in each city plan using a latent Dirichlet allocation (LDA). Feedback from partners in the California Environmental Justice Alliance (CEJA) helped groundtruth findings by verifying that the top 20 cities with EJ content were active in EJ policy networks. CEJA is a network of 10 nonprofit agencies working on EJ issues in California and represents more than 35,000 Asian Pacific American, Latino, and African Americans. Next, the first author spatially joined topic probability fit with cities

and their attributes (American Community Survey 2014–2019 5-year averages of median household income, percentage White) to conduct regression analyses.

Content Analysis

To further validate the topic model, we selected seven plans for content analysis from the top 20 plans with the greatest amount of the EJ topic. For greater representation of diverse approaches, we selected plans that would include representation of California's sociodemographic and geographic diversity from small, medium, and large cities, as well as coastal and inland areas. We followed Baer's (1997) Click or tap here to enter text. model of plan assessment in post-test descriptive content analysis on completed plans. We did not analyze plan outcomes but rather the plans themselves. This allowed us to examine the full breadth of EJ policies (Bowen, 2009). We only included policies that supported EJ through a focus on *both* the improvement of environmental exposures (e.g., reduction of air pollution) as well as an explicit or suggested prioritization of vulnerable populations or geographic areas. In addition, we noted the presence of EJ policies in goals and implementation strategies, omitting only general mention of EJ terminology not associated with actions. Two coders evaluated the plans, comparing the number of codes in agreement to reach an intercoder reliability score of 95%. In total, 77 codes were used to describe policy approaches to EJ, as well as 12 codes for priority populations or areas (Technical Appendix A, Table A1). Of the 12 priority populations/areas, 10 were focused on characteristics of people, whereas 2 focused on characteristics of places ("affected areas" and "underserved areas"). During the coding process we aimed to maintain the language used by each city in their general plan to identify and describe priority populations in their respective communities; however, some categories were collapsed for simplicity, such as "English language learners" and "linguistically isolated households." Intersections across policy foci and populations were identified using matrix coding queries in NVivo 12 (QRS International, released 2018).

Limitations

The limitations of our study included sampling a single state and a focus on plan contents, not plan outcomes. The plans selected for in-depth content analysis covered the 2010 to 2015 range with many policy objectives that had outcome time horizons beyond this study. Our study did not evaluate policy strength in terms of funding, staff, and timeline commitments. Moreover, although we present policies in terms of the number of policies, it is possible that one broad policy may exert more impact than several more targeted policies. Thus, our content analysis was focused on comparing EJ policy scope in practice with the EJ movement and attending theories. Last, our study was focused on comprehensive plans, and it is possible that EJ content could be found in other planning documents not considered in this study, for example, climate action plans (see Baptista, 2019). We encourage follow-up studies to delve into planning outcomes as well as the context in which plans were made to better understand planning processes, including the use of consultants.

Which Cities Are Planning for EJ?

In this study, we asked to what extent and in what ways local governments included goals and recommendations that would advance EJ in their comprehensive plans. Topic modeling allowed rapid assessment of EJ content across 461 city plans; in-depth content analysis on plans with the most EJ content provided hundreds of example policies.

First, we found that only 31 cities (of 461 with plans collected, 485 total in California) mentioned the term *environmental justice* in their general plans. National City mentioned the term the most at 112 times and was the only city to have a standalone EJ element at the time of document collection. This plan chapter on EJ from National City is thus referred to as a model in state guidance documents (OPR, 2020). However, the first city to address EJ was Oakland, two decades earlier in 1998. We expected that newer plans would have a stronger focus on EJ based on trends in growing EJ advocacy statewide (London, 2022; London & Harrison, 2021). We found the frequency of the term and density of the topic in plans to be greater in newer plans; two-thirds of the city plans that addressed EJ were adopted within the last 10 years, indicating a growing local interest in EJ.

The method of topic modeling allowed us to capture language affiliated with environmental justice even where the EJ term was not explicitly mentioned, thus drawing on longer collective efforts to address equity and justice. In so doing, we found that approximately half of the plans within the top 20 for EJ model fit were from suburban cities in the Los Angeles and San Diego metropolitan areas, perhaps indicating EJ policy innovation and adoption regionally (Figure 2).

Communities of Color Leading EJ Content

Because the EJ movement is and has historically been predominantly led by BIPOC communities (Agyeman et al., 2016; Taylor, 2011), we hypothesized that certain community characteristics would influence the planning focus. We found the most headway in EJ planning made in cities with populations that are majority BIPOC and would presumably have more input and leadership from historically marginalized populations. Only a quarter of the cities (28%) in the top quartile for EJ topic model were White majority in population (Table 1), whereas more than half the cities (55%) in the bottom quartile for EJ topic model fit were majority White. There was little difference in average median household income between the top quartile in EJ topic fit ($79,640) and the bottom ($80,509). For reference, fewer than half of all California cities were majority White, and *none* of the seven cities chosen for our analysis were majority White in population (Table 1).

Justice for Whom?

Next, we turn to plan content analysis for a more detailed look at the topical focus of EJ efforts. Across the seven plans, we identified 628 discrete policies that supported EJ (Table 2).[i] Fifty-four percent of policies focused on places. Of the policies focused on people, the most prioritized groups were low-income residents (38%), children or youth (37%),

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[i]Note: Throughout our findings sections, we specify the number of policies that fit each topic definition listed in Technical Appendix A. These counts are intended only to compare the relative focus of plans on policy areas and populations. Policies were often coded under multiple subject areas depending on their content; thus, there was overlap in policy counts across categories. In addition, some

and people with disabilities (31%). Twenty-four policies focused on homeless individuals, and 10 policies prioritized farm workers. Only one policy focused on formerly incarcerated people. The next least represented groups were minority groups (three policies), English-language learners (five policies), and communities of color (three policies). This finding is surprising given the original motivation for EJ and that the seven cities have populations in the global majority (i.e., majority communities of color). Yet, it is also possible that some population categories acted as proxies and that place-based considerations offered coded language for majority BIPOC neighborhoods without directly acknowledging race or segregation.

In reflecting findings back across the 461 plans for comparison, nearly half of California's cities addressed homelessness, whereas only two used the term *communities of color* and only one mentioned the term *racism* (La Mesa City in San Diego County; Brinkley & Stahmer, 2021). Further, we found that even in the seven plans with the most attention to EJ, little content acknowledged historically racist policies such as redlining. In sum, EJ policies were more explicitly focused on poverty over race. In this sense, EJ has been predominantly operationalized as health equity without explicit emphasis on race or racism (Braveman & Gruskin, 2003), though the most policy headway has occurred in communities of color.

How Are Cities Planning for EJ?

To demonstrate the broad applicability of EJ principles and content, we identified relevant policies across all required elements of city general plans in California (Figure 3) with discussion in decreasing order of focus, based on policy counts and organized by the required plan elements: housing, circulation, land use, health, safety, open space, air quality, and noise.

Housing, Transportation, and Land Use

Housing, transportation, and land use elements contained the most EJ policies (Table 2), a finding that aligned with how frequently these elements of the general plan must be updated, providing more opportunities for EJ language to be infused. Of these elements, housing was the only element that included state-level plan review, and the state Housing and Community Development agency emphasized feasibility as a top review focus for developing low-income housing, a primary EJ consideration. Of a total of 141 policies focused on housing and EJ, policies most included support for affordable housing (53 policies). Yet, EJ policies also went beyond state requirements to simply build enough affordable housing. Plans also included policies to mitigate displacement by designing mixed-income neighborhoods (8 policies), support renters through assistance programs or requirements for landlords to maintain properties (8 policies), and enforce fair housing practices (7 policies from 4 plans) that would protect people from discrimination when they are renting or buying a home, getting a mortgage, or seeking housing. See examples in Technical Appendix B, Table B1.

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cities included the same policies in multiple elements of their general plans, meaning some policies may have been coded more than once during our analysis.

To this end, housing, transportation, and land use policies most frequently prioritized people and not places, with most focusing on low-income residents (e.g., 68 of 141 housing polices; Table 2). For example, five of the seven plans included policies (22 in total) that prioritized homeless individuals, including policies to support homelessness prevention, offer emergency or transitional housing for homeless individuals and families, provide supportive housing including short-term and permanent arrangements, and connect homeless individuals with supportive services (e.g., mental health, substance abuse, and primary healthcare). The City of Richmond General Plan (2012) included unique goals and policies to support re-entry and transition of formerly incarcerated individuals through shelter and supportive services (e.g., p. 314, Action EC5.B). In reflecting across the corpus of 461 city plans, only 16 cities mentioned "incarcerated" in their plans, and of these only four included policies to address reentry for the formerly incarcerated, indicating how rare such policies are in city-level plans. This finding also supported the topic modeling results in demonstrating that the plans used for in-depth coding represented the vanguard of EJ planning in California cities. Although such focus emphasized health equity broadly, EJ was also pronounced in policies focused on farmworkers. For example, cities located in more rural or agricultural areas (Arvin, Coachella, Woodland) included housing policies to pursue funding support for farm worker housing.

Similarly, EJ policies related to transportation focused on people over place with emphasis on supporting access and services for all users (e.g., universal design; Table 2). Yet, in doing so, none of the transportation-related policies addressed language justice, homeless populations, or communities of color. This finding was surprising given the legacy of transit planning that created public transportation deserts in many low-income communities of color. In reflecting back on the full corpus of plans, none of the 461 cities mentioned the term "transit desert." In addition, none of the EJ-related policies addressed electric vehicles (EVs), though this topic was common across the 461-plan corpus. The lack of connection between EV and EJ policies reflects critiques that EVs are not yet part of the suite of policies that could bring about mobility justice (Henderson, 2020). Similarly, air quality was a critical consideration within EJ and transportation; however, relatively few EJ policies addressed this topic (38 policies total). Where policies related to air quality occurred, they often dovetailed with non-EJ focused environmental sustainability efforts to promote active and alternative forms of transportation (Technical Appendix B, Table B7).

Prominent EJ policy themes related to land use focused more on places over people (100 of 129 policies) and included siting compatibility, use of buffer zones or barriers, promoting mixed-use development and infill, and renovation. In fact, of the seven cities included in the study, only Los Angeles's general plan mentioned segregation, and then only to call out that it is "now the least segregated major city in the United States" (Los Angeles, 2013, p. 1–6), according to a controversial report by Glaeser and Vigdor (2013 Click or tap here to enter text.) that has been challenged by numerous segregation scholars (Ellen et al., 2016; Rugh & Massey, 2014; Valbrun, 2012). Across the corpus of plans, only 20 cities mentioned historical redlining, belying a deeper trend across plans to not acknowledge past segregation policies that have led to today's health disparities.

Health

All seven general plans selected for our analysis included a voluntary health-focused element, indicating a local commitment to addressing health equity in planning well before state mandates to do so. We identified 115 policies within this element covering themes such as access to sources of healthy food, opportunities for recreation and physical activity, access to healthcare services, water quality and access, tobacco control, exposure to lead-based paints, exposure to pesticides, alcohol or substance use, and mental health.

Policies mostly centered on food access (44 policies). For example, six out of seven general plans included policies to promote community gardens, urban agriculture, and/or farmers' markets in areas with more limited access to sources of healthy foods (e.g., low-income neighborhoods, underserved areas, food deserts). Five of the seven plans also included policies to support use of food assistance programs among low-income residents, such as by encouraging stores and farmers' markets to accept WIC (Special Supplemental Nutrition Program for Women, Infants and Children), EBT (Electronic Benefits Transfer), and SNAP (Supplemental Nutrition Assistance Program) benefits, or by building awareness of these programs in the community. Of note, Vallejo was the only city in California to address food deserts, but community gardens were addressed in 65 plans, 80% in the top quartile of EJ content.

Beyond the food environment, health chapters focused on medical services, physical activity, and pesticide exposure. Five of the seven plans included policies to improve access to healthcare services in medically underserved areas (15 policies). The various approaches included developing affordable medical facilities in underserved areas, offering transportation services to residents, or promoting adoption of culturally and linguistically appropriate care to serve diverse populations. Four cities included policies to promote exercise and physical activity among vulnerable populations (9 policies), including children or youth, seniors, low-income residents, and people with disabilities. The Coachella general plan included policies concerning pesticide exposures among vulnerable population groups or areas (6 policies), including geographic areas most likely to be affected by pesticide use, as well as farmworkers and children. For example, these policies aimed to reduce use of pesticides or herbicides, encourage non-toxic alternatives, educate agricultural workers and employers, and create buffer zones between agricultural and sensitive land uses (e.g., residential areas, schools). Only 5 of 461 cities addressed secondhand smoke, and all were in the top quartile for EJ content. Together, these policies showed the breadth of focus areas that EJ policies can take and provide templates for other cities who are similarly drafting EJ policies to support health equity through general plans (Technical Appendix B, Table B4).

Safety, Noise, Open Space, and Conservation

Last, we address the polices in the remaining required elements of California plans: safety, noise, open space, and conservation. Planning for safety centered on preventing or mitigating harmful exposures in particular geographic areas as opposed to any population group (102 policies total, 80 focused on affected areas). Six of the seven plans included safety-related policies that focused on children or youth (13 policies), several of which aimed to establish programs for at-risk youth. Indeed, Richmond was the only city of 461

to mention "anti-violence" in its plan. Although 23 cities mentioned "extreme heat" and 122 mentioned "farm workers," Coachella was the only city with a safety policy to protect farm workers from extreme heat and other hazardous conditions (See examples in Technical Appendix B, Table B5).

Five of the seven plans included policies aimed at preventing or mitigating excessive noise (21 policies), including noise from transportation-related sources (e.g., freeways, railroad crossings, truck routes). Most such policies prioritized affected areas (20 policies), often described as residential and/or sensitive land uses, without naming priority population groups.

Open space policies that address EJ (83 total policies) centered on the equitable distribution of parks and other community amenities. Six out of seven general plans included policies to promote improvements in park access in low-income (14 policies) or underserved areas (33 policies). Several plans also included policies to improve access to public facilities; for example, locating schools, childcare services, and libraries near affordable housing or encouraging mixed-use development for the colocation of housing with public amenities (e.g., healthy food outlets). Open space policies that mentioned demographic groups did not focus on race but prioritized children or youth (19 policies), people with disabilities (12 policies), and seniors (8 policies). One plan (Coachella) specified recreation programs should meet needs of non-English speaking groups (Technical Appendix B, Table B6).

Relatively few conservation policies addressed EJ. This reflects a long-standing critique of sustainability as often lacking a social justice or health equity component (Agyeman et al., 2016; Taylor, 2000). However, those policies that did meet EJ criteria may serve as useful examples to planners in connecting environmental and human health (17 policies total), with most focused on affected areas (12 policies) as opposed to vulnerable population groups.

Discussion: Supporting Environmental Justice Policies in Plans

In sum, we used a novel approach to first identify policy content with quantitative topic modeling and then categorize planning approaches with qualitative coding. In doing so, we provide a method to rapidly assess plans, enabling future benchmarking of progress and ability to tie planning content with outcomes for future evaluations. This research draws attention to cities that have the most attention to EJ with information-oriented sampling that can celebrate the leading edge of EJ policymaking.

As the first plan content analysis of EJ, our findings can help inform EJ theory and scholarship. We found that majority BIPOC cities have pioneered California's EJ policies. This finding further supports the theory and growing evidence (Loh & Kim, 2021) that representational justice is important to achieving procedural justice. Our findings also indicated that to further realize EJ in planning, local jurisdictions will need to be deliberate with engaging diverse stakeholders, particularly in majority White communities. In our review of EJ plans, we also found more focus on equitable development of amenities and concerns of inclusion as opposed to a focus on hazardous sites. This finding echoed similar trends in EJ scholarship from siting waste facilities to the effects of gentrification as noted

by Anguelovski (2016) Click or tap here to enter text.. As such, EJ policy in California was built from representational justice and sought to provide distributive justice with a capability lens.

Yet, our findings challenge EJ theory by noting that even where representational and procedural justice aligned, there was little recognitional justice in policies. Even in plans from majority BIPOC communities, planning policy focused more on health equity than explicit acknowledgement of race, racism, or historical segregationist policies. Such planning practices speak to the undercurrents of converging EJ and health equity movements (Frumkin, 2003). Indeed, voluntary health elements were present in plans with the most EJ content, indicating a shared thought process. As California state EJ policy moves forward, will cities relabel "health equity" as "EJ," or will they address the civil rights origins of EJ in their own communities?

Our findings bring up considerations for the trajectory of the EJ movement and allied efforts. California has created a framework where cities can continue to meet EJ requirements without explicitly addressing racial equity. Further, plans are created at the local level but not reviewed by the state or tied to funding opportunities, apart from affordable housing allocations, leaving one to wonder how much state mandates will influence EJ practice overall. Although the state provides data products like CalEnviroScreen to help map disadvantaged communities and health concerns, more plan review, incentives, and technical support are clearly demanded as noted by the Annual Planning Survey (2020).

Our research highlights how the EJ policies present in plans even before the state mandate took effect are homage to an upwelling of local willpower, several decades of advocacy, newly available data sets, and research support. For example, the City of Richmond offered nationally recognized efforts to address EJ by establishing "Health in All Policies" (Corburn, 2009; Corburn et al., 2014) into the general plan adopted in 1998, well before the state's SB 1000 mandate to include EJ in plans. Similarly, the prominence of food planning within health elements of general plans underscores a two-decade-long history of collaboration between the EJ and the community food security movements (Agyeman et al., 2016). Gottlieb & Fisher (1996, p. 193) implored EJ advocates to "first feed the mouth," and planning scholars have developed planning research and practice in food systems to support advocacy efforts (Pothukuchi, 2009; Pothukuchi & Kaufman, 2000). The focus on food systems in EJ acknowledges the disparities in diet-related health and hunger, seeks to undo past policies by redirecting resources to underserved areas and communities, and includes aims to prevent future health disparities by focusing on maternal and early childhood interventions. Similarly, the presence of pesticide policies in land use planning is an homage to the decades of activism by the largely Chicano/Latino-led United Farm Workers' Organizing Committee, who focused primarily on farmworker exposure as opposed to parallel efforts by other environmental groups to protect wildlife, wilderness, and consumers from pesticides (Pulido & Peña, 1998). The information-oriented method of topic modeling combined with CEJA advocacy feedback allowed us to draw attention to such cutting-edge efforts across a cohort of 461 plans.

Many such efforts are novel, and our findings indicated that EJ content is increasing as plans are updated. We hope this research will embolden communities to take further action on the conspicuous absence of EJ policy focus in many areas. For example, none of the policies addressed how policing of noise ordinances are often disproportionately leveraged within disadvantaged communities (e.g., youth, communities of color) and can have long-term impacts leading to tenant evictions (Desmond & Valdez, 2013; Stolper, 2019). For example, the American Civil Liberties Union found that of the 412 people arrested for noise complaints in Washington (DC) from 2013 to 2017, 76% were Black (American Civil Liberties Union, 2019). Noise is a required element in California city plans, but this chapter is not frequently updated. By bringing attention not only to innovative policies but where plans are silent on topics, we hope to inspire broader city-to-city learning efforts for pioneering policies.

Conclusion

As the most ethno-racially diverse state, California has a critical stake in addressing health disparities. Beyond California, demand for EJ policies will likely increase as communities grapple with the impacts of policing on communities of color and low-income neighborhoods as well as new FEMA guidelines that incorporate social vulnerability indices into hazard planning. Indeed, this research showed a growing focus on creating EJ policies in recent years, with the most EJ content arising from suburban communities that are majority of color.

To better inform such demand and refine EJ principles in guidelines (Liu, 2001; Mills & Neuhauser, 2000), the appendix of 628 EJ policies generated by our analysis is rich with piloted approaches, based on local efforts, that offer proof of concept and a basis for recommending grounded examples. Our topic modeling effort identifies the cutting-edge efforts that those aspiring to incorporate more EJ policies should keep up with, thereby setting a benchmark to be surpassed. Further, congratulating these "best in show" cities (Sze et al., 2009) for their efforts helps recognize the well-trod paths to state and national EJ policymaking and implementation, celebrating the majority BIPOC communities who are putting the EJ movement into practice.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

Acknowledgments

Data Availability Statement

The data that support the findings of this study are openly available at the General Plan Database Mapping Tool at https://critical-data-analysis.org/general-plan-map/, Antonio, D; Lopez, M.; Poirier, L; Ghosh, S.; Dettmann, M and Brinkley, C. (2021, February 24). (Version 2.1.2). Zenodo. http://doi.org/10.5281/zenodo.4566234

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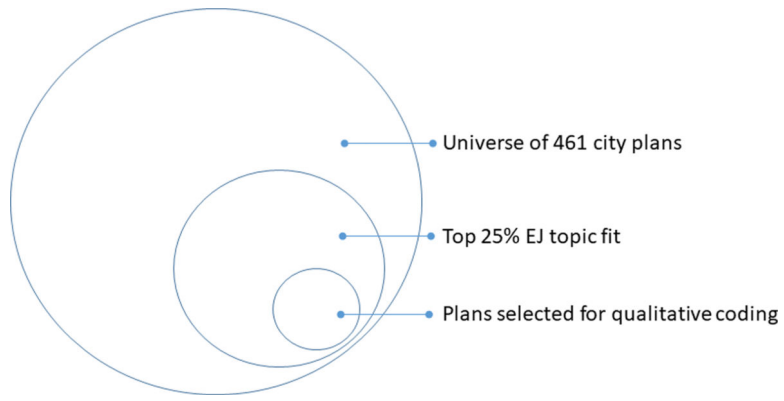**Figure 1.**
Universe of plans evaluated for topic fit and subset of plans selected for in-depth qualitative coding.
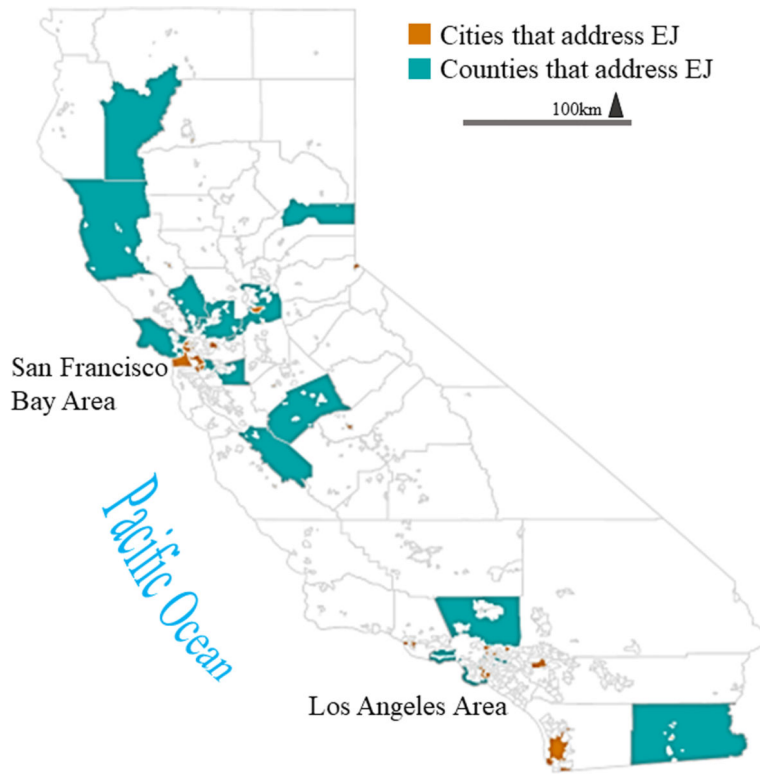
Figure 2.
Location of 31 of 461 cities and 13 of 58 counties that mentioned "environmental justice" in their general plan.
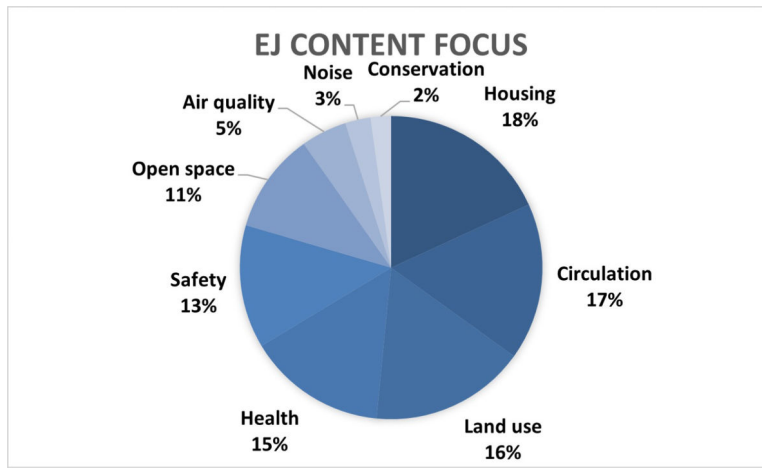
Figure 3.

EJ policy content focus across the eight required elements of the general plan and an optional health element shows most policy focus on housing, transportation, and land use.

Table 1.

Geographic and demographic context of cities included in analysis.

City	Year of most recent plan adoption	EJ topic fit rank (n=461)[a]	Land area (sq. miles)[b]	Population[b]	Median household income[b]	% non-White (including White Hispanic/ Latino)[b]	Region	Landscape	Urbanicity
Los Angeles	2015	1	469	3,990,456	$58,385	72%	Southern California	Coastal	Urban
National City	2011	2	7	61,431	$46,032	88%	Southern California	Coastal	Suburban
Arvin	2012	4	5	21,522	$38,214	96%	San Joaquin Valley	Valley	Rural
Fresno	2014	7	112	530,093	$47,189	73%	San Joaquin Valley	Valley	Urban
Richmond	2012	8	30	110,146	$64,575	82%	San Francisco Bay Area	Coastal	Suburban
Coachella	2015	10	29	45,839	$33,870	98%	Inland Empire	Desert	Suburban
Woodland	2017	18	15	60,531	$64,122	61%	Sacramento Valley	Valley	Suburban

Notes:

[a] (Brinkley & Stahmer, 2021).

[b] U.S. Census Bureau QuickFacts (https://www.census.gov/quickfacts/CA).

Table 2.

Focus areas for 628 EJ policies identified in seven California city general plans.

	Priority populations/ areas[a]	Affected areas	Children or youth	Communities of color	English language learners	Farm workers	Formerly incarcerated	Homeless individuals	Low-income residents	Minority groups	People with disabilities
Housing	**141**	23	7	0	0	7	1	24	68	0	17
Circulation	**130**	51	37	3	0	0	0	0	17	0	52
Land use	**129**	100	15	0	0	0	0	0	19	1	6
Health	**115**	34	28	0	3	1	0	2	24	3	10
Safety	**102**	80	14	0	1	1	0	0	2	0	11
Open space	**83**	34	19	0	1	0	0	1	14	0	12
Air quality	**38**	25	12	2	0	1	0	0	5	0	2
Noise	**21**	20	0	1	0	0	0	0	1	0	0
Conservation	**17**	12	3	0	0	0	0	0	2	0	1
Totals	**628**	**293**	**112**	**3**	**5**	**10**	**1**	**26**	**116**	**3**	**95**

Notes: Focus area counts are parsed based on vulnerable communities or areas as well as across each required general plan element (chapter).

[a.]"Priority populations/areas" is a parent code, meaning all populations or areas are nested within this code. Because policies could be coded for multiple populations/areas, the counts across groups may or may not sum to the total indicated in the priority populations/areas column.