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Equity Lenses: Targeting Equitable Community Investment Across Southern California

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EQUITY LENSES

TARGETING EQUITABLE COMMUNITY INVESTMENT ACROSS SOUTHERN CALIFORNIA

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Client: Southern California Association of Governments (SCAG)
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A comprehensive project submitted in partial satisfaction of the requirements for the degree Master of Urban and Regional Planning.

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16. Abstract

How can SCAG's Sustainable Communities Program (SCP) improve resource prioritization in communities most impacted by economic, social, and environmental inequities? This research project involves analyzing documentation and conducting semi-structured interviews with staff at SCAG and other organizations. I also selected three Metropolitan Planning Organizations (MPOs) to feature as case studies. I focused on four specific areas: indicators, scoring analysis areas, mapping, and prioritization. Based on the findings, I've come to a set of initial recommendations for a web-based Equity Lens Tool and the start of a scorecard. First, determine a core set of indicators for the Priority Populations and each of the SCAG themes defined in ConnectSoCal: Economy, Healthy & Complete Communities, Mobility, and Environment. Next, use the bin scoring method for the Priority Populations and map those across the entire region on the tool. Use each of the thematic areas as filters on the map. Also, surface details about the communities, past SCP projects, and data methodology for transparency. Then, the project prioritization scorecard could combine existing equity frameworks and data from the tool centered around Connect SoCal's four thematic areas. Initial sections of this scorecard could include Proposal, Community, Engagement, Benefits, Significance & Alignment, Burdens, and Accountability. Organizations are yearning for clear guidance on how to go beyond the buzzwords and operationalize equity in a meaningful way. If SCAG can lead by example, they have the potential to inspire other MPOs and multiply their impact beyond Southern California to impact people across the country.

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EXECUTIVE SUMMARY

Project Motivation

The social inequities we see across Southern California result from decades of systemic racism and historical disinvestment. How governments distribute funding and other resources can directly support efforts to address these issues. At the same time, increased investment has the potential to cause further displacement. With these challenges in mind, SCAG seeks to improve resource prioritization in communities most impacted by economic, social, and environmental inequities. This research project involves reviewing documentation, interviewing planners, and synthesizing best practices from across the United States. The results will aid SCAG staff in further discussions with stakeholders and policymakers.

Background

The project focuses on four research questions. First, how can SCAG use a data-informed outreach approach and prioritization methodology to identify and encourage disinvested communities to apply for funding? The Sustainable Communities Program (SCP), a key technical assistance program from SCAG, currently uses Environmental Justice (EJ) Areas, Communities of Concern (CoCs), and SB 535 Disadvantaged Communities (DAC) as geographies to prioritize funding. Second, how much do these existing geographies overlap? Third, are there additional data indicators to consider that might provide a more holistic picture of the most impacted communities in the region? And finally, how can SCAG use data to evaluate funding applications and proposals more strategically to target investment to communities with the highest need?

In addition to the research component, another desired outcome is to produce prototypes of a web-based tool. The idea is to visualize how SCAG might put these recommendations into practice in the future. The first is a data-based spatial tool to visualize key indicators across multiple programmatic categories to highlight the most impacted geographies and identify gaps in past funding investments. The second is a scorecard synthesizing existing frameworks to create unified criteria for the Sustainable Communities Program and an initial plan for applying the scorecard more broadly.

As part of the background research, I first reviewed the literature on environmental justice, racial equity, the importance of prioritization, and technical assistance. Next, I researched equity frameworks, tools, and general prioritization practices at other Metropolitan Planning Organizations (MPOs). This research project builds upon the recommendations from the literature.

Methods

I started by reviewing programs and tools at SCAG related to the Sustainable Communities Program. Then, I broadened out to other MPOs in California and across the country on the East Coast. These were selected based on prior research in the literature review, which highlighted these MPOs for their notable work in incorporating equity in their prioritization. I also wrote up expanded case studies for Boston, Atlanta, and MTC. Next, I expanded my research to include some other organizations that aren't MPOs and incorporate equity into their work. The table below (**Table E.1**) summarizes the MPOs, programs, and other organizations included in the research.

SCAG programs & tools	Other MPOs	Other Organizations/ Indexes
Connect SoCal Disadvantaged Communities (DAC) Planning Initiative Sustainable Communities Program (SCP) Environmental Justice (EJ) Tool - Communities of Concern - SB 535 Disadvantaged Areas - Native American & Tribal Lands - Environmental Justice Areas Active Transportation Database (ATDB) Equity Early Action Plan	Broward MPO The San Diego Association of Governments (SANDAG) **Boston Region MPO*** **Atlanta Regional Commission (ARC)*** Delaware Valley Regional Planning Commission (DVRPC) **Metropolitan Transportation Commission (MTC) & Association of Bay Area Govt. (ABAG)***	National Equity Atlas (National) Opportunity Atlas (National) SB 535 Disadvantaged Communities (CA State) TCAC/HCD Opportunity Areas (CA State) California Healthy Places Index (CA State) Social Equity Index (LA County) Metro Equity Focused Communities (LA County) LA Equity Index (LA City)

*Table E.1. Organizations, tools, programs, and indexes reviewed. Case studies marked with **bold** and an asterisk(*).*

The research is a mixed-methods approach that includes analyzing documentation and conducting semi-structured interviews with SCAG staff and staff at other organizations. I also selected three MPOs to feature as case studies. I narrowed my focus on four specific areas:

1. **Indicators** - How do they define "communities of concern" and why?
2. **Scoring Analysis Areas**- What methodologies do they use to score census tracts and highlight communities of concern?
3. **Mapping** - What interactive mapping tools have they created to make this data easily accessible to the public?
4. **Prioritization** - How do they use scorecards and equity analysis to prioritize projects?

Findings

Other MPOs can be an excellent resource for inspiration for incorporating an equity lens, as many have already done a considerable amount of work developing these strategies. Defining equity-focused communities more broadly and with positive language can be more inclusive and uplifting, considering the relative concentration of these populations begins to paint a more detailed picture of our communities. Mapping these populations in a user-friendly interface makes the data more transparent and accessible to less technical audiences. Additionally, when using this data to prioritize projects, considering equity from multiple perspectives acknowledges the interconnectedness of equity issues.

Organizations outside the sphere of MPOs are also a valuable resource and reference point when considering these multiple perspectives. California is fortunate to have several established state-wide indexes already in use that encompass a wide range of equity factors. The challenge here is not how to get enough data but having a clear understanding of what to do with it. The creation of new indexes for decision-making is an undertaking that SCAG should not take lightly. It should be grounded in peer-reviewed research, data analysis, and community engagement. Even then, it is unlikely that a single index will be the definitive measure of equity for all, but rather the first step is establishing clear goals.

Recommendations

Based on the findings, I've come to a set of initial recommendations as a starting point. The first is to determine a core set of indicators for the Priority Populations and each of the four SCAG themes defined in ConnectSoCal: Economy, Healthy & Complete Communities, Mobility, and Environment. Once the final list of indicators is determined, the next step is to operationalize them. As a first step, use the bin scoring method for the priority populations and map those across the entire region. Then, each of the four thematic areas can appear as different filters on the map, so it's easier for users to explore how other thematic areas and factors intersect.

For decision-making, SCAG could continue to leverage existing indexes for now. However, in future phases, SCAG may want to work on custom blended indexes for each program based on goals, more in-depth data analysis, and a review of policy implications. For example, the project prioritization scorecard could combine existing equity frameworks and data from the map centered around Connect SoCal's four thematic areas. Initial sections of this scorecard could include Proposal, Community, Engagement, Benefits, Significance & Alignment (Economy, Healthy & Complete Communities, Mobility, Environment), Burdens, and Accountability.

Conclusion

Talking about incorporating an equity lens grounded in data is more timely than ever. At the same time, organizations are yearning for clear guidance on how to go beyond these buzzwords and operationalize them in a meaningful way. As Cathy O'Neil, CEO of ORCAA, says, "we've seen time and again that mathematical models can sift through data to locate people who are likely to face great challenges, whether from crime, poverty, or education. It's up to society whether to use that intelligence to reject and punish them—or to reach out to them with the resources they need"(O'Neil, 2016). SCAG has the resources and responsibility to be at the forefront of this effort. If SCAG can lead by example, they have the potential to inspire other MPOs and multiply their impact beyond Southern California to impact people across the country.

PART 1

BACKGROUND CONTEXT

PROJECT PURPOSE AND PRIOR RESEARCH

1. Introduction

Decades of racist land use, housing, and transportation policies created inequities across Southern California. Policies included practices such as racially restrictive covenants and exclusionary zoning. These have led to eventual gentrification and displacement. Historical disinvestment in some parts of the region has resulted in long-term repercussions for these communities. How can local government agencies begin to tackle such injustices?

One way to directly counter the effects of past disinvestment is through new investment and deep engagement with local community residents. How governments distribute funding and other resources, therefore, can directly address inequities. At the same time, it's essential to be mindful that this increased investment doesn't cause further displacement. This concern underscores the need for a robust community engagement process and clear anti-displacement strategies in planning projects.

1.1 About SCAG's Commitment to Equity

The Southern California Association of Governments (SCAG) is the largest metropolitan planning organization (MPO) in the United States, representing more than 19 million residents living in Los Angeles, Orange, San Bernardino, Riverside, Imperial, and Ventura counties. Through its various technical assistance programs, SCAG provides resources to communities across the region. SCAG is uniquely positioned to leverage data and identify inequities across public health, land use, housing, economy, and transportation. As a result, SCAG's programs can potentially catalyze change at a large scale, especially in communities most impacted by racial, economic, social, and environmental injustices.

On July 2nd, 2020, the SCAG Regional Council Resolution (Southern California Association of Governments, 2020) reaffirmed the agency's commitment to working toward a fair and just society. They are committed to systemic change and improving outcomes for the region's low-income communities of color, particularly Black, Indigenous, and People of Color (BIPOC) and frontline communities. These are the communities that experience the first and worst impacts of any given crisis. SCAG aims to address the obstacles that have fostered racial inequities in health, wealth, and opportunity for marginalized communities. To support the implementation of the Resolution and achieve these goals, SCAG seeks to develop an equity visualization tool to take an equity-centric approach and target investments to the most impacted communities. Instead of relying on a single measure, such as the poverty rate, a multi-faceted scorecard recognizes that many equity indicators are interconnected. Hence, it needs to include multiple indicators across race, income, and other socioeconomic and community factors. This multi-faceted lens could enable SCAG to strategically prioritize and equitably target its resources to communities most impacted by economic, social, and environmental inequities.

1.2 The Research Questions & Goals

This research focuses on two SCAG staff responsibilities. Prioritization of outreach for technical assistance and evaluating program applications. In support of these activities, there are three main questions this research seeks to answer:

1. How can SCAG use a data-informed outreach approach and prioritization methodology to identify and encourage disinvested communities to apply for funding?
2. SCAG currently uses established state and federal definitions for Environmental Justice Areas, Communities of Concerns, and SB 535 Disadvantaged Areas identified in its Connect SoCal Environmental Justice Technical Report. How much do these three existing geographies overlap? Are there additional data indicators that might provide a more holistic picture of the most impacted communities in the region?
3. How can SCAG use data to strategically evaluate funding applications and proposals to prioritize communities with the highest needs?

The end goal is to synthesize the research findings in this document and produce an initial prototype of two web-based digital products for SCAG staff:

1. A data-based spatial tool to visualize key indicators across multiple programmatic categories. This tool will illustrate the most impacted geographies and identify gaps in past funding investments;
2. A scorecard system to synthesize existing frameworks and create unified criteria to guide equitable targeting and awarding of technical assistance, including an initial plan to apply the scorecard to the Southern California region.

The first version of these products can be tested by SCAG staff internally and used to solicit user feedback from various stakeholders over time. As a test case, this project will focus specifically on SCAG's "Sustainable Communities Program" with the potential for use among other programs across the agency and released publicly in the future.

This research contains four parts. Part 1 consists of the background information, which includes the literature review and research methodology. Part 2 focuses on understanding the equity lens within MPOs, including SCAG. Part 3 broadens the scope to draw inspiration from other tools and programs incorporating equity in their processes. Finally, Part 4 synthesizes all these elements into a series of recommendations and a prototype of the digital product.

1.3 Findings

I reviewed several MPOs and other equity-focused organizations to gain an understanding of current practices in this space. Throughout this research, the varied and complex processes of equitably allocating resources become even more evident. Organizations strive to use a data-driven approach to decision-making. However, it's important to remember that creating models include many potentially subjective decision points along the way. Deciding which datasets to use and how to use the data varies significantly across organizations. In most cases, outreach and community engagement were influential throughout the process of developing indicators and selecting priority geographies. While every process and program is different, some trends and techniques emerged.

MPOs

Most of the MPOs reviewed (see **Table E.1**) had a much more comprehensive range of indicators for their baseline "communities of concern" than SCAG currently uses. Some justify their selections based on federal definitions of protected classes, the groups of "people with a common characteristic who are legally protected from employment discrimination on the basis of that characteristic" (Thomson Reuters, 2021). Once I uncovered selected indicators, I reviewed what the selected MPOs did with them. Two main approaches emerged.

One is a binary threshold where an area is either "in" or "out" of a designation. The other approach uses "bin scoring," which considers how an area compares to the regional average based on standard deviation and sums individual indicators for a cumulative score. The chosen scoring technique lends itself to different mapping methods. For example, MPOs typically visualize the binary approach with only a solid block of color designating areas above a threshold. In contrast, MPOs portray the bin scoring method with a gradient of colors to indicate high and low concentrations across an entire region. These interactive maps also include more detailed breakdowns of each indicator. When it comes to prioritizing projects, one interesting way to acknowledge the interconnectedness of equity is to incorporate it throughout the scoring criteria as a multiplier, rather than separating it into one stand-alone section.

Beyond MPOs

When I broadened my research to include indices from other organizations, the scope of possible indicators considerably expanded. Many indexes measure similar things in slightly different ways. For instance, some might define poverty as percent above poverty in a more positively framed index or below poverty in a more disadvantaged framed index. How organizations use these indicators in each of the indexes varies considerably. However, some ground their analysis by connecting each to a specific outcome to provide a

measurable baseline. This technique makes it easier to determine which indicators are significant and how to apply weighting in the overall index. Other organizations outside MPOs tended to have more robust custom mapping interfaces with better user experiences and more unique features than a standard ArcGIS web app. For prioritization and decision making, some organizations use a mix of their equity-focused communities in addition to established California state-level indexes.

1.4 Recommendations

Based on the findings, I've come to a set of initial recommendations as a starting point. SCAG will need to conduct community outreach, stakeholder engagement, and data analysis before implementing any of these recommendations. First, this is the draft list of indicators and indexes for Priority Population across each of the four SCAG themes, as defined in ConnectSoCal.

Priority Population	Economy	Healthy & Complete Communities	Mobility	Environment
Income to Poverty Level People of Color Hispanic or Latinx Disability Age Under 18 Age Over 75 English Proficiency	Employment Education Retail Job Density Public Assistance	Homeownership Rent Severe Overcrowding Kitchen Facilities Plumbing Facilities Broadband Internet Access Health Insurance Life Expectancy	Commute Time Commute Mode Access to Vehicle	Ozone PM 2.5 Diesel PM Water Quality Hazardous Waste Park Access

Table 1.1. Recommended Indicators for Priority Populations and each of the four themes

Once the final list of indicators is determined, the next step is to operationalize them. As a first step, I suggest SCAG use the bin scoring method for the priority populations. Next, map the areas across the entire region. Then, each of the four thematic areas can appear as different filters on the map, so it's easier for users to explore how different thematic areas and factors intersect. This method is a shift from the current practice of stacking several layers on top of each other. For decision making, SCAG could continue to leverage existing indexes for now and, in future phases, work on custom blended indexes for each program based on goals, more in-depth data analysis, and review of policy implications.

The project prioritization scorecard could combine existing equity frameworks and data from the map centered around Connect SoCal's four thematic areas. Initial sections of this scorecard could include Proposal, Community, Engagement, Benefits, Significance & Alignment (Economy, Healthy & Complete Communities, Mobility, Environment), Burdens, and Accountability.

2. Literature Review: Why prioritize and how to do it equitably

This literature review focuses on three key themes. First, recognizing the importance of defining and prioritizing racial and social equity sets the stage for why this research is needed. Second, an existing framework for evaluation provides one example of how a set of criteria has resulted in successfully investing funds equitably. Third, a high-level overview of how MPOs across the country incorporate equity highlights key trends and recommendations.

This project builds upon the existing literature with both a broader and narrower lens. Not only does my research focus on the specific methodologies and data indicators used by other MPOs, but it also looks beyond peer MPOs for inspiration. It goes beyond high-level theory, guidelines, and recommendations. This report is one vision of what a data-driven outreach approach and prioritization methodology could look like for SCAGs funding programs.

2.1 Justice and Equity

What is racial and social equity, and how is it different from equality? How is it related to environmental justice? Many definitions of equity touch upon themes of justice, fairness, the inclusion of marginalized communities, and historical inequities. Some are more abstract than others, but we strive to be as concrete as possible in our definitions in this research.

Environmental Justice

Many government organizations evaluate transportation social equity issues through an environmental justice lens. The EPA's official definition of environmental justice is "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." (United States Environmental Protection Agency, 2020) But Litman and Brenman contend that this application of environmental justice is just *one* subset of a larger category of social equity issues that planners must address (Litman & Brenman, 2012).

Focusing on the environmental justice approach is understandable as compliance relates directly to federal mandates such as Title VI of the Civil Rights Act of 1964 and Executive Order 12898. The Presidential Memorandum that accompanies EO 12898 states:

"In accordance with Title VI of the Civil Rights Act of 1964, each Federal agency shall ensure that all programs or activities receiving Federal financial assistance that affect human health or the environment do not directly, or through contractual or other arrangements, use criteria, methods, or practices that discriminate on the basis of race, color, or national origin" (United States EPA, Office of Environmental Justice, 2014).

These federal requirements are in place to protect low-income and minority populations from unfair treatment and ensure them an opportunity to participate in decisions that affect their lives meaningfully. The US Census Bureau defines racial and ethnic minority groups as Black, American Indian, Asian, Pacific Islander, Other, Two or More Races, and Hispanics. Additional federal mandates over the years have served to reinforce Title VI and ensure all federally funded projects incorporate environmental justice into their missions. Since metropolitan planning organizations (MPOs) are federally mandated and federally funded, they are subject to these mandates. (United States EPA, Office of Environmental Justice, 2014).

Litman and Brenman argue that there are significant limitations to using environmental justice as the only approach. First, it is not always effective at representing the needs of unorganized or geographically dispersed groups. Second, it often relies on ambiguous classifications instead of functional statuses. Third, planners often consider social equity issues in isolation, and this approach favors mitigation instead of more comprehensive solutions. It can also overlook important issues to underrepresented groups that the government hasn't explicitly defined as discrimination. Instead, Litman and Brenman believe it is crucial to explain key social equity concepts, including functional statuses such as poverty and disability. Planners must also consider equity in all phases of the planning process to find win-win solutions (Litman & Brenman, 2012).

Racial and Social Equity

There is no single definition of social equity in our state law, but the California Governor's Office of Planning and Research highlights a few definitions in their General Plan Guidelines. (Governor's Office of Planning and Research, 2017)

"The expansion of opportunities for betterment that are available to those communities most in need, creating more choices for those who have few." -American Planning Association

"The fair, just, and equitable management of all institutions serving the public directly or by contract; the fair, just and equitable distribution of public services and implementation of public policy; and the commitment to promote fairness,

justice, and equity in the formation of public policy" - National Academy of Public Administration

The Local and Regional Government Alliance on Race & Equity (GARE) clarified that organizations should not use equality and equity interchangeably. While equality strives for uniformity, equity is about fairness. The GARE definition of racial equity is one of the most concrete of all:

> "Racial equity means that race can't be used to predict success, and we have successful systems and structures that work for all" (Local and Regional Government Alliance on Race & Equity, 2015).

This bold statement unequivocally emphasizes that the abstract notion of equal opportunity for everyone is not the point. Instead, we need to focus on "the real results in the lives of people of color" (Local and Regional Government Alliance on Race & Equity, 2015).

2.2 Prioritization and Capacity Matters

Being clear about definitions and priorities has a measurable impact on the equitable distribution of grant funding. Another factor that influences the distribution of grant funding includes the resources available to apply for grants. A lack of prioritization combined with a lack of capacity leads to understandably subpar results.

Prioritization

One example of poor prioritization was Prop 84, which California voters approved in 2006. Prop 84 authorized $5.4 billion in spending on projects to improve parks, natural resource protection, water quality, safety, and supply (Christensen, n.d.). Christensen's analysis of Prop 84 found that disadvantaged communities received less funding than communities with higher median household incomes. In addition, the study found that clear priorities resulted in funds being spent according to those priorities, while vaguely stated preferences resulted in a lack of alignment.

An example of the impact of clear priorities was AB 31, a section of Prop 84 about funding for sustainable communities and climate change reduction. This section gave clear and specific criteria for "critically underserved communities" that included urban, park-poor, and disadvantaged areas. Communities that met all three of these criteria ended up with $244 million of the $358 million spent under AB 31. Conversely, funding for state parks had a much looser set of priorities that did not give specific equity criteria for spending. As a result, communities with fewer park acres per 1,000 people received less funding than communities with more park acres. To improve the results of bond measures in the future,

Christensen recommends "stating clear priorities, setting criteria for evaluating spending, using data for planning and selecting projects, and measuring success"(Christensen, n.d.). While this study was specific to the spending of bond funds, planners can apply the goals and principles broadly to other funding sources.

Technical Assistance

Building upon his prior research about prioritization, in 2019, Christensen analyzes the results of California's Prop 1. This $7.5 billion bond measure funded projects that improve water quality, supply, and infrastructure. Unlike Prop 84, this new proposition had several explicit provisions for prioritizing investments in disadvantaged communities, such as the inclusion of technical assistance (Christensen, 2019).

Technical assistance helps disadvantaged communities compete with higher-resourced communities and levels the playing field. More affluent communities often have a higher capacity to apply for grants and bonds. Larger cities with environmental planning staff have the tools to put together proposals and applications while smaller communities do not, and technical assistance is one solution to alleviate this issue. As a result of Prop 1, several hundred communities developed plans for drinking water and wastewater improvement projects. However, many of these projects will still require future funding to move into implementation. Christensen recommends technical assistance should be institutionalized and expanded in future environmental funding measures.

2.3 Equity Frameworks and Tools

A Framework for Equitable Investment

What criteria can planners use to ensure equitable investment of resources? Chelsea Tu and Richard Marcantonio propose the "disadvantaged community benefits" framework as a solution. This four-question process serves as a way to ensure public investment meaningfully benefits Environmental Justice community residents and could be applied more broadly (Tu & Marcantonio, 2016). In addition, this framework can serve as a foundation for equitable project evaluation and integration into the MPO process.

1. **Does the investment meet an important community need**, **as defined by the residents themselves?** Residents are the experts of what they need to thrive in their community. Agencies should build relationships directly with community members and partner with community-based organizations already working and advocating for residents.
2. **Are the benefits to the community significant and direct?** Are the benefits direct and measurable, either qualitatively or quantitatively? Policymakers have often

considered underserved communities as incidental beneficiaries of policies that directly benefit others.

3. **Are low-income residents or households the primary beneficiaries?** Without this check, there is a risk that new investments in communities may primarily benefit affluent residents of a community, such as higher-income people moving into a gentrifying neighborhood. Therefore, it is essential to consider what anti-displacement measures are included in the project or proposal to avoid displacement from the outset.

4. **Does the investment avoid substantial burdens and harm?** This question ensures long-time residents won't face the negative impacts of new investments. While Environmental Justice mandates require merely *mitigating* adverse effects, this fourth step pushes for a more assertive stance of *avoiding* burdens entirely.

Effectively implementing this standard requires more stringent data and reporting on project outcomes. While measuring how a process ultimately influences an outcome is challenging, this is vital in ensuring equity. (Tu & Marcantonio, 2016)

One example of this framework in action appears in California state law, SB 535. The law requires 25% of yearly cap-and-trade revenues to be spent on investments to reduce greenhouse gasses while also benefiting disadvantaged communities. But, how should these "benefits" be defined? Environmental Justice and Civil Rights advocates pushed to not just rely on an investment's proximity to a disadvantaged community. Instead, they used the four-step framework of questions outlined above. SB 535 funding requires a project to (1) meet an important need identified by the community, (2) provide a significant benefit, (3) target low-income residents, and (4) avoid substantial harm (Karner & Marcantonio, 2017). This framing is a shift from a mere location-based proxy for equity. Instead, it focuses on meeting the specific needs that the existing community has prioritized.

The California Air Resources Board (CARB) adopted this framework in their final guidance on how to allocate the cap-and-trade revenue. The CARB guidelines also include specific directives in regards to benefits and burdens. For example, CARB requires agencies to prioritize investments that maximize the most significant benefits while avoiding substantial harms such as "physical or economic displacement, or increased exposure to toxins or other health risks" (Karner & Marcantonio, 2017). As a result of these principles, billions of dollars in investments have meaningfully met the needs of underserved communities. Advocates have applauded the process of creating these guidelines for the level of public involvement. However, some have raised concerns about implementation. Advocates call for a greater level of transparency around how individual projects are selected and prioritized (Karner & Marcantonio, 2017). In addition, CARB should ensure agencies follow through on implementation by requiring robust reporting on project outcomes.

The Racial Equity Tool

Another framework for evaluating racial equity is the Racial Equity Tool from GARE, intended to be used by government staff, elected officials, and community-based organizations. GARE designed the tool to integrate racial equity into operations and decision-making and "institutionalize the consideration of racial equity" (Nelson & Brooks, 2016). The tool is a set of six questions and several overlaps with the previous framework for equitable investment.

1. **Proposal:** What is the policy, program, practice, or budget decision under consideration? What are the desired results and outcomes?
2. **Data:** What's the data? What does the data tell us?
3. **Community engagement:** How have communities been engaged? Are there opportunities to expand engagement?
4. **Analysis and strategies:** Who will benefit from or be burdened by your proposal? What are your plans for advancing racial equity or mitigating unintended consequences?
5. **Implementation:** What is your plan for implementation
6. **Accountability and communication:** How will you ensure accountability, communicate, and evaluate results?

This tool is well-tested and already used by several government agencies across the United States, including Seattle, Washington, Multnomah County, Oregon, and Madison, Wisconsin. A similar tool is the Racial Equity Impact Assessment Guide by Race Forward. The guide provides sample questions to "anticipate, assess and prevent potential adverse consequences of proposed actions on different racial groups" (Keleher, 2009). It includes identifying and engaging stakeholders, identifying and documenting racial inequities and their causes, clarifying the purpose, impact, and potential alternatives, and ensuring sustainability and accountability. Planners can use these question-based tools to ensure equity is incorporated throughout the process from development to implementation and evaluation (Nelson & Brooks, 2016).

2.4 Prioritization in Practice

How do different MPOs across the country ensure their projects are prioritized equitably? While organizations outside of California have other local mandates, they must all comply with federal regulations. As a result, every organization has a somewhat different strategy, but some patterns and trends have been emerging. This literature review finds two studies focusing specifically on documenting how MPOs prioritize their projects with equity in mind.

Equity Criteria

Agustina Krapp studies information from MPOs serving the top 40 largest urban areas in the United States. Krapp finds two common analytical approaches to transportation equity: Environmental Justice analysis and equity-based criteria for project selection. Given the limitations of a purely Environmental Justice analysis approach, Krapp recommends equity-based measures. She further classifies the equity-based process into five categories, with the potential for equity impact increasing at each step (Krapp, 2020):

- Location burdens-based (least potential for equity impact)
- Location benefits-based (the most common)
- Impact benefits-based
- Access to destinations-based
- User-based (highest potential for equity impact)

From this analysis come three key recommendations. First, it is crucial to implement a prioritization process that places significant weight on the equity criteria to have a meaningful impact on communities with higher needs. Next, decision-makers must carefully analyze both the potential benefits and burdens of proposed projects on historically marginalized populations. And finally, prioritization should take into account whether the project has community support and if it addresses a need identified by the community in question (Krapp, 2020). These recommendations align with Tu and Marcantonio's framework for equitable investment outlined in a previous section.

Prioritization Processes

Kristine Williams et al. takes another approach studying 19 MPOs across the country in addition to 16 MPOs in Florida. This study also finds a wide range of project prioritization practices. Some are broad and implicit, while others are narrow and explicit. Some rely more heavily on subjective measures and others on more qualitative metrics. The definitions of the equity dimensions, criteria, and scores also vary widely during the project selection process.

Nevertheless, there are some common trends. Many create maps comparing proposed project locations and areas with a high proportion of communities of concern to ensure their investments distribute equitably. When evaluating individual projects, scorecard systems and holistic assessments are common strategies. All the MPOs surveyed have some level of public involvement, but only some target communities of concern, specifically as part of their project prioritization process (Williams et al., 2019). The various prioritization practices fit into seven common themes:

1. Defining, Profiling, and Mapping Communities of Concern (COCs)
2. Public Involvement Targeting COCs
3. Holistic Approach (i.e., qualitative evaluation of individual projects)
4. Scoring & Weighting (i.e., quantitative evaluation of individual projects)
5. Equity Performance Measures and Targets for Project Prioritization
6. Modeling, GIS, and Scenario evaluation of groups of projects
7. Equity Assessment of Distribution of Total Investments

Of all MPOs surveyed, none of the MPOs cover all seven categories, and some only use one or two. The majority utilize a combination of several. Additionally, the study details case studies of six of MPOs and concludes with several observations, similar to those highlighted in earlier studies. When MPOs explicitly include equity as a goal, systematically prioritize projects for COCs, and effectively engage these communities, they are more likely to address the needs of these groups. Dedicating funding to increasing equity in prioritization is especially important for larger MPOs. This strategy would include earmarking funds to have COCs identify needs and select the projects to address them.

All MPOs should be transparent about how equity is incorporated into project prioritization and ensure equity components are weighted similarly to other essential criteria. Finally, it should include multiple perspectives and "from an access to opportunity standpoint" (Williams et al., 2019). These two studies provide a solid foundation for understanding how MPOs currently integrate equity into prioritization practices. **Appendix A** contains a link to the spreadsheet summarizing the findings of both studies.

Unified Process

Some MPOs have attempted to standardize their disparate equity prioritization processes. For example, MPOs in PennDOT District 8 worked with Rutgers University to create the South Central Pennsylvania Environmental Justice Unified Process and Methodology Guide. The guide "recommends Core Activities that an MPO should implement to assess the benefits and burdens of plans and programs meaningfully. The Guide also identifies additional activities that an MPO may implement to enrich the EJ process if required staffing and technical capacity are available" (Alan M. Voorhees Transportation Center, 2019). Each recommended activity includes information about what data sources to use, specific technical specifications, and the pros/cons of each. Several MPOs in the South Central Pennsylvania region have adopted these guidelines.

Transportation Equity Scorecard Tool

Kristine Williams et al. also built upon their prior research on MPOs. They created an Excel-based tool called the Transportation Equity Scorecard Tool (TEST) to support MPOs with project screening and prioritization. Williams et al. built the tool to assist MPOs with

helping communities who are underserved by transportation "relative to access to opportunity, health (e.g., health care, healthy food, safety, active transportation) and related equity considerations" (Williams et al., 2020). The researchers built the tool in collaboration with Hillsborough MPO and the City of Tampa. The tool's user guide outlines four main steps:

1. Define and Locate Communities of Concern (COC)
2. Select Scoring System and Methods
3. Conduct the Evaluation
4. Rank and Select Projects

As the concentration of COCs varies in different regions, each MPO must define its systems for steps 1 and 2. The tool assists with steps 3 and 4. After planners gather all the required data, they can then use the tool to answer questions in the evaluation. These questions consider equity from multiple perspectives, covering themes such as Access to Opportunity, Health and Environment, Safety and Emergency Evacuation, Affordability, Mobility, and Burdens. Each project is then scored and prioritized by the tool (Williams et al., 2020). See **Appendix B** for a screenshot of the TEST interface. This tool is similar to the requirements outlined for the SCAG tool, and this research will build upon this going forward.

3. Methodology: A Mixed-methods approach

This research methodology has three phases. First, I focus on equity at MPOs to compare SCAG to its counterparts. Next, I look beyond the MPO structure to draw inspiration from other equity-based tools and programs from the city to the national scale. In each of these, I focus on four areas which include:

- **Indicators** - How do they define their communities of concern and why?
- **Scoring Analysis Areas** - What methodologies do they use to score census tracts and highlight these communities of concern?
- **Mapping** - What interactive mapping tools have they created to make this data easily accessible to the public?
- **Prioritization and Scorecards** - How do they use scorecards and equity analysis to prioritize projects?

Finally, I synthesize these findings into recommendations for the next steps and illustrate initial example prototypes for the prioritization mapping tool and scorecard system.

3.1 The Equity Lens at MPOs

I started my analysis by focusing on SCAG. Before making any recommendations, it was essential to understand better how SCAG currently handles project prioritization and equity areas and what data forms the current analysis. To do this, I reviewed SCAG's published documentation about their process, data layers and interviewed SCAG staff. **Table 3.1** summarizes the documents reviewed. In this analysis, I focus specifically on reviewing information directly related to the Sustainable Communities Program.

SCAG Programs & Data Tools	Overview
Connect SoCal	2020-2045 Regional Transportation Plan (RTP) / Sustainable Communities Strategy, a long-range transportation and land use vision for Southern California.
Sustainable Communities Program (SCP)	Technical assistance program to support multiple planning areas, including active transportation and multimodal planning efforts, mobility innovations, sustainability, land use, civic engagement, environmental justice, and planning for affordable housing.
Disadvantaged Communities (DAC) Planning Initiative	Outlines best practices and principles for effective community outreach and engagement in divested communities.
Environmental Justice (EJ) Tool	Interactive ArcGIS mapping tool with several equity data layers for the Sustainable Communities Program
Active Transportation Database (ATDB)	Interactive mapping tool with bicycle counts, pedestrian counts, and data layers for Active Transportation Program requirements

Table 3.1. SCAG documents and data tools reviewed

Then, I branch out to compare it to other MPOs. There are over 400 MPOs in the United States. To narrow my scope for potential MPOs to study more detail, I leaned on the Krapp (2020) and Williams (2019) studies. I decided to research organizations that have demonstrated significant work towards integrating equity in their prioritization process. I selected MPOs with at least 4 out of the seven prioritization practices identified by the Williams study. Additionally, I focus on MPOs serving an area of at least 1 million residents and have readily available documentation about their methodologies available online.

Table 3.2 summarizes the MPOs reviewed. I reached out to staff at each MPO for interviews to supplement the documentation found online. These semi-structured interviews strived to understand the inspiration and rationale behind their methodologies and how they applied the methods today.

MPO Name	Urban Centers	2010 pop.
Broward MPO	Fort Lauderdale, FL	1.7 million
The San Diego Association of Governments (SANDAG)	San Diego, CA	3.1 million
Boston Region MPO*	Boston, MA	3.2 million
Atlanta Regional Commission (ARC)*	Atlanta, GA	4.8 million
Delaware Valley Regional Planning Commission (DVRPC)	Philadelphia, PA	5.6 million
Metropolitan Transportation Commission (MTC) & Association of Bay Area Govt. (ABAG)*	San Francisco, CA	7.2 million

*Table 3.2. Metropolitan Planning Organizations (MPOs) reviewed, organizations featured in the case study indicated by an **asterisk(*)***

The MPO-specific research focused on comparing how MPOs approach critical areas as they relate to equity. Throughout each case study, I highlight how each integrated community engagement throughout the process. I have also featured three case studies of specific initiatives at MPOs to elaborate on notable practices, as indicated in **Table 3.2.** above.

Both Atlanta Regional Commission and Boston Region MPO recently adjusted their methodology for analyzing equity. MTC/ABAG also recently updated their Communities of Concern Framework. I wanted to understand why and learn more about their process for making the transitions. All three organizations had well-documented processes available online and were also amenable to discussing their process with me in more detail.

3.2 Equity Beyond the MPO

After reviewing MPOs, I explored other tools and initiatives focusing on improving social equity, summarized in **Table 3.3**. I chose to focus on a few examples from different geographic scales, from the national level down to the city level, and draw inspiration from each. Organizations outside the MPO created these tools, but they are sometimes utilized by MPOs as well.

Name	Organization
National Equity Atlas	PolicyLink, USC Equity Research Institute
Opportunity Atlas	Census Bureau, Harvard University, Brown University
SB 535 Disadvantaged Communities	Office of Environmental Health Hazard Assessment, California EPA
TCAC/HCD Opportunity Areas	California Tax Credit Allocation Committee
California Healthy Places Index	Public Health Alliance of Southern California
LA Equity Index	Ron Galperin - LA Controller
Social Equity Index	Angel City Advisors

Table 3.3. Equity Indexes Reviewed

Since there are so many different examples, I tried to focus on models with robust documentation created by or in conjunction with a government organization or actively used by a government organization. For each of these programs, I collected information about the indicators used to create the index. Then, I saved each in my Airtable base alongside the indicators used by the MPOs. This method allowed me to tag, categorize, and filter each one from multiple perspectives and get a better sense of which indicators are more common and which ones are not. I also sought feedback from SCAG staff through an interactive exercise where each person voted on their 15 highest priority indicators from the indicator groups.

Next, I looked at how funding programs (**Table 3.4**) score and prioritize projects. Some programs utilize the composite indicators identified in the previous section as part of their scoring criteria. I wanted to understand how organizations used these indexes. This section focuses on programs based in California, as similar state-level guidelines bind many. For example, some programs rely on the SB 535 Disadvantaged Communities indicator in their scoring.

Name	Organization
Metro Active Transportation (MAT) Program	Los Angeles Metro
Transformative Climate Communities (TCC)	California Strategic Growth Council

Table 3.4. Summary of funding programs reviewed

3.3. Recommendations and Prototyping

Finally, after reviewing the landscape of equity-centric practices, I consolidated the findings into a series of recommendations. These recommendations consider best practices from the literature review, other MPOs, other programs, and input from SCAG staff. The proposals form the basis of the proposed requirements for the scorecard and data tool prototypes.

Data for the prototype was analyzed and cleaned using Excel and Jupyter Notebooks. Next, I built the prototype with ArcGIS Experience Builder. I considered other potential platforms, such as Tableau, but I selected these platforms for their ease of use and SCAG's existing software license agreements. The prototypes were then shared with the Equity Work Group and tested with SCAG stakeholders for additional feedback and refinement.

PART 2

FINDINGS AND ANALYSIS

IMPLEMENTING AN EQUITY LENS AT MPOS AND BEYOND

In this section, I start with an overview of the equity-related practices at SCAG as they relate to the Sustainable Communities Program. Next, I review peer MPOs and compare SCAG's equity practices to other organizations with similar organizational goals and federal requirements. When reviewing equity-oriented procedures at other MPOs, I focused on understanding the specific indicators and data sets used to define communities eligible for special equity considerations. MPOs often refer to these communities as Communities of Concern (COCs), Environmental Justice (EJ) Areas, Equity Areas (EA), etc.

Next, I looked to see if there were trends or gaps in selecting indicators and how MPOs subsequently used those indicators in scoring processes, maps, and project prioritization. Involving the communities throughout the process is vital, and the goal is to include engagement throughout the process. So instead of setting aside a dedicated section about how MPOs engage the community during one "phase," each section highlights how each MPO included community engagement throughout.

Outside of the sphere of MPO's, there are several other tools, initiatives, and grantmaking programs focusing on improving social equity. These may come from academia, nonprofits, and other government organizations. This section focuses on a few different programs from national levels, state level, and city level.

4. The SCAG Equity Baseline

The SCAG Regional Council Resolution on July 2nd, 2020 (Southern California Association of Governments, 2020) reaffirmed the agency's commitment to working toward a fair and just society. It initialized a board-led "Special Committee on Equity and Social Justice" and an internal staff-led "Equity Work Group." SCAG tasked these teams with recommending a set of policies and changes to bylaws to help SCAG meet its objective of consistently incorporating equity awareness into every aspect of its work. This definitive affirmation builds upon the equity tools for outreach and identification already in place. While SCAG has several programs and tools, my focus is mainly on the Disadvantaged Communities Planning Initiative and the Environmental Justice Tool, as these two relate to the Sustainable Communities Program (SCP) directly.

The SCP is one of the primary ways SCAG implements the goals from a regional plan called Connect SoCal, the 2020-2045 Regional Transportation Plan/Sustainable Communities Strategy (Southern California Association of Governments, 2020). The process of developing this plan engaged stakeholders from across the region. These groups included agency partners from all levels of government, technical advisory groups, community-based organizations (CBOs), and more. The partnership with CBOs helped SCAG broaden their outreach to traditionally underserved communities, including:

- Children and youth
- Individuals with access and functional needs
- Low-income communities of color
- Older adults or retired people
- Populations with limited English proficiency
- Women and female-headed households

SCAG incorporated feedback from these meetings into the plan. As a result, the strategies "emphasize growth in areas rich with destinations and mobility options, promote diverse housing choices, leverage technology innovations, support implementation of sustainability policies and promote a green region." (Southern California Association of Governments, 2020).

4.1 Disadvantaged Communities Planning Initiative

SCAG's Disadvantaged Communities Planning Initiative outlines best practices for outreach and begins to formulate a working Equity Framework. This document highlights the International Association for Public Participation (IAP2) pillars of public outreach: "core values, code of ethics, and a spectrum of public participation" (Southern California Association of Governments, 2020). The spectrum of public participation demonstrates the importance of empowering stakeholders. Not only do they feel heard, but they also feel the impact of their comments on the outcome of the implementation in their communities.

The guide also notes the importance of being mindful of accessibility and cultural considerations. The template outreach framework recommends three key outreach phases: listening, collaborating, and refining. In addition, the framework takes equity to mean that "one's identity as a resident of their community has no detrimental effect on the distribution of resources, opportunities, and outcomes for them as a resident." (Southern California Association of Governments, 2020). Possible "disadvantaged communities" identified by the framework include (but are not limited to):

- People of color
- Women
- People of no- and low-income
- People with limited English proficiency
- People with disabilities
- Children and seniors
- Single parents
- People who do not own cars or do not drive

SCAG affirms these communities are local experts who should have a strong voice in the formation of plan recommendations and projects that address the disparities faced by these communities "should be prioritized above all other prioritization factors." (Southern California Association of Governments, 2020). To this end, SCAG recommends forming Community and Technical Advisory Committees and facilitating various outreach activities to engage these communities.

4.2 Environmental Justice Tool
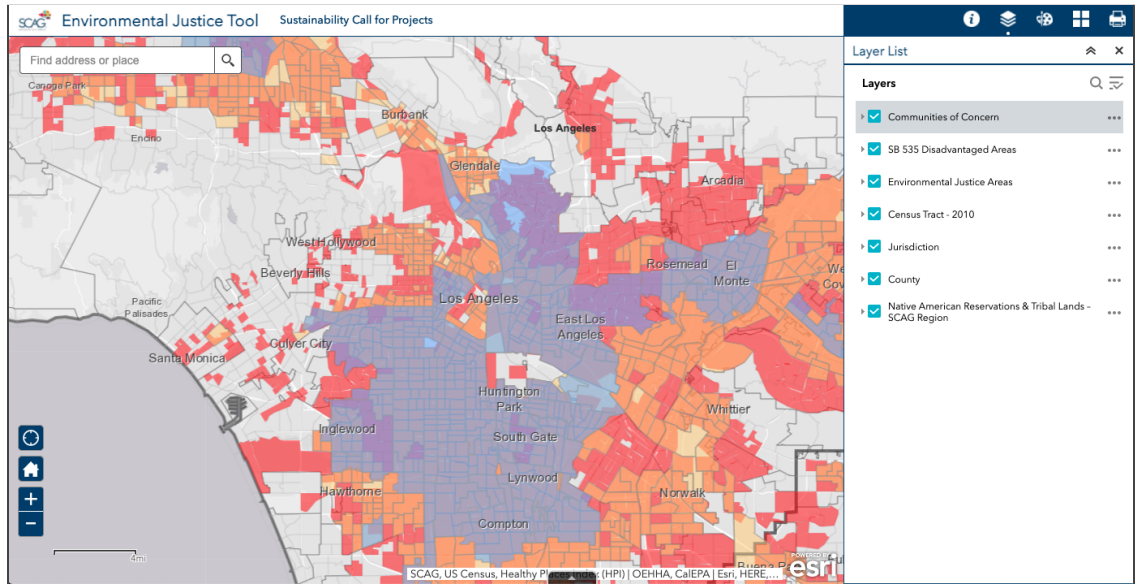
Figure. 4.1 *Screenshot of the Environmental Justice Tool*

The Environmental Justice Tool (Southern California Association of Governments, n.d.) is an interactive web-based ArcGIS map that overlays several semi-transparent data layers across the region, as shown in **Figure 4.1**. The map features essential geographic boundaries (jurisdictions, counties, and census tracts shown in the outlines above). It also includes four equity-related data layers (color-coded in red, orange, and blue above), defined in **Table 4.1.**

Layer	Definition
Communities of Concern	Upper third (top 33.33%) in the SCAG region for both percentages of households in poverty and minority population (Southern California Association of Governments, 2021).
Environmental Justice Areas	Higher concentration of minority population or households in poverty than is seen in the greater SCAG region (Southern California Association of Governments, 2020).
SB535 Disadvantaged Areas	Top 25% scoring areas from CalEnviroScreen and the other regions with high amounts of pollution and low populations (Southern California Association of Governments, 2021).
Native American and Tribal Lands	Boundaries for the Native American Reservations in the SCAG region, as defined by the United States Census Bureau (Southern California Association of Governments, 2018).

Table 4.1 - Environmental Justice Tool Equity-Related Data Layers

Both the Communities of Concern and the Environmental Justice Areas rely on threshold levels of poverty and minority populations. SCAG bases the poverty on "regional average household size for a given census year. In 2016, a family of three earning less than $19,105 was classified as living in poverty." (Southern California Association of Governments, 2020). SCAG defines a minority as "persons belonging to any of the following groups, as well as "other" categories that are based on the self-identification of individuals in the Census: African American, Hispanic, Asian/Pacific Islander, and Native American and Alaskan Native." (Southern California Association of Governments, 2020). The Sustainable Communities Program currently uses the Environmental Justice Tool as a reference.

While SCAG highlights several possible disadvantaged communities in Connect SoCal and the Disadvantaged Communities Planning Initiative, the data layers of the Environmental Justice Tool primarily use the indicators of minority population and poverty. Other indicators are part of the SB535 Disadvantaged Areas layer. More details about this will follow in **Section 7.1**.

4.3 Equity in the Sustainable Communities Program

One of SCAG's current initiatives is the Sustainable Communities Program (SCP). The SCP provides local agencies and organizations multiple opportunities to apply for funding and resources. **Table 4.2.** summarizes example programs. SCAG partners with these agencies to meet the needs of local communities while also implementing the goals and strategies outlined in Connect SoCal. The Sustainable Communities Program has several purposes. One is to support local agencies with local planning, including active transportation and multimodal planning efforts, sustainability, land use, and planning for affordable housing. In addition, SCAG is committed to prioritizing equity across all program areas to address injustices, better serve communities of color, and create healthy, equitable communities throughout the region. (Southern California Association of Governments, n.d.)

Active Transportation	Housing & Sustainable Development	Smart Cities & Mobility Innovations	Civic Engagement, Equity & Environmental Justice
City-wide Active Transportation Plans Pedestrian Master Plans Quick Build Projects Network Visioning & Implementation Transportation Safety Focused Plans First/Last Mile Plans Local Road Safety Plans or Safe Systems Plan	Accessory Dwelling Units (ADU) Plans and Programs Parking Innovation Workforce Housing Opportunity Programs Streamlined Housing Programs Housing Sustainability Programs Housing Supportive Tax Increment Financing Programs Pro-housing Designation Programs	Curb Space Data Collection & Inventory Technology Assessment or Adoption Plan Parking Management Plan Permitting Process Evaluation	Civic Engagement Plans AB1717 Air Quality Management Plan Updates: Community Emission Reduction Plans (CERP) Community Air Monitoring Plan (CAMP) Access to broadband Freeway caps Climate Action & Adaptation Plans Local Hazard Mitigation Plans & Infrastructure Financing Plans SB 379 Safety Element Compliance Urban Heat Mitigation Plans SB 1000 EJ Elements/EJ Goals & Policies

Table 4.2 *Example Sustainable Communities Project Types (Southern California Association of Governments, n.d.).*

Two ways that SCAG considers equity for the program are through outreach and individual project scoring. In 2020, the targeted outreach process involved identifying jurisdictions that lacked regional plans and had populations with over 25% disadvantaged communities. After identifying these jurisdictions, staff reached out to notify the jurisdictions about the grant opportunity and provided direct technical assistance to help under-resourced local agencies apply for the grants.

Individual project scoring incorporated equity in different ways depending on the focus of the project. "Active Transportation and Safety (ATS)" projects had a rubric that awarded different levels of points based on how the proposed project overlapped with the layers highlighted in the Environmental Justice Tool and the level of direct benefit to disadvantaged communities. It also included a Public Health score based on the Healthy Places Index (**Section 7.1** contains more details on the Healthy Places Index). These "Disadvantaged Communities and Public Health" points account for 15 out of 100 total possible points. (Southern California Association of Governments, n.d.) It should be noted that SCAGs scoring criteria for the ATS projects more closely align with the State ATP scoring criteria due to the inclusion of State ATP funds.

On the other hand, "Housing & Sustainable Development" projects are awarded points based on the examples of how a project "will significantly improve communities of disadvantaged areas listed above." However, the scorecard itself does not identify any areas above. Here the points make up 10 out of 105 possible points. Both "Active Transportation & Safety" projects and "Housing and Sustainable Development" projects

incorporate similar community outreach and engagement measures, although they are weighted differently between the two project types. The first allocates a total of 5 points to community engagement, while the second allocates 10. Overall, SCAG has the foundational elements of equity-focused goals, frameworks, and methodologies for the Sustainable Communities program. The next step is to operationalize these more transparently and consistently, aligning with SCAG's overall goals and industry best practices.

4.4 Active Transportation Database

Another related SCAG tool is the Active Transportation Database(ATD) (Southern California Association of Governments, n.d.) which features bike and pedestrian count data across the region. It also features additional layers related to the state-level Active Transportation Program (ATP) requirements, the parent funding program for the Sustainable Communities Program (SCP). While these programs are related, SCP differs in how it accounts for equity. ATP allows applicants to pick and choose from a menu of equity measurements. SCP is more stringent and requires applicants to align across all the measures. **Figure 4.2** shows the ATD with Count, and ATP Requirement layers enabled. All layers stack on top of each other, similar to the EJ tool.
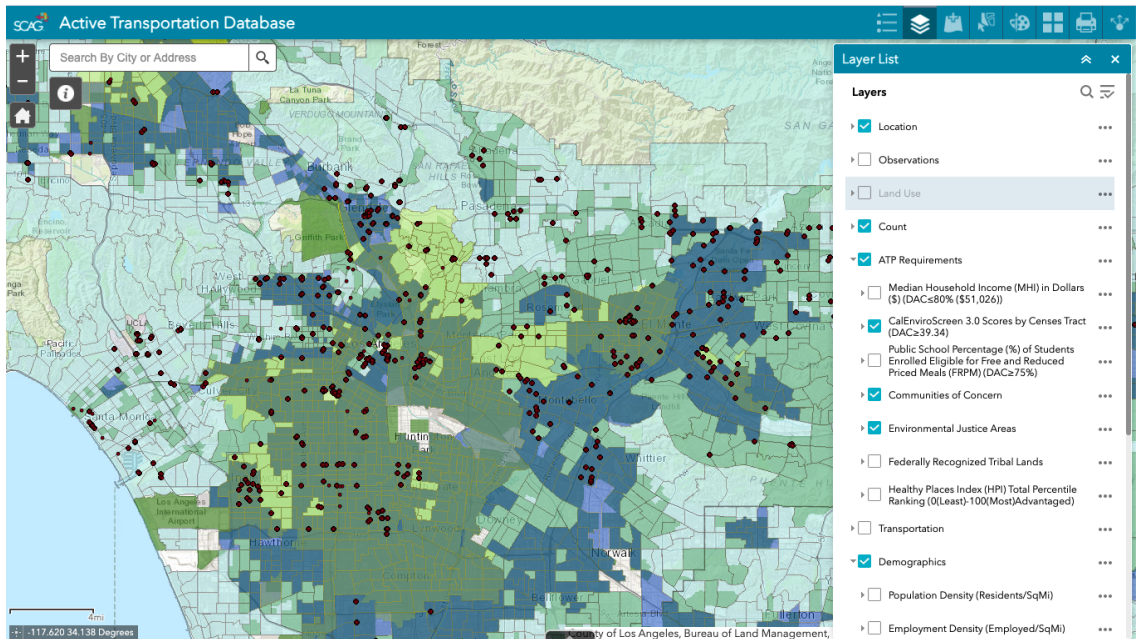

Figure 4.2 - Active Transportation Database

In addition to geographic boundaries, the ATD also includes several other informative layers not directly tied to SCP scoring criteria. These additional layers include Transportation, Demographics, and Additional Planning Layers. **Table 4.3.** details the individual data layers within each of these categories.

Transportation	Demographic	Additional Planning
Bikeways Transit Collisions High-Quality Transit Areas Commute to Work Mode Share Automobile Access Traffic Density	Population Density Employment Density Speaks English Race Age	Retail Density (Jobs/Acre) Supermarket Access Park Access Tree Canopy Coverage

Table 4.3 Active Transportation Database Additional Informational Layers

While SCAG does not currently incorporate these additional layers into an equity scoring system, many of them could potentially be integrated going forward. SCAG staff also noted a high-priority feature for the new tool: the ability to quickly understand whether a city currently has an active transportation plan and recent count data.

5. Equity-centric practices at MPOs

5.1 Indicators

Federal mandates require all MPOs to protect minority and low-income populations from unfair treatment. How MPOs identify these populations and the additional core indicators selected for inclusion in equity consideration varies. **Table 5.1** below compares the indicators specific to SCAG to those used by some other MPOs.

SCAG's current set is much more limited than the ones used by other MPOs. Note, this does not include indicators that are part of SB 535 Disadvantaged Communities (see **Section 7.1).** Green squares represent indicators currently used. Orange squares highlight indicators the SCAG Equity Work Group is considering (as of February 2021) but are not implemented. The number in the parentheses includes the indicators under consideration. Complete definitions of each indicator are available in the Airtable base linked in **Appendix A.**

Indicator Name	California				East Coast					Total
	SCAG COCs	SCAG EJ Areas	MTC / ABAG COCs	SANDAG COCs	Broward EA	ARC Protected Classes	ARC EJ Model	Boston New TIP Criteria	DVRPC IPD	
Disability	?		X	X	X	X		X	X	6 (7)
Low Income	?		X	X		X	X	X	X	6 (7)
Poverty	X	X		X	X					4(3)
Minority	X	X	X	X				X		5
Racial Minority					X	X	X		X	4
Ethnic Minority					X	X	X		X	4
Limited English Prof.	?		X		X	X		X	X	5 (6)
Educational Attainment				X						1
Linguistic Isolation				X						1
Foreign-Born						X			X	2
Youth	?				X	X		X	X	4 (5)
Older Adults (65+)					X	X		X	X	4
Seniors (75+)	?		X	X						2 (3)
Female						X			X	3
Female head. households	?									(1)
Single Parent			X							1
Severely Rent Burdened			X							1
Severe Overcrowd				X						1
Zero Vehicle			X	X						2
Total	2 (7)	2	8	9	7	9	3	6	9	

Table 5.1. - Equity Indicators in SCAG datasets compared to other MPOs studied.

While this represents just a tiny sample of MPO indicators, there appear to be some trends to note. For example, SCAG currently only utilizes minority and poverty indicators, while other MPOs also include demographic indicators related to disability, age, and limited English proficiency. Other California-based organizations (ABAG/MTA and SANDAG) also have indicators related to more situational factors such as zero-vehicle households, educational attainment, rent-burden, and more. When evaluating programs, MPOs use other relevant indicators (such as safety), but these are different from the core set of indicators to identify communities of concern.

It is important to note that some of these additional indicators appear in the SB 535 Disadvantaged Communities layer, such as educational attainment and linguistic isolation. Still, since this is an index measure, it can be challenging to disaggregate those indicators for scoring calculations. Some MPOs such as the Broward MPO and ARC chose to use separate indicators for racial minorities and ethnic minorities instead of just using a combined indicator for minorities like SCAG. This distinction is significant in "majority-minority" regions such as Broward County and the Atlanta metropolitan area. Broward MPO clarifies that "while Hispanics and Latinos are considered minorities, they are defined by the US Census Bureau as an ethnicity rather than a race. People who identify their origin as Hispanic or Latino may be of any race" (Broward MPO, 2019).

Community Engagement

SANDAG's selection criteria for which indicators to include involved several workshops with members of their Stakeholder Working Group and members of the public to identify the demographic categories of populations that should be analyzed and what performance measures they should use. This process resulted in four COCs: Low Income Community of Concern, Minority Community of Concern, Low Mobility Community of Concern, and Low Community Engagement Community of Concern. The categories are not mutually exclusive. A community could belong to one or more at the same time (SANDAG, n.d.).

5.2 Scoring Analysis Areas

The MPOs selected tended to use one of two standard methodologies for quantifying levels of inequity in their regions, either binary thresholds or bins. California MPOs tend to use the binary thresholds, while the East Coast MPOs have adopted the bins (**Table 5.2**). It is also important to note that the California-based MPOs have the state-wide standard SB535 Disadvantaged Communities (DAC). As noted in **Section 4**, this designation highlights the top 25% scoring areas from CalEnviroScreen and the other regions with high amounts of pollution and low populations. Given this, the threshold-based standard is often incorporated into the process for regulatory reasons. However, since DAC doesn't consider race or other protected classes, MPOs must rely on the other indicators in **Table 5.1** to paint a complete picture and decide for themselves what thresholds to use.

To align with the DAC geography, SCAG staff have recommended evaluating indicators at the census tract level. While smaller areas such as block groups can provide a more granular image, there is a concern that block group data might be less reliable because the sample size is not enough to offset a high margin of error.

Binary Thresholds (In or Out)	Bins (Scale of 0-4)
Southern California Association of Governments (SCAG) San Diego Association of Governments (SANDAG) Association of Bay Area Governments (ABAG) & Metropolitan Transportation Commission (MTC)	Boston Region Metropolitan Planning Organization Atlanta Regional Commission Broward Metropolitan Planning Organization Delaware Valley Regional Planning Commission

Table 5.2. Methodologies at different MPOs.

Binary Threshold

With a binary threshold, a percentage of a population is defined as the threshold. Any communities above the threshold are considered "in," while any communities below the threshold are "out." For example, SANDAG's Low-income Community of Concern category includes "any community in which 33 percent or more of households are low income, and/or 10 percent or more of the households are severely overcrowded, and/or 25 percent or more of the population is in poverty" (SANDAG, n.d.). From this research, it is unclear how SANDAG determined these exact thresholds.

Standard Deviation Bins

Another technique is to have a more fine-grained approach based on the standard deviation. First, the percentage of each population group (such as % of youth, racial minority, etc.) is calculated for each census tract. Then this percentage is compared to the regional mean (average). Each census tract is then given a score based on the standard deviation relative to the regional mean and classified into one of five bins.

In interviews, both Boston MPO and ARC cited The Delaware Valley Regional Planning Commission (DVRPC) as inspiration for this methodology. In addition, they noted they took comfort because another MPO had already vetted the process. The Federal Transit Administration (FTA) also supports a similar strategy. The FTA caution against using simple "bright-line" thresholds to identify impacted groups. They further emphasize that "EJ determinations are ultimately based on effects, not on population size; therefore, it is important to consider the comparative impact of an action among different population groups." (United States Department of Transportation, n.d.)

5.3 Mapping

Several different approaches to mapping the communities of concern at MPOs seem to vary based on the scoring methodologies. Static maps of thresholds, dot densities, or maps with simple layers are standard at MPOs. I focused instead on examples of interactive mapping tools from Broward MPO, ARC, and DVRPC. These all used the standard deviation bin method of scoring. They also stick to a blue-green color palette and avoid red, which can have a negative connotation due to historic redlining. A red-green spectrum may also pose issues for accessibility due to possible color blindness. Broward MPO was also especially conscious of labeling things as low to high concentrations as not to imply any positive or negative associations with higher or lower concentrations of populations (Lychak, E. Personal interview, Feb 4, 2021). While each MPO has a slightly different approach to the user interface, common elements include the ability to:

1. View a composite equity indicators score based on the underlying indicators
2. Click on a specific census tract to view details about the concentrations of populations and how it compares to the regional average
3. Investigate the underlying indicator individually
4. Read about the methodology used to create the map
5. Read more about the specific indicator definitions and data sources

The interactive maps allow for more detailed information and understanding than the static maps typically produced. Being able to zoom in and out of specific regions and toggle indicators and layers on and off makes it much easier to digest the information and get precise, detailed results. In addition, interactive maps are much easier for the rest of the community to use. Broward MPO cited one example of using the map while working with a community-based organization. They used the map together to help determine where a new public library should go and understand what languages residents spoke in the neighborhood where a community outreach event was planned (Lychak, E. Personal interview, Feb 4, 2021).

5.4 Scoring Projects

Many MPOs promote equity by prioritizing projects located in areas with higher proportions of communities of concern. But as noted in the Williams (2019) study, there are some limitations to being overly reliant on a spatial distribution as the benchmark for equity. For example, a project located in an area with high concentrations of COCs might not benefit the community. In addition, maps are not the best visualization for all types of investments. Maps only represent a fixed point in time in the past and often don't account for future projections. Instead, the trend is a more holistic approach, evaluating equity in multiple dimensions and considering access and user benefit more directly (Williams et al.,

2019). These thematic areas might include thematic areas such as Equity, Mobility, Accessibility, Safety, Environment, and Economic Vitality.

6. Case Studies: Atlanta, Boston, and the Bay Area

To better understand how different MPOs incorporate equity into their work, I've selected three MPOs to feature in case studies. Atlanta Regional Commission (ARC), Boston Region MPO, and the Association of Bay Area Governments / Metropolitan Transportation Commission (ABAG/MTC). These MPOs appeared in the literature review as organizations with notable practices related to equity.

6.1 Atlanta Regional Commission (ARC)

The Atlanta Regional Commission (ARC) is based in Georgia. ARC is the MPO for the 10-county Atlanta region, including Cherokee, Clayton, Cobb, DeKalb, Douglas, Fayette, Fulton, Gwinnett, Henry, Rockdale counties, and the city of Atlanta (Atlanta Regional Commission, n.d.).

6.1.1 Indicators

ARC's process for choosing indicators adhered closely to federal legislation because they felt it more defensible and objective. Each indicator is tied explicitly to a federal requirement to back up the rationale for inclusion. During the process, the team discussed including households without vehicles. However, not having a car is not necessarily a burden since many are now striving towards becoming zero-car households. Additionally, they found no federal regulations protecting zero-car households.

ARC also has two different models, the "Environmental Justice Model," which only includes low-income and minority indicators, and an expanded "Protected Classes Model," which consists of the additional indicators (see **Table 5.1**). Only the Environmental Justice Model is used for scoring because they felt this was safer for federal compliance. ARC uses the expanded Protected Class Model for policy, analysis, and as a source of information to share with the public.

6.1.2 Scoring Analysis Areas

Previously, ARC used an Equitable Target Area (ETA) Index, which identified communities with a large low-income or minority population. This index used income as a limiting factor. However, this proved to be problematic, especially because Atlanta is a "majority-minority" city. As a result, the index excluded some regions with a high population of minorities because, of course, not all minorities live in high-poverty areas. ARC felt that moving to the

bin methodology for scoring and mapping would provide a more holistic view of the different populations. (Daney, A and Roell, M, Personal Interview, Jan 14, 2021).

ARC's new Equity Analysis uses the standard deviation-based criteria bin method for their Protected Class model and their Environmental Justice model. First, the percentage of each population group (such as % of youth, racial minority, etc.) is calculated for each census tract. Then this percentage is compared to the regional mean (average). Each census tract is then given a score based on the standard deviation relative to the regional mean and classified into one of five bins. This method is similar to the MTC example. In this case, the bins are used as multiple steps to indicate a population's concentration. It is not just a threshold to be crossed. After they score each area in ARC's model, a cumulative score is calculated by adding each individual score. See **Figure 6.1** below for a visual representation of this model.
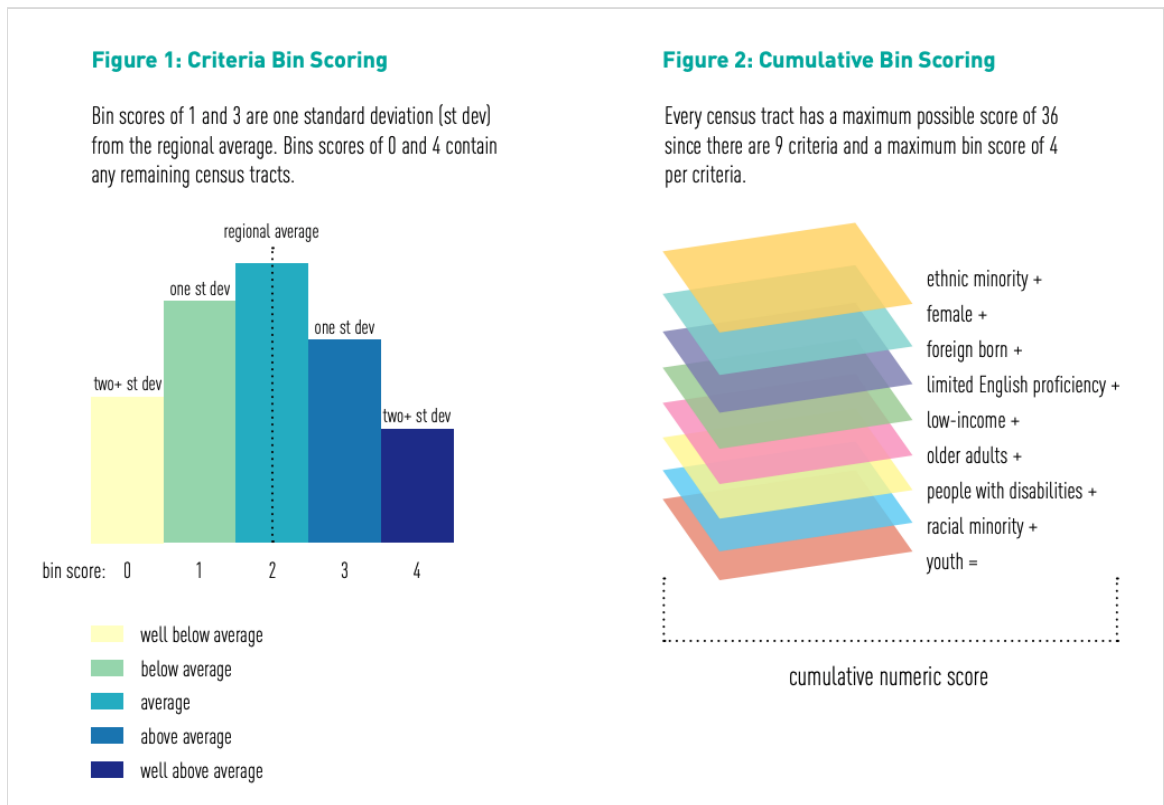

Figure 1: Criteria Bin Scoring

Bin scores of 1 and 3 are one standard deviation (st dev) from the regional average. Bins scores of 0 and 4 contain any remaining census tracts.

- well below average
- below average
- average
- above average
- well above average

Figure 2: Cumulative Bin Scoring

Every census tract has a maximum possible score of 36 since there are 9 criteria and a maximum bin score of 4 per criteria.

ethnic minority +
female +
foreign born +
limited English proficiency +
low-income +
older adults +
people with disabilities +
racial minority +
youth =

cumulative numeric score

Figure 6.1 Example bin scoring methodology illustrated (Atlanta Regional Commission, 2019)

ARC then uses the scores when evaluating projects but notes that "The regional analysis results are not the end-all for identifying and addressing disproportionately high and adverse effects, but rather one tool to leverage in our regional environmental justice efforts. This technical perspective is further refined and calibrated by qualitative knowledge, community engagement, and policy and program development" (Atlanta Regional Commission, 2019). It's essential to keep this perspective in mind. While the data

can be a tool to help with decision-making, human insight and community involvement are still vital.

6.1.3 Mapping

The ARC Dash app features an interactive map paired with detailed data about each census tract. It is similar to the map by DVRPC (see **Appendix C**) but has a few notable features. First, it allows the user to select multiple equity criteria to create a cumulative score instead of focusing on either the total score or only one individual indicator. Second, the interface also allows the user to select multiple tracts to get a cumulative score for that specified region and download the data.
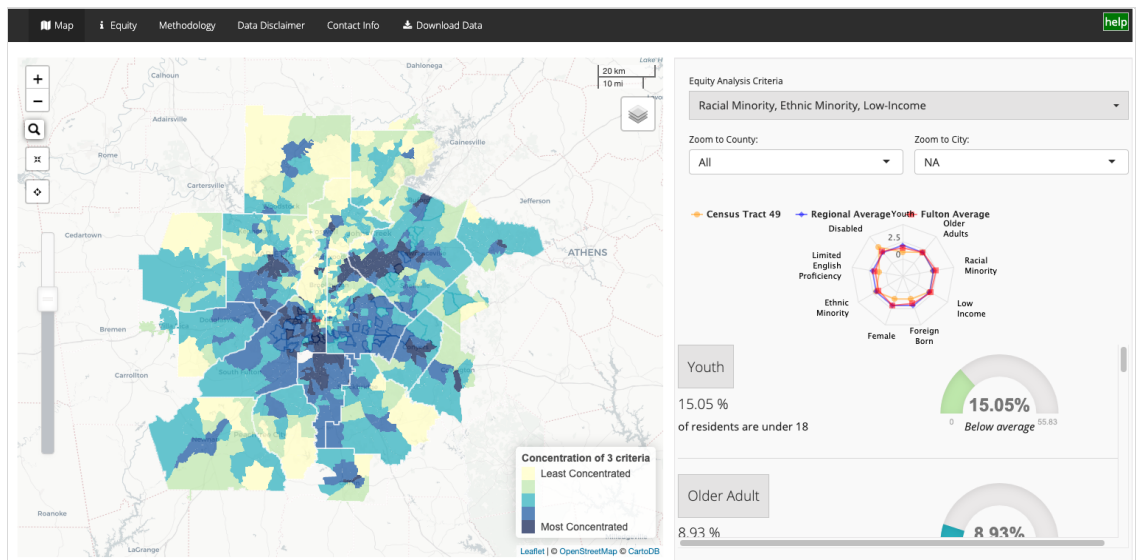

Figure 6.2. ARC - Equity Dashboard

ARC built the map using R and Shiny.io (Atlanta Regional Commission, n.d.). ARC made earlier versions of the tool with Javascript, but this proved challenging to maintain. At the time of development, ARC chose not to use the ArcGIS Online web application builders because they were interested in producing more charts and plots instead of focusing on the map. Shiny.io made it easier for the team to deploy the app quickly, but iterative development took several months. Additionally, the development of the tool was one of many projects at the time. There are currently no plans for additional features, aside from updating the data to ensure it uses the most recently released ACS data available (Fan, S, Personal interview, Jan 22, 2021).

Community engagement at ARC - Equity Analysis Methodology

These maps are used both internally by the MPO staff and externally by the general public. ARC engaged with the Transportation Equity Advisory Group (TEAG) throughout the process and incorporated the feedback throughout. ARC formed TEAG to allow local equity advocates, transportation planners, and agencies to work together to influence planning processes and outcomes. The advisory group also serves as a "voice for the needs of vulnerable populations" (Atlanta Regional Commission, n.d.).

The TEAG members include:

- Atlanta NAACP
- Center for Pan Asian Community Services
- DeKalb NAACP
- Georgia Community Coalition
- Georgia Stand Up
- PEDS
- Partnership for Southern Equity
- Presbyterians for a Better Georgia
- Southern Environmental Law Center
- Urban League of Greater Atlanta

During the methodology and map development, the TEAG members validated the results based on their lived experience and neighborhood knowledge. Ground-truthing data is a vital reality check step that recognizes the wisdom of the community.

6.1.4 Scoring & Prioritizing Projects

In a previous version of The ARC TIP Project Evaluation Framework (Winter 2017), the social equity component primarily consisted of checking whether or not the project was within an Equitable Target Area (ETA) and evaluating a written assessment of how a project would support an ETA. See **Figure 6.3** for an example of these criteria from 2017.

Measure	Metric	Nature of Metric	Sponsor Provided
Addressing Social Equity	Does project serve an ETA community?	Written; sponsor provides an assessment of how developing the project will support ETA areas.	Yes; with supplemental ARC assessment of ETA areas

Figure 6.3 - Old Metric for Evaluating the Trail Social Equity Criterion (Atlanta Regional Commission, 2017).

With the new Equity Analysis methodology, the updated project evaluation framework shifts to a more fine-grained evaluation. ARC still uses a written assessment as a screening step. For example, suppose a project demonstrates that it will serve a minority or

low-income community. In that case, the project then gets additional points based on the new social equity scoring methodology, which considers the relatively low to high concentration levels. **Figure 6.4** shows how this change works in the framework.

Measure	Metric	Nature of Metric	Sponsor Provided
Addressing Social Equity	Does project serve a minority or low-income community?	Written; sponsor provides an assessment of how developing the project will support these populations. This information is used to screen projects to receive a score.	Yes; with supplemental ARC assessment of minority or low-income areas

Social Equity Scoring	Points Awarded
Low	0
Medium-Low	25
Medium	50
Medium-High	75
High	100

Figure 6.4 New Metric for Evaluating the Trail Social Equity Criterion, as of August 2019 (Atlanta Regional Commission, 2019).

Community engagement at ARC - Weighting

Deciding how to assign weights to different score elements is essential for evaluating projects with multiple goals and metrics. In addition, other projects may have different criteria for success. ARC sent a survey to their Prioritization Taskforce members and the Transportation Coordinating Committee to start this process.

ARC asked survey respondents to rank each criterion from most to least important in determining a successful project. After this prioritization exercise, ARC converted the data to a weighting scheme. Criteria that were higher in priority received a higher weight. (Atlanta Regional Commission, 2019)

6.2. Boston Region MPO

In Massachusetts, the Boston Region MPO covers many communities, from rural towns such as Dover to large urban centers such as Boston. It encompasses 97 cities and towns and is home to nearly three million people (Boston Region Metropolitan Planning Organization, n.d.). Boston Region MPO recently updated their Transportation Improvement Program (TIP) criteria and scoring methodology to have a greater weight on equity and impact.

6.2.1 Indicators

Boston Region MPO equity populations in the new TIP criteria include "the low-income population, people of color, people with limited English proficiency, people with disabilities, the elderly population (age 75 and older), and the youth population (age 17 and younger)" (Boston Region MPO, 2020). This approach is similar to their previous criteria with three main changes. Previously, the requirements included zero-vehicle households but did not include the youth population. It also had low-income households.

Boston MPO removed zero-vehicle households because there is no federal guideline indicating that they qualify as a protected class. Similarly, they added the youth population because it is part of a protected class. Low-income populations based on poverty status replaced low-income households.
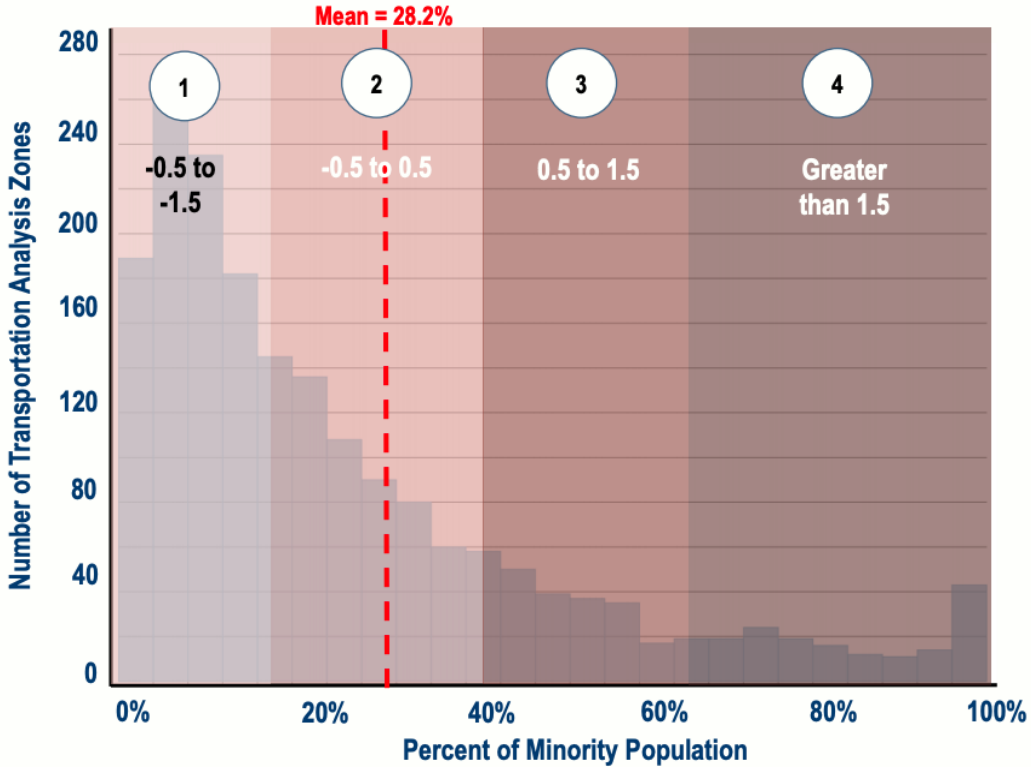
6.2.2 Scoring Analysis Areas

Boston Region MPO previously used a simplified threshold approach to indicate whether a project was in a high or low population concentration. For example, a population with a high concentration of minority populations would be over 2,000 people, whereas a low concentration would be equal to or less than 2,000 people. But this did not take into account how this compares to the region as a whole.

The new approach uses a similar methodology to ARC to create an "Equity Index" by comparing a Transportation Analysis Zone to the regional average for each indicator. Next, it is given a score between 1-4 based on the standard deviation. Next, they multiplied this score by weight. Finally, each indicator is added together for a total index score of 22. **Figure 6.4** illustrates the process for creating the Equity Index (Harvey, 2020).

Step 1: Create Equity Index

Mean = 28.2%

Histogram showing Number of Transportation Analysis Zones (y-axis, 0 to 280) versus Percent of Minority Population (x-axis, 0% to 100%), divided into four zones:

- **1**: -0.5 to -1.5
- **2**: -0.5 to 0.5
- **3**: 0.5 to 1.5
- **4**: Greater than 1.5

Demographic Group	Base Index Points	Population Weight	Maximum Index Points
Minority population		x2	8
Low-income population		x1	4
People with LEP	1 through 4	x1	4
People with disabilities		x0.5	2
Elderly population		x0.5	2
Youth population		x0.5	2
HIGHEST POSSIBLE INDEX			**22**

Figure 6.4 - Creating the Equity Index (Harvey, 2020)

6.2.3 Mapping

Boston Region MPO does not currently have a public-facing map-based tool to visualize the equity index spatially. Instead, they rely on a GIS analyst to provide the required data and calculate the scores within Excel as needed. The staff noted that they would like to have an interactive map similar to DVRPC's Equity Analysis mapping tool but currently lack the resources to develop it (Genova, M. and Harvey B, Personal interview, January 8, 2020). They do have a map of TIP projects, though. This map (**Figure 6.5**) shows projects by type and also includes details about each project.
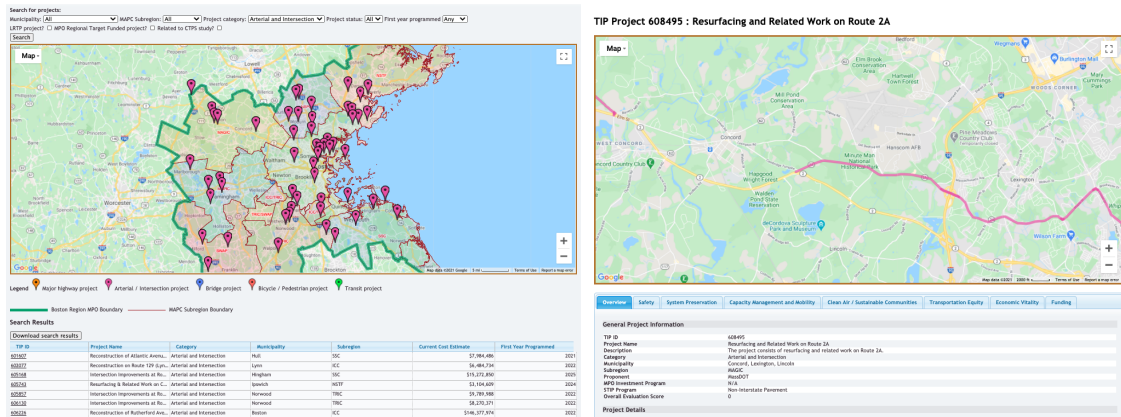
Figure 6.5. TIP Web Application Main Page, filtered by Arterial and Intersection projects (left) and example project detail screen (right)

These project detail screens are great for transparency and accountability. Each component of the project's score is visible, including Overview, Safety, System Preservation, Capacity Management and Mobility, Clean Air / Sustainable Communities, Transportation Equity, Economic Vitality, and Funding. Note these are for past projects, so Transportation Equity still appears as its own category here.

6.2.4 Scoring & Prioritizing Projects

In addition to updating the criteria to include the new "Equity Index," the methodology for scoring individual projects has also been updated. Instead of having a separate category for transportation equity, the new criteria integrate equity *into every goal area*. As a result, projects receive more points based on both "the share of equity populations in the project area and the expected impacts of the project, as evaluated in the other five goal areas." In addition, the selected goal areas can receive an *equity multiplier boost* based on their Equity Index score, as shown in **Figure 6.6** (Boston Region MPO, 2020).

Project's Equity Index	Project's Equity Multiplier
1 to 5	1.25
6 to 10	1.5
11 to 15	1.75
16 or greater	2

Hypothetical Project Scores for CA/SC Criteria

Criteria	Base Score	Multiplier	Final Score
Reduces CO_2 emissions	3	None	3
Reduces other transportation-related emissions (CO, NOx, VOCs, and $PM_{2.5}$)	5	1.5	7.5
Addresses environmental impacts	1	None	1
Enhances the natural environment	2	None	2
	11		13.5

Figure 6.6 - Equity Multiplier and Hypothetical Project Scores for Clean Air / Sustainable Communities Criteria (Harvey, 2020)

The scoring system also allows different projects to weigh relevant criteria differently while keeping the equity component consistent across all project types. The new system also increases the number of points allocated towards addressing equity concerns. **Figure 6.7** shows how Boston MPO distributed the points across different program areas and compares this to the previous scale.
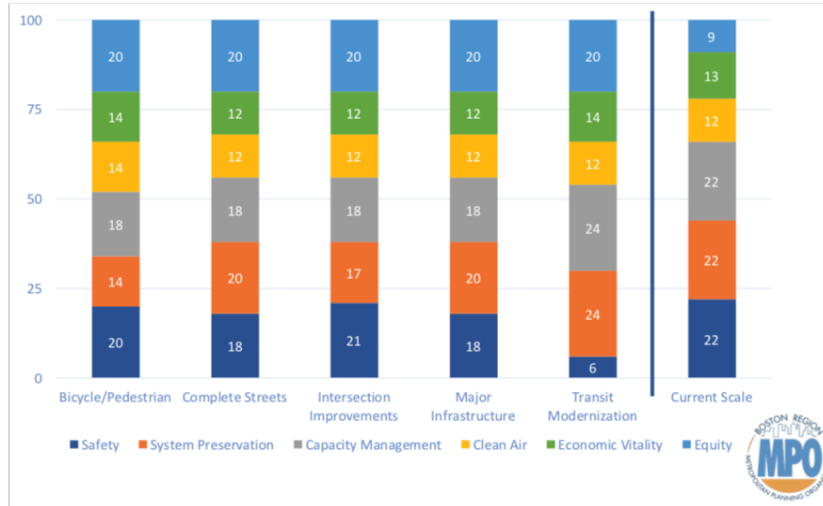
Figure 6.7. Proposed Scoring Framework for TIP (Harvey, 2020)

Community Engagement at Boston Region MPO

The process of updating the TIP criteria involved several rounds of community engagement. First, they started the process in the Fall of 2019 by hosting focus groups with various organizations and sending out several surveys. In this phase, they asked people to choose their top priorities (**Figure 6.8**). Boston MPO then incorporated these priorities into the newly proposed TIP criteria, which they also shared with the public. Finally, online surveys were available for people to provide input on the new priorities. In the end, this helped inform which elements would receive the equity multiplier in the scoring system.
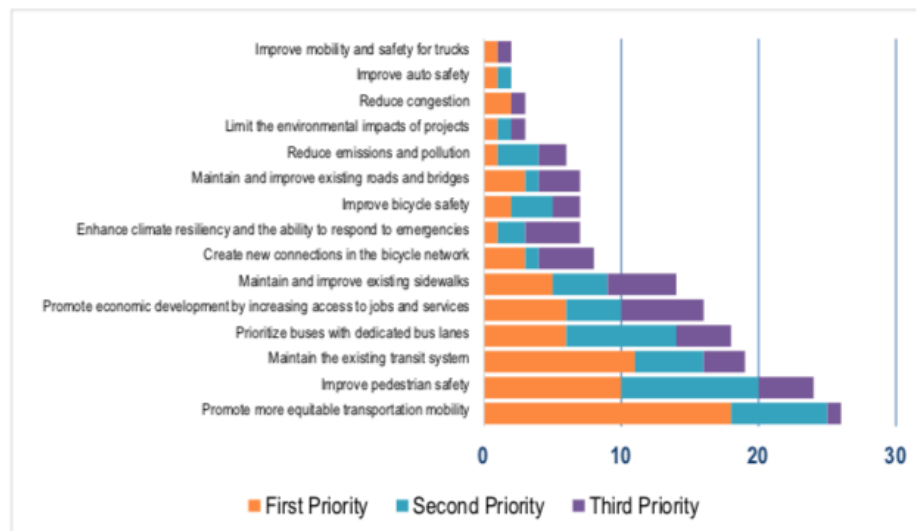

Figure 6.8 - Focus Group Priorities (White, 2020)

6.3. Association of Bay Area Governments and Metropolitan Transportation Commission (ABAG/MTC)

In 2016 The Association of Bay Area Governments (ABAG) and the Metropolitan Transportation Commission (MTC) merged to take joint responsibility for the regional planning needs of the San Francisco Bay Area. ABAG and MTC work together to oversee the needs of 9 counties and 101 cities and work together on their Sustainable Communities Strategy, Plan Bay Area 2040 (California Air Resources Board, n.d.). They are also jointly responsible for the ABAG-MTC Equity Platform, which has four key pillars (Association of Bay Area Governments, n.d.):

- Define & Measure
- Listen & Learn
- Focus & Deliver
- Train & Grow

ABAG/MTC manifests the work of this equity platform across several different activities and outcomes across the organizations. Some of these include providing technical assistance to local jurisdictions, investing in Community-Based Organizations, and hiring high-level staff who are "dedicated to advancing, tracking, and monitoring equity."

Vital Signs

One example of the "Define & Measure" aspect of the ABAG-MTC Equity Platform in action is their Vital Signs site, which tracks various indicators across the region, including Transportation, Land and People, Economy, Environment, and Equity. Within the Equity theme, this is further broken down by:

- Jobs by Wage Level
- Housing Affordability
- Displacement Risk
- Migration
- Poverty
- Life Expectancy

The Vital Signs site is a more narrative-based format than a dashboard. Users can dive into each indicator, read more about the data, and see various charts and maps. **Figure 6.9.** shows an example detail page of one indicator. Not all of the indicators include data at the census tract level. The indicators are also not rolled up into a high-level index.
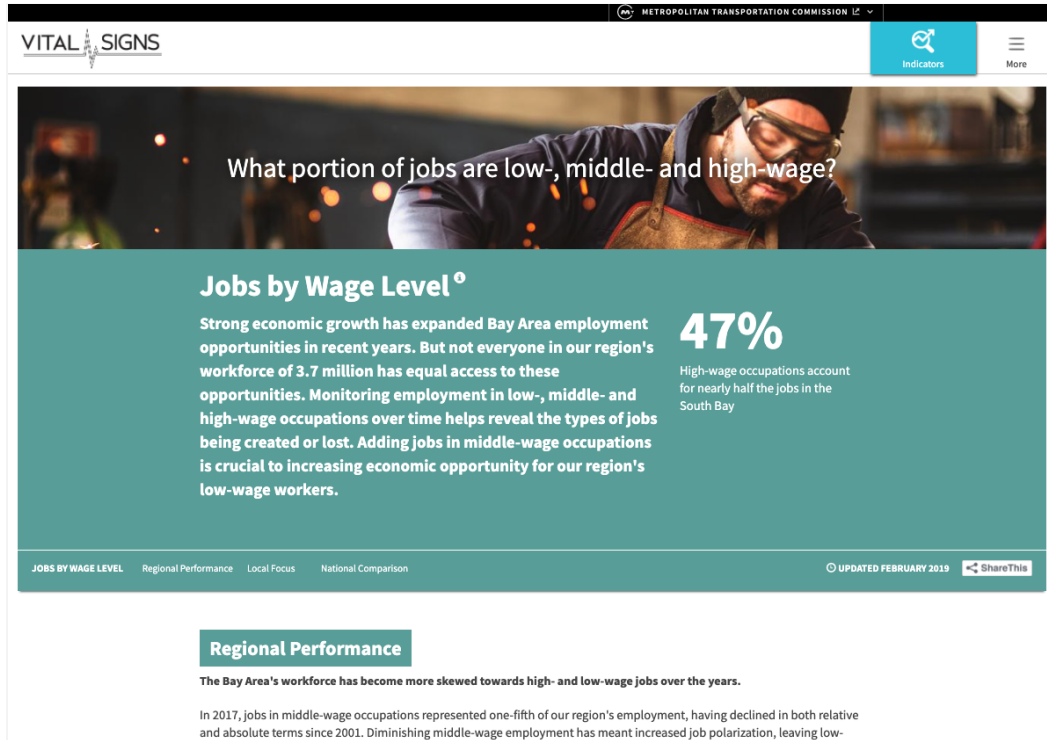
Figure 6.9. Screenshot of the Jobs by Wage Level detail screen on the Vital Signs site. (https://www.vitalsigns.mtc.ca.gov/)

While the site provides valuable data, the purpose of this site is more informational/educational rather than tied to any program decisions, similar to the National Equity Atlas. Because of this limitation, the following few sections will instead focus on the methodologies behind the 2020 update of MTC's Communities of Concern for Plan Bay Area 2040, which is also a more comparable use case to the other MPOs.

6.3.1 Indicators

For defining their target populations (Communities of Concern), MTC uses the "Disadvantage Factors" illustrated in **Figure 6.10** below to calculate the % regional population and concentration threshold. To establish the list of factors, MTC worked with their Equity Workgroup, whose recommendations included the addition of seniors and disabled populations in addition to low income and minority (MTC/ABAG, n.d.)

Disadvantage Factor	% Regional Population	Concentration Threshold
1. Minority	58%	70%
2. Low Income (<200% Federal Poverty Level - FPL)	25%	30%
3. Limited English Proficiency	9%	20%
4. Zero-Vehicle Household	10%	10%
5. Seniors 75 Years and Over	6%	10%
6. People with Disability	9%	25%
7. Single-Parent Family	14%	20%
8. Severely Rent-Burdened Household	11%	15%
Definition – census tracts that have a concentration of BOTH minority AND low-income households, OR that have a concentration of 3 or more of the remaining 6 factors (#3 to #8) but only IF they also have a concentration of low-income households.		

Figure 6.10. Proposed Communities of Concern Framework for Plan Bay Area 2040 (Bay Area Metro, n.d.).

Separately, MTC/ABAG also defines several key equity-related performance measures for Plan Bay Area 2040, used when analyzing the effect of different scenarios. These measures include:

- Housing and Transportation Affordability
- Potential for Displacement
- VMT and Emissions Density
- Commute Time
- Non-Commute Travel Time

6.3.2 Scoring Analysis Areas

MTC also uses a threshold approach but defines their thresholds using standard deviation. For example, if the mean (average) census tract has a 58% population of minorities, the threshold is determined to be 0.5x the standard deviation (Bay Area Metro, n.d.). **Figure 6.11** shows the threshold for the minority indicator is 70%. While additional threshold values are calculated in the table, only the "High COC" is used for determining if a community qualifies as a COC. Once the threshold is selected, the classification is based on a combination of factors (as defined in **Figure 6.10)**. Still, it is not entirely clear how ABAG/MTC chose this combination of factors.

Communities of Concern Framework 2018 COC Update

Disadvantage Factor	Mean of Tract-Level Shares	Standard Deviation	.5 Standard Deviation Concentration Threshold (High COC)	1 Standard Deviation (Higher COC)	1.5 Standard Deviation (Highest COC)
Minority	58%	24%	70%	81%	93%

Figure 6.11 Sample of the Communities of Concern Framework for Minority indicator.

6.3.3 Mapping

The main visualization of these communities of concern highlights how the communities have shifted from previous years and remained the same. Thus, the purpose of this map (**Figure 6.12**) seems more focused on conveying the change between current and prior definitions. Clicking on a tract also surfaces the individual indicators and their values, but it is a less prominent feature than other interactive maps.
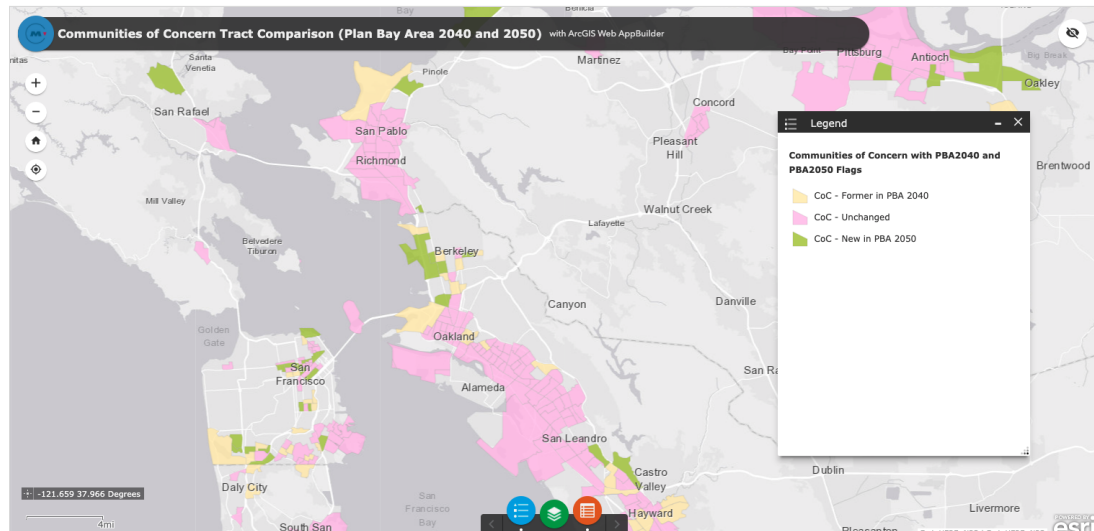

Figure 6.12 Communities of Concern Tract Comparison (Plan Bay Area 2040 and 2050)
(Source: https://mtc.maps.arcgis.com/apps/webappviewer/index.html?id=32e18f6edb9f44dab4a2144e3f500bc4)

6.3.4 Scoring & Prioritizing Projects

ABAG/MTC uses this definition of Communities of Concern in Plan Bay Area 2040 and programs such as the Priority Development Area (PDA) Planning, Staffing, and Technical Assistance grants. The goal of these grants is "to achieve higher density land uses in and around transit stations and along corridors in PDAs throughout the region" (MTC, 2018). The grants support a wide range of projects, some of which include:

- Affordable housing and anti-displacement policies
- Design guidelines, form-based codes, and placemaking
- VMT-based transportation impact standards
- Parking and Transportation Demand Management (TDM)
- Infrastructure and housing finance

The prioritization and scoring for PDA grants are unique in that they have multiple screening steps for eligibility before scoring. The first step to being designated as a PDA is to meet the following criteria (Metropolitan Transportation Commission, 2021)

- Locally nominated by a local government with land use authority
- Infill location is fully contained within an existing urban area
- The plan for significant housing growth and/or housing and employment growth is reflected by the local jurisdiction's general plan or zoning ordinance and must be completed by 2025
- Area has been identified as a Transit-Rich or Connected Community

Within the designation of Transit-Rich or Connected Communities, there are several screening criteria related to proximity to transit service. The Connected Communities classification also requires an area to meet at least one of the following:

- At least 50% of the area is defined as a High Resource or Highest Resource on the most recent Opportunity Map adopted by HCD; or
- At least two policies have been adopted to reduce Vehicle Miles Traveled, such as prioritizing bicycle and pedestrian planning projects.

Once ABAG/MTC identifies an area as a Priority Development Area, the program application includes additional screening criteria related to completeness and eligibility for funding. After passing the screening criteria threshold, an application is then subject to the evaluation criteria. During this step, a project can receive 5/100 points if it is located in a COC or has a high risk of displacement. The evaluation criteria also include 15 points for local commitment and community support.

These multiple steps did not seem to deter applicants as the latest cycle of the program received over $30M in applications for $6M in available grant funding. This enthusiasm could also be due to the simplified application process. They distributed the application via Survey Monkey, and it mainly consisted of checkboxes and a 500-word narrative. ABAG/MTC staff note that having to submit several documents created a barrier to applying in the past. As a result, organizations with better grant writers often received the grant. ABAG/MTC also hosted weekly office hours and webinars throughout the application process and worked with liaisons to talk to local planning staff (Shorett, M, Personal interview, March 11, 2021).

7. Equity Beyond MPOs

While MPOs typically do the work of both identifying communities of concern and prioritizing projects to meet the needs of these communities, many of these projects focus primarily on one or the other. Composite indexes combine many equity indicators into one overall score and often map the results to highlight the communities. Project prioritization systems often use these combined indexes as one element of a scorecard system to score programs.

7.1. Overview of the Equity Indexes

The equity indexes I reviewed all measured equity in slightly different ways since each has a somewhat different purpose and focus. Generally, there appear to be two primary uses for these equity indexes. Some are educational at a high level, while others are used for precise program decision-making. Composite indexes are convenient points of reference, but one drawback of relying on a composite is that they can make it difficult to truly understand the needs of a specific community (Williams et al., 2019).

High level educational versus precise program decision making

The National Equity Atlas has a broad scope of indicators that span multiple categories for a more well-rounded look at equity across the country. It also provides unique ways to categorize the indicators and includes a breakdown by race. However, since the data presented on the website are only presented n at the city level, it is a less helpful tool for precise targeting and scoring specific projects. Instead, it provides more high-level information and policy recommendations.

At the other end of the spectrum of scale is the Social Equity Index which focuses specifically on data in the City of Los Angeles. This index has a unique set of calculated indicators at the census tract level. Still, the non-interactive map makes it difficult to drill into a specific census tract and gives a high-level overview of equity across the region.

The precise decision-making tools include the three state-wide tools SB 535 Disadvantaged Communities, Opportunity Areas, and the California Healthy Places Index. These interactive tools allow the user to drill down into a precise location and see more detailed information about each area. Various applications use these tools for both local and state funding.

Positive versus negative framing language

There are also two different ways of framing the data, highlighting areas of opportunity uses more positive, asset-based language, while highlighting disadvantages uses more

negative vocabulary. Community members have provided feedback to organizations about using a more positive framing and moving away from labeling areas as disadvantaged. For example, in 2016, when CalEPA was open to public comments on the draft version of CalEnviroScore 3.0, SCAG highlighted the concern and suggested a more neutral term:

> "While most of the feedback we have received from our regional stakeholders has been very positive regarding this most recent version of the CalEnviroScreen tool, one key comment that has been brought to our attention is the potential negative connotation associated with the use of the term 'disadvantaged communities' in reference to those areas that are included among the top 25 percent of statewide census tracts in the CalEnviroScreen analysis. While we understand the purpose of the tool for identifying environmentally disadvantaged communities in fulfillment of provisions of California Senate Bill 535, we request that an alternative, more neutral term be used to denote these disproportionately burdened communities such as, for example, "SB 535 Eligible Communities" (Ikhrata, 2016).

The Opportunity Atlas, TCAC/HCD Opportunity Areas and the California Healthy Places Index are three examples using positive language to frame the data. **Table 7.1.** summarizes the different programs reviewed, the responsible organizations, the scope, the focus, and a brief description of each.

Name	Geography	Focus	Description
National Equity Atlas	National - City Level	General	"Report card on racial and economic equity" (National Equity Atlas, 2021)
Opportunity Atlas	National - Census Tract Level	Childhood Poverty	"See which neighborhoods in America offer children the best chance to rise out of poverty" (Census Bureau et al., n.d.)
SB 535 Disadvantaged Communities (CalEnviroScreen)	Statewide - Census Tract Level	Public Health (Investment)	"Disadvantaged communities in California are specifically targeted for investment of proceeds from the State's cap-and-trade program. These investments are aimed at improving public health, quality of life and economic opportunity in California's most burdened communities at the same time reducing pollution that causes climate change" (OEHHA, 2017).
TCAC/HCD Opportunity Areas	Statewide - Census Tract Level	Housing (Investment)	"Identify areas that support positive economic, educational, and health outcomes for low-income families... Designed with the funding infrastructure for the 9% Low Income Housing Tax Credit and programs such as the Multifamily Housing Program in mind" (California Fair Housing Task Force, 2020).
California Healthy Places Index (HPI)	Statewide - Census Tract Level	Public Health	"Explore local factors that predict life expectancy and compare community conditions across the state" (Public Health Alliance of Southern California, 2021).

AB 1500 Low Income Community Tract	Statewide - Census Tract Level	Poverty	"Low-income communities and households are defined as the census tracts and households, respectively, that are either at or below 80 percent of the statewide median income or at or below the threshold designated as low-income by the California Department of Housing and Community Development's (HCD) 2016 State Income Limits" (California Air Resources Board, 2018).
LA Equity Index	Citywide - Census Tract Level	General	"Illustrates the level of equity and opportunity in each neighborhood so that City leaders and all residents have a data-driven understanding of community needs throughout Los Angeles." (Galperin, n.d.)
Social Equity Index	Citywide - Census Tract Level	General	"Shows what Los Angeles communities are unfairly impacted across multiple structural and current socioeconomic disadvantages. It also weights co-location with place-based investment opportunities" (Angel City Advisors, 2020).

Table 7.1. Equity Indexes Reviewed

7.2 Indicators

Comparing indicators across different indexes at the same level of granularity proved to be a little challenging. The equity indexes often use slightly different indicators to measure similar dimensions. For example, measuring "Age" includes Older Adults, Seniors, Youth, Median Age. Indicators also vary significantly in their units of measurement. For example, some estimate the number of individuals or households per census tract or other custom-defined geographies. Other indicators are percentages or calculated scores and some indexes include other indexes nested inside of them.

To better understand how organizations use these indicators, I grouped them and organized them by common themes, which are currently under consideration by SCAG's Equity Working Group (EWG). This list also filters out indicators deemed infeasible by the SCAG Data & Modeling team. **Table 7.2** below shows the indicator groups in each theme. Each indicator group may have one or more individual indicators inside. For example, "Poverty" includes the individual indicators: Above Poverty, Below Poverty, Neighborhood Poverty, People in High Poverty, Neighborhoods, Poverty, Poverty as Filter, Public Benefits, School Poverty, SNAP Recipiency, and Student Poverty Rate.

On the other hand, "Political Engagement" only includes one indicator, Voting. Note, this list also consists of the indicators used by MPOs and indicators that SCAG's EWG is currently considering but are not currently used (as of January 2021). The complete list of individual indicators can be found in **Appendix A.** While only reviewing eight indexes is a relatively small sample size, it is interesting to see how the different themes might be weighted. When considering equity, indicators that measure economic outcomes account for 34% of the total number of indicators.

Theme	Population	Economy	Healthy & Complete Communities	Mobility	Environment
Indicator Groups	Age Race/Ethnicity Family Language Gender Disability	Poverty Education Level Employment Income Job Density Growth Wage Political Engagement Enforcement	Housing Burden Homes Historic Disinvestment Internet Access Vacancy Population Density Insurance Disease Hospitalization Lifespan Birth-Weight	Commute Access to Car Proximity Transit Access Safety	Air Pollution Water Quality Waste Greenery Access Traffic Density Hazards
Total	22	35	19	10	17

Table 7.2 Indicator themes, groups of individual indicators, and the total number of individual indicators included in the theme.

Table 7.3- **Table 7.7** below compares how common a particular indicator group is across the different indexes. I have also included SCAG's here and references for current indicators and those under consideration, marked with a "?" in the box. The total number inside the () includes the indicators under consideration. Note, this chart does not include other MPOs aside from SCAG. The last column on the right also indicates the number of votes each received during the Equity Work Group prioritization meeting.

Indicator Group	SCAG	NEA	OA	DAC	TCAC	HPI	AB	LA	SEI	Total	EWG Votes
Age	?	X								1(2)	2
Race/Ethnicity	X	X	X		X				X	5	2
Family	?		X			X				2(3)	1
Language	?			X						1(2)	1
Gender										0	1
Disability	?									(1)	3
Total	1 (4)	2	2	1	1	1	0	0	1	--	10

Table 7.3 - Population indicator groups across different indexes. *Abbreviations: SCAG = Southern California Association of Governments, NEA = National Equity Atlas, OA = Opportunity Atlas, DAC = SB 535 Disadvantaged Communities, TCAC = TCAC/HCD Opportunity Areas, HPI = California Healthy Places Index, AB = AB 1500 Low Income Community Tract, LA = LA Equity Index, SEI = Social Equity Index*

The most common indicators in the Population theme are related to people of color: Diversity Index, Ethnic Minority, Foreign Born, Minority, Racial Generation Gap, Racial Minority, and Racial Segregation. The least common is Gender, used by an MPO but not any of the indexes reviewed here.

Indicator Group	SCAG	NEA	OA	DAC	TCAC	HPI	AB	LA	SEI	Total	EWG Votes
Poverty	X	X	X	X	X	X		X	X	8	5
Education Level	?	X	X	X	X	X		X	X	7(8)	2
Employment	?	X	X	X	X	X			X	6(7)	4
Income	?	X	X			X	X		X	5(6)	5
Job Density	?	X	X		X	X				4(5)	2
Growth		X	X							2(3)	1
Wage	?	X	X							2(3)	2
Revenue		X								1	0
Engagement						X				1	1
Enforcement			X						X	2	0
Total	1(9)	8	8	3	4	6	1	2	5		23

Table 7.4 - Economy indicator groups across different indexes. Abbreviations: SCAG = Southern California Association of Governments, NEA = National Equity Atlas, OA = Opportunity Atlas, DAC = SB 535 Disadvantaged Communities, TCAC = TCAC/HCD Opportunity Areas, HPI = California Healthy Places Index, AB = AB 1500 Low Income Community Tract, LA = LA Equity Index, SEI = Social Equity Index

Indicators related to economic vitality are the most common across the indexes reviewed. Over half of the indexes measure Poverty, Education Level, Employment, and Income in some way. The least common is Engagement, which measures the percentage of registered voters voting in the 2012 general election, and only appears in the California Healthy Places Index.

Housing burden is an important issue, as it appears in most of the indexes reviewed, but this category also includes several individual indicators, including:

- Energy Cost Burden
- Homelessness
- Housing Burden
- Housing Burdened Low Income Households
- Median Home Sales & Values
- Median Rent

- Own Severe
- Rent Severe
- Severe Overcrowding

Indicator Group	SCAG	NEA	OA	DAC	TCAC	HPI	AB	LA	SEI	Total	EWG Votes
Housing Burden	?	X	X	X	X	X		X	X	7(8)	4
Homes	?	X				X		X		3(4)	5
Internet Access	?							X		1(2)	3
Vacancy	?									(1)	1
Hist. Disinvest.									X	1	3
Pop. Density			X							1	0
Insurance	?					X		X		2(3)	1
Disease				X						1	1
Hospitalization				X						1	0
Lifespan	?	X								1(2)	3
Safety	?									(1)	3
Birth-weight				X						1	1
Total	(7)	3	2	4	1	3	0	4	2		25

Table 7.5 - Healthy and Complete Communities (Housing and Public Health) indicator groups across different indexes Abbreviations: SCAG = Southern California Association of Governments, NEA = National Equity Atlas, OA = Opportunity Atlas, DAC = SB 535 Disadvantaged Communities, TCAC = TCAC/HCD Opportunity Areas, HPI = California Healthy Places Index, AB = AB 1500 Low Income Community Tract, LA = LA Equity Index, SEI = Social Equity Index

Rent Severe & Housing Burdened Low Income Households define housing burden as paying over 50% of income in rent. Variations of this measure are the most common across the indexes. The least common indicators are Internet Access, Vacancy, and Historic Disinvestment.

Although SCAG considers several indicators related to Public Health, it doesn't appear to be very common across the indexes reviewed. It is surprising to see so few Public Health indicators in the California Healthy Places Index, but this is by design. Because the HPI is itself an index of health, including health outcomes within the index wouldn't work with the logic of the calculations.

Indicator Group	SCAG	NEA	OA	DAC	TCAC	HPI	AB	LA	SEI	Total	EWG Votes
Commute	?	X	X			X				3(4)	3
Access to Car	?	X				X				2(3)	2
Proximity	?					X		X		2(3)	4
Transit Access	?									(1)	3
Safety	?									(1)	3
Total	(4)	2	1	0	0	3	0	1	0		15

Table 7.6 - *Mobility indicator groups across different indexes. Abbreviations: SCAG = Southern California Association of Governments, NEA = National Equity Atlas, OA = Opportunity Atlas, DAC = SB 535 Disadvantaged Communities, TCAC = TCAC/HCD Opportunity Areas, HPI = California Healthy Places Index, AB = AB 1500 Low Income Community Tract, LA = LA Equity Index, SEI = Social Equity Index*

Not many indexes include mobility-related indicators, but indicators related to Commute, Access to Car, and Proximity show up in a few. For example, commute includes measures such as:

- Commute by walking, cycling, or transit
- Commute time under 15 minutes
- Travel Time to work

Surprisingly, Transit Access does not appear to be included in any of the current indexes, although it is under consideration by SCAG.

Indicator Group	SCAG	NEA	OA	DAC	TCAC	HPI	AB	LA	SEI	Total	EWG Votes
Air Pollution	?	X		X	X	X		X		5(6)	5
Water Quality				X	X	X				3	3
Waste				X	X					2	2
Green Access	?					X				1(2)	3
Traffic Density				X	X			X		3	0
Hazards	?			X	X					2(3)	1
Total	(3)	1	0	5	5	3	0	2	0		14

Table 7.7 - *Environment indicator groups across different indexes. Abbreviations: SCAG = Southern California Association of Governments, NEA = National Equity Atlas, OA = Opportunity Atlas, DAC = SB 535 Disadvantaged Communities, TCAC = TCAC/HCD Opportunity Areas, HPI = California Healthy Places Index, AB = AB 1500 Low Income Community Tract, LA = LA Equity Index, SEI = Social Equity Index*

The most common Environment indicators relate to Air Pollution includes:

- Air Pollution Index
- Diesel PM Emissions
- Ozone Concentration
- PM2.5 Concentration
- Toxic Releases from Facilities

Given the focus on federally defined Environmental Justice measures, it's not surprising that the two official California indexes (SB 535 Disadvantaged Communities and TCAC/HCD Opportunity Areas) focus heavily on environmental indicators compared to some of the others.

7.3 Scoring Analysis Areas

Each of these indexes is unique in its methodology for scoring based on the specific goals of the index. For example, the California Healthy Places Index (HPI) "was created using statistical modeling techniques that evaluated the relationship between these Policy Action Areas and life expectancy at birth" (Public Health Alliance of Southern California, 2021). On the other hand, the Opportunity Atlas focuses on measuring the outcomes of children who grew up in each neighborhood because studies have found that where children grow up has "substantial causal effects on his or her prospects of upward mobility" (Opportunity Insights, 2018). Due to the wide range of goals, it is more difficult to generalize a scoring methodology across these indexes. However, regardless of the method, one crucial aspect that planners should consider for all of the indexes is allowing for "ground-truthing" where the local communities identified in the maps can provide additional information from their lived experiences. CalEnviroScreen is an example of an index that attempts to verify its quantitative scores with community testimonies (Zrzavy & Blondell, 2019).

7.4 Mapping

Most of the indexes reviewed have an interactive map (screenshots of these maps are in **Appendix C)**. The two exceptions include the National Equity Index, which features more charts and narrative, and the Social Equity Index, which features many non-interactive print-based maps. All the interactive maps allow the user to drill down to the census tract level of detail to see additional information about each. The California Healthy Places Index and the Opportunity Atlas allow for more detailed customization of the data being viewed based on different parameters chosen by the user. They both feature the ability to upload custom layers to the map, which allows for more context. The California Healthy Places Index is also unique in its ability to customize regions, indicators, and selected geographic areas.

7.5 Project Prioritization

Several of these indexes guide equitable funding decisions as part of a more extensive scoring system. Since the Opportunity Atlas is available at the census tract level at a national scale, organizations across the country used it. The website lists testimonials from a mayor, directors of nonprofits, and CEOs (Census Bureau et al., n.d.). But it is unclear how these organizations specifically integrated it into any project prioritization criteria.

In California, using a combination of SB 535 Disadvantaged Communities and AB 1550 low-income communities is typical for programs that receive funding from the state. For example, at least 35 percent of California Climate Investments must benefit communities in these identified areas. A variety of programs also use the California Healthy Places Index at both the state and regional levels.

> "HPI has already been utilized by more than 100 government agencies, health care institutions, community groups, and other sectors for a variety of different purposes, including transportation planning, climate vulnerability analysis, philanthropic grantmaking, and hospital community health needs assessments. Most notably, the State of California is using HPI as part of its Blueprint for a Safer Economy Health Equity Metric and for COVID-19 vaccine distribution." (Public Health Alliance of Southern California, 2021)

Some use a combination of existing indexes and their own in their scoring. One example is the Metro Active Transportation (MAT) Program. Established by the passing of Measure M, the MAT program will fund active transportation and infrastructure projects throughout Los Angeles. Over 40 years, Metro expects the program to support more than $857 million in projects (Metro, 2020). MAT is part of Metro's overall Equity Platform Framework (Metro, 2018). Metro built the framework on four pillars: Define and Measure, Listen and Learn, Focus and Deliver, and Train and Grow.

In June 2019, as part of the Define and Measure pillar, the Metro board adopted the Equity Focused Communities (EFC) as a working definition. Metro reviewed several possible indicators and drew inspiration from MTC, the Bay Area MPO. Working with stakeholders, Metro landed on three core measures: Low-Income, Non-White, and Zero-Car Household. Metro found these three to have "the highest statistical correlations and/or a higher than County average (30% or more in likelihood) to opportunity gaps" (Metro, 2019). They used these three indicators to identify census tracts that had:

- A population where at least 40% are low-income (less than $35,000 annual income) AND
- At least 80% are non-white, OR at least 10% of the households have zero cars.

After identifying the EFC in the region, the MAT program prioritizes individual areas by awarding points based on Disadvantaged Communities, the Healthy Places Index, and SCAG's Communities of Concern (CoC) (Metro, 2020).

Organizations in California seem to have the advantage of relying on several of these established state-wide indexes for policy and program decision-making. However, when interviewing staff at MPOs outside of California (Broward, Boston, and Atlanta), they did not use any established state-level equity indexes. Moreover, they weren't aware of any that were available.

PART 3

RECOMMENDATIONS AND CONCLUSION

SYNTHESIZING AND LOOKING FORWARD

8. Recommendations: A starting point

The literature review pointed to the need for frameworks and tools that explicitly address community engagement, benefits to priority populations, and analyzing equity from multiple perspectives. Additionally, several discussions with SCAG stakeholders provided an opportunity to prioritize the recommended indicators and features while aligning this research with other equity initiatives at SCAG. There were also several technical considerations for building the prototype. It was essential to leverage the available tools within ArcGIS Online since Esri products are SCAG's primary GIS and data platform, and the final tool needs to be built and extended by the SCAG team. The end product also needed to be user-friendly and easy to use for staff members, not GIS analysts themselves. The following summarizes the main recommendations for selecting indicators, scoring analysis areas, designing the mapping interface, and project prioritization.

8.1 Indicators

SCAG should expand the "Communities of Concern" indicators beyond "minority" and "poverty." Instead of using a negative framing term such as "disadvantaged communities," use a more neutral umbrella term such as "Priority Populations." Also, avoid using the term "minority" or "non-white" when possible—this framing centers around the idea of whiteness as the default and everyone else as the exception.

Use this core population as the consistent variable when exploring equity across SCAG's four main programmatic areas: Economy, Healthy & Complete Communities, Mobility, and Environment. Within each of these programmatic areas, use indicators that are vetted, publicly available at the census tract level, and used in other established and robustly researched indexes.

Table 8.1 summarizes the initial list of recommended indicators for each category. Note, this is a starting point and recommendations for SCAG. Further refinement of this list of indicators will require more qualitative and quantitative analysis to determine a final set of indicators. In addition, SCAG should plan a robust series of outreach activities to solicit feedback from the community. SCAG should also conduct statistical analysis to determine whether a particular indicator correlates with the desired outcome. The following section, **14.2 Scoring Analysis Areas**, discusses this further.

Priority Population	Economy	Healthy & Complete Communities	Mobility	Environment
Income to Poverty Level People of Color Hispanic or Latinx Disability Age Under 18 Age Over 75 English Proficiency	Employment Education Retail Job Density Public Assistance	Homeownership Rent Severe Overcrowding Kitchen Facilities Plumbing Facilities Broadband Internet Access Health Insurance Life Expectancy	Commute Time Commute Mode Access to Vehicle	Ozone PM 2.5 Diesel PM Water Quality Hazardous Waste Park Access

Table 8.1- *List of recommended indicators across each theme. Complete definitions and sources are linked in Appendix A.*

8.2 Scoring Analysis Areas

When evaluating analysis areas using these indicators, determining thresholds and weights should not be an arbitrary choice. Instead, these decisions should be rooted in rigorous data analysis, and SCAG should document the methods in an accessible format. Explain why the threshold or weighting was determined to be statistically significant. Additionally, it is crucial to recognize the limitations of the data and consult community members to validate and supplement the findings.

Core Priority Populations

As a starting point for the Core Priority Populations, SCAG should move away from a binary threshold based on an arbitrary cut-off percentage. Instead, consider each of these indicators in terms of how each compares to the regional average. Use standard deviation (z-score) to determine if an area is significantly above or below the regional average. Create a simple 5-bin system for scoring each indicator and assign a point value to each, then sum the point values for the Priority Population indicators to create a cumulative score. Next, classify the analysis areas based on high to low concentrations of the priority populations, which SCAG can then visualize via colors on the map. This recommendation follows the methodology established by ARC in **Section 6.1** above. The various program area indicators can further filter the analysis areas to explore how each *intersects* with this population.

Expanded Indexes - First Phase

When evaluating applications to award funds, it's essential to have a simple, consistent way to assess the areas related to each specific SCP area (Active Transportation, Housing, Smart Cities, and other future programs). However, creating a custom blend of indicators for each area that considers the wide range of interconnected elements and the proper weighting of each is a significant undertaking. SCAG should further explore this data analysis in a future phase. As a first step, SCAG should continue leveraging the many

existing indexes and build upon prior research. Years of research and community outreach informed the creation of the CalEnviroScreen, The California Healthy Places Index, TCAC/HCD Opportunity Areas, and the Opportunity Atlas. SCAG can use all of these indexes as a metric for each of the SCAG program areas. In this first phase, the focus should be on operationalizing these existing indexes in a user-friendly way.

SCAG could potentially incorporate other indexes into the tool in the future if SCAG has the resources to format the data into the required format (at the census tract level, for the entire SCAG region). For example, the Urban Displacement Project (Urban Displacement Project, 2016) has displacement data for Los Angeles and Orange County in the Southern California region. While this does not cover the entire SCAG region, the data sources for these maps are publicly available. The methodology is also open source and available on GitHub. SCAG could partner with the original researchers to expand the map to the entire SCAG region or follow the researcher's methodologies to replicate it independently.

Another example is the EPA's Walkability Index (United States EPA, 2021), publicly available at the block level. SCAG could aggregate this data to be useful at the census tract level and incorporate it into the Mobility theme. Building upon this prior research ensures the results are grounded in a rational methodology.

Priority Population	Economy	Healthy & Complete Communities	Mobility	Environment
EJ Areas SCAG COCs	TCAC Opportunity Areas	Healthy Places Index Urban Displacement (future)	EPA Walkability Index (future)	SB 535 DAC CalEnviroScreen

Table 8.2 - Initial list of recommended indexes across each theme

Expanded Indexes - Future Phases

Before embarking on the journey of creating a new index for each SCP program area, evaluate the costs and benefits. Is it vital to create yet another new index for each? Is it possible to rely on established metrics? If SCAG still decides to create a custom index for each SCP area, SCAG should invest the resources needed to accomplish this. Dedicate a full-time team to building it out. A plan for moving forward with this (based on the HPI method) could include the following steps:

1. Select a specific, measurable outcome. Then, investigate if peer-reviewed research shows the indicator links to this outcome. For example, HPI selected indicators associated with life expectancy at birth.
2. Standardize the indicators by computing the Z-scores for each.
3. Determine the weight for each domain using a regression model or a similar method.

4. Create the final index. Multiply the score and the weight for each domain and add these all together.
5. Confirm the domain weights by performing sensitivity analysis.

Creating custom expanded indexes for each is possible. However, it will need more time and resources than available for this current research engagement. It will also be essential to get input on these indexes from the community. Be sensitive to feedback about potentially controversial measures or wording.

8.3 Map Interface

This web-based mapping application uses ArcGIS Experience Builder. The SCAG ArcGIS Online platform includes access to this product. Experience Builder allows for a greater level of customization and control than ArcGIS Dashboard or Web AppBuilder. **Figure 8.1** shows the app with a custom splash screen on load.

Colors and language

Avoid the use of reds and oranges to highlight "disadvantaged" areas. This coloring has a negative connotation and makes it seem like these areas are "bad." A neutral blue-green color palette (as shown in **Figure 8.2**) is preferable. Use positive, asset-based framing language when possible. Recognize that these communities are full of positive assets.
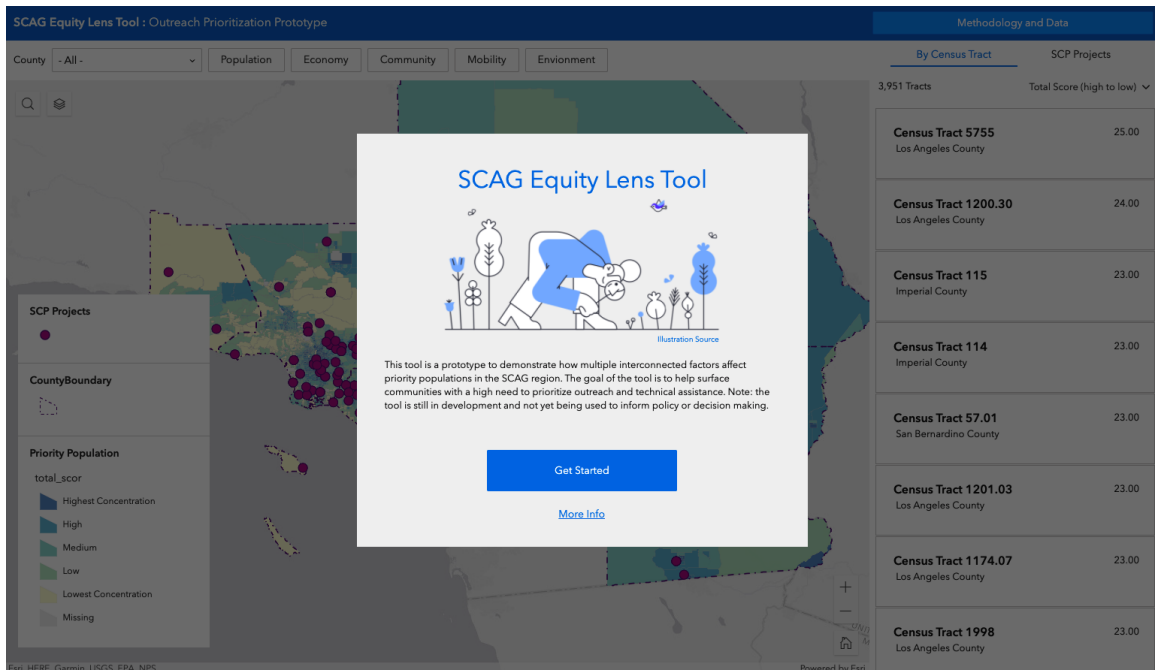
Figure 8.1 Screenshot of the splash screen to give context about the project.
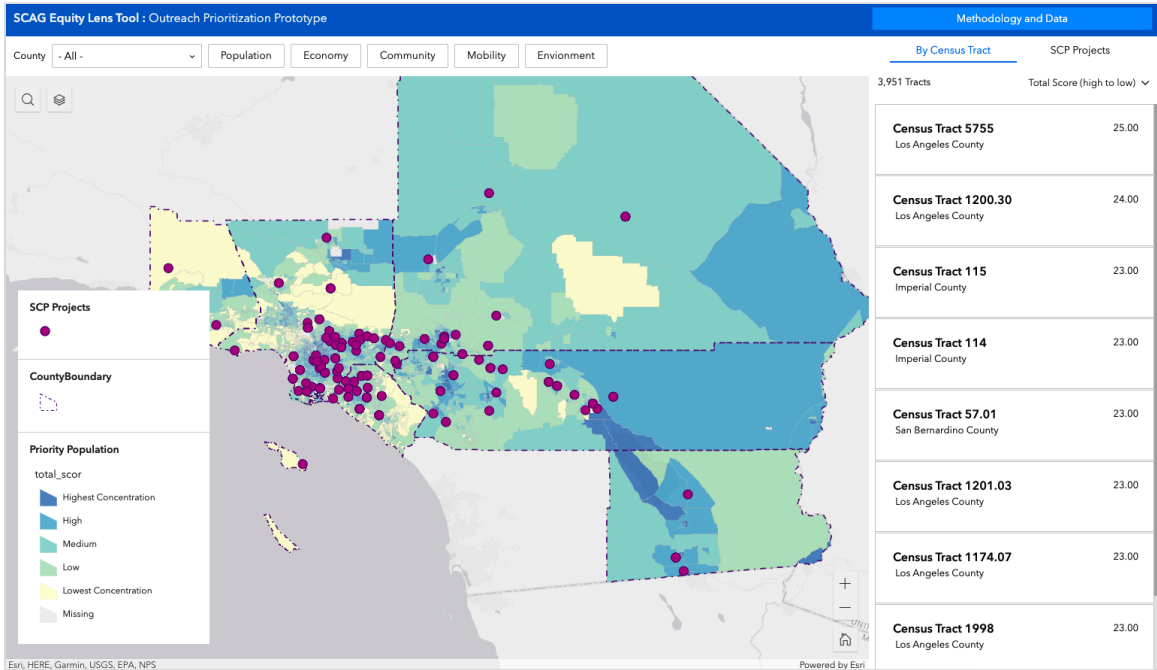
Figure 8.2 *Screenshot of the interface, zoomed out to the regional level*

Filters and Layers

When assembling the data, simplify and organize it with a consistent structure. Each census tract needs the attributes to filter the views across many program areas. To surface the areas with the highest need, visualize how equity factors intersect. Relying on many overlapping layers creates visual noise. Instead, shift to depending on user-friendly filters. This technique enables the user to refine the view according to their specific needs. It also removes irrelevant data from the screen to make it easier to target particular areas.

Additionally, point-based data such as the SCP projects can exist as a separate layer on top of the main map. Other layers, such as the current SCAG Communities of Concern, are optional. These can appear as outlines to highlight the boundaries of these zones.
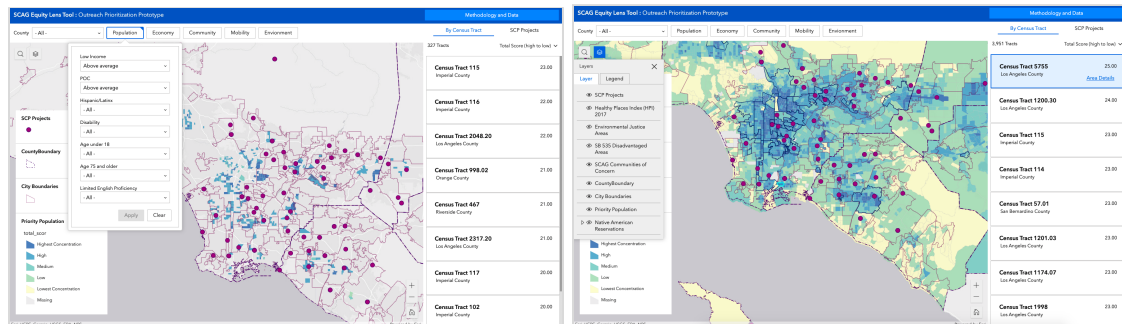
Figure 8.3 *Screenshot of the map with Priority Population filters applied (left), and current SCAG COC layer turned on (right)*

List view of Census Tracts and SCP Projects

Mapping is a great way to understand how attributes vary across a geographic area. A map alone is not the best for understanding priority, though. The map should also feature an accompanying ordered list view. Each item should contain high-level information for each tract or SCP project. Then, display the data with appropriate visual hierarchies.

Having a list view also means the user can sort items. The order of the list can reorder in ways that are more meaningful to their particular needs. This ability to sort makes it easy to locate the highest priority area. It is more efficient than needing to click around on random map areas one at a time. Clicking on an item on the map should highlight the corresponding row in the list and vice versa.
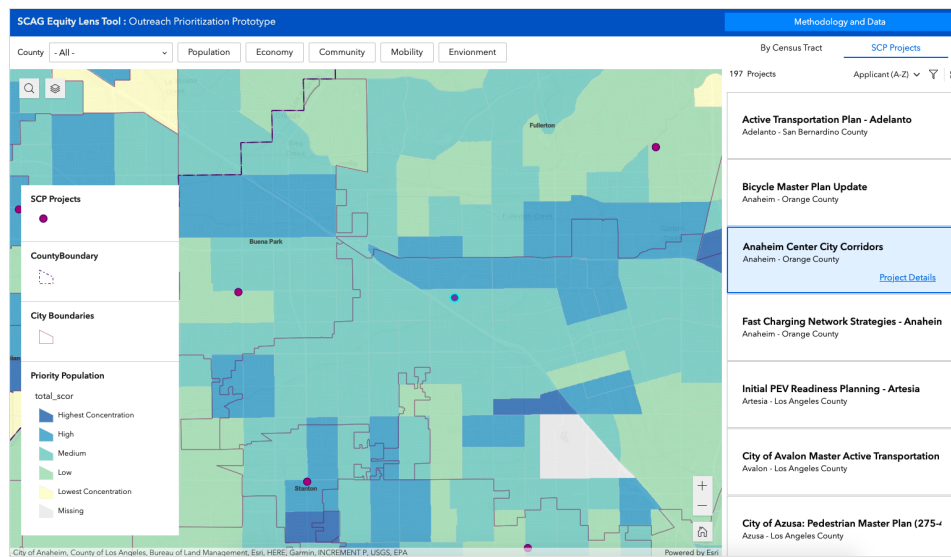
Figure 8.4 *Screenshot showing list of SCP projects on the right with one selected*

Detail Views

A user should be able to click on "Area Details" or "Project Details." They can see a detailed view that displays a breakdown of data. Visualize the data for the area's Priority Populations and each of the four categories. Create a visual hierarchy in the layout to ensure essential information is easy to read. Allow the user to drill down for more specific details if desired.
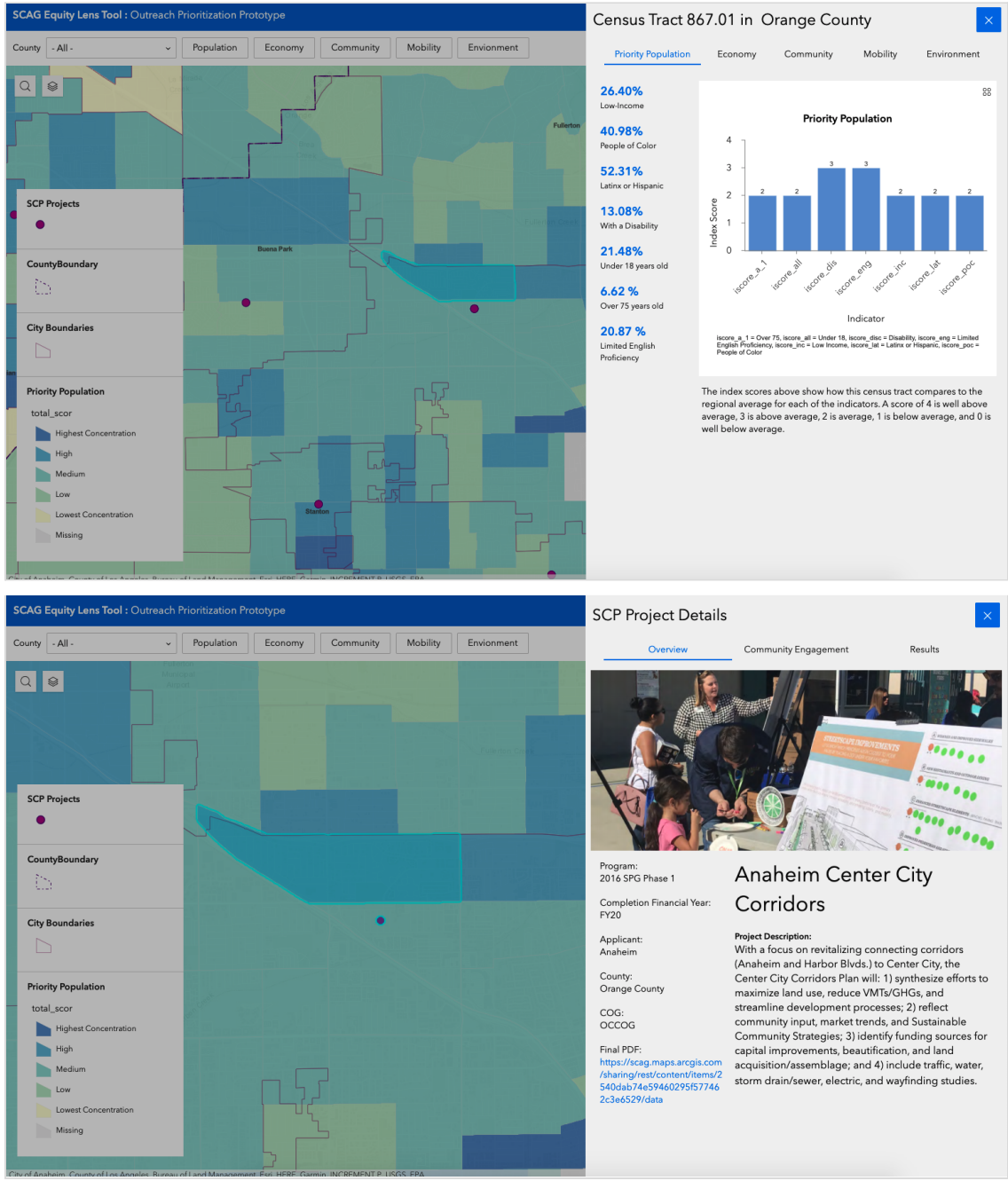
Figure 8.5 *Screenshots of detail views for census tracts (top) and SCP projects (bottom)*

SCAG should include complete details for each SCP project to ensure accountability. Include a link to the final project PDF if available and surface information about the community engagement involved in creating the project. Share survey results about the project's outcomes. The current SCP project data set does include this information in a structured format. SCAG will need to invest time and resources to populate, prepare, and host the data.

Methodology and Data

Transparency is an essential aspect of equity. The tool should describe the purpose and methodologies used to create it. List the exact sources used, allow users to download the data, and note any data limitations. Be sure to include a data dictionary to help people decipher the data. This section can also house the scorecard questions, which can help users understand project evaluation criteria for SCAG technical assistance programs.
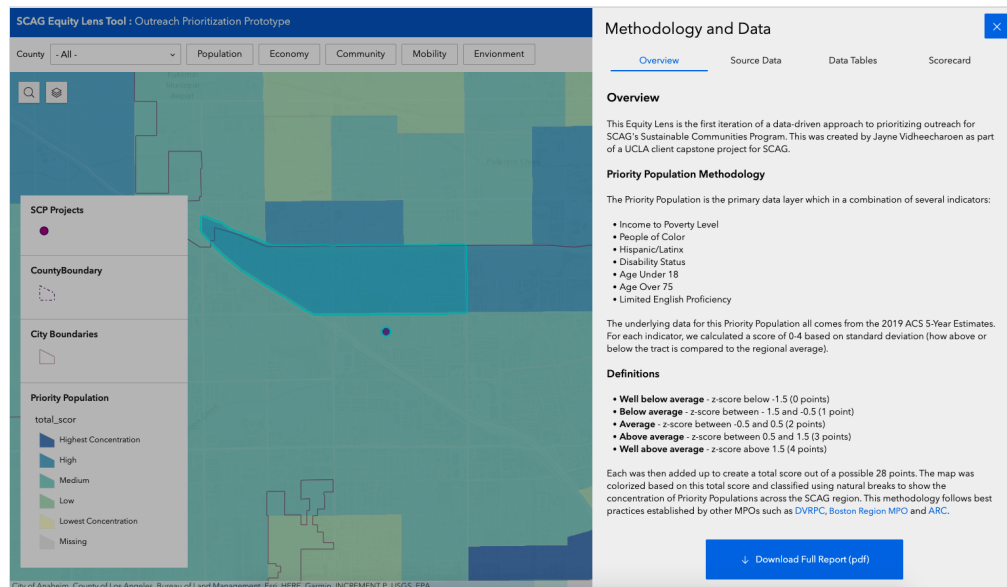
Figure 8.6 Screenshot of Methodology and Data window explaining how I created the map and sourced the data.

8.4 Project Prioritization

As highlighted in the literature review, there are several frameworks for evaluating equity. Most pose qualitative questions about a project or proposal's impact. This report also covers the use of data indicators in various qualitative tools at MPOs and elsewhere. Unfortunately, I did not find a system that combines both in *one* easy-to-use format. Some scorecard tools leverage Excel functionality. Excel-based tools may work, but it's cumbersome for the average user. It also lacks the ability to customize the experience. Instead, the SCAG scorecard could leverage a survey tool like Jotform, allowing for conditional questions and scoring.

Determining the scoring and weighting of each item is a significant challenge. This exercise will need extensive input from many stakeholders and investment of time and resources for SCAG staff. Unfortunately, this project was not able to reach the point of confidently assigning scores and weights. However, **Table 8.3** outlines an initial set of proposed topics and questions for the scorecard to start.

Topic	Questions
1. Project Information	What is the name of the project? What is the scope of the project? What are the main deliverables? What are the desired results and outcomes?

2. Community & Population	What is the concentration of priority populations?
	What does the data tell us about the community?
	    ● Is it in a SCAG Environmental Justice area?
	    ● Is it in a SCAG Community of Concern area?
	    ● Is it in an SB 535 DAC area?
	    ● Is it within Native & Tribal Lands?

3. Engagement	Who are the project partners, and what are their roles on this proposal?
	Does the investment meet an important community need, as defined by the residents themselves?
	How have communities been engaged?
	    ● What was the format for engagement: Email, Mail-out, Post, Workshops, In-Person events, webinars, etc.?
	    ● How accessible was the communication: Languages and modes supported?
	    ● Was it done In partnership with Community-Based Organizations?

4. Benefits	Which members of priority populations will benefit from the proposal? Are low-income residents or households the primary beneficiaries? Does this proposal directly prioritize and benefit People of Color?

5. Significance & Alignment	How significantly do the project benefits for priority populations align with overall equity goals at SCAG?
	5.1 Economy
	    ● What is the proposal area's TCAC Opportunity Map category?
	    ● Does the proposal aim to improve access to jobs?
	    ● Does the proposal aim to improve access to educational opportunities?
	5.2 Healthy & Complete Communities
	    ● What is the proposal area's Healthy Places Index score percentile?
	    ● Does the proposal aim to improve access to healthcare?
	    ● Does the proposal aim to improve the availability of affordable housing?
	    ● Does the proposal include valid, proven anti-displacement strategies?
	5.3 Environment
	    ● What is the proposal area's CalEnviroScreen 4.0 score?
	    ● Does the proposal aim to improve air quality?
	    ● What climate change adaptation measures are in place?
	    ● Does the proposal aim to reduce noise pollution?
	    ● Is the project located in a Priority Growth Area or Constraint Area?
	5.4 Mobility
	    ● What is the proposal area's National Walkability Index score?
	    ● Does the proposal aim to improve access to transit?
	    ● Does the proposal aim to improve commuting by active transportation?
	    ● Does the proposal aim to improve safety from collisions?

6. Burdens	Who will be burdened by the proposal? What are the burdens associated with the proposal? Are the burdens direct or indirect? Does the investment avoid substantial burdens and harm? What strategies does it use to avoid harm?
7. Accountability	Are there strategies for advancing racial equity or mitigating unintended consequences? What is the plan of action for addressing the unintended consequences? Is there a plan to ensure accountability to communicate and evaluate results?

Table 8.3 - Equity Scorecard Topics and Questions

The next iteration of the scorecard should combine question frameworks with measurable data. As a starting point, this could rely on existing indexes as outlined in **Table 8.3.** In future versions, the concentration of priority populations could become a *multiplier*. Apply the multiplier across the four separate program areas. This strategy is one way to quantify how much the proposal could impact the priority population. Boston Region MPO and the TEST tool by Kristine M. Williams use a similar method. It would also be essential to consider how many questions to include. A scorecard should be manageable for a project evaluator. Avoid making the process too cumbersome.

8.5 Constraints of the tool

Experience Builder makes it very easy to build a more customizable mapping interface. But this comes with tradeoffs. There are some limitations to the prototype and Experience Builder (EB) itself.

Data for the base map layer and the SCP projects each live in their own separate CSV files. It is not currently possible to filter related data across different layers in EB. These CSVs live on ArcGIS Online. The column names must be the same as the original file to update the hosted CSV file. Otherwise, the front end of the interface will need to be re-linked to the appropriate columns in EB. While this is doable, it is somewhat tedious and time-consuming. A more scalable solution would be to host all the data on a SQL database instead of a large CSV file.

For the SCP projects, only two have pdf links and images included in the prototype. This is due to the manual process of uploading and linking each item in the spreadsheet one at a time. SCAG staff should decide on a more long-term solution for hosting these files and invest the time and resources to build a robust, complete list. For now, the SCP projects appear as point-based data. This made it easier to visualize their approximate geographic distributions, but many projects cover several streets, blocks, cities, or entire regions. SCAG may want to create a project layer that accounts for this spatial variation.

8.6 Next Steps

With the prototype in hand, SCAG now has a tangible vision. It embodies an idea of what this tool and scorecard could be as an end product. This prototype does not represent the final version. Instead, it is the first step towards building out a full-featured tool. Instead of an abstract idea, it gives people something tangible to consider. The next steps might include the following to realize this vision:

1. Clean and prepare SCP project data. Structure all the information required for the project details.
2. Conduct community and stakeholder outreach. Request more feedback on the proposed indicators and scorecard framework.
3. Prepare and format extra indicator data. Ensure it will display in the tool as needed.
4. Decide on the scoring method for the scorecard. Consider weights and points with care.
5. Collect user feedback on the map interface. Refine features and usability for the tool.
6. Use the scorecard on prior SCP applications. Compare prioritization results from the tool to the current methods and refine the calculations.
7. Write a series of user stories for the SCAG development team. Provide clear guidance on the public-facing version of the tool.
8. Launch the tool. Iterate in response to feedback that arises over time.
9. Allocate dedicated staff time and resources toward managing, updating, and using the tool, both on the program and GIS/IT sides.

In the future, SCAG might also want to consider building a custom open-sourced tool. This option would allow for more extensive customization of the interface features and functionality. An open-sourced tool could also create a framework to be built upon by other MPOs. If SCAG cannot make the product in-house, they could partner with organizations like Code for America or Hack for LA to help develop this tool.

9. Conclusion: An opportunity to lead by example

Historical disinvestment has resulted in long-term repercussions for communities in Southern California. However, local government agencies like SCAG can be proactive to address these injustices transparently and equitably. The first step is to understand what the data tells us about these communities. At the same time, this report demonstrates the need to be critical of the methods behind the data. Although a data-based approach has the appearance of being impartial, there are many subjective decision points along the way. This nuance underscores the importance of involving the community throughout the process.

9.1 Summary of Findings and Recommendations

Other MPOs can be an excellent resource for inspiration since many have done a considerable amount of work to incorporate an equity lens. Define equity-focused communities with intersectionality in mind. Use positive framing language to be more inclusive and uplifting. Considering the relative concentrations of populations paints a more nuanced picture. Map these populations in an accessible interface for less technical

audiences. Make the data more transparent. Consider equity from many perspectives when using this data. These strategies help acknowledge the interconnectedness of equity issues.

Organizations outside the sphere of MPOs are also valuable resources and reference points. California is fortunate to have several established state-wide indexes. These indexes encompass a wide range of equity factors. The challenge here is not *how to get enough data.* It's having a clear understanding of *what to do with the data* already available. The creation of new indexes for decision-making is a long-term undertaking. SCAG should ground this in peer-reviewed research, data analysis, and community engagement. Even then, it is unlikely that a single index will be the definitive measure of equity for all. But the first step is establishing clear goals.

9.2 Limitations and Future Research

This research presents a broad overview of equity-centered practices at a high level. There are benefits to casting such a wide net. It allows for drawing inspiration from far-flung places, and it enables us to learn from a diverse range of perspectives. However, this also presents a challenge given the time constraints. The scope of this project was too large for in-depth analysis. Any topic could have been an entire research project in itself. This research only touches upon prioritization within non-MPO grantmaking programs, and many other programs could provide more insights. Taking on two prototypes on top of this was ambitious. However, this is a blue-sky visioning exercise. Hopefully, it can guide future research and development for a more equitable future.

9.3 Taking the Lead

Talking about incorporating an equity lens grounded in data is more timely than ever. Organizations yearn for guidance on how to go beyond buzzwords and operationalize equity. As Cathy O'Neil, CEO of ORCAA, says, "we've seen time and again that mathematical models can sift through data to locate people who are likely to face great challenges, whether from crime, poverty, or education. It's up to society whether to use that intelligence to reject and punish them—or to reach out to them with the resources they need" (O'Neil, 2016). SCAG has the resources and responsibility to be at the forefront of this effort. If SCAG can lead by example, they have the potential to inspire other MPOs. SCAG's influence could go beyond Southern California and impact communities around the country.

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APPENDIX

Appendix A

Description	URL
Comparison of MPOs (Google Sheet)	https://docs.google.com/spreadsheets/d/1f8FczHLXMSjDHQeG2mT0PwjRR8spvkfXr7MR5unH4bE/edit?usp=sharing
Complete List of All Indicators (Airtable)	https://airtable.com/shrpKESqDdAqRILIV
Recommended Indicators (Airtable)	https://airtable.com/shr5fAf2FzbCXm9sN
Equity Lens Prototype (Web App)	https://experience.arcgis.com/experience/aefd4d7d48be4374925db3ccb1dfbb3a/page/page_0/

Table A.1 - Research Material Links

Appendix B

Figure A.1 TEST Tool Screenshot. (Williams et al., 2020)

Appendix C - Additional Maps
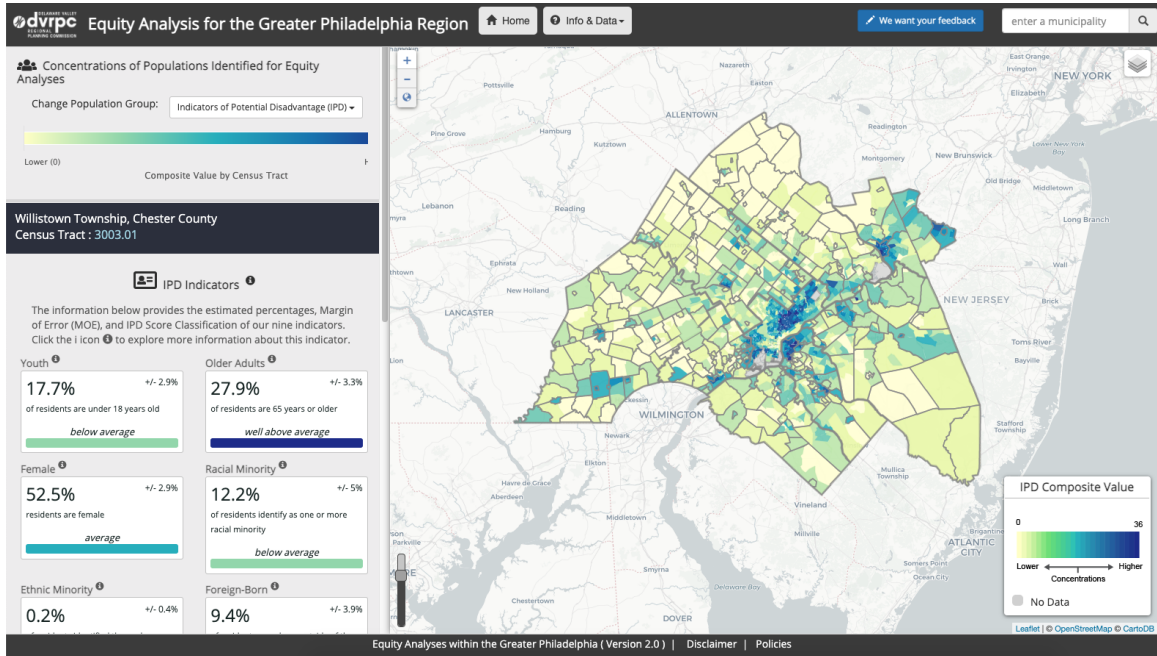
Figure A.2 *DVRPC - Equity Analysis for the Greater Philadelphia Region (Source: https://www.dvrpc.org/webmaps/IPD/#map)*
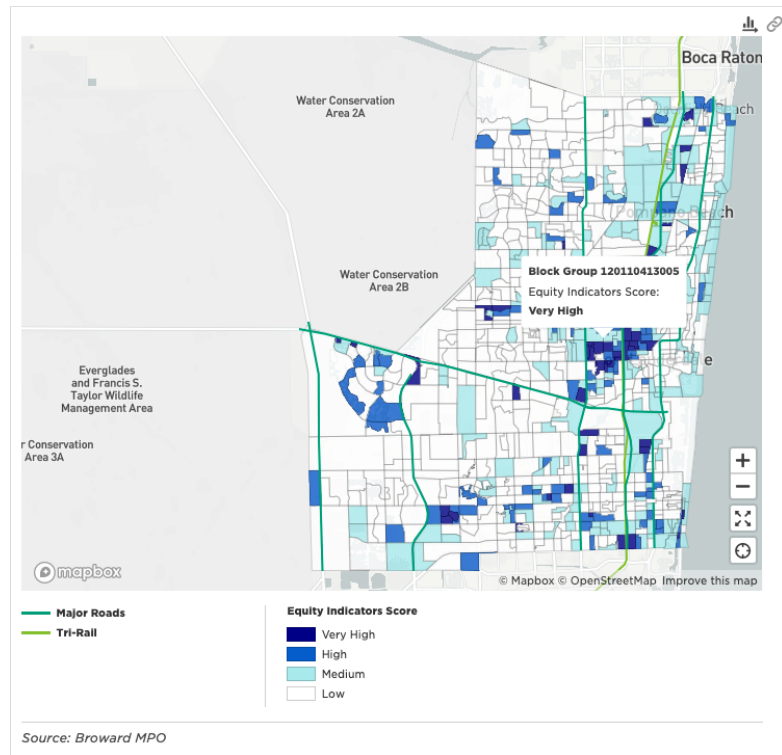
Figure A.3 *Broward MPO Equity Maps (https://reports.mysidewalk.com/c34b42a988)*
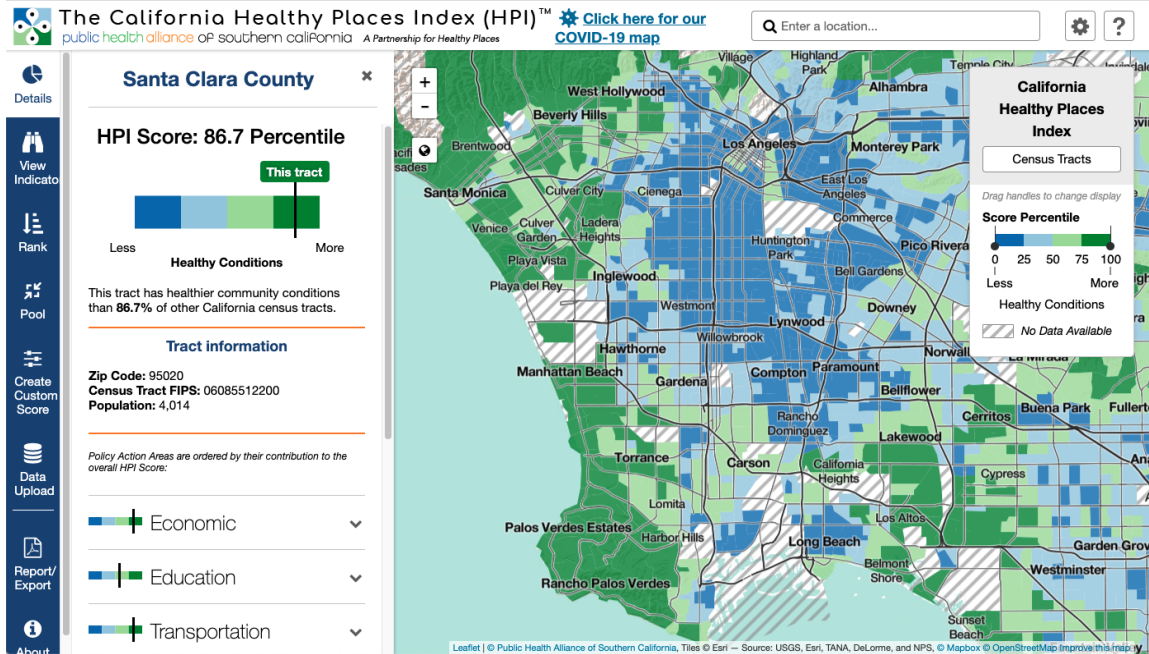
Figure A.4 California Healthy Places Index (Source: https://healthyplacesindex.org/)
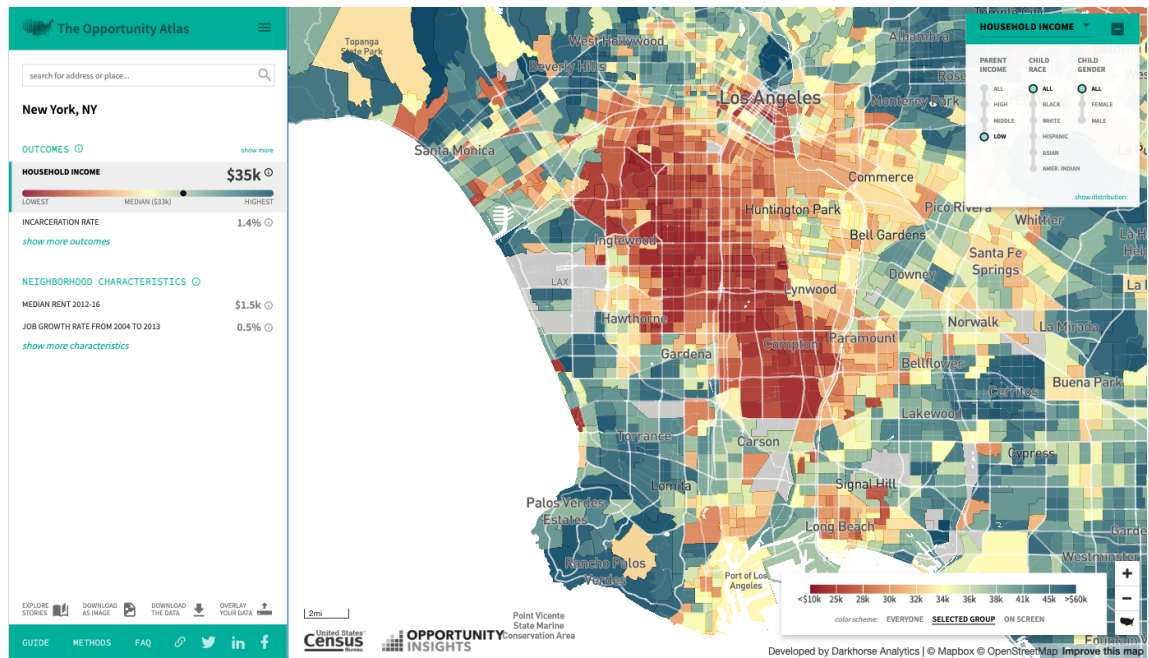
Figure A.5 The Opportunity Atlas (Source: https://opportunityatlas.org/)
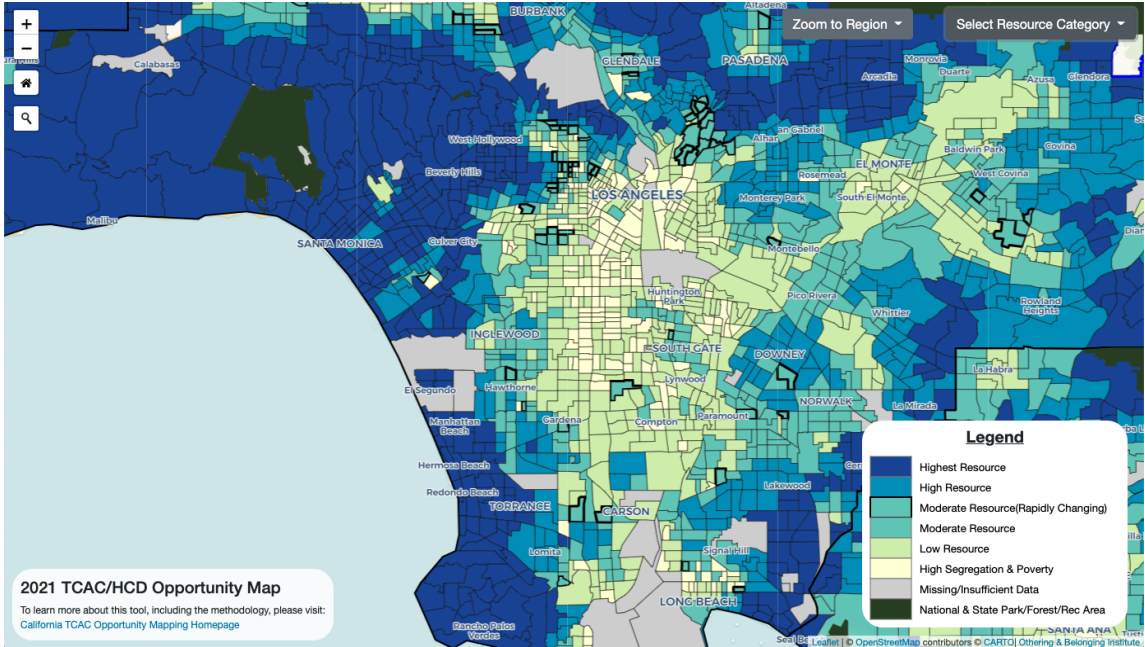
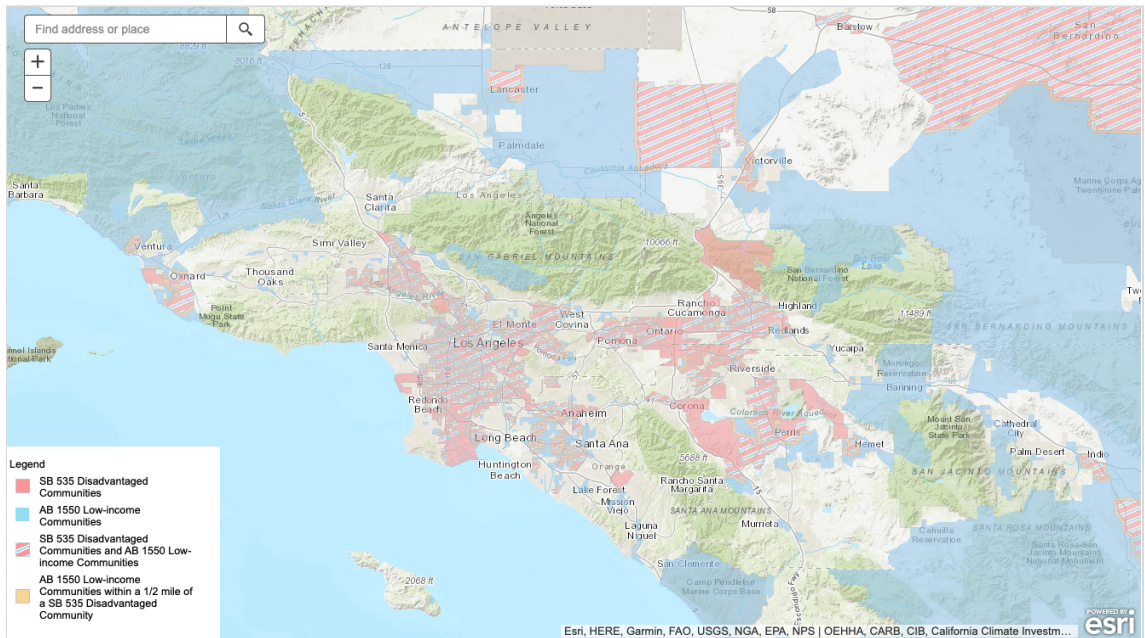**Figure A.6** *TCAC/HCD Opportunity Areas (Source: https://www.treasurer.ca.gov/ctcac/opportunity.asp)*

Figure A.7 *Priority Population Investments showing SB 535 Disadvantaged Communities and AB 1550 Low-income Communities (Source: https://ww3.arb.ca.gov/cc/capandtrade/auctionproceeds/communityinvestments.htm)*
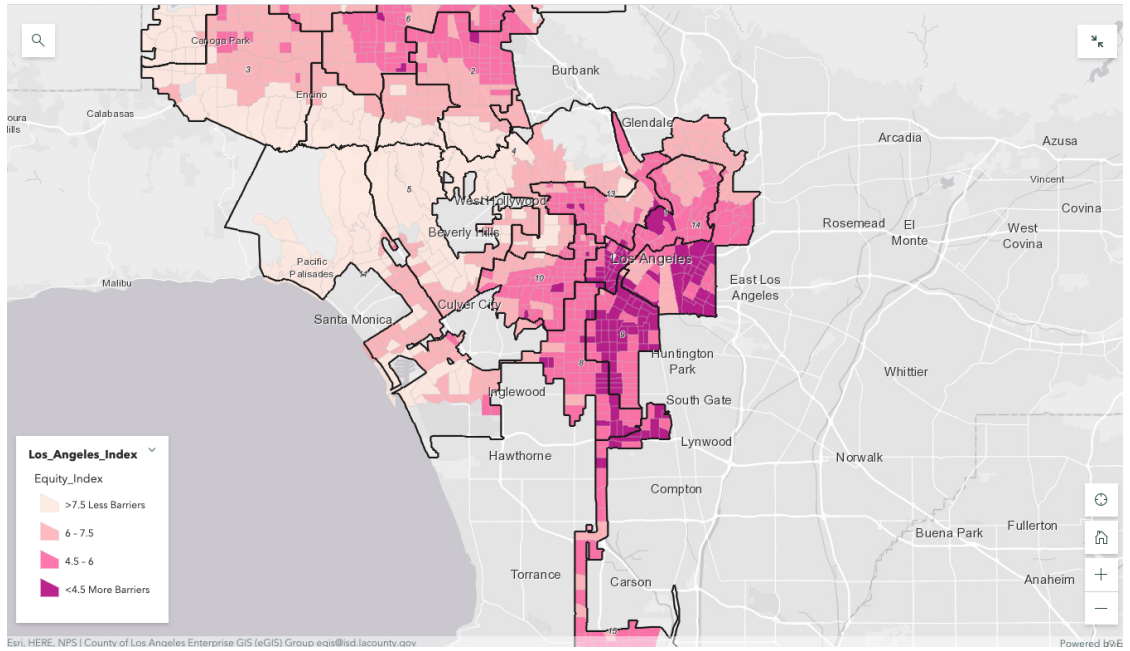
Figure A.8 *LA Equity Index (Source: https://lacontroller.org/data-stories-and-maps/equityindex/)*