DISCUSSION DRAFT
April 13, 2015

2016 RTP/SCS PUBLIC HEALTH ANALYSIS FRAMEWORK

EXECUTIVE SUMMARY

Unlike the field of medicine, public health does not focus on individual patients or the treatment of particular diseases. Rather, the goals of public health are to prevent disease and injury while promoting health and prolonging life among the population as a whole. Public health outcomes are affected by the policies and practices of many sectors of society, most of which are not under the direct control of public health professionals. Transportation and land use greatly influence the extent to which people can be healthy, active, and safe. As the Metropolitan Planning Organization responsible for developing the Regional Transportation Plan and Sustainable Communities Strategy (RTP/SCS) for Southern California, SCAG has an opportunity to provide leadership to the region by expanding its analysis of the health impacts of the 2016 RTP/SCS (hereinafter to referred to as the "Plan").

This paper seeks to implement the Public Health Subcommittee recommendation to "Provide robust public health data and information, as feasible, to better inform regional policy, the development of the 2016 RTP/SCS, and support public health stakeholder participation." The paper proposes an overarching framework for more thoroughly integrating public health analysis and policies into the 2016 RTP/SCS. It is intended to serve, as a platform to facilitate discussions among stakeholders that may lead to the development of proposed policies and planning methodologies. The paper considers the federal, state, regional, and local policy context driving greater consideration of health in land-use and transportation planning; reviews the state of public health in the SCAG region; utilizes a social determinants of health framework to assess ways in which the RTP/SCS impacts health outcomes in the region; and reviews the use of a health policies approach for integrating health considerations into the 2012 RTP/SCS. Based on this information, the final section of this paper lays out a proposed approach for integrating health into the 2016 RTP/SCS. The key focus areas are proposed to be air quality, physical activity, safety, climate resilience, access to essential destinations, and economic wellbeing. The approach includes the following strategies:

- **Engagement**
  - Develop a Public Health Working Group to engage public health professionals and interested stakeholders early in the development of the RTP/SCS to expand SCAG's understanding of the ways in which transportation and land-use policies impact public health.
  - Engage with the Technical Working Group, SCAG's policy committees, and additional stakeholders on a regular basis to examine proposed polices and planning methodologies.
- **Education**
  - Use vignettes and call-out boxes throughout the plan to highlight best-practices for improving health outcomes through transportation and land-use policy implementation.

  - Create a Public Health Appendix to summarize proposed policies and analysis conducted as part of the plan development process, including recommendations for further developing SCAG's public health work program.
  - Broadly disseminate information to increase regional awareness of the relationship between health and the built environment.

- **Policy Development and Analysis**
  - Adopt a "Health in All Policies" approach to incorporate health considerations throughout the plan, and not just in isolated areas. For example, call-out boxes will be used to demonstrate progress made and regional efforts.
  - Develop a framework for better analysis of health impacts in Scenario Planning, Environmental Justice Analysis, Program Environmental Impact Report, and the 2016 Plan Performance and Monitoring Measures.
  - Develop Scenarios that examine the trade-offs of various "health-enabling" activities: increased investment in active transportation and transit, more compact land-form, minimized exposure to pollutants and climate impacts, and greater access to affordable housing and economic opportunity.
  - Consider health disparities in the development of the Active Transportation needs assessment and policies to provide data that supports local agencies in accessing funds from grant programs that prioritize health (including ATP).
  - Conduct an Active Transportation Health and Economic Impact Study to refine SCAG's understanding of the benefits of active transportation.

INTRODUCTION

The built environment and the transportation network directly affect many public health outcomes. Policy decisions that influence transportation and land use investments can improve public health outcomes by improving air quality, reducing greenhouse gas emissions, increasing opportunities for physical activity, reducing the risk of injury, and creating access to jobs, education, and health care. The 2016 Regional Transportation Plan and Sustainable Communities Strategy (RTP/SCS) will identify billions of dollars in transportation investments and provide a vision for land use investments across the region. SCAG has committed itself to work with the county transportation commissions, public health departments, subregional councils of government, local agencies, and other stakeholders to "enhance how SCAG addresses public health issues in its regional planning, programming, and project development activities."

This paper will serve as a platform for discussing SCAG's role in addressing public health outcomes related to transportation planning and the built environment. In addition, this paper will provide a general overview of how land use and transportation policies impact public health outcomes. Finally, the paper describes how public health was incorporated into the 2012 RTP/SCS, and identifies opportunities for further integration in the upcoming 2016 RTP/SCS. It should be noted that although public health outcomes and environmental justice concerns share some of the same root causes, this paper will focus primarily on how public health will be integrated into the 2016 RTP/SCS as part of the plan. The extent of SCAG's environmental justice analysis will be covered thoroughly in its own appendix.

PLANNING CONTEXT

SCAG, like other MPOs, develops long-range regional transportation plans, growth forecasts, regional transportation improvement programs, regional housing needs allocations, and a portion of the South Coast Air Quality Management Plans. Every four years, SCAG develops the Regional Transportation Plan and Sustainable Communities Strategy (RTP/SCS), a long-range transportation plan that provides a vision for transportation investments and land use strategies throughout the region over a 20-year period. The RTP/SCS considers the role of transportation and land use in the broader context of economic, environmental, and quality-of-life goals for the future, identifying regional transportation strategies to address our mobility needs.

SCAG's 2012 RTP/SCS addressed health outcomes related to air quality, environmental justice, safety, affordable housing, location efficiency, active transportation, and access to jobs, health care, and open space. Moving forward, SCAG has the opportunity to proactively provide leadership in the region by further integrating public health considerations into the 2016 RTP/SCS and through ongoing partnerships with regional partners, local public health departments, and other stakeholders. Both nationally and across California, there is expanded interest in incorporating solutions that address health outcomes into regional land use and transportation planning efforts.

Federal Level

At the federal level, the Federal Highway Administration (FHWA) has embraced the link between transportation and health, and has developed tools to help MPOs and other agencies integrate public

health into their planning activities. In a 2012 white paper titled "Metropolitan Transportation Planning for Healthy Communities," the FHWA highlighted Nashville Area MPO and Puget Sound Regional Council for prioritizing health in their transportation and land use policy development process.[1] In particular, the FHWA praised the Nashville Area MPO for its designation of STP funding, with fifteen percent of funds dedicated to projects for active transportation compared to the one percent national average. In addition, the FHWA also recognized two California MPOs, SANDAG and SACOG, for making significant progress on incorporating health into their planning processes.

State Level

Recognizing that health is impacted by many policies and sectors, the California Strategic Growth Council has created the Health in All Policies (HiAP) Task Force, a collaborative effort of over 20 agencies, departments, and offices that aims to improve health outcomes through the coordination of multiple government sectors. (For more on the HiAP approach, see "Policy Development and Analysis" section.) In 2014, the California Environmental Protection Agency (CalEPA) released an update of its environmental health screening tool, CalEnviroScreen 2.0. The tool identifies disadvantaged communities throughout the State that experience the greatest burden of pollution from multiple sources and can inform policy decisions. This tool is being used in both the State's Active Transportation Program and the Affordable Housing and Sustainable Communities grant program to encourage funding in disadvantaged communities.

Regional and Local Agencies

Cities and counties in the region have begun generating strategies to prioritize and improve public health outcomes related to transportation and land use. This section provides brief examples of initiatives taking place throughout the SCAG region. SCAG is currently working with the public health departments from all six counties to identify the extent of healthy city resolutions and public health element adoption by local jurisdictions across the SCAG region.

Other California MPOs (SACOG, SANDAG)

The Sacramento Area Council of Governments (SACOG) has integrated health into its Metropolitan Transportation Plan and Sustainable Communities Strategies (MTP/SCS) which specifically mentions health in the context of equity, housing, safety, air quality, public transportation, and bicycling and walking. The plan identifies a number of strategies that aim to incorporate public health into project evaluation and performance measures with a specific focus on transit access, active transportation, and reducing vehicle miles traveled (VMT) so as to improve air quality and public health. SACOG has also lead the statewide effort to develop a Public Health Module for the UrbanFootprint modeling tool which calculates the public health benefits and costs of weight and cardiovascular related diseases from physical inactivity and poor air quality.

The San Diego Association of Governments (SANDAG) has taken a number of steps to integrate public health into its planning processes through a partnership with the County of San Diego's Health and Human Services Agency. This partnership has leveraged numerous state and federal planning grants to address obesity and increase planning capacity at SANDAG to implement public health related

initiatives. Examples of these initiatives include the foundation of a Public Health Stakeholder Group and the development of a regional Safe Routes to School Plan. In addition to this, SANDAG collaborated with local jurisdictions and regional stakeholders to develop a health and wellness policy framework and associated performance measures for adoption in regional plans such as the Regional Comprehensive Plan and the RTP/SCS. Finally, SANDAG has supported a number of other health related planning activities such as the Healthy Communities Atlas, Health Assessment Modules for their Activity Based Module, and Active Design Guidelines for local jurisdictions.

County of Imperial

Community Transformation is one of Imperial County's community health initiatives. Through funding from CA4Health, as well as technical support and training from Public Health Institute (PHI) and the California Department of Public Health (CDPH), *Community Transformation* aims to improve health in the rural communities of the county. Priority areas include Safe Routes to School and walkable communities.

County of Los Angeles

In Los Angeles County, the Department of Public Health and the Department of City Planning are developing a *Health Atlas*, which highlights health disparities between neighborhoods. The data will help in the development of goals and policies that should be prioritized in the upcoming Plan for a Healthy Los Angeles. The County Health Department has also developed the PLACE Program (Policies for Livable, Active Communities and Environments), which fosters policy change that supports the development of healthy, safe, and active environments for County residents. As part of this work, LA County conducted a survey to explore the attitudes toward active transportation and found voters view active transportation infrastructure as very important and support redirecting funding to improve such infrastructure.

County of Orange

The *Healthier Together* community-wide initiative in Orange County aligns public and private resources within the public health system to improve health for all communities in the county. Led by the Health Improvement Partnership (HIP), *Healthier Together* conducts community health assessments, develops community health improvement plans, fosters coordination and collaboration among community partners, and helps build capacity by sharing data and best practices. The *Healthier Together* website provides health and demographic data, as well as tools to analyze health indicators by zip code and census tract.

County of Riverside

The Healthy City Resolution Workgroup was created to advance the work of the *Healthy Riverside County Initiative*. The Resolution Workgroup goal is to work with a minimum of 15 cities county-wide to adopt Healthy City Resolutions, with the overall vision that all cities will eventually adopt a resolution. The key to the success of this workgroup has been twofold: 1) Preparing a Healthy City Resolution Toolkit to assist cities interested in taking this important step toward future policy-making; and 2) Collaborating with the local Council of Governments and community partners such as the Clinton Foundation, Kaiser Permanente, and SCAG to implement common goals.

County of San Bernardino

The County of San Bernardino has recently completed the *Community Vital Signs Initiative*, which envisions a "county where a commitment to optimizing health and wellness is embedded in all decisions by residents, organizations, and government." This project provides in-depth analysis of the health of the County which will be used to inform the Wellness Element of the Countywide Vision by setting evidence-based goals.

County of Ventura

The Ventura County Public Health Department has developed *Health Matters in Ventura County*, a web-based source for population data and community health information. Similar to *Healthier Together*, this user-friendly site provides health and demographic data, reports, best practices, and tools for comparing health indicators by census tract and zip code. The website also links to the most recent community health assessment for Ventura County.

South Coast Air Quality Management District (SCAQMD)

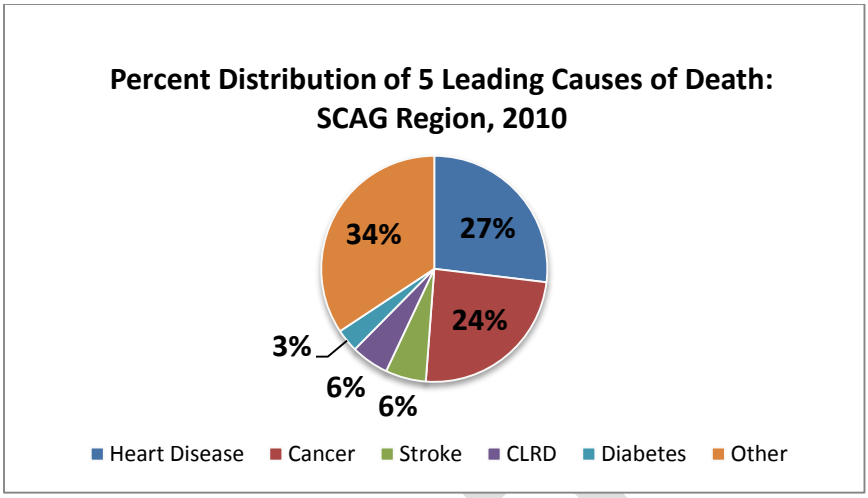
The SCAQMD has extensively studied the relationship between transportation and air quality. In the 2012 Air Quality Management plan (AQMP), SCAQMD notes that although air quality has greatly improved in Southern California, it is still some of the worst in the nation. The AQMP extensively analyzes the health impacts of air quality pollutants such as ozone and $PM_{2.5}$. In addition to the 2012 AQMP, SCAQMD released a Socioeconomic Report. This report examined the economic and health impacts of the proposed plan to understand how the improvements would affect the overall economy of the region. Finally, SCAQMD has begun the development of a number of white papers related to transportation topics to inform the 2016 AQMP. SCAG will work closely with the SCAQMD to determine how the 2016 RTP/SCS affects air quality throughout the region.

THE STATE OF PUBLIC HEALTH

The prevalence of chronic diseases in the U.S. has become a major public health problem. In 2010, despite the fact that chronic diseases are mostly preventable, 7 in 10 deaths in California were caused by chronic diseases such as heart disease, cancer, stroke, asthma, Alzheimer's, and diabetes. In the SCAG region

- Asthma prevalence in 2012 ranged from 10.8 percent of residents in Orange County to 15.9 percent in San Bernardino.
- Over one million residents were living with diagnosed diabetes in 2011, a nearly 50 percent increase from 2005.

Many other chronic diseases, including diabetes, result from people being overweight and obese. In 2010, six in ten adults, and four in ten school-age children, were overweight or obese in California.[2] A more thorough analysis of current public health concerns in the SCAG region will be presented in the 2016 RTP/SCS.

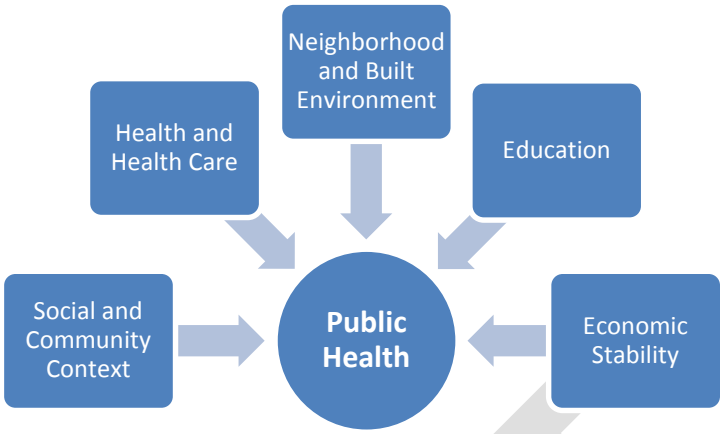


The costs of poor population health and chronic disease are immense and can be measured in a variety of ways. Research has shown that the health care costs resulting from physical inactivity, obesity, and overweight reached an estimated $41.2 billion in 2006 in California.[3] Health costs can also be measured in terms of productivity. For example, asthma-related incidents cause millions of school and work absences nationwide each year resulting in millions of dollars of lost productivity.[4]

While not all public health issues can be improved through changes in the built environment, many can and there is a growing body of research and literature which seeks understand this relationship. In recent years there has been an emphasis on linking public health outcomes, including chronic disease and traffic safety, to the built environment in order to address the root causes of these problems. The following section explains how the *social determinants of health* relate to the built environment and public health outcomes. This background information will inform how SCAG approaches policy development for the 2016 RTP/SCS.

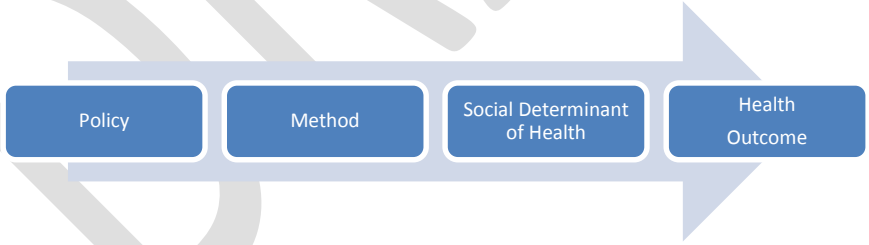
SOCIAL DETERMINANTS OF HEALTH

Unlike the field of medicine, public health does not focus on individual patients or the treatment of particular diseases. Rather, the goals of public health are to prevent disease and injury while promoting health and prolonging life among the population as a whole. There is an increasing awareness that public health outcomes are the product of the social determinants of health, or the circumstances in which people are born, grow up, live, work, play, and age. Economic opportunities, government policies, and the built environment all play a role in shaping these circumstances and influencing public health outcomes. The Office of Disease Prevention and Health Promotion's Healthy People 2020 Initiative organizes the social determinants of health into five key domains, including health and health care, neighborhood and built environment, economic stability, education, and social and community environment.



As with public health outcomes in general, not all of the social determinants of health lie within the purview of MPOs, such as SCAG. The social determinants of health that typically fall under the purview of MPOs include: transportation safety, opportunities for physical activity, strategies for regional land use pattern, air quality, climate change impacts, accessibility, and regional economic activity. While most of these are included under the domain of neighborhood and built environment, there is some overlap with other domains as well.

The public health community is increasingly focused on tackling public health "upstream" by identifying and shaping the policy pathways that impact the social determinants of health. The following logic model is a useful tool to understand the primary and secondary inputs (policies and methods, respectively), as well as the primary and secondary outputs (health determinants and health outcomes, respectively) related to the social determinants of health. SCAG proposes to use this framework to inform scenario development and policy development for the final alternative.



As an example of how this model can be applied is to consider the adoption of a regional policy. If an agency were to adopt a Regional Complete Streets Policy (policy), we would expect to see the inclusion of complete streets elements in regional projects (method), which would increase opportunities physical activity from active transportation (social determinant of health), which would produce lower rates of obesity (health outcome).

Transportation Safety

One of the ways in which the built environment influences public health is through provision of transportation networks and their impact on traffic safety. Despite roadway design changes and

improvements in vehicle safety such as seat belts and air bags, the number of yearly fatalities has not declined significantly since 1963 due to increases in total vehicle miles traveled (VMT). In 2012, fatalities and injuries increased for almost all modes of transportation in the SCAG region. In particular, vulnerable users such as pedestrians and bicyclists represented over a third of all roadway fatalities in the SCAG region and approximately twelve percent of all roadway injuries. National health costs for traffic crashes total about $180 billion annually, after taking into account everything from healthcare costs and lost wages to property damage and travel delay.[5]

	Pedestrian		Bicyclist		Total (all modes)	
YEAR	Killed	Injured	Killed	Injured	Killed	Injured
2007	354	7,289	57	4,813	1,740	138,778
2008	↓ 321	↓ 7,178	↑ 61	↑ 5,391	↓ 1,533	↓ 124,975
2009	↓ 312	↑ 7,224	↓ 49	↑ 5,840	↓ 1,297	↓ 120,709
2010	↓ 301	↓ 6,622	↓ 44	↑ 6,349	↓ 1,172	↓ 119,655
2011	↑ 303	↑ 6,690	↑ 67	↑ 7,051	↑ 1,212	↓ 118,981
2012	↑ 363	↑ 7,087	↓ 62	↑ 7,428	↑ 1,321	↑ 121,304

Studies have shown that people from low income, minority neighborhoods face a disproportionate risk of being involved in a pedestrian collision. One study demonstrated that pedestrian crashes are four times more frequent in poor communities.[6] This discrepancy also may partly result from low automobile ownership in such neighborhoods (leading people to walk or use public transit) as well as from urban form characteristics such as lighting and sidewalk conditions.[7]

Research has revealed that transportation and roadway safety can have dramatic impacts on people's mental health. For example, studies have shown that 14 percent of car crash survivors suffer from posttraumatic stress disorder (PTSD) and a quarter of survivors have psychiatric problems one year after an accident.[8] In addition, traffic noise has been shown to be associated with increased nervousness, depression, sleeplessness, irritability, high blood pressure, and heart disease.[9,10]

Substantial evidence exists demonstrating how roadway safety can be addressed through changes in engineering and design standards that reduce speeds and create complete streets for all modes. Design interventions that can reduce the number of severe crashes include: striping narrower lane widths, creating bicycle lanes, increasing the width and availability of sidewalks, and improving the design of intersections and other crossings for pedestrians. SCAG does not have authority over local streets and roads, however, SCAG does support planning by local agencies for complete streets, transit and active transportation modes through its sustainability grant program to assist local communities in prioritizing these types of improvements.

Opportunities for Physical Activity

The Surgeon General recommends that adults get 30 minutes of physical activity 5 days per week in order to maintain good health and lower their risk of chronic disease, but only about half of all adults manage to do so. Creating infrastructure and facilities that encourage active transportation such as biking and walking helps people increase their daily physical activity to meet this recommendation and improve their health. In addition, since public transportation usually requires some physical activity at the beginning and end of the trip, it produces similar benefits.[11]

A recent study in the Bay Area predicts that increasing the amount people walk or bike per day to about 22 minutes can reduce the burden of chronic diseases such as heart disease, stroke and diabetes and avoid up to 2,200 premature deaths. While some of these benefits may be lost due to an increase in traffic injuries to pedestrians and bicyclists, the study noted that such harms can be significantly reduced through investments in infrastructure, education, and enforcement.[12] SCAG has also conducted research into the connection between the built environment and obesity.[13] SCAG found that there is "a significant association between neighborhood land use/built environment characteristics and the level of obesity." The study shows that living in a neighborhood with higher residential density and employment density, rail service, and higher bus stop density are associated with a lesser likelihood to be obese. This results also show that people in a well-designed TOD type of neighborhood tend to use active transportation modes to access their daily activities and reach transit services and this physical activity helps to reduce their weight.

Air Quality

Combustion and vehicle emissions create a variety of air pollutants, including carbon monoxide, nitrogen oxide, volatile organic compounds, ozone, and fine particulate matter. Motorized transportation and goods movement are major sources of air pollution. Exposure to air pollution can lead to cardiovascular and respiratory diseases such as stroke, heart disease, lung cancer, and asthma.[14] Studies, such as the USC Children's Health Study, have also shown that poor air quality has a negative impact on children's lung function growth and is associated with new asthma cases and more acute asthma events, leading to more school absences. Low income and minority residents often suffer disproportionate health consequences from air pollution due to their proximity to emission sources.[15] The California Air Resources Board (CARB) and CalEPA recommend that there be a 500 foot buffer between highways and new housing, schools, daycare centers, playgrounds, and medical facilities to avoid high levels of exposure to particulate pollution.

Climate Change

Climate change has been called the biggest public health threat of the 21st Century. Climate change results from GHG emissions which trap heat and make the planet warmer. The transportation sector is the largest contributor to GHG emissions in California, producing 36.5 percent in 2008. In the SCAG region, climate change is increasingly being linked to increased drought, heat waves, wildfires, and air pollution. The poor and communities of color disproportionately suffer impacts such as death from heat stroke, damage and loss of property due to a lack of weather insurance, and respiratory-related illnesses.[16] Many state and local governments have begun preparing for expected impacts of climate change through mitigation and adaptation plans. Some measures include investing in cleaner fuels and

vehicles, active transportation and public transit to minimize transportation's contribution to climate change. Other strategies include incorporating trees into planning and projects to clean the air and offset the urban "heat island" effect.[17,18]

Accessibility

Accessibility is central to improving public health. Greater access to daily needs and activities, such as schools, jobs, retail, parks and recreation, and primary care can significantly improve people's quality of life. Increased access to primary care enhances health care management, helps prevent hospitalizations for chronic and acute diseases, and reduces associated costs. Similarly, access to healthy food environments such as grocery stores, farmers' markets, and community gardens decreases food insecurity and obesity. Expanding access to healthy food environments often requires the support of land use policies, regulations, and collaboration with the business community.

Access to jobs and housing is especially important for low-income families. For those without cars, public transit provides a lifeline to jobs.[19] A lack of affordable housing can also lead to over-crowded and unsafe housing conditions, and results in less money for food and clothing. It may cause people to move to places with fewer jobs, public services or reduced education quality. The lack of affordable housing is a leading cause of homelessness.[20]

Regional Economic Activity

Job security and economic well-being are significant determinants of health. Living in poverty is associated with poor health outcomes across all demographics and communities.[21] For example, people living in poverty are at greater risk for premature death. Providing access to safe jobs with a living wage is critical to ensuring communities become and stay healthy.[22] Transportation systems support the larger economy through the delivery of goods and services. The construction, operation and maintenance of transportation projects also create good paying jobs. The 2012 RTP/SCS showed that job growth from building RTP infrastructure projects would average about 174,500 jobs per year. Also in 2012, SCAQMD released a Socioeconomic Report which found that the Air Quality Management Plan (AQMP) would result in an increase of 37,043 jobs annually.

PUBLIC HEALTH IN THE 2012 RTP/SCS

The 2012 RTP/SCS seeks to "protect the environment and health of residents by improving air quality and encouraging active transportation." The 2012 RTP/SCS seeks to address the following goals related to public health:

- Ensure travel safety and reliability for all people and goods in the region.
- Maximize mobility and accessibility for all people and goods in the region.
- Actively encourage and create incentives for energy efficiency, where possible.
- Encourage land use and growth patterns that facilitate transit and non-motorized transportation.
- Preserve and ensure a sustainable regional transportation system.

- Align the plan investments and policies with improving regional economic development and competitiveness.
- Maximize the productivity of our transportation system.
- Maximize the security of the regional transportation system through improved system monitoring, rapid recovery planning, and coordination with other security agencies.

In addition, the 2012 RTP/SCS provides examples of ways to reduce obesity in the region, such as through increasing access to parks, safe active transportation facilities, and fresh foods. Other important public health issues in the 2012 RTP/SCS include environmental justice and adaptation to climate change. SCAG also identified eleven performance measures to analyze social and environmental equity issues and to assess the impacts of the 2012 RTP/SCS on environmental justice population groups. The RTP/SCS lists actions to address energy uncertainty and to mitigate the region's contribution to global climate change. Similarly, the plan draws attention to the importance of water supply, air quality, and waste management, as well as the transportation and handling of hazardous materials. Analysis related to public health was incorporated throughout the 2012 RTP/SCS as outlined below.

Public Health Related Topics 2012 RTP/SCS					
Topics	**Sub Topics**	**Scenario Planning**	**EJ Analysis**	**Performance Measures**	**PEIR**
Physical Activity	**Active Transportation**	**X**	**X**	**X**	**X**
Air Quality	**Emissions**	**X**	**X**	**X**	**X**
	Greenhouse Gases/VMT	**X**		**X**	**X**
Safety	**Collisions by Mode**	**X**		**X**	**X**
Access	**Open Space**		**X**	**X**	**X**
	Healthy Food		**X**		
	Jobs		**X**	**X**	**X**
	Medical Facilities		**X**		
	Transit Availability	**X**	**X**	**X**	**X**
Land Use	**Increase in Short Trips**			**X**	**X**
	Water/Energy	**X**		**X**	**X**
	Jobs Housing Balance		**X**		**X**
	Land Consumption/Infill	**X**		**X**	**X**
	Affordable Housing		**X**	**X**	**X**
Economy	**Transportation Costs**	**X**	**X**	**X**	
	Tax Burden	**X**	**X**		
	Jobs Created			**X**	
Other	**Noise**		**X**	**X**	**X**

In April 2012, SCAG's Regional Council approved a motion with the adoption of the 2012 RTP/SCS which directed staff to work with the SCAG Policy Committees, proceed with the follow-up recommendations as the necessary revenue are identified, and return to the Regional Council with potential amendments to the 2012-2035 RTP/SCS as appropriate. Included in this motion were recommendations for enhancing

clean goods movement investments, developing and tracking meaningful health and equity performance measures, and the development of active transportation planning activities.

Following the adoption of the 2012 RTP/SCS, SCAG convened six subcommittees, one of which focused on public health. The subcommittees consisted of elected officials, industry professionals, and other stakeholders. Each subcommittee developed policy recommendations for the development of the 2016 RTP/SCS related to their specific topic areas. There was recognition that the Subcommittee's recommendations would serve as a starting point subject to further policy analysis and direction. The Public Health Subcommittee recommendations, which were adopted by the Regional Council on June 6, 2013, are as follows:

- Seek opportunities to promote transportation options with an active component/physical activity.
- Provide robust public health data and information, as feasible, to better inform regional policy, the development of the 2016 RTP/SCS, and support public health stakeholder participation.
- Promote and seek ongoing partnerships with regional partners, local public health departments, and other stakeholders.

INTEGREATING PUBLIC HEALTH INTO THE 2016 RTP/SCS: PROPOSED APPROACH

The following section outlines strategies for integrating public health into the 2016 RTP/SCS. Building off of previous efforts, the three strategies include: engagement, education, and policy development and analysis.

Engagement

To ensure that public health concerns are addressed in the 2016 RTP/SCS, SCAG is committed to performing an extensive engagement process. This will include input received through SCAG's environmental justice workshops, review by SCAG's Technical Working Group, engagement with each of the County Transportation Commissions, and engagement with stakeholders such as the Public Health Alliance of Southern California. Issues related to public health will also, be discussed in SCAG's policy committees. Finally, to ensure public health is adequately addressed in the 2016 RTP/SCS, SCAG has initiated a Public Health Working Group to engage public health professionals and interested stakeholders early in the development of the RTP/SCS to expand SCAG's understanding of the ways in which transportation and land-use policies impact public health.

Education

Throughout the development and implementation of the 2016 RTP/SCS SCAG will work to educate policy makers across the SCAG region on the importance of improving public health outcomes through transportation and land use planning. Educational activities will incorporate the analyses conducted as part of the 2016 RTP/SCS and additional studies conducted by SCAG such as the Active Transportation Health and Economic Impact Study. In addition, SCAG will be developing a number of educational materials related to active transportation through the Active Transportation Safety and Encouragement

Campaign. SCAG will also continue to provide educational activities to regional practitioners through its Toolbox Tuesday forums. Finally, SCAG is committed to continue hosting forums on topics of regional significance and integrating discussions on public health when appropriate.

Policy Development and Analysis

Health in All Policies (HiAP) is a collaborative strategy that aims to improve health by including health considerations in the decision-making process across sectors and policy areas. Since HiAP addresses the social determinants of health, this approach requires transportation practitioners to work with nontraditional partners who have expertise related to public health outcomes, such as city and county public health departments.[23] For example, California's Strategic Growth Council created a HiAP Task Force in 2010, bringing together 22 state agencies and departments.

SCAG proposes to use a HiAP approach to incorporate public health considerations throughout the 2016 RTP/SCS and the scenario development process. For example, many public health inputs and outputs will be examined with the Scenario Planning Model, as well in the Environmental Justice Analysis, the Program Environmental Impact Report (PEIR), and the 2016 Plan Performance Measures. In addition, to assist with the analysis that will be conducted throughout the RTP on air quality and other topics, SCAG is hiring consulting services to analyze the health and economic benefits of active transportation investments. This study will be conducted in parallel with the RTP/SCS development and outcomes from the study will inform the Draft Plan.

Scenario Development

The scenario development stage of the planning process provides an opportunity to test and gain insight on the impacts of alternative policy options. The goal of the scenario development process is to stimulate a range of discussion on possible strategies that the region can pursue over the course of the RTP/SCS to achieve its goals. Scenarios are developed through input from SCAG's stakeholders and policy committees. For the 2016 RTP/SCS SCAG will be developing four scenarios to test the impacts of different investment strategies. Draft scenarios are currently being presented to SCAG's policy committees and the general public for input. After SCAG has completed its public outreach, SCAG will develop a final plan alternative which may be one of the scenarios or a combination of different scenarios.

SCAG primarily uses the Scenario Planning Model (SPM) to assess the impacts of the proposed scenarios. GIS and off-model analysis can be used to supplement the SPM results, as necessary. The SPM is a comprehensive web-based land use sketch planning tool for scenario development, modeling, and data organization developed to facilitate informed and collaborative planning among counties, local jurisdictions, other stakeholders, and the public. Built on open source software platforms, SPM includes a suite of tools and analytical engines that help to quickly illustrate alternative plans and policies and to estimate their transportation, environmental, fiscal, public health, and community impacts. SCAG has partnered with the Sacramento Area Council of Governments to develop a new Public Health Module for the SPM which will examine physical activity rates from active transportation and expected health

outcomes related to chronic diseases such as obesity and heart disease. Outcomes from the Public Health Module will be included in the scenarios developed for the 2016 RTP/SCS.

The SPM will conduct analysis on four scenarios which will be used to inform the 2016 RTP/SCS. Although public health will be analyzed in all four scenarios, Scenarios 3 and 4 will more heavily emphasize methods that have been shown to improve health outcomes.

- **Scenario 1 (Baseline):** No build network updated with trends in social-economic data.
- **Scenario 2 (2012 Updated Plan/Local Input):** Updates growth forecast based on local input.
- **Scenario 3 (Policy A):** Builds off of Scenario 2 with updates to 2012 policies for active transportation, public health, environmental justice, technology, and millennials. Balances GHG, air quality, and livability benefits with transportation capacity efficiency.
- **Scenario 4 (Policy B):** "Pushes the envelope" of Scenario 3 policies by including comprehensive "short trip" strategy which would maximize GHG, air quality, livability, public health, environmental justice, and affordability benefits. Assume profound technology effects.

The following table provides an overview of the SPM for Scenario 3 and Scenario 4, and shows how each policy is expected to affect the social determinants of health and related health outcomes and co-benefits. The Health Outcomes and Co-Benefits column refers to weight-related diseases as well as cardiovascular and respiratory diseases. Weight-related diseases include heart disease, diabetes, and cancer; cardiovascular and respiratory diseases include stroke, heart disease, lung cancer, and asthma. SCAG will be providing estimated outcomes from the SPM model as part of the scenario development process for the 2016 RTP/SCS. At this time additional research and model development needs to be conducted before SCAG can provide estimates for all of the expected social determinants of health, health outcomes and co-benefits.

Land Use Socio-Economic Data (SED) & Housing				
Policy Question	Methods		Social Determinants of Health (SPM Outputs)	Expected Health Outcomes and Co-Benefits
Explore Land Use and Socio Economic factors and Housing	Scenario 3	Scenario 2 + 2012 land use (LU) policy updated. Emphasize multi-family. Target 70/30 Multi-Family (MF)/Single-Family (SF) housing type. Focus on rail corridors and key HQTAs.	Land consumption Local costs and fees Transportation mode VMT GHG emissions Building energy use Residential energy use Physical Activity Rates	Weight-related diseases Cardiovascular and respiratory diseases Medical costs School and work absences
	Scenario 4	Scenario 3 + Target 70/30 MF/SF housing type		
Farm & Natural Lands Conservation				
Policy Question	Methods		Social Determinants of Health (SPM Outputs)	Expected Health Outcomes and Co-Benefits
Explore Alternative Open Space Scenarios	Scenario 3	Scenario 2 + encourage land preservation techniques including Transfer of Development Rights and preservation easements within and across jurisdictions.	Land consumption Local costs and fees Transportation mode VMT GHG emissions Physical Activity Rates	Weight-related diseases Cardiovascular and respiratory diseases Medical costs School and work absences
	Scenario 4	Scenario 3 + Support new development in areas not vulnerable to sea-level rise + Avoid natural hazard areas +Exclude unprotected, high quality habitat areas		
Highway/Roadway Network				
Policy Question	Methods		Social Determinants of Health (SPM Outputs)	Expected Health Outcomes and Co-Benefits
Explore Investment Scenarios for the Highway/Roadway Network	Scenario 3	Scenario 2 + additional emphasis on system preservation	Local costs and fees Transportation mode VMT GHG emissions	Weight-related diseases Cardiovascular and respiratory diseases Medical costs School and work absences
	Scenario 4	Scenario 3		
Transit/High-Speed Rail				

Policy Question	Methods		Social Determinants of Health (SPM Outputs)	Expected Health Outcomes and Co-Benefits
Explore Investments Scenarios for Transit/High Speed Rail	Scenario 3	Scenario 2 + Add additional high quality (HQ) transit corridors based on feedback from transit operators + Livable Blvd/Complete Corridors (transit + Active Transportation (AT) + LU Strategy)	Local costs and fees Transportation mode VMT GHG emissions Physical Activity Rates	Weight-related diseases Cardiovascular and respiratory diseases Medical costs School and work absences Collision Rates
	Scenario 4	Scenario 3 + Assume 50% decrease in peak period headways, eliminated bus fares		
Active Transportation				
Policy Question	Methods		Social Determinants of Health (SPM Outputs)	Expected Health Outcomes and Co-Benefits
Explore Alternative Investment Scenarios for Active Transportation	Scenario 3	Scenario 2 + Focus on AT for regional trips. Expanded Regional Corridors. First/last Mile implementation. Livable Blvd/Complete Corridors (transit + AT + LU Strategy).	Local costs and fees Transportation mode VMT GHG emissions Physical Activity Rates	Weight-related diseases Cardiovascular and respiratory diseases Medical costs School and work absences Collision rates
	Scenario 4	Scenario 3 + Comprehensive "short trip" strategy, including AT + shared-use, Neighborhood Electric Vehicle (NEV), etc.		
Technology/Innovation				
Policy Question	Methods		Social Determinants of Health (SPM Outputs)	Expected Health Outcomes and Co-Benefits
Explore Penetration of Technology/Innovation	Scenario 3	Assume a modest rate/depth of penetration of new transport innovations; Primarily private investment; Supportive public policy	Local costs and fees Transportation mode VMT GHG emissions	Weight-related diseases Cardiovascular and respiratory diseases Medical costs School and work absences
	Scenario 4	Assume an aggressive rate/depth of		

		penetration of new transportation innovations; Public & private investment; More supportive public policy		
Finance Pricing/Incentives				
Policy Question	Methods		Social Determinants of Health (SPM Outputs)	Expected Health Outcomes and Co-Benefits
Explore Possible Pricing Strategies/ Incentives	Scenario 3	Scenario 2 + Any further modifications reflecting recent economic trends and legislative initiatives	Local costs and fees Transportation mode VMT GHG emissions Physical Activity Rates	Weight-related diseases Cardiovascular and respiratory diseases Medical costs School and work absences
	Scenario 4	Unconstrained		
Transportation Demand Management (TDM) & Transportation System Management (TSM)				
Policy Question	Methods		Social Determinants of Health (SPM Outputs)	Expected Health Outcomes and Co-Benefits
Explore Alternative Transportation Demand Management (TDM) and Transportation System Management (TSM) Strategies	Scenario 3	Scenario 2 + Assume additional (modest) benefits - e.g. 5% speed, capacity increase	Local costs and fees Transportation mode VMT GHG emissions Physical Activity Rates	Weight-related diseases Cardiovascular and respiratory diseases Medical costs School and work absences Collision rates
	Scenario 4	Scenario 3 + Assume additional (aggressive) benefits - e.g. 2-3% reduction HBW trips; 7% speed, capacity increase		

Programmatic Environmental Impact Report (PEIR)

Public health is not a listed resource area recommended for analysis by the State California Environmental Quality Act (CEQA) Guidelines Appendix G Checklist and therefore public health is not included as a topic area in the 2016 Regional Transportation Plan/Sustainable Communities Strategy (2016 RTP/SCS) Program Environmental Impact Report (PEIR). However, some of the topic areas that are listed in the Appendix G of the State CEQA Guidelines have public health implications. These topic areas may include, but not limited to, air quality, noise, hydrology and water quality, recreation (including access to open space and recreational opportunities), and transportation and traffic (including active transportation and safety). Hence, the 2016 RTP/SCS PEIR will approach PEIR topic areas, where applicable, from a public health lens, and refer to the applicable public health analysis that will be prepared as part of the 2016 RTP/SCS Plan document. The 2016 RTP/SCS PEIR will also include a Health Risk Assessment similar to that performed in 2012.

Environmental Justice Analysis

Pursuant to Federal requirements and guidance, SCAG analyzes the impacts of the RTP/SCS on environmental justice populations which include minority and low income populations. In the 2012 RTP/SCS, SCAG analyzed the environmental justice impacts for a variety of outcomes related to public health such as the jobs housing mismatch/imbalance, accessibility to essential destinations such as jobs, retail and parks, gentrification/displacement, environmental impacts such as air quality, public health and noise. In the 2016 RTP/SCS, in addition to continuing the previous analyses for the preferred scenario, SCAG plans to conduct EJ analysis for all scenarios. Further, SCAG plans to expand its analysis by incorporating and reviewing impact upon the SB 535 Disadvantaged Areas.

Economic Analysis

In the 2012 RTP/SCS SCAG included an economic analysis that examined the direct, indirect, and induced benefits of constructing the transportation investments in the plan. For example, the economic analysis included a discussion of how many jobs the plan would create the improved economic competitiveness of the region from improvements in the transportation network, and the number of additional jobs that would be attracted to the region due to increased access to the transportation network, improved air quality, and reduced health costs. In the 2016 RTP/SCS, SCAG will continue to assess the economic benefits of transportation investments and increased mobility for the region.

Performance Measures

SCAG used three sets of performance measures during certain stages of the planning process of the 2012 RTP/SCS. These include the performance measures used in the scenario planning stage, the performance measures developed to measure the final plan, and the performance measures used for Environmental Justice for the final plan. For the upcoming 2016 RTP/SCS, staff proposes to use a unified set of performance measures throughout the planning process. This unified set of performance measures integrate those three sets of performance measures used before. This integrated approach recognizes that performance measures are not just used to measure the final plan, but more importantly, to measure the extent goals could be achieved by scenarios/alternatives which are precursors to the final plan. SCAG is currently monitoring the development of federal performance measures from MAP-21 to ensure compatibility.

Finally, in the 2012 RTP/SCS, a set of monitoring measures was adopted to monitor plan performance after implementation. Staff proposes to continue to have monitoring measures for the 2016 RTP/SCS. In conducting monitoring, SCAG will be evaluating public health outcomes based on available tools and data.

Draft and Final Plan

SCAG currently plans to address public health outcomes throughout the 2016 RTP/SCS using a Health in All Policies approach. To ensure that the public health outcomes of the plan are easily accessible, SCAG will include vignettes and call-out boxes throughout the plan to highlight best-practices for improving health outcomes through transportation and land-use policy implementation. Any public health policies for the Plan will be developed in coordination with stakeholders and SCAG's policy committees and approved by the SCAG's Regional Council as mentioned above. Public health policies adopted as part of the Plan will be located in a variety of locations depending on their function. For example, mitigation

measures related to public health may be found in the PEIR. SCAG plans to include several appendices in the final plan to summarize different topic areas that have impacts on public health.

Active Transportation Appendix

SCAG will include an Active Transportation Appendix that summarizes the Plan's contributions to the active transportation network and the public health benefits of increased rates of physical activity. This appendix will also incorporate information from SCAG's Active Transportation Health and Economic Impact Study which will be conducted in parallel with the 2016 RTP/SCS development. This study will help to summarize the public health benefits of active transportation and their impacts on the regional economy. The Active Transportation Appendix will also build off of SCAG's Active Transportation Needs Assessment which includes geographic analysis of injuries and fatalities for bicyclists and pedestrians.

Goods Movement Appendix

SCAG will also develop a Goods Movement Appendix that expands on the one included in the 2012 RTP/SCS. This appendix will provide an overview of the regional goods movement system and how it supports the regional economy. In addition, this appendix will outline regional strategies and initiatives, such as the environmental strategy and an action plan to support the development of technologies necessary for a zero and near-zero emissions goods movement system.

Public Health Appendix

Finally, SCAG will develop a detailed Public Health Appendix which summarizes the existing conditions, public health outcomes of the Plan, and steps that SCAG and local agencies can take to further integrate health outcomes into transportation and land use planning across the region. The key focus areas are proposed to be air quality, physical activity, safety, climate resilience, access to essential destinations, and economic wellbeing. The appendix will provide stakeholders a single point of reference to understand how the Plan will perform related to public health outcomes.

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