



The Gateway Cities Air Quality Action Plan

HEALTH IMPACT ASSESSMENT: SCOPE OF WORK

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PREPARED FOR:

Gateway Cities Council of Governments
and
Los Angeles County Metropolitan Transportation Authority
(Metro)

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1. Introduction

Scoping, the second stage of Health Impact Assessment (HIA), involves creating a work plan for conducting an HIA. The scope for the I-710 HIA described below includes:

- A description of:
 - ◆ The alternatives for the I-710 Corridor Project that will be analyzed in the HIA
 - ◆ The geographic and time boundaries for the HIA analysis
 - ◆ The populations that will be assessed
 - ◆ For each health determinant (or issue) to be assessed (air quality, noise, mobility, traffic safety, jobs and economic development, and access to neighborhood resources):
 - Pathway diagrams describing the potential connections between the I-710 Corridor Project to health outcomes
 - Research questions regarding existing conditions and forecasted positive and negative impacts
 - Indicators (also known as metrics) that can be analyzed to answer the research questions
 - Data sources and methods
 - ◆ The scoping phase for this HIA is being led and coordinated by Human Impact Partners but has included input from the Gateway Cities Air Quality Action Plan (AQAP) Health Impact Assessment Technical Work Group (HIA/TWG), the AQAP Technical Roundtable and Advisory Roundtable, the Gateway Cities Environmental Committee, the Gateway Cities Council of Governments (GCCOG), and the AQAP project team.

2. I-710 HIA Goals

The following goals were agreed upon by the AQAP HIA/TWG, Technical Roundtable, Advisory Roundtable, and the Gateway Cities Environmental Committee:

- Provide I-710 Corridor Project decision-makers and other stakeholders with positive and negative health effects, findings, and recommendations for alternatives being considered
- Increase stakeholder participation and understanding of the I-710 Corridor Project
- Identify community health concerns/issues within the Gateway Cities whose solutions may be unrelated to the I-710 Corridor Project
- Provide a model for future transportation and infrastructure HIAs (including evidence and utility of doing an HIA)
- Add value to the I-710 related analyses while utilizing the I-710 EIR/EIS technical data in the HIA to the greatest extent possible to reduce redundancy

3. Overarching Parameters

3.1 Alternatives to be Considered

- Alternative 1 – The No Build Alternative: This alternative consists of those transportation projects that are already programmed and/or committed to be constructed by or before the study’s planning horizon year of 2035. Therefore, Alternative 1 represents future travel conditions in the I-710 corridor and is the baseline against which the I-710 Corridor Project alternatives are assessed. The proposed projects included in this alternative are based on SCAG’s 2008 Regional Transportation Plan (RTP) as well as the 2008 Regional Transportation Improvement Program (RTIP) project list.
- Alternative 5A – Freeway Widening up to 10 General Purpose (GP) Lanes: The intent of Alternative 5 is to improve the I-710 mainline by widening the freeway up to include ten lanes throughout the length of the corridor (including through the freeway-to-freeway interchanges) and modernizing its design. Included in this alternative are redesigns of the freeway-to-freeway and arterial interchanges. 5A includes ten general purpose lanes. Also included in Alternative 5A are:
 - ◆ The projects included in the No Build Alternative.
 - ◆ Transportation Systems Management/Transportation Demand Management (TSM/TDM)/ Transit/Intelligent Transportation Systems (ITS) improvements, including operational investments, policies, and actions aimed at improving goods movement, passenger auto and transit travel, as well as reducing the environmental impacts of transportation for cities and operations in the I-710 study area, including improvements to transit in the I-710 corridor and implementation of ITS applications.
 - ◆ Arterial Highway and I-710 Congestion Relief Improvements including the maximum arterial highway improvements that could be feasibly implemented in advance of any I-710 improvements. This would incorporate the major north/south and east/west arterial highways within the study area, as well as the study area intersections identified for the proposed project. This will also address congestion relief projects, including early action projects on I-710, by identifying existing freeway deficiencies causing bottlenecks, congestion and safety problems.
- Alternative 6A – 10 GP Lanes plus Four-Lane Freight Corridor: Alternative 6A includes all the improvements from Alternative 5A (described above) with the addition of a separate four-lane freight corridor for exclusive use by conventional trucks from the ports (Ocean Boulevard) to the intermodal rail yards in Commerce and Vernon. This alternative is the Locally Preferred Strategy (LPS) that resulted from the prior I-710 Major Corridor Study plus additional design concept refinements. For the purpose of the I-710 EIR/EIS, the freight corridor is being designed for the exclusive use of heavy duty trucks (5+ axles).
- Alternative 6B – 10 GP Lanes plus a Zero-Emissions Four-Lane Freight Corridor: Alternative 6B includes all the improvements of Alternative 6A (described above) with the Freight Corridor restricted to trucks with zero tailpipe emissions. In this alternative the design of the freight corridor will allow for possible future conversion as feasible (which may require

additional environmental analysis and approval), of a fixed-track guideway family of alternative freight transport technologies (e.g. maglev).

- Alternative 6C – 10 GP Lanes plus a tolled Four-Lane Freight Corridor: Alternative 6C includes all the improvements of Alternatives 6, but would toll trucks using the freight corridor.

3.2 Health Determinants

The following health determinants were selected for study and agreed upon by the AQAP HIA/TWG and approved by the AQAP Technical Roundtable, Advisory Roundtable, and the Gateway Cities Environmental Committee:

- Air quality
- Noise
- Mobility
- Traffic safety
- Jobs and economic development
- Access to neighborhood resources
- A more complete description of what is included in each of these categories can be found in the pathway diagrams and research questions below.
- Decisions regarding other health determinants included:
 - ◆ Water quality. Because there are regulations regarding water quality mitigations that the I-710 Corridor Project must follow and, given the resource constraints for conducting the HIA, health outcomes related to water quality were de-prioritized.
 - ◆ Housing: The proposed I-710 improvement designs are estimated to displace only tens of residences according to the project leads, and housing displacement was therefore de-prioritized. Other aspects of housing (e.g., exposure to noise and access to neighborhood resources) are included in the determinants that will be addressed.
 - ◆ Education: Proposed impacts to education are believed to be through environmental factors (e.g., air quality and noise) and not directly as a result of the freeway expansion, so it was decided not to include education as an independent health determinant for analysis. Education-related outcomes will be addressed in the air quality and noise sections.
 - ◆ Neighborhood safety: Impacts related to neighborhood safety have been integrated into other sections of the scope including mobility, traffic safety, and neighborhood resources, so it was decided not to include neighborhood safety as an independent health determinant for analysis.
 - ◆ Social cohesion: Impacts related to social cohesion have been included in several other sections so it was decided to not include a separate section on social cohesion related impacts.

- ◆ Other health determinants: Generally it was decided that impacts on all other determinants of health were too indirect to include in the HIA, given resource constraints. Other health determinants considered included disease vectors, poverty, racism, segregation, and political participation.

3.3 Time Boundaries

The HIA will analyze impacts in the year 2035 only. Other analyses (e.g., the EIR/EIS and other sections of the AQAP) are covering construction impacts on air quality. Given the resource constraints on the HIA, other construction-related impacts were not included, though it was recognized that these impacts could have health impacts.

3.4 Geographic Boundaries

Each health issue will use its own geographic boundaries, as detailed below. Generally and when possible, corridor specific statistics will be compared with statistics for Los Angeles County as a whole as well as statistics for the state of California and the U.S. as a whole.

3.5 Vulnerable Populations

In addition to the general population, the following vulnerable populations will be considered when stratified data is available:

- Groups defined by age (e.g., young children (0-5), school children (6-17), seniors (65+))
- Groups defined by race/ethnicity (e.g., African American, Hispanic, Non-English speakers and/or recent immigrants/foreign born populations)
- Groups defined by income (e.g., those living below poverty line, those living below 200% of poverty line, lowest quartile or quintile of earners)
- Populations with existing health conditions (e.g., asthma, diabetes, cardiovascular disease [CVD]) (making them more susceptible to issues related to air quality or other impacts)

4. Common Questions (CQ)

4.1 CQ1

Existing Conditions Research Question:

What are current vehicle volumes (including cars and medium and heavy-duty trucks) on I-710, related freeways, and local roads?

Impact Research Question:

What are predicted future vehicle volumes?

Indicators:

- Heavy duty truck traffic counts on the I-710
- Medium duty truck traffic counts on the I-710
- Car traffic counts on the I-710
- Heavy duty truck traffic counts on the I-110, I-605, I-405, SR-91, I-105, I-5, SR-60, I-10
- Medium duty truck traffic counts on the I-110, I-605, I-405, SR-91, I-105, I-5, SR-60, I-10
- Car traffic counts on the I-110, I-605, I-405, SR-91, I-105, I-5, SR-60, I-10
- Heavy duty truck traffic counts on ramps on/off the I-710
- Medium duty truck traffic counts on ramps on/off the I-710
- Car traffic counts on ramps on/off the I-710
- Heavy duty truck traffic counts on specific arterials
- Medium duty truck traffic counts on specific arterials
- Car traffic counts on specific arterials
- Heavy duty truck traffic counts on specific residential roads
- Medium duty truck traffic counts on specific residential roads
- Car traffic counts on specific residential roads

Data Sources (the same for all indicators):

- I-710 EIR/EIS traffic studies
- Other reports/studies of local traffic conditions

Methods (the same for all indicators):

- Review of EIR/EIS traffic model

4.2 CQ2

Existing Conditions Research Question:

What are current speeds for vehicles (including cars and medium and heavy-duty trucks) on the I-710, related freeways, and local roads?

Impact Research Question:

What are predicted future vehicle speeds?

Indicators:

- Speed vs. pollutant profile for different vehicles and different pollutants
 - ◆ Data Sources:
 - I-710 EIR/EIS traffic studies
 - ◆ Methods:
 - Review of EIR/EIS traffic model
- Traffic speeds at various times of day
 - ◆ Data Sources:
 - I-710 EIR/EIS traffic studies
 - ◆ Methods:
 - Review of EIR/EIS traffic model
- Speed vs. collision severity profile for trucks and cars
 - ◆ Data Sources:
 - Other reports/studies of local traffic conditions
 - ◆ Methods:
 - Review of EIR/EIS traffic model

4.3 CQ3

Existing Conditions Research Question:

What is the average vehicle miles travelled (VMT) for people who live and/or work in the impacted areas? For trucks?

Impact Research Question:

How would the proposed project impact the average VMT for people who live and/or work in the impacted areas? For trucks?

Indicators:

- Average VMT per day for people who live in impacted areas
 - ◆ Data Sources:
 - SCAG (see 2008 Regional Transportation Plan and Pacific Electric Right-of-Way (PE ROW) / West Santa Ana Branch Corridor Analysis)
 - ◆ Methods:
 - Review results of EIR/EIS analysis; quantitative if possible
- Average VMT per day for trucks traveling on the I-710 and through impacted areas
 - ◆ Data Sources:
 - SCAG (see 2008 Regional Transportation Plan and Pacific Electric Right-of-Way (PE ROW) / West Santa Ana Branch Corridor Analysis)
 - ◆ Methods:
 - Review results of EIR/EIS analysis; quantitative if possible
- Gross number and length of vehicle trips by vehicle type in the impacted area per day
 - ◆ Data Sources:
 - I-710 EIR/EIS traffic studies
 - SCAG
 - Other reports/studies
 - ◆ Methods:
 - Review results of EIR/EIS analysis; quantitative if possible

4.4 CQ4

Existing Conditions Research Question:

What are the existing public transit routes and their associated use in the impacted areas?

Impact Research Question:

How would the proposed project impact public transit routes, stops, and use?

Indicators:

- Existing and planned transportation routes, transit routes/stops, bike routes and pedestrian facilities
 - ◆ Data Sources:
 - METRO GIS layer of transit (rail/bus) system
 - I-710 Intermodal Study

- Metro
- Metrolink: Bus service operators
- ◆ Methods:
 - Qualitative (literature review and review of available statistics)
- Transit ridership
 - ◆ Data Sources:
 - METRO GIS layer of transit (rail/bus) system
 - I-710 Intermodal Study
 - Metro
 - Metrolink: Bus service operators
 - ◆ Methods:
 - Qualitative (literature review and review of available statistics)

4.5 CQ5

Existing Conditions Research Question:

How do demographic characteristics of populations living within in the I-710 corridor compare to characteristics of people living in Los Angeles County and in California? How have these been changing over time (the last 10 years)?

Impact Research Questions:

- How would demographics change?
 - ◆ Indicators:
 - Population
 - Income
 - Unemployment rate
 - Occupation
 - Poverty rate
 - Race/ethnicity
 - Educational attainment
 - Age
 - Housing tenure (how long have lived and rental or own)
 - Overcrowding
 - Car ownership

- Mode of transportation to work
 - Commute time to work
 - ◆ Data Sources:
 - Census data
 - I-710 EIR/EIS Community Impact Assessment
 - Pacific Electric Right-of-Way (PE ROW) / West Santa Ana Branch Corridor Analysis
 - ◆ Methods:
 - GIS
- How many residents would be displaced?
 - ◆ Indicators:
 - Number of residents displaced
 - ◆ Data Sources:
 - I-710 EIR/EIS Community Impact Assessment
 - ◆ Methods:
 - GIS
- How many residents would be in closer proximity to the I-710?
 - ◆ Indicators:
 - Number of residents living within 150 and 300 meters (approximately 500 and 1000 feet) of the edge of the I-710
 - ◆ Data Sources:
 - Census data
 - I-710 EIR/EIS Community Impact Assessment
 - ◆ Methods:
 - GIS

4.6 CQ6

Existing Conditions Research Question:

What sensitive receptor populations live in the I-710 corridor? Sites at which those people live, work, play, or go to school (e.g., children in schools and parks, seniors homes, hospitals)?

Impact Research Question:

How are these populations expected to change over time?

Indicators:

- Number of residences (with age of housing), or people, within 150 meters (approximately 500 feet) of the edge of the I-710 and related roads and destinations
 - ◆ Data Sources:
 - Census data
 - I-710 EIR/EIS Community Impact Assessment
 - ◆ Methods:
 - GIS

- Number of schools (and enrollment) and daycare centers within 150 and 300 meters (approximately 500 and 1000 feet) of the I-710 and related roads and destinations
 - ◆ Data Sources:
 - CADOE or local school districts
 - I-710 EIR/EIS Community Impact Assessment
 - ◆ Methods:
 - GIS

- Number of hospitals within 150 and 300 meters (approximately 500 and 1000 feet) of the I-710 and related roads and destinations
 - ◆ Data Sources:
 - OSHPD Facility Listings (12/31/2009) - Hospitals
 - I-710 EIR/EIS Community Impact Assessment
 - ◆ Methods:
 - GIS

- Number of parks within 150 and 300 meters (approximately 500 and 1000 feet) of the I-710 and related roads and destinations
 - ◆ Data Sources:
 - SCAG land use database
 - I-710 EIR/EIS Community Impact Assessment
 - ◆ Methods:
 - GIS

- Number of churches within 150 and 300 meters (approximately 500 and 1000 feet) of the I-710 and related roads and destinations
 - ◆ Data Sources:
 - I-710 EIR/EIS Community Impact Assessment

◆ Methods:

- GIS

4.7 CQ7

Existing Conditions Research Question:

What are existing disease outcomes for residents in the I-710 corridor compared to Los Angeles County (broken out by demographic characteristics)?

Impact Research Question:

See individual topic areas

Indicators:

- Asthma prevalence
- Asthma attacks/symptomatic days
- Diabetes prevalence
- Obesity rates
- Cancer rates
- Cardiovascular disease (CVD) prevalence
- Stroke rates
- Myocardial infarction (MI) rates
- Hypertension prevalence
- Communicable disease rates
- Depression rates
- Ave number of days of poor mental health
- Self-rated health
- Physical activity rates
- Injury rates
- Low birth weight birth rate
- Pre-term birth rate
- Mortality
- Asthma hospitalizations
- Diabetes hospitalizations
- Mental-health related hospitalizations

- Stress rates

Data Sources (the same for all indicators):

- Los Angeles County Health Survey
- California Health Interview Survey (CHIS)
- I-710 EIR/EIS Community Impact Assessment
- Hospitalization records (define with International Statistical Classification of Diseases and Related Health Problems (ICD-9) codes)
- LACDPH (mortality records – ICD-10 codes)

Methods (the same for all indicators):

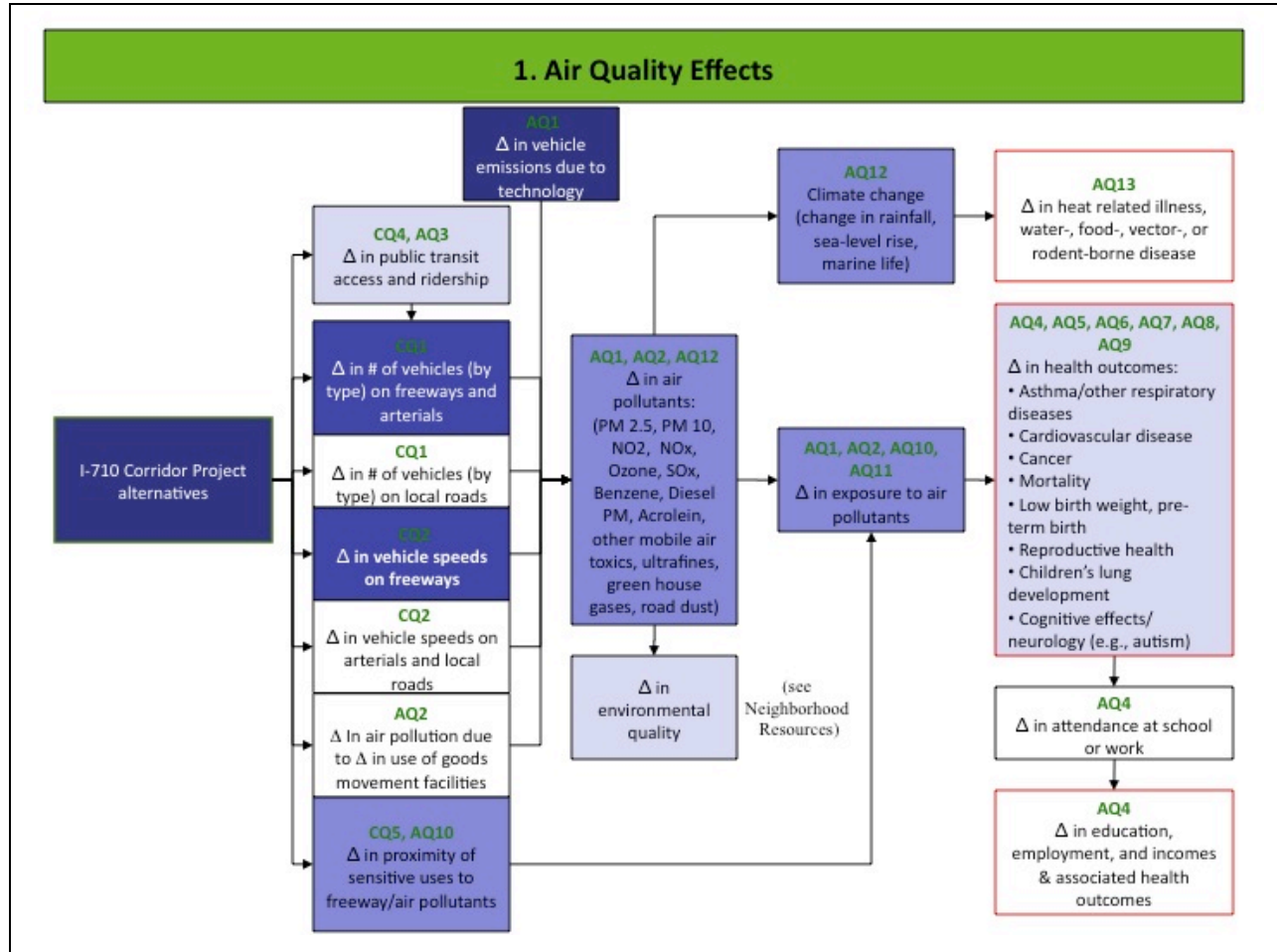
- Review and summary of the data sources above
- Potentially GIS

4.8 Note for Common Questions

The Los Angeles region has been the focus of a number of public health studies. In our analysis of health impacts, data from these studies will be given more weight compared to studies that focus on other locations.

5. Air Quality (AQ)

5.1 Pathway



5.2 Geographies of Interest

- 0–150 meters (approximately 0–500 feet) from the I-710 (upwind and downwind)
- 150–300 meters (approximately 500–1000 feet) from the I-710 (upwind and downwind)
- Greater than 300 meters (approximately 1000 feet) within the I-710 corridor study area
- Los Angeles County and California (as comparison)

5.3 Research Questions

5.3.1 AQ1

Existing Conditions Research Question:

What are the existing levels of air pollution emissions/exposures from traffic on I-710 in corridor communities and the region? How do emissions/exposures (of which pollutants) for the different vehicles change with speed?

Impact Research Question:

Based on the traffic model, how would the projected changes in traffic counts and speeds affect air quality in the corridor communities and the region? How would specific features of the proposals (e.g., position of truck lanes, zero emission trucks) impact air quality? How would emissions/ exposures (of which pollutants) for the different vehicles change over time?

Indicators:

- Ambient level of Nitrogen Oxides (NO_x), Sulfur Oxides (SO_x), Diesel Particulate Matter (DPM), Particulate Matter (PM_{2.5} and PM₁₀), ozone, benzene, acrolein, other mobile air toxics, and road dust at various locations in the community near the I-710
 - ◆ Data Sources:
 - I-710 EIR/EIS
 - AQ/HRA
 - California Air Resources Board (CARB)
 - South Coast Air Quality Management District (SCAQMD) SIP model predictions, inventories
 - SCAQMD ambient monitoring data
 - MATES III inventories and/or model predictions
 - Zhu et al. papers
 - Other Los Angeles AQ studies
 - ◆ Methods:
 - Review results of EIR/EIS AQ analysis
- Level of NO₂ emissions/exposures from the I-710
 - ◆ Data Sources:
 - I-710 EIR/EIS
 - AQ/HRA
 - CARB
 - SCAQMD SIP model predictions, inventories
 - SCAQMD ambient monitoring data
 - MATES III inventories and/or model predictions
 - Zhu et al. papers

- Other Los Angeles AQ studies
- ◆ Methods:
 - Review results of I-710 EIR/EIS AQ analysis
- Level of ultrafines (particles of size <100 nanometers) emissions/exposures from the I-710
 - ◆ Data Sources:
 - I-710 EIR/EIS
 - AQ/HRA
 - CARB
 - SCAQMD SIP model predictions, inventories
 - SCAQMD ambient monitoring data
 - MATES III inventories and/or model predictions
 - Zhu et al. papers
 - Other Los Angeles AQ studies
 - ◆ Methods:
 - Qualitative description
- Speed vs. pollutant profile for different vehicles and different pollutants (see Common Questions)
 - ◆ Data Sources:
 - I-710 EIR/EIS
 - AQ/HRA
 - Literature
 - ◆ Methods:
 - Qualitative description

5.3.2 AQ2

Existing Conditions Research Question:

In addition to the I-710, what are other sources of air pollution occur in corridor communities? Include both stationary sources (e.g., refineries) and other mobile sources (other freeways, rails).

Impact Research Question:

How would the I-710 Corridor Project impact air pollution from other sources including rails, at warehousing, transloading, and intermodal facilities?

Indicators:

- For each source of pollution, level of select pollutants emissions/exposures
 - ◆ Data Sources:
 - I-710 EIR/EIS AQ/HRA
 - CARB
 - SCAQMD SIP model predictions, inventories
 - SCAQMD ambient monitoring data
 - MATES III inventories and/or model predictions
 - Zhu et al. papers
 - Other Los Angeles AQ studies
 - ◆ Methods:
 - Qualitative description
- Number of households within 300 meters (approximately 1000 feet) of warehouses/transloading facilities
 - ◆ Data Sources:
 - Cambridge Systematics report to SCAG, 12/3/09
 - ◆ Methods:
 - GIS

5.3.3 AQ3

Existing Conditions Research Question:

What is the existing impact of public transit access and use on transportation mode choice and, therefore air quality in corridor communities?

Impact Research Question:

How would the proposed project be expected to impact transportation mode choice and thereby air quality?

Indicators:

- Existing and planned transportation routes, transit routes/stops
 - ◆ Data Sources:
 - METRO GIS layer of transit (rail/bus) system
 - ◆ Methods:
 - Qualitative (literature review and review of available statistics)

- Transit ridership
 - ◆ Data Sources:
 - I-710 Intermodal Study
 - Metro; Metrolink: Bus service operators
 - ◆ Methods:
 - Qualitative (Literature review and review of available statistics)

5.3.4 AQ4

Existing Conditions Research Question:

What are current asthma rates and rates of other respiratory diseases, compared to Los Angeles County? How many missed days of school and work are currently attributable to asthma in the impacted areas?

Impact Research Question:

How would changes in air quality resulting from the proposed project be expected to impact asthma risk? How would changes in asthma rates be expected to impact missed school and work days? How would missed school and work days be expected to impact health outcomes related to education, employment, and income?

Indicators:

- Asthma prevalence, hospitalizations
 - ◆ Data Sources:
 - Los Angeles County Health Survey
 - Hospital admissions data
 - CHIS
 - I-710 EIR/EIS AQ/HRA
 - ◆ Methods:
 - Model using odds ratios from HIP meta-analyses to obtain attributable risk
- Days of missed school due to asthma
 - ◆ Data Sources:
 - Local school districts
 - CARB
 - Literature
 - ◆ Methods:
 - Qualitative

■ Days of missed work due to asthma

◆ Data Sources:

- CARB
- Literature

◆ Methods:

- Qualitative

5.3.5 AQ5

Existing Conditions Research Question:

What are mortality rates associated with air pollution in impacted areas compared to Los Angeles County?

Impact Research Question:

How would changes in air quality resulting from the proposed project be expected to impact mortality risk?

Indicators:

■ Mortality rates due to air pollution (including CVD, hypertension, stroke, etc.)

◆ Data Sources:

- Hospital admissions data
- LACDPH mortality data (ICD-10 codes)
- I-710 EIR/EIS AQ/HRA

◆ Methods:

- Modeling based on CARB 2008 (or 2002) study (Pittsburg and Port of Oakland HIAs) if PM2.5 data is available from the I-710 EIR/EIS process; otherwise, qualitative analysis

5.3.6 AQ6

Existing Conditions Research Question:

What is the current cancer risk due to air pollution in the impacted areas, compared to in Los Angeles County?

Impact Research Question:

How would changes in air quality resulting from proposed project changes be expected to impact cancer risk?

Indicators:

- Rates and risk of various types of cancer
 - ◆ Data Sources:
 - I-710 EIR/EIS AQ/HRA
 - ◆ Methods:
 - Qualitative description (e.g., about uncertainties in analysis, if any)

5.3.7 AQ7

Existing Conditions Research Question:

What is the current prevalence of hypertension, CVD, and stroke in impacted areas compared to Los Angeles County?

Impact Research Question:

How would changes in air quality resulting from the proposed project be expected to impact the prevalence of hypertension, CVD, and stroke?

Indicators:

- CVD prevalence and hospitalization
- Hypertension prevalence and hospitalization
- Stroke rates and hospitalization

Data Sources (the same for all indicators):

- Los Angeles County Health Survey; hospital admissions data

Methods (the same for all indicators):

- Qualitative (literature review and review of available statistics)

5.3.8 AQ8

Existing Conditions Research Question:

What is the current number of low-birth weight babies, pre-term births, and status of other reproductive and endocrine health measures in the impacted areas compared to in Los Angeles County and in California?

Impact Research Question:

How would changes in air quality resulting from the proposed project be expected to impact low birth-weight, pre-term births, and other reproductive and endocrine health risk (associated with air quality)?

Indicators:

- Low birth weight births
 - ◆ Data Sources:
 - Literature review
 - Hospital data
 - ◆ Methods
 - Qualitative (literature review and review of available statistics)
- Preterm births
 - ◆ Data Sources:
 - Literature review
 - ◆ Methods
 - Qualitative (literature review and review of available statistics)

5.3.9 AQ9

Existing Conditions Research Question:

What is the current number of autistic people and people with other cognitive/neurological issues in the impacted areas compared to in Los Angeles County and in California?

Impact Research Question:

How would changes in air quality resulting from the proposed project be expected to impact autism rates and rates of people with other cognitive/neurological issues?

Indicators:

- Autism rates
 - ◆ Data Sources:
 - Literature review
 - ◆ Methods
 - Qualitative (literature review and review of available statistics)
- Rates of cognitive/neurological disorders
 - ◆ Data Sources:
 - Literature review
 - ◆ Methods
 - Qualitative (literature review and review of available statistics)

5.3.10 AQ10

Existing Conditions Research Question:

How do demographic characteristics of populations living in proximity to air pollution sources compare to characteristics of people living outside proximate areas?

Impact Research Question:

Would projected changes in air pollution exposure disproportionately impact people with social, economic, or education-related vulnerabilities?

Indicators:

- See Common Questions section

5.3.11 AQ11

Existing Conditions Research Question:

What is the current air quality at the sites at which sensitive receptors live, work, play, or go to school (e.g., children in schools and parks; seniors homes, hospitals)? Include data on age of housing units and impact age has on indoor air quality; disease populations (e.g., diabetes) and any added sensitivity to air quality they may have.

Impact Research Question:

How would the proposed project impact air quality for sensitive receptors at those sites?

Indicators:

- Ambient air quality measurements at schools, hospitals, etc.
 - ◆ Data Sources:
 - I-710 EIR/EIS Community Impact Assessment
 - SCAQMD
 - Existing studies
 - EIR/EISs
 - ◆ Methods:
 - Qualitative (literature review and review of available statistics)

5.3.12 AQ12

Existing Conditions Research Question:

What are existing levels of greenhouse gas (GHG) emissions from traffic on the I-710? What is the existing contribution of GHG emissions from traffic on the I-710 to climate change?

Impact Research Question:

How would the projected changes impact levels of GHG emissions and therefore climate change?

Indicators:

- Level of CO₂eq emissions from traffic on the I-710. Speed profile for CO₂ and different vehicles. For current and future trucks.
 - ◆ Data Sources:
 - I-710 EIR/EIS
 - ◆ Methods:
 - Qualitative (literature review and review of available statistics)
- Level of CO₂eq emission from other sources associated with the I-710 (e.g., warehouses)
 - ◆ Data Sources:
 - I-710 EIR/EIS (especially cumulative impact analysis)
 - Mira Loma warehouses AQ measurements?
 - ◆ Methods:
 - Qualitative (literature review and review of available statistics)

5.3.13 AQ13

Existing Conditions Research Question:

What is the current prevalence of heat-related illness in the corridor compared to Los Angeles County?

Impact Research Question:

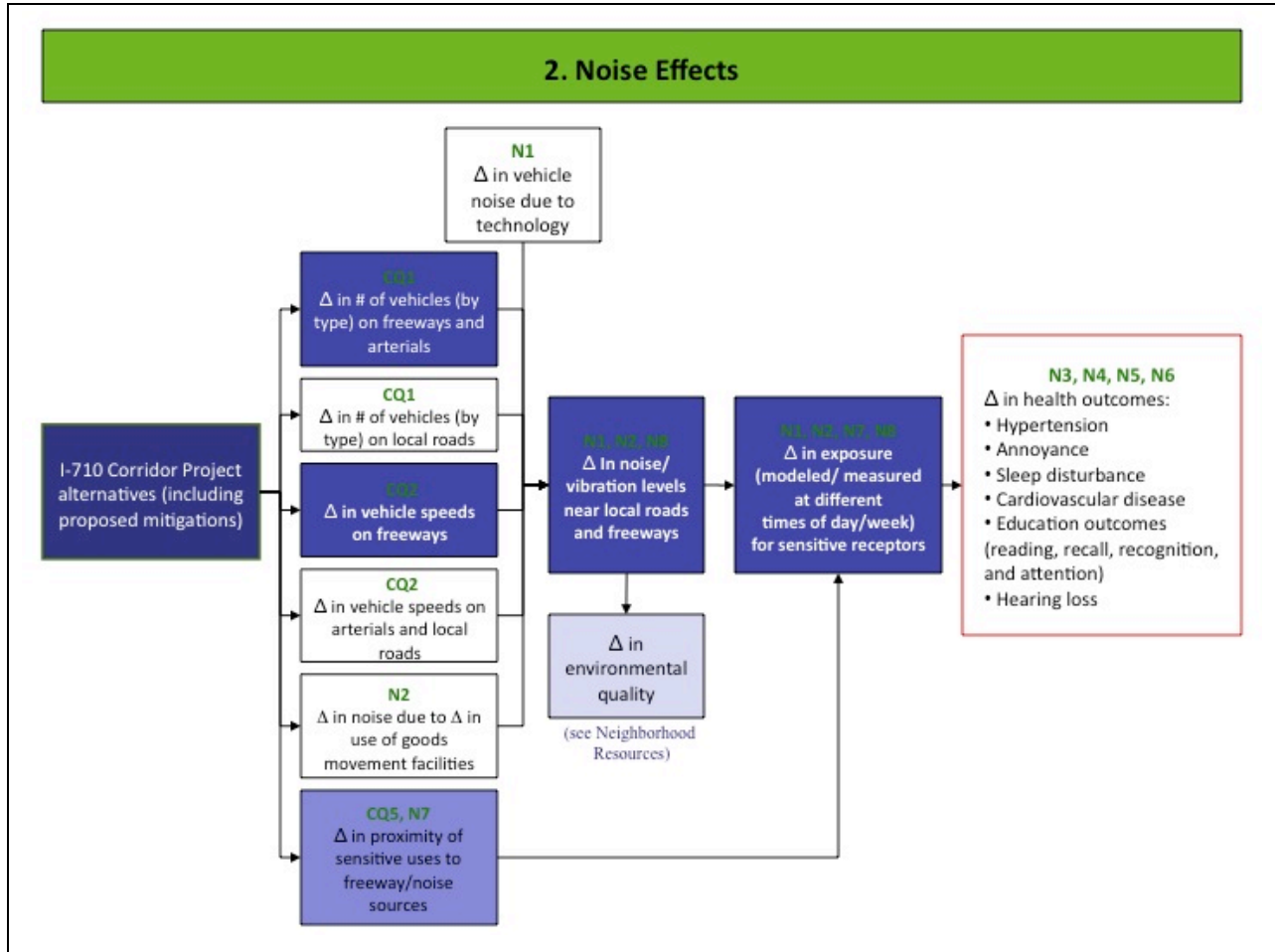
How would changes in greenhouse gas emissions and climate change from the proposed project impact heat-related illness?

Indicators:

- Heat-related illness
 - ◆ Data Sources:
 - California Department of Public Health
 - ◆ Methods:
 - Qualitative (literature review and review of available statistics)

6. Noise (N)

6.1 Pathway



6.2 Geographies of Interest

- 0–150 meters (approximately 0–500 feet) from the I-710
- 150–300 meters (approximately 500–1000 feet) from the I-710
- Greater than 300 meters (approximately 1000 feet) within the I-710 corridor study area
- Los Angeles County (as comparison)

6.3 Research Questions

6.3.1 N1

Existing Conditions Research Question:

What are noise levels in impacted areas, measured at different times of day? Where are the existing sound barriers, and what type of barriers are they?

Impact Research Question:

How would projected changes affect noise levels in the impacted areas? How would specific features of the proposals (e.g., position of truck lanes, zero emission trucks, sound barriers) impact noise?

Indicators:

- Average daytime and night time (and weekday/weekend times) decibel readings at sites (including sensitive receptor locations) near the I-710, other major highways, on/off ramps, and selected arterials.
 - ◆ Data Sources:
 - I-710 EIR/EIS noise readings/contours or noise model
 - Caltrans studies
 - ◆ Methods:
 - Review results of EIR/EIS Noise analysis
- Locations and heights of noise barriers on the I-710, other major highways, and on/off ramps
 - ◆ Data Sources:
 - I-710 EIR/EIS/Caltrans noise barrier locations and heights
 - ◆ Methods:
 - Review results of EIR/EIS Noise analysis

6.3.2 N2

Existing Conditions Research Question:

What are other sources of noise (including rail) in corridor communities, how do they vary by time of day/week, and what is their contribution to existing levels of noise in the impacted areas?

Impact Research Question:

How would the I-710 Corridor Project impact other noise sources including rail, local roads, and warehousing, transloading, and intermodal facilities? How would changes in these sources in addition to project changes cumulatively be expected to impact noise?

Indicators:

- Locations of other noise sources in the community
- Average daytime and night time decibel estimates near these locations

Data Sources (the same for all indicators):

- EIRs/EISs (Ports PierPASS project EIR/EIS)
- Rail/intermodal facility EIRs/EISs
- South Coast International Gateway (SCIG)/ International Container Transfer Facility (ICTF) expansion EIR/EIS (forthcoming)

Methods (the same for all indicators):

- Qualitative
- GIS

6.3.3 N3

Existing Conditions Research Question:

Based on modeling data, what is current prevalence of annoyance, sleep disturbance, and cognitive impairment in the impacted areas?

Impact Research Question:

How would projected changes in noise affect modeled levels of these outcomes?

Indicators:

- Percent highly annoyed
 - ◆ Data Sources:
 - I-710 EIR/EIS noise readings/contours or noise model
 - ◆ Methods:
 - If noise data is available from the EIR/EIS, model percent highly annoyed based on decibel levels near traffic and other noise sources to estimate the population at risk for health problems due to noise (Mediema); otherwise qualitative analysis
- Percent of people whose sleep is disturbed
 - ◆ Data Sources:

- I-710 EIR/EIS noise readings/contours or noise model
- ◆ Methods:
 - If noise data is available from the EIR/EIS, model sleep disturbance using Mediema study; otherwise qualitative analysis
- Cognitive impairment based on noise
 - ◆ Data Sources:
 - I-710 EIR/EIS noise readings/contours or noise model
 - ◆ Methods
 - Qualitative (literature review and review of available statistics)

6.3.4 N4

Existing Conditions Research Question:

What is the current prevalence of hypertension, and myocardial infarction in impacted areas compared to Los Angeles County?

Impact Research Question:

How would changes in noise resulting from the proposed project be expected to impact the prevalence of hypertension and myocardial infarction?

Indicators:

- Rates of hypertension and MI
 - ◆ Data Sources:
 - LACHS, hospital discharge diagnosis data
 - Van Kempen 2002 meta-analysis for hypertension
 - Babich meta-analysis for MI
 - ◆ Methods:
 - Qualitative (literature review and review of available statistics)

6.3.5 N5

Existing Conditions Research Question:

What are the current levels of academic achievement (standardized tests, reading comprehension) for children in the impacted areas?

Impact Research Question:

How might the projected changes in noise affect school achievement? How might changes in school achievement affect health outcomes?

Indicators:

- Average test scores for children (broken out test scores by race/ethnic enrollment and eligible for free and reduced price meals)
 - ◆ Data Sources:
 - Local school districts
 - ◆ Methods:
 - Qualitative (literature review and review of available statistics)

6.3.6 N6

Existing Conditions Research Question:

What are the current levels of hearing impairment in the impacted areas?

Impact Research Question:

How might the projected changes in noise affect hearing impairment?

Indicators:

- Number of hearing impaired people
 - ◆ Data Sources:
 - Literature review
 - ◆ Methods:
 - Qualitative (literature review and review of available statistics)

6.3.7 N7

Existing Conditions Research Question:

How do demographic characteristics of populations living in close proximity to noise sources compare to characteristics of people living outside proximate areas?

Impact Research Question:

Would projected changes in noise exposure disproportionately impact people with social, economic, or education-related vulnerabilities?

Indicators:

- See Common Questions section

6.3.8 N8

Existing Conditions Research Question:

What is current noise level at the sites at which sensitive populations live, work, play, or go to school (e.g., children in schools and parks, seniors homes, churches, hospitals, disease populations, and any added sensitivity to noise)?

Impact Research Question:

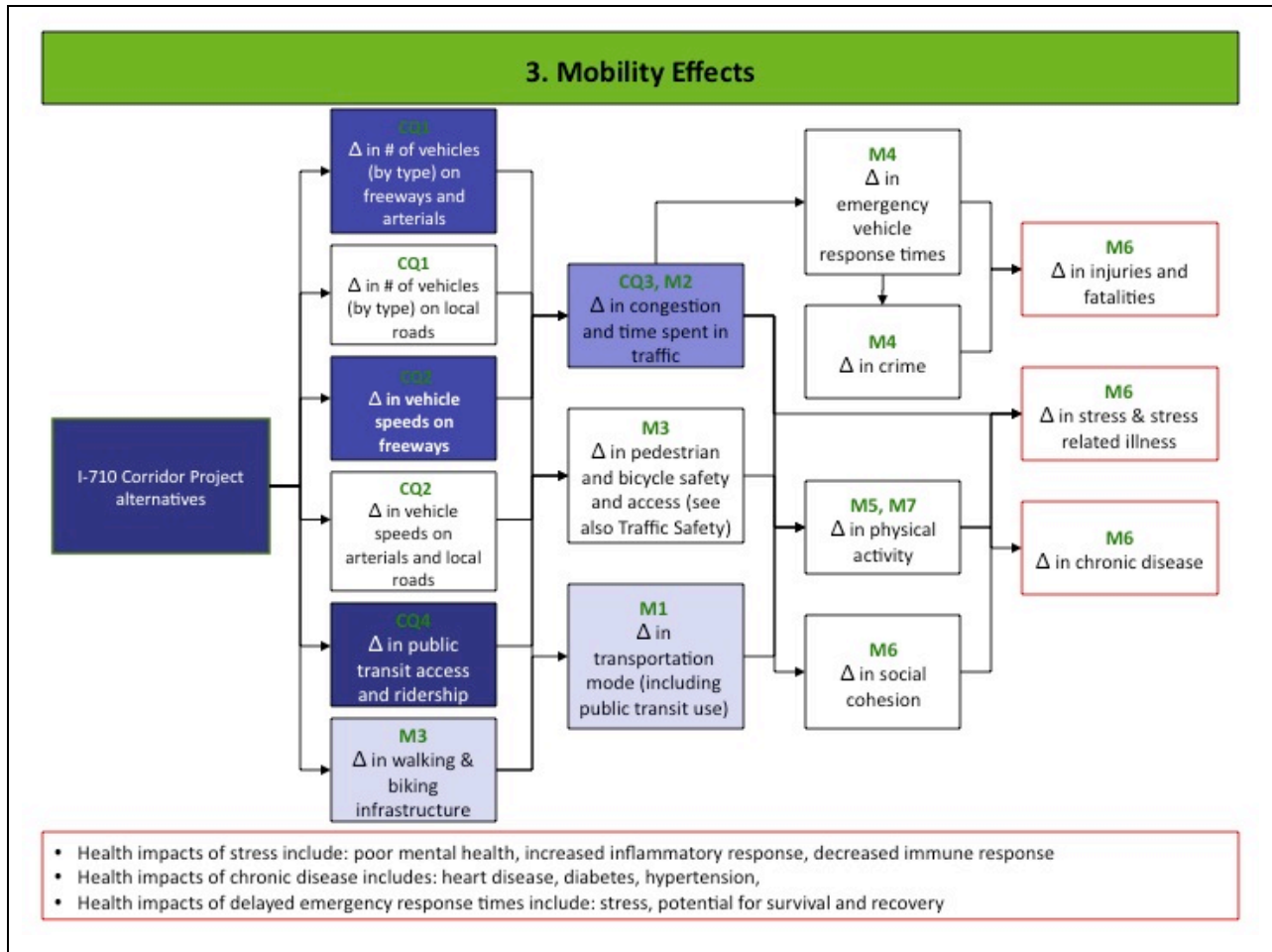
How would the proposed project impact noise for sensitive receptors at those sites? How would soundproofing in schools or other buildings impact existing ventilation or air conditioning systems (and potentially increase other health impacts)?

Indicators:

- Average daytime and night time decibel readings (or modeled levels)
 - ◆ Data Sources:
 - I-710 EIR/EIS noise readings/contours or noise model
 - Caltrans noise studies
 - ◆ Methods:
 - Qualitative (literature review and review of available statistics)

7. Mobility (M)

7.1 Pathway



7.2 Geographies of Interest

- I-710 corridor study area

7.3 Research Questions

7.3.1 M1

Existing Conditions Research Question:

Which modes of transportation do residents use to get to work in impacted areas? What are current travel times to work for residents who live in the impacted areas?

Impact Research Question:

How would proposed changes impact mode of travel to work? What impact would these changes have on traffic measures? How would the proposed project impact the travel times for people who live and/or work in the impacted areas?

Indicators:

- Mode Share for residents to work in the impacted area (by race, age, income, etc.)
 - ◆ Data Sources:
 - U.S. Census
 - I-710 EIR/EIS traffic studies
 - SCAG (see 2008 Regional Transportation Plan and Pacific Electric Right-of-Way (PE ROW) / West Santa Ana Branch Corridor Analysis)
 - ◆ Methods:
 - Review results of EIR/EIS analysis
- Access to motor vehicles by household and household size
 - ◆ Data Sources:
 - U.S. Census
 - I-710 EIR/EIS traffic studies
 - SCAG (see 2008 Regional Transportation Plan and Pacific Electric Right-of-Way (PE ROW) / West Santa Ana Branch Corridor Analysis)
 - ◆ Methods:
 - Qualitative (literature review and review of available statistics)
- Commute time for residents who live in the area
 - ◆ Data Sources:
 - U.S. Census
 - I-710 EIR/EIS traffic studies
 - SCAG (see 2008 Regional Transportation Plan and Pacific Electric Right-of-Way (PE ROW) / West Santa Ana Branch Corridor Analysis)
 - ◆ Methods:
 - Qualitative (literature review and review of available statistics)
- Travel times for segments of the I-710
 - ◆ Data Sources:
 - I-710 EIR/EIS traffic studies

- SCAG (see 2008 Regional Transportation Plan and Pacific Electric Right-of-Way (PE ROW) / West Santa Ana Branch Corridor Analysis)
- CA DOT database
- ◆ Methods:
 - Review results of EIR/EIS analysis
 - Quantitative if possible

7.3.2 M2

Existing Conditions Research Question:

What are the current congestion conditions, VMT, time spent driving, and speeds on roads in defined geographies at various times in the day and week?

Impact Research Question:

How would the proposed project impact congestion conditions on the freeway and arterials streets at various times in the day and week? How would the proposed project impact speeds on roads in the impacted areas, VMT, and time spent driving?

Indicators:

- Screenline volume/capacity (vehicle demand compared to the available roadway capacity)
 - ◆ Data Sources:
 - I-710 EIR/EIS traffic studies
 - SCAG (see 2008 Regional Transportation Plan and Pacific Electric Right-of-Way (PE ROW) / West Santa Ana Branch Corridor Analysis)
 - ◆ Methods:
 - Review results of EIR/EIS analysis
 - Quantitative if possible
- Traffic speeds at various times of day (see Common Questions section)
 - ◆ Data Sources:
 - I-710 EIR/EIS traffic studies
 - SCAG, Bureau of Transportation Statistics (BTS) travel time index - http://www.bts.gov/publications/national_transportation_statistics/html/table_01_64.html
 - ◆ Methods:
 - Review results of EIR/EIS analysis
- Annual delay per traveler (or vehicle-hour delay)

◆ Data Sources:

- Texas Transportation Institute
(http://mobility.tamu.edu/ums/congestion_data/tables/national/table_4.pdf)

◆ Methods:

- Quantitative if possible (see http://mobility.tamu.edu/ums/report/appendix_a.pdf)

■ VMT – See Common Questions

7.3.3 M3

Existing Conditions Research Question:

What is the status of walkability and bikability in impacted areas?

Impact Research Question:

How would the proposed project impact the quality of the environment for pedestrians and bicyclists in the impacted areas?

Indicators:

■ Traffic volume on streets used by pedestrians

◆ Data Sources:

- LA DOT Traffic Volumes Book
- Metro
- I-710 Intermodal study
- SCAG
- Metrolink
- Bus service operators: focus group
- City of Long Beach Livability Study

◆ Methods:

- Qualitative (literature review and review of available statistics)

■ Ratio of miles of bike lanes and paths to miles of road

◆ Data Sources:

- GIS shapefiles from CA DOT or local transit authority
- Long Beach Bicycle Master Plan

◆ Methods:

- Qualitative (literature review and review of available statistics)

7.3.4 M4

Existing Conditions Research Question:

What are current emergency vehicle response times in impacted areas?

Impact Research Question:

How would project proposals impact congestion and speeds for emergency response vehicles?
How might these changes impact crime rates in impacted areas?

Indicators:

- Average response times for emergency vehicles (medical, police, and fire)
 - ◆ Data Sources:
 - Police, fire, and medical departments
 - ◆ Methods:
 - Qualitative (literature review and review of available statistics)
- Crime rates
 - ◆ Data Sources:
 - Police departments
 - ◆ Methods:
 - Qualitative (literature review and review of available statistics)

7.3.5 M5

Existing Conditions Research Question:

What are the current rates of physical activity for populations living in the impacted areas? What are the health impacts of these activity levels (e.g., CVD, mental health, diabetes)?

Impact Research Question:

How would projected changes in travel times, VMT, and mode of transportation impact rates of physical activity for these populations? What are the health impacts of projected changes in levels of physical activity?

Indicators:

- Number of days physically active at least one hour (typical week) for adults and children
 - ◆ Data Sources:
 - Los Angeles County Health Survey
 - Cohen's RAND study on parks and physical activity in Los Angeles
 - ◆ Methods:

- Qualitative (literature review and review of available statistics)
- Percent of adults/children that participate in recommended levels of physical activity
 - ◆ Data Sources:
 - Los Angeles County Health Survey
 - School data
 - ◆ Methods:
 - Qualitative (literature review and review of available statistics)
- Rates of obesity (body mass index)
 - ◆ Data Sources:
 - Los Angeles County Health Survey
 - ◆ Methods:
 - Qualitative (literature review and review of available statistics)
- Morbidity and mortality from heart disease
 - ◆ Data Sources:
 - Los Angeles County Health Survey
 - ◆ Methods:
 - Qualitative (literature review and review of available statistics)
- Morbidity and mortality from diabetes
 - ◆ Data Sources:
 - Los Angeles County Health Survey
 - ◆ Methods:
 - Qualitative (literature review and review of available statistics)
- Hospital visits with a depressive disorder diagnosis
 - ◆ Data Sources:
 - Los Angeles County Health Survey
 - ◆ Methods:
 - Qualitative (literature review and review of available statistics)

7.3.6 M6

Existing Conditions Research Question:

What are the other potential health impacts of a lack of mobility? (Does a lack of mobility lead to increased stress? Does stress from a lack of mobility lead to CVD or aggression? Does lack of

mobility impact social cohesion? Does congestion impact emergency vehicle services and therefore injury and fatality rates?)

Impact Research Question:

How would the changes in traffic impact other health impacts related to mobility and congestion (e.g., how would injury rates from crime change)?

Indicators:

- Average medical, police and fire emergency response times
 - ◆ Data Sources:
 - Police, fire, and medical departments
 - ◆ Methods:
 - Qualitative (literature review and review of available statistics)
- Percent of residents reporting higher than average levels of stress (LACHS has entries for "avg days of poor mental health in past month", "diagnosed depression", and "frequent mental distress")
 - ◆ Data Sources:
 - Los Angeles County Health Survey
 - ◆ Methods:
 - Qualitative (literature review and review of available statistics)

7.3.7 M7

Existing Conditions Research Question:

How many hours of physical activity do children currently get?

Impact Research Question:

How would children's physical activity levels change as a result of the proposed project (e.g., walking to school, park use)?

Indicators:

- Amount of PA or a measure of physical fitness
- Body mass index

Data Sources (the same for all indicators):

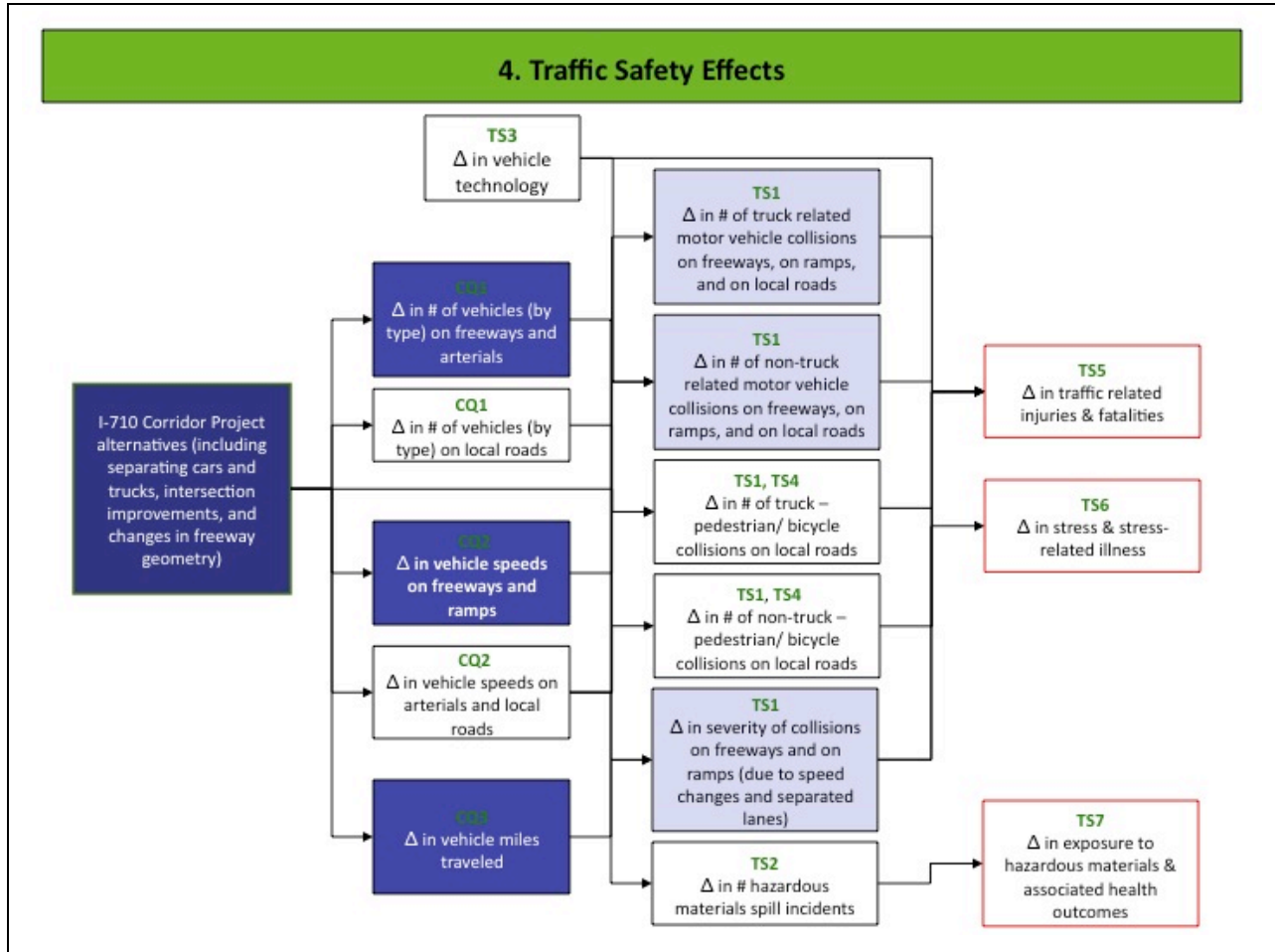
- LACDPH
- Fitness program

Methods (the same for all indicators):

- Qualitative (literature review and review of available statistics)

8. Traffic Safety (TS)

8.1 Pathway



8.2 Geographies of Interest

- I-710 Corridor Project Study Area
- Los Angeles County

8.3 Research Questions

8.3.1 TS1

Existing Conditions Research Question:

How many truck and non-truck motor vehicle - motor vehicle and motor vehicle - pedestrian/bicycle collisions occur annually in the impacted areas? (Separate analysis for on freeway, on ramps, and on local roads.)

Impact Research Question:

How would changes in traffic volumes, VMT and speeds, separating car and truck lanes, freeway geometry and intersection improvements impact the number and severity of truck and non-truck motor vehicle - motor vehicle and motor vehicle - pedestrian/bicycle collisions?

Indicators:

- Number of truck-related motor vehicle-motor vehicle collisions, broken out by location (highway or city streets)
- Number of non-truck-related motor vehicle - pedestrian/bicycle collisions
- Number of truck-related motor vehicle - pedestrian/bicycle
- Number of non-truck-related motor vehicle - pedestrian/bicycle
 - ◆ Data Sources (for all 4 indicators above):
 - SWITRS
 - I-710 EIR/EIS
 - ◆ Methods (for all 4 indicators above)
 - Review results of EIR analysis
 - GIS
 - Qualitative (literature review and review of available statistics)
- Speed vs. collision severity profile for trucks and cars (see Common Questions)
 - ◆ Data Sources:
 - SWITRS
 - I-710 EIR/EIS
 - ◆ Methods
 - Qualitative analysis of pedestrian collisions using Loukaitou-Sideris
 - Use expert analysis of proposed interchange design

8.3.2 TS2

Existing Conditions Research Question:

How many hazardous materials incidents occur on the I-710 each year? What are the impacts of these incidents on infrastructure and on health?

Impact Research Question:

How would changes in traffic volumes, VMT, and speeds, separating car and truck lanes, freeway geometry and intersection improvements impact the number of hazardous materials incidents? How would it impact infrastructure and health of surrounding communities?

Indicators:

- Number of incidents per year
- Amount of material released annually

Data Sources (the same for all indicators):

- Incidents Reports Database (US DOT Pipeline and Hazardous Materials Safety Administration)
- CHP
- California Emergency Management Agency

Methods (the same for all indicators):

- Qualitative (literature review and review of available statistics)

8.3.3 TS3

Existing Conditions Research Question:

What are existing vehicle sizes and technologies related to traffic safety (e.g., air bags)?

Impact Research Question:

How would changes in vehicle size and technology impact collision rates and rates of injury/fatality?

Indicators:

- Vehicle sizes and technologies

Data Sources:

- Literature review

Methods:

- Qualitative (literature review and review of available statistics)

8.3.4 TS4

Existing Conditions Research Question:

How do students get to school?

Impact Research Question:

How would the project impact routes to schools? Is there evidence of higher pedestrian injury in schools in closer proximity to the I-710 or other freeways?

Indicators:

- locations of schools in corridor study area
- Number of students that walk/bike to school
- Number of pedestrian injuries near schools near the I-710

Data Sources (the same for all indicators):

- SWITRS
- Local school districts
- CADOE

Methods (the same for all indicators):

- GIS

8.3.5 TS5

Existing Conditions Research Question:

What is the current rate (or number) of injuries and fatalities from motor vehicle accidents in the corridor? (Broken out by pedestrian, bicycle, and vehicle.)

Impact Research Question:

How would changes in traffic, VMT, separating car and truck lanes, freeway geometry and intersection improvements due to the proposed project impact the rate (or number) of injuries due to motor vehicle accidents in the corridor? How would changes in traffic speed and freeway design due to the project impact the severity of collisions/ injuries from motor vehicle accidents on freeways and on ramps?

Indicators:

- Number of pedestrian injuries from collisions
- Number of bicycle injuries from collisions
- Number of bicycle fatalities from collisions
- Number of pedestrian fatalities from collisions
- Number of injuries from motor vehicle-motor vehicle collisions

Data Sources (the same for all indicators):

- Statewide Integrated Traffic Records System (SWITRS)
- I-710 EIR/EIS

Methods (the same for all indicators):

- Qualitative analysis of number of pedestrian accidents and fatalities using Loukaitou-Sideris
- Qualitative (literature review and review of available statistics)
- Qualitative analysis using SWITRS data and analysis above
- Qualitative analysis based on number of collisions

8.3.6 TS6

Existing Conditions Research Question:

What are current levels of stress and stress-related illness related to motor vehicle accidents in the corridor?

Impact Research Question:

How would changes in traffic, VMT, separating car and truck lanes, freeway geometry and intersection improvements due to the proposed project impact stress and stress-related illness in the corridor?

Indicators:

- Percent of residents reporting higher than average levels of stress (LACHS has entries for "avg days of poor mental health in past month," "diagnosed depression," and "frequent mental distress")
 - ◆ Data Sources:
 - Los Angeles County Health Survey
 - ◆ Methods:
 - Qualitative (literature review and review of available statistics)

8.3.7 TS7

Existing Conditions Research Question:

What are the health outcomes associated with past hazardous material spills?

Impact Research Question:

How would the change in the number of hazardous material spills impact health outcomes?

Indicators:

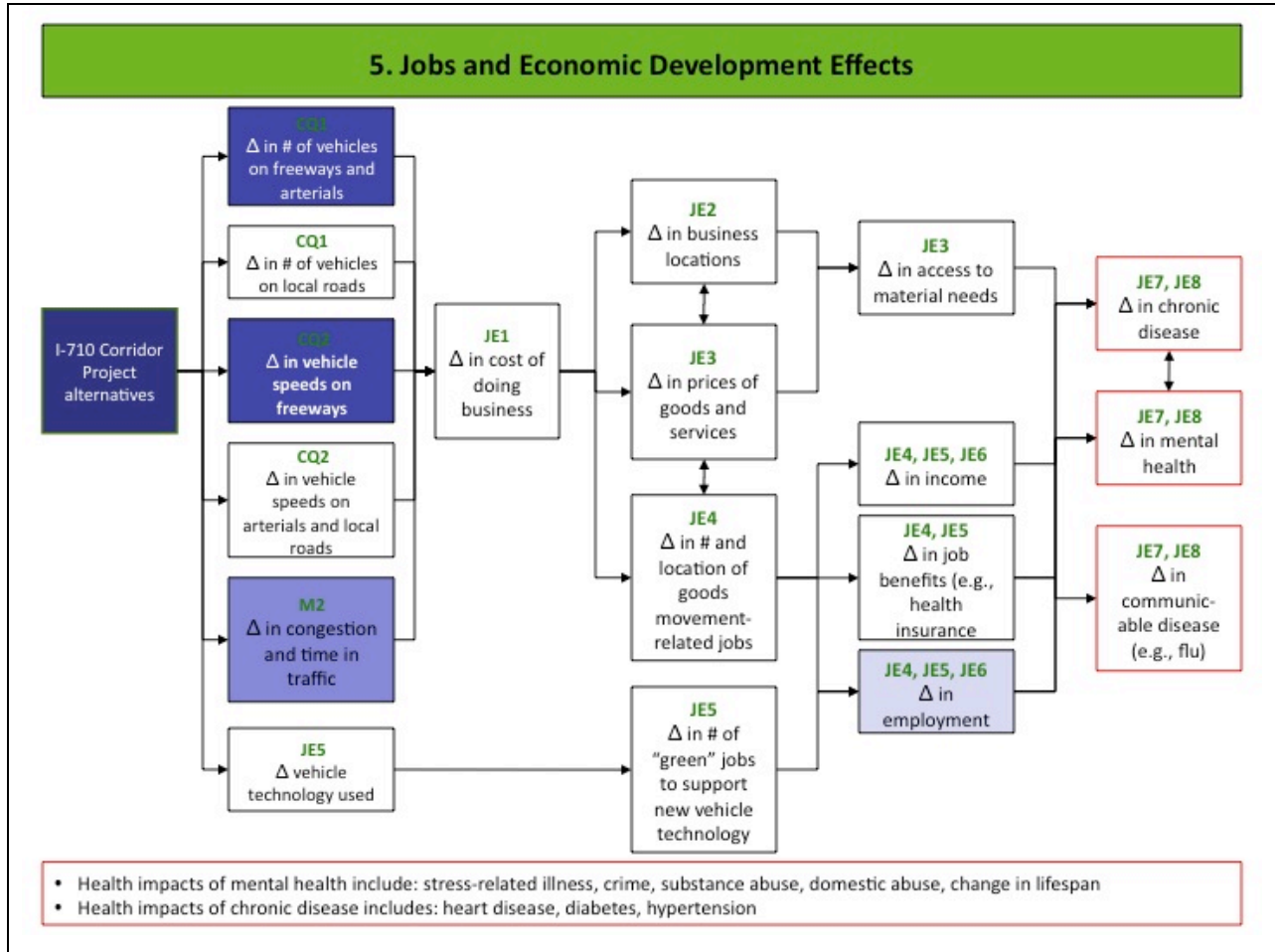
- Qualitative description of hazardous material spills and health outcomes, if any
 - ◆ Data Sources:
 - California Emergency Management Agency

◆ Methods:

- Qualitative (literature review and review of available statistics)

9. Jobs and Economic Development (JE)

9.1 Pathway



9.2 Geographies of Interest

- I-710 corridor study area, where possible
- Los Angeles County or state-level indicators

9.3 Research Questions

9.3.1 JE1

Existing Conditions Research Question:

What are the current major, relevant inputs into the cost of doing business in region? (Include, for example, property values, travel time, environmental concerns.)

Impact Research Question:

How would the costs of doing business change as a result of the proposed project?

Indicators:

- Commercial property values
 - ◆ Data Sources:
 - California Association of Realtors
 - I-710 EIR/EIS community profiles and property impacts and relocation study
 - Caltrans interview
 - ◆ Methods:
 - Qualitative (literature review, review of available statistics)
- Annual delay for trucks or VMT for trucks
 - ◆ Data Sources:
 - I-710 traffic studies (discuss with Cambridge Systematics and maybe URS)
 - ◆ Methods:
 - Qualitative (literature review, review of available statistics)
- Perceptions of environment of business community
 - ◆ Data Sources:
 - Focus groups/surveys
 - ◆ Methods
 - Qualitative (literature review, review of available statistics, focus groups or interviews with businesses)

9.3.2 JE2

Existing Conditions Research Question:

What businesses are currently choosing to locate in the I-710 corridor?

Impact Research Question:

How would the proposed project impact the choice of business location?

Indicators:

- Business location by industry type
 - ◆ Data Sources:
 - California Association of Realtors

- I-710 EIR/EIS community profiles
- ◆ Methods:
 - Qualitative (literature review, review of available statistics, focus groups or interviews with businesses)

9.3.3 JE3

Existing Conditions Research Question:

What are the costs of goods and services available locally? How does this impact access to these goods and services?

Impact Research Question:

Would the proposed project impact cost of goods and services: (1) as inputs for other businesses, and (2) consumer goods available to residents locally and in the region? Would changes in costs impact access to these goods and services?

Indicators:

- Consumer price index
 - ◆ Data Sources:
 - BLS, California Department of Industrial Relations
 - ◆ Methods:
 - Qualitative (literature review, review of available statistics)

9.3.4 JE4

Existing Conditions Research Question:

How many and what types of jobs (including wages, benefits, types, skill sets necessary, safety hazards, leave policies) does the goods movement industry currently offer? How many and what types of jobs do goods movement industries currently provide residents in which parts of the city, county, region, state?

Impact Research Question:

How would the proposed project impact the number and types of goods movement jobs available? How would the proposed project impact the number and types of goods movement jobs offered to residents in the corridor?

Indicators:

- Number of goods movement jobs, by category
 - ◆ Data Sources:

- CA EDD
 - U.S. Census
 - ◆ Methods:
 - Qualitative (literature review, review of available statistics)
- Number of jobs, by income
 - ◆ Data Sources:
 - CA EDD
 - U.S. Census
 - ◆ Methods:
 - Qualitative (literature review, review of available statistics)
- Number of jobs, by educational level required
 - ◆ Data Sources:
 - CA EDD
 - U.S. Census
 - ◆ Methods:
 - Qualitative (literature review, review of available statistics)
- Proportion of goods movement jobs held locally
 - ◆ Data Sources:
 - Port of Los Angeles
 - Port of Long Beach
 - U.S. Census
 - ◆ Methods:
 - Qualitative (literature review, review of available statistics)
- Net job loss/growth: compare projected rise in jobs (in goods movement, retail, etc.) to industries projected to decline (manufacturing, construction)—stratify by educational attainment level required
 - ◆ Data Sources:
 - CA EDD
 - U.S. Census
 - ◆ Methods:
 - Qualitative (literature review, review of available statistics)

9.3.5 JE5

Existing Conditions Research Question:

How many and what types of jobs related to alternative vehicle technologies are currently available in the corridor and region?

Impact Research Question:

How would the proposed project impact the number and types of jobs related to alternative vehicle technologies available? How would the proposed project impact the number and types of such jobs offered to residents in the corridor?

Indicators:

- Number of alternative vehicle technology jobs by category
 - ◆ Data Sources:
 - CA EDD
 - U.S. Census
 - ◆ Methods:
 - Qualitative (literature review, review of available statistics)
- Number of jobs by income
 - ◆ Data Sources:
 - CA EDD
 - U.S. Census
 - ◆ Methods:
 - Qualitative (literature review, review of available statistics)
- Number of jobs by educational level required
 - ◆ Data Sources:
 - CA EDD
 - U.S. Census
 - ◆ Methods:
 - Qualitative (literature review, review of available statistics)

9.3.6 JE6

Existing Conditions Research Question:

What is the current level of unemployment in corridor communities?

Impact Research Question:

How would the proposed project impact levels of employment?

Indicators:

- Percent unemployment, underemployment, and those no longer seeking work
- Number of jobs needed to fulfill unemployment
- Number of jobs needed to bring employment rate to parity with the Los Angeles County level (will be a greater number than above)

Data Sources (the same for all indicators):

- U.S. Census
- City estimates

Methods (the same for all indicators):

- Qualitative (literature review, review of available statistics)

9.3.7 JE7

Existing Conditions Research Question:

What are the current rates of major diseases (CVD, mental health, premature mortality, infectious diseases, others) related to income and employment?

Impact Research Question:

How would the proposed project impact rates of major diseases related to income and employment?

Indicators:

- Health outcome data
 - ◆ Data Sources:
 - LACDPH
 - I-710 EIR/EIS community profiles
 - ◆ Methods:
 - Qualitative (literature review, review of available statistics)

9.3.8 JE8

Existing Conditions Research Question:

What are the rates of diseases related to access to goods and services?

Impact Research Question:

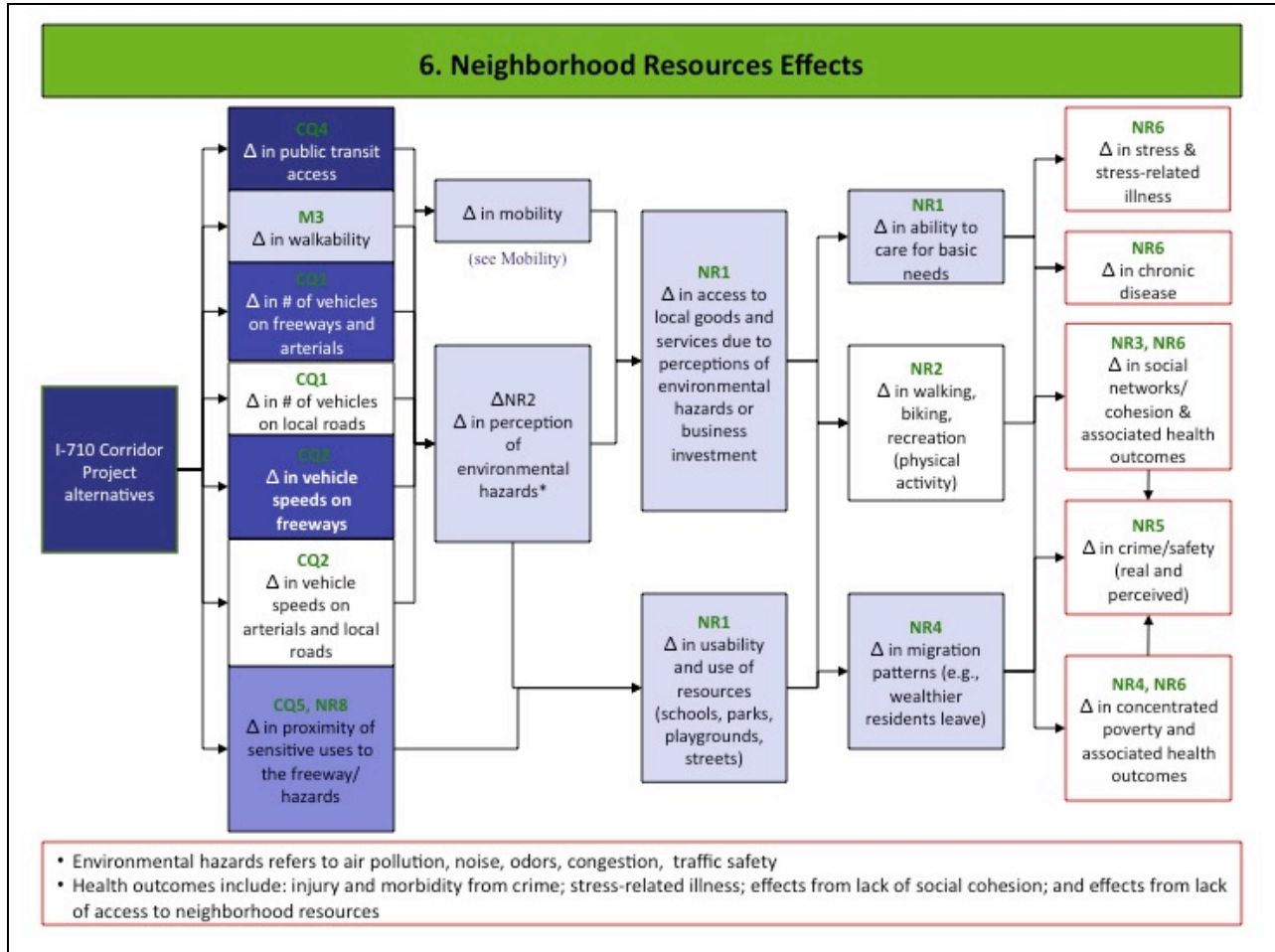
How would the rates of these diseases change as a result of the proposed project?

Indicators:

- Health outcome data
 - ◆ Data Sources:
 - LACDPH
 - I-710 EIR/EIS community profiles
 - ◆ Methods:
 - Qualitative (literature review, review of available statistics)

10. Neighborhood Resources (NR)

10.1 Pathway



10.2 Geographies of Interest

- I-710 corridor study area

10.3 Research Questions

10.3.1 NR1

Existing Conditions Research Question:

What public and private resources (e.g., parks, libraries, schools, health clinics, day care centers, community centers, post offices, banks, grocery stores, local retail) are available? Do residents perceive a lack of necessary public or private resources in their neighborhoods? If so, which resources do residents feel are important?

Impact Research Question:

Would projected changes result in real or perceived changes in necessary neighborhood resources (including displacement or proximity of environmental hazards to resources)?

Indicators:

- Neighborhood completeness index (SFDPH)
 - ◆ Data Sources:
 - Chamber of Commerce, neighborhood associations, business directories, etc.
 - I-710 EIR/EIS community profiles and property impacts and relocation study
 - ◆ Methods:
 - Qualitative (literature review and review of available statistics and focus groups/surveys)
- Proportion of population within 1/2 mile of health care facilities
 - ◆ Data Sources:
 - Chamber of Commerce, neighborhood associations, business directories, etc.
 - I-710 EIR/EIS community profiles and property impacts and relocation study
 - ◆ Methods:
 - GIS mapping

10.3.2 NR2

Existing Conditions Research Question:

Do residents perceive environmental hazards in their neighborhoods associated with the freeway? If so, which hazards are a problem? Do environmental hazards cause residents to avoid certain outdoor activities (e.g., walking, visiting parks, routes to schools)?

Impact Research Question:

Would projected changes due to the proposed project result in changes to perceptions of environmental hazards? Would projected changes in environmental hazards change residents' outdoor activities or use of neighborhood resources?

Indicators:

- Perceptions of the environmental quality
 - ◆ Data Sources:
 - Focus groups/survey
 - ◆ Methods:

- Qualitative analysis of how these perceptions impact social cohesion, collective efficacy, use of resources

10.3.3 NR3

Existing Conditions Research Question:

What is the nature of existing social cohesion in the impacted areas? What social spaces do people identify as being important?

Impact Research Question:

How would projected changes to the neighborhood population and resources impact social cohesion? Would the proposed project change the cohesiveness of neighborhoods? Do residents think the changes resulting from the freeway would affect social cohesion?

Indicators:

- Perceptions of social cohesion
- Objective measures: counts of community centers, parks, churches, community and neighborhood organizations, churches; voting records

Data Sources (the same for all indicators):

- Focus groups/survey

Methods (the same for all indicators):

- Qualitative (literature review and review of available statistics and focus groups/surveys)

10.3.4 NR4

Existing Conditions Research Question:

Is there concentrated poverty in the study area as compared to the county? What are the trends in poverty levels over time? What is the relationship between home prices and proximity to the freeway?

Impact Research Question:

Would changes in environmental hazards, social cohesion, or neighborhood resources be expected to change migration patterns and increase poverty in the study area as compared to the county or region? How would home prices be impacted by the proposed project alternatives?

Indicators:

- Poverty rate
 - ◆ Data Sources:

- Census
- I-710 EIR/EIS community profiles
- Pacific Electric Right-of-Way (PE ROW) / West Santa Ana Branch Corridor Analysis
- ◆ Methods:
 - GIS
 - Qualitative (literature review and review of available statistics)
- Home prices
 - ◆ Data Sources:
 - I-710 EIR/EIS community profiles
 - Real estate data
 - ◆ Methods:
 - GIS
 - Qualitative (literature review and review of available statistics)

10.3.5 NR5

Existing Conditions Research Question:

What are current conditions of neighborhood safety in the impacted areas (violent crime rates, citizen neighborhood safety commissions)?

Impact Research Question:

How would changes in the social environment, concentrated poverty, and neighborhood resources impact neighborhood safety (violent crime rates, neighborhood safety commissions)?
How would changes in neighborhood safety impact use of resources, such as parks?

Indicators:

- Violent crime rates
 - ◆ Data Sources:
 - LAPD
 - I-710 EIR/EIS community profiles
 - ◆ Methods:
 - Qualitative (literature review and review of available statistics)

10.3.6 NR6

Existing Conditions Research Question:

What are the current rates of major diseases (CVD, mental health, premature mortality, self-rated health, others) related to social cohesion, concentrated poverty, and neighborhood resources (including those mediated through stress)?

Impact Research Question:

How would the proposed project broadly impact rates of major diseases related to social cohesion and neighborhood resources?

Indicators:

- Health outcome data
 - ◆ Data Sources:
 - LACDPH
 - ◆ Methods:
 - Qualitative (literature review and review of available statistics)

10.3.7 NR7

Existing Conditions Research Question:

What are the current rates of physical activity for populations living in the impacted areas?

Impact Research Question:

How would projected changes in travel times, time spent outdoors, and mode of transportation impact rates of physical activity for these populations?

Indicators:

- Number of days physically active at least one hour (typical week) for adults and children
 - ◆ Data Sources:
 - Los Angeles County Health Survey
 - Deb Cohen's RAND study on PA
 - City of Long Beach Livability Study
 - ◆ Methods:
 - Qualitative (literature review and review of available statistics)
- Percent of adults/children that participate in recommended levels of physical activity
 - ◆ Data Sources:

- Los Angeles County Health Survey
- School data
- ◆ Methods:
 - Qualitative (literature review and review of available statistics)

10.3.8 NR8

Existing Conditions Research Question:

How do demographic characteristics of populations living in proximity to environmental hazards compare to characteristics of people living outside proximate areas?

Impact Research Question:

How would perceived changes in environmental hazards vary by proximity to hazards and the demographic characteristics of these populations?

Indicators:

- See Common Questions section

10.3.4 Notes for Neighborhood Resources

"Environmental hazards" refers to air pollution, noise, odors, congestion, and traffic safety.

