Appendix A

EXISTING PLANS, POLICIES, AND PROGRAMS

A.1 Municipal Efforts

THE ONTARIO PLAN (2010) –PENDING UPDATE

Adopted in 2010, the Ontario Plan serves as the General Plan for the City. The central vision of the Plan is "A sustained, community-wide prosperity which continuously adds value and yields benefits." On the subject of Mobility, the Plan envisions a "true multi-modal transportation system" with an "exceptional degree of movement and connectivity for people and goods to, from, and within Ontario," including a special emphasis on connections to "parks, open space amenities and other key destination[s]" and dealing with "choke points" limiting mobility and associated economic prosperity

The Mobility element includes a Multipurpose Trails & Bikeways Corridor Plan that serves as the basis for the development of a bicycle network in the City of Ontario, and was referenced in the development of engineering recommendations for the Plan. The Corridor Plan envisions a mix of Class I, Class II, and Class III bikeways along with related categories including "multipurpose trail" and "sharrow/bike boulevard." The following policies were developed to guide walking and biking in Ontario:

- M2-1 Bikeway Plan: We maintain our Multipurpose Trails & Bikeway Corridor Plan to create a comprehensive system of on- and off-street bikeways that connect residential areas, businesses, schools, parks, and other key destination points.
- M2-2 Bicycle System: We provide off-street multipurpose trails and Class II bikeways as our primary paths of travel and use the Class III for connectivity in constrained circumstances.
- M2-3 Pedestrian Walkways: We require walkways that promote safe and convenient travel between residential areas, businesses, schools, parks, recreation areas, and other key destination points.
- M2-4 Network Opportunities: We explore opportunities to expand the pedestrian and bicycle networks. This includes consideration of utility easements, levees, drainage corridors, road right-of-ways, medians and other potential options.

The plan further stresses the need for integration with of development patterns and land uses with the transportation system.

At the time of writing, the City is updating the Ontario Plan. Furthermore, the Plan would provide updates to several exhibits in the 2010 Ontario Plan that pertain to transportation facilities.

COMPLETE STREETS SAFETY ASSESSMENT (2018)

The Complete Streets Safety Assessment (CSSA) aims to improve vehicle, bicycle, and pedestrian safety in the City of Ontario. The study specifically looked at holistic improvements to four intersections and three corridors (two along 4th Street and one along Mountain Avenue) in the northwest part of the City. The assessment includes a strong focus on data-driven solutions and enforcement targeted to specific collision issues encountered by the City. To this end, the assessment includes an analysis of the factors most contributing to vehicle, pedestrian, and bicycle collisions in the City and includes strategies for informing City law enforcement services to respond to and enforce traffic violations contributing to these collisions. The assessment also includes recommendations for educational programs that can supplement these enforcement strategies.

COMMUNITY CLIMATE ACTION PLAN (2014)

The City adopted a Community Climate Action Plan with a greenhouse gas emissions reduction of 30% below projected 2020 levels in 2014.

- The following measures are identified by the Climate Action Plan that relate to active transportation:
- Trans-11 School Transit Plan: Encourages school districts to reduce automobile trips surrounding schools, including the use of Safe Routes to School programs to increase walking and biking by students.
- Trans-13 Bicycle and Pedestrian Infrastructure Plan: Adopt a comprehensive bicycle and pedestrian infrastructure plan to expand the City's bicycle and pedestrian network, encouraging residents to substitute vehicle trips for biking and walking.
- Trans-14 Development Standards for Bicycles: Establish standards for new development projects to support bicycle use, including VMT reduction targets from new development.
- This document concerns reducing emissions by the community-at-large (residents and businesses), while the Municipal Climate Action Plan focuses on city operational activities.

TRANSFORMATIVE CLIMATE COMMUNITIES PROGRAM (ONGOING)

The Transformative Climate Communities (TCC) Program is designed to encourage transformative, neighborhood-level projects that reduce greenhouse gas (GHG) emissions and create healthier, and more resilient communities. As a part of this program, the City has planned many active transportation-related projects. These include: Grove Avenue Connector, Mission Boulevard Bicycle and Pedestrian Corridor, pedestrian pathways, enhanced crossings, and new urban canopies along some of the City's roadways.

WEST VALLEY CONNECTOR RAPID BUS PROJECT (ONGOING)

The West Valley Connector is a planned Bus Rapid Transit (BRT) project that predominately runs along Holt Boulevard. The project would provide transit connections to local and regional destinations in the Inland Empire such as the Ontario International Airport, Ontario Mills, and Victoria Gardens. The termini for Phase 1 of the project include the Pomona Regional Transit Center Station in Pomona and Victoria Gardens in Rancho Cucamonga. The project is led by Omnitrans and in collaboration with the City of Ontario, and it would be the second BRT route in San Bernardino County.

CALTRANS SYSTEMIC SAFETY ANALYSIS REPORT PROGRAM FOR EUCLID AVENUE (SSARP)

The Caltrans Systemic Safety Analysis Report Program uses a comprehensive approach to evaluate safety concerns for users along the roadways. As a part of the program, the City is conducting a corridor study for Euclid Avenue between the I-10 Freeway and Riverside Drive to identify high-risk roadway characteristics and potential countermeasures that could reduce collisions, especially those that involve pedestrians and bicyclists.

OTHER EXISTING ONTARIO MUNICIPAL PROGRAMS

Transportation improvements are made regularly through several city departments in Ontario. The Engineering division periodically completes street reconstruction projects and other facilities via the use of funds from the Capital Improvement Program. Parks & Maintenance is responsible for repairing sidewalks and installing or replacing accessible ramps. The Planning division prepares grants, and has received funding from the California ATP program for pedestrian improvements.

In 2012, the City prepared a missing sidewalk study. As part of the study the City prepared maps of existing sidewalk coverage within the attendance boundaries of each school in Ontario.

In the past several years, Ontario completed Safe Routes to School Infrastructure Projects for Bon View Elementary, Corona Elementary, Euclid Elementary, Vineyard Elementary, and El Camino Elementary. They are also planning for improvements to El Camino Elementary. The improvements in each case include the installation of missing sidewalks, ADA curb ramps, rectangular rapid flashing beacons (RRFBs), and high-visibility crosswalks. Improvements around Sultana Elementary and De Anza Middle Schools are in design and improvements are anticipated to be completed in 2020.

A.2 Regional and Statewide Efforts

SAN BERNARDINO COUNTY NON-MOTORIZED TRANSPORTATION PLAN (NMTP) (2018) - SAN BERNARDINO COUNTY TRANSPORTATION AUTHORITY (SBCTA)

In 2011, the San Bernardino County Transportation Authority adopted the Non-Motorized Transportation Plan which aims to coordinate and guide the provision of all bicycle and pedestrian related plans, programs, and projects within San Bernardino County. The Plan was most recently revised in June 2018.

NMTP Goals include:

- Increased bicycle and pedestrian access- Expand bicycle and pedestrian facilities and access within and between neighborhoods, to employment centers, shopping areas, schools, and recreational sites.
- Increased travel by cycling and walking - Make the bicycle and walking an integral part of daily life in San Bernardino County, particularly (for bicycle) for trips of less than five miles, by implementing and maintaining a bikeway network, providing end-of-trip facilities, improving bicycle/transit integration, encouraging bicycle use, and making bicycling safer and more convenient.
- Routine accommodation in transportation and land use planning - Routinely consider bicyclists and pedestrians in the planning and design of land development, roadway, transit, and other transportation facilities, as appropriate to the context of each facility and its surroundings.
- Improved bicycle and pedestrian safety - Encourage local and statewide policies and practices that improve bicycle and pedestrian safety.

The NMTP makes proposals for a regional bikeways network, including providing recommendations for the City of Ontario, mimicking and embellishing those in The Ontario Plan. It notes that the City of Ontario is "widely viewed as Southern California's next urban center and is considered the inland region's population and job growth center," pointing out the regional transportation facilities in the City including the Ontario airport, three freeways, and three rail lines.

SBCTA POINT OF INTEREST PEDESTRIAN PLAN – SBCTA

The Point of Interest Pedestrian Plan (PIPP) assists local jurisdictions in the identification and prioritization of future pedestrian projects. It supplements the NMTP by identifying pedestrian projects, as the original document primarily focused on bike improvements. For the City of Ontario, the PIPP notes six locations throughout the City as deserving pedestrian improvements and further makes seven recommendations, including the locations of potential curb extensions, crosswalks, and RRFBs, for the neighborhood surrounding Ontario Town Square.

SBCTA - SAFE ROUTES TO SCHOOL STRATEGY :PHASE I & II (2017) – SBCTA

Building on the momentum of the NMTP, the SANBAG Safe Routes to School (SRTS) Strategy aims to address the active transportation needs of San Bernardino County students and school areas. The ultimate goal is to promote walking and cycling to school, improving the overall health of students and the community by providing safer and more accessible bicycle and pedestrian facilities.

Phase I of the Strategy identified focus areas that could most benefit from SRTS improvements compared to other areas within the County. This was done by analyzing the relative impacts of SRTS improvements to safety and mode share. Additional analyses were conducted to determine priority schools in these focus areas based on project readiness, geographic distribution, and equity considerations.

Phase II of the Strategy, completed in 2017, focuses on developing and prioritizing more site-specific SRTS infrastructure improvements. Specifically, Phase II establishes the following goals:

(1) compiling findings from field observations and student travel pattern data collected from approximately ten percent of the County's public schools, (2) assembling an inventory of site-specific recommended school zone bicyclist and pedestrian network improvements based on these data, (3) providing resources for future implementation efforts at a regional scale, and (4) developing a strategy for collecting student travel data on a periodic basis for monitoring and modeling purposes

Walk audits were conducted across 55 identified San Bernardino County schools to assess active transportation infrastructural needs and concerns and assemble an inventory of site-specific bicyclist and pedestrian network improvements.

Three of the school walk audits occurred at schools located in the City of Ontario. These are (walk audit dates in parentheses):

- Vina Danks Middle School (October 7, 2016)
- Lincoln Elementary School (October 10, 2016)
- Elderberry Elementary School (October 11, 2016)

School analysis included student tallies and parent surveys demonstrating the number of students currently walking or biking to school and why parents are choosing to let or not let their children walk to school. "Safety of Intersections and Crossings" was the top ranked concern for all three schools. Site-specific engineering recommendations were provided for each school along with detailed cost estimates.

SAN BERNARDINO COUNTYWIDE VISION (2011) - SAN BERNARDINO COUNTY

Adopted in 2011, the Countywide Vision calls for the collaboration between all sectors in San Bernardino County to work towards creating a healthier San Bernardino County and a more vibrant economy and community over the next 20 years. Part of the Vision includes envisioning San Bernardino as: "A sustainable system of high quality education, community health, public safety, housing, retail, recreation, arts and culture, and infrastructure, in which development complements our natural resources and environment."

The vision statement provides further details through several elements related to jobs, environment, infrastructure, and others. The "transportation" element emphasizes developing "clean and advanced modes of transportation and infrastructure", while the environment element focuses on protecting natural resources.

The Vision cites The Ontario Plan as a "Great Example" supporting the Countywide Vision for its innovative web-based format. Respondents to the vision survey by the Western Valley (including the City of Ontario) uniquely cited the need to improve roadway safety and the need to improve the countywide image as important issues.

SAN BERNARDINO COUNTY COMMUNITY TRANSFORMATION PLAN 2015 - 2020 (2015)

Following the adoption of the Countywide Vision, the Community Vital Signs Initiative was formed to address strategies to improve wellness in the county. A data-driven policy framework is used to promote programs that improve the health and quality of life in San Bernardino County.

The San Bernardino County Community Transformation Plan – developed by the Community Vital Signs – sets short- and long-term goals and more immediate strategies for several areas, including 'Access to Health and Wellness' and 'Safety'. The "Access to Health and Wellness" strategy seeks to increase the number of residents engaged in active living activities, including increasing options for residents to use active transportation. The "Safety" strategy seeks to improve children's perception of safety at school through partnering with law enforcement at school sites. It also seeks to support "Economy" by supporting wellness in the workforce.

COMPREHENSIVE PEDESTRIAN SIDEWALK INVENTORY PLAN (ONGOING) - SBCTA

The Comprehensive Pedestrian Sidewalk Inventory Plan effort aims to identify areas for potential sidewalk improvements across San Bernardino County. This effort is a joint collaboration between SBCTA and local jurisdictions, including the City of Ontario.

CONNECT SOCAL- THE 2020-2015 REGIONAL TRANSPORTATION PLAN/ SUSTAINABLE COMMUNITY STRATEGIES (2020) - SCAG

Adopted in 2020 by the Southern California Association of Governments, Connect SoCal is Southern California's long-range strategy to improve the region's mobility, economy, and sustainability. Active Transportation efforts are integral components of achieving the goals identified in the planning document. Its significance is highlighted in a stand-alone technical report on the impact of Active Transportation. The report also discusses many strategies for increasing active transportation options in Southern California.

MEASURE I

Approved by voters in 1989 and extended in 2004, Measure I is a countywide half-cent sales tax increase used to fund transportation improvements within San Bernardino County. 20% of Measure I revenue collected from the Valley Subarea, which includes the City of Ontario, is reserved for Local Street Projects within the same subarea.

The Measure I 2010-2040 Strategic Plan – adopted in 2009 by SBCTA, formerly SANBAG – establishes a policy framework that guides the implementation of Measure I projects/programs.

COMPLETE STREETS ACT (2008)

Assembly Bill (AB) 1358, also known as the Complete Streets Act of 2008, requires local agencies to integrate Complete Streets policies whenever there is a substantive revision to their General Plan, Circulation Element. This is intended to help reduce GHG emissions based on AB 32, the California Global Warming Solutions Act. In the Ontario Plan, the City acknowledges Complete Streets in M 1-5, aiming to provide a "balanced context sensitive, multi-modal transportation network that meets the needs of all users."

Appendix B

SETTING

B.1 Introduction

The City of Ontario is the fourth most populous city in San Bernardino County with a population of 171,041, according to the 2017 American Community Survey (ACS) 5-year estimates. It is located approximately 35 miles east of Downtown Los Angeles. The City is surrounded by Montclair to west, Upland and Rancho Cucamonga to the north, Fontana to the east, Eastvale to the east and south, and Chino to the south and west. The Metrolink commuter rail and the Interstate 10, Interstate 15, and State Route 60 freeways, along with the Pacific Electric Trail (P.E. Trail) near the northern border of Ontario in Rancho Cucamonga, provide Ontario community members with transit, automobile, and pedestrian and bicycle access to regional destinations.

A high percentage of the neighborhoods in the city are designated as a "Disadvantaged Community." The disadvantaged communities designation is an important tool in advancing environmental justice in California. The level of disadvantage in census tracts is quantified through the CalEnviroScreen 3.0 tool. Developed by the California Environmental Protection Agency (CalEPA), CalEnviroScreen 3.0 is an index that utilizes environmental and socio-economic data to identify California communities that are disproportionately burdened by, and vulnerable to, multiple sources of pollution. Census tracts that score above the 75th percentile are designated as California's disadvantaged communities.

Census tracts within the City rank at the 85th percentile, making them some of the most disadvantaged in California. Census tracts that reside adjacent to the airport and encompass Downtown score at the 95th percentile or higher.

Accompanying Map(s): Figure B.1 Active Transportation Network Planning Areas, Figure B.2 Disadvantaged Communities in the City of Ontario: Citywide

B.2 Demographics

RACE AND POPULATION

According to the to the 2017 American Community Survey (ACS) 5-year estimates, the City of Ontario has a population of 171,041. The racial and ethnic makeup of Ontario is 70% Hispanic or Latino, 16.1% White, 5.7% African American, and 5.7% Asian. The City's 18 year old and under population comprises the largest percentage of age range as measured by ACS data. Areas with high youth population density are the residential neighborhoods adjacent to Holt Boulevard in the northwest region of the City near Downtown and adjacent to Euclid Avenue, south of Mission Boulevard.

In addition, the demographics of the City reveal that nearly 32% of the population is considered vulnerable due to their low or high age (less than 18 years of age or more than 65 years of age). Age vulnerability is especially significant in determining mode choice because the vulnerable age group may have increased reliance on modes of transportation other than personal vehicles such as walking, biking, or taking transit.

MEDIAN HOUSEHOLD INCOME

Ontario has a median household income of $57,544 which is slightly higher than the County's median of $57,156. In addition, nearly 43% of Ontario households have a median household income that is less than $50,000. Areas with a high median household income are the residential neighborhoods adjacent to Euclid Avenue north of Downtown, north of Sixth Street and Vineyard Avenue, and Archibald Avenue south of State Route 60.

Accompanying Map: Figure B.5 Median Household Income in the City of Ontario: Citywide

LIMITED ENGLISH HOUSEHOLDS

With 70% of Ontario's population being Hispanic or Latino, there are many households in the City with limited English capabilities. Approximately 40.1% are English-speaking only, 51.5% are Spanish-speaking, 42.8% are Spanish-only speaking, 10.1% are limited English-speaking, and 8.6% are Spanish-speaking with limited English. The share of Ontario households with limited English is higher than the County's average of 6.9%. Limited English household density is higher than the City's average within the residential neighborhood that resides adjacent to the Euclid Avenue and Mission Boulevard, and areas along Holt Boulevard and north of Interstate 10.

Accompanying Map: Figure B.8 Households with Limited English: Citywide

B.3 Travel Characteristics

The average commute for workers residing in Ontario is approximately 31 minutes. It is identical to the San Bernardino County average of 31 minutes. Additionally, nearly 35% of commuter trips take less than 20 minutes. Commuting by public transportation, walking, and biking accounts for a very small share of all commuter trips at 4%. This may indicate that personal vehicle trips could be replaced if more convenient and comfortable alternative mode options were provided.

Moreover, one in five households within Ontario are low vehicle households which is defined as households where only one or no vehicles are available. This is significant among family households where at least one parent commutes to work using a personal vehicle.

According to the ACS data, the areas with the largest populations that walk, bike, or take transit to work include Ontario Downtown , areas along Mission Boulevard west of the Ontario International Airport, and neighborhoods adjacent to John Galvin Park.

Accompanying Map(s): Figure B.11 Households that Walk, Bike, or Take Transit to Work: Citywide, Figure B.14 Households with Low Vehicle Access: Citywide

B.4 Land Use

EXISTING LAND USE

Land use and transportation elements work in tandem to influence how places are planned, designed, and built. Existing land use patterns in Ontario loosely help categorize the City into different portions. Low-density residential and commercial land uses are primarily found in the northwestern portion of the City and in the neighborhoods between State Route 60 and Riverside Drive. Agriculture land uses occupy a majority of the City's southern portion, south of Riverside Drive. Transportation and utilities uses are scattered in small pockets throughout the City, but are comprised primarily of the Ontario International Airport in central Ontario. The airport also separates the City's residential uses in the western portion from the commercial and industrial uses in the eastern portion. The eastern portion of Ontario is comprised primarily of industrial, manufacturing, and warehousing uses, with commercial and office uses scattered in between.

LAND USE MIX ANALYSIS FINDINGS

The Land Use Mix Analysis analyzed the diversity of land uses within a given area. The analysis helps identify locations that could benefit from increased active transportation infrastructure and potentially be more conducive to non-motorized transportation modes.

The analysis calculated the number of different land uses within a quarter-mile of any given area of the City of Ontario. Areas with high land use mix tend to have shorter distances between destinations and fewer barriers for community members to partake in active transportation. These areas typically consist of a mixture of commercial areas, denser residential areas, open space, and civic uses. They also often have smaller, human-scale roadways, and overall higher density.

Findings from the analysis suggest that areas with higher intensity land uses are concentrated near the Downtown area in the western region of Ontario, particularly around Euclid Avenue between Holt Boulevard and Mission Boulevard.

On the other hand, areas with lower intensity land use mix tend to be less accessible by walking, biking, and transit. These areas include low-density residential neighborhoods, multi-use agriculture land uses, and industrial areas. Examples of these areas include the Ontario Ranch and industrial areas south of Ontario International Airport.

Accompanying Map: Figure B.17 Land Use Mix: Citywide

ATTRACTORS

A City's bicycle and pedestrian network should enhance connections between activity centers, both within the City and at adjacent municipalities. Activity centers are destinations for both residents and visitors of Ontario, and they are primarily comprised of shopping centers, public facilities, parks, schools, large employment centers, and other civic institutions.

Major activity centers in Ontario include the Ontario Mills Mall – one of the largest attractors in San Bernardino County, Downtown Ontario along Euclid Avenue, Ontario International Airport, and various shopping centers and homestays embedded in the residential areas. Sub-regional destinations include, Victoria Gardens, the Pacific Electric Trail (P.E. Trail), and Amazon Fulfillment Centers.

Accompanying Map: Figure B.20 Attractors and Destinations in the City of Ontario: Citywide

SCHOOLS

As a part of the Ontario Active Transportation Master Plan, 31 schools in the City were selected to be a part of the Safe Routes to School component. The selected schools include 4 high schools, 5 intermediate/middle/junior high schools, and 22 elementary schools. The schools are a part of the five school districts that are present in the City: Ontario-Montclair School District, Mountain View School District, Cucamonga School District, Chino Valley Unified School District, and Chaffey Joint Union High School District.

Collectively, the schools enrolled 26,054 students in the 2017-2018 school year. Of the student population, 79.7% (20,775 students) participated in the Free and Reduced-Price Meal Program. Of the selected schools, Ray Wiltsey Middle School had the largest percentage of students enrolled in the program (90.5%).

Participation in the Free and Reduced-Price Meal Program is a proxy for understanding disadvantaged communities in the neighborhood. To participate in the program, families need to earn below a certain income that is different depending on how many members are in the household.

B.5 Infrastructure

EXISTING PEDESTRIAN INFRASTRUCTURE

Sidewalks and crosswalks are two of the most fundamental components in a pedestrian infrastructure network. Sidewalks offer pedestrians a designated right-of-way for pedestrian activities to occur; meanwhile, crosswalks provide pedestrians with a defined space to cross the roadway.

The City has a relatively expansive network of sidewalks. However, there are still many areas and long corridors that have gaps in the sidewalk infrastructure. For instance, Mission Boulevard and State Street lack sidewalk coverage along long segments of each corridor. Sidewalks are missing from both sides of Mission Boulevard for long segments. Meanwhile, State Street is missing sidewalks on the north portion of the street which runs adjacent to the railroad tracks. Other areas that have missing sidewalk coverage include corridors within the southern portion of Ontario which has agricultural land uses, and the industrial area that lies to the south and east of the Ontario International Airport.

Crosswalks are present at most major intersections within the City. However, high vehicle speeds, missing

sidewalks, and wide roadways can present challenges to the current pedestrian environment. In recent years, the City has installed high visibility crosswalks at 20 different intersections, most of which are located near schools to help promote safer crossings.

Accompanying Map: Figure B.23 Missing Sidewalks and Availability of Crosswalks: Citywide

EXISTING BICYCLE INFRASTRUCTURE

The existing bicycle network in Ontario is comprised of bicycle lanes, bicycle routes, and off-street multi-use paths, totaling 17.6 miles. Nearly 44% of the existing bicycle infrastructure is comprised of multi-use paths, 34% consists of bicycle lanes, and 22% consists of bicycle routes. A majority of the existing multi-use paths are centralized within the neighborhoods adjacent to Haven Avenue, south of State Route 60, with scattered segments embedded in the Ontario Ranch area. The northern Downtown area, along G Street, is intersected by a bicycle route that transitions into a bicycle lane. This corridor spans from the western city border and terminates at the I-10 freeway. The bicycle lane continues along Inland Empire Boulevard, east of Archibald Avenue until Haven Avenue. This east-west on-street corridor provides connections to the Downtown area and facilitates potential access to Ontario Mills. Additional existing on-street bicycle facilities can be found along:

- San Antonio Avenue between Mission Boulevard and Phillips Street
- I Street between Euclid Avenue and Allyn Avenue
- Schaeffer Avenue between Archibald Avenue and Haven Avenue

TRANSIT INFRASTRUCTURE

Public transit is a fundamental component to local and regional transportation systems, as it provides opportunities for multi-modal travel. While public transportation can offer an alternative means to driving, transit service is also critical for Ontario community members with limited access to personal vehicles. Omnitrans, Riverside Transit Agency (RTA), and Metrolink provide transit services to the Ontario community. Omnitrans is the primary bus transit service provider, while RTA operates one route that goes through the City. Metrolink offers opportunities for commuter rail travel via the Riverside Route at the Ontario East Station.

As of January 2021, Omnitrans operates six routes within the City. These include:

- Route 61 serves Fontana and Pomona via Ontario. Destinations located along the route include Citizens Bank Arena, Fontana High School, Fontana Metrolink, Indian Hill Mall, Kaiser Hospital (Fontana), Ontario Civic Center, Ontario Convention Center, Ontario International Airport, Pomona Transit Center, San Bernardino County Department of Human Services (Ontario), South Fontana Transit Center, and, W.V. Detention Center.
- Route 81 serves Ontario and Rancho Cucamonga via Ontario Mills Mall. Destinations located along the route include Chaffey College, Citizens Business Bank Arena, Colony High School, Kaiser Medical Office (Ontario), Los Osos High School, Ontario Civic Center, Ontario International Airport, Ontario Mills Mall, and Chino Transit Center.
- Route 82 serves Rancho Cucamonga and Sierra Lakes via Jurupa. Destinations located along the route

include Citizens Business Bank Arena, Fontana Adult School, Fontana Metrolink, Jurupa Hills High School, Kaiser High School, Kaiser Hospital (Fontana), Ontario Mills Mall, Rancho Cucamonga Civic Center, Rancho Cucamonga Metrolink, San Bernardino County Office (Rancho Cucamonga), Summit High School, and Victoria Gardens.

- Route 83 serves Upland and Chino via Euclid Avenue. Destinations located along the route include Chaffey College Chino Campus, Chaffey High School, Colonies Shopping, Chino Civic Center, Colonies Crossroads Shopping Center, K-Mart (Ontario), and the Ontario Civic Center.
- Route 87 serves Ontario and Rancho Cucamonga. Destinations located along the route include John Galvin Park, Kindred Ontario Hospital, Downtown Ontario, Bon View Park, and Brookfield Recreation Center.
- Route 290 serves Colton, Montclair, Ontario, and San Bernardino with express service.

RTA operates in western Riverside County and offers a variety of local fixed routes, CommuterLink routes, and a RapidLink Gold Line route. Only one route is offered within Ontario which includes:

- Route 204 serves as a connection to UC Riverside, Downtown Riverside, Country Village, Ontario Mills, and the Montclair Transcenter.

Accompanying Map: Figure B.29 Transit Facilities in the City of Ontario: Citywide

B.6 Health

OBESITY AND PHYSICAL ACTIVITY

Ontario has an adult obesity rate of 39.9% - much higher than the County rate of 29.2% (SCAG 2019 Local Profiles – Ontario). In comparison to neighboring cities like Montclair, Upland, Rancho Cucamonga, Fontana, and Chino, Ontario ranks second in obesity rate behind only Montclair. While Ontario's physical activity rate (30.4%) is slightly lower than the county average (33.3%), it ranks second amongst neighboring cities, only behind Chino (30.6%).

Map: The obesity score measures the percent of adults over the age of 18 who have a body mass index (BMI) greater than or equal to 30.0 kg/m^2 calculated from self-reported weight and height. The census tracts that make up the City of Ontario rank among the 32nd percentile for the prevalence of obesity.

Accompanying Map: Figure B.35 Percentages of Households with Obesity: Citywide

DIABETES

The diagnosed diabetes score measures the number of adults over the age of 18 who report having ever been told by a medical professional that they have diabetes. The census tracts that make up Ontario rank among the 46th percentile for the prevalence of adult diabetes. Enhancing physical activity opportunities and increasing access to healthy food sources can help reduce the prevalence of diabetes in Ontario.

Accompanying Map: Figure B.38 Percentages of Households with Asthma: Citywide

CARDIOVASCULAR DISEASE AND ASTHMA

The City of Ontario ranks at the 81st percentile among all census tracts for the average rate of hospital visits related to cardiovascular disease. It also ranks at the 62nd percentile for asthma rates, slightly lower than San Bernardino County (64th percentile). Sedentary lifestyles and poor air quality resulting from vehicle emission and toxic releases from facilities could be contributors to these rankings (U.S. EPA, Health and Environmental Effects of Particulate Matter (PM).

Accompanying Map: Figure B.41 Percentages of Households with Cardiovascular Disease: Citywide

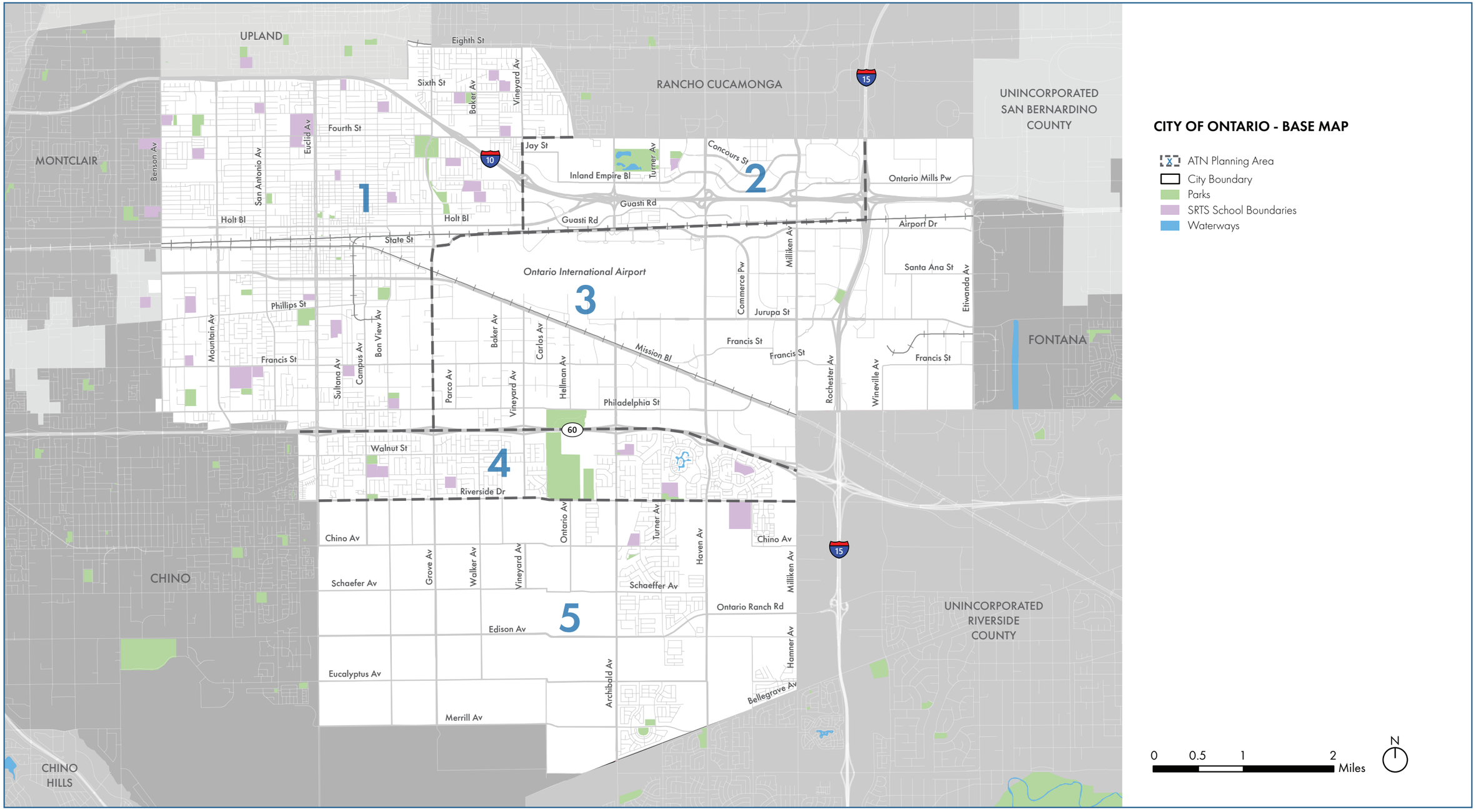


Figure B.1 Active Transportation Network Planning Areas

Source: Ontario Active Transportation Master Plan

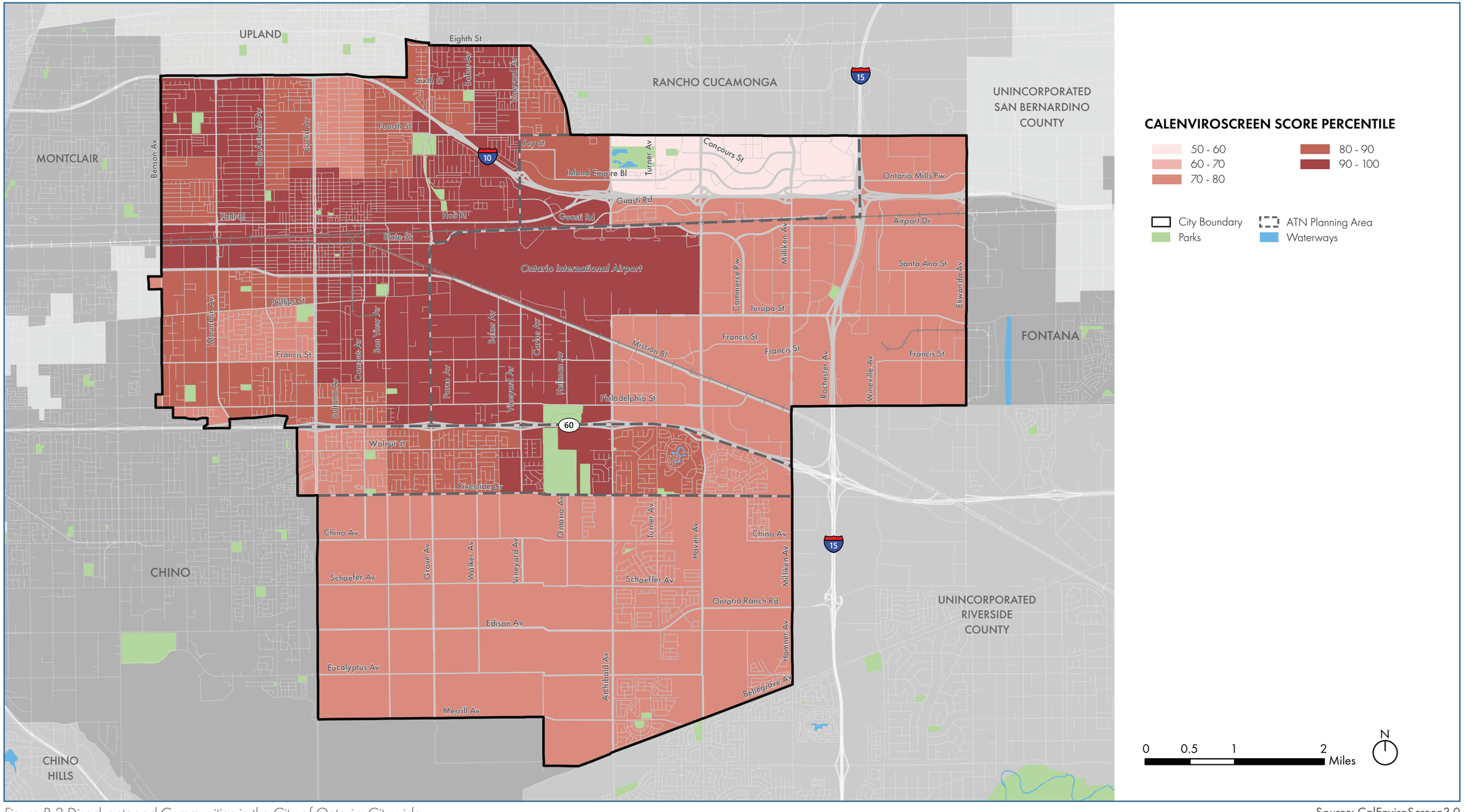


Figure B.2 Disadvantaged Communities in the City of Ontario: Citywide

Source: CalEnviroScreen3.0

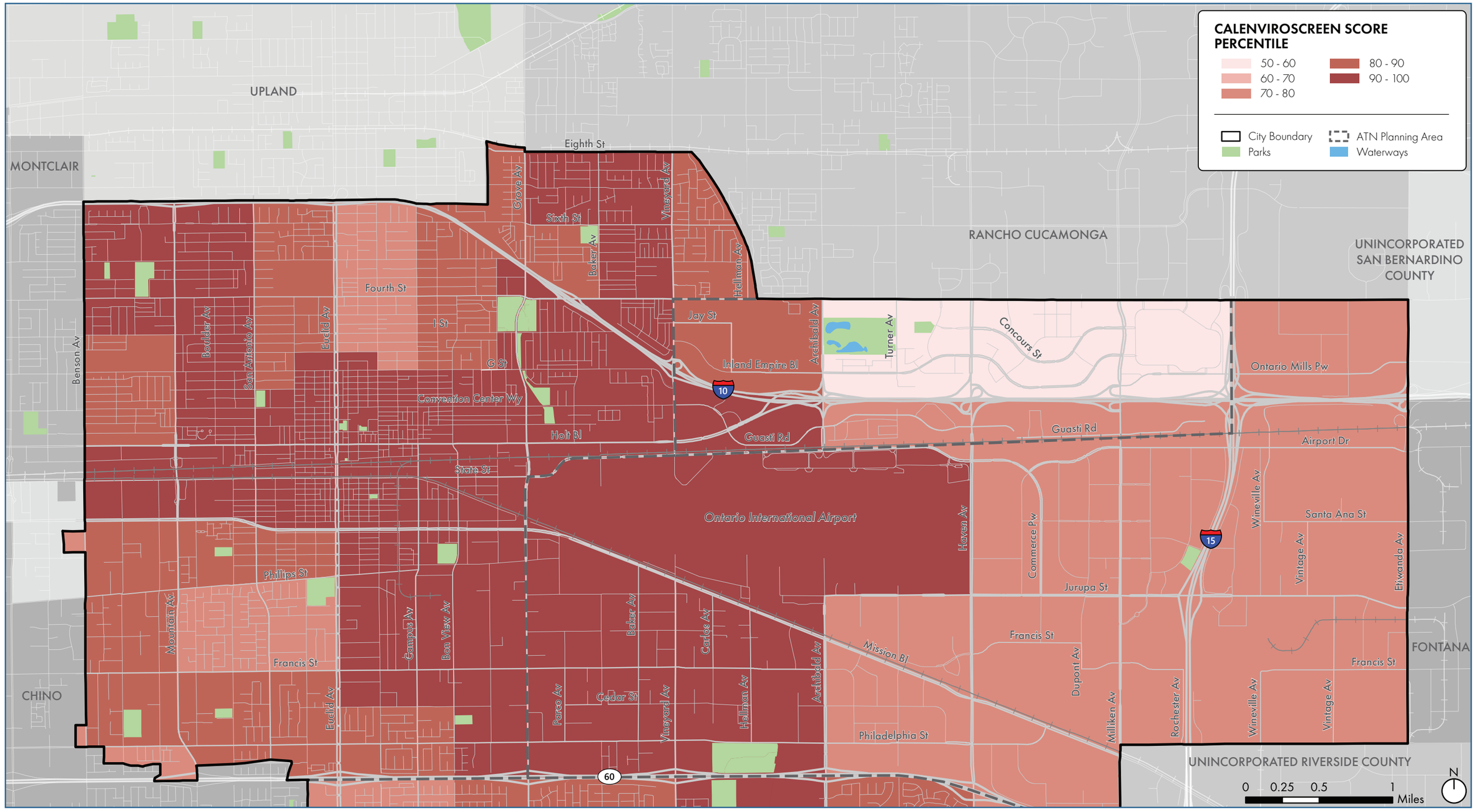


Figure B.3 Disadvantaged Communities in the City of Ontario: Citywide - A Closer Look at the Northern Portion

Source: CalEnviroScreen3.0

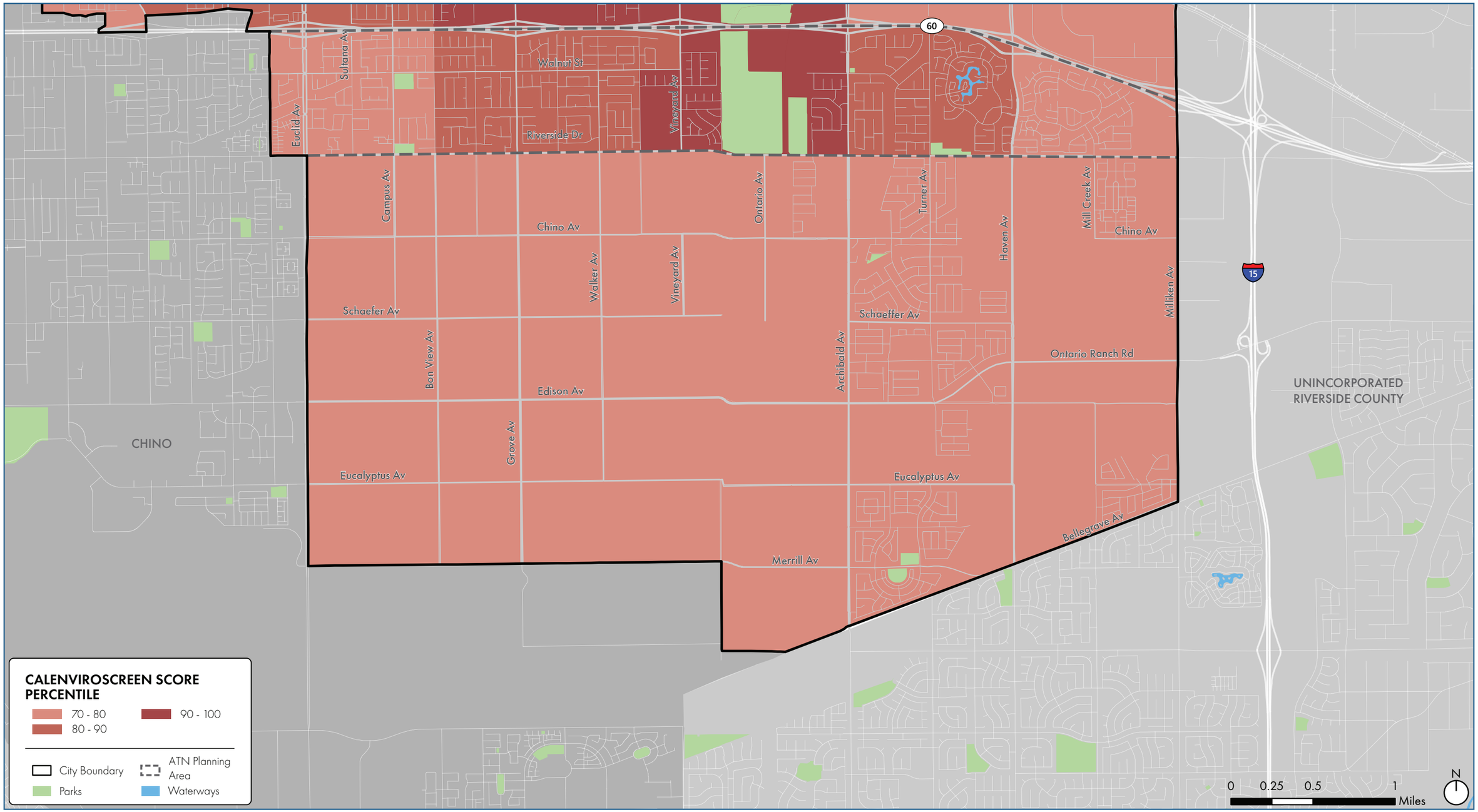


Figure B.4 Disadvantaged Communities in the City of Ontario: Citywide - A Closer Look at the Southern Portion

Source: CalEnviroScreen3.0

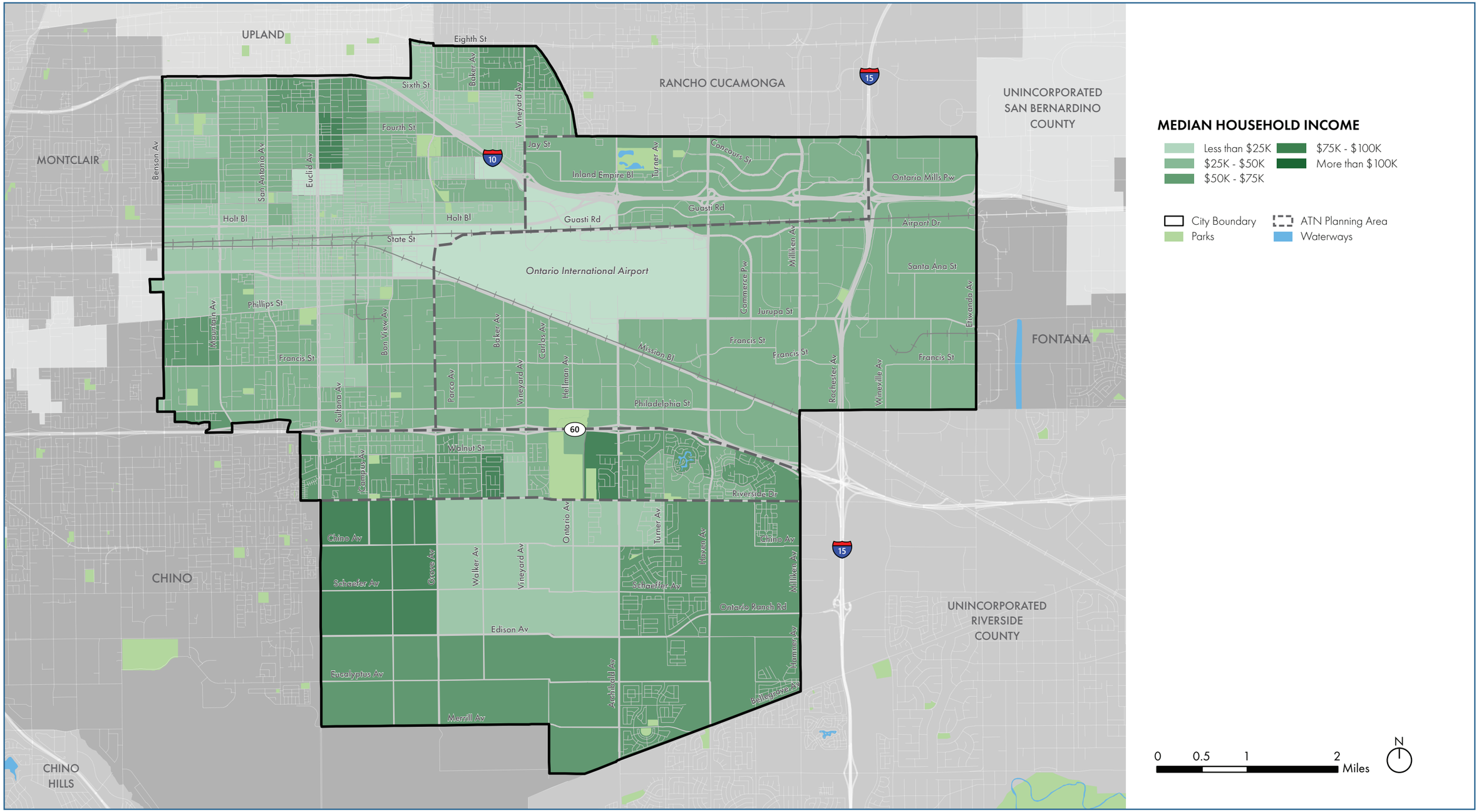


Figure B.5 Median Household Income in the City of Ontario: Citywide

Source: American Community Survey (ACS) 2017 5-Year Estimates

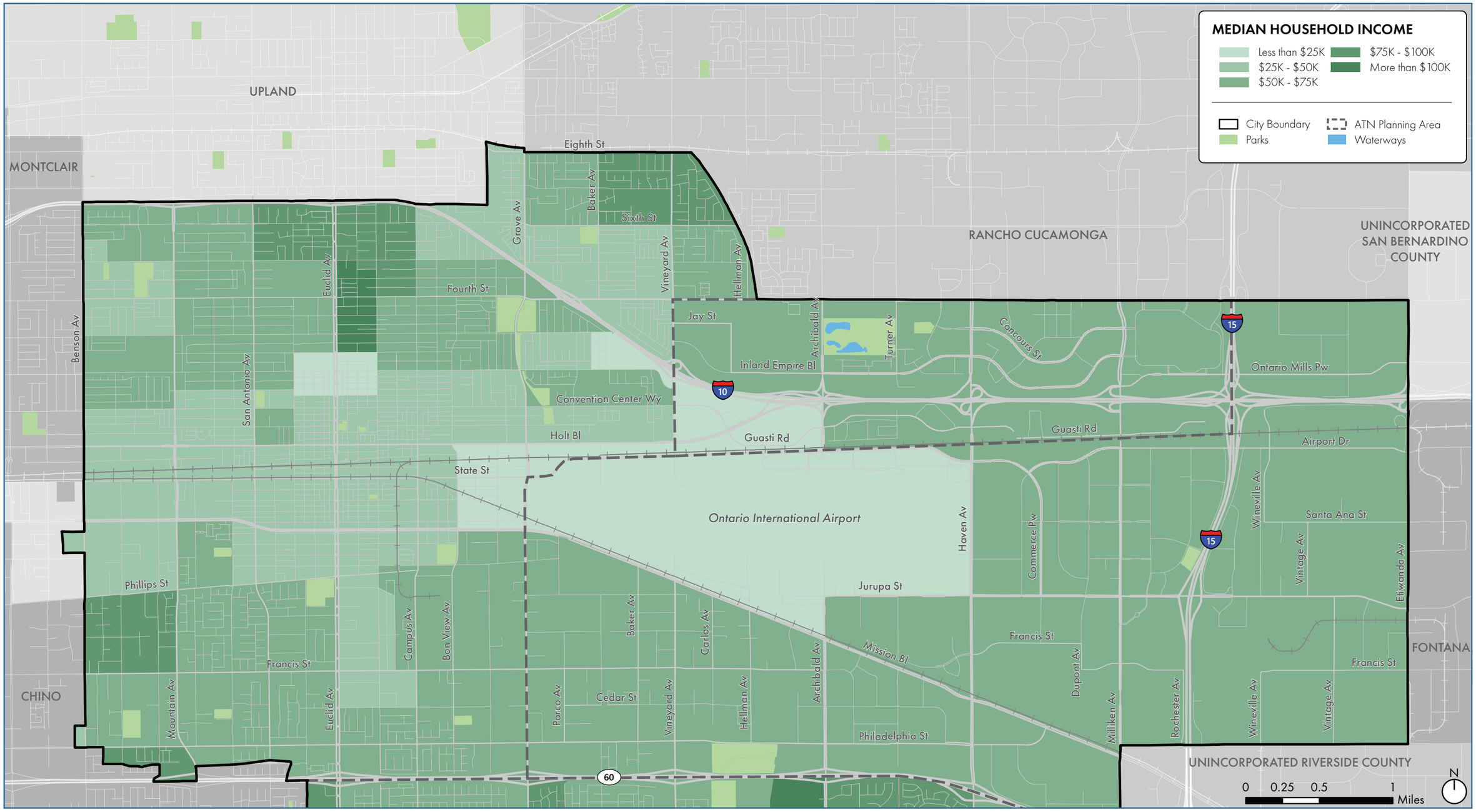


Figure B.6 Median Household Income in the City of Ontario: Citywide - A Closer Look at the Northern Portion

Source: American Community Survey (ACS) 2017 5-Year Estimates

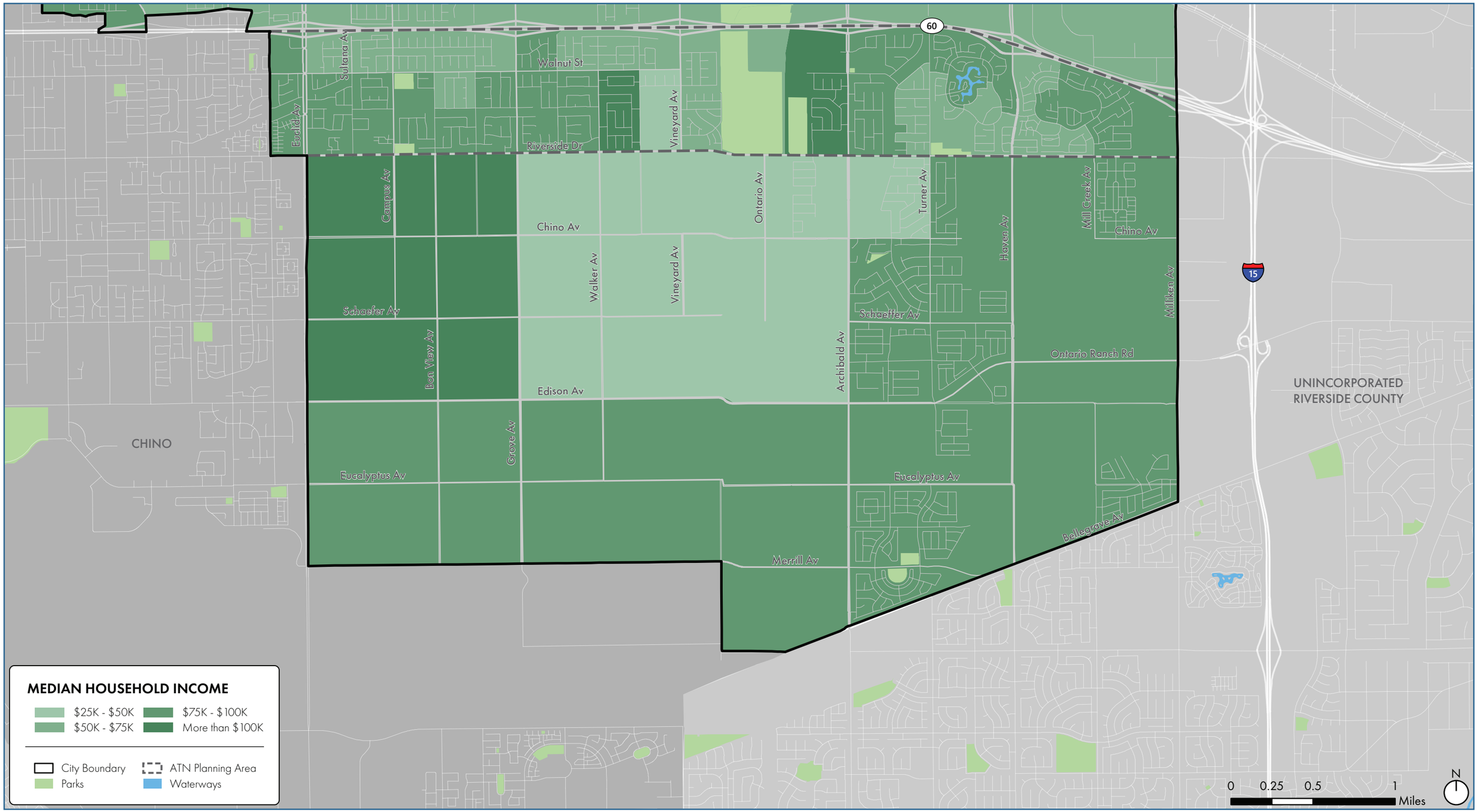


Figure B.7 Median Household Income in the City of Ontario: Citywide - A Closer Look at the Southern Portion

Source: American Community Survey (ACS) 2017 5-Year Estimates

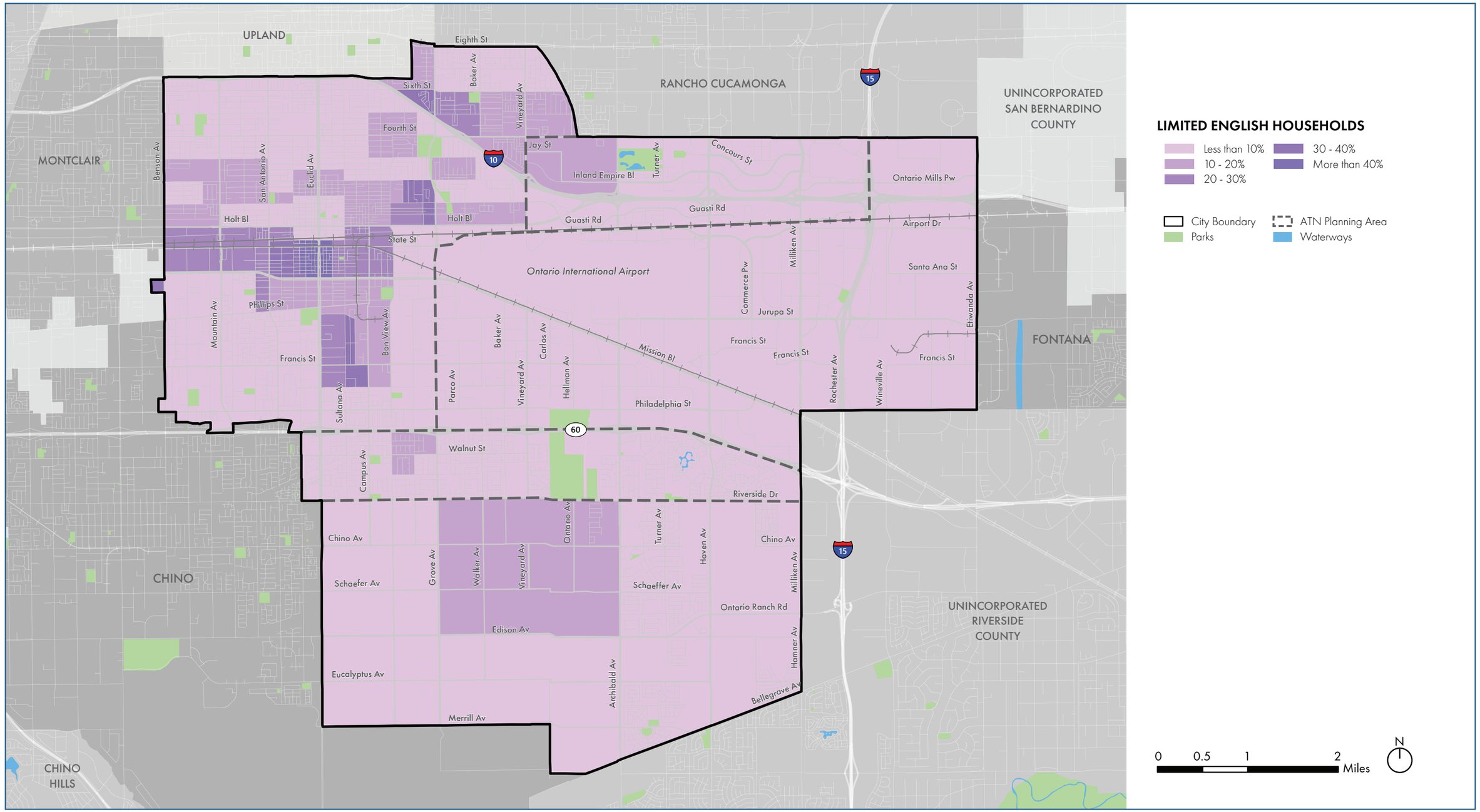


Figure B.8 Households with Limited English: Citywide

Source: American Community Survey (ACS) 2017 5-Year Estimates

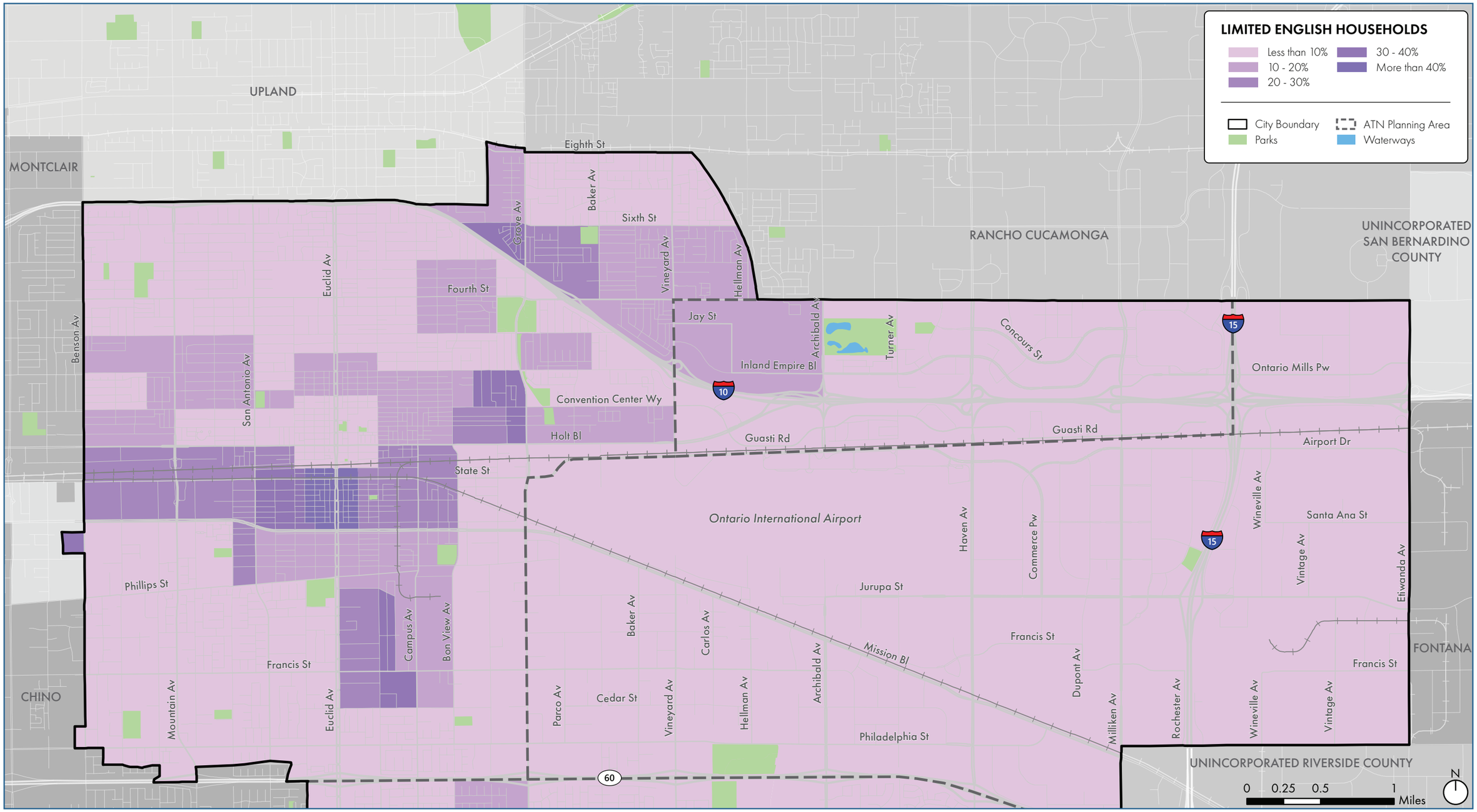


Figure B.9 Households with Limited English: Citywide - A Closer Look at the Northern Portion

Source: American Community Survey (ACS) 2017 5-Year Estimates

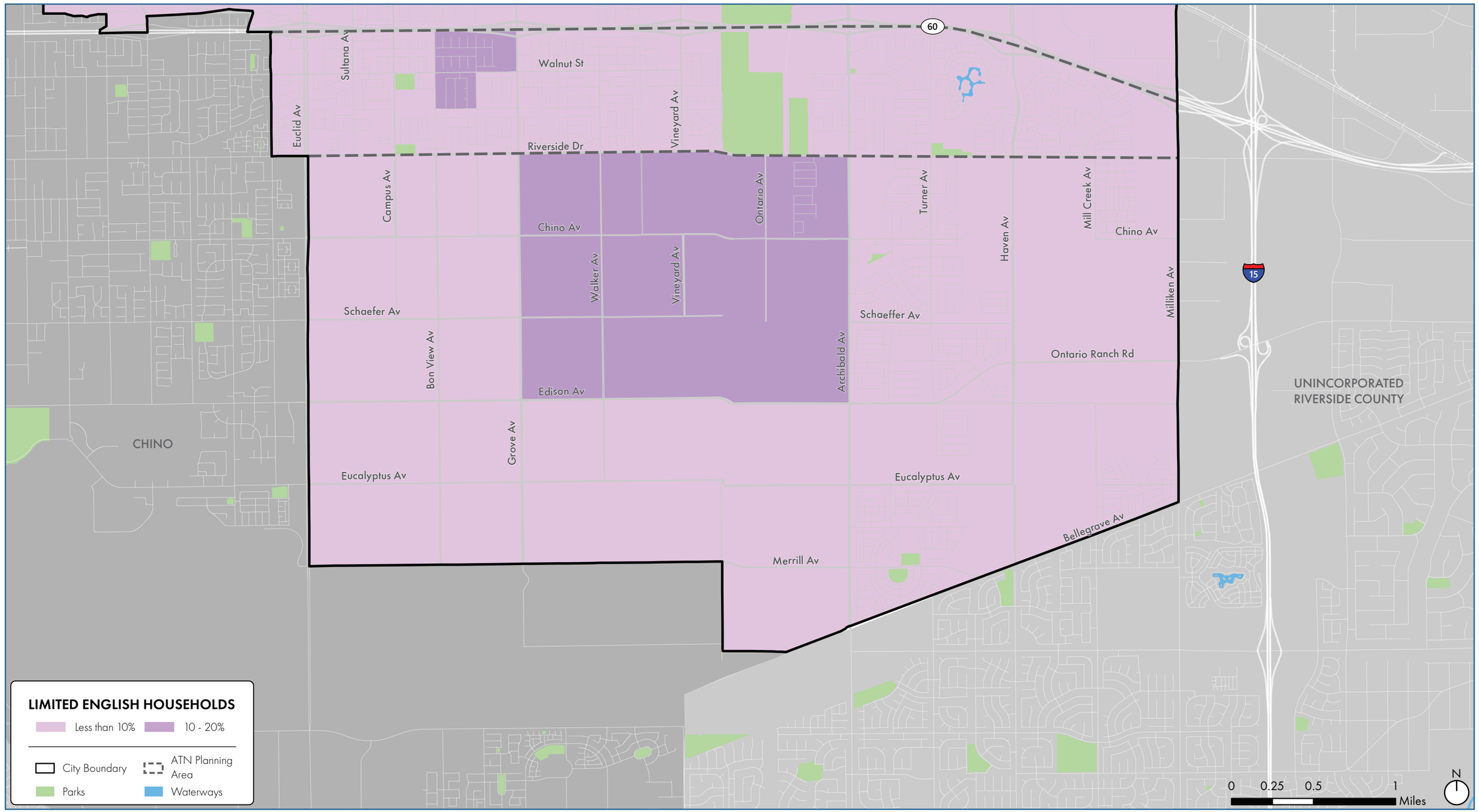


Figure B.10 Households with Limited English: Citywide - A Closer Look at the Southern Portion

Source: American Community Survey (ACS) 2017 5-Year Estimates

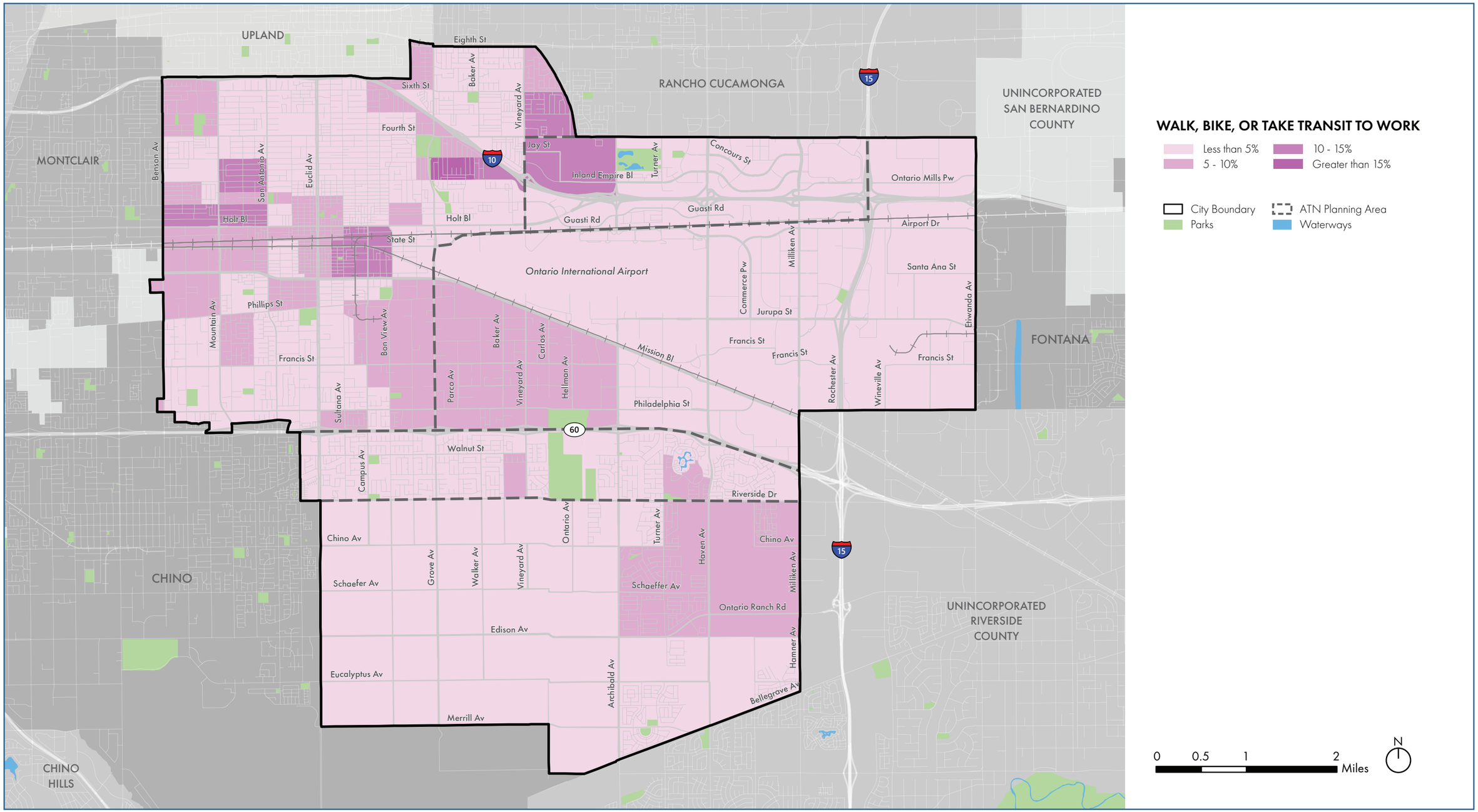


Figure B.11 Households that Walk, Bike, or Take Transit to Work: Citywide

Source: American Community Survey (ACS) 2017 5-Year Estimates

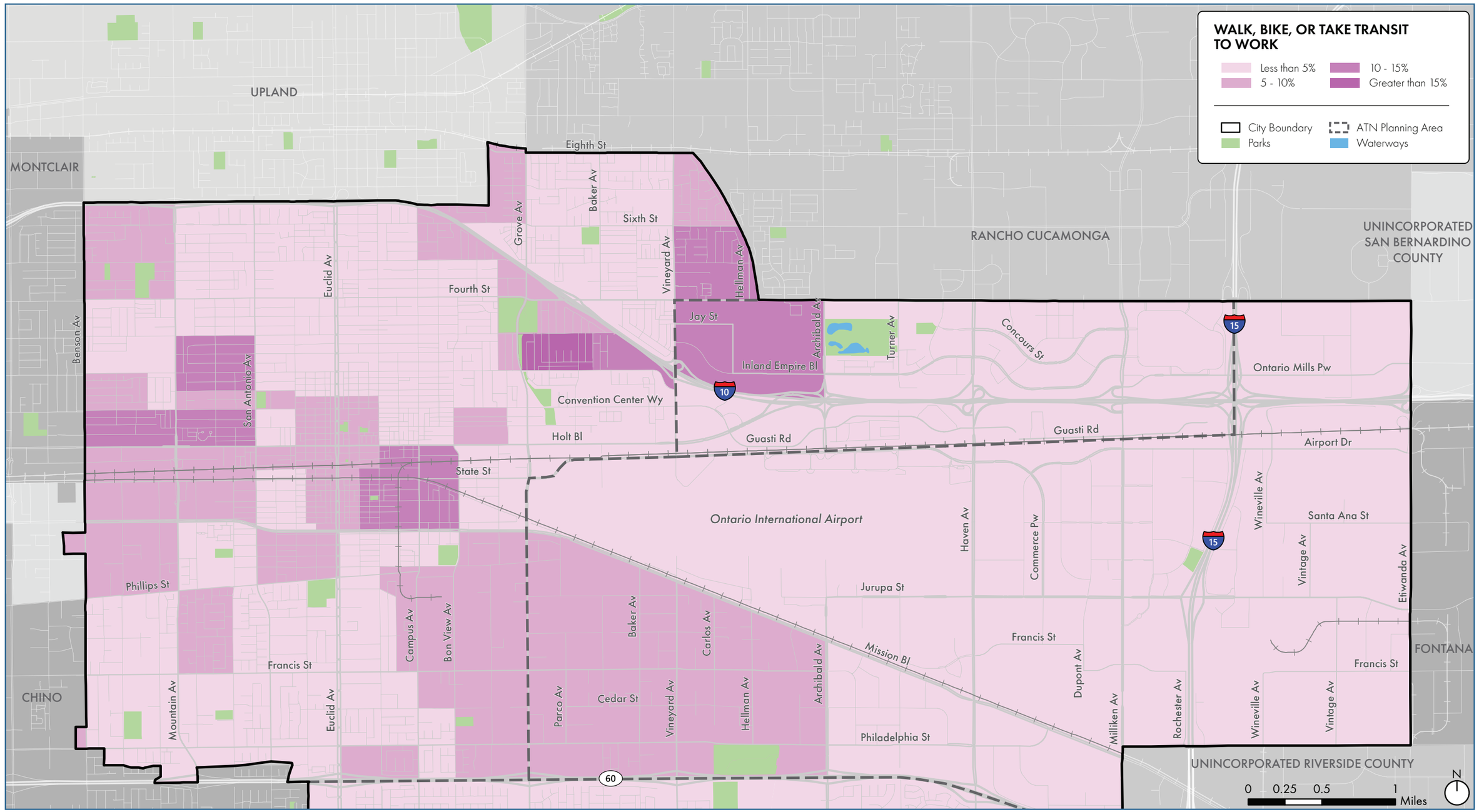


Figure B.12 Households that Walk, Bike, or Take Transit to Work: Citywide - A Closer Look at the Northern Portion

Source: American Community Survey (ACS) 2017 5-Year Estimates

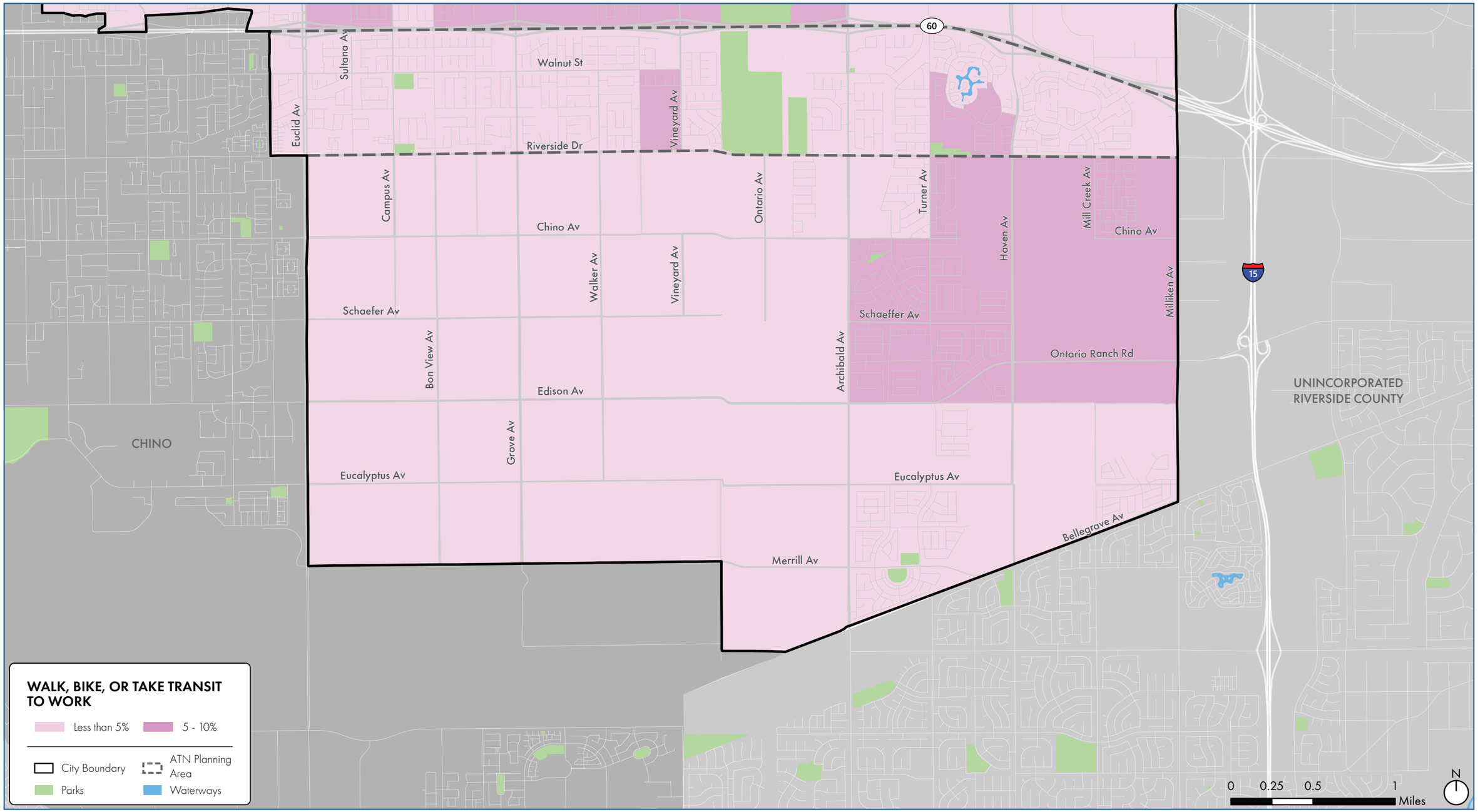
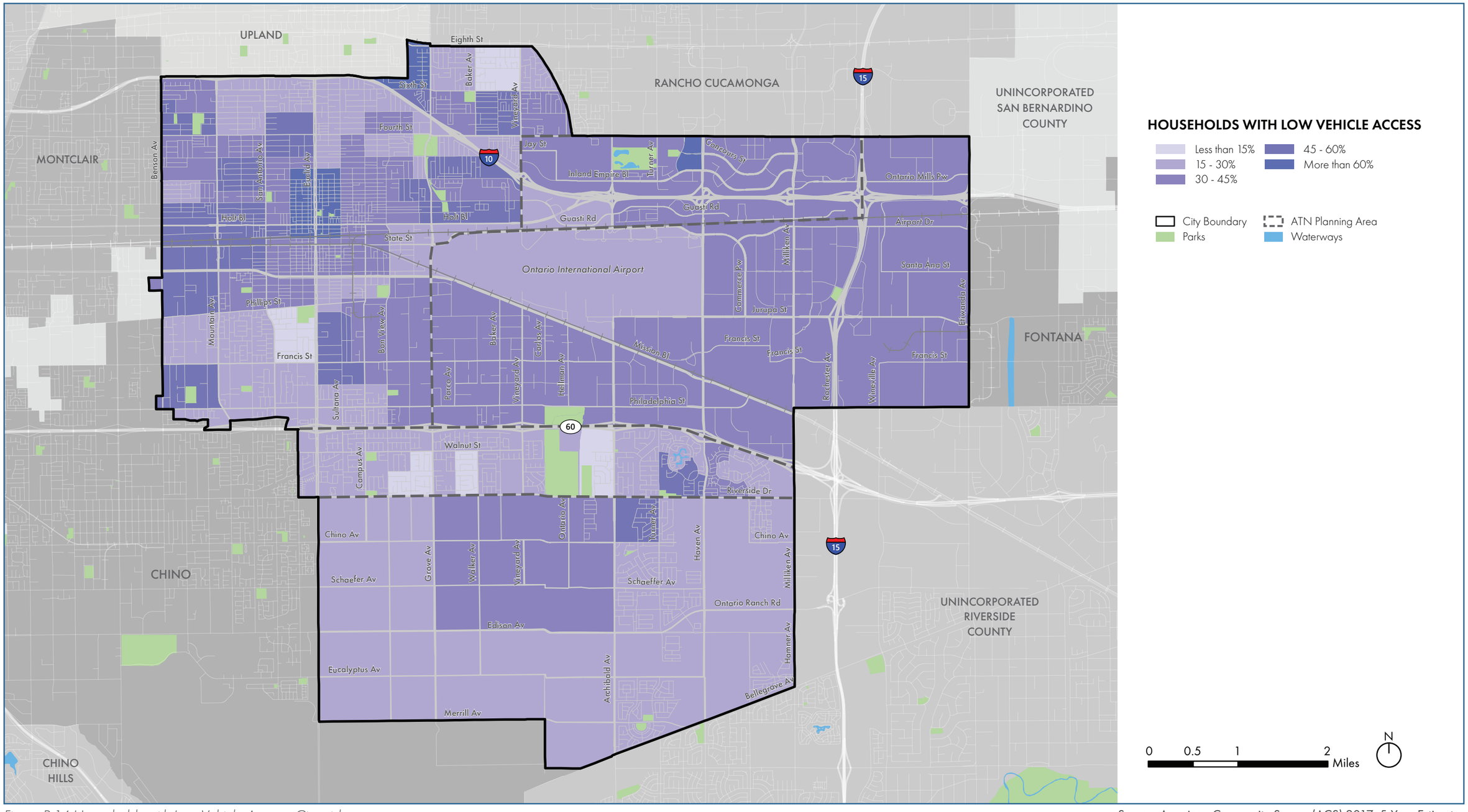


Figure B.13 Households that Walk, Bike, or Take Transit to Work: Citywide - A Closer Look at the Southern Portion

Source: American Community Survey (ACS) 2017 5-Year Estimates



HOUSEHOLDS WITH LOW VEHICLE ACCESS

- Less than 15%
- 15 - 30%
- 30 - 45%
- 45 - 60%
- More than 60%

- City Boundary
- Parks
- ATN Planning Area
- Waterways

Figure B.14 Households with Low Vehicle Access: Citywide

Source: American Community Survey (ACS) 2017 5-Year Estimates

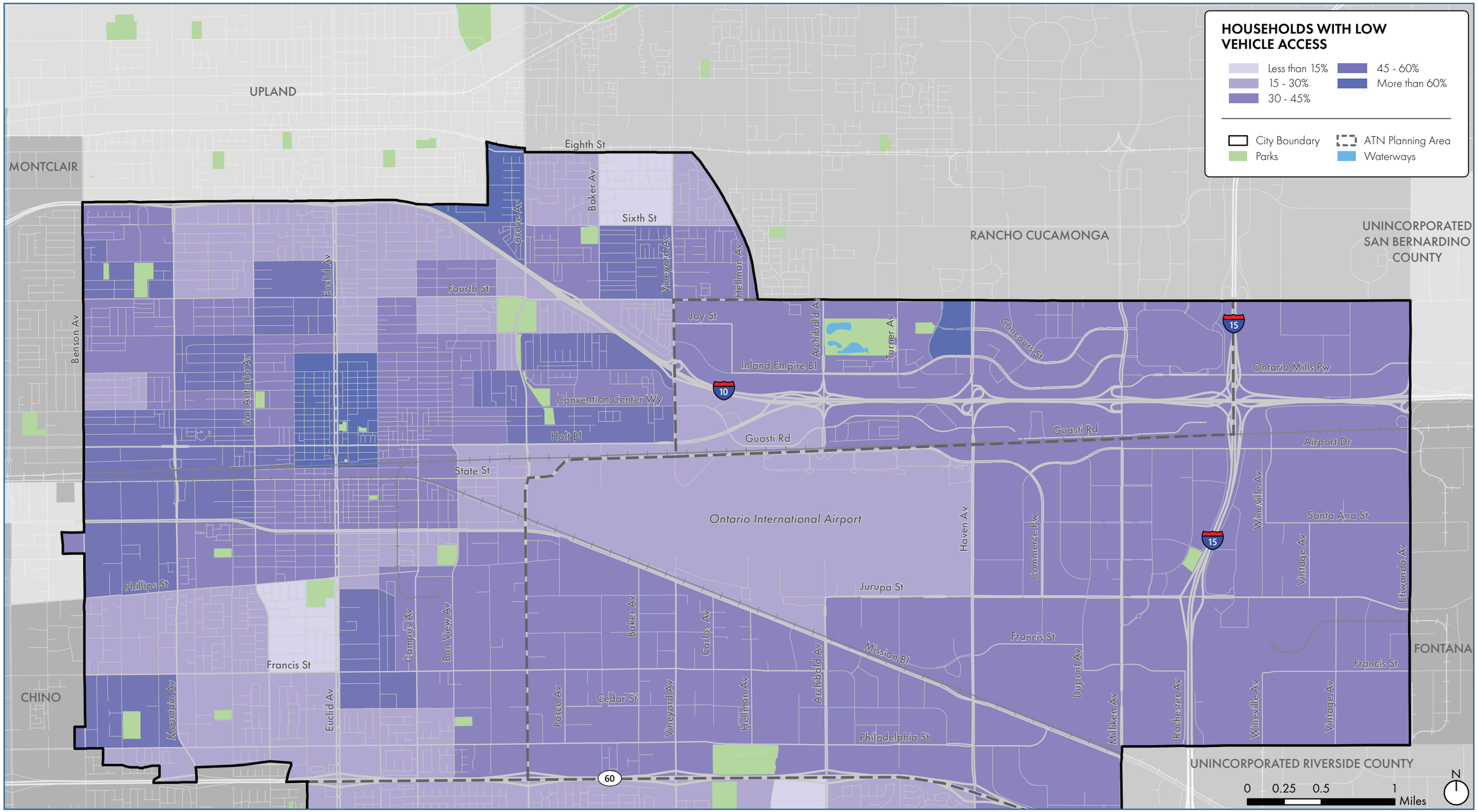


Figure B.15 Households with Low Vehicle Access: Citywide - A Closer Look at the Northern Portion

Source: American Community Survey (ACS) 2017 5-Year Estimates

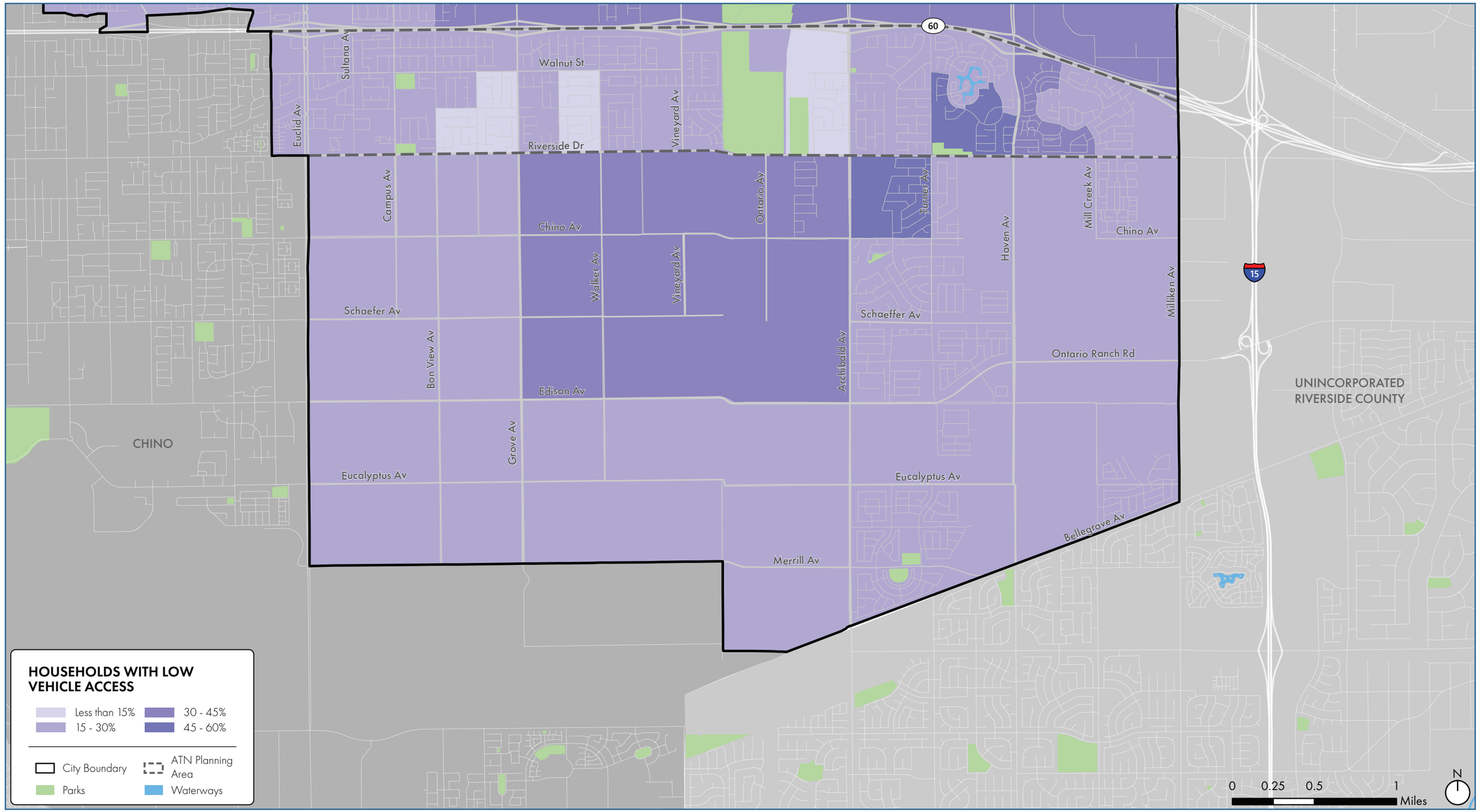


Figure B.16 Households with Low Vehicle Access: Citywide - A Closer Look at the Southern Portion

Source: American Community Survey (ACS) 2017 5-Year Estimates

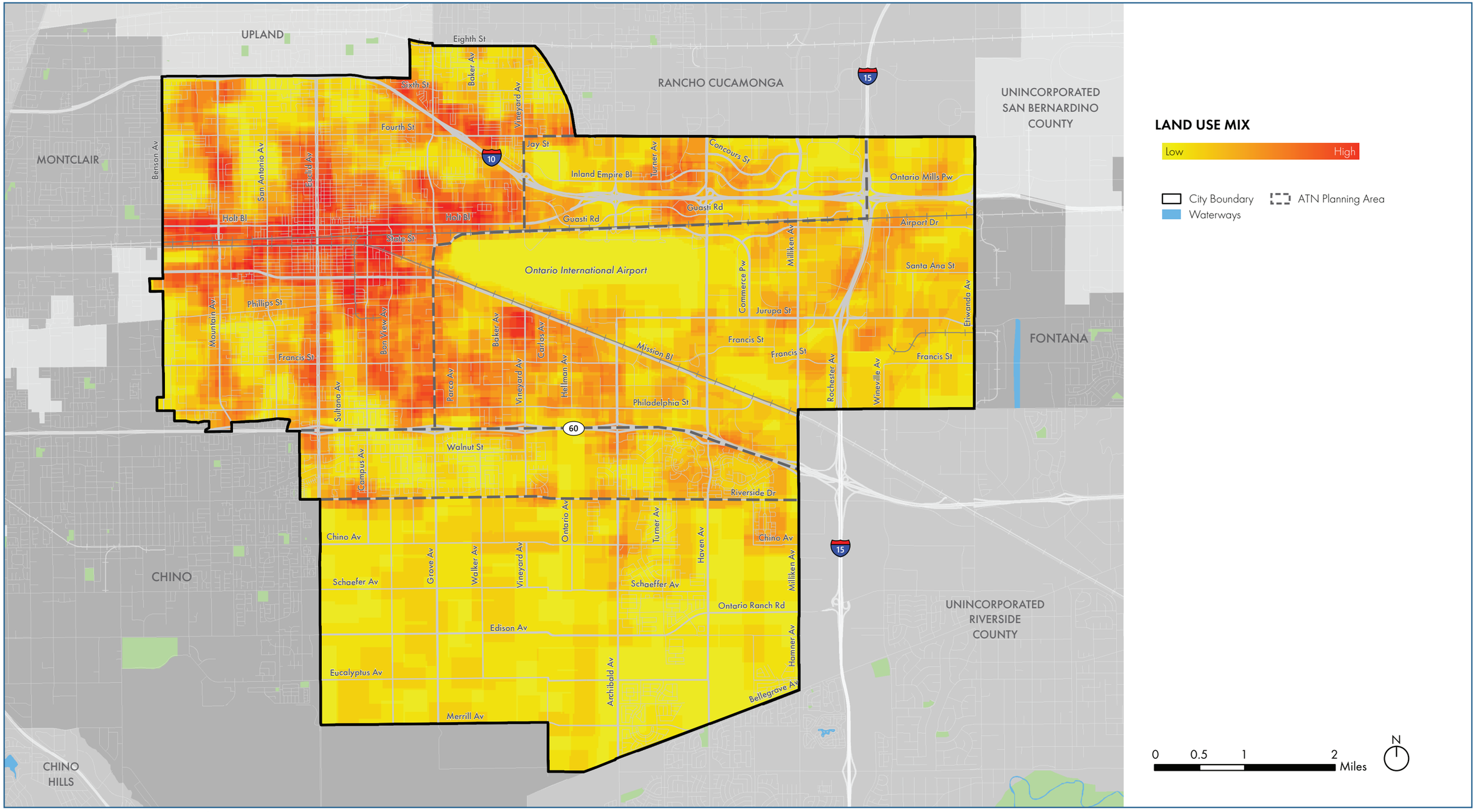


Figure B.17 Land Use Mix: Citywide

Source: Ontario Active Transportation Master Plan

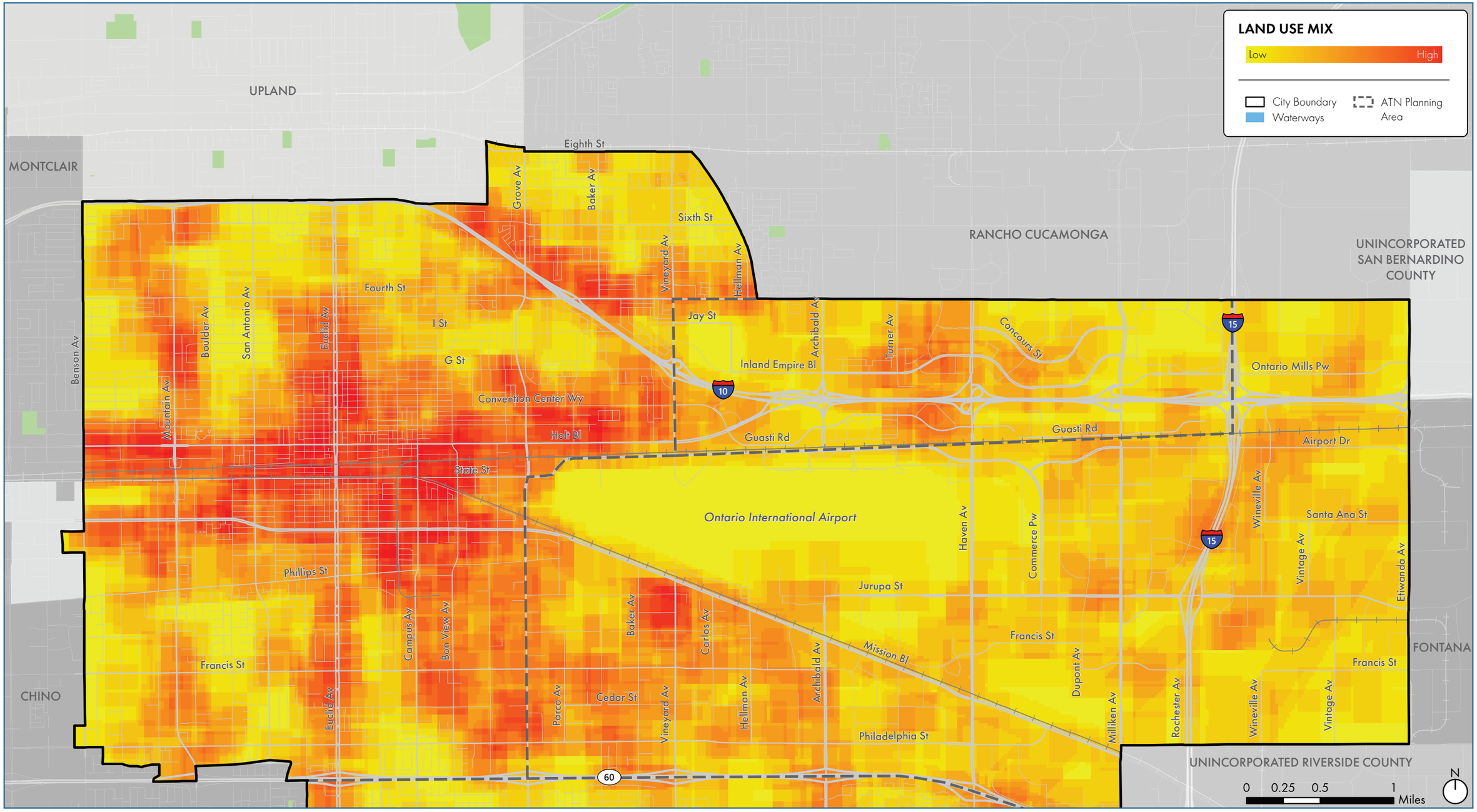


Figure B.18 Land Use Mix: Citywide - A Closer Look at the Northern Portion

Source: Ontario Active Transportation Master Plan

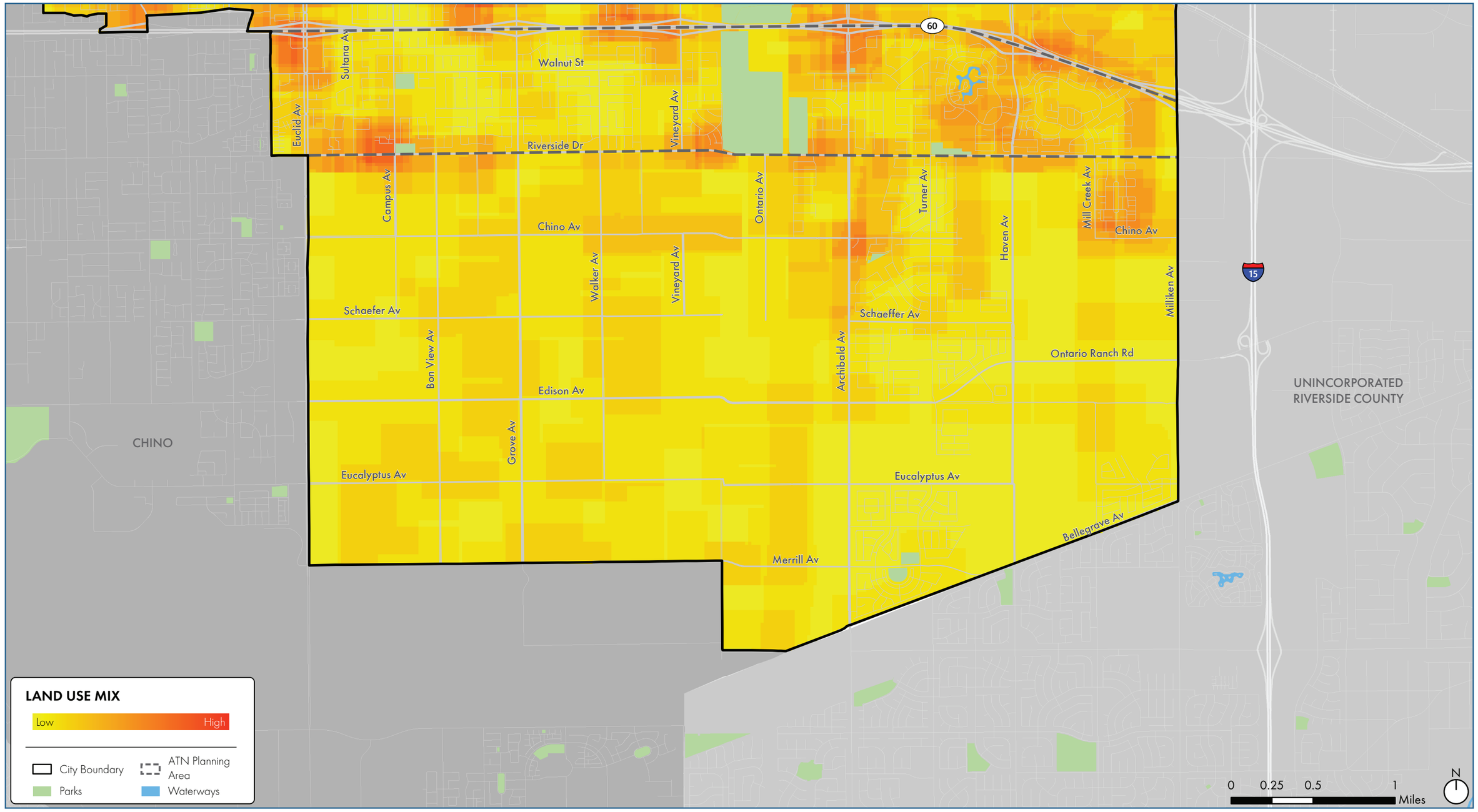


Figure B.19 Land Use Mix: Citywide - A Closer Look at the Southern Portion

Source: Ontario Active Transportation Master Plan

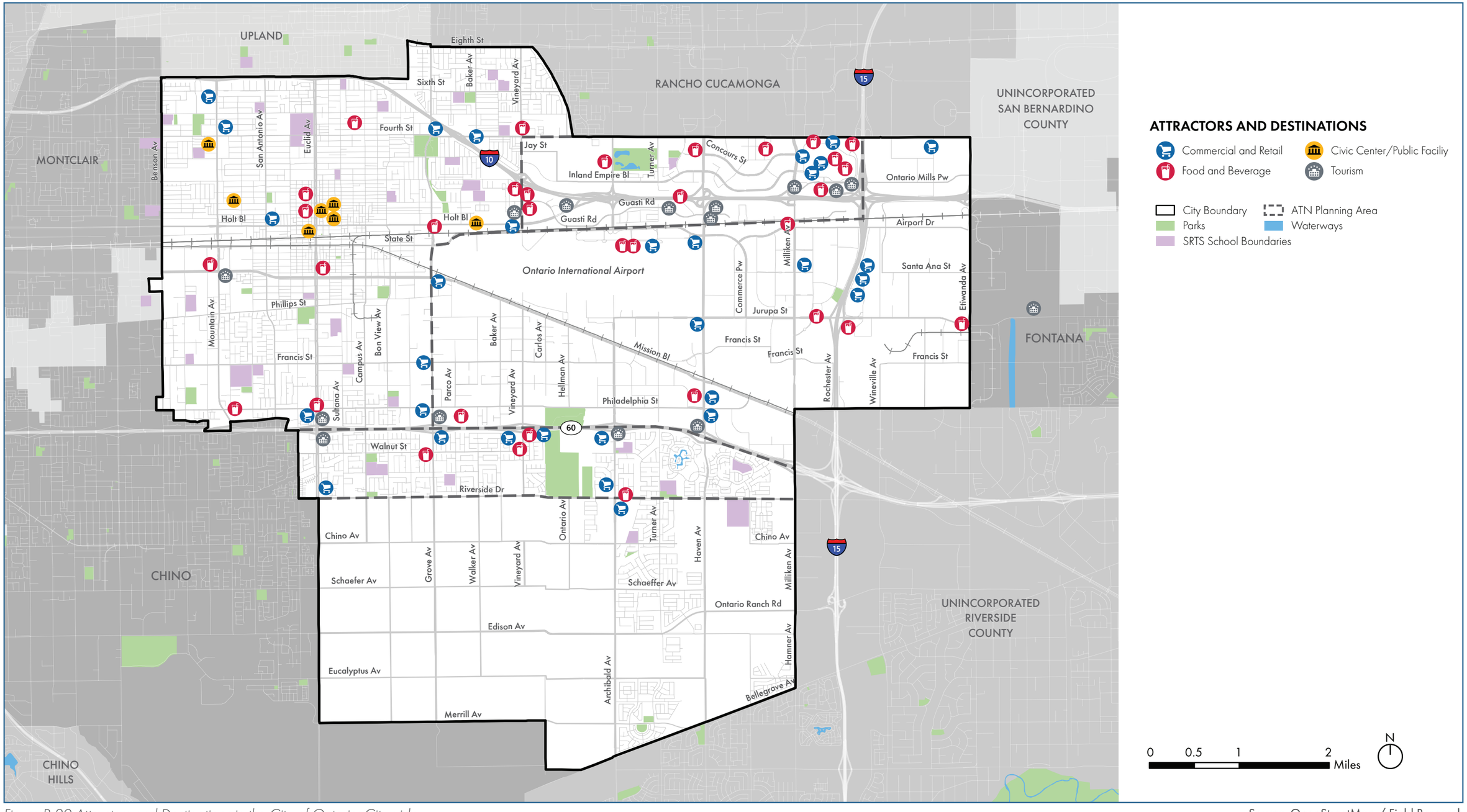


Figure B.20 Attractors and Destinations in the City of Ontario: Citywide

Source: OpenStreetMap / Field Research

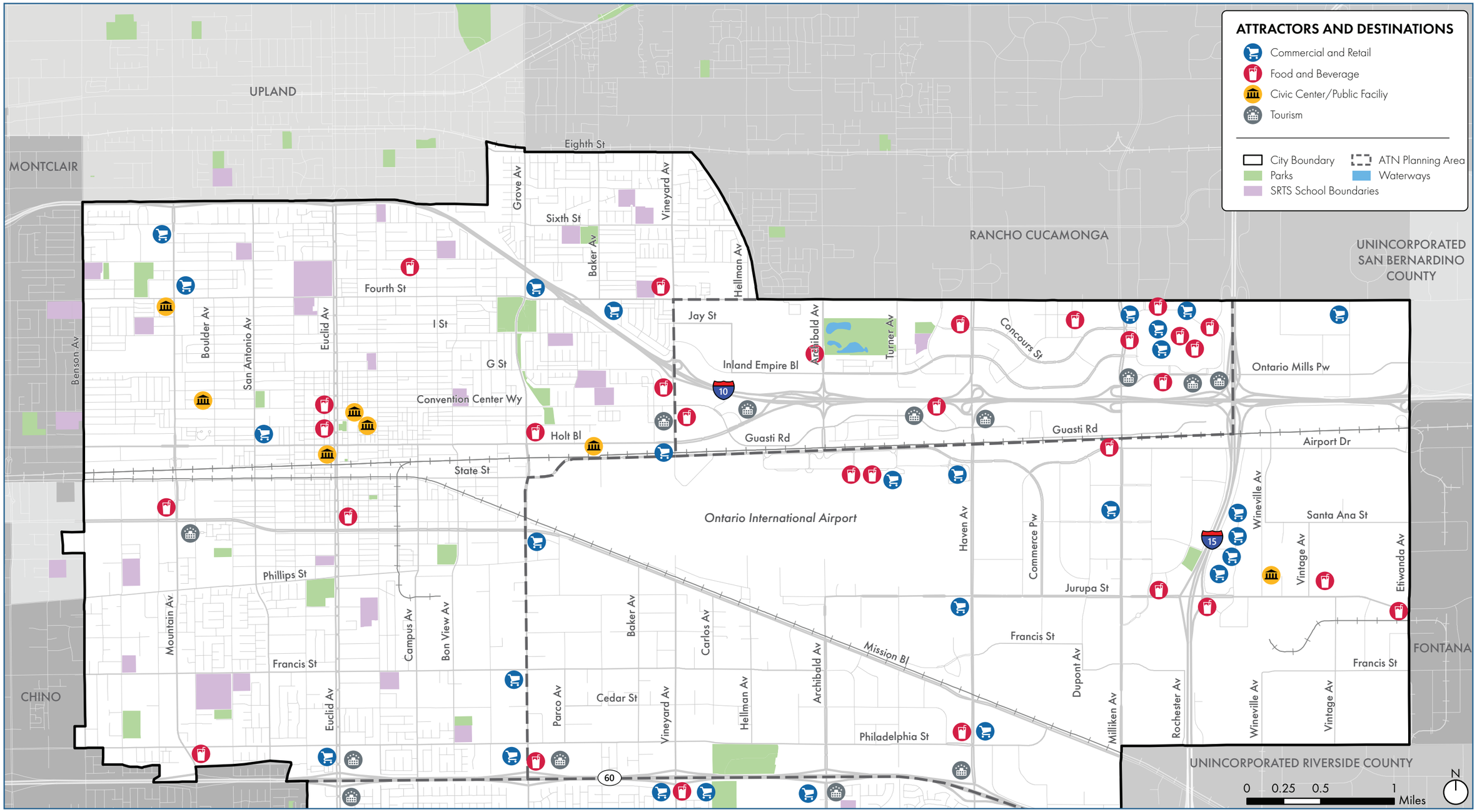


Figure B.21 Attractors and Destinations in the City of Ontario: Citywide - A Closer Look at the Northern Portion

Source: OpenStreetMap / Field Research

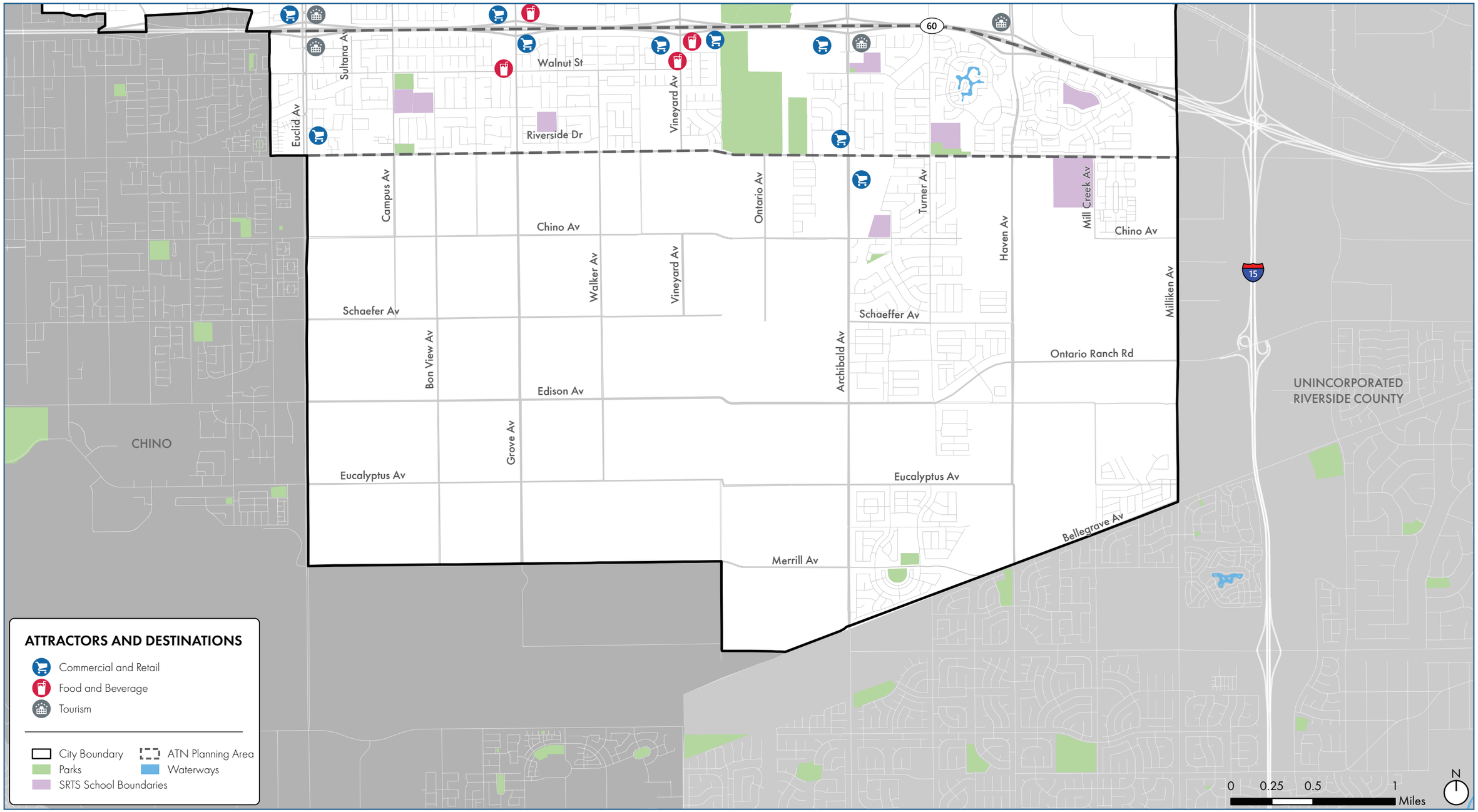


Figure B.22 Attractors and Destinations in the City of Ontario: Citywide - A Closer Look at the Southern Portion

Source: OpenStreetMap / Field Research

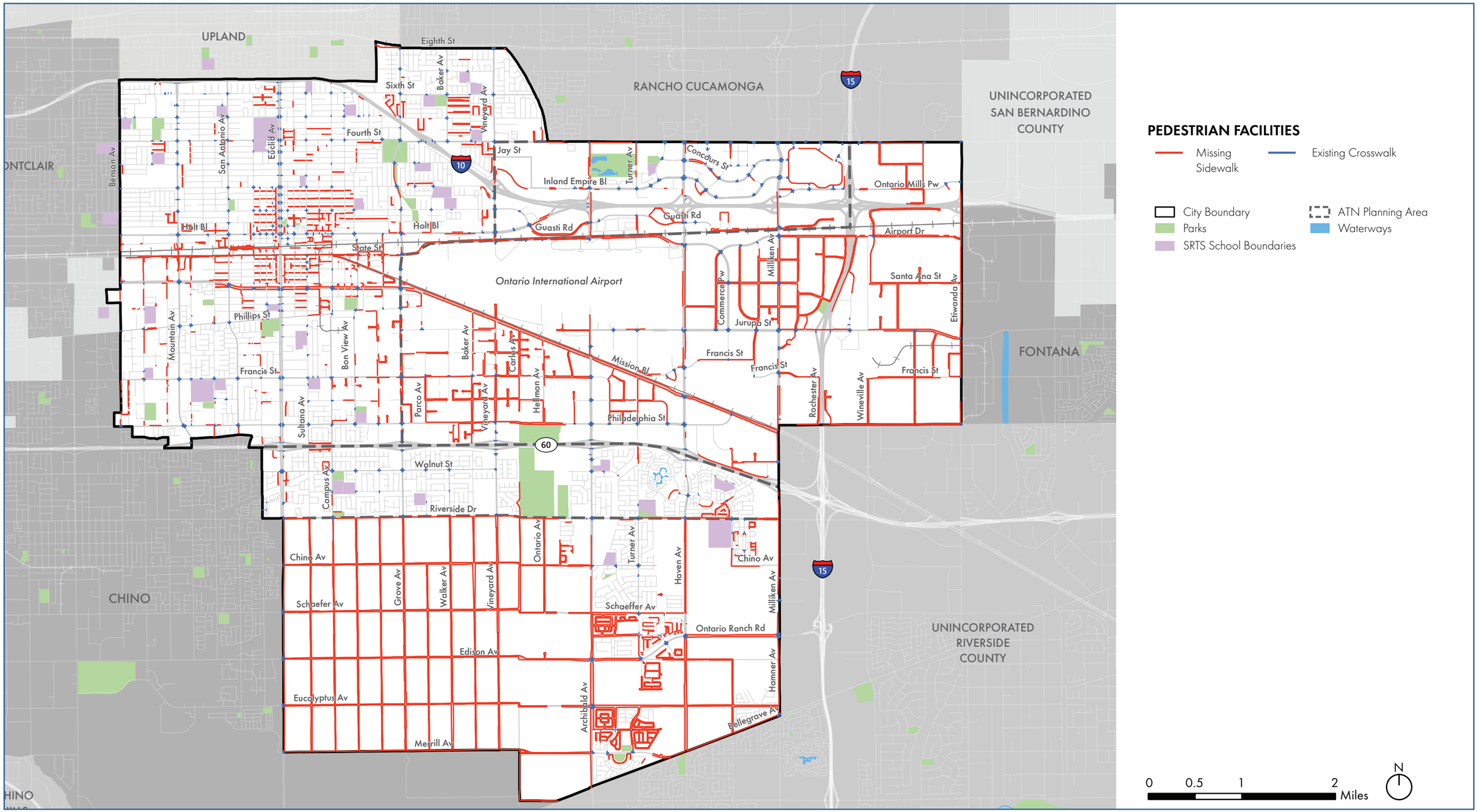


Figure B.23 Missing Sidewalks and Availability of Crosswalks: Citywide

Source: SBCTA Comprehensive Pedestrian Connectivity Plan Phase I

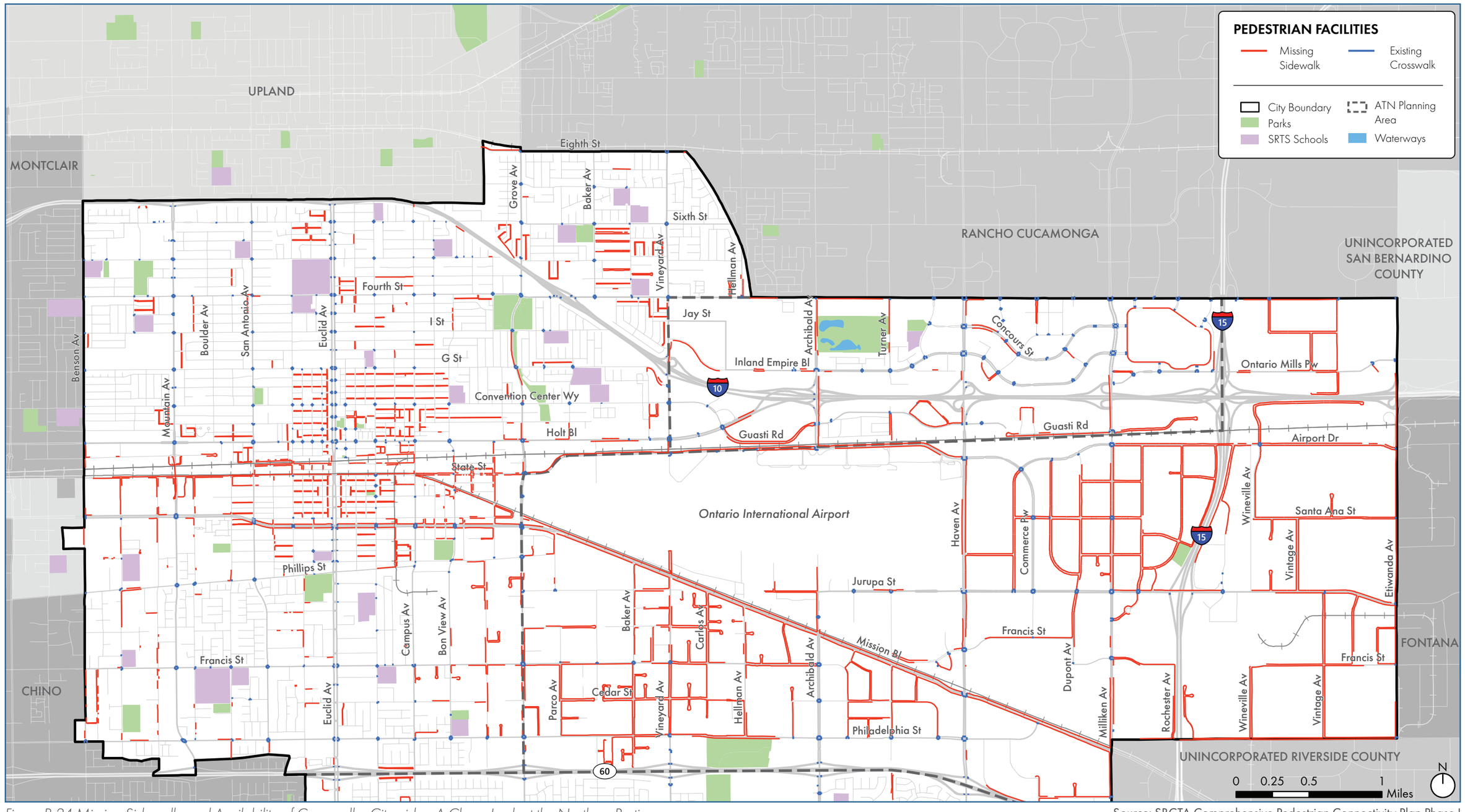


Figure B.24 Missing Sidewalks and Availability of Crosswalks: Citywide - A Closer Look at the Northern Portion

Source: SBCTA Comprehensive Pedestrian Connectivity Plan Phase I

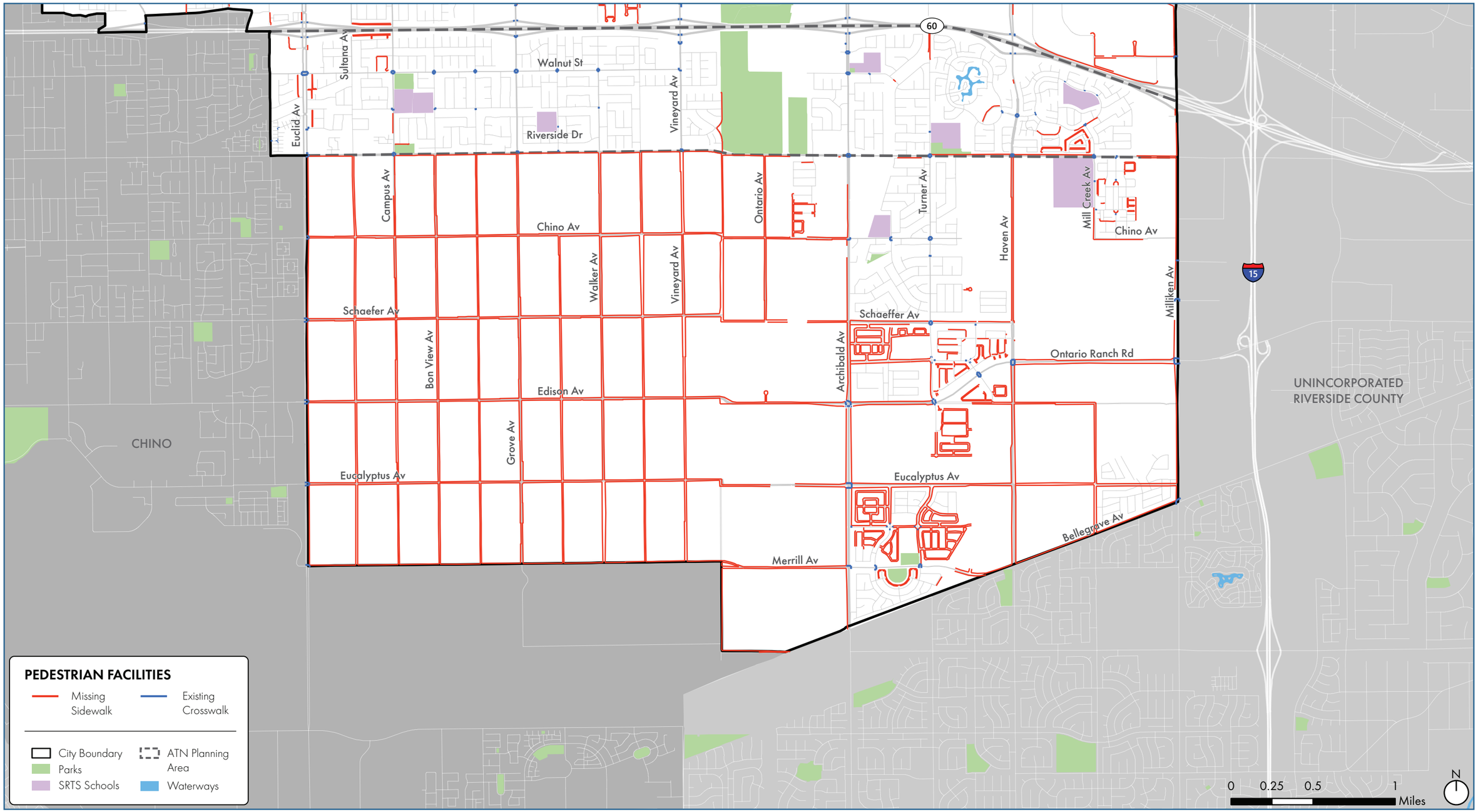


Figure B.25 Missing Sidewalks and Availability of Crosswalks: Citywide - A Closer Look at the Southern Portion

Source: SBCTA Comprehensive Pedestrian Connectivity Plan Phase I

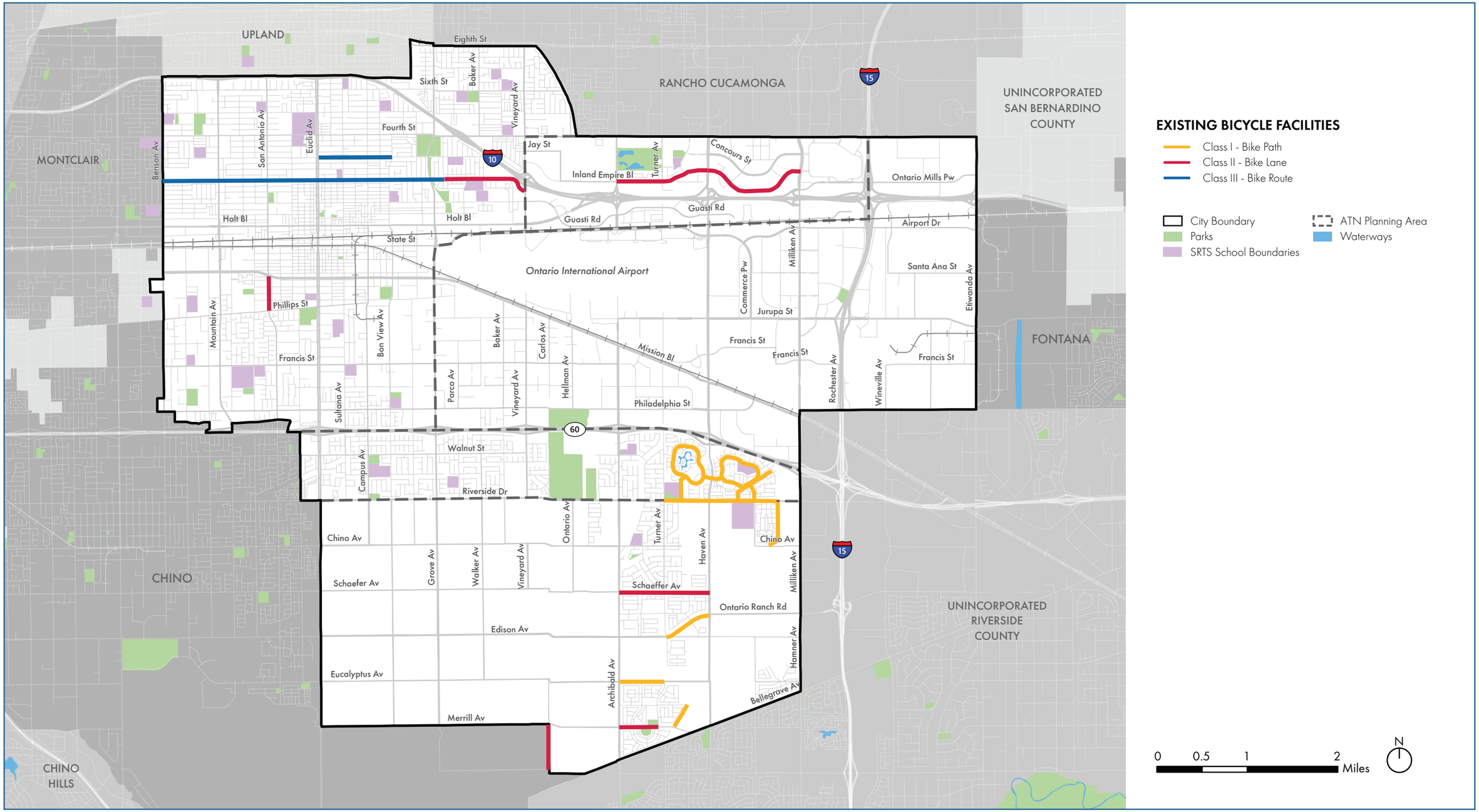


Figure B.26 Existing Bicycle Facilities: Citywide

Source: City of Ontario / Field Review

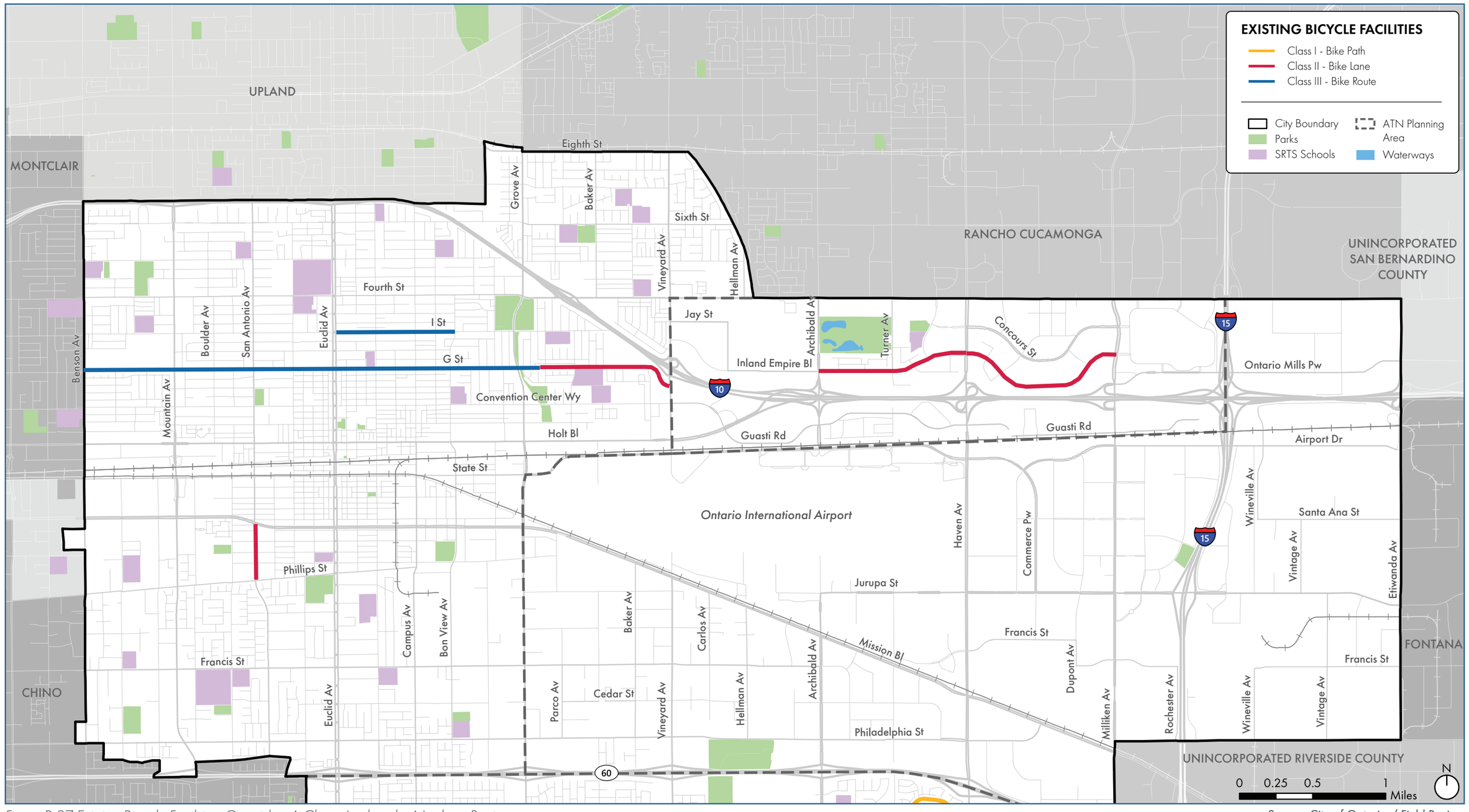


Figure B.27 Existing Bicycle Facilities: Citywide - A Closer Look at the Northern Portion

Source: City of Ontario / Field Review

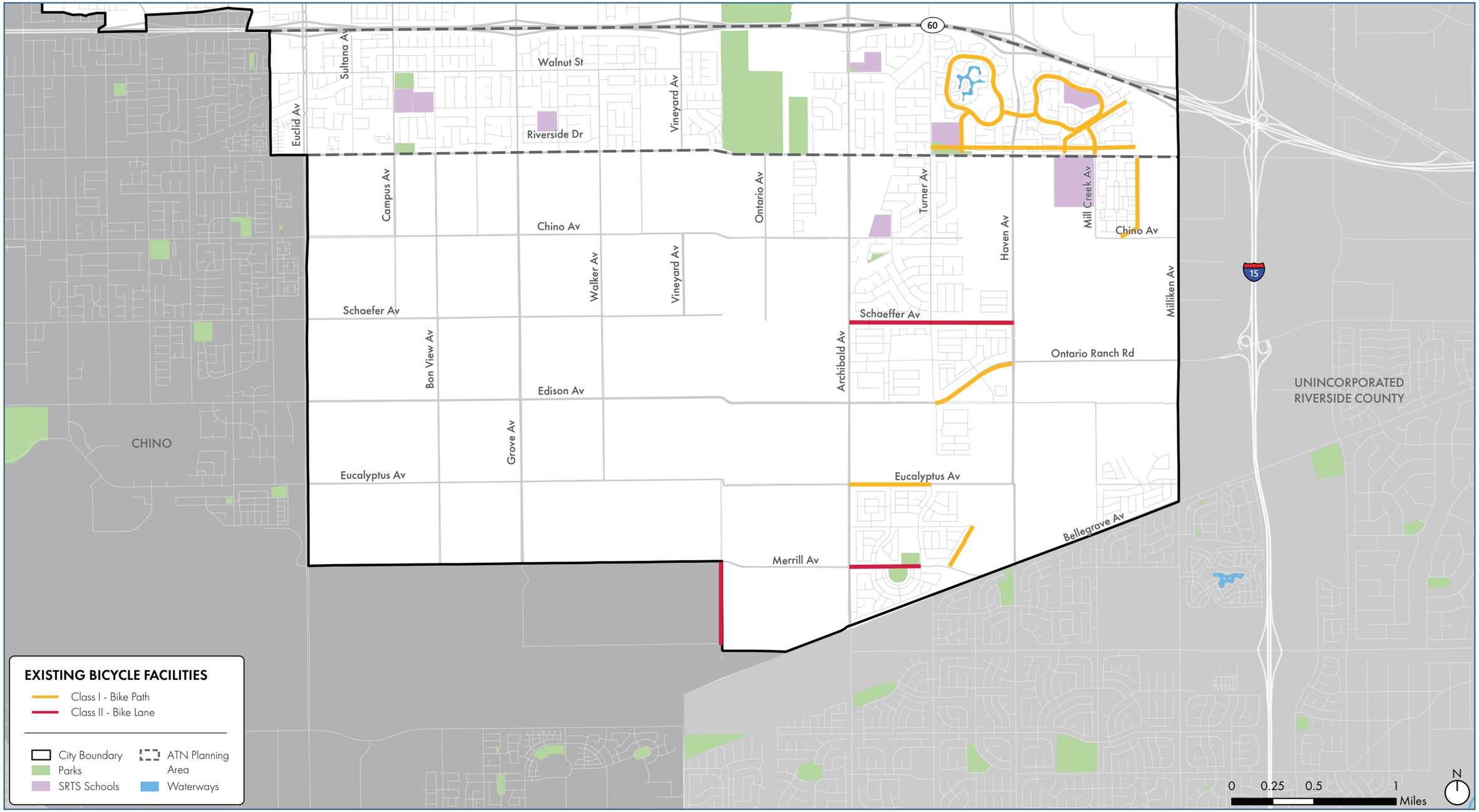


Figure B.28 Existing Bicycle Facilities: Citywide - A Closer Look at the Southern Portion

Source: City of Ontario / Field Review

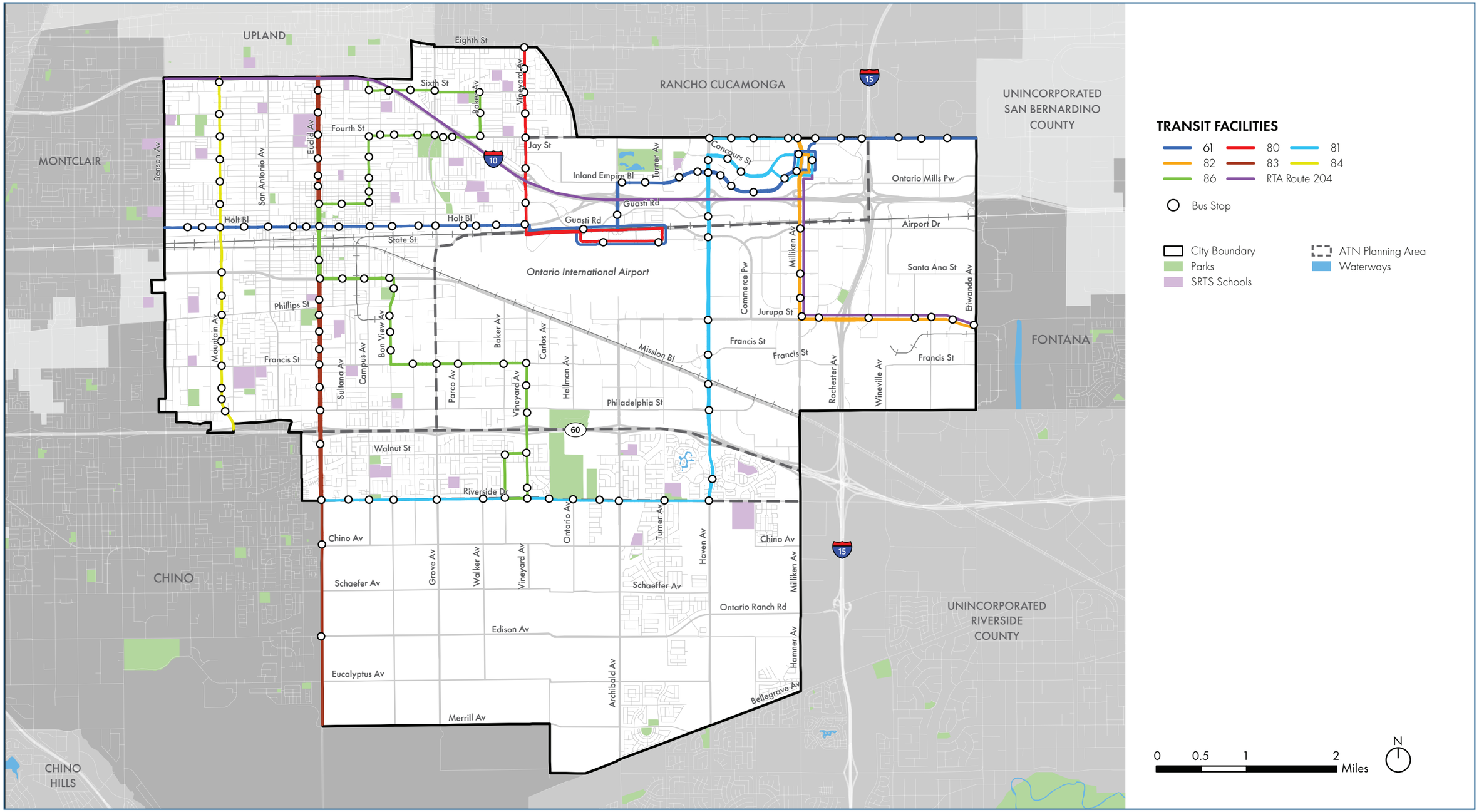


Figure B.29 Transit Facilities in the City of Ontario: Citywide

Source: Omnitrans

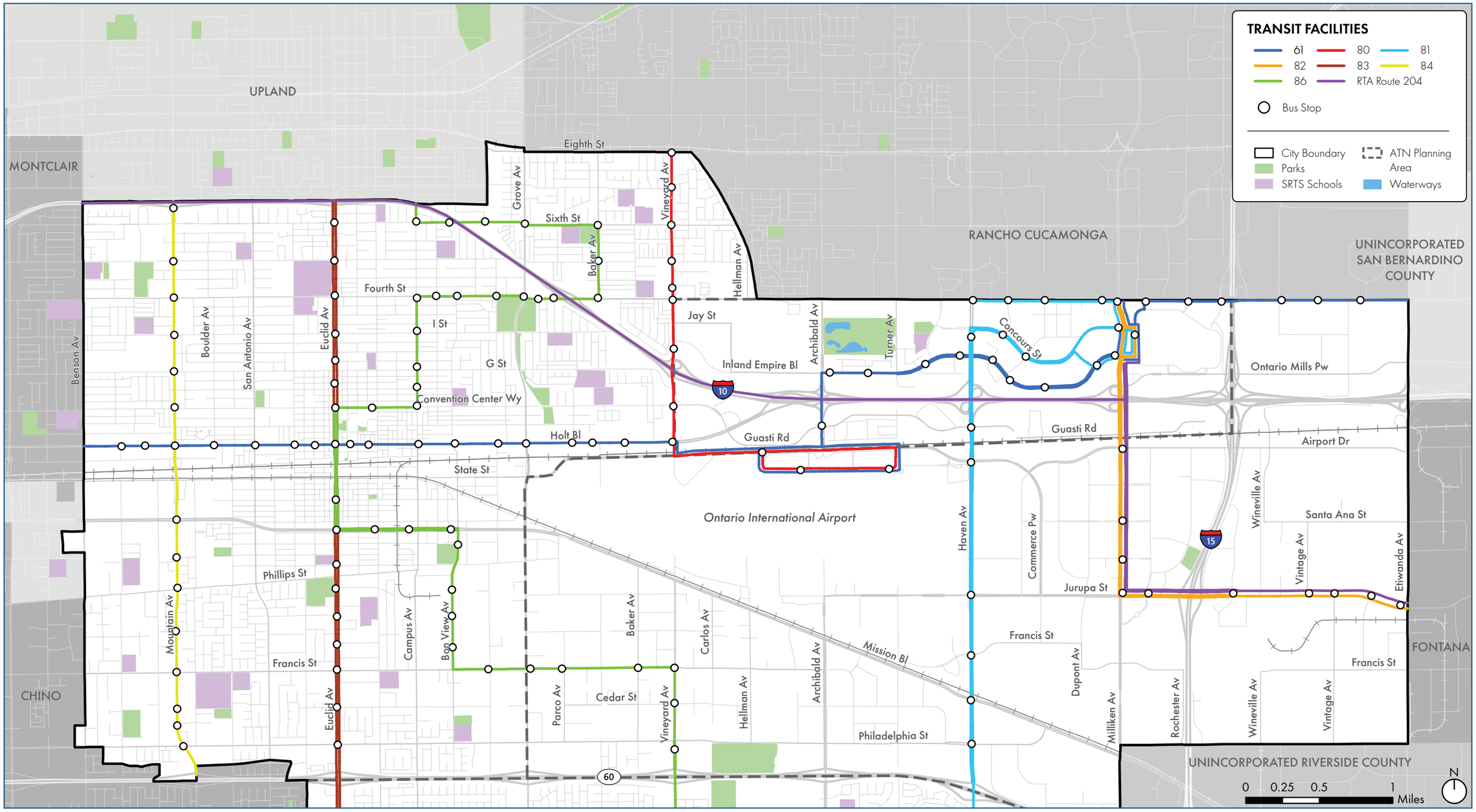


Figure B.30 Transit Facilities in the City of Ontario: Citywide - A Closer Look at the Northern Portion

Source: Omnitrans

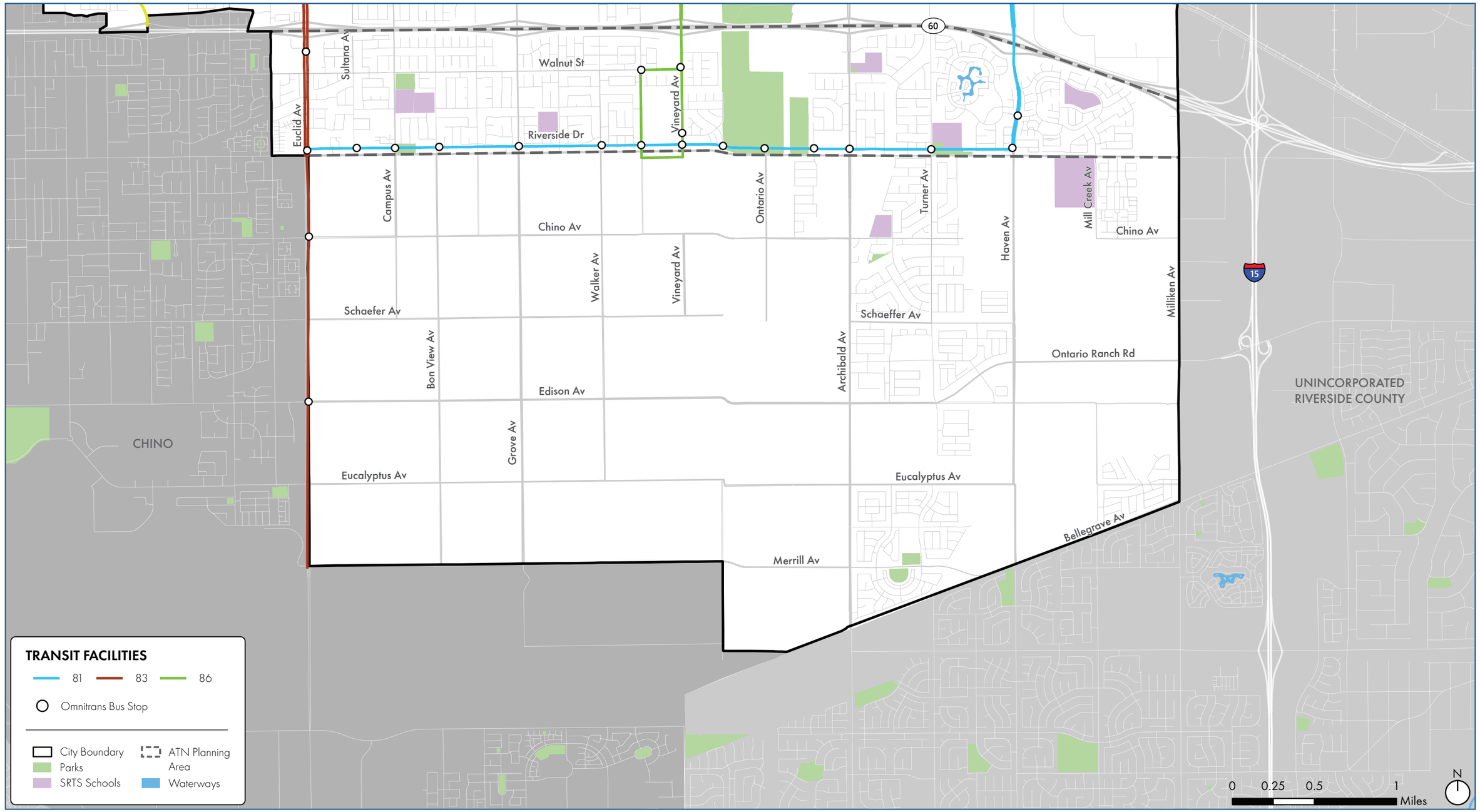


Figure B.31 Transit Facilities in the City of Ontario: Citywide - A Closer Look at the Southern Portion

Source: Omnitrans

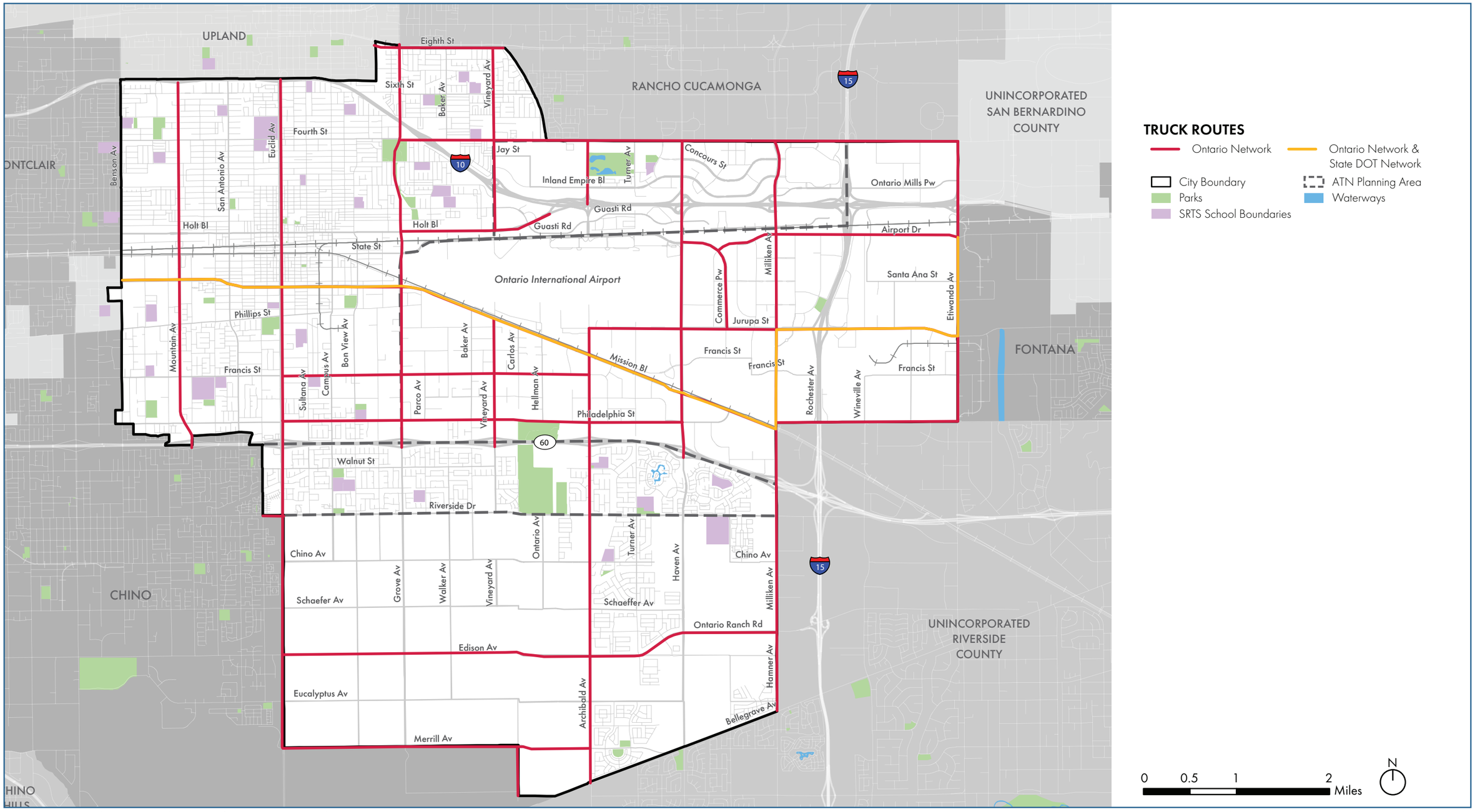


Figure B.32 Truck Routes in the City of Ontario: Citywide

Source: The Ontario Plan - Revised September 20, 2016

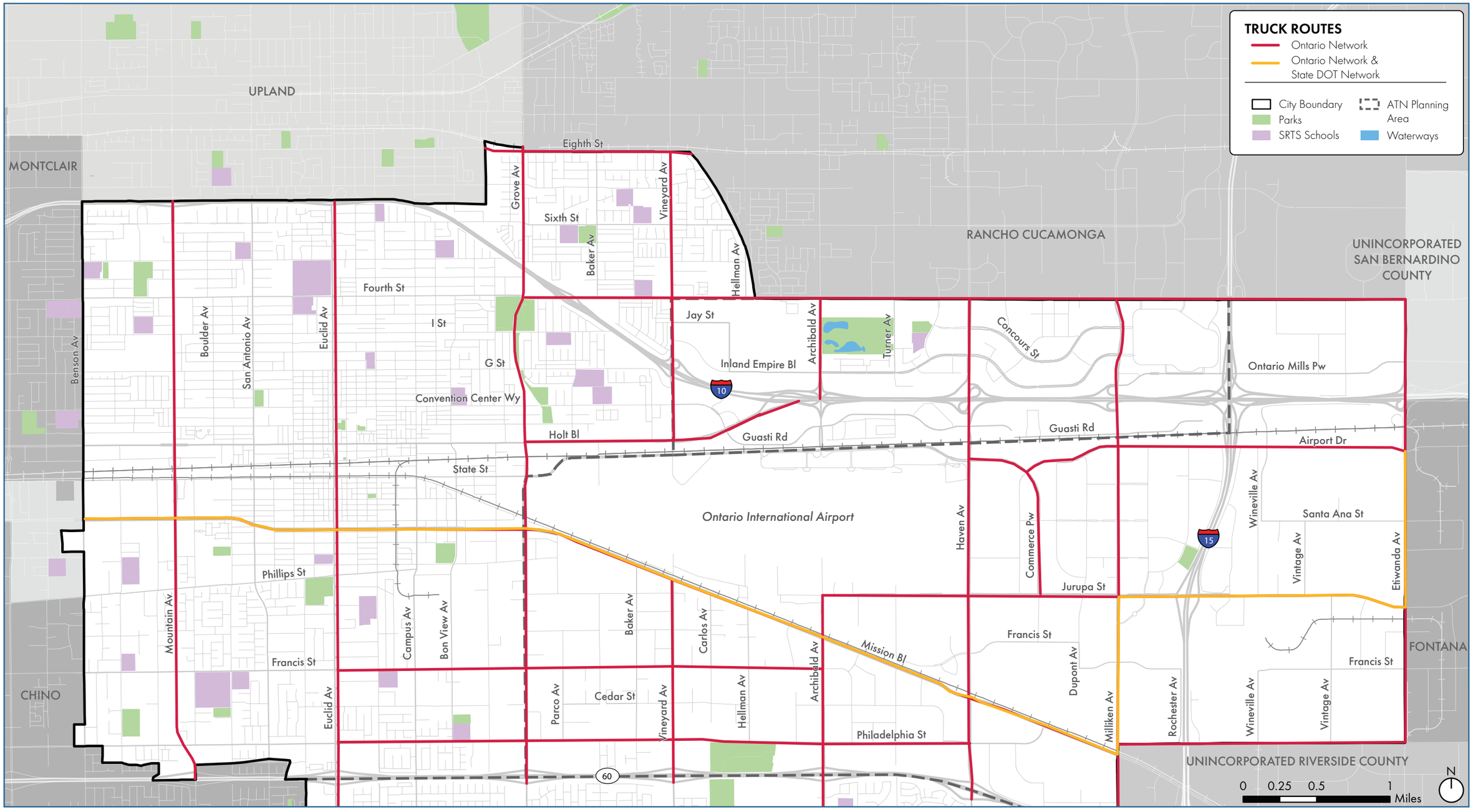


Figure B.33 Truck Routes in the City of Ontario: Citywide - A Closer Look at the Northern Portion

Source: The Ontario Plan - Revised September 20, 2016

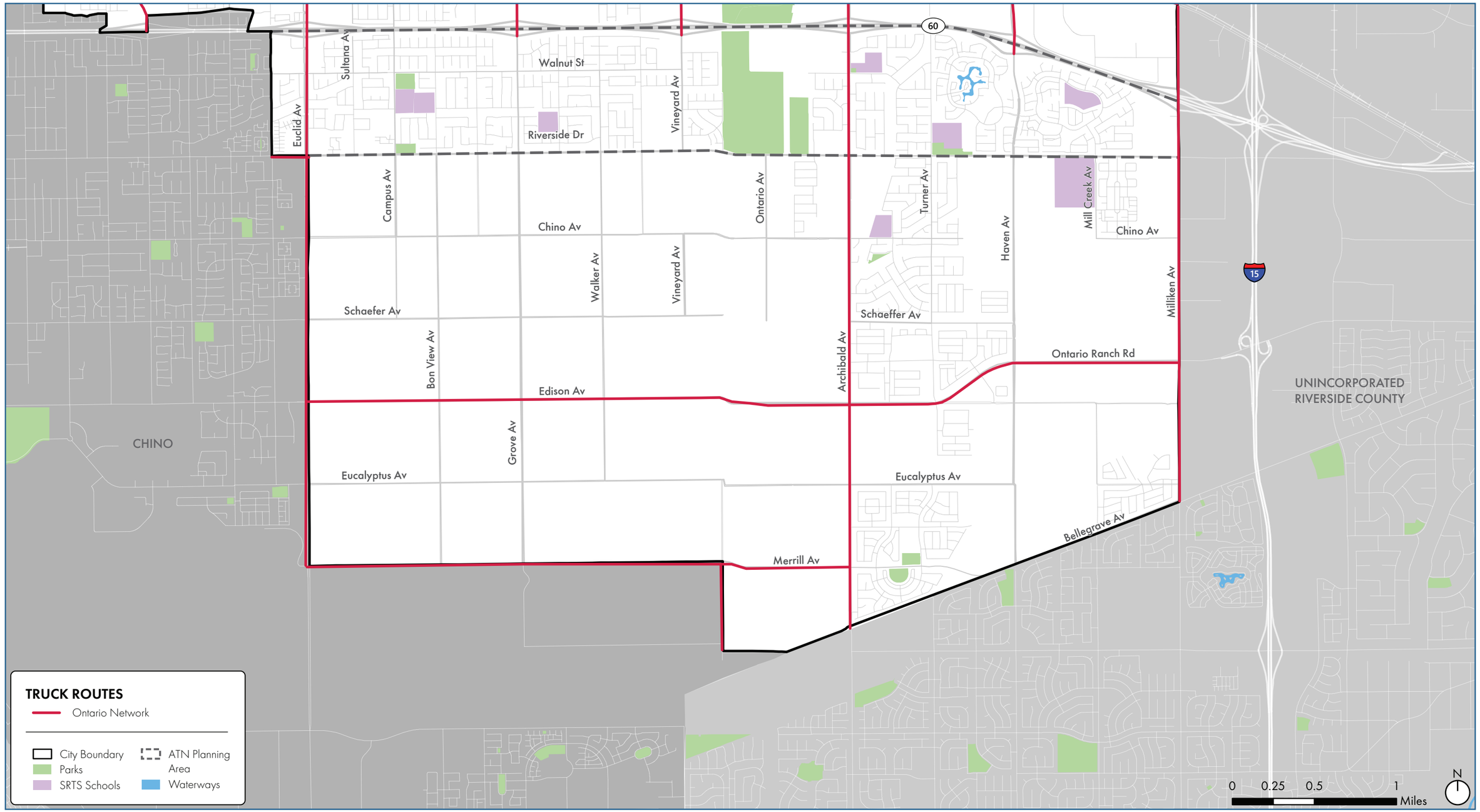


Figure B.34 Truck Routes in the City of Ontario: Citywide - A Closer Look at the Southern Portion

Source: The Ontario Plan - Revised September 20, 2016

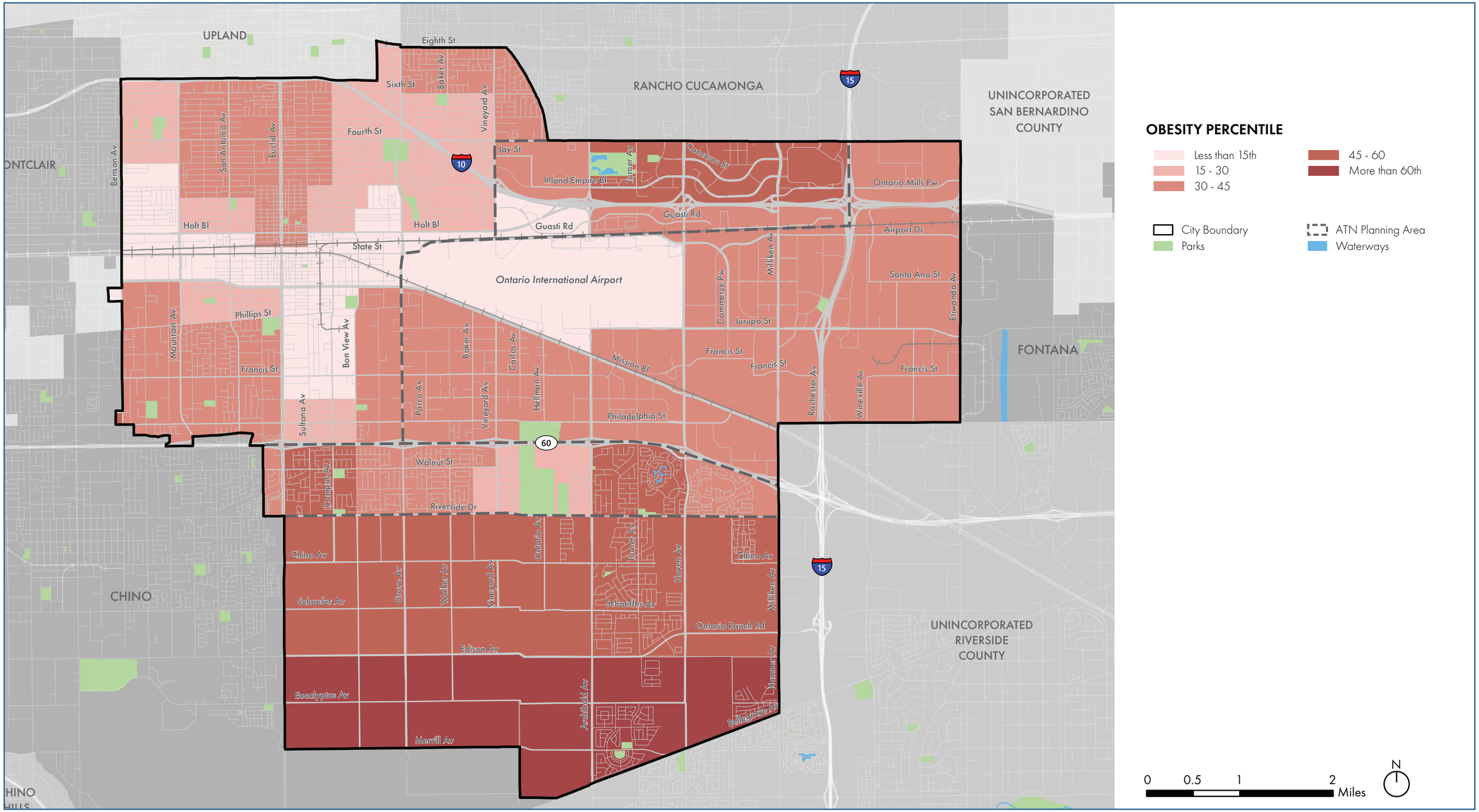


Figure B.35 Percentages of Households with Obesity: Citywide

Source: CalEnviroScreen 3.0

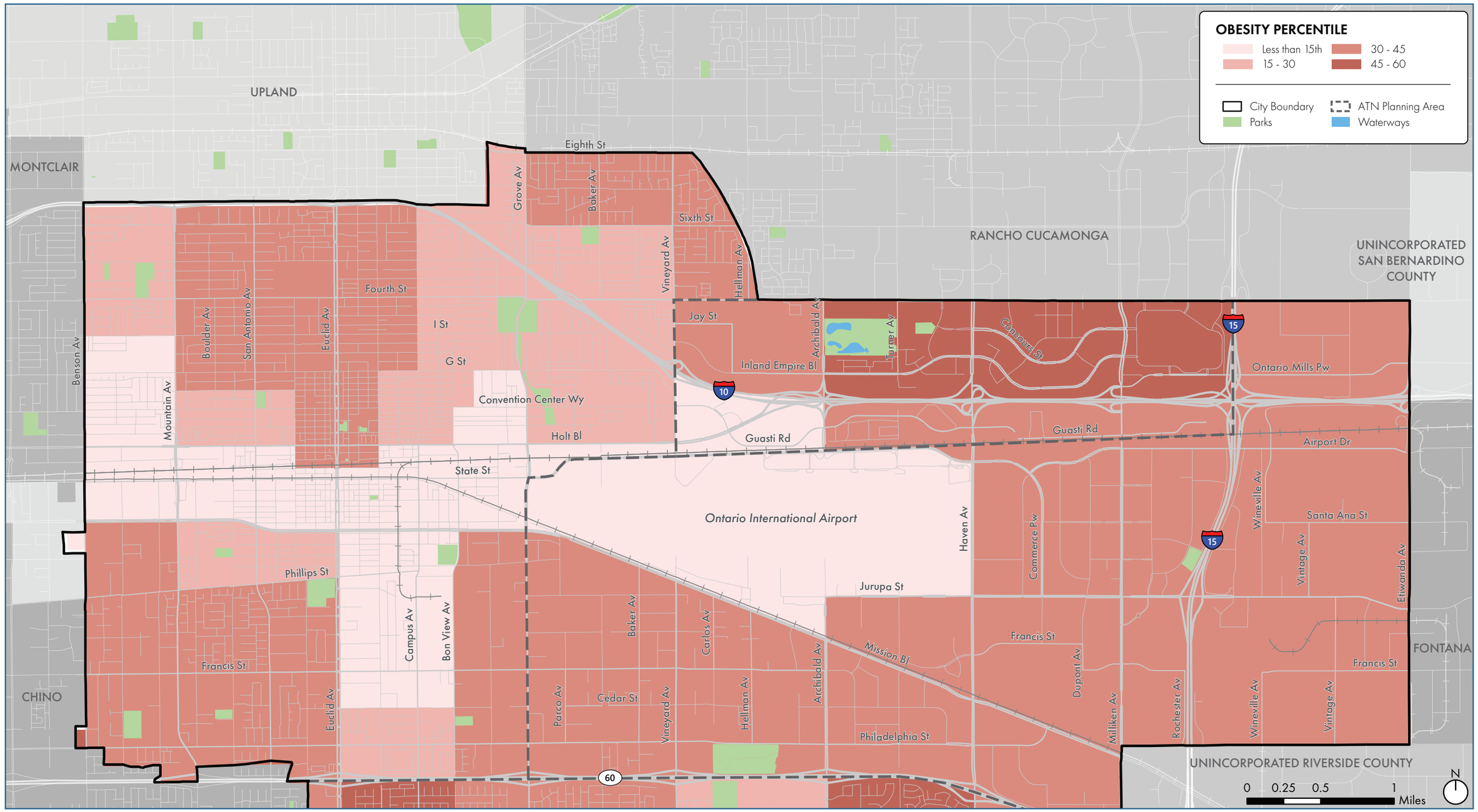


Figure B.36 Percentages of Households with Obesity: Citywide - A Closer Look at the Northern Portion

Source: CalEnviroScreen 3.0

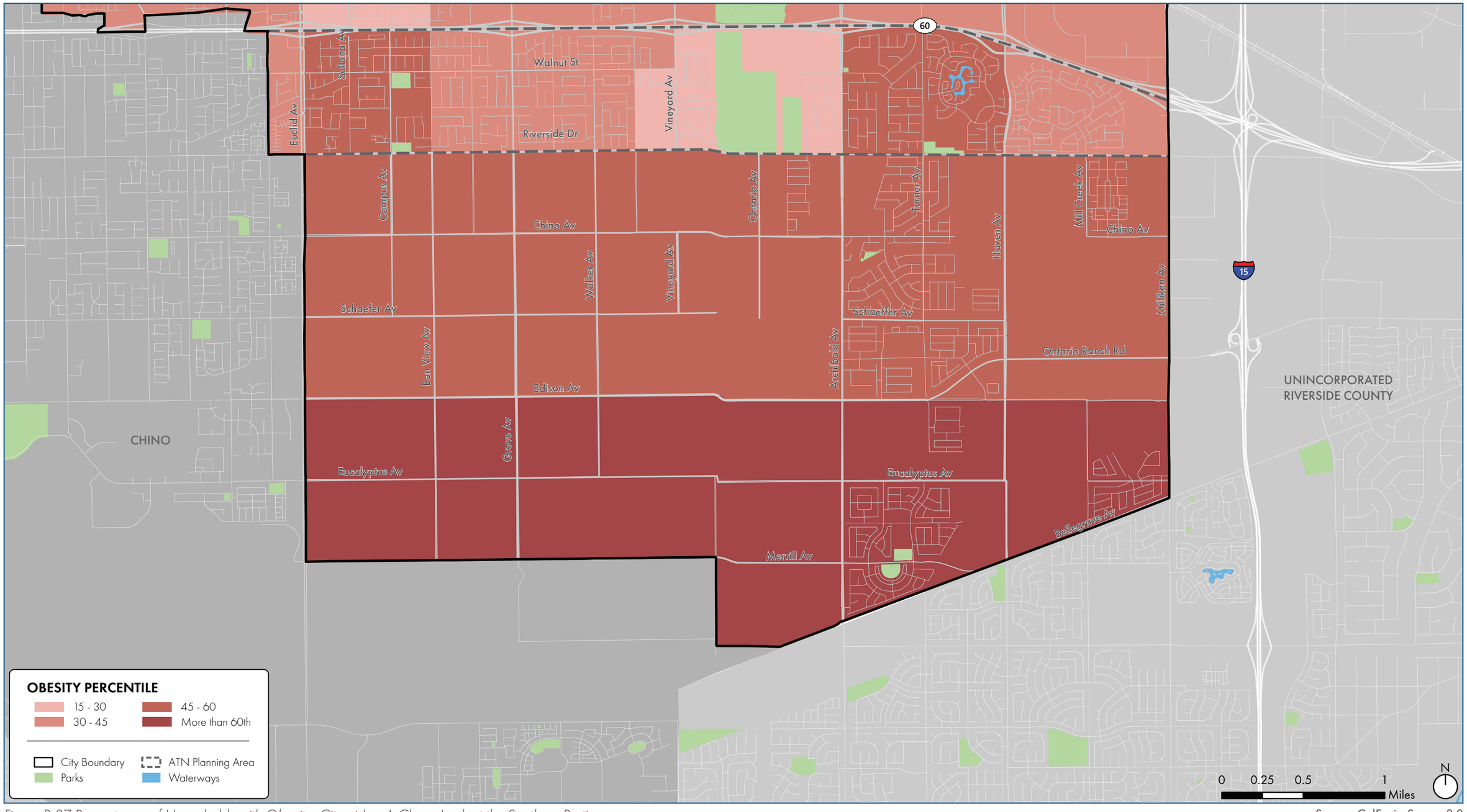
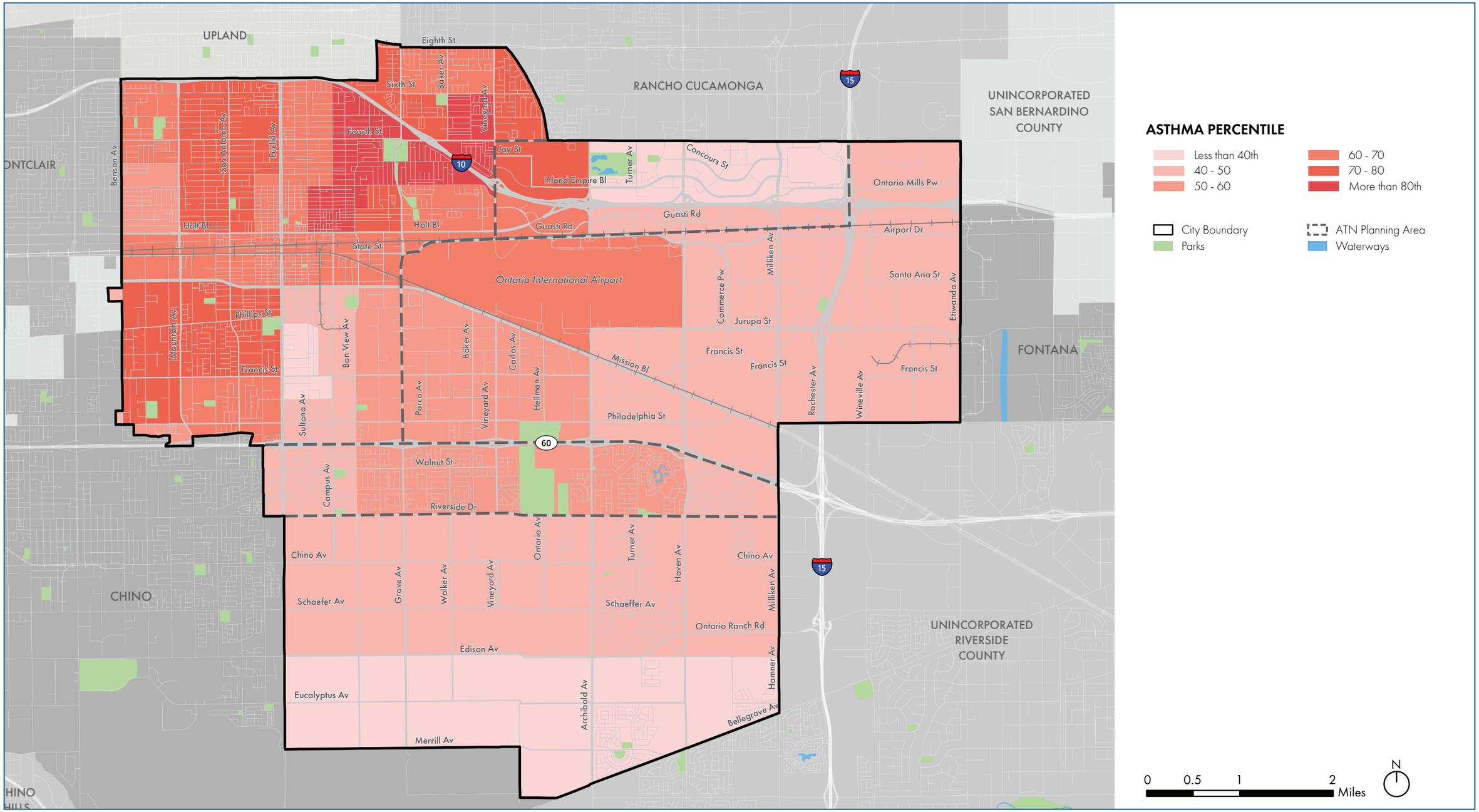


Figure B.37 Percentages of Households with Obesity: Citywide - A Closer Look at the Southern Portion

Source: CalEnviroScreen 3.0



ASTHMA PERCENTILE

- Less than 40th
- 40 - 50
- 50 - 60
- 60 - 70
- 70 - 80
- More than 80th

- City Boundary
- Parks
- ATN Planning Area
- Waterways

0 0.5 1 2 Miles

N

Figure B.38 Percentages of Households with Asthma: Citywide

Source: CalEnviroScreen 3.0

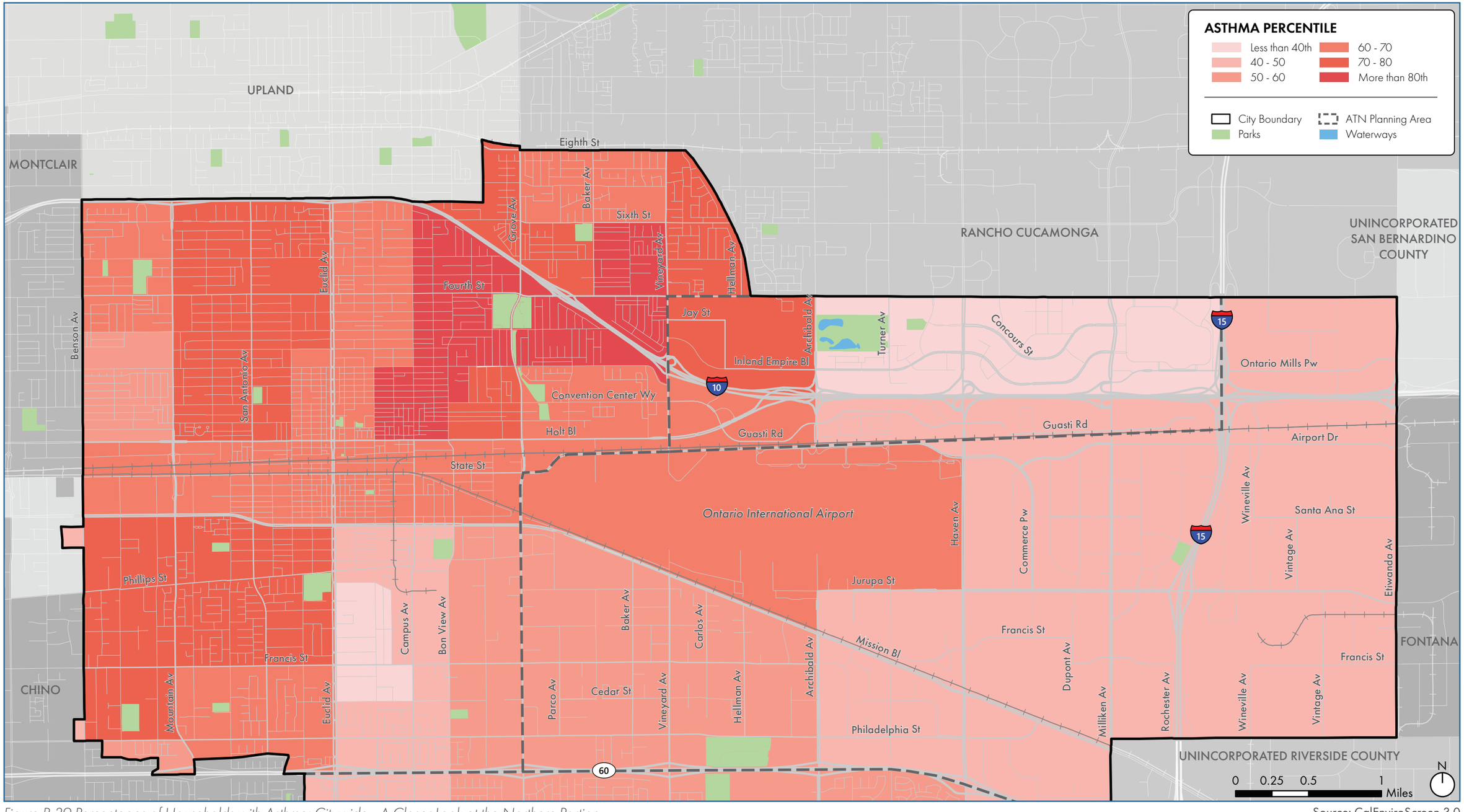


Figure B.39 Percentages of Households with Asthma: Citywide - A Closer Look at the Northern Portion

Source: CalEnviroScreen 3.0

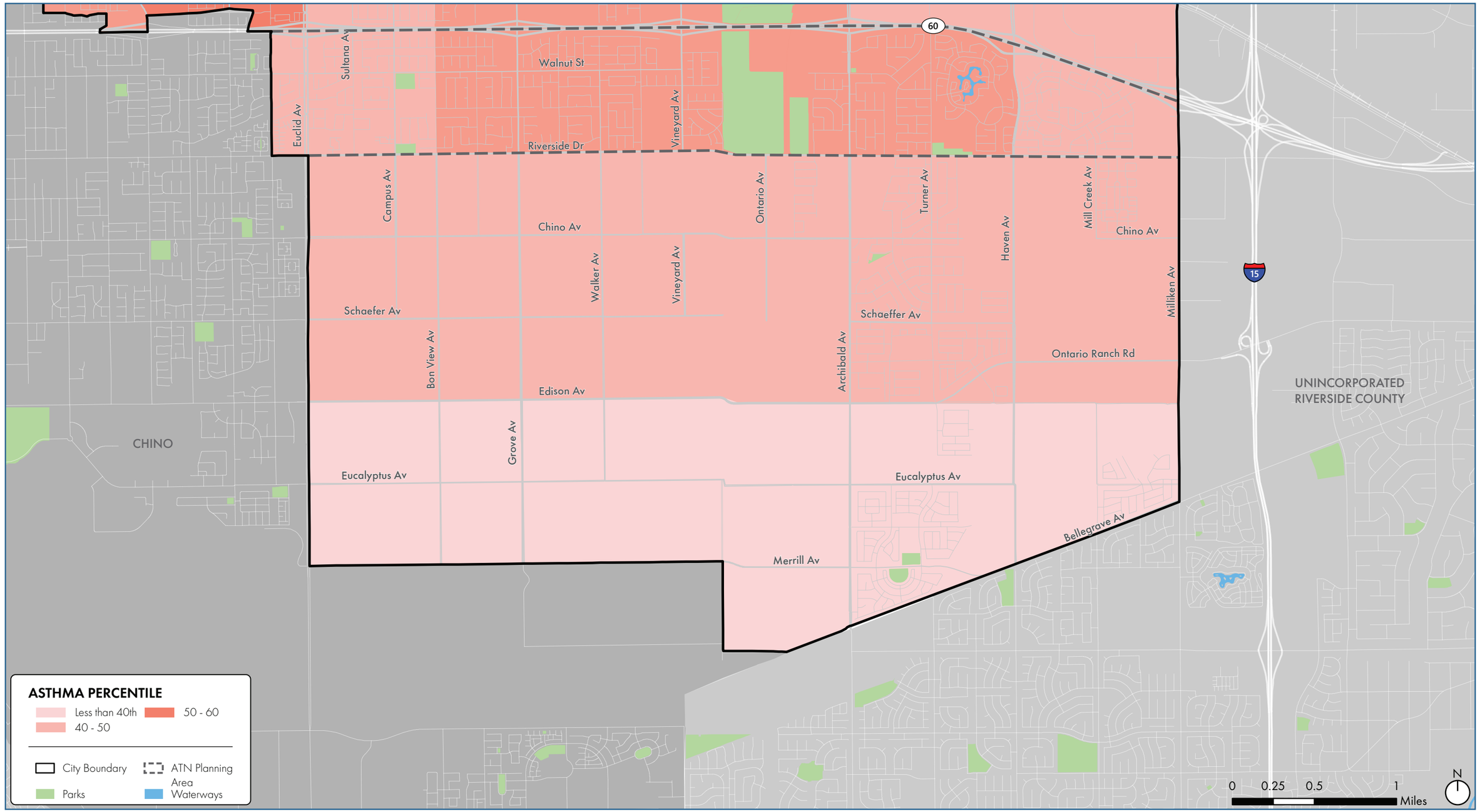


Figure B.40 Percentages of Households with Asthma: Citywide - A Closer Look at the Southern Portion

Source: CalEnviroScreen 3.0

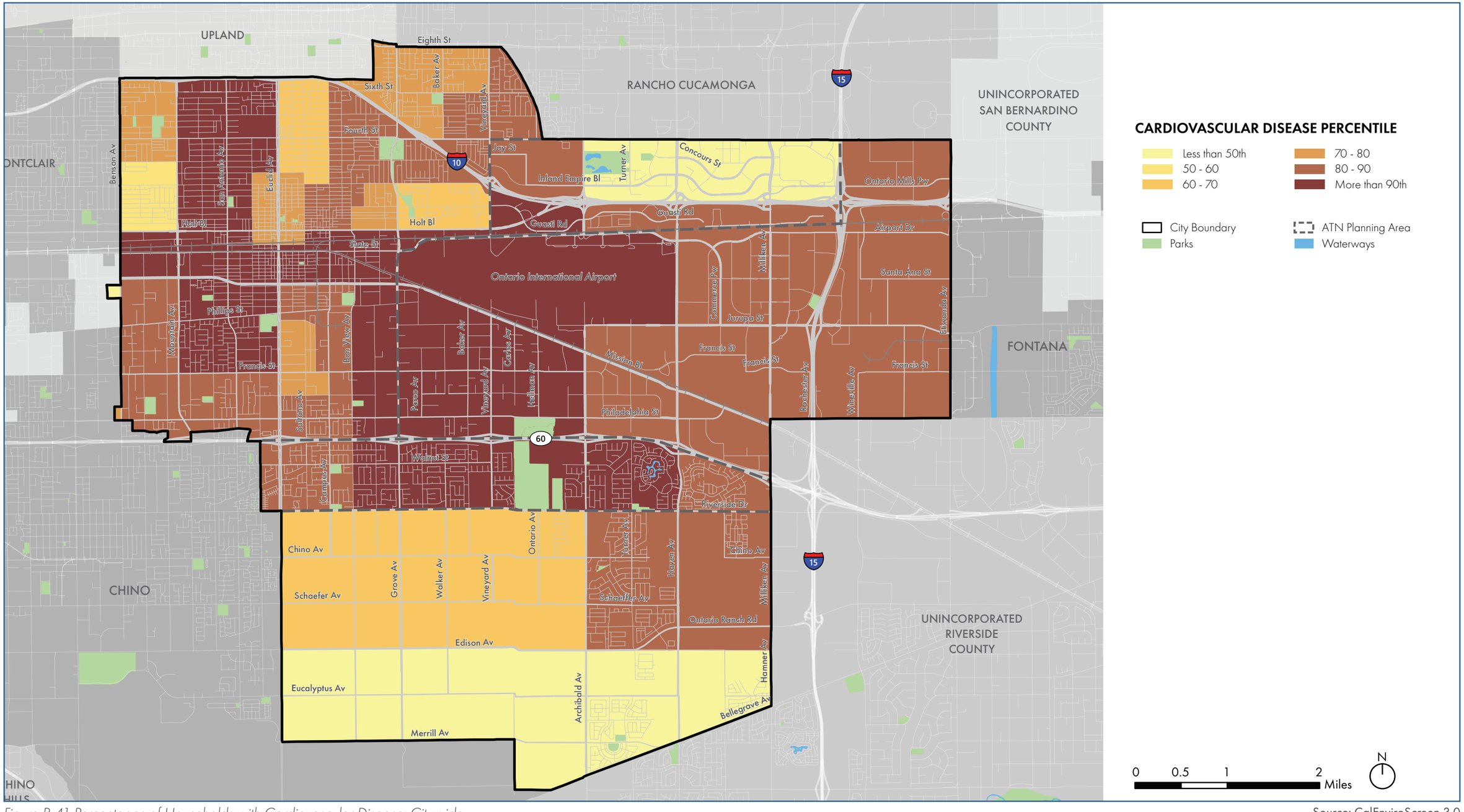


Figure B.41 Percentages of Households with Cardiovascular Disease: Citywide

Source: CalEnviroScreen 3.0

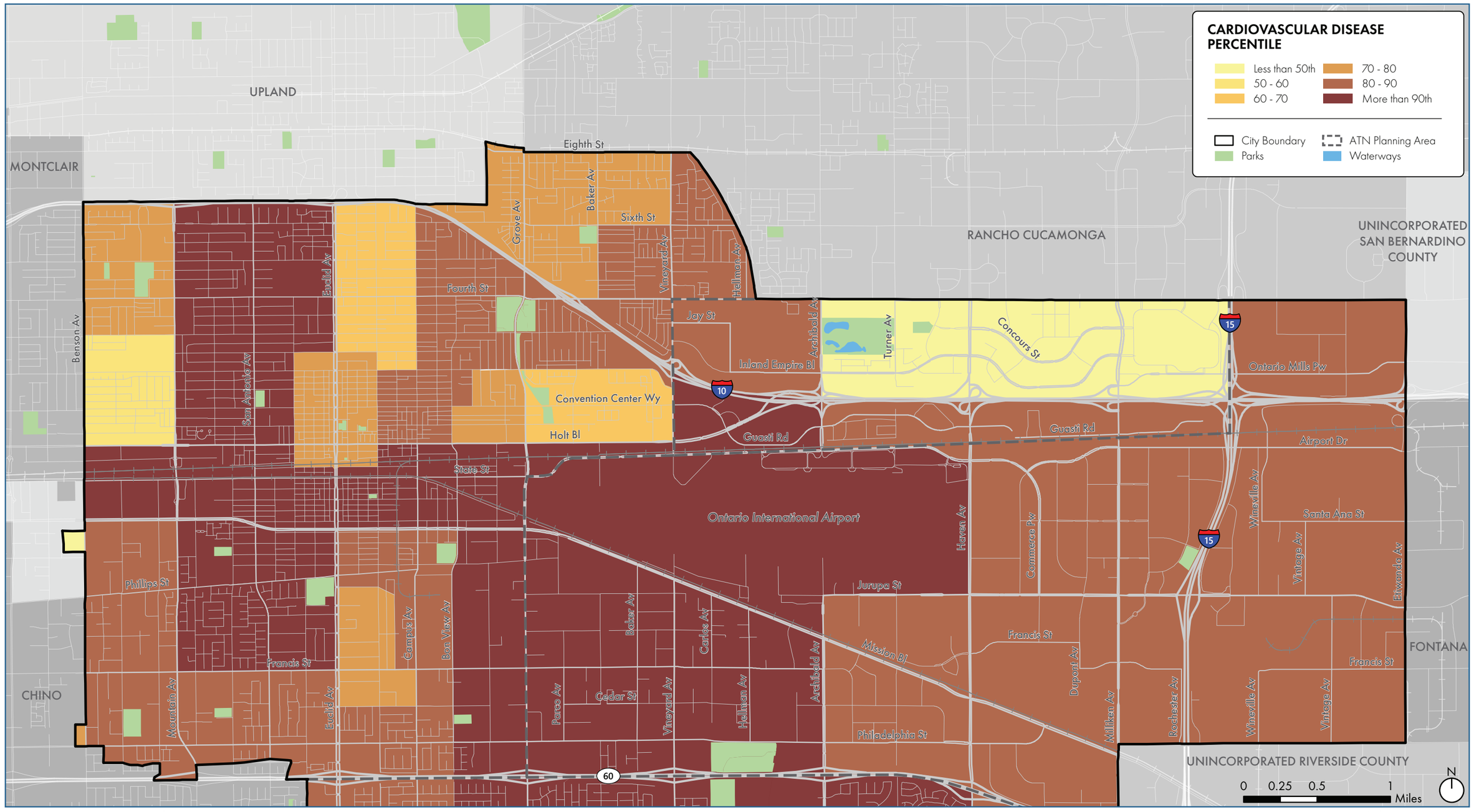


Figure B.42 Percentages of Households with Cardiovascular Disease: Citywide - A Closer Look at the Northern Portion

Source: CalEnviroScreen 3.0

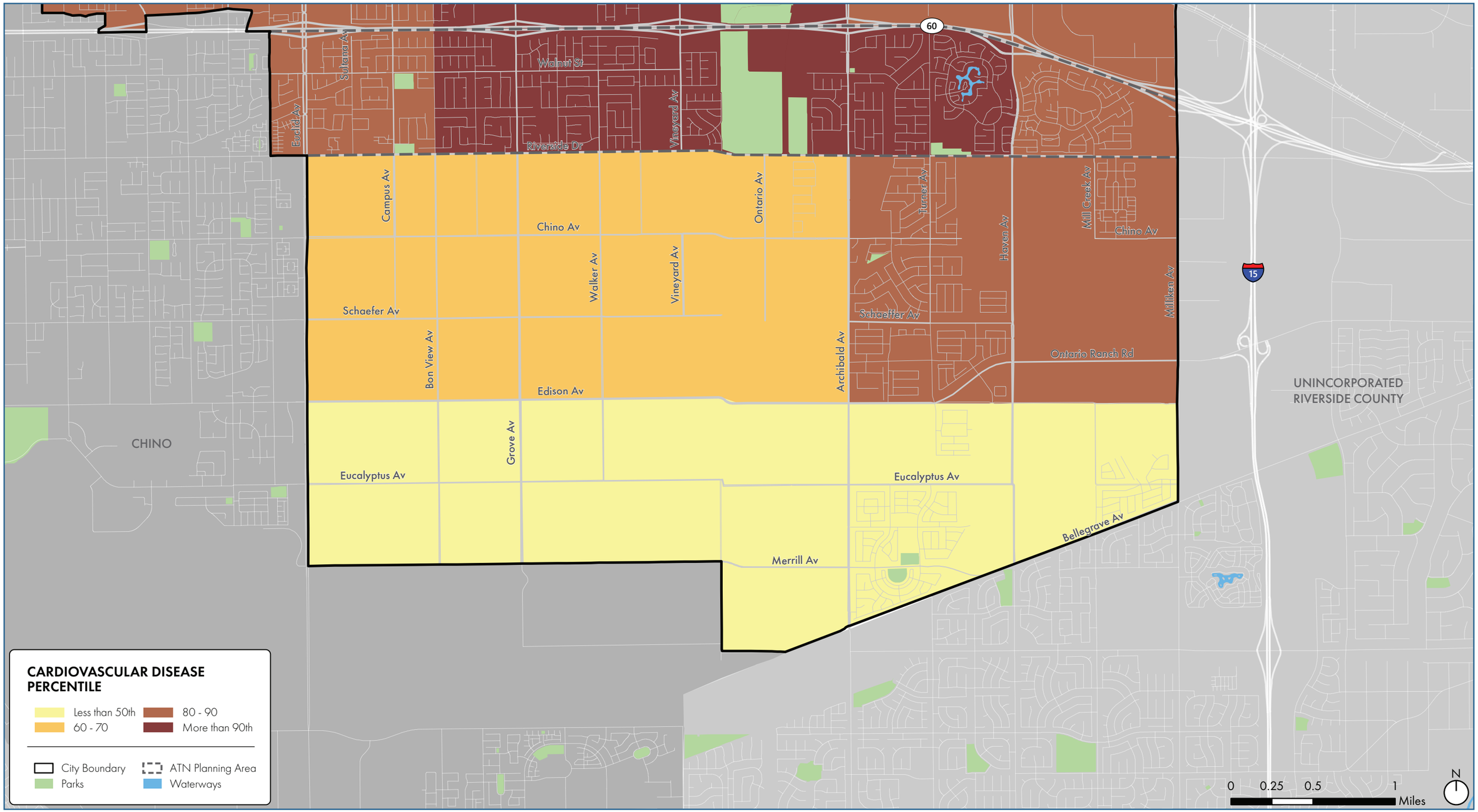


Figure B.43 Percentages of Households with Cardiovascular Disease: Citywide - A Closer Look at the Southern Portion

Source: CalEnviroScreen 3.0

Appendix C

COLLISION ANALYSIS

COLLISION ANALYSIS

A critical component used to improve the exposure and safety of bicyclists and pedestrians is the analysis of historical collision data. Analyzing historical collision data is an essential task used in determining the implementation of specific countermeasures. Collision data from January 2014 to December 2018 was obtained from the Transportation Injury Mapping System (TIMS).

From 2014-2018, there were 169 bicyclist-involved collisions in Ontario, an average of roughly 34 collisions per year. During that same time frame, 192 pedestrian-involved collisions occurred, an average of approximately 38 collisions per year. Approximately 12% of all collisions within the 5-year time period were pedestrian- or bicyclist-involved collisions.

The California Office of Traffic Safety (OTS) develops rankings for comparison of traffic safety statistics between cities with similar-sized populations. The OTS provides statistics based on rates of victims killed and injured per "1,000 daily-vehicle-miles-of-travel" (Caltrans), per "1,000 average population" (Department of Finance), and groups cities based on population. The City of Ontario is ranked in a 58-city group (OTS Group D) classified by populations between 100,001 and 250,000. According to the 2017 OTS report, of the 58 California cities, Ontario ranked 52nd based on average population for both bicyclist- and pedestrian-involved collisions. Most notably, Ontario ranks 53rd in Group D for total fatal and injury collisions of all modes.

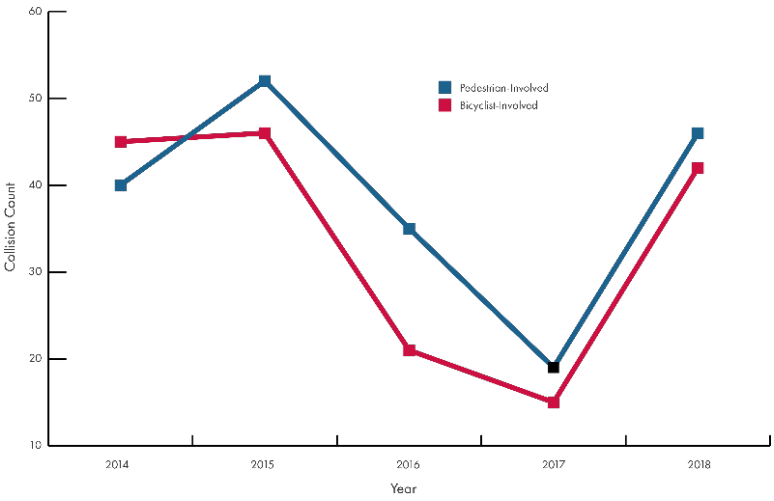
Collision data was analyzed at the citywide scale over the 5-year period. Collision attributes that were analyzed included top collision corridors, collision severity, primary collision factors, collisions by time and day of the week, and collision by type.

Table 1 Summary of Bicyclist & Pedestrian-Involved Collisions Per Year (2014-2018)

Year	Bicyclist-Involved			Pedestrian-Involved			Total Collisions
	Fatal	Injury	Total	Fatal	Injury	Total	
2014	0	45	45	3	37	40	85
2015	0	46	46	2	50	52	98
2016	0	21	21	1	34	35	56
2017	0	15	15	1	18	19	34
2018	1	41	42	7	39	46	88
Total	**1**	**168**	**169**	**14**	**178**	**192**	**361**

As shown in Table 1 from 2014 to 2018, a total of 361 collisions involving pedestrians and bicyclists were reported in the City of Ontario. The average number of collisions per year was approximately 72. Bicyclist- and pedestrian-involved collisions followed totals followed a similar trend in the given timeframe. Between 2015 and 2017, the total number of bicyclist and pedestrian-involved collisions per year experienced a steady decline. From 2017 to 2018, the total number of bicycle-involved collisions nearly tripled and the total number of pedestrian-involved collisions doubled (Figure 1). Based on the collision data within the time frame, pedestrians are slightly more likely to be involved in a collision. These collisions could occurred in part due to long distances between signalized intersections and a lack of complete sidewalk coverage throughout the City which expose pedestrians to motorists.

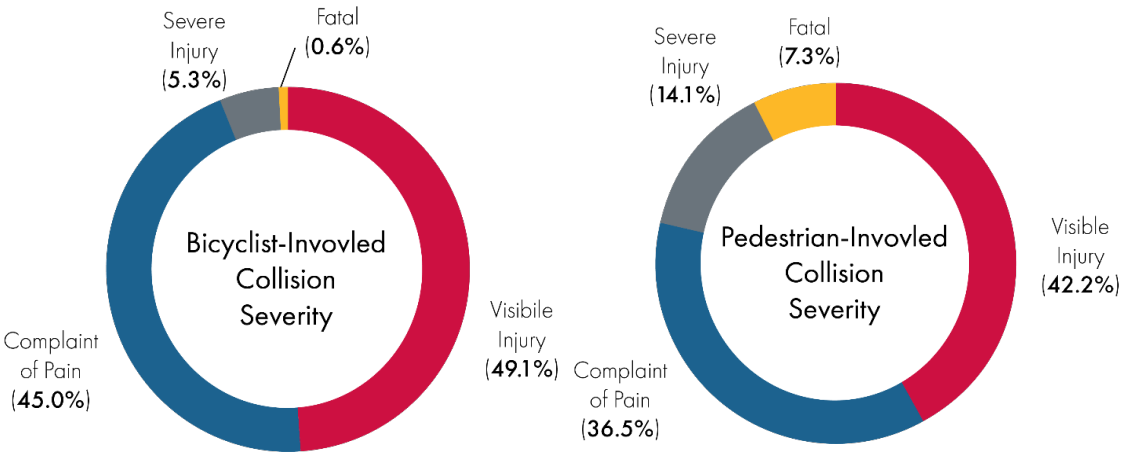
Figure 1 Pedestrian- and Bicyclist-Involved Collisions by Year



COLLISIONS BY SEVERITY

Approximately 6% of all bicyclist-involved collisions resulted in a fatality or a severe injury, while approximately 21% of pedestrian-involved collisions resulted in a fatality or a severe injury. Figure 2 highlights the distribution of collision severities.

Figure 2 Pedestrian- and Bicyclist-Involved Collision Severities



COLLISIONS BY TIME OF DAY AND DAY OF THE WEEK

Between 2014 and 2018, bicyclist-involved collisions were most prevalent during the AM and PM peak hours of the day (Figure 3). Nearly 30% of bicyclist-involved collisions occurred between 3:00 PM and 6:00 PM. Pedestrian-involved collisions were also most prevalent during the AM and PM peak hours of the day, with slightly more collisions occurring in the early evening. Vehicle-only collisions followed a similar temporal trend as bicyclist- and pedestrian-involved collisions.

StreetLight Data also highlights bicycle and pedestrian trip volumes by time of day, distributed across the defined StreetLight Zones. On average, approximately 24% of total bicycle trips and 20% of total pedestrian trips throughout the City occur during the PM peak hour (3:00 PM – 5:59 PM), which holds the highest volume of bicycle and pedestrian activity of any timeframe.

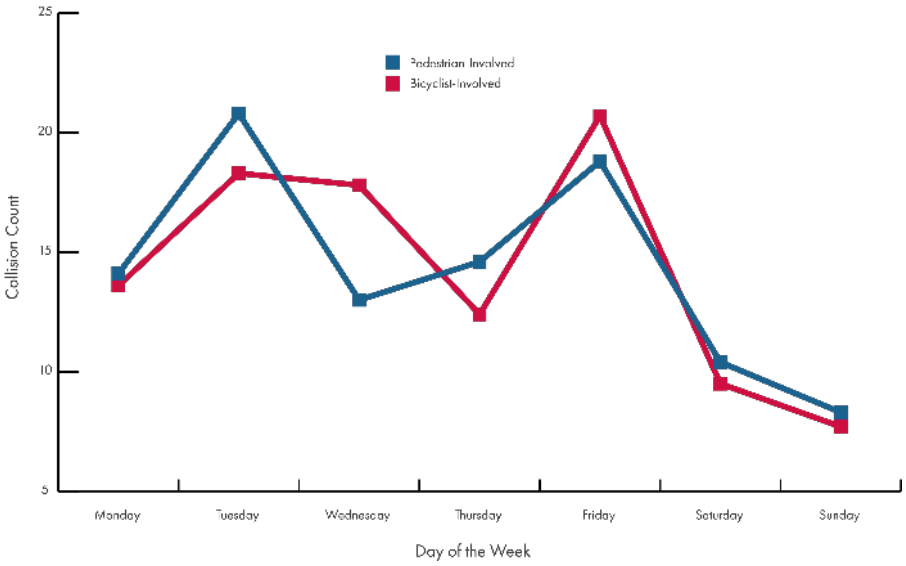
Figure 3 Collisions by Time of Day

	12:00 A.M - 2:59 A.M.	3:00 A.M. - 5:59 A.M.	6:00 A.M. - 8:59 A.M.	9:00 A.M. - 11:59 A.M.	12:00 P.M. - 2:59 P.M.	3:00 P.M. - 5:59 P.M.	6:00 P.M. - 8:59 P.M.	9:00 P.M. - 11:59 P.M.
Vehicle	4.4%	3.8%	12.4%	12.3%	19.1%	25.0%	14.5%	8.4%
Bicycle	0.6%	0.0%	16.6%	9.5%	16.0%	28.4%	19.5%	9.5%
Pedestrian	3.7%	4.2%	10.0%	7.4%	15.3%	25.3%	24.2%	10.0%

On average, bicyclist- and pedestrian-involved collision rates during the weekdays were 4.5 times higher than on weekend days (Figure 4). Both collision modes followed a similar trend throughout the week, with a peak on Monday, a slight decline throughout during the middle of the week, a peak on

Friday, and a drastic decline on weekend days. Higher bicyclist- and pedestrian-involved collision rates during weekdays is supported by the higher volume of trips to and from school and work. Additionally, according to StreetLight Data, on average approximately 73% of bicycle and pedestrian trips within the City occur during the week, which supports the higher collision rates on weekdays as compared to weekends.

Figure 4 Collisions by Day of the Week



COLLISIONS BY PRIMARY COLLISION FACTOR (PCF VIOLATION CATEGORY)

The violation of a transportation law that likely caused a collision to occur is classified as the Primary Collision Factor (PCF). The distribution of the top bicyclist-involved PCF violations can be seen in Table 2. Of the 162 bicyclist-involved collisions, the bicyclist was at fault 76% of the time. This was a result of not properly yielding to the automobile right-of-way, not abiding to traffic signals and signs, and riding on the wrong side of the road.

Table 2 Primary Collision Factors (PCF) for Bicyclist-Involved Collisions

Primary Collision Factor (PCF)	Total	Percent of Total
Wrong Side of Road	69	41.1%
Automobile Right-of-Way	39	23.2%
Traffic Signals & Signs	22	13.1%
Improper Turning	22	13.1%
Unsafe Speed	7	4.2%
Driving or Bicycling Under the Influence	3	1.8%
Other Hazardous Violation	1	0.6%
Improper Passing	1	0.6%
Other than Driver	1	0.6%
Pedestrian Right-of-Way	1	0.6%

Following Too Closely	1	0.6%
Lights	1	0.6%
No Distinction	1	0.6%

The distribution of the top pedestrian-involved collisions can be seen in Table 3. Of the 192 pedestrian-involved collisions, the pedestrian was at fault 41% of the time. This was likely a result of a pedestrian violating the vehicle's right-of-way. Collisions where the motorist was at fault was likely due to the motorist not yielding to the pedestrian right-of-way and turning improperly.

Table 3 Primary Collision Factors (PCF) for Pedestrian-Involved Collisions

Primary Collision Factor (PCF)	Total	Percent of Total
Pedestrian Violation	76	39.8%
Pedestrian Right-of-Way	73	38.2%
Improper Turning	10	5.2%
Traffic Signals & Signs	8	4.2%
Automobile Right-of-Way	6	3.1%
Driving or Bicycling Under the Influence	5	2.6%
Unsafe Starting or Backing	5	2.6%
Unsafe Speed	4	2.1%
Unknown	2	1.0%
Wrong Side of Road	1	0.5%
Other Equipment	1	0.5%
No Distinction	1	0.5%

COLLISION BY CRASH TYPE

Analyzing the collision crash type is valuable for understanding the initial impact of a collision and its involved parties. For bicyclist-involved collisions, the collision type breakdown can be seen in Table 4. The top bicyclist-involved collision type was broadside (58%), which is classified as a T-Bone of Side collision, often resulting from improper lane changes, failure to yield to traffic signals and signs, speeding, improper turning, and improper passing.

Table 4 Collision Types for Bicyclist-Involved Collisions

Primary Collision Factor (PCF)	Total	Percent of Total
Broadside	98	58.0%
Other	27	16.0%
Vehicle/Pedestrian	13	7.7%
Sideswipe	12	7.1%
Head-On	9	5.3%
Rear End	6	3.6%
Not Stated	3	1.8%
Hit Object	1	0.6%

For pedestrian-involved collisions, the collision type breakdown can be seen in Table 5. 85% of all pedestrian-involved collisions were classified as a Vehicle/Pedestrian collision type. This collision type is of broad stature, as it does not denote the specifics of the impact between the motorist and the pedestrian. By analyzing the at fault party for pedestrian-involved collisions with the Vehicle/Pedestrian collision type designation, the movement of parties and the impact of the collisions can be made clearer. As previously noted, the pedestrian was at fault in 78 of the 192 collisions, or 41% of the time. Of the pedestrian at fault collisions, 64 (82%) had the Vehicle/Pedestrian collision type designation. Considering the pedestrian was at fault in a majority of the collisions with this designation, it's probable to infer that the pedestrian was improperly yielding to the automobile right-of-way or improperly using existing pedestrian facilities (walking in the road, crossing at the midblock).

Table 5 Collision Types for Pedestrian-Involved Collisions

Primary Collision Factor (PCF)	Total	Percent of Total
Vehicle/Pedestrian	98	85.4%
Broadside	27	4.2%
Head-On	13	4.2%
Not Stated	12	3.1%
Sideswipe	9	1.6%
Read End	6	0.5%
Hit Object	3	0.5%
Overturned	1	0.5%

PEDESTRIAN-INVOLVED COLLISIONS BY PEDESTRIAN ACTION

Approximately 54% of pedestrian-involved collision occurred because the pedestrian was crossing outside of a crosswalk or was using the shoulder of the road rather than a designated sidewalk or if sidewalk was nonexistent. Of these, 61% violated California vehicle code (CVC) 21954, which states that "Every pedestrian upon a roadway at any point other than within a marked crosswalk or within an unmarked crosswalk at an intersection shall yield right-of-way to all vehicles upon the roadway so near as to constitute an immediate hazard." In addition, of the pedestrian-involved collisions occurring due to the pedestrian not using the crosswalk or walking in the shoulder of the road, 29 (28%) resulted in a fatality or a severe injury. Table 6 illustrates the frequency of each pedestrian action for pedestrian-involved collisions.

Considering that more than half of pedestrian-involved collisions are as a result of improper usage of pedestrian facilities, as defined by the "Crossing Not at Crosswalk" and "In Road, Using Shoulder" pedestrian actions, the enhancement and/or expansion of existing pedestrian infrastructure could potentially reduce the amount of pedestrian-involved collisions.

Table 6 Pedestrian-Involved Collisions by Pedestrian Action and Severity

Pedestrian Action	Count	Percent	Fatal/Sev. Injury Count	Fatal/Sev. Injury Percent
Using Intersection Crosswalk	71	37.0%	9	12.7%
Using Mid-Block Crosswalk	5	2.6%	0	0.0%
Crossing Not at Crosswalk	75	39.1%	22	29.3%
In Road, Using Shoulder	28	14.6%	7	25.0%
Not in Road	10	5.2%	2	20.0%
Not Stated	3	1.6%	1	33.3%

PEDESTRIAN-INVOLVED COLLISION HOTSPOTS

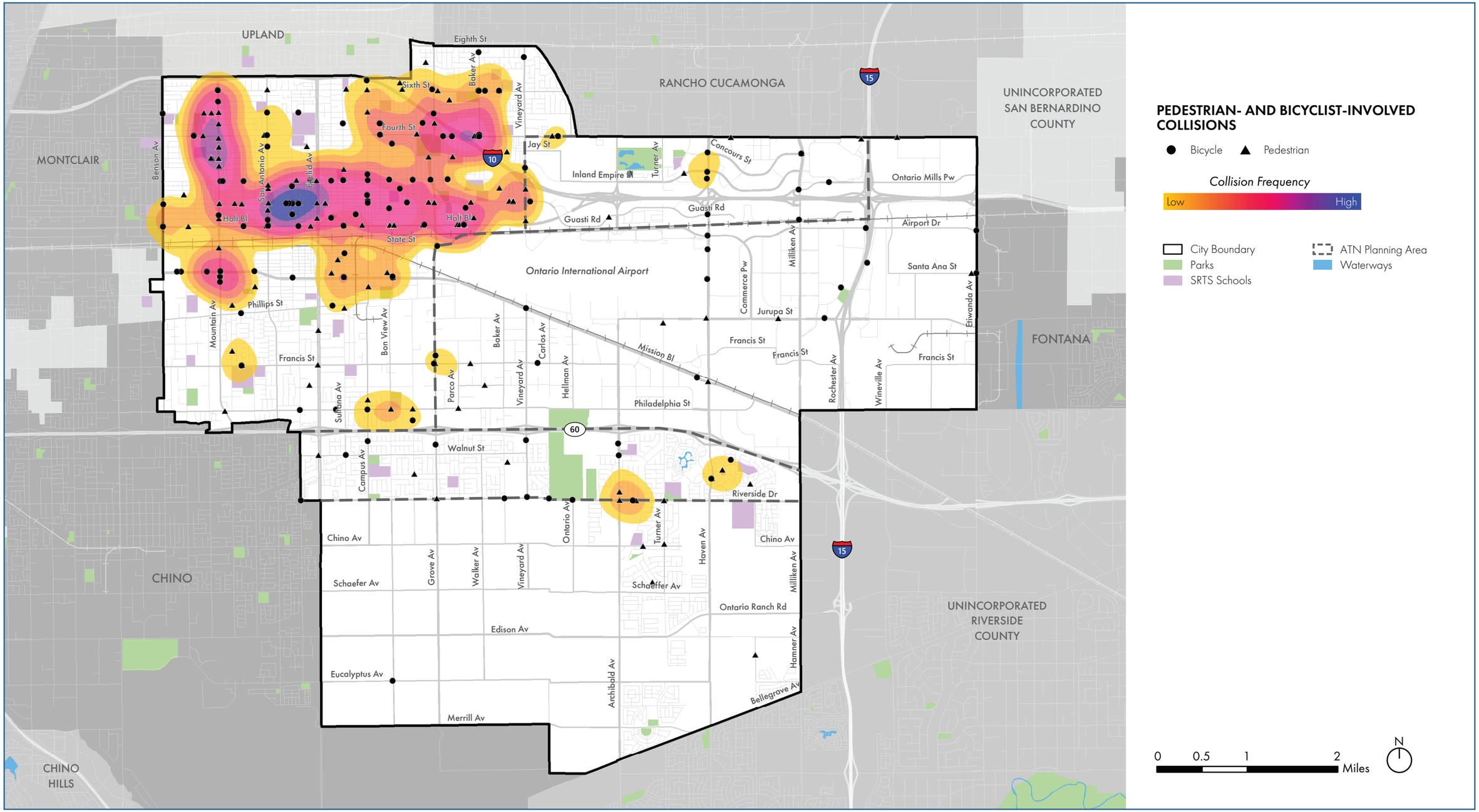
Of the 192 pedestrian-involved collisions, approximately 34% occurred on five different corridors. The top five pedestrian-involved collision corridors are as follows:

1. Holt Boulevard – 20
2. Fourth Street – 14
3. Mountain Avenue – 13
4. D Street – 12
5. Euclid Avenue – 7

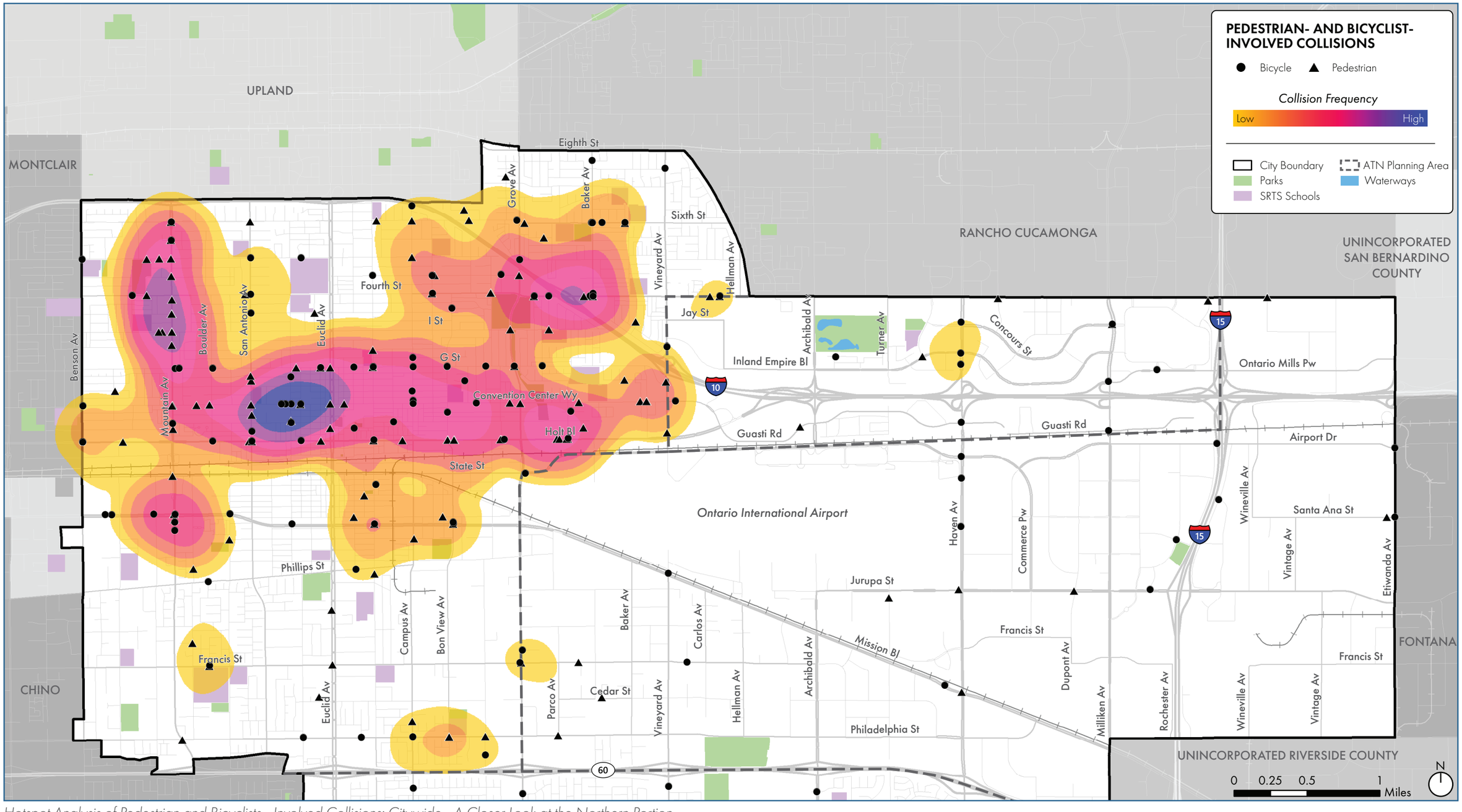
BICYCLIST-INVOLVED COLLISION HOTSPOTS

Of the 169 bicyclist-involved collisions, 30% occurred on five different corridors. The top five bicyclist-involved collision corridors are as follows:

1. Mission Boulevard – 11
2. Fourth Street – 10
3. G Street – 10
4. Holt Boulevard – 9
5. Haven Avenue - 9

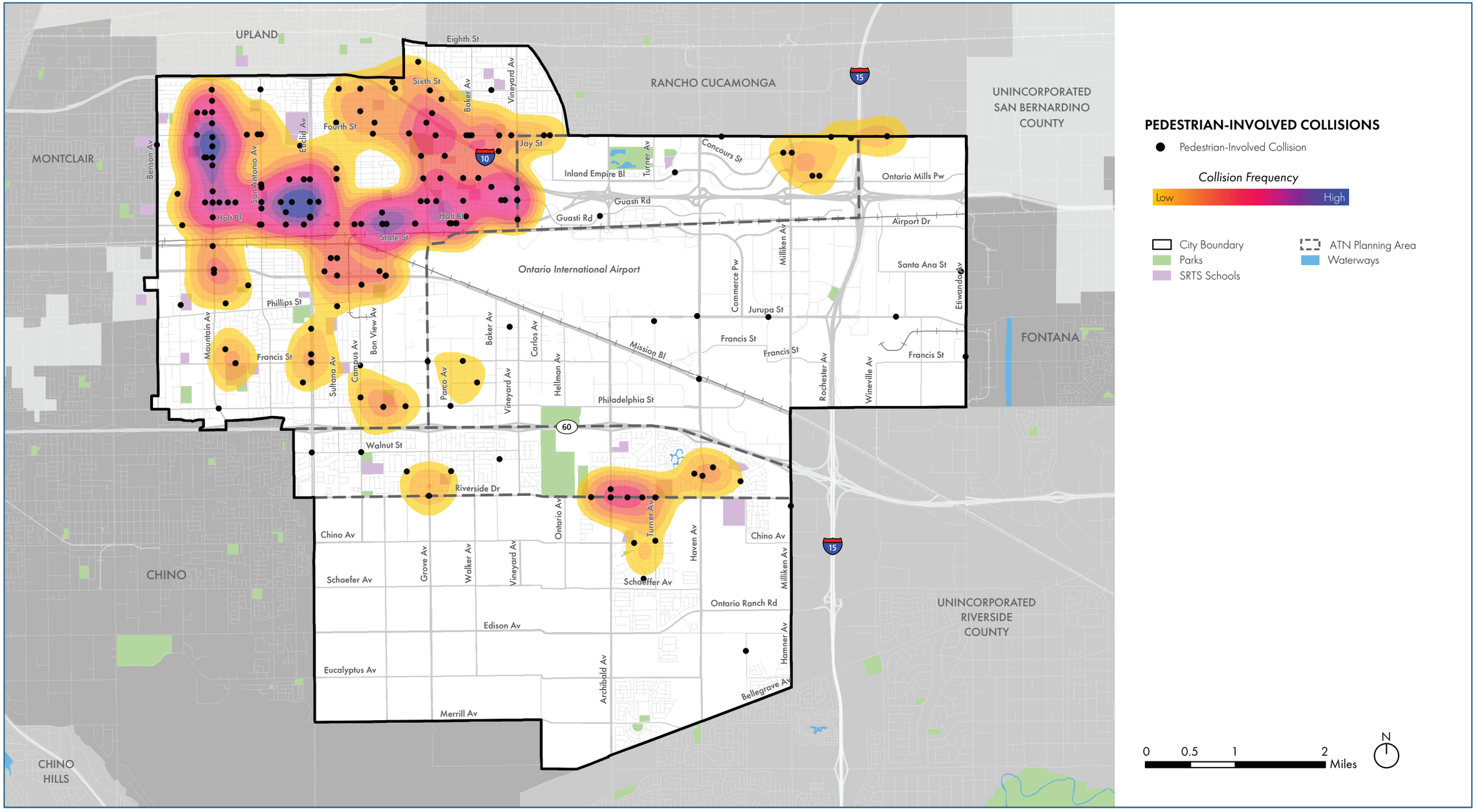


Hotspot Analysis of Pedestrian and Bicyclists - Involved Collisions: Citywide

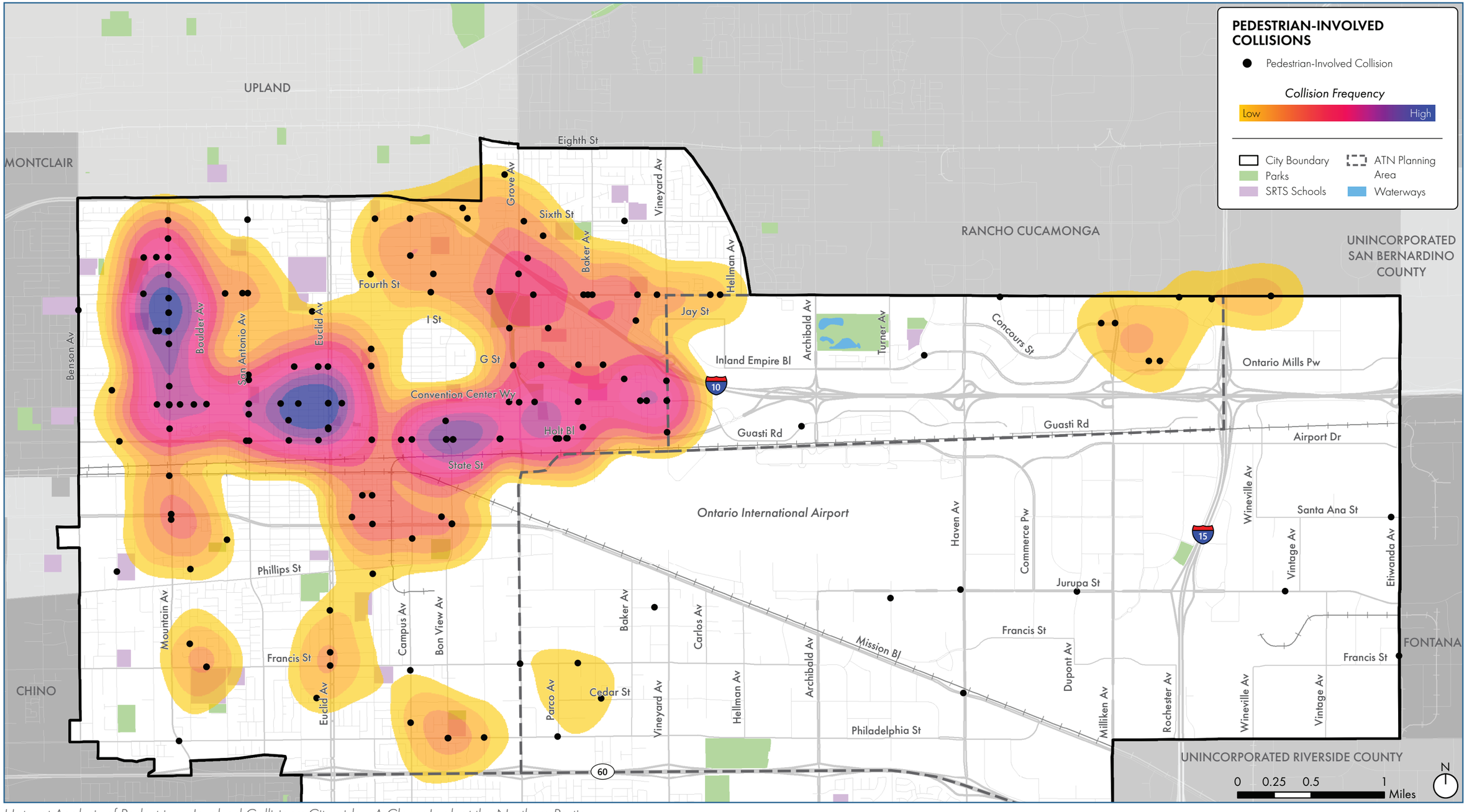


Hotspot Analysis of Pedestrian and Bicyclists - Involved Collisions: Citywide - A Closer Look at the Northern Portion

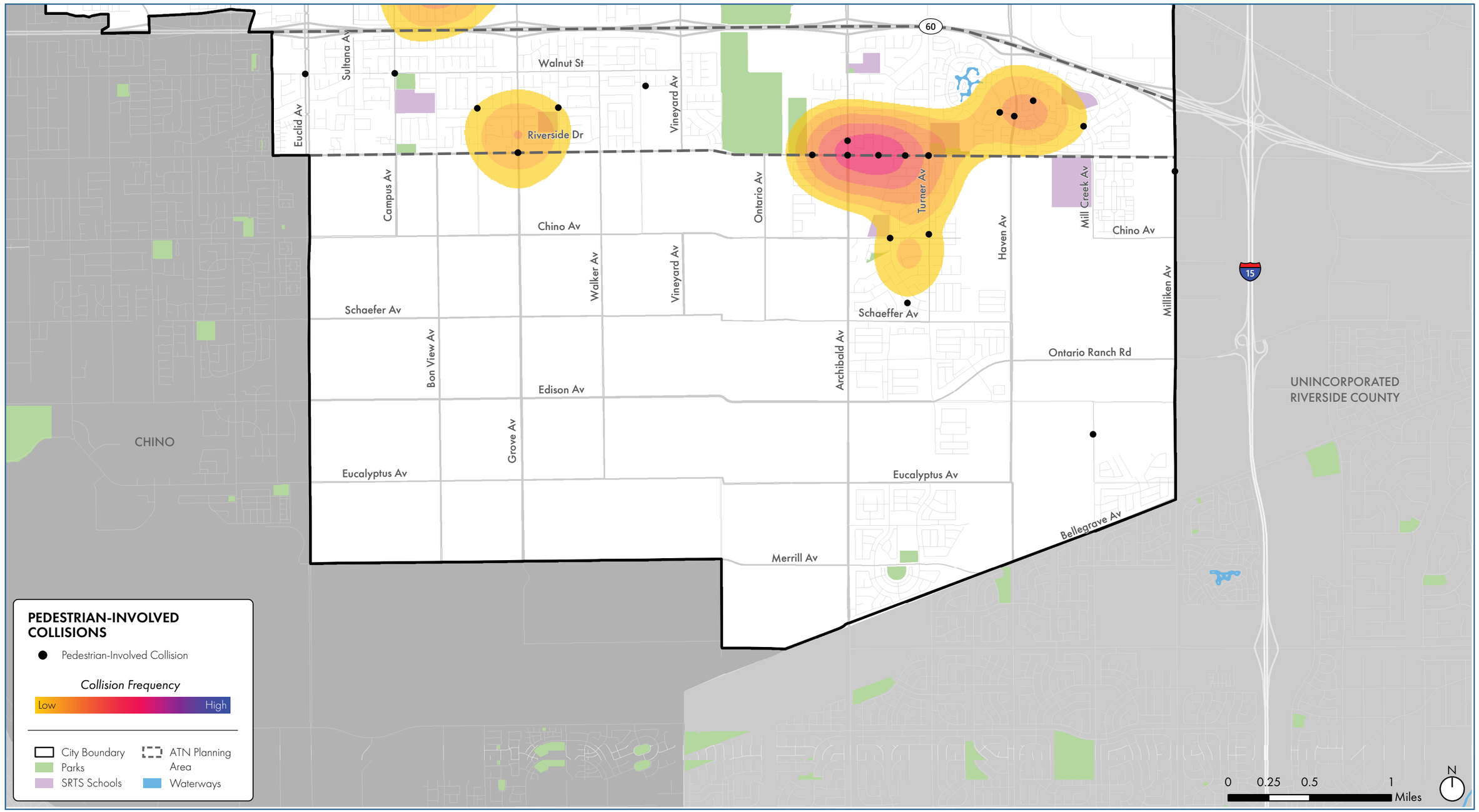
Hotspot Analysis of Pedestrian and Bicyclists - Involved Collisions: Citywide - A Closer Look at the Southern Portion



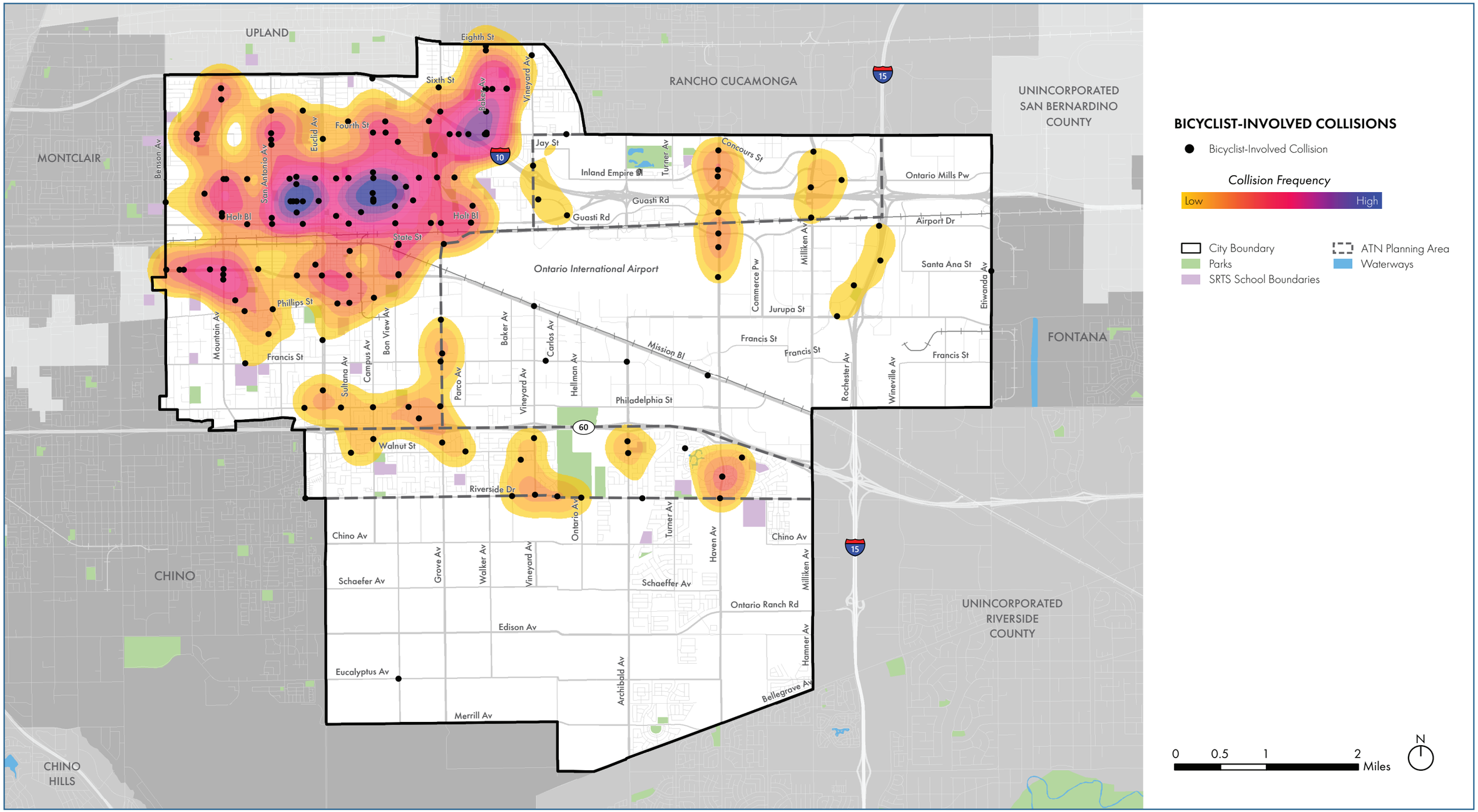
Hotspot Analysis of Pedestrian - Involved Collisions: Citywide



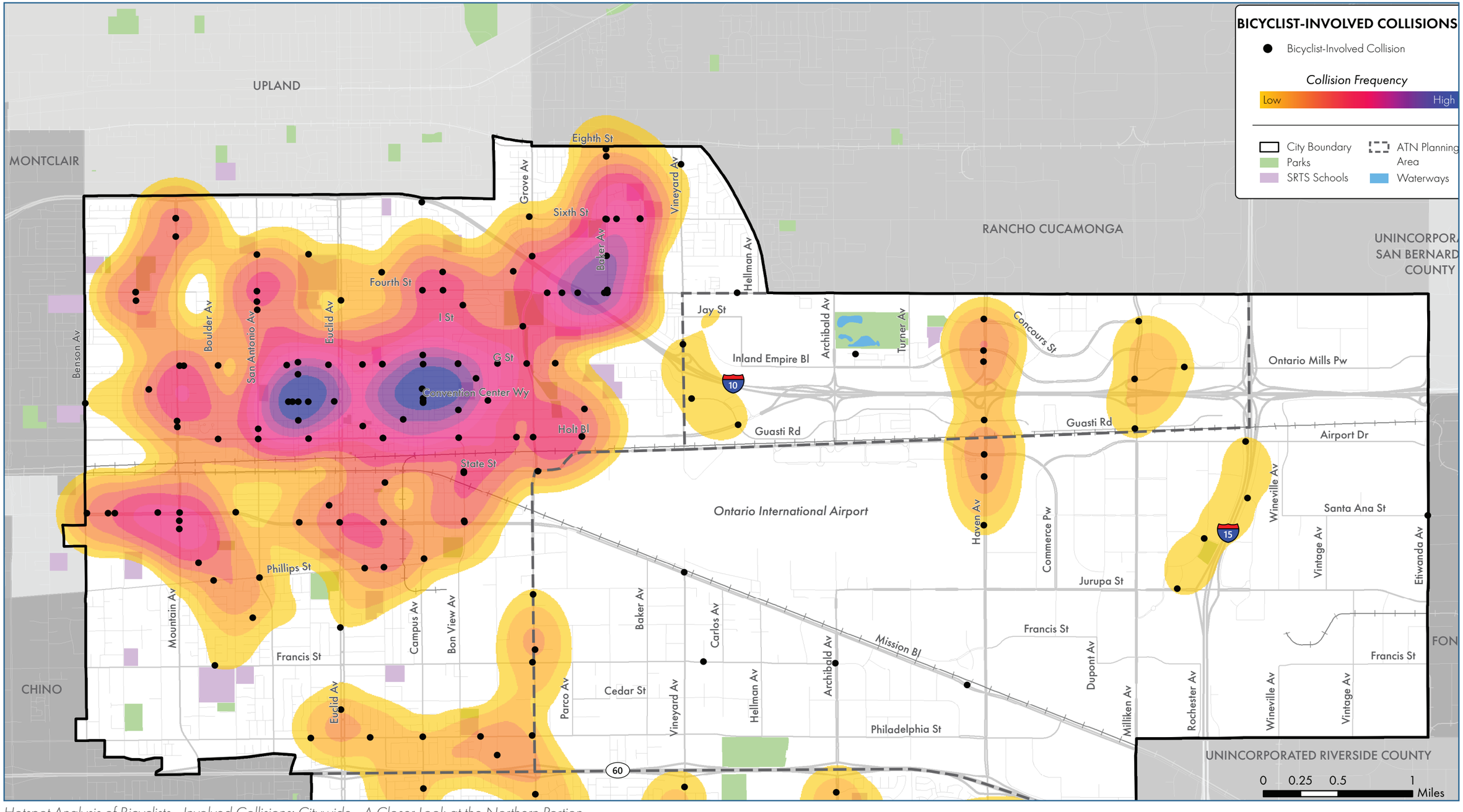
Hotspot Analysis of Pedestrian - Involved Collisions: Citywide - A Closer Look at the Northern Portion



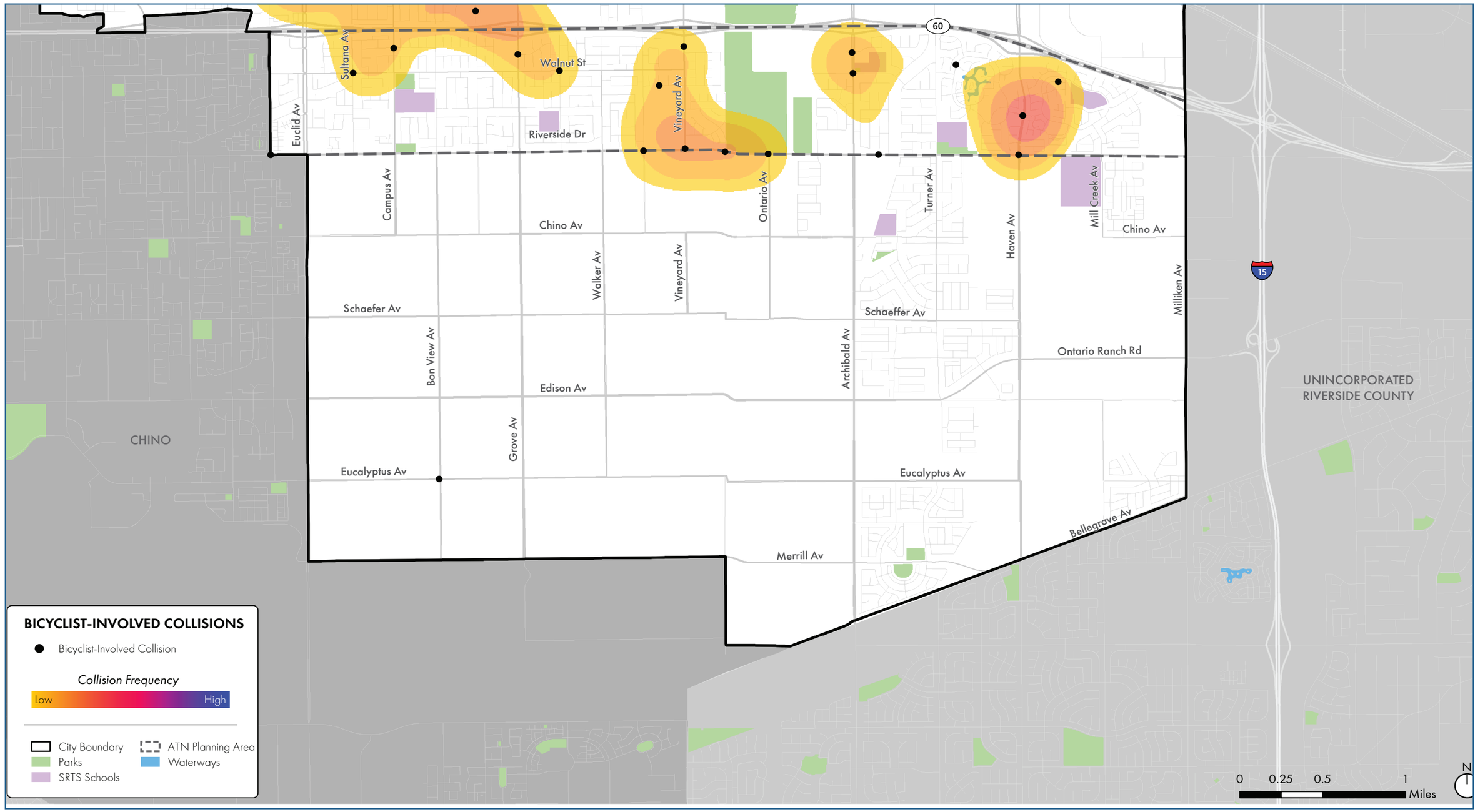
Hotspot Analysis of Pedestrian - Involved Collisions: Citywide - A Closer Look at the Southern Portion



Hotspot Analysis of Bicyclist - Involved Collisions: Citywide



Hotspot Analysis of Bicyclists - Involved Collisions: Citywide - A Closer Look at the Northern Portion



Hotspot Analysis of Bicyclist - Involved Collisions: Citywide - A Closer Look at the Southern Portion

Appendix D

POLICE CITATION ANALYSIS

POLICE CITATION ANALYSIS

The analysis of police citation data from local enforcement agencies is supplementary to traditional collision analyses in that it provides an additional layer of historical roadways safety. Identifying citation hotspots in conjunction with collisions spots can help inform countermeasure development and ensure proper allocation of resources to prevent future collisions from occurring. Citations are viewed as "near miss" collisions in this analysis, which can aid in the prediction of where potential collisions may occur. Police citation data from January 2013 to December 2017 was acquired from the Ontario Police Department. Citations related to bicycle and pedestrian travel, and poor driving habits that may infringe on bicycle and pedestrian safety were used and weighted similarly to "near miss" collisions.

CITATION DATA SUMMARY

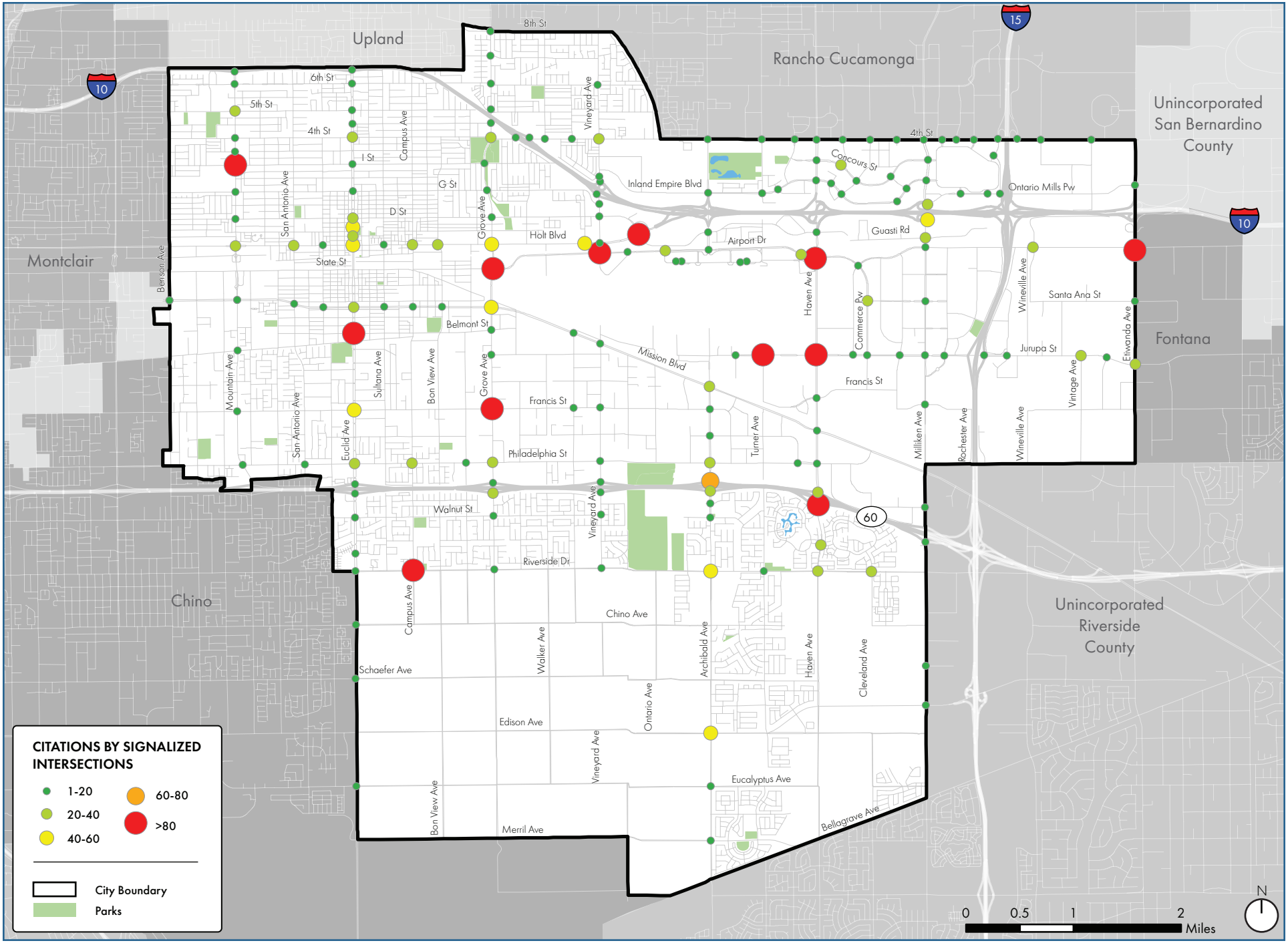
A total of 14,073 citations pertaining to the movement of bicyclists and pedestrians, or poor motorist driving behavior that may infringe on bicycle and pedestrian mobility, were logged in the City of Ontario between 2013-2017. Table 1 highlights the citation vehicle codes and their totals that were used for this analysis. California Vehicle Code (CVC) definitions were acquired from the California Law Code Section under the California Legislative Information. Aside from vehicle speeding being a major citywide citation, approximately 21% of all citations were cited as a result of motorists failing to stop at a stop sign limit line, crosswalk, or entrance of an intersection. This CVC code is particularly problematic for pedestrians and bicyclists because motorists who are cited for this violation typically violate the right-of-way of pedestrians and bicyclists. Other citations with high frequency included the failure to obey MUTCD signage and signals, and unsafe turning and lane changing. Each of these citation types are of heightened concern around school zones.

Table 1 Citation California Vehicle Code Definitions and Totals

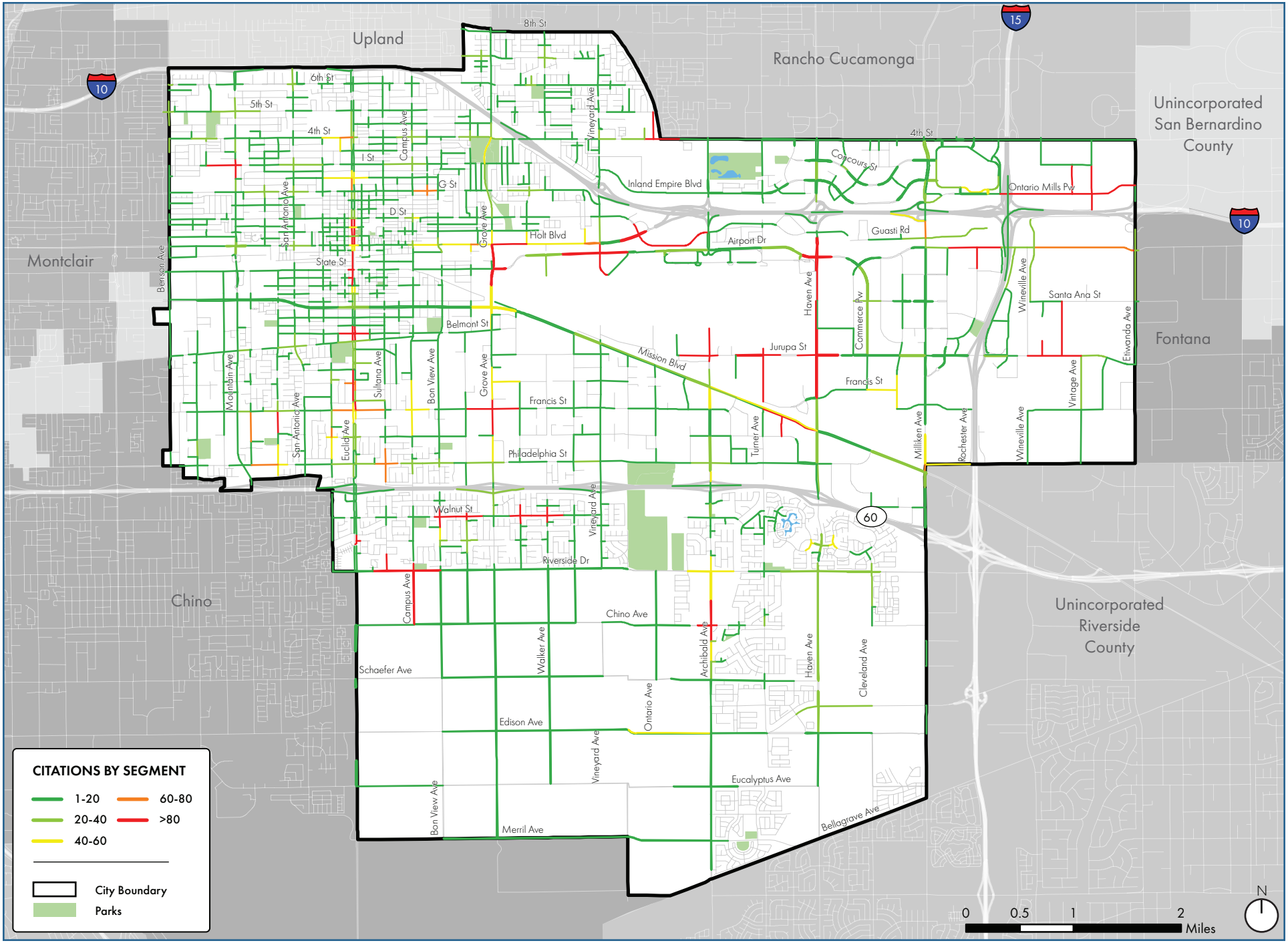
CVC CODE	Description	Citywide Violations	Citywide %
22350	Speeding (speed greater than in reasonable)	7808	55.5%
22450(A)	Failure to stop at stop sign limit line, crosswalk, or entrance of intersection	2993	21.3%
21453(A)	Failure to stop at red traffic signal	1668	11.9%
21461(A)	Failure to obey MUTCD/regulatory sign/signal	900	6.4%
22107	Unsafe turning/lane change	455	3.2%
21955	Jaywalking between two adjacent signalized intersections	99	0.7%
22102	Non-Intersection U-turn in business district	69	0.5%
21954(A)	Pedestrian failing to yield to traffic (not in crosswalk)	36	0.3%
22349(A)	Speeding (>65 on highway)	27	0.2%
21950(A)	Failure to yield right-of-way for pedestrian in crosswalk	8	0.1%
22101(D)	Failure to obey turning movement sign/signal	5	0.0%
21453(C)	Turning against red arrow signal	4	0.0%

21802(A)	Failure to stop at stop sign or yield right-of-way at intersection with stop sign	1	0.0%

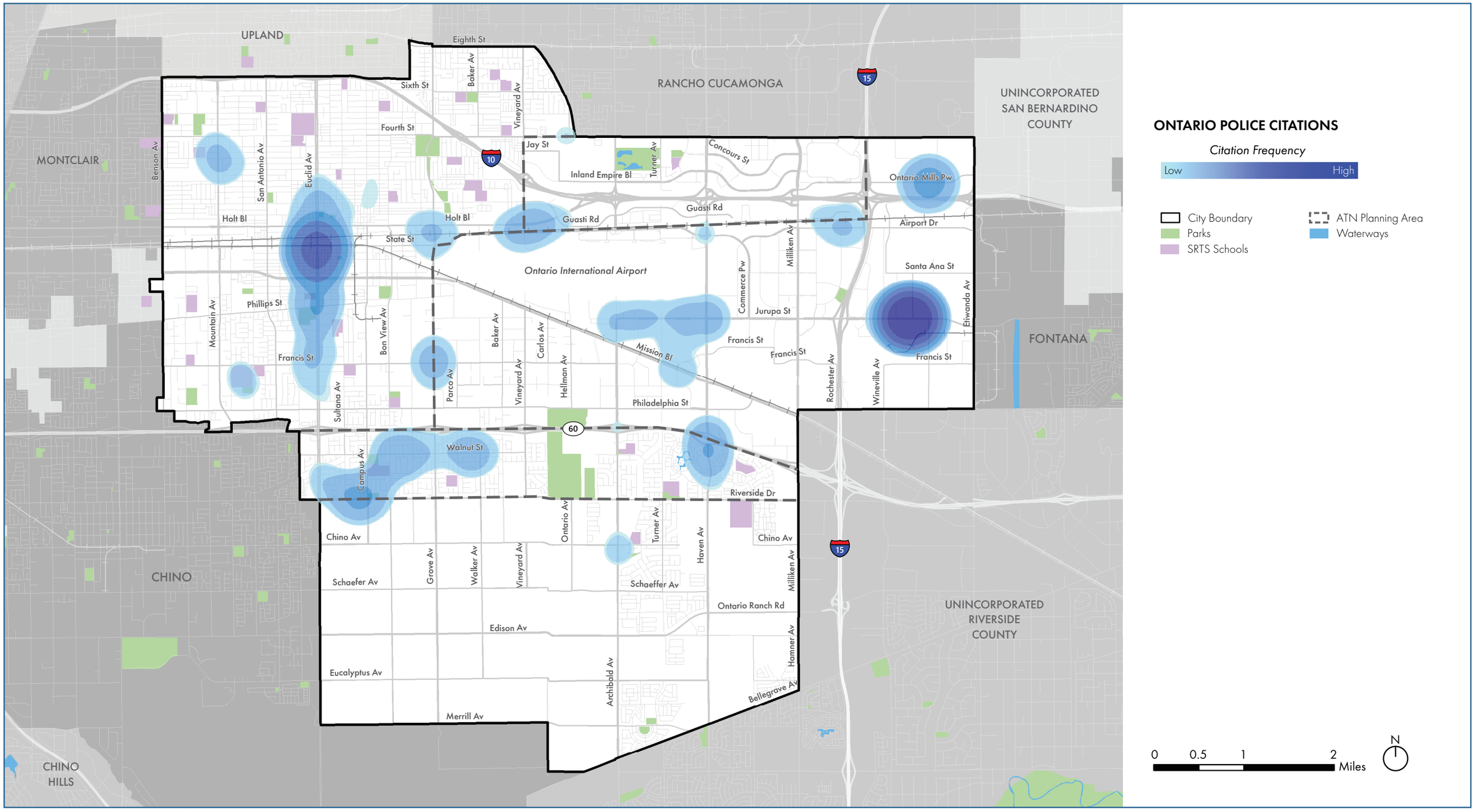
Identifying the day of the week, time of the day, and where citations are most likely to occur are critical in facilitating the allocation of enforcement resources and justification of countermeasures to mitigate citation frequency and bolster safety for all roadway users. The following factsheets summarize when citations are most likely to occur and outlines the top citywide citation locations. The following figures highlight the top intersection hotspots corridor hotspots.



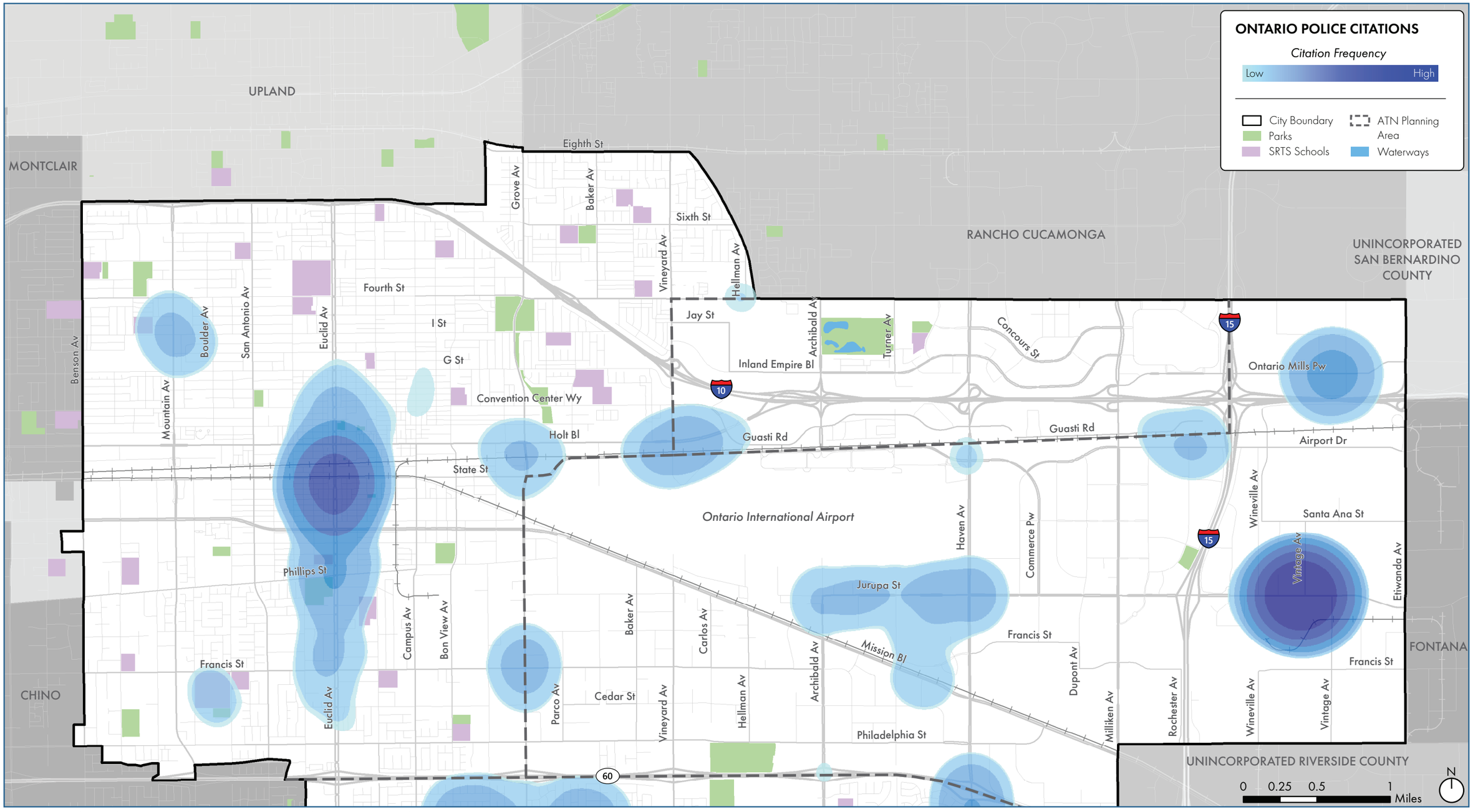
Quantity of Ontario Police Citations By Signalized Intersections



Quantity of Ontario Police Citations By Segment



Hotspot Analysis of Ontario Police Citations: Citywide

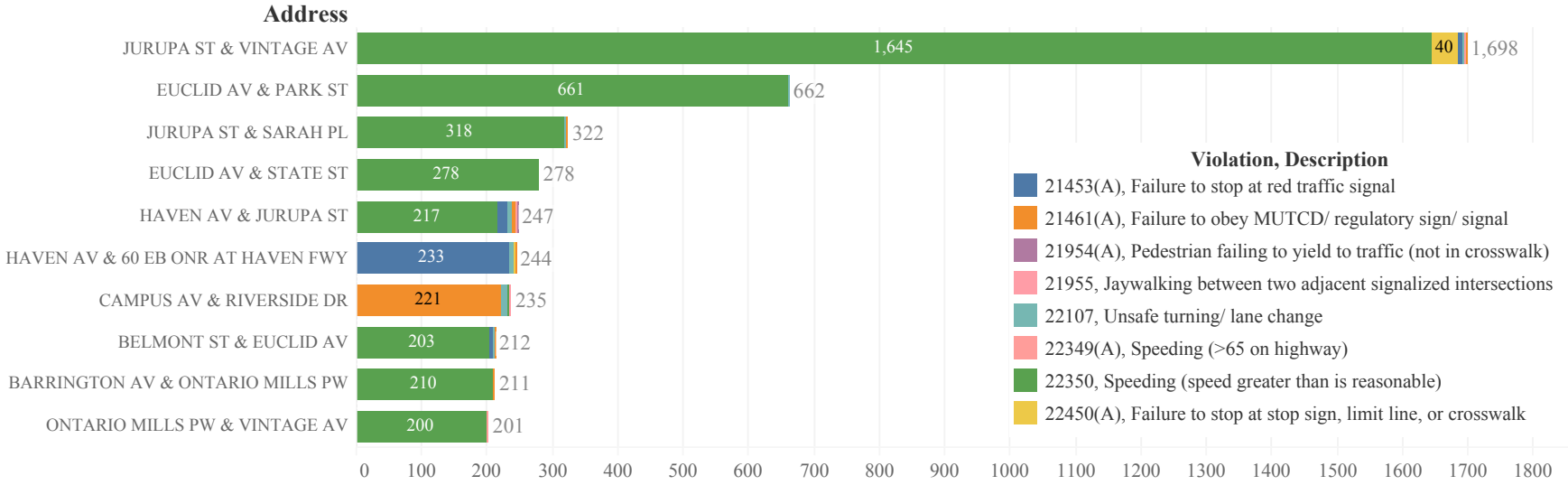


Hotspot Analysis of Ontario Police Citations: Citywide- A Closer Look at the Northern Portion

Hotspot Analysis of Ontario Police Citations: Citywide - A Closer Look at the Southern Portion

Citywide Ontario Police Citations: 2013-2017

Top 10 Violation Addresses or Intersections



Citation Frequency by Day and Time Range

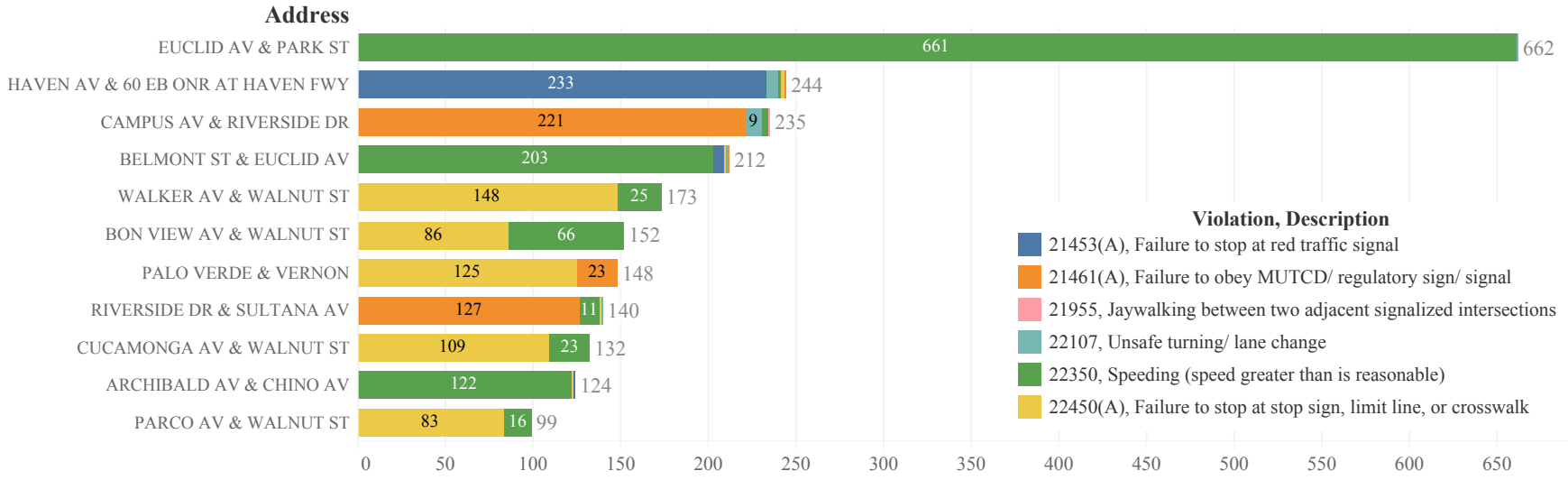
*Percentages are based on the total number of citations for each day (horizontal)

	12:00 - 2:59 AM	3:00 - 5:59 AM	6:00 - 8:59 AM	9:00 - 11:59 AM	12:00 - 2:59 PM	3:00 - 5:59 PM	6:00 - 8:59 PM	9:00 - 11:59 PM
Sunday	10.5%	2.9%	12.1%	26.6%	16.7%	16.2%	8.0%	7.0%
Monday	1.2%	2.5%	27.0%	25.2%	22.5%	11.4%	5.7%	4.4%
Tuesday	1.4%	2.4%	33.8%	13.8%	23.2%	16.2%	6.6%	2.6%
Wednesday	1.3%	2.4%	32.5%	17.6%	19.9%	16.1%	8.0%	2.2%
Thursday	1.4%	3.2%	34.3%	17.5%	19.6%	15.0%	6.7%	2.4%
Friday	1.8%	1.7%	27.3%	20.5%	22.3%	13.5%	6.7%	6.2%
Saturday	3.2%	0.9%	11.2%	27.5%	24.1%	18.9%	7.3%	6.9%

Data Source: 2013-2017 Ontario Police Citations

Ontario Police Citations Within 1/2-Mile of a School: 2013-2017

Top 10 Violation Addresses or Intersections



Citation Frequency by Day and Time Range

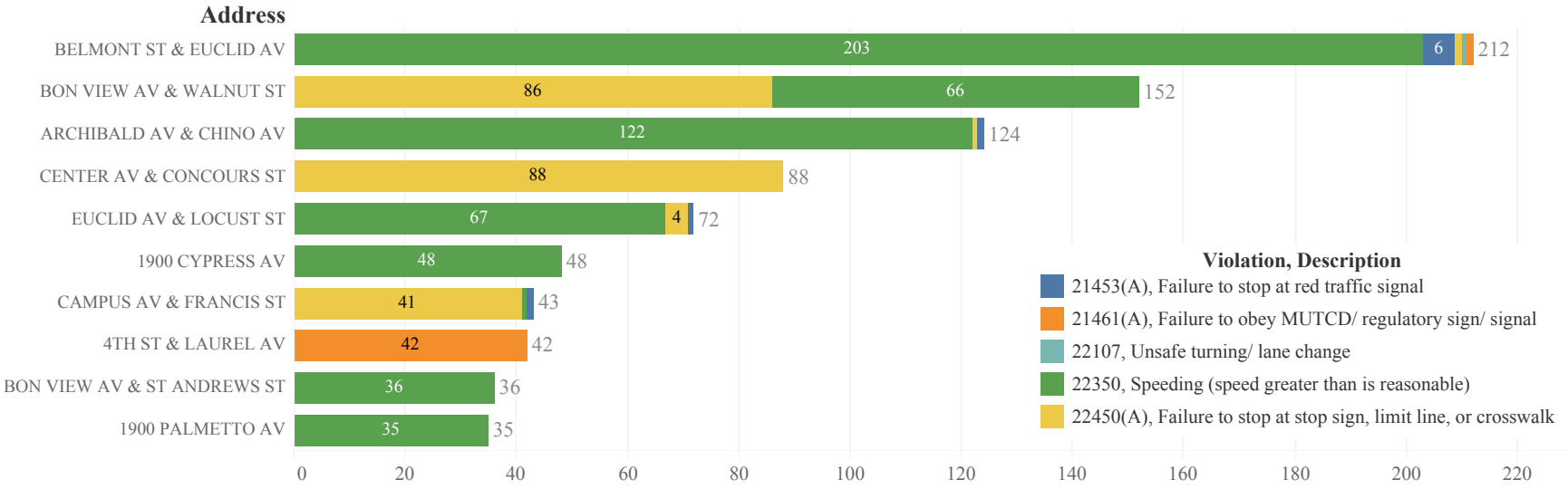
*Percentages are based on the total number of citations for each day (horizontal)

	12:00 - 2:59 AM	3:00 - 5:59 AM	6:00 - 8:59 AM	9:00 - 11:59 AM	12:00 - 2:59 PM	3:00 - 5:59 PM	6:00 - 8:59 PM	9:00 - 11:59 PM
Sunday	11.7%	2.3%	6.3%	25.8%	15.2%	20.7%	8.6%	9.4%
Monday	1.9%	3.7%	24.5%	18.3%	23.5%	12.0%	6.7%	9.3%
Tuesday	1.6%	2.7%	32.1%	11.7%	30.3%	12.8%	5.1%	3.7%
Wednesday	1.8%	2.6%	39.0%	13.0%	19.3%	14.0%	7.0%	3.5%
Thursday	1.9%	4.6%	34.2%	11.1%	19.5%	16.7%	8.2%	3.7%
Friday	1.7%	1.8%	33.1%	17.9%	20.9%	12.5%	6.1%	6.1%
Saturday	4.3%	0.7%	8.3%	27.5%	24.9%	17.9%	7.4%	9.0%

Data Source: 2013-2017 Ontario Police Citations

Ontario Police Citations Within 1/4-Mile of a School: 2013-2017

Top 10 Violation Addresses or Intersections



Citation Frequency by Day and Time Range

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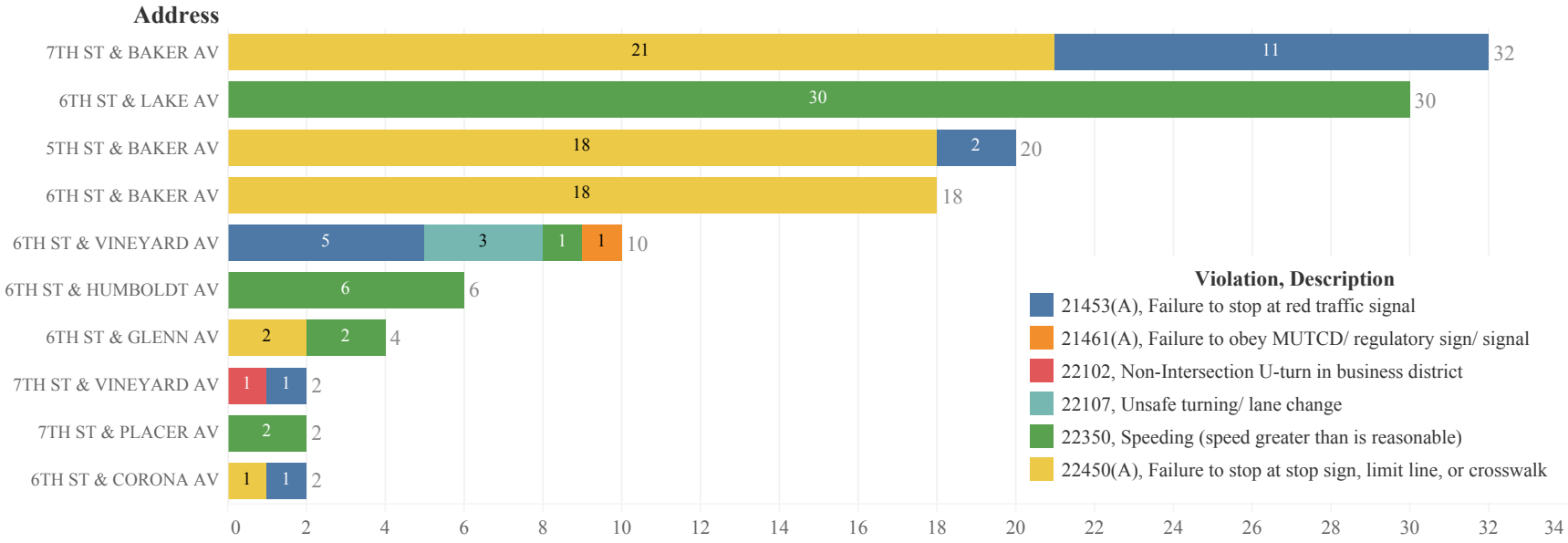
	12:00 - 2:59 AM	3:00 - 5:59 AM	6:00 - 8:59 AM	9:00 - 11:59 AM	12:00 - 2:59 PM	3:00 - 5:59 PM	6:00 - 8:59 PM	9:00 - 11:59 PM
Sunday	13.8%		3.4%	34.5%	15.5%	15.5%	3.4%	13.8%
Monday	1.7%	1.1%	33.0%	11.9%	18.8%	15.9%	9.1%	8.5%
Tuesday	2.4%	3.9%	52.9%	7.5%	10.5%	16.5%	3.9%	2.4%
Wednesday	1.3%	2.6%	52.2%	7.4%	16.3%	12.0%	6.7%	1.5%
Thursday	1.8%	3.6%	43.9%	8.3%	19.3%	12.8%	8.0%	2.4%
Friday	3.1%	4.8%	26.0%	16.7%	20.7%	12.8%	7.5%	8.4%
Saturday	8.5%	2.1%	8.5%	26.1%	11.3%	16.9%	9.9%	16.9%

Data Source: 2013-2017 Ontario Police Citations

Arroyo Elementary

Violation Count by Address or Intersection



Citation Frequency by Day and Time Range

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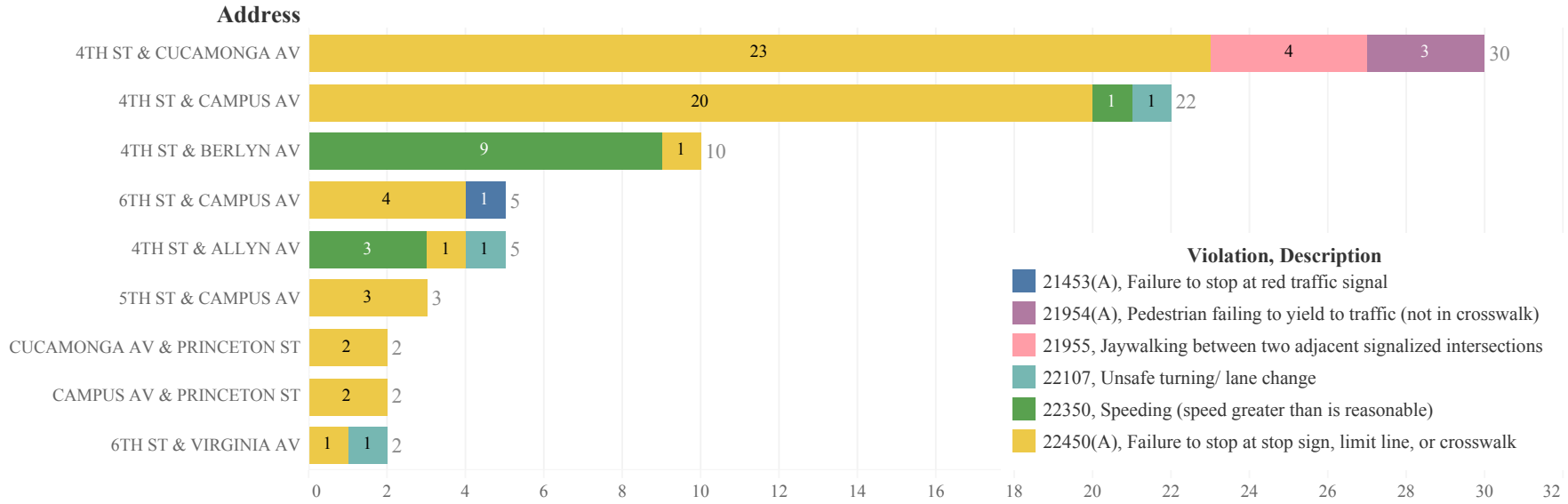
	12:00 - 2:59 AM	3:00 - 5:59 AM	6:00 - 8:59 AM	9:00 - 11:59 AM	12:00 - 2:59 PM	3:00 - 5:59 PM	6:00 - 8:59 PM	9:00 - 11:59 PM
Monday			12.5%		12.5%	25.0%	25.0%	25.0%
Tuesday		11.5%	38.5%	7.7%	11.5%	15.4%	7.7%	7.7%
Wednesday		2.6%	43.6%	15.4%	10.3%	10.3%	12.8%	5.1%
Thursday	3.2%	3.2%	54.8%	9.7%	9.7%	12.9%	6.5%	
Friday		13.3%	13.3%	6.7%	13.3%	6.7%	13.3%	33.3%
Saturday	25.0%			33.3%	8.3%	8.3%	8.3%	16.7%
Sunday				40.0%	40.0%	20.0%		

Data Source: 2013-2017 Ontario Police Citations

Berlyn Elementary

Violation Count by Address or Intersection



Citation Frequency by Day and Time Range

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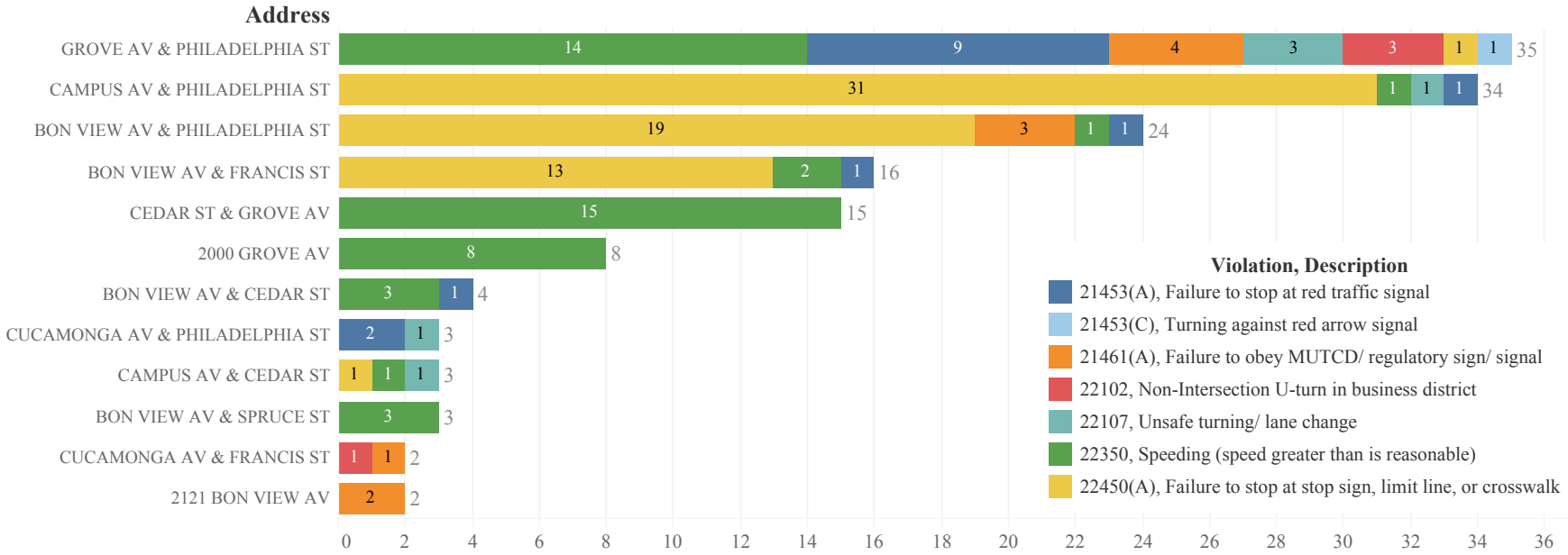
	12:00 - 2:59 AM	3:00 - 5:59 AM	6:00 - 8:59 AM	9:00 - 11:59 AM	12:00 - 2:59 PM	3:00 - 5:59 PM	6:00 - 8:59 PM	9:00 - 11:59 PM
Monday			23.5%	17.6%	11.8%	5.9%	17.6%	23.5%
Tuesday			17.6%	35.3%	23.5%		11.8%	11.8%
Wednesday			35.7%	7.1%	35.7%	7.1%	14.3%	
Thursday			12.5%	25.0%	12.5%	12.5%	12.5%	25.0%
Friday			27.3%		27.3%	18.2%	9.1%	18.2%
Saturday	6.7%	6.7%		6.7%	33.3%	20.0%		26.7%
Sunday	40.0%			40.0%				20.0%

Data Source: 2013-2017 Ontario Police Citations

Bon View Elementary

Violation Count by Address or Intersection



Citation Frequency by Day and Time Range

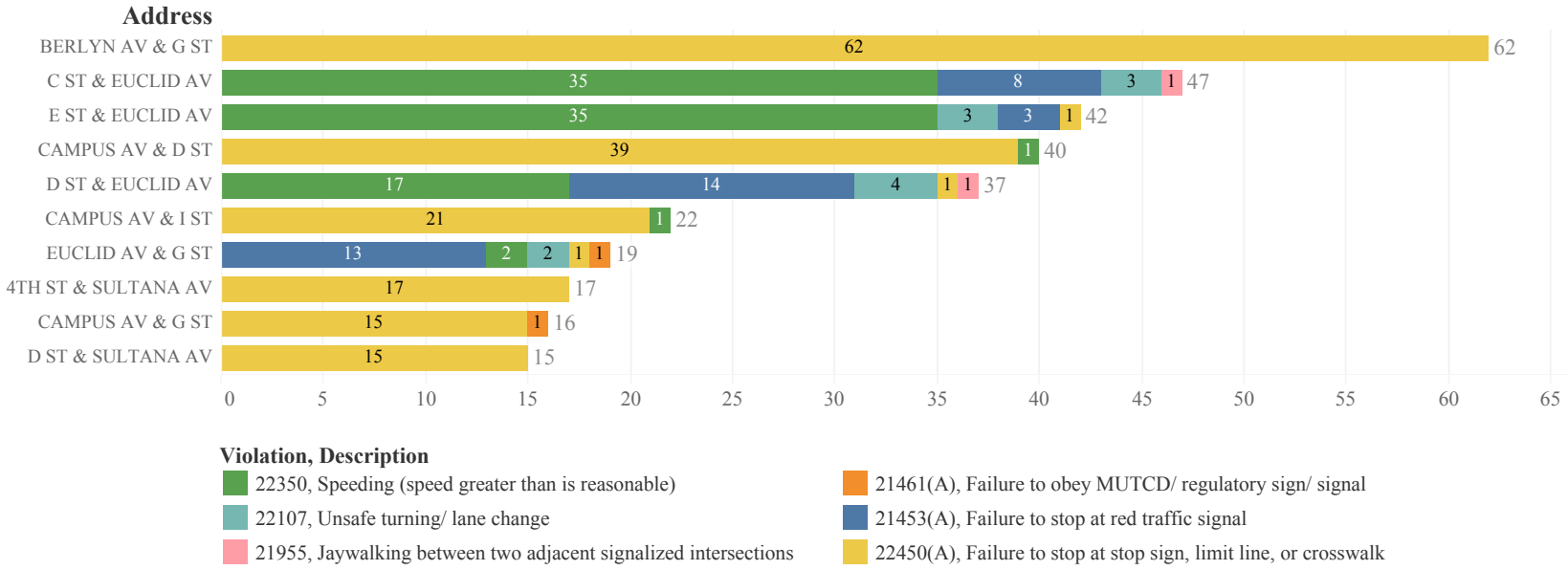
*Percentages are based on the total number of citations for each day (horizontal)

	12:00 - 2:59 AM	3:00 - 5:59 AM	6:00 - 8:59 AM	9:00 - 11:59 AM	12:00 - 2:59 PM	3:00 - 5:59 PM	6:00 - 8:59 PM	9:00 - 11:59 PM
Monday			23.5%	17.6%	11.8%	5.9%	17.6%	23.5%
Tuesday			17.6%	35.3%	23.5%		11.8%	11.8%
Wednesday			35.7%	7.1%	35.7%	7.1%	14.3%	
Thursday			12.5%	25.0%	12.5%	12.5%	12.5%	25.0%
Friday			27.3%		27.3%	18.2%	9.1%	18.2%
Saturday	6.7%	6.7%		6.7%	33.3%	20.0%		26.7%
Sunday	40.0%			40.0%				20.0%

Data Source: 2013-2017 Ontario Police Citations

Central Language Academy

Violation Count by Address or Intersection



Citation Frequency by Day and Time Range

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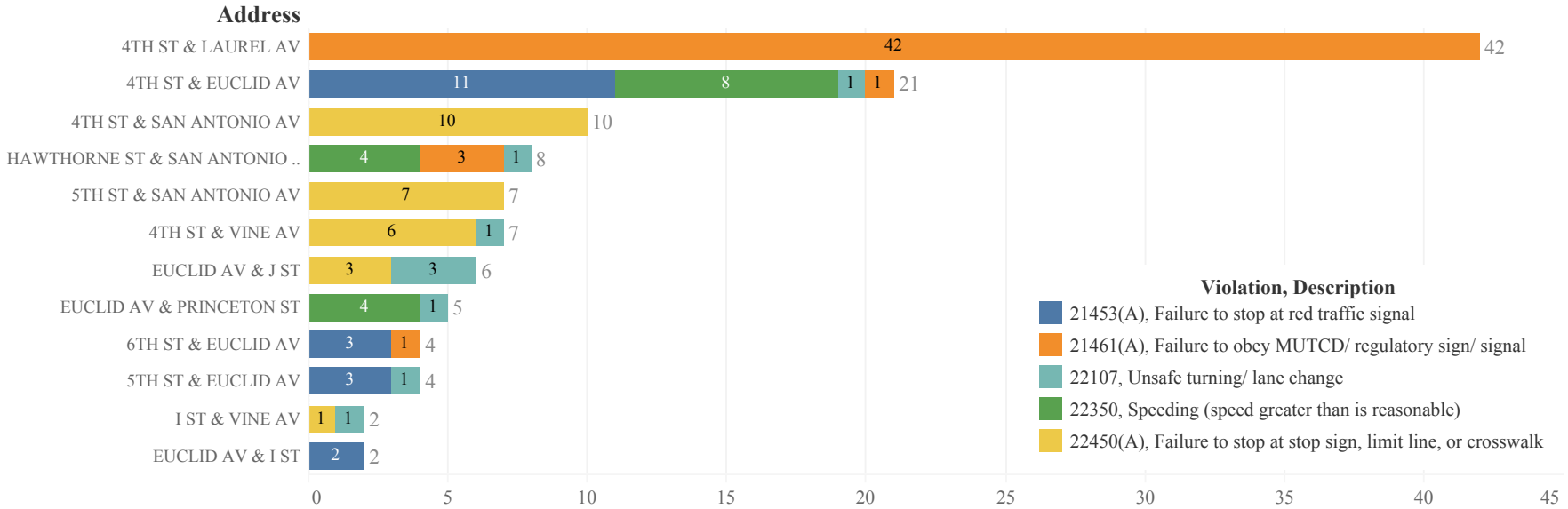
	12:00 - 2:59 AM	3:00 - 5:59 AM	6:00 - 8:59 AM	9:00 - 11:59 AM	12:00 - 2:59 PM	3:00 - 5:59 PM	6:00 - 8:59 PM	9:00 - 11:59 PM
Monday	2.4%		19.0%	19.0%	28.6%	11.9%	14.3%	4.8%
Tuesday	4.2%		17.7%	15.6%	35.4%	19.8%	6.3%	1.0%
Wednesday	4.9%	1.0%	41.2%	20.6%	19.6%	4.9%	6.9%	1.0%
Thursday	2.2%	2.2%	21.7%	13.0%	32.6%	15.2%	4.3%	8.7%
Friday	2.8%	4.2%	30.6%	15.3%	25.0%	8.3%	11.1%	2.8%
Saturday	3.6%		21.8%	10.9%	14.5%	16.4%	20.0%	12.7%
Sunday	31.3%	12.5%	6.3%	6.3%	6.3%	25.0%	6.3%	6.3%

Data Source: 2013-2017 Ontario Police Citations

Chaffey High

Violation Count by Address or Intersection



Citation Frequency by Day and Time Range

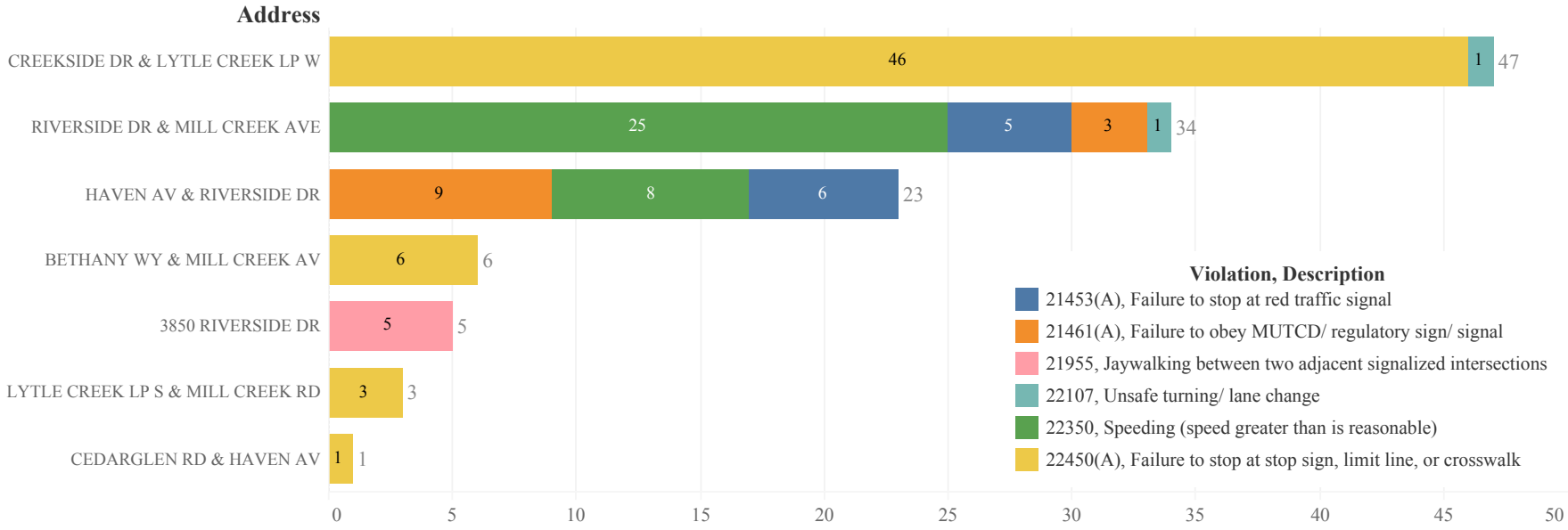
*Percentages are based on the total number of citations for each day (horizontal)

	12:00 - 2:59 AM	6:00 - 8:59 AM	9:00 - 11:59 AM	12:00 - 2:59 PM	3:00 - 5:59 PM	6:00 - 8:59 PM	9:00 - 11:59 PM
Monday	12.5%		37.5%		12.5%	12.5%	25.0%
Tuesday		66.7%		30.0%	3.3%		
Wednesday		76.9%	2.6%	15.4%	2.6%	2.6%	
Thursday	4.8%	47.6%	19.0%	9.5%	9.5%		9.5%
Friday			30.0%	30.0%	10.0%	20.0%	10.0%
Saturday	10.0%				30.0%	20.0%	40.0%
Sunday	57.1%		14.3%		28.6%		

Data Source: 2013-2017 Ontario Police Citations

Colony High

Violation Count by Address or Intersection



Citation Frequency by Day and Time Range

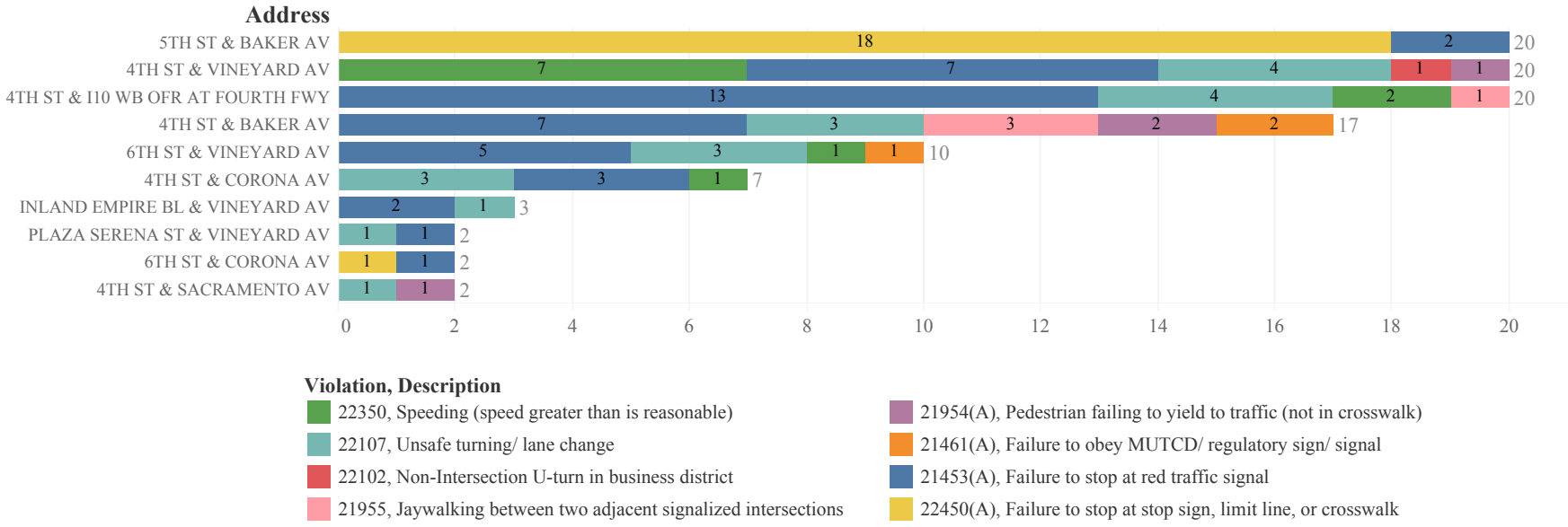
*Percentages are based on the total number of citations for each day (horizontal)

	12:00 - 2:59 AM	6:00 - 8:59 AM	9:00 - 11:59 AM	12:00 - 2:59 PM	3:00 - 5:59 PM	6:00 - 8:59 PM	9:00 - 11:59 PM
Monday	4.3%	13.0%	4.3%	69.6%	4.3%	4.3%	
Tuesday		63.3%	10.0%	10.0%	13.3%	3.3%	
Wednesday		10.0%	5.0%	35.0%	35.0%	15.0%	
Thursday		73.1%	7.7%	11.5%	3.8%		3.8%
Friday		23.1%		69.2%	7.7%		
Saturday					50.0%		50.0%
Sunday			33.3%	33.3%	33.3%		

Data Source: 2013-2017 Ontario Police Citations

Corona Elementary

Violation Count by Address or Intersection



Citation Frequency by Day and Time Range

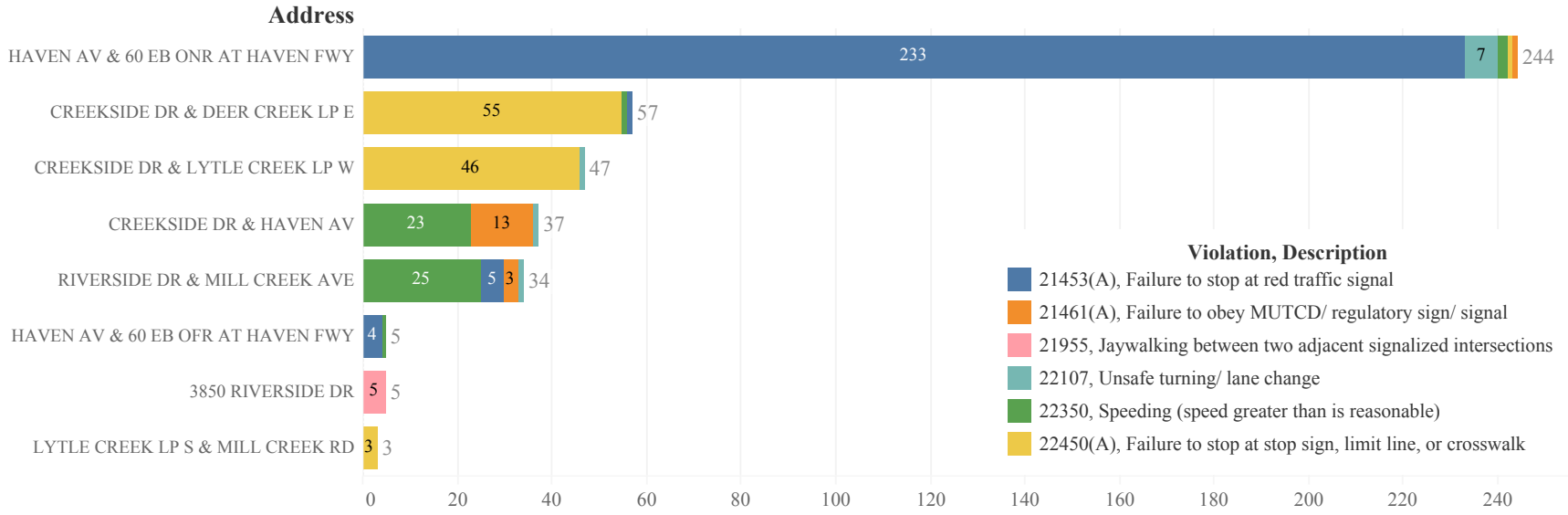
*Percentages are based on the total number of citations for each day (horizontal)

	12:00 - 2:59 AM	3:00 - 5:59 AM	6:00 - 8:59 AM	9:00 - 11:59 AM	12:00 - 2:59 PM	3:00 - 5:59 PM	6:00 - 8:59 PM	9:00 - 11:59 PM
Monday	7.1%		7.1%	21.4%	21.4%	7.1%	21.4%	14.3%
Tuesday			15.0%	5.0%	30.0%	20.0%	15.0%	15.0%
Wednesday		14.3%	7.1%	7.1%	35.7%	7.1%	21.4%	7.1%
Thursday	15.8%		5.3%	15.8%	21.1%	26.3%	10.5%	5.3%
Friday		4.2%	20.8%	12.5%	12.5%	8.3%	12.5%	29.2%
Saturday	11.8%		5.9%	17.6%	11.8%	17.6%	5.9%	29.4%
Sunday	16.7%		16.7%	33.3%	33.3%			

Data Source: 2013-2017 Ontario Police Citations

Creek View Elementary

Violation Count by Address or Intersection



Citation Frequency by Day and Time Range

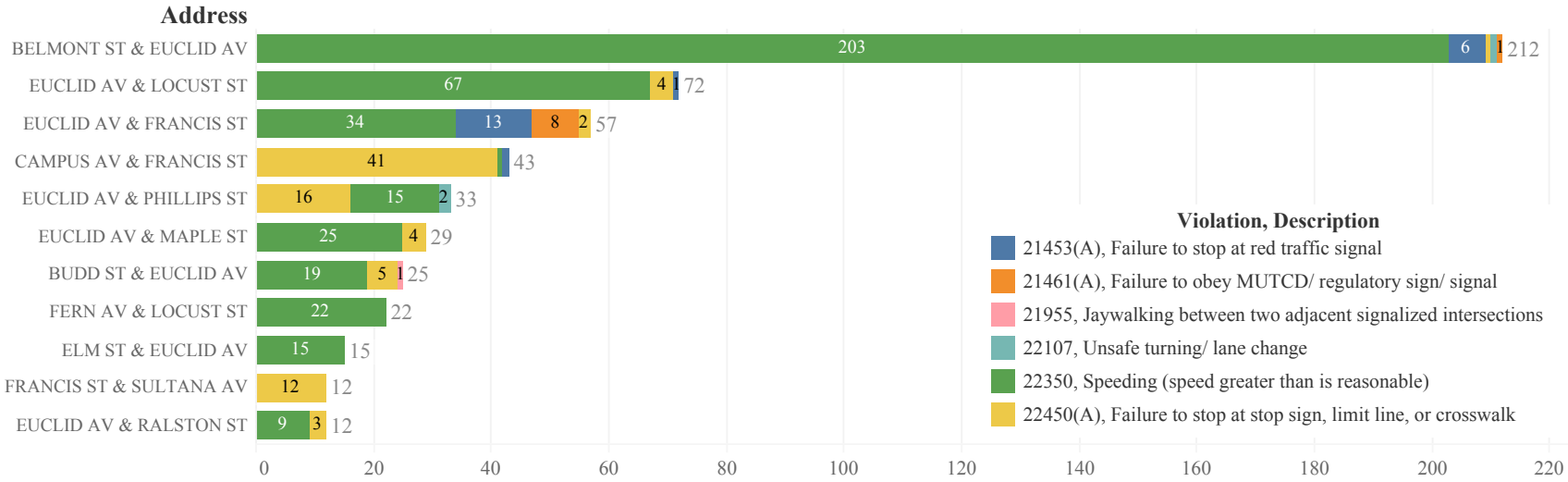
*Percentages are based on the total number of citations for each day (horizontal)

	12:00 - 2:59 AM	3:00 - 5:59 AM	6:00 - 8:59 AM	9:00 - 11:59 AM	12:00 - 2:59 PM	3:00 - 5:59 PM	6:00 - 8:59 PM	9:00 - 11:59 PM
Monday	2.0%	14.0%	34.0%	12.0%	34.0%	2.0%	2.0%	
Tuesday		8.2%	60.0%	4.7%	4.7%	18.8%	2.4%	1.2%
Wednesday		9.7%	54.8%	6.5%	8.1%	16.1%	4.8%	
Thursday		13.4%	58.2%	4.5%	4.5%	16.4%	3.0%	
Friday	0.7%	2.8%	76.1%	1.4%	9.9%	9.2%		
Saturday	4.5%		9.1%	27.3%	18.2%	22.7%		18.2%
Sunday	16.7%	16.7%		16.7%		33.3%	16.7%	

Data Source: 2013-2017 Ontario Police Citations

De Anza Middle

Violation Count by Address or Intersection



Citation Frequency by Day and Time Range

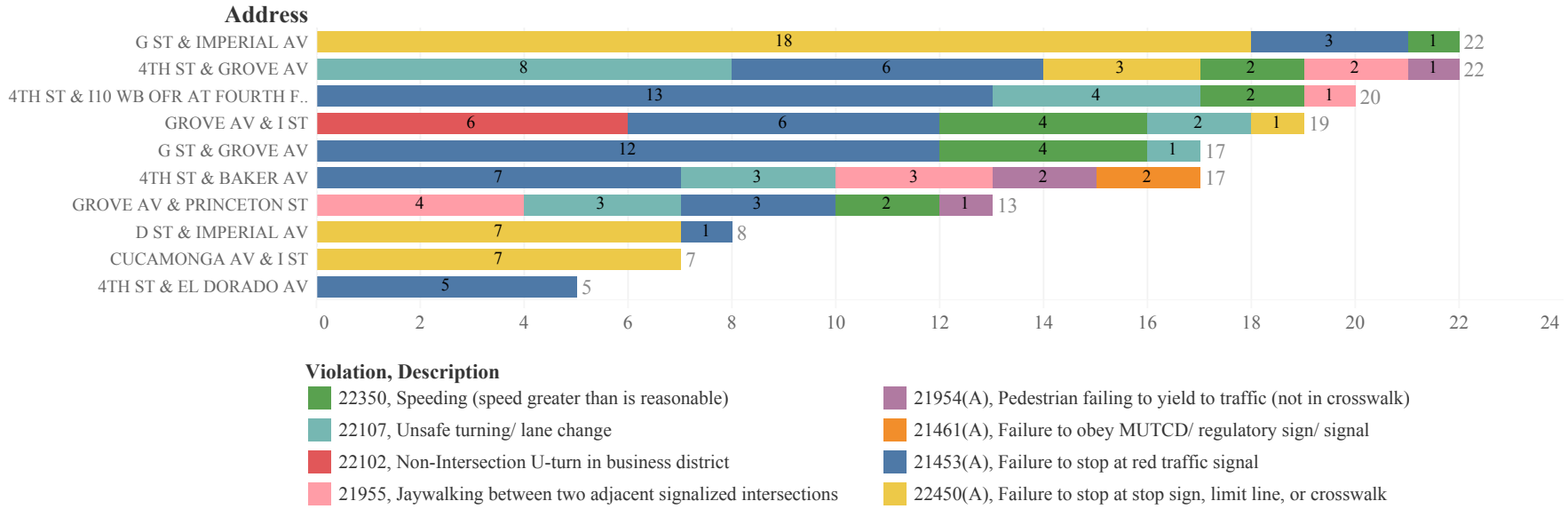
*Percentages are based on the total number of citations for each day (horizontal)

	12:00 - 2:59 AM	3:00 - 5:59 AM	6:00 - 8:59 AM	9:00 - 11:59 AM	12:00 - 2:59 PM	3:00 - 5:59 PM	6:00 - 8:59 PM	9:00 - 11:59 PM
Monday		1.8%	45.6%	5.3%	24.6%	14.0%	1.8%	7.0%
Tuesday	2.1%	1.1%	72.6%	3.2%	14.7%	5.3%		1.1%
Wednesday	0.6%	0.6%	66.0%	6.3%	11.9%	11.3%	1.9%	1.3%
Thursday	0.8%	4.2%	64.4%	5.9%	15.3%	6.8%	0.8%	1.7%
Friday	9.9%	4.9%	21.0%	13.6%	21.0%	12.3%	7.4%	9.9%
Saturday	6.5%		11.3%	24.2%	12.9%	24.2%	6.5%	14.5%
Sunday	21.4%			14.3%	14.3%	7.1%	14.3%	28.6%

Data Source: 2013-2017 Ontario Police Citations

Del Norte Elementary

Violation Count by Address or Intersection



Citation Frequency by Day and Time Range

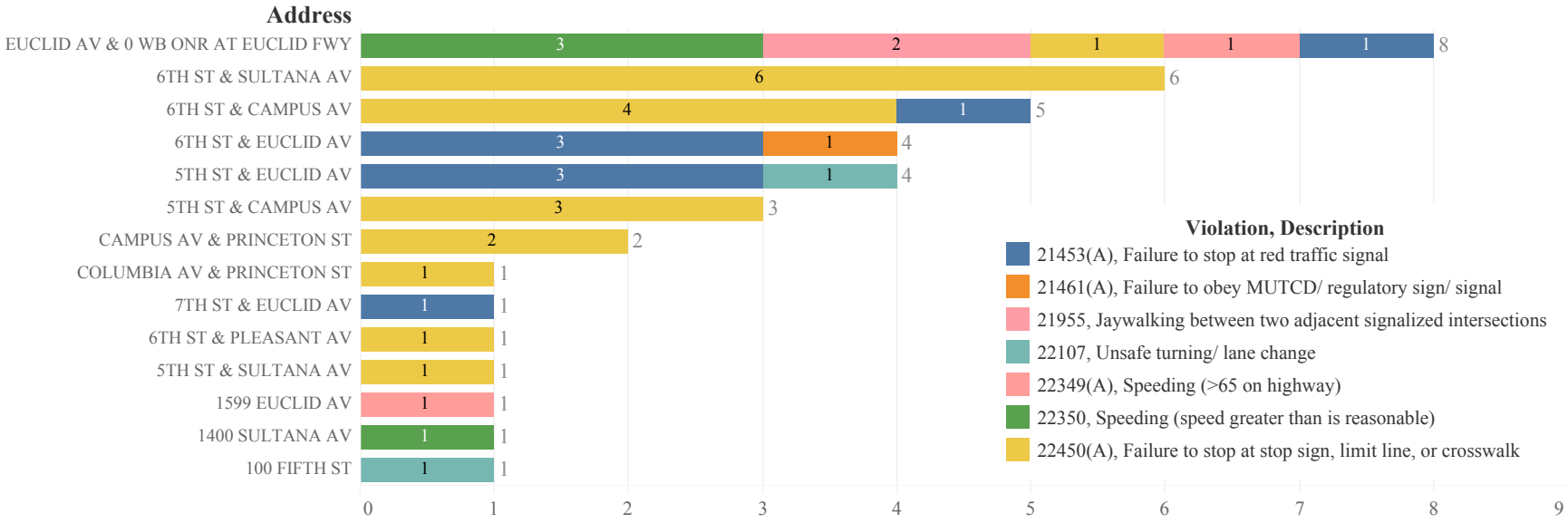
*Percentages are based on the total number of citations for each day (horizontal)

	12:00 - 2:59 AM	3:00 - 5:59 AM	6:00 - 8:59 AM	9:00 - 11:59 AM	12:00 - 2:59 PM	3:00 - 5:59 PM	6:00 - 8:59 PM	9:00 - 11:59 PM
Monday	9.1%	4.5%	18.2%	22.7%	9.1%	4.5%	9.1%	22.7%
Tuesday			5.3%	26.3%	26.3%	10.5%	15.8%	15.8%
Wednesday		6.3%	18.8%	3.1%	18.8%	21.9%	15.6%	15.6%
Thursday	14.8%	7.4%	7.4%	18.5%	11.1%	7.4%	25.9%	7.4%
Friday	3.1%	6.3%	6.3%	15.6%	6.3%	12.5%	18.8%	31.3%
Saturday	19.2%	7.7%		7.7%	7.7%	11.5%	15.4%	30.8%
Sunday	20.0%		10.0%	20.0%	20.0%	10.0%		20.0%

Data Source: 2013-2017 Ontario Police Citations

Edison Elementary

Violation Count by Address or Intersection



Citation Frequency by Day and Time Range

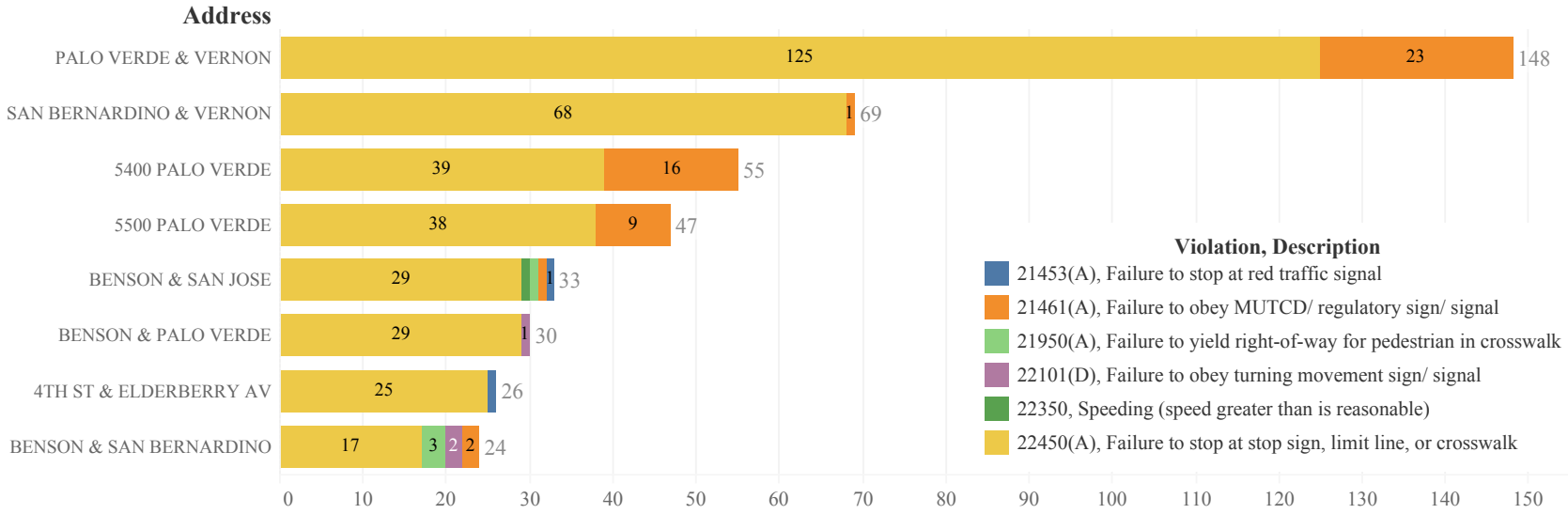
*Percentages are based on the total number of citations for each day (horizontal)

	12:00 - 2:59 AM	6:00 - 8:59 AM	9:00 - 11:59 AM	12:00 - 2:59 PM	3:00 - 5:59 PM	6:00 - 8:59 PM	9:00 - 11:59 PM
Monday		25.0%	25.0%	12.5%		25.0%	12.5%
Tuesday		14.3%	28.6%	28.6%		14.3%	14.3%
Wednesday		16.7%	33.3%	33.3%		16.7%	
Thursday			14.3%	42.9%	42.9%		
Friday				40.0%	20.0%	20.0%	20.0%
Saturday			50.0%	50.0%			
Sunday	25.0%		25.0%	25.0%			25.0%

Data Source: 2013-2017 Ontario Police Citations

El Camino Elementary

Violation Count by Address or Intersection



Citation Frequency by Day and Time Range

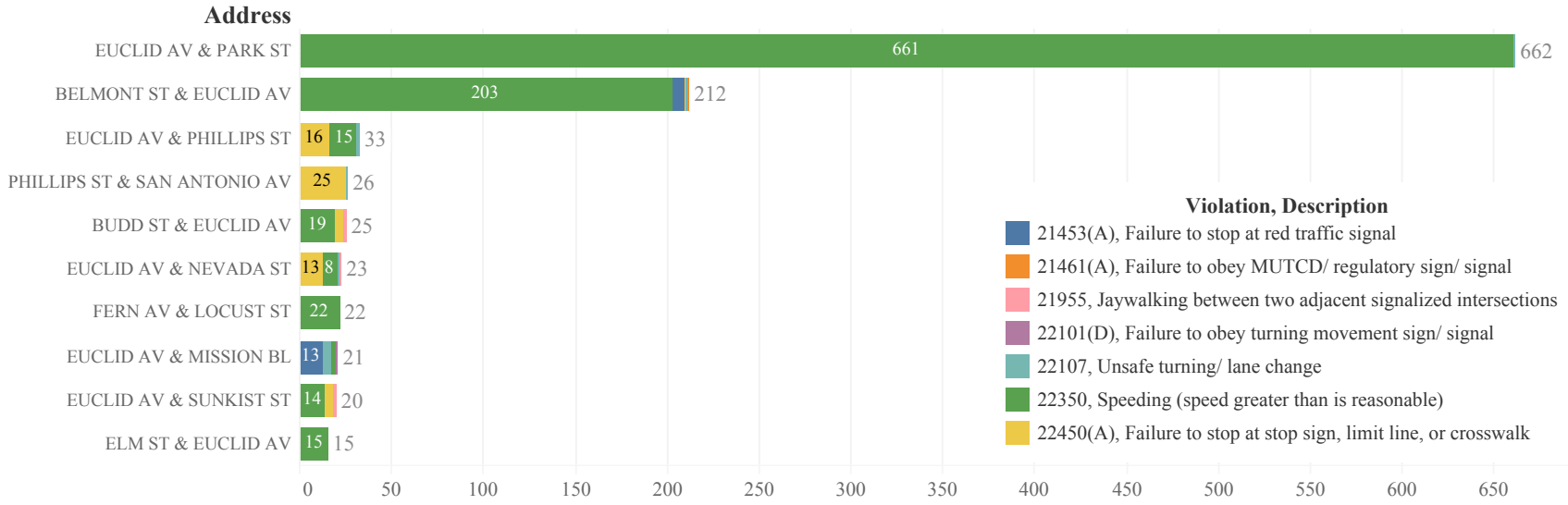
*Percentages are based on the total number of citations for each day (horizontal)

	12:00 - 2:59 AM	6:00 - 8:59 AM	9:00 - 11:59 AM	12:00 - 2:59 PM	3:00 - 5:59 PM	6:00 - 8:59 PM	9:00 - 11:59 PM
Monday		25.0%	25.0%	12.5%		25.0%	12.5%
Tuesday		14.3%	28.6%	28.6%		14.3%	14.3%
Wednesday		16.7%	33.3%	33.3%		16.7%	
Thursday			14.3%	42.9%	42.9%		
Friday				40.0%	20.0%	20.0%	20.0%
Saturday			50.0%	50.0%			
Sunday	25.0%		25.0%	25.0%			25.0%

Data Source: 2013-2017 Ontario Police Citations

Euclid Elementary

Violation Count by Address or Intersection



Citation Frequency by Day and Time Range

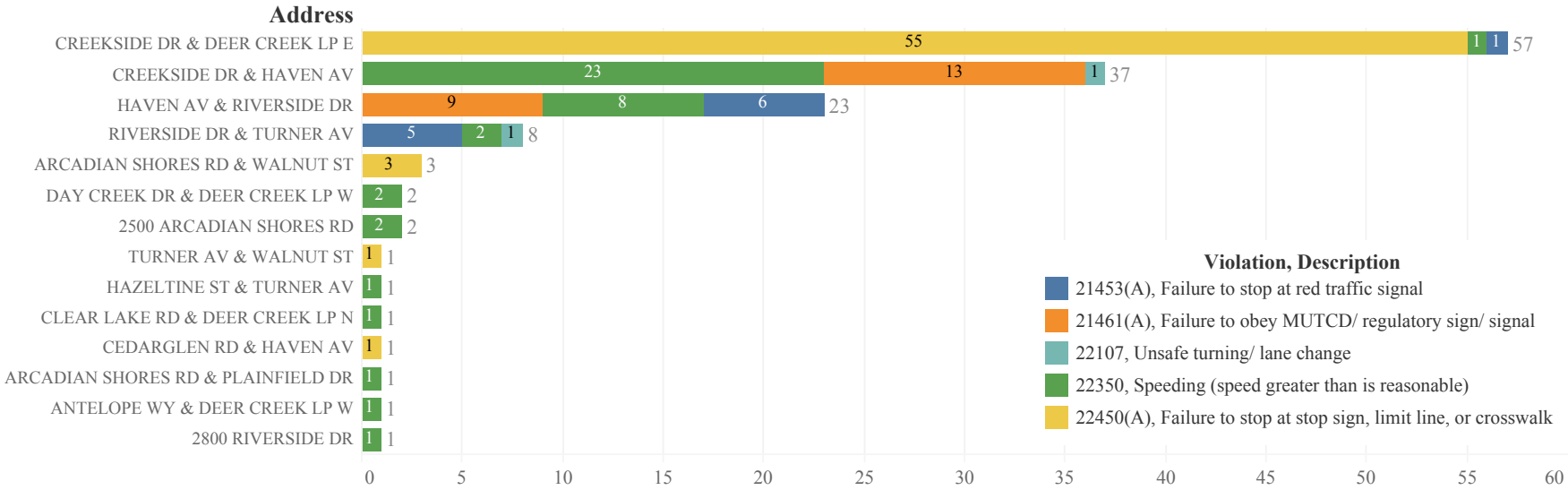
*Percentages are based on the total number of citations for each day (horizontal)

	12:00 - 2:59 AM	3:00 - 5:59 AM	6:00 - 8:59 AM	9:00 - 11:59 AM	12:00 - 2:59 PM	3:00 - 5:59 PM	6:00 - 8:59 PM	9:00 - 11:59 PM
Monday		2.0%	32.3%	26.3%	19.2%	14.1%	2.0%	4.0%
Tuesday	0.8%	1.6%	49.6%	4.0%	17.6%	12.8%	9.6%	4.0%
Wednesday	0.5%	0.5%	54.6%	13.1%	13.1%	9.3%	7.1%	1.6%
Thursday	2.5%	3.3%	49.2%	5.7%	21.3%	13.9%	3.3%	0.8%
Friday	0.4%	0.4%	43.8%	18.9%	17.9%	13.1%	2.6%	3.0%
Saturday	2.5%	1.7%	10.9%	16.8%	27.7%	30.3%	4.2%	5.9%
Sunday	10.0%		10.0%	15.0%	15.0%	10.0%	20.0%	20.0%

Data Source: 2013-2017 Ontario Police Citations

Grace Yokley Elementary

Violation Count by Address or Location



Citation Frequency by Day and Time Range

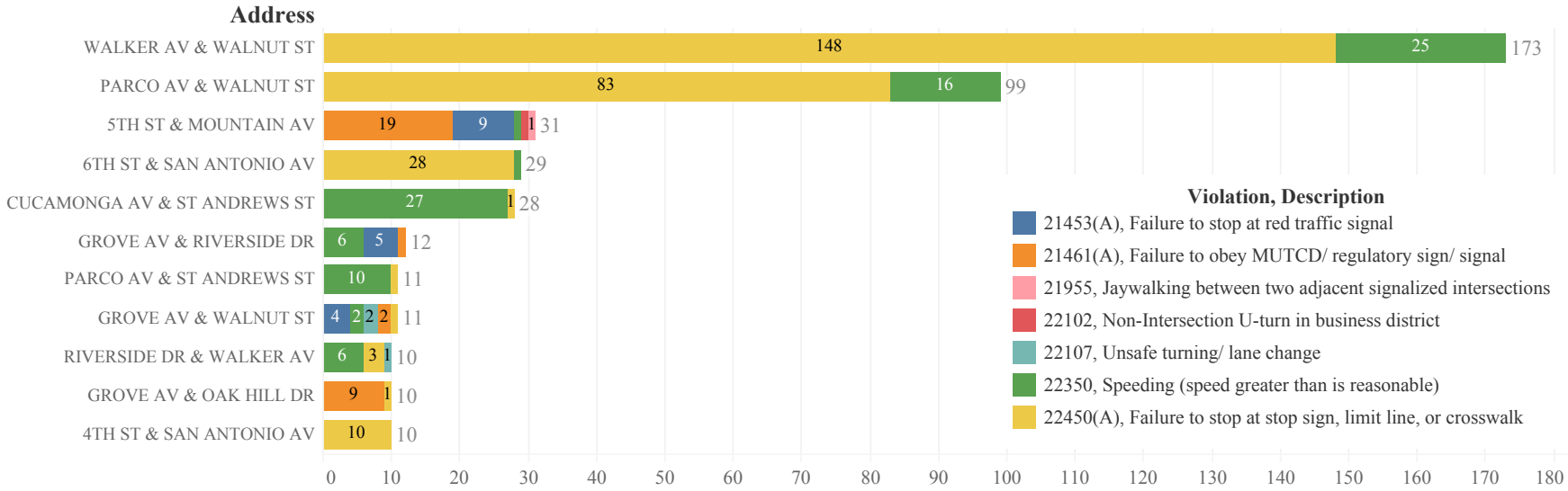
*Percentages are based on the total number of citations for each day (horizontal)

	6:00 - 8:59 AM	9:00 - 11:59 AM	12:00 - 2:59 PM	3:00 - 5:59 PM	6:00 - 8:59 PM	9:00 - 11:59 PM
Monday	15.6%	18.8%	62.5%		3.1%	
Tuesday	33.3%	7.4%	3.7%	48.1%	7.4%	
Wednesday	43.5%	4.3%	13.0%	30.4%	4.3%	4.3%
Thursday	16.7%	5.6%		55.6%	16.7%	5.6%
Friday	6.3%	6.3%	18.8%	62.5%		6.3%
Saturday	4.8%	28.6%	19.0%	33.3%		14.3%
Sunday			50.0%	50.0%		

Data Source: 2013-2017 Ontario Police Citations

Hawthorne Elementary

Violation Count by Address or Intersection



Citation Frequency by Day and Time Range

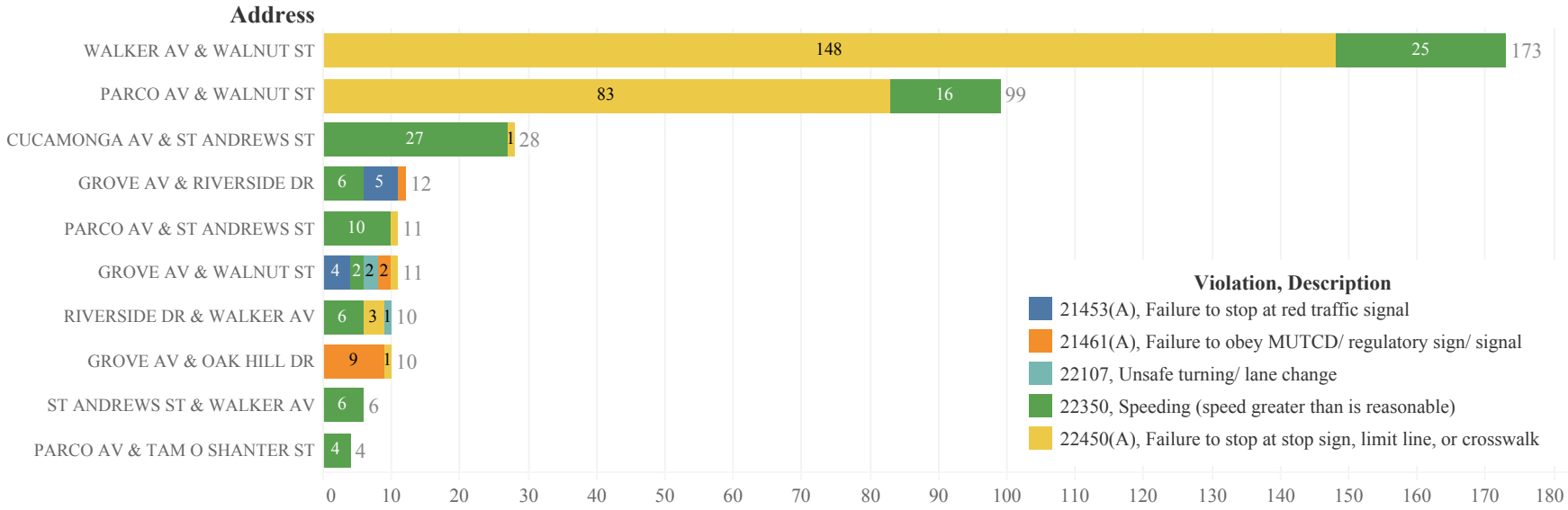
*Percentages are based on the total number of citations for each day (horizontal)

	12:00 - 2:59 AM	3:00 - 5:59 AM	6:00 - 8:59 AM	9:00 - 11:59 AM	12:00 - 2:59 PM	3:00 - 5:59 PM	6:00 - 8:59 PM	9:00 - 11:59 PM
Monday		4.2%	27.1%	29.2%	10.4%	16.7%	10.4%	2.1%
Tuesday	5.1%	3.8%	21.8%	20.5%	39.7%	7.7%	1.3%	
Wednesday	1.0%	1.0%	18.3%	11.5%	36.5%	28.8%	2.9%	
Thursday	1.3%		11.4%	27.8%	19.0%	26.6%	12.7%	1.3%
Friday			12.4%	23.7%	29.9%	20.6%	7.2%	6.2%
Saturday	4.3%		2.1%	31.9%	19.1%	27.7%	8.5%	6.4%
Sunday	9.5%		4.8%	42.9%	9.5%	28.6%		4.8%

Data Source: 2013-2017 Ontario Police Citations

Levi H. Dickey Elementary

Violation Count by Address or Intersection



Citation Frequency by Day and Time Range

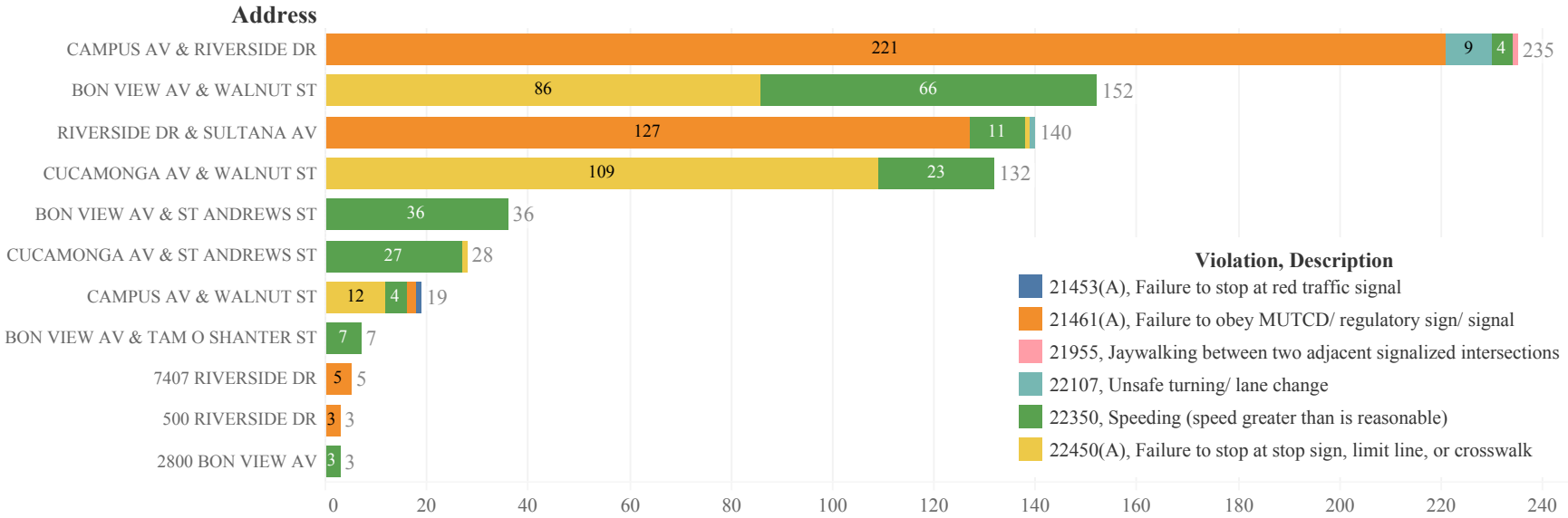
*Percentages are based on the total number of citations for each day (horizontal)

	12:00 - 2:59 AM	3:00 - 5:59 AM	6:00 - 8:59 AM	9:00 - 11:59 AM	12:00 - 2:59 PM	3:00 - 5:59 PM	6:00 - 8:59 PM	9:00 - 11:59 PM
Monday		4.9%	31.7%	24.4%	12.2%	17.1%	7.3%	2.4%
Tuesday		2.0%	33.3%	13.7%	39.2%	9.8%	2.0%	
Wednesday	1.3%		11.7%	9.1%	35.1%	39.0%	3.9%	
Thursday			11.6%	29.0%	15.9%	29.0%	14.5%	
Friday			15.8%	22.4%	28.9%	22.4%	6.6%	3.9%
Saturday	5.0%		2.5%	30.0%	20.0%	30.0%	7.5%	5.0%
Sunday	6.3%		6.3%	50.0%	12.5%	18.8%		6.3%

Data Source: 2013-2017 Ontario Police Citations

Liberty Elementary

Violation Count by Address or Intersection



Citation Frequency by Day and Time Range

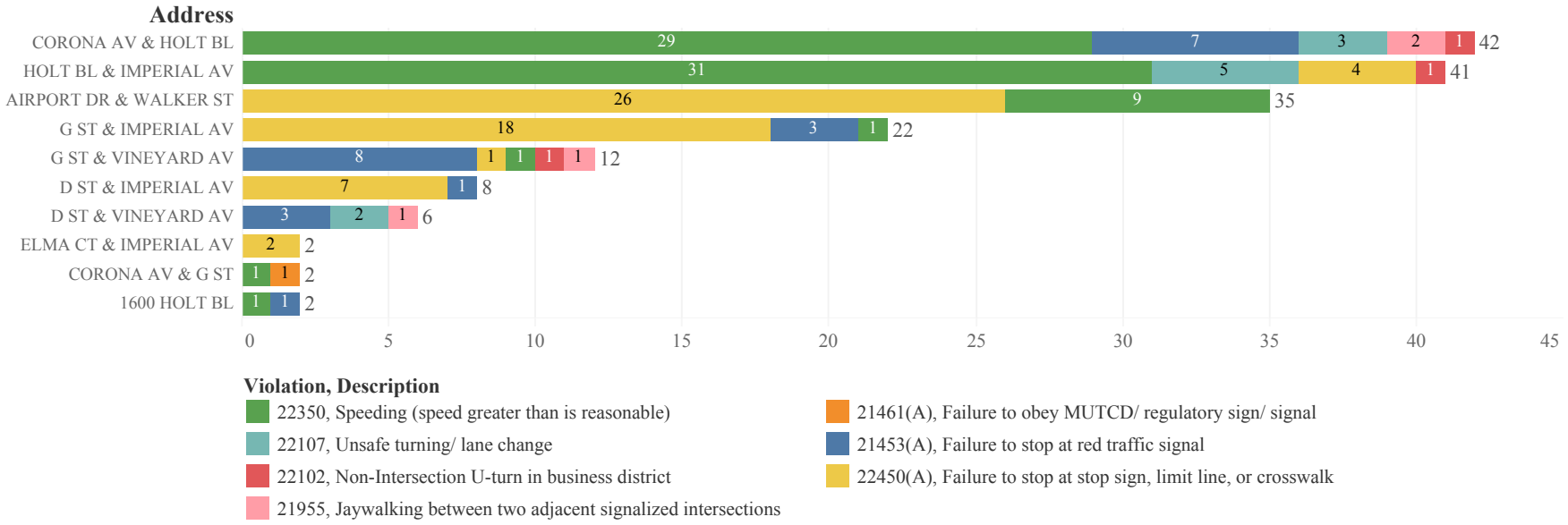
*Percentages are based on the total number of citations for each day (horizontal)

	12:00 - 2:59 AM	3:00 - 5:59 AM	6:00 - 8:59 AM	9:00 - 11:59 AM	12:00 - 2:59 PM	3:00 - 5:59 PM	6:00 - 8:59 PM	9:00 - 11:59 PM
Monday			77.8%	22.2%				
Tuesday		0.4%	14.2%	11.7%	65.6%	7.3%	0.4%	0.4%
Wednesday		1.1%	41.5%	4.3%	20.2%	27.7%	3.2%	2.1%
Thursday	2.3%		25.0%	2.3%	25.0%	27.3%	18.2%	
Friday			12.0%	21.8%	53.4%	9.8%	2.3%	0.8%
Saturday			4.6%	51.1%	39.7%	3.2%	0.5%	0.9%
Sunday				23.1%	30.8%	46.2%		

Data Source: 2013-2017 Ontario Police Citations

Mariposa Elementary

Violation Count by Address or Intersection



Citation Frequency by Day and Time Range

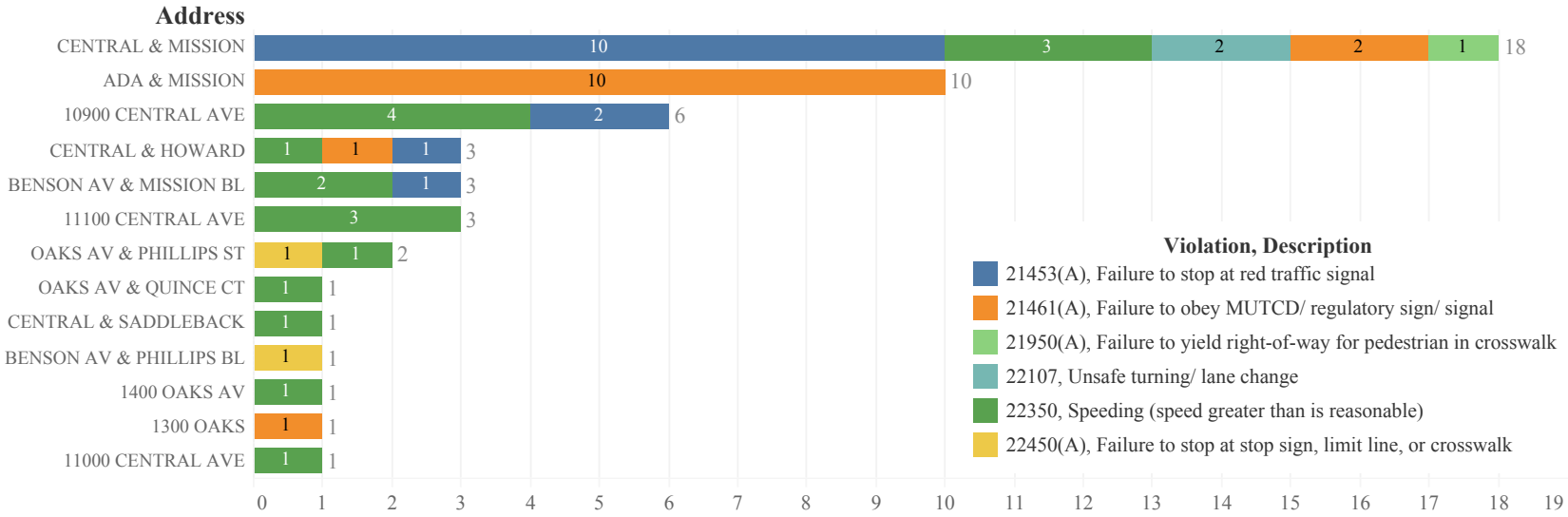
*Percentages are based on the total number of citations for each day (horizontal)

	12:00 - 2:59 AM	3:00 - 5:59 AM	6:00 - 8:59 AM	9:00 - 11:59 AM	12:00 - 2:59 PM	3:00 - 5:59 PM	6:00 - 8:59 PM	9:00 - 11:59 PM
Monday			2.8%	38.9%	25.0%	19.4%	8.3%	5.6%
Tuesday			8.3%	16.7%	25.0%		33.3%	16.7%
Wednesday	4.8%	4.8%	14.3%	4.8%	23.8%	28.6%	14.3%	4.8%
Thursday		11.1%	5.6%	16.7%	16.7%	5.6%	27.8%	16.7%
Friday		4.8%		14.3%	14.3%	23.8%	28.6%	14.3%
Saturday	10.5%	1.8%	3.5%	5.3%	22.8%	26.3%	21.1%	8.8%
Sunday	21.4%	7.1%			28.6%	14.3%	28.6%	

Data Source: 2013-2017 Ontario Police Citations

Mission Elementary

Violation Count by Address or Intersection



Citation Frequency by Day and Time Range

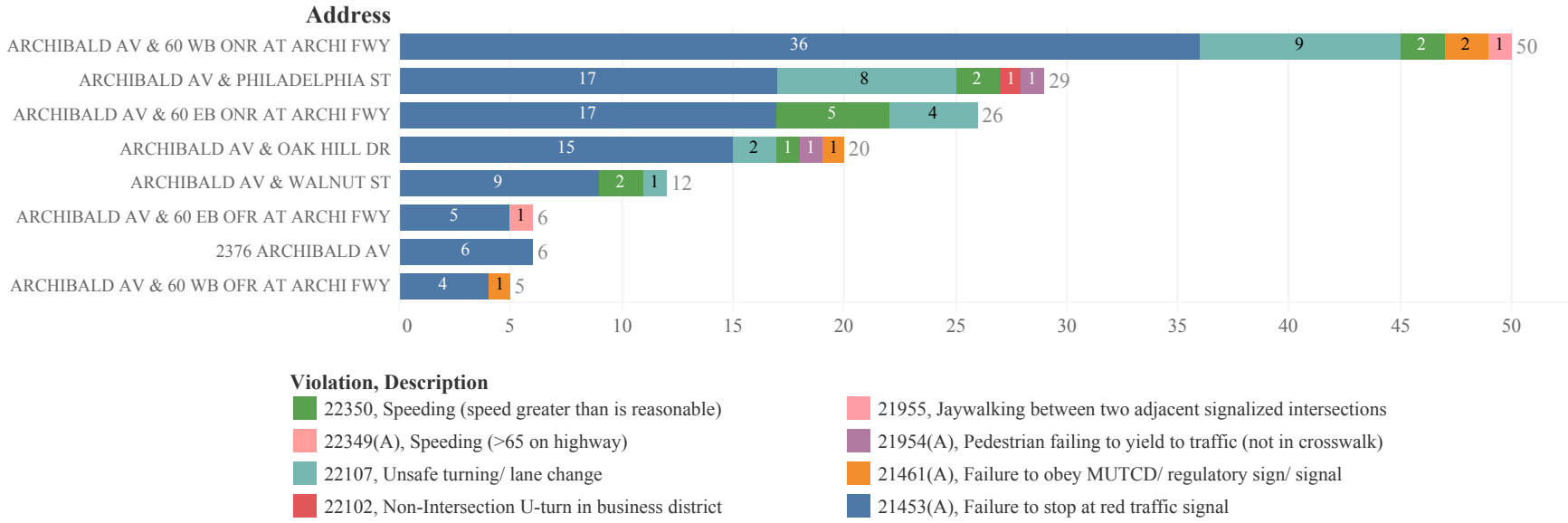
*Percentages are based on the total number of citations for each day (horizontal)

	12:00 - 2:59 AM	3:00 - 5:59 AM	6:00 - 8:59 AM	9:00 - 11:59 AM	12:00 - 2:59 PM	3:00 - 5:59 PM	6:00 - 8:59 PM	9:00 - 11:59 PM
Monday	28.6%	14.3%		14.3%	14.3%		14.3%	14.3%
Tuesday	30.0%	30.0%	10.0%			10.0%		20.0%
Wednesday				25.0%	25.0%	25.0%		25.0%
Thursday				25.0%				75.0%
Friday	25.0%			25.0%	16.7%		8.3%	25.0%
Saturday	30.0%		40.0%	10.0%		10.0%		10.0%
Sunday	25.0%					25.0%	25.0%	25.0%

Data Source: 2013-2017 Ontario Police Citations

Mountain View Elementary

Violation Count by Address or Intersection



Violation, Description

- 22350, Speeding (speed greater than is reasonable)
- 22349(A), Speeding (>65 on highway)
- 22107, Unsafe turning/ lane change
- 22102, Non-Intersection U-turn in business district
- 21955, Jaywalking between two adjacent signalized intersections
- 21954(A), Pedestrian failing to yield to traffic (not in crosswalk)
- 21461(A), Failure to obey MUTCD/ regulatory sign/ signal
- 21453(A), Failure to stop at red traffic signal

Citation Frequency by Day and Time Range

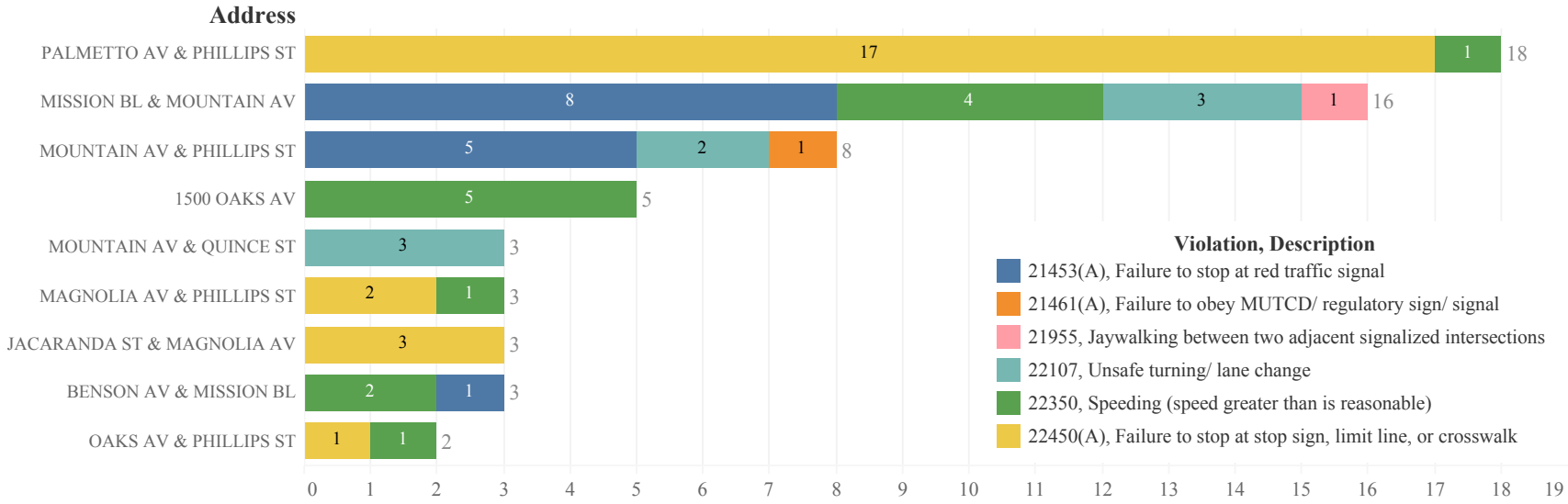
*Percentages are based on the total number of citations for each day (horizontal)

	12:00 - 2:59 AM	3:00 - 5:59 AM	6:00 - 8:59 AM	9:00 - 11:59 AM	12:00 - 2:59 PM	3:00 - 5:59 PM	6:00 - 8:59 PM	9:00 - 11:59 PM
Monday		8.7%	17.4%	4.3%	30.4%	13.0%	4.3%	21.7%
Tuesday	3.4%	6.9%	51.7%	3.4%	13.8%	17.2%		3.4%
Wednesday	3.7%	3.7%	18.5%	14.8%	29.6%	14.8%	11.1%	3.7%
Thursday		2.8%	33.3%	5.6%	16.7%	16.7%	13.9%	11.1%
Friday	6.5%	3.2%	6.5%	16.1%	29.0%	22.6%		16.1%
Saturday			15.4%	15.4%	7.7%	15.4%	23.1%	23.1%
Sunday	9.1%	9.1%	9.1%	18.2%	9.1%	27.3%	9.1%	9.1%

Data Source: 2013-2017 Ontario Police Citations

Oaks Middle

Violation Count by Address or Intersection



Citation Frequency by Day and Time Range

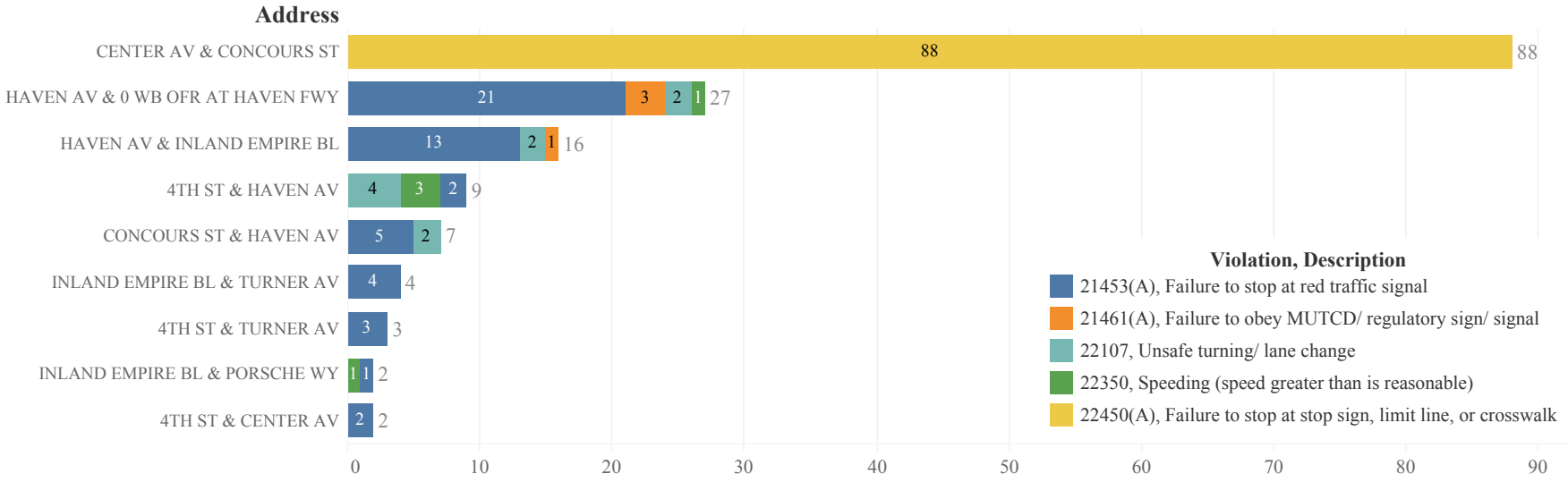
*Percentages are based on the total number of citations for each day (horizontal)

	12:00 - 2:59 AM	3:00 - 5:59 AM	6:00 - 8:59 AM	9:00 - 11:59 AM	12:00 - 2:59 PM	3:00 - 5:59 PM	6:00 - 8:59 PM	9:00 - 11:59 PM
Monday		50.0%		25.0%				25.0%
Tuesday		11.1%	22.2%	55.6%			11.1%	
Wednesday	25.0%		12.5%	25.0%	37.5%			
Thursday	6.7%	6.7%	53.3%	26.7%				6.7%
Friday			5.9%	29.4%	17.6%	5.9%	23.5%	17.6%
Saturday	18.2%			18.2%		27.3%	9.1%	27.3%
Sunday				33.3%	33.3%	33.3%		

Data Source: 2013-2017 Ontario Police Citations

The Ontario Center

Violation Count by Address or Intersection



Citation Frequency by Day and Time Range

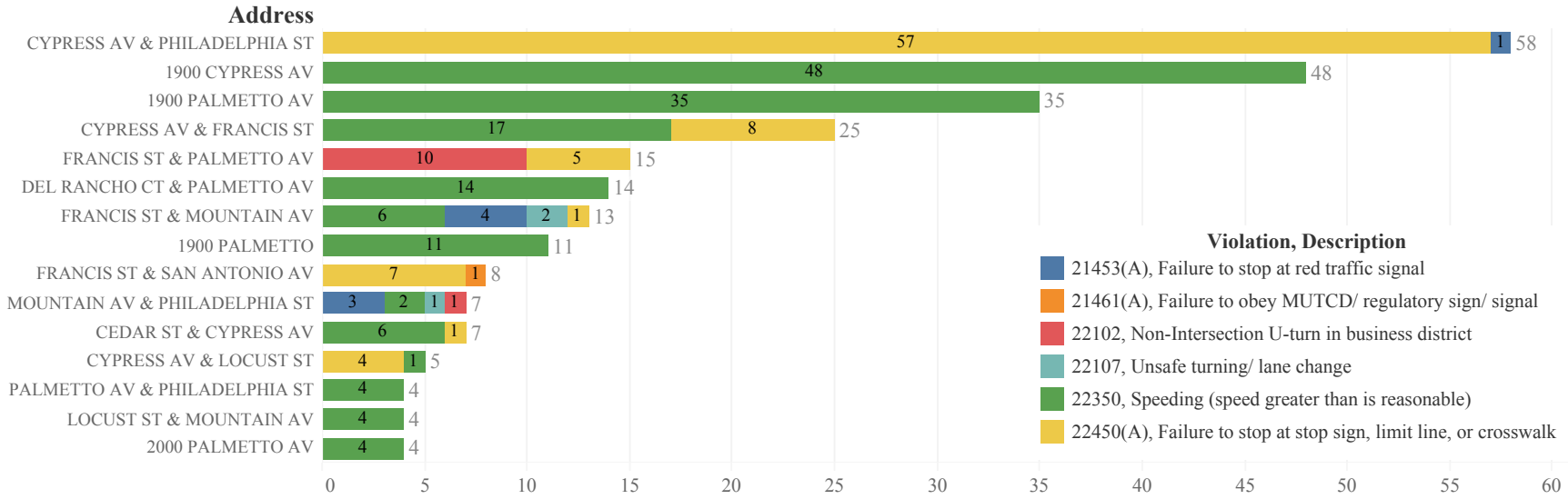
*Percentages are based on the total number of citations for each day (horizontal)

	12:00 - 2:59 AM	3:00 - 5:59 AM	6:00 - 8:59 AM	9:00 - 11:59 AM	12:00 - 2:59 PM	3:00 - 5:59 PM	6:00 - 8:59 PM	9:00 - 11:59 PM
Monday	5.0%	5.0%	30.0%	10.0%	10.0%	15.0%	20.0%	5.0%
Tuesday		4.5%	13.6%	18.2%	4.5%	27.3%	20.5%	11.4%
Wednesday		2.9%	23.5%	11.8%	8.8%	32.4%	20.6%	
Thursday	3.4%		13.8%	20.7%	13.8%	24.1%	24.1%	
Friday	3.7%	14.8%	14.8%	29.6%	7.4%	7.4%	11.1%	11.1%
Saturday				25.0%	25.0%		25.0%	25.0%
Sunday				66.7%		33.3%		

Data Source: 2013-2017 Ontario Police Citations

Ontario High

Violation Count by Address or Intersection



Citation Frequency by Day and Time Range

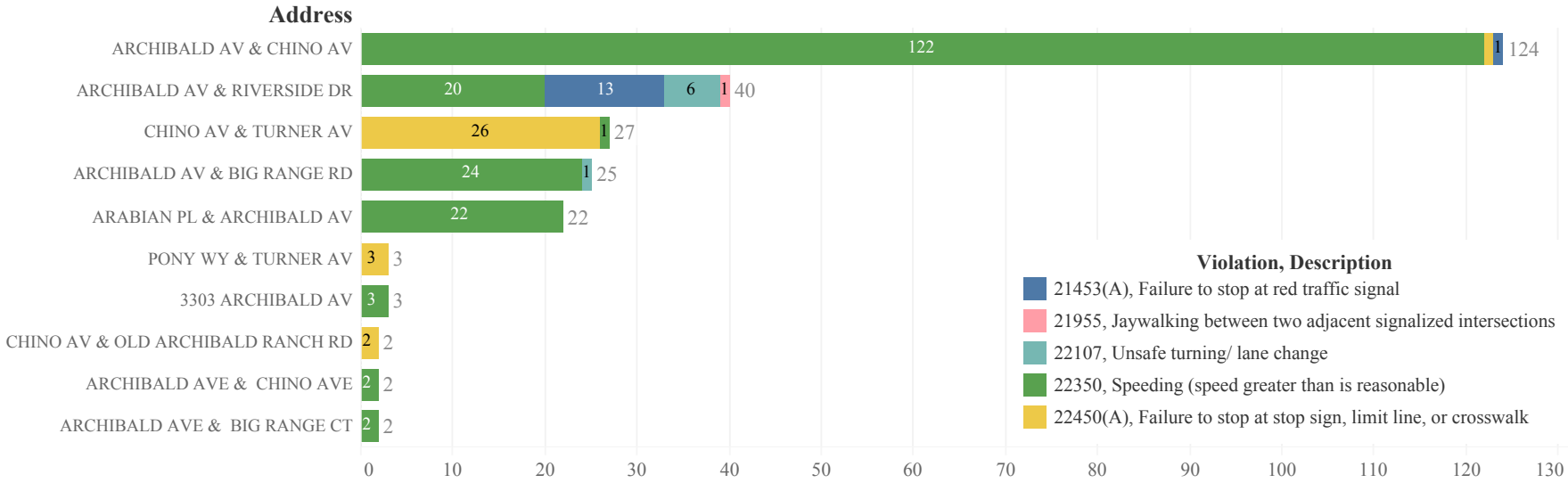
*Percentages are based on the total number of citations for each day (horizontal)

	12:00 - 2:59 AM	3:00 - 5:59 AM	6:00 - 8:59 AM	9:00 - 11:59 AM	12:00 - 2:59 PM	3:00 - 5:59 PM	6:00 - 8:59 PM	9:00 - 11:59 PM
Monday			45.2%	25.8%	12.9%	3.2%		12.9%
Tuesday	6.3%		56.3%		9.4%	9.4%	9.4%	9.4%
Wednesday	1.7%		45.0%	18.3%	28.3%	1.7%	3.3%	1.7%
Thursday		1.7%	55.2%	1.7%	32.8%	8.6%		
Friday			37.5%	35.9%	6.3%	15.6%		4.7%
Saturday			8.0%	8.0%	28.0%	36.0%	4.0%	16.0%
Sunday			22.2%		11.1%		22.2%	44.4%

Data Source: 2013-2017 Ontario Police Citations

Ranch View Elementary

Violation Count by Address or Intersection



Citation Frequency by Day and Time Range

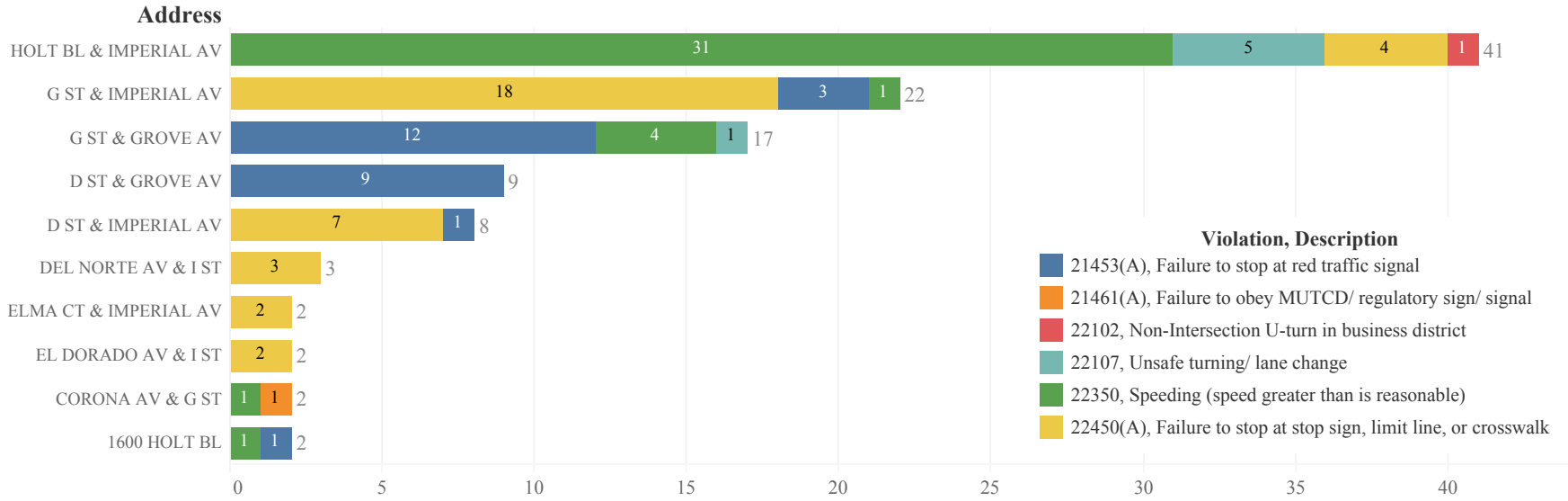
*Percentages are based on the total number of citations for each day (horizontal)

	12:00 - 2:59 AM	3:00 - 5:59 AM	6:00 - 8:59 AM	9:00 - 11:59 AM	12:00 - 2:59 PM	3:00 - 5:59 PM	6:00 - 8:59 PM	9:00 - 11:59 PM
Monday	3.1%		37.5%	3.1%	21.9%	31.3%	3.1%	
Tuesday	1.5%	2.9%	61.8%	1.5%	5.9%	23.5%	2.9%	
Wednesday	3.4%	3.4%	55.9%	5.1%	1.7%	23.7%	5.1%	1.7%
Thursday		12.8%	41.0%	5.1%	15.4%	23.1%	2.6%	
Friday	2.4%	2.4%	26.2%	14.3%	26.2%	19.0%	7.1%	2.4%
Saturday			16.7%	33.3%	16.7%			33.3%
Sunday	10.0%	10.0%		50.0%	20.0%			10.0%

Data Source: 2013-2017 Ontario Police Citations

Ray Wiltsey Middle

Violation Count by Address or Intersection



Citation Frequency by Day and Time Range

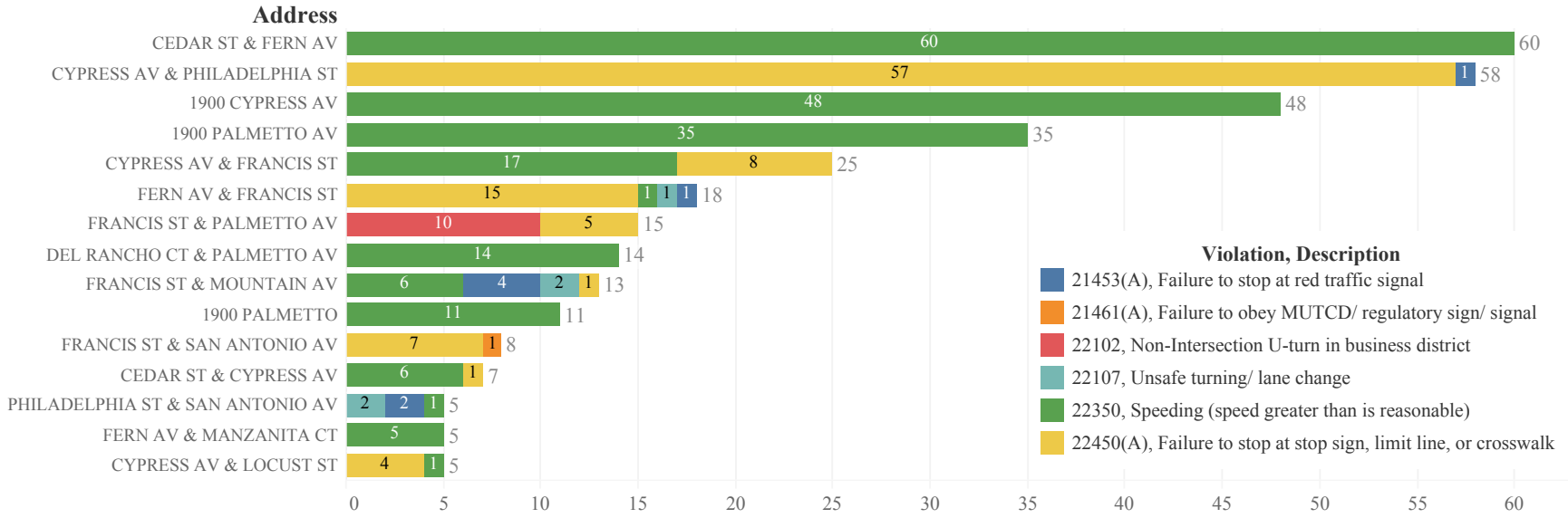
*Percentages are based on the total number of citations for each day (horizontal)

	12:00 - 2:59 AM	3:00 - 5:59 AM	6:00 - 8:59 AM	9:00 - 11:59 AM	12:00 - 2:59 PM	3:00 - 5:59 PM	6:00 - 8:59 PM	9:00 - 11:59 PM
Monday	6.3%	6.3%	6.3%	37.5%	6.3%	25.0%	6.3%	6.3%
Tuesday			22.2%	22.2%	22.2%		11.1%	22.2%
Wednesday		6.3%	12.5%		37.5%	31.3%	12.5%	
Thursday	6.3%	12.5%	6.3%	6.3%	6.3%	12.5%	43.8%	6.3%
Friday		7.1%		21.4%	7.1%		50.0%	14.3%
Saturday	5.4%	2.7%	2.7%	8.1%	27.0%	21.6%	27.0%	5.4%
Sunday	12.5%				50.0%	12.5%	12.5%	12.5%

Data Source: 2013-2017 Ontario Police Citations

Richard Haynes Elementary

Violations Count by Address or Intersection



Citation Frequency by Day and Time Range

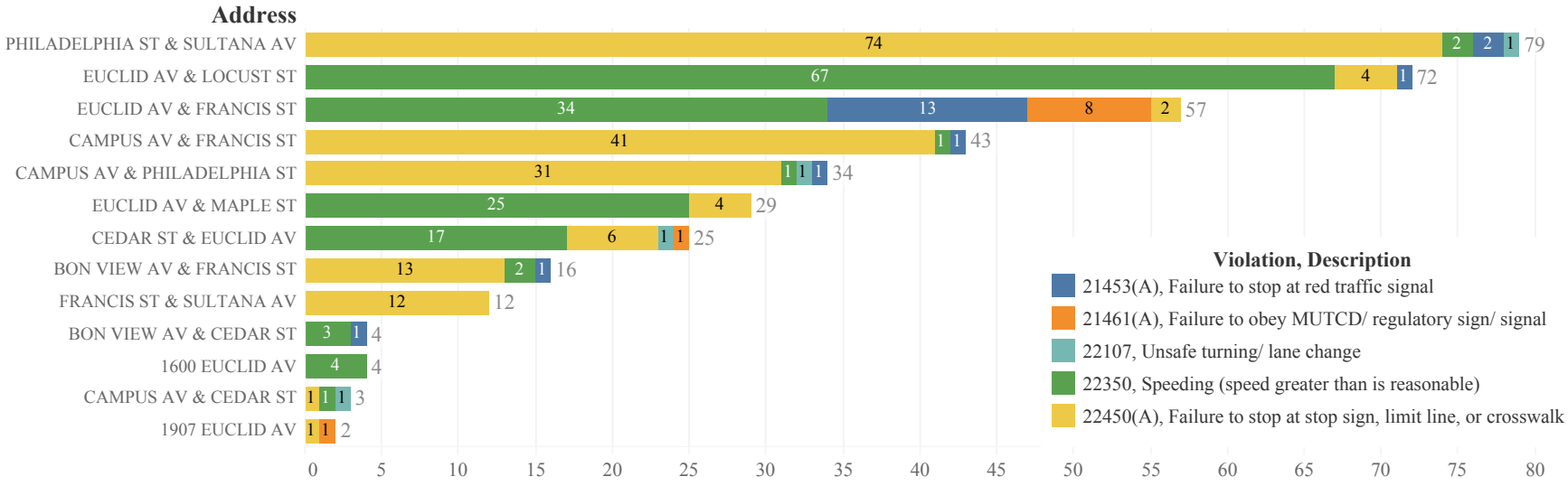
*Percentages are based on the total number of citations for each day (horizontal)

	12:00 - 2:59 AM	3:00 - 5:59 AM	6:00 - 8:59 AM	9:00 - 11:59 AM	12:00 - 2:59 PM	3:00 - 5:59 PM	6:00 - 8:59 PM	9:00 - 11:59 PM
Monday			26.9%	15.4%	40.4%	7.7%	1.9%	7.7%
Tuesday	3.3%		31.7%		53.3%	5.0%	1.7%	5.0%
Wednesday	1.5%		40.0%	13.8%	38.5%	1.5%	3.1%	1.5%
Thursday		1.6%	50.0%	3.1%	37.5%	7.8%		
Friday	1.5%		36.8%	32.4%	11.8%	14.7%		2.9%
Saturday	2.9%		8.8%	5.9%	26.5%	47.1%	2.9%	5.9%
Sunday	10.0%		20.0%		20.0%		20.0%	30.0%

Data Source: 2013-2017 Ontario Police Citations

Sultana Elementary

Violation Count by Address or Intersection



Citation Frequency by Day and Time Range

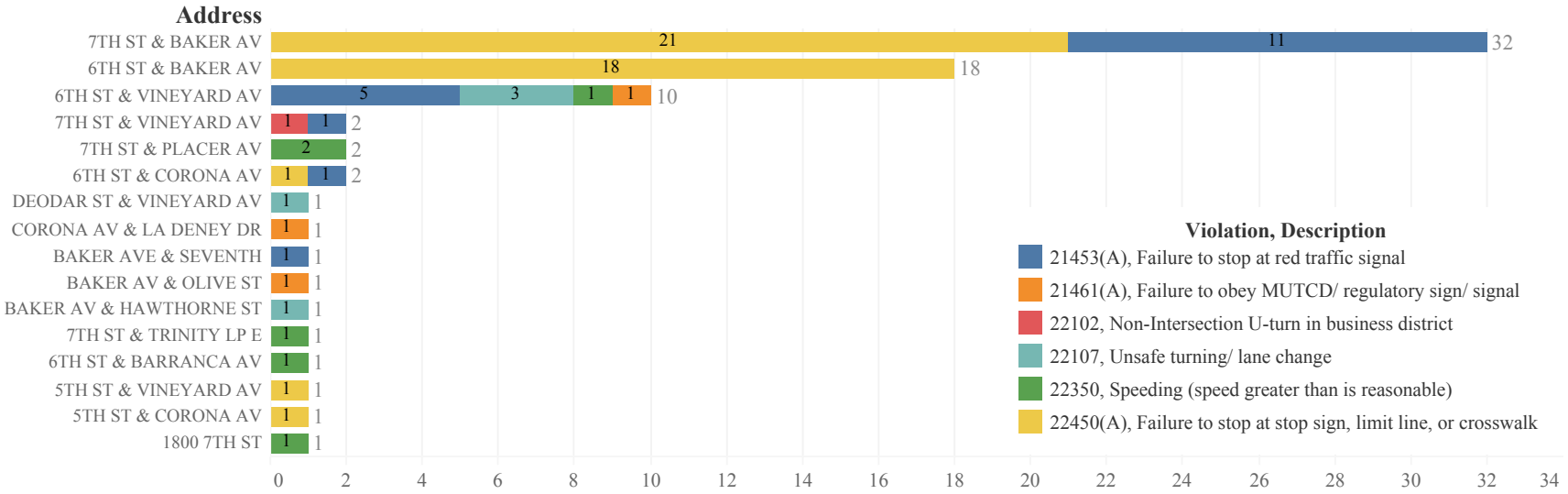
*Percentages are based on the total number of citations for each day (horizontal)

	12:00 - 2:59 AM	3:00 - 5:59 AM	6:00 - 8:59 AM	9:00 - 11:59 AM	12:00 - 2:59 PM	3:00 - 5:59 PM	6:00 - 8:59 PM	9:00 - 11:59 PM
Monday	2.6%	5.3%	15.8%	15.8%	34.2%	7.9%	5.3%	13.2%
Tuesday	3.8%		38.5%	23.1%	25.0%	7.7%		1.9%
Wednesday	2.7%	1.4%	32.9%	27.4%	11.0%	11.0%	8.2%	5.5%
Thursday	1.4%	4.2%	46.5%	12.7%	18.3%	8.5%	4.2%	4.2%
Friday	11.5%	4.9%	13.1%	14.8%	24.6%	9.8%	11.5%	9.8%
Saturday	5.6%		9.9%	29.6%	23.9%	15.5%	5.6%	9.9%
Sunday	19.0%		4.8%	14.3%	19.0%	28.6%	4.8%	9.5%

Data Source: 2013-2017 Ontario Police Citations

Valley View High

Violation Count by Address or Intersection



Citation Frequency by Day and Time Range

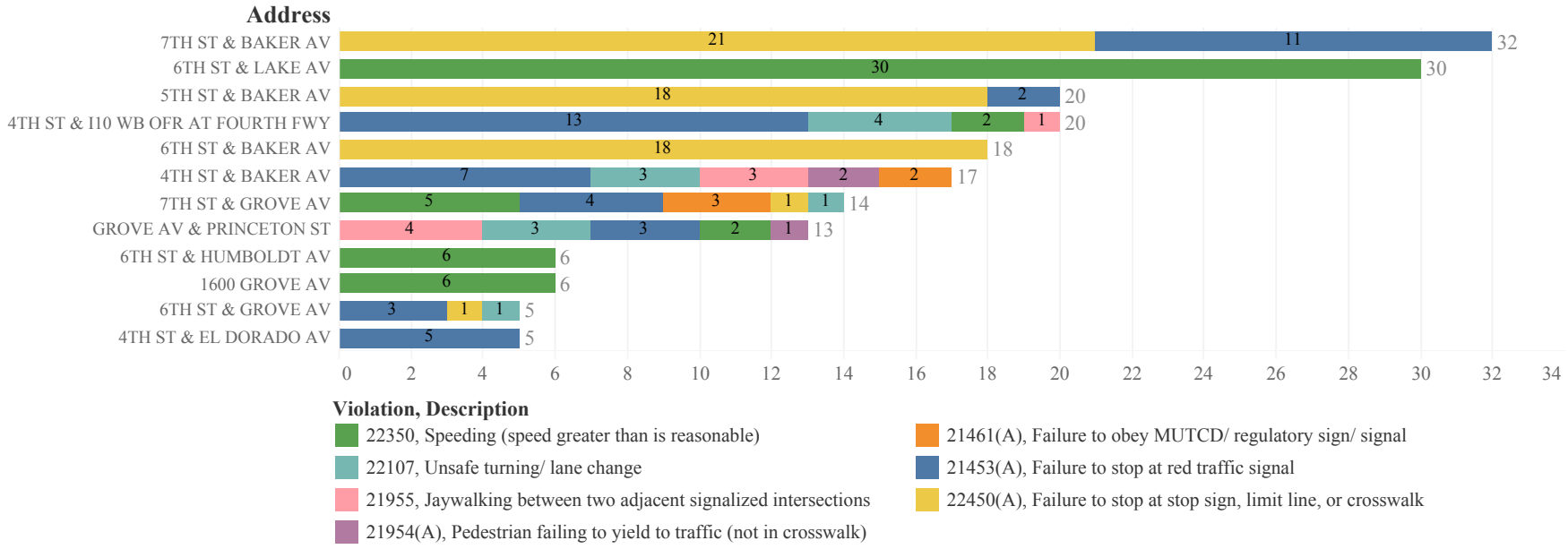
*Percentages are based on the total number of citations for each day (horizontal)

	12:00 - 2:59 AM	3:00 - 5:59 AM	6:00 - 8:59 AM	9:00 - 11:59 AM	12:00 - 2:59 PM	3:00 - 5:59 PM	6:00 - 8:59 PM	9:00 - 11:59 PM
Monday			14.3%			28.6%	28.6%	28.6%
Tuesday		23.1%	23.1%		15.4%	15.4%	15.4%	7.7%
Wednesday		4.8%	4.8%	23.8%	19.0%	19.0%	19.0%	9.5%
Thursday		11.1%	11.1%	33.3%	11.1%	11.1%	22.2%	
Friday		18.2%	9.1%		18.2%	9.1%	18.2%	27.3%
Saturday	27.3%			27.3%	9.1%	9.1%	9.1%	18.2%
Sunday				50.0%	25.0%	25.0%		

Data Source: 2013-2017 Ontario Police Citations

Vineyard Elementary

Violation Count by Address or Intersection



Citation Frequency by Day and Time Range

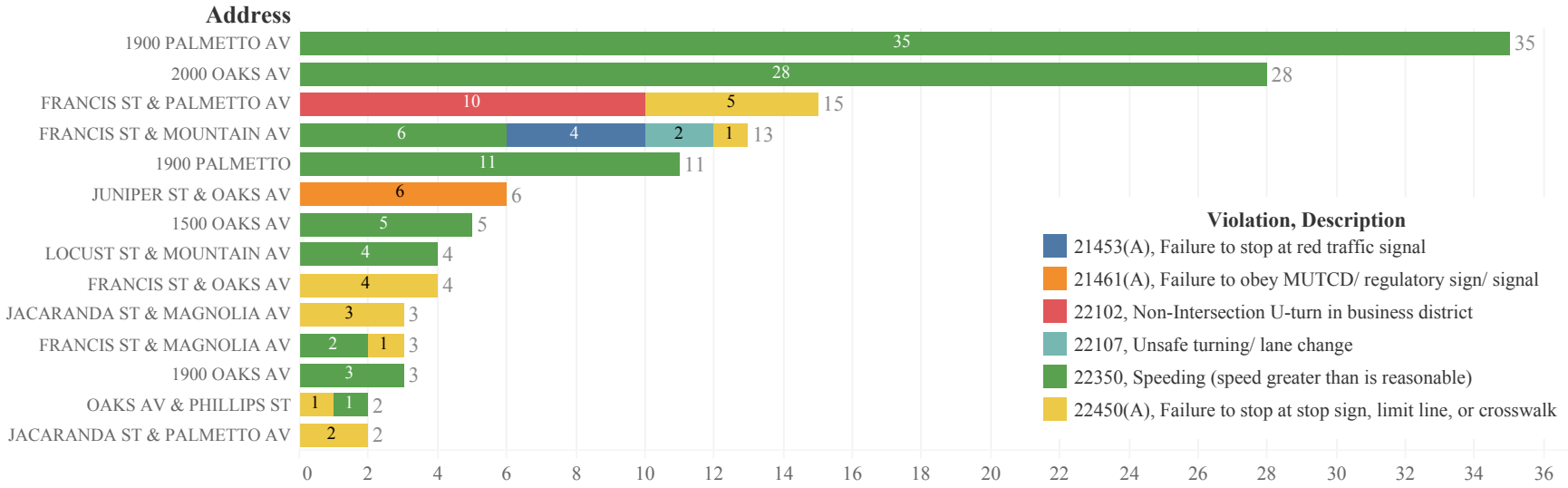
*Percentages are based on the total number of citations for each day (horizontal)

	12:00 - 2:59 AM	3:00 - 5:59 AM	6:00 - 8:59 AM	9:00 - 11:59 AM	12:00 - 2:59 PM	3:00 - 5:59 PM	6:00 - 8:59 PM	9:00 - 11:59 PM
Monday	10.5%		10.5%	5.3%	26.3%	15.8%	15.8%	15.8%
Tuesday		7.9%	21.1%	7.9%	23.7%	13.2%	18.4%	7.9%
Wednesday		2.0%	36.7%	16.3%	12.2%	12.2%	10.2%	10.2%
Thursday	7.5%	2.5%	42.5%	12.5%	10.0%	12.5%	7.5%	5.0%
Friday	3.1%	6.3%	31.3%	12.5%	12.5%	9.4%	3.1%	21.9%
Saturday	14.3%	4.8%		28.6%	9.5%	14.3%	4.8%	23.8%
Sunday	16.7%		8.3%	41.7%	16.7%	16.7%		

Data Source: 2013-2017 Ontario Police Citations

Vista Grande Elementary

Violation Count by Address or Intersection



Citation Frequency by Day and Time Range

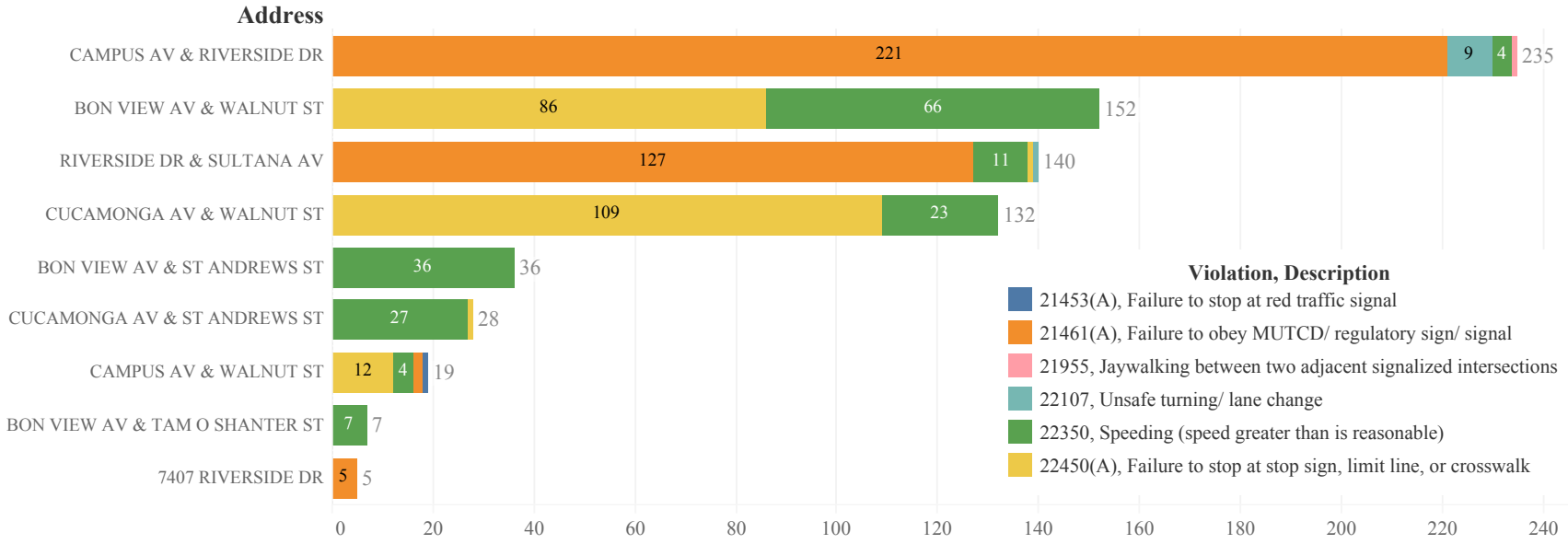
*Percentages are based on the total number of citations for each day (horizontal)

	12:00 - 2:59 AM	6:00 - 8:59 AM	9:00 - 11:59 AM	12:00 - 2:59 PM	3:00 - 5:59 PM	6:00 - 8:59 PM	9:00 - 11:59 PM
Monday		33.3%	33.3%	33.3%			
Tuesday		21.4%		7.1%	57.1%		14.3%
Wednesday		22.9%	11.4%	40.0%	17.1%	2.9%	5.7%
Thursday		16.7%	2.1%	54.2%	27.1%		
Friday		42.9%	17.9%	10.7%	28.6%		
Saturday	22.2%	11.1%	11.1%	11.1%	22.2%	11.1%	11.1%
Sunday			50.0%	50.0%			

Data Source: 2013-2017 Ontario Police Citations

Woodcrest Middle

Violation Count by Address or Intersection



Citation Frequency by Day and Time Range

*Percentages are based on the total number of citations for each day (horizontal)

	12:00 - 2:59 AM	3:00 - 5:59 AM	6:00 - 8:59 AM	9:00 - 11:59 AM	12:00 - 2:59 PM	3:00 - 5:59 PM	6:00 - 8:59 PM	9:00 - 11:59 PM
Monday			77.8%	22.2%				
Tuesday		0.4%	14.2%	11.7%	65.6%	7.3%	0.4%	0.4%
Wednesday		1.1%	41.1%	4.2%	21.1%	27.4%	3.2%	2.1%
Thursday	2.3%		25.0%	2.3%	25.0%	27.3%	18.2%	
Friday			12.0%	21.8%	53.4%	9.8%	2.3%	0.8%
Saturday			4.6%	51.1%	39.7%	3.2%	0.5%	0.9%
Sunday				23.1%	30.8%	46.2%		

Data Source: 2013-2017 Ontario Police Citations

Appendix E

PEDESTRIAN LOC AND BICYCLE LTS ANALYSES

INTRODUCTION

This report is a combination of four separate yet inter-related analyses that built upon the spatial extent of the pedestrian and bicycle network to gain a better understanding of the overall functionality of the network. Rooted in data-driven approaches, the analyses included the following:

- Bicycle Level of Traffic Stress (LTS) Analysis
- Pedestrian Level of Comfort (LOC) Analysis
- Intersection Level of Comfort (LOC) Analysis for Pedestrians
- Pedestrian and Bicycle Connectivity Analysis

PEDESTRIAN LEVEL OF COMFORT (LOC) ANALYSIS AND BICYCLE LEVEL OF TRAFFIC STRESS (LTS) ANALYSIS

The Pedestrian Level of Comfort (LOC) and Bicycle Level of Traffic Stress (LTS) Analyses are two of the best practices in the transportation industry for analyzing the comfort and connectivity of pedestrian and bicycle networks.

The analyses are influenced by the thoroughness and availability of the data, making each analysis unique. Common data inputs for the analyses include:

- roadway speed
- traffic volumes (ADT)
- roadway classifications
- number of vehicle lanes
- presence of bicycle facilities
- occasional use of latent data including collision records
- sidewalk data
- assessment of sidewalk widths

The Pedestrian LOC Analysis used two additional data inputs: sidewalk data and assessment of sidewalk widths.

By uniquely weighting each data input, a roadway segment can be assigned a rank, with higher values representing a higher level of stress and providing the least comfort. While Pedestrian LOC and Bicycle LTS Analyses independent from one another, they are analyzed in conjunction to represent the overall functionality of a network.

INTERSECTION LEVEL OF COMFORT (LOC) ANALYSIS FOR PEDESTRIANS

The Intersection Level of Comfort (LOC) Analysis for pedestrians is a point-based model of pedestrian and user experience within and along formal crosswalks or crossing designations. Pedestrians are most exposed at controlled and uncontrolled pedestrian crossings, making them vulnerable to all modes of travel. Pedestrian crossings with long crossing distances and high vehicle speeds can significantly decrease pedestrian comfort levels.

PEDESTRIAN AND BICYCLE CONNECTIVITY ANALYSIS

The Pedestrian and Bicycle Connectivity Analysis assessed the connectivity of bicycle LTS and pedestrian LOC within the City. The analysis sheds light on where highly connective areas and low connectivity areas are located; this can help identify high stress and low comfort gaps, allowing for an improved network holistically.

BICYCLE LEVEL OF TRAFFIC STRESS (LTS) ANALYSIS

For the design of the bicycle component of the Ontario Active Transportation Master Plan, a functional network is one that provides a comprehensive network of bike facilities for every level of user. Such a bicycle network provides equal access and opportunity for bicycle riders and ensure they do not exceed their tolerance of stress.

A traditional Bicycle LTS Analysis ranks roadways segments based on the "Four Types of Cyclists", originally structured by Roger Geller at the City of Portland:

1. **No Way, No How:** People unwilling to bicycle even if high-quality bicycle infrastructure is in place
2. **Interested but Concerned**: People willing to bicycle if high-quality bicycle infrastructure is in place
3. **Enthused and Confident:** People willing to bicycle if some bicycle-specific infrastructure is in place
4. **Strong and Fearless:** People willing to bicycle with limited or no bicycle-specific infrastructure

Available data were reviewed and cleaned, and a unique LTS criteria scheme and classification was created. Data inputs include:

- roadway speed
- roadway classification

- vehicular average daily traffic volumes (ADT)
- number of travel lanes
- presence of bicycle facilities

This approach was originally developed by Mineta Transportation Institute at San Jose State in 2012 and has since been modified by KOA to meet the needs and context of the City of Ontario. The LTS ranking scheme is defined in Table 1. Each data input was independently weighted and added to the LTS scoring matrices (Tables 3 to 4).

The study segments used for the Bicycle LTS include all segments within the Functional Roadway Classification Plan with the addition of specific segments that were selected by the City. Segment breaks were typically defined at an intersection, or, if there was a change in posted speed limit, a break in existing bicycle facilities, or, if there was a shift in the number of lanes between intersections. The scoring matrices are divided into two subsets – (1) if segments had vehicle ADT volumes (Table 3), and (2) if segments did not have vehicle ADT volumes (Table 4). The roadway classification metric, which references the Functional Roadway Classification Plan, is only used in the matrix that analyzes segments without vehicle ADT volumes (Table 4). Roadway classification is used as a supplementary metric, which assumes the conditions and patterns of the roadway, and fills the gap for the segments without vehicle ADT counts. Segments with adjacent off-street bicycle facilities were given an LTS 1 score.

Vehicle ADT volume ranges were defined and used as a heavily weighted metric in measuring bicyclists stress on a roadway. Five classes were defined based on the distribution of existing ADT volumes (Table 2). ADT class breaks were defined at equal quantiles, statistically derived from existing ADT distribution and to account for future development and volume increases.

Table 1. Bicycle LTS Ranking Scheme

Level of Traffic Stress	Description
LTS 1	Suitable for almost all ages and bicycling abilities
LTS 2	Suitable for most adults
LTS 3	Suitable for more skilled and confident bicyclists
LTS 4	Not suitable for most bicyclists

Table 2. Vehicle ADT Volume Classifications

Class	Volume
Low	< 6,250
Low-Moderate	6250 - 12,500
Moderate	12,500 - 18,750
Moderate-High	18,750 - 25,000
High	>= 25,000

Table 3. Segments with Vehicle ADT Volumes - Bicycle LTS Scoring Matrix

Segments with Vehicle Volumes							
ADT	Speed	On-Street Bicycle Facility			No On-Street Bicycle Facility		
		Lanes					
		2-3	4-5	6+	2-3	4-5	6+
Low	<=25	1	1	1	2	2	2
	30-35	1	1	1	2	2	2
	40-45	1	1	1	2	2	3
	>45	1	1	1	2	3	3
Low-Moderate	<=25	1	1	2	3	3	3
	30-35	1	2	2	3	3	3
	40-45	2	2	2	3	3	3
	>45	2	2	2	3	3	3
Moderate	<=25	2	2	2	3	3	4
	30-35	2	2	3	3	4	4
	40-45	2	3	3	4	4	4
	>45	3	3	3	4	4	4
Moderate-High	<=25	3	3	3	4	4	4
	30-35	3	3	3	4	4	4
	40-45	3	3	3	4	4	4
	>45	3	3	4	4	4	4
High	<=25	3	4	4	4	4	4
	30-35	4	4	4	4	4	4
	40-45	4	4	4	4	4	4
	>45	4	4	4	4	4	4

Table 4. Segments without Vehicle ADT Volumes - Bicycle LTS Scoring Matrix

Segments without Vehicle Volumes							
Roadway Class	Speed	On-Street Bicycle Facility			No On-Street Bicycle Facility		
		Lanes					
		2-3	4-5	6+	2-3	4-5	6+
Collector	<=25	1	1	2	3	3	3
	30-35	2	2	3	3	3	4
	40-45	2	3	3	4	4	4
	>45	3	3	4	4	4	4
Minor Arterial	<=25	2	2	3	4	4	4
	30-35	3	3	4	4	4	4
	40-45	3	4	4	4	4	4
	>45	4	4	4	4	4	4
Other Principal Arterial	<=25	3	3	4	4	4	4
	30-35	3	4	4	4	4	4
	40-45	4	4	4	4	4	4
	>45	4	4	4	4	4	4

FINDINGS

The analysis shown that there are corridors of all stress levels. Examples of corridors that are more stressful for bicyclists include:

- Mountain Avenue
- Euclid Avenue
- Grove Avenue
- Vineyard Avenue
- Archibald Avenue
- Haven Avenue
- Milliken Avenue
- Holt Boulevard
- Mission Boulevard
- Philadelphia Street
- Riverside Drive
- Schaefer Avenue (West of Vineyard Avenue)

These corridors received high LTS scores due to a lack of existing bicycle facilities, high vehicle ADT volumes, and high posted speed limits.

The presence of an existing on-street bicycle facility or an adjacent off-street bicycle facility did significantly decrease the stress level of certain segments. These segments include:

- I Street (East of Euclid Avenue)
- Inland Empire Boulevard (East of Archibald Avenue)
- G Street (between Benson Avenue and Vineyard Avenue)
- San Antonio Avenue (between Mission Boulevard and Phillips Street)
- Schaefer Avenue (between Archibald Avenue and Haven Avenue)

Nearly all segments not included in the Functional Roadway Classification Plan received low LTS scores. This is primarily due to low vehicle volumes, low speed limit, and few travel lanes.

Overall, the Bicycle LTS Analysis seeks to identify high stress segments where bicycle facilities are nonexistent. The installation of bicycle facilities on high LTS segments could in turn lower the stress score and make the segment less stressful for bicyclists to ride along.

The study segments had a total coverage of 244 centerline miles. Of these, only 102 miles received a LTS 1 or LTS 2 score. Table 5 defines the total linear coverage for each LTS score.

Table 5. Bicycle LTS Segment Coverage (as of 02/01/2020)

Bicycle LTS Segment Coverage		
Bicycle LTS Score	**Segment Miles**	**Percentage Share**
Bicycle LTS 1	11.04	4.76%
Bicycle LTS 2	90.79	39.13%
Bicycle LTS 3	47.17	20.33%
Bicycle LTS 4	83.00	35.78%

DISCUSSION

Findings from the analysis help informed the development of the Active Transportation Network (ATN) and corridor prioritization. The recommendations discussed in Chapter 4. Recommendations of the report seek to decrease the Bicycle Level of Traffic Stress along corridors in the ATN. The recommendations include a proposed Bicycle Network and Design Guidelines. Additionally, Appendix M. High Priority Corridor Factsheets has factsheets for seven high priority corridors. The factsheets contain more recommendations on how to address pedestrian and bicycle concerns along the corridors.

PEDESTRIAN LEVEL OF COMFORT (LOC) ANALYSIS

The Pedestrian Level of Comfort Analysis complements the Bicycle LTS Analysis and help identify suitable corridors for pedestrian improvements. Data inputs include:

- roadway speed
- vehicular average daily traffic volumes (ADT)
- number of travel lanes
- sidewalk separation
- presence of sidewalk
- sidewalk width

Sidewalk separation is classified based on the presence of an existing on-street Class II bicycle lane that provides separation between the sidewalk and the travel lanes. This approach was originally developed by Mineta Transportation Institute in 2012 and has since been modified by KOA to meet the needs and context of the City of Ontario. Segment breaks were typically defined at an intersection, or if there was a change in posted speed limit, a break in sidewalk separation, or if there was a shift in the number of lanes between intersections. The pedestrian LOC ranking scheme is defined in Table 6. The scoring matrices are divided into subsets based on the presence of sidewalk (Tables 7 to 8).

Since the study segments are centerline, if a segment has sidewalk on both sides of the road with no missing links, then the segment has "Full" Coverage. If a segment has missing sidewalk on either side of the road, then the segment has "Partial" Coverage. If the segment has missing sidewalk on both sides of the road, with no existing sidewalk, the segment has "Missing" coverage. For segments with Full or Partial sidewalk coverage, the greatest sidewalk width for that segment is used as the "Sidewalk Width" input.

While vehicle ADT volumes were still considered an important metric in the pedestrian LOC, they were not weighted as heavily as in the bicycle LTS. Vehicle ADT volumes affect the stress of bicyclists more directly because they share the road with vehicles. While pedestrian comfort is still influenced by vehicle ADT volumes, it is not as direct as bicyclists. The pedestrian LOC defined only three ADT classes, lessening its weight on the scoring matrices - a low ADT class has a volume less than 10,000, a medium ADT class has a volume between 10,000 and 25,000, and a high ADT class has a volume greater 25,000. Segments with missing sidewalk coverage were automatically scored as a LOC 4.

Table 6. Pedestrian LOC Ranking Scheme

Level of Comfort	Description
LOC 1	Suitable for almost all pedestrians, including children that are trained to safely cross intersections
LOC 2	Suitable for most adult pedestrians, but demand more attention for children
LOC 3	Suitable for most adult pedestrians and older children with little or no supervision
LOC 4	May be suitable for adults and children with parental supervision

Table 7. Segments with Full Sidewalk Coverage LOC Scoring Matrix

Full Sidewalk Coverage									
Sidewalk Separation	ADT	Speed	Sidewalk Width						
			Greater than 8'			4' to 8'			
			Lanes						
			2-3	4-5	6+	2-3	4-5	6+
Separation (On-Street Bike Facility)	Low	<=25	1	1	1	1	1	1
		30-35	1	1	1	1	1	1
		40-45	1	1	1	1	1	1
		>45	1	1	1	1	1	1
	Moderate	<=25	1	1	1	1	1	2
		30-35	1	1	1	1	2	2
		40-45	1	1	1	2	2	2
		>45	1	1	2	2	2	2
	High	<=25	1	2	2	2	2	2
		30-35	2	2	2	2	2	2
		40-45	2	2	2	2	2	3
		>45	2	2	2	2	3	3
No Separation	Low	<=25	1	1	1	1	1	1
		30-35	1	1	1	1	1	2
		40-45	1	1	1	1	2	2
		>45	1	1	1	2	2	2
	Moderate	<=25	1	1	2	2	2	2
		30-35	1	2	2	2	2	2
		40-45	2	2	2	2	2	2
		>45	2	2	2	2	2	3
	High	<=25	2	2	2	2	3	3
		30-35	2	2	2	3	3	3
		40-45	2	2	3	3	3	3
		>45	2	3	3	3	3	3

Table 8. Segments with Partial Sidewalk Coverage LOC Scoring Matrix

Partial Sidewalk Coverage								
Sidewalk Separation	ADT	Speed	Sidewalk Width					
			Greater than 8'			4' to 8'		
			Lanes					
			2-3	4-5	6+	2-3	4-5	6+
Separation (On-Street Bike Facility)	Low	<=25	1	1	1	1	1	2
		30-35	1	1	1	1	2	2
		40-45	1	1	1	2	2	2
		>45	1	1	2	2	2	2
	Moderate	<=25	1	2	2	2	2	2
		30-35	2	2	2	2	2	2
		40-45	2	2	2	2	2	3
		>45	2	2	2	2	3	3
	High	<=25	2	2	2	3	3	3
		30-35	2	2	3	3	3	3
		40-45	2	3	3	3	3	3
		>45	3	3	3	3	3	3
No Separation	Low	<=25	1	1	2	2	2	2
		30-35	1	2	2	2	2	2
		40-45	2	2	2	2	2	2
		>45	2	2	2	2	2	3
	Moderate	<=25	2	2	2	2	3	3
		30-35	2	2	2	3	3	3
		40-45	2	2	3	3	3	3
		>45	2	3	3	3	3	3
	High	<=25	3	3	3	3	3	3
		30-35	3	3	3	3	3	4
		40-45	3	3	3	3	4	4
		>45	3	3	3	4	4	4

FINDINGS

The on-street Pedestrian LOC Analysis identified corridors of all comfort levels. Examples of less comfortable corridors for pedestrians include:

- Mission Boulevard
- Airport Drive (East of Grove Avenue)
- Haven Avenue
- Jurupa Street (East of Milliken Avenue)
- Philadelphia Street (East of Milliken Avenue)
- Most segments in the Southwest region of the City

Approximately 88% of all LOC 4 segments had missing sidewalk. The remaining 12% of LOC 4 segments had partial sidewalk coverage with no sidewalk separation, and high vehicle ADT volumes. High comfort segments are aggregated within residential areas, as seen in the Northwest region of the City. Roughly 96% of LOC 1 segments had full sidewalk coverage. The remaining 4% of LOC 1 segments had partial sidewalk coverage with low vehicle ADT volumes which contributed to their high pedestrian comfort level.

Overall, the pedestrian LOC model seeks to identify low comfort segments throughout the City. The installation of sidewalks on high LOC segments could in turn lower the comfort score and make the segment more comfortable to walk along.

The study segments had a total coverage of 244 centerline miles. High comfort and low comfort segments had a nearly even share of total centerline miles. Table 9 defines the total linear coverage for each LTS score.

Table 9. Pedestrian LOC Segment Coverage (as of 02/01/2020)

Pedestrian LOC Segment Coverage		
Pedestrian LOC Score	**Segment Miles**	**Percentage Share**
Ped LOC 1	70.44	29.02%
Ped LOC 2	49.40	20.35%
Ped LOC 3	34.73	14.31%
Ped LOC 4	88.15	36.32%

DISCUSSION

Similar to the Bicycle LTS, findings from the analysis help informed the development of the Active Transportation Network (ATN) and corridor prioritization. Chapter 4. Recommendations of the report provides Design Guidelines for many pedestrian-oriented treatments that could contribute to a more comfortable walking environment in Ontario. Appendix M. High Priority Corridor Factsheets has factsheets for seven high priority corridors. The factsheets contain more recommendations on how to address pedestrian and bicycle concerns along the corridors.

INTERSECTION LEVEL OF COMFORT (LOC) ANALYSIS FOR PEDESTRIANS

The Intersection LOC Analysis for Pedestrians analyzed the top 43 signalized and un-signalized intersections which formed the studied intersections. These intersections were defined by reviewing bicyclist- and pedestrian-involved collisions (2014 to 2018), bicycle and pedestrian related Ontario Police Department (OPD) citations (2013 to 2017), and balanced community input and local knowledge. Intersections that were selected for the LOC assessment had to meet a selection criteria as follows:

1. Signalized Intersections:
    - With Collisions: Must have at least two collisions AND at least 25 OPD police citations within 200 feet
    - Without collisions: Must have at least 50 OPD police citations within 200 feet

2. Unsignalized Intersections:
    a. Must have at least two collisions or at least 25 OPD police citations within 200 feet

METHODOLOGY

Four variables are utilized for the assessment of pedestrian intersection LOC (Table 10): type of intersection, intersection control, crossing distance from curb to curb, and roadway speed. Cumulative crossing distance excluding the presence of raised medians, and posted roadways speed are derived from City's data and/or field data collection. The comfort scoring matrices are sectioned by the intersection control (Table 11 to 13) – signalized, unsignalized (controlled), and unsignalized (uncontrolled). The pedestrian LOC matrices' posted speed limit intervals are defined identically to the bicycle LTS and pedestrian LOC matrices. The crossing distance intervals vary by intersection type – signalized intersections have a longer distance for the upper and lower limits than unsignalized intersections.

Table 10. Intersection Pedestrian Level of Comfort Variables

Category	Input	Measure Scale	Justification for Use
Intersection Type	Type of intersection	Signalized or Unsignalized	Pedestrian comfort levels vary depending on the type of intersection.
Intersection Control	Signalized and Unsignalized intersections	Signalized – Controlled Unsignalized Controlled – All way stop Unsignalized Partially or Uncontrolled – No control, one way stop, two way stop, three way stop	Vehicles may not have a stop at a crossing, making for a more uncomfortable pedestrian crossing
Pedestrian Crossing Distance	Longest leg of the intersection	Intersection; curb to curb width	Assess longest leg of intersection as this represents the most impacting barrier for pedestrian comfort at any given intersection.
Posted Vehicle Speed Limit	Segment with highest posted speed	Miles per Hour (MPH) from field survey	Pedestrian crossings are highly exposed within intersection – the speed at which vehicles travel by imposes on comfort.

Table 11. Signalized Intersection Pedestrian Level of Comfort Scoring Matrix

Signalized Pedestrian Intersection LOC			
Speed	Crossing Distance (Ft.)		
	< 80	80 - 120	> 120
<=25	1	2	3
30-35	2	3	3
40-45	3	3	4
>45	3	4	4

Table 12. Unsignalized (Controlled) Intersection Pedestrian Level of Comfort Scoring Matrix

Unsignalized (Controlled) Pedestrian Intersection LOC			
Speed	Crossing Distance (Ft.)		
	< 60	60 - 80	> 80
<=25	1	2	2
30-35	2	2	3
40-45	3	3	3
>45	3	3	4

Table 13. Unsignalized (Uncontrolled) Intersection Pedestrian Level of Comfort Scoring Matrix

Unsignalized (Uncontrolled) Pedestrian Intersection LOC			
Speed	Crossing Distance (Ft.)		
	< 60	60 - 80	> 80
<=25	3	3	4
30-35	3	4	4
40-45	3	4	4
>45	4	4	4

FINDINGS

Of the 43 hotspot intersections, 27 were signalized, 13 were controlled unsignalized, and 3 were uncontrolled unsignalized. Table 14 outlines each hotspot intersection's characteristics and pedestrian intersection LOC score. None of the intersections received a LOC 1 score. This finding is due in part to that none of the signalized, unsignalized but controlled or unsignalized and uncontrolled intersections had widths and/or speeds that were low enough below the thresholds shown in Table 11, 12 and 13. A total of ten hotspot intersections received a LOC 4 score, nine of which were signalized. Additionally, all LOC 4 intersections were intersected by an "Other Principal Arterial" classification, which is the highest roadway classification, where high vehicle volumes, high speed limits, and long crossing distances exist.

DISCUSSION

The analysis highlighted many intersections that need pedestrian treatments. Chapter 4. Recommendations of the report provides Design Guidelines for many pedestrian-oriented treatments that could address concerns at intersections.

Table 14. Intersection Pedestrian Level of Comfort Scores

Intersection Pedestrian LOC Ranks					
Intersection Name	Intersection Type	Intersection Control	Crossing Distance (Ft.)	Posted Speed Limit (mph)	LOC Score
Fourth St. & San Antonio Ave.	Unsignalized	Controlled (all way)	66	35	2
G St. & Sultana Ave.	Unsignalized	Controlled (all way)	42	35	2
Campus Ave. & G St.	Unsignalized	Controlled (all way)	50	35	2
G Sts & Allyn Ave.	Unsignalized	Controlled (all way)	37	35	2
Cucamonga Ave. & 4th St.	Unsignalized	Controlled (all way)	70	35	2
6th St. & Campus Ave.	Unsignalized	Controlled (all way)	43	35	2
San Antonio Ave. & 6th St.	Unsignalized	Controlled (all way)	61	35	2
Mountain Ave. & 6th St.	Signalized	Signalized	90	40	3
4th St. & Mountain Ave.	Signalized	Signalized	83	40	3
D St. & Mountain Ave.	Signalized	Signalized	76	40	3
Holt Blvd. & San Antonio Ave.	Signalized	Signalized	102	35	3
Baker Ave. & 4th St.	Signalized	Signalized	80	45	3
Euclid Ave. & D St.	Signalized	Signalized	176	35	3
Euclid Ave. & B St.	Signalized	Signalized	169	35	3
Euclid Ave. & C St.	Signalized	Signalized	170	35	3
Holt Blvd. & Euclid Ave.	Signalized	Signalized	181	35	3
Mountain Ave. & I St.	Signalized	Signalized	78	40	3
Holt Blvd. & Allyn Ave.	Signalized	Signalized	96	40	3
Riverside Dr. & Campus Ave.	Signalized	Signalized	85	45	3
Haven Ave. & Creekside Dr.	Signalized	Signalized	86	45	3
Jurupa St. & Turner Ave.	Signalized	Signalized	83	45	3
Holt Blvd. & Grove Ave.	Signalized	Signalized	78	45	3
Holt Blvd. & Guasti Rd.	Signalized	Signalized	112	40	3
Airport Dr. & Vineyard Ave.	Signalized	Signalized	116	45	3
Chino Ave. & Archibald Ave.	Signalized	Signalized	74	55	3
Boulder Ave. & Francis St.	Unsignalized	Uncontrolled (one way)	67	25	3
Ontario Mills Pw. & Ontario Mills Dr.	Unsignalized	Controlled (all way)	100	30	3
Chino Ave. & Turner Ave.	Unsignalized	Controlled (all way)	71	45	3
4th St. & Berlyn Ave.	Unsignalized	Uncontrolled (two way)	54	35	3
Baker Ave. & 7th St.	Unsignalized	Controlled (all way)	75	40	3
Philadelphia St. & Cypress Ave.	Unsignalized	Controlled (all way)	77	45	3
Philadelphia St. & Sultana Ave.	Unsignalized	Controlled (all way)	85	40	3
Philadelphia St. & Bon View Ave.	Unsignalized	Controlled (all way)	88	40	3
Mission Blvd. & Mountain Ave.	Signalized	Signalized	139	40	4
Euclid Ave. & Belmont St.	Signalized	Signalized	158	40	4
Euclid Ave. & Francis St.	Signalized	Signalized	153	40	4
Grove Ave. & Francis St.	Signalized	Signalized	109	50	4
Ontario Ranch Rd. & Archibald Ave.	Signalized	Signalized	137	55	4
Riverside Dr. & Archibald Ave.	Signalized	Signalized	97	50	4
Airport Dr. & Etiwanda Ave.	Signalized	Signalized	106	50	4
Haven Ave. & Airport Dr.	Signalized	Signalized	142	55	4
Haven Ave. & Jurupa St.	Signalized	Signalized	138	55	4
Holt Blvd. & Laurel Ave.	Unsignalized	Uncontrolled (two way)	60	45	4

PEDESTRIAN AND BICYCLE CONNECTIVITY ANALYSIS

The analysis builds upon the linear LTS and LOC networks by giving a broader representation of where high stress and low comfort gaps exist across the City. The models are best used to identify high stress or low comfort gaps by area on a larger scale.

The analysis links data to Census Blocks to form a scale of analysis. To ensure an accurate connectivity representation, a 20 foot buffer around each study segment was used as the overlay to assign bicycle LTS and pedestrian LOC scores to intersected Census Blocks. Since the boundaries of a Census Block are typically defined by the presence of a roadway, the use of a larger segment buffer was unnecessary. Lower stress and higher comfort scores were weighted more heavily in the connectivity model. For example, if both a bicycle LTS 1 and LTS 3 segment intersected the same Census Block, then the block would receive a LTS 1 score. This model assumes that the bicycle user chooses the least stressful segment if available. Census Blocks without a score were not intersected by any roadway segment used in the connectivity model.

FINDINGS

Table 15 highlights the total citywide area coverage by Census Block for each bicycle LTS score. Table 16 highlights the total citywide area coverage by Census Block for each pedestrian LOC score.

Table 15. Bicycle LTS Area Coverage by Census Block

Bicycle LTS Area Coverage by Census Block		
Bicycle LTS Score	**Square Miles**	**Percentage Share**
Bicycle LTS 1	7.14	15.19%
Bicycle LTS 2	30.05	63.92%
Bicycle LTS 3	6.21	13.21%
Bicycle LTS 4	3.61	7.68%

Table 16. Pedestrian LOC Area Coverage by Census Block

Pedestrian LOC Area Coverage by Census Block		
Pedestrian LOC Score	**Square Miles**	**Percentage Share**
Ped LOC 1	22.26	47.36%
Ped LOC 2	10.27	21.85%
Ped LOC 3	6.17	13.13%
Ped LOC 4	8.30	17.66%

As noted in Table 15, roughly 80% of the City's area is connected by a bicycle LTS 1 or LTS 2 segment, primarily LTS 2 segments. As noted in Table 16, approximately 70% of the City's area is connected by a pedestrian LOC 1 or LOC 2 segment.

DISCUSSION

Due to the limitations of the model, the findings from the analysis might not be a true reflection of the experiences felt by pedestrians and bicyclists that use the roadway infrastructure in the city. The majority of segments within the linear network have low vehicle volumes, which in turn lowers the stress level of the segment. Additionally, the pedestrian LOC linear network is weighted heavily by the presence of sidewalks. Since a majority of segments have full or partial coverage, specifically in the north region of the City, low-stress connectivity is enhanced.

However, many of the corridors that offer connectivity from one part of the city to another have high Bicycle LTS and/or high Pedestrian LOC; as such, the corridors limit the opportunities for pedestrians and bicyclists to safely and comfortably use the existing roadway infrastructure to reach their destinations.

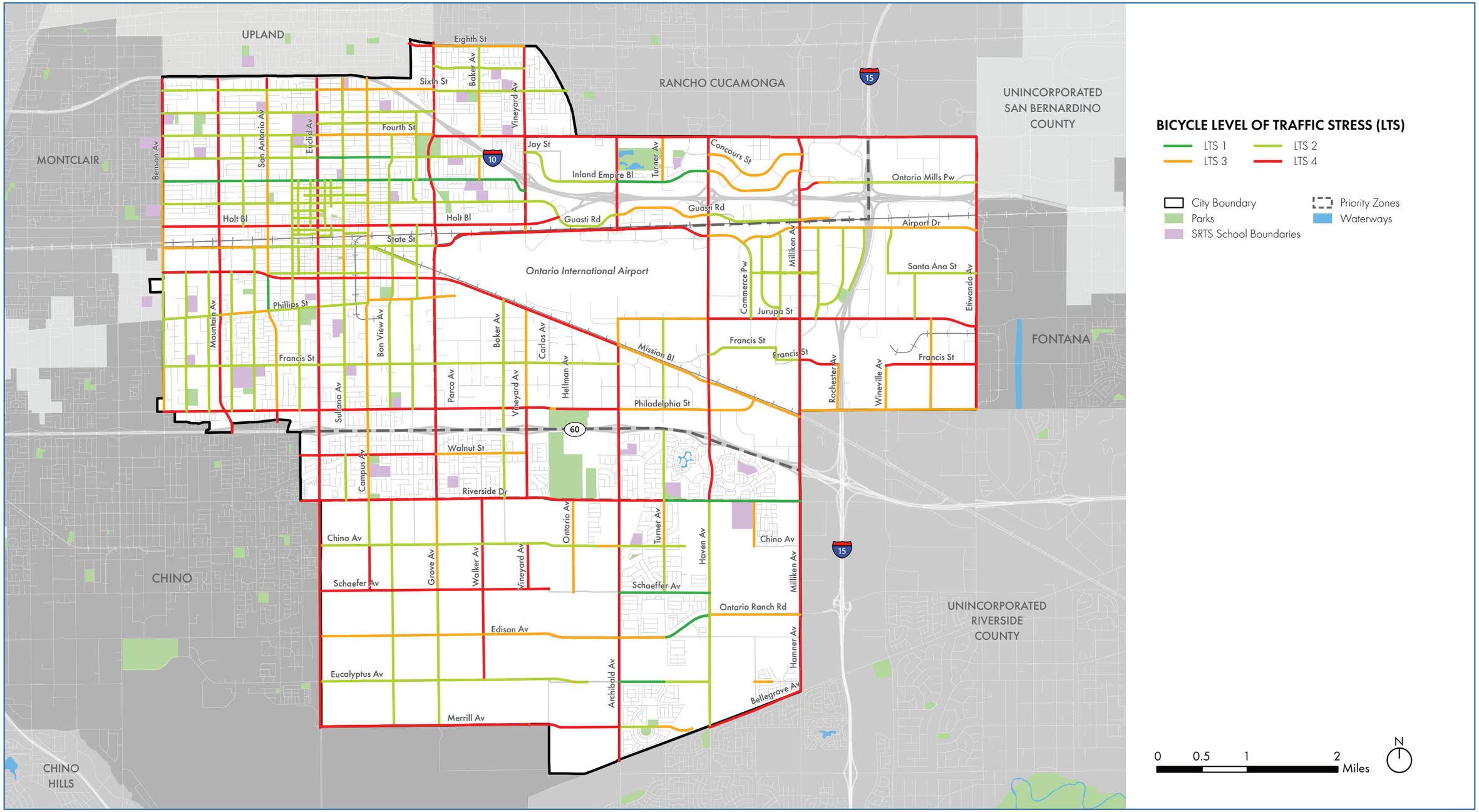
Census Blocks that are accessible by an LTS 1 segment are within the Ontario Ranch neighborhood where an on-street and off-street bicycle facility exists, and along G Street and Inland Empire Boulevard where an on-street bicycle facility exists. However, these areas provide limited connectivity throughout the city.

As seen in the pedestrian LOC linear network, the pedestrian connectivity analysis identifies a significant gap in the Southwest region of the City where most Census Blocks are only accessible by a LOC 4 segment. Additionally, the industrial area that resides adjacent to Interstate 15 is only accessible by a LOC 3 or LOC 4 segment. Both of these areas have high-stress connectivity due to missing sidewalk coverage and no sidewalk separation.

Lastly, many census blocks, particularly those south of Riverside Drive, are large. Consequently, the data don't provide as meaningful outputs for this type of analysis.

Note 1: The analysis sets a perimeter of 200’ from a roadway that is a part of the analysis. As a result, certain areas from the city that are further than 200’ show up as blank on the maps.

Note 2: In the base map, there is item called Priority Zones. They are also known as ATN Planning Areas in other maps.

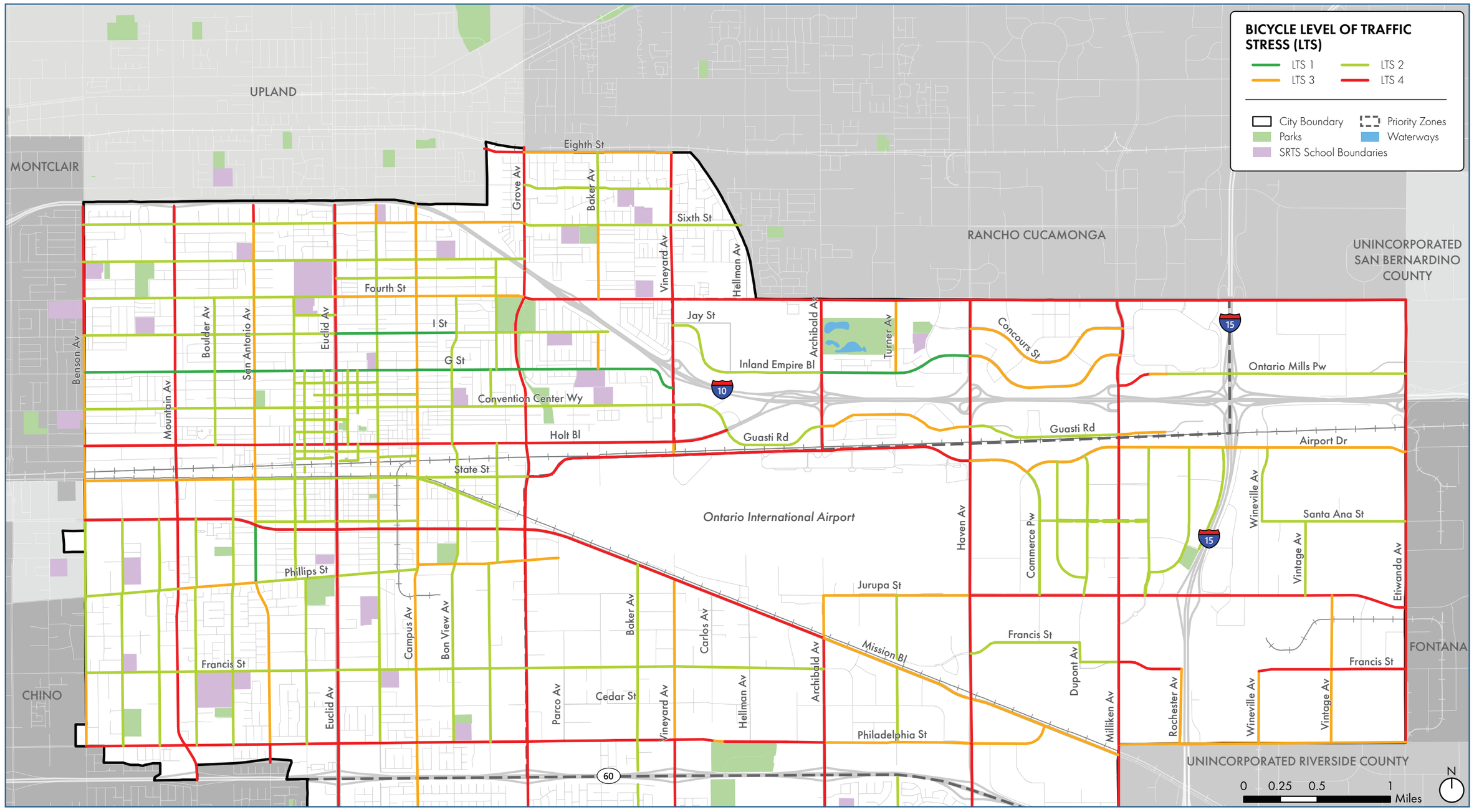


BICYCLE LEVEL OF TRAFFIC STRESS (LTS)

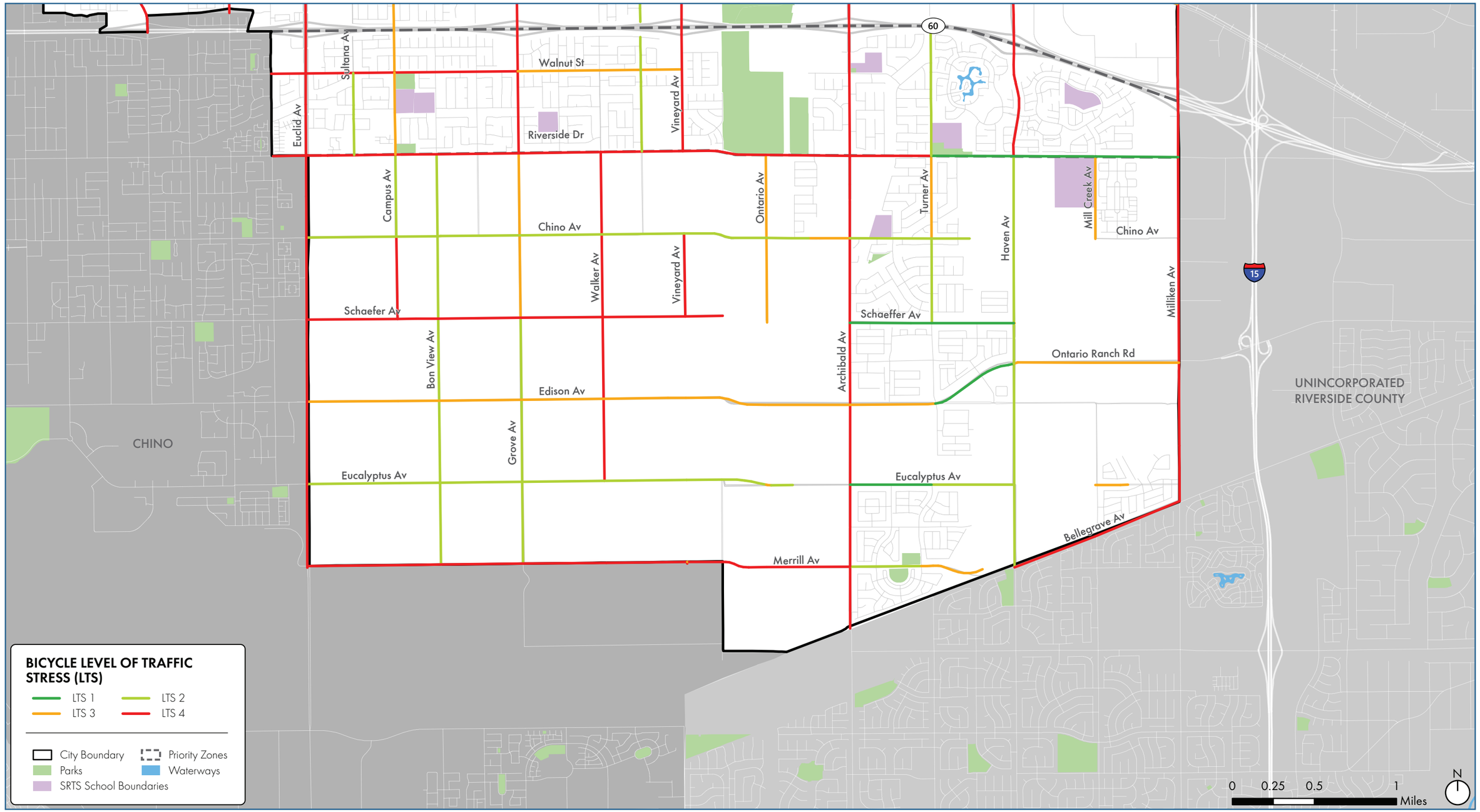
- LTS 1
- LTS 2
- LTS 3
- LTS 4

- City Boundary
- Parks
- SRTS School Boundaries
- Priority Zones
- Waterways

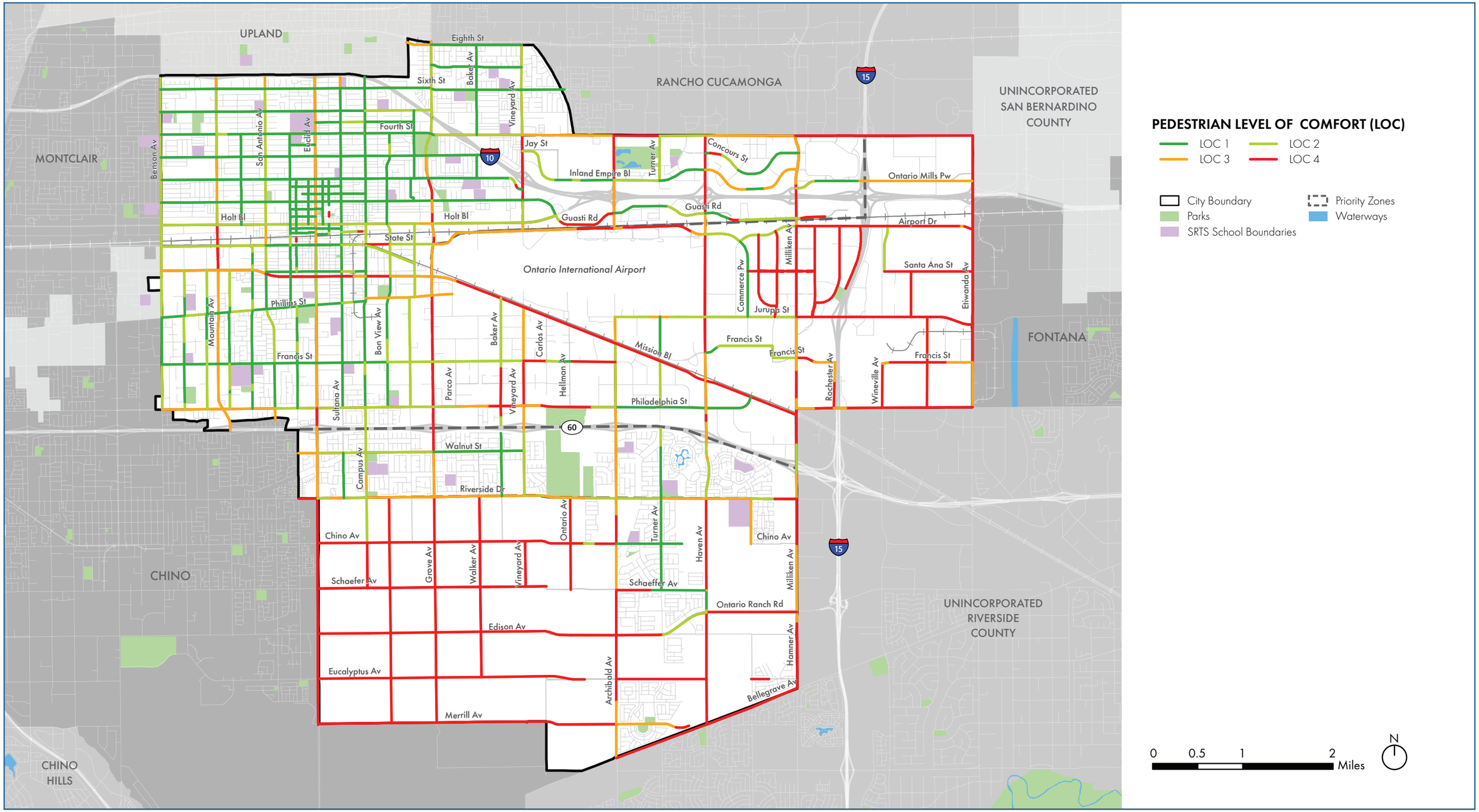
Bicycle Level of Traffic Stress: Citywide



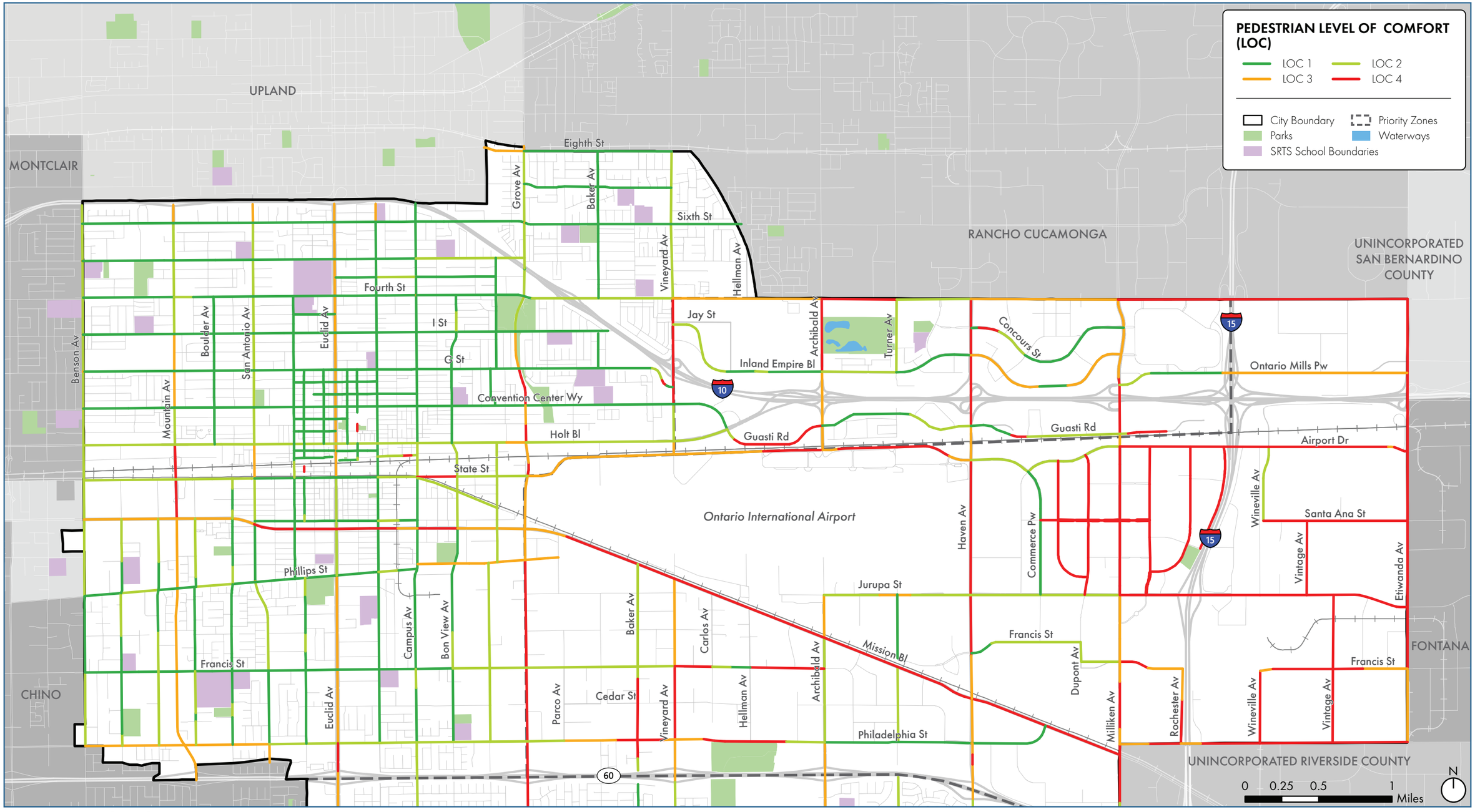
Bicycle Level of Traffic Stress: Citywide - A Closer Look at the Northern Portion



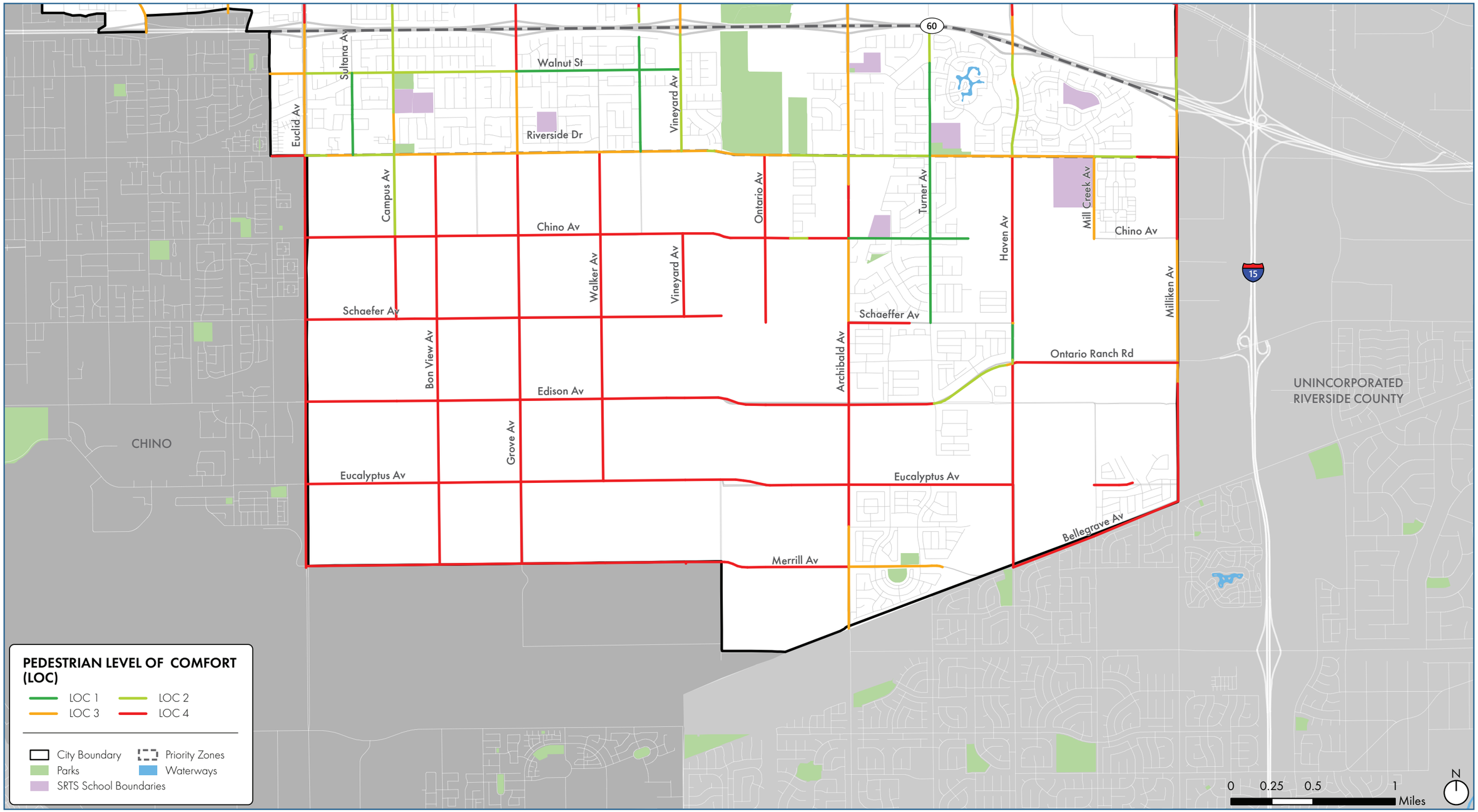
Bicycle Level of Traffic Stress: Citywide - A Closer Look at the Southern Portion



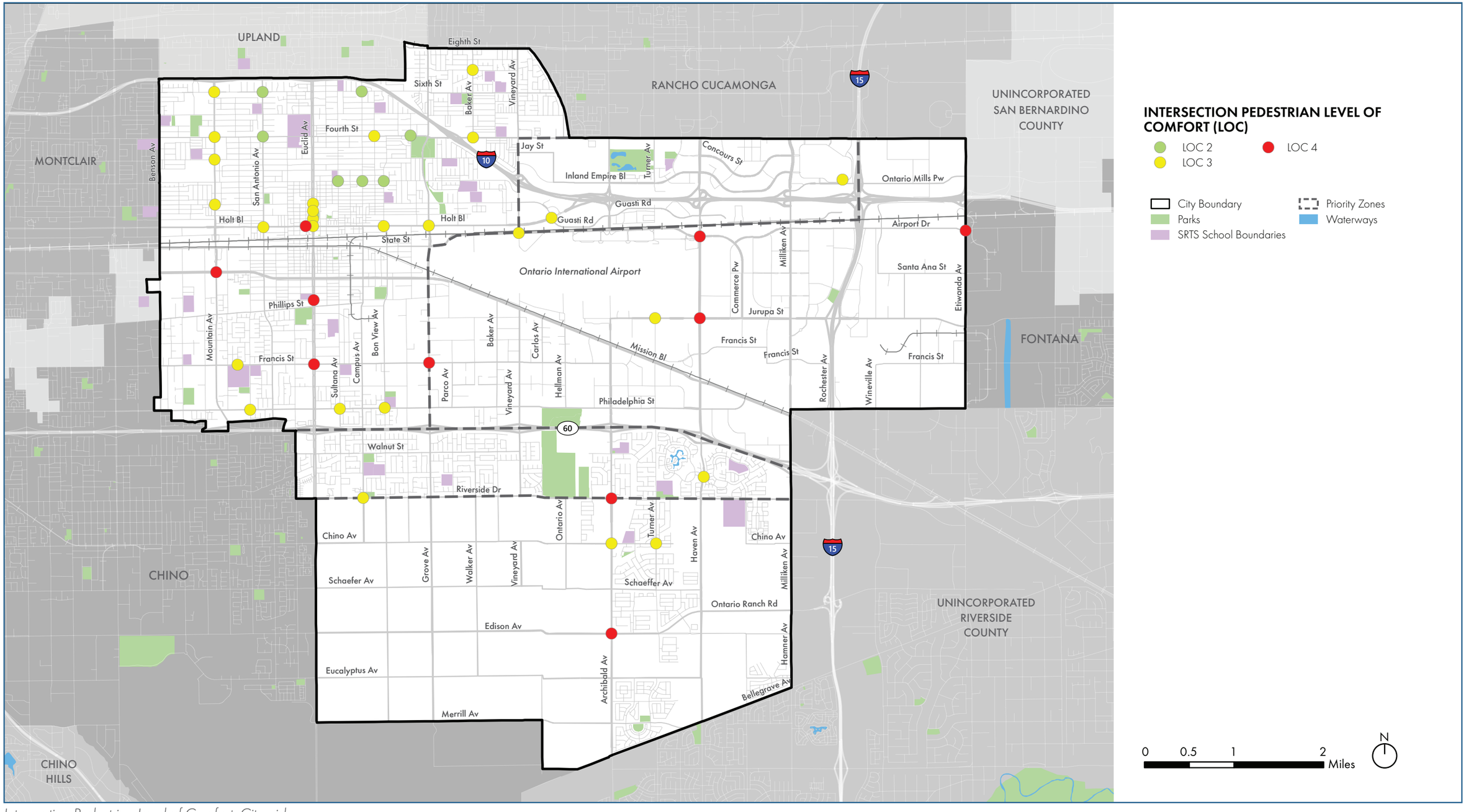
Pedestrian Level of Comfort: Citywide



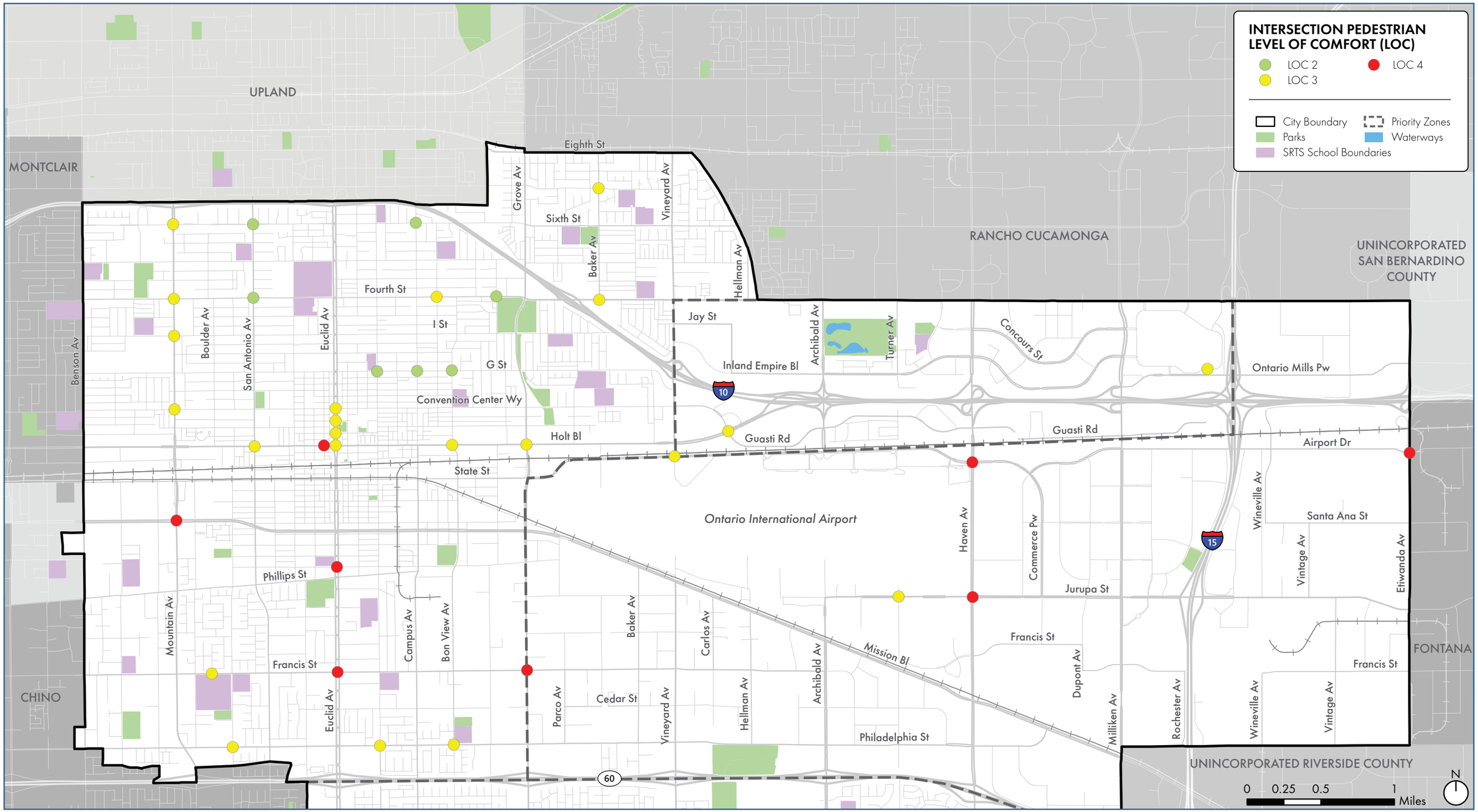
Pedestrian Level of Comfort: Citywide - A Closer Look at the Northern Portion



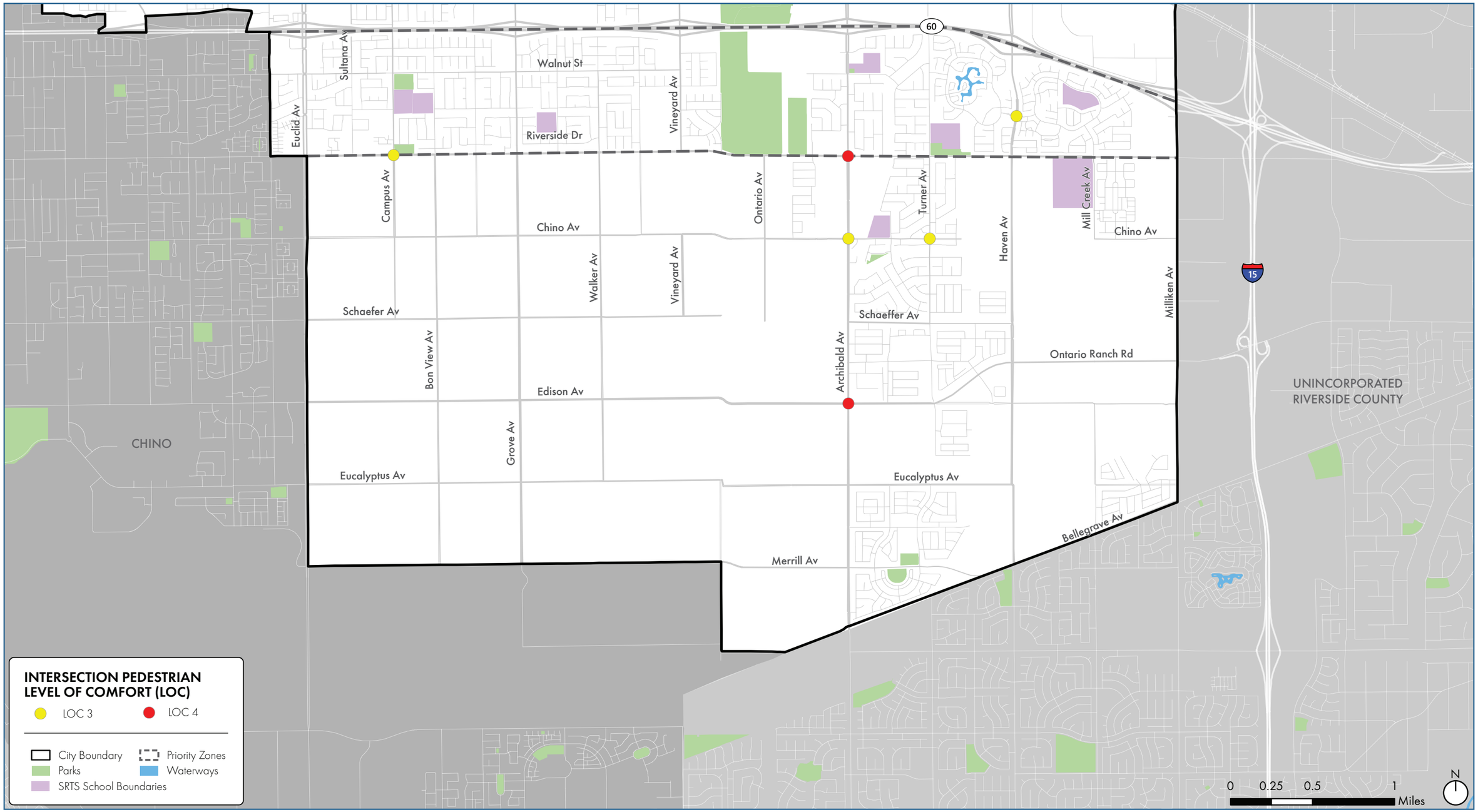
Pedestrian Level of Comfort: Citywide - A Closer Look at the Southern Portion



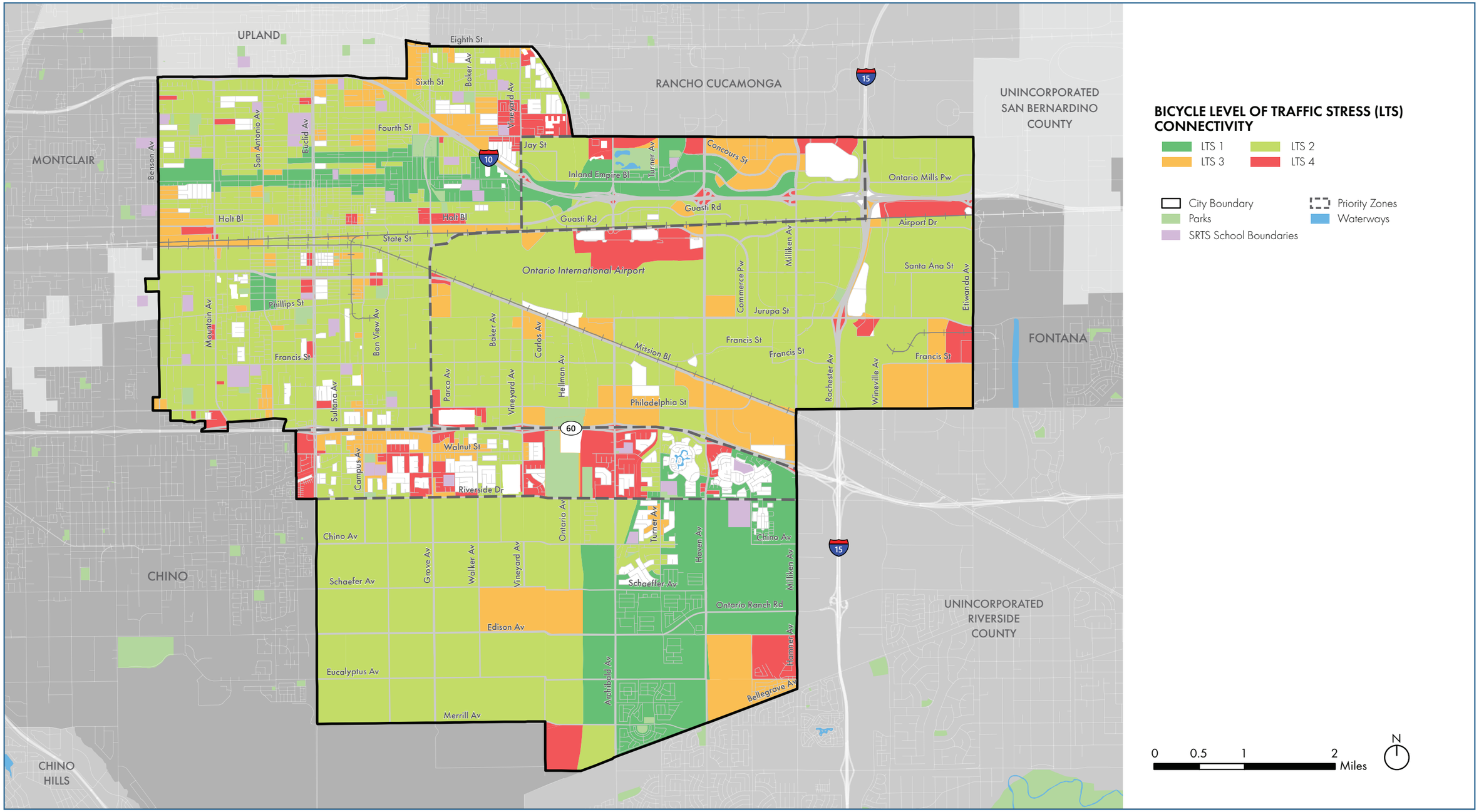
Intersection Pedestrian Level of Comfort: Citywide



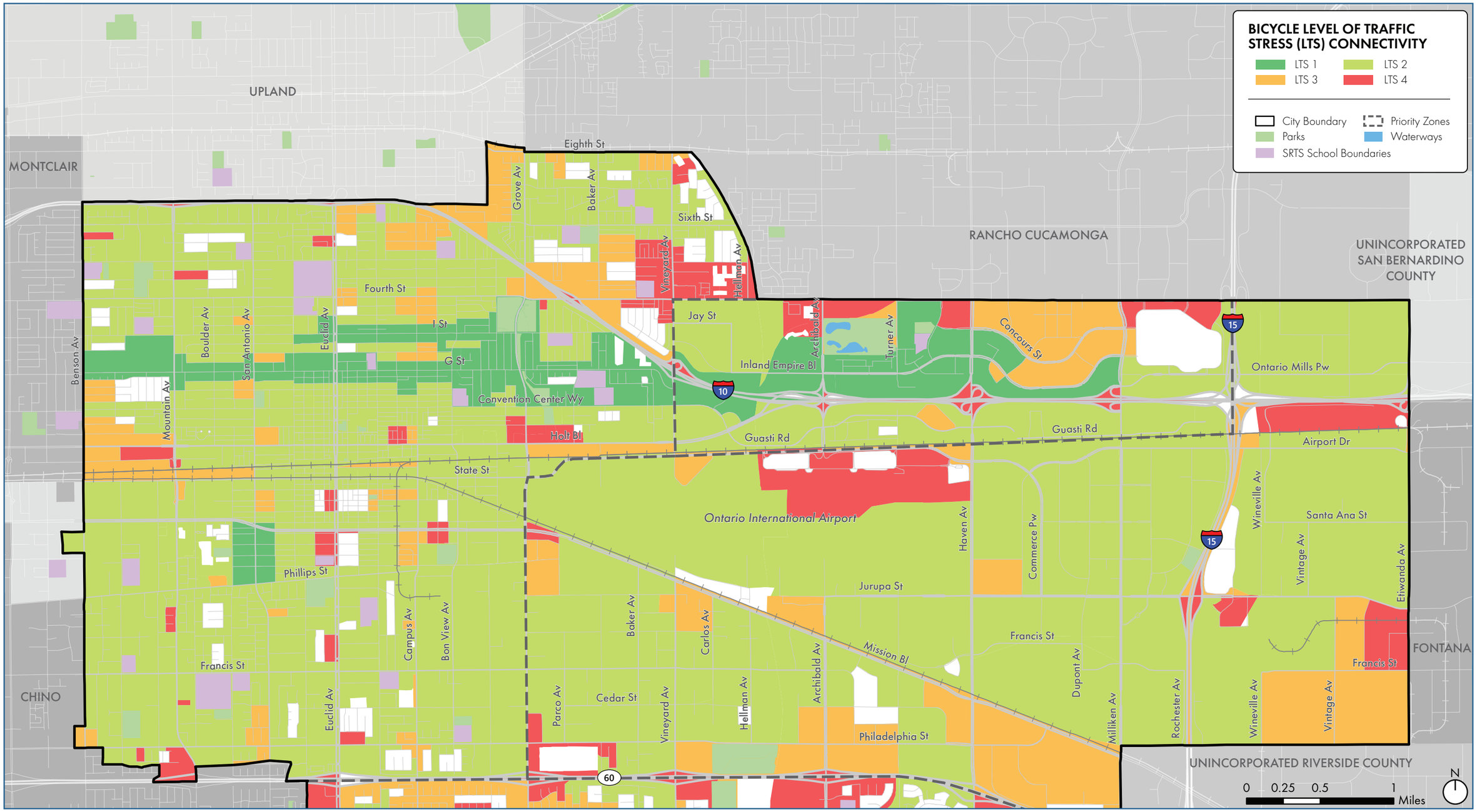
Intersection Pedestrian Level of Comfort: Citywide - A Closer Look at the Northern Portion



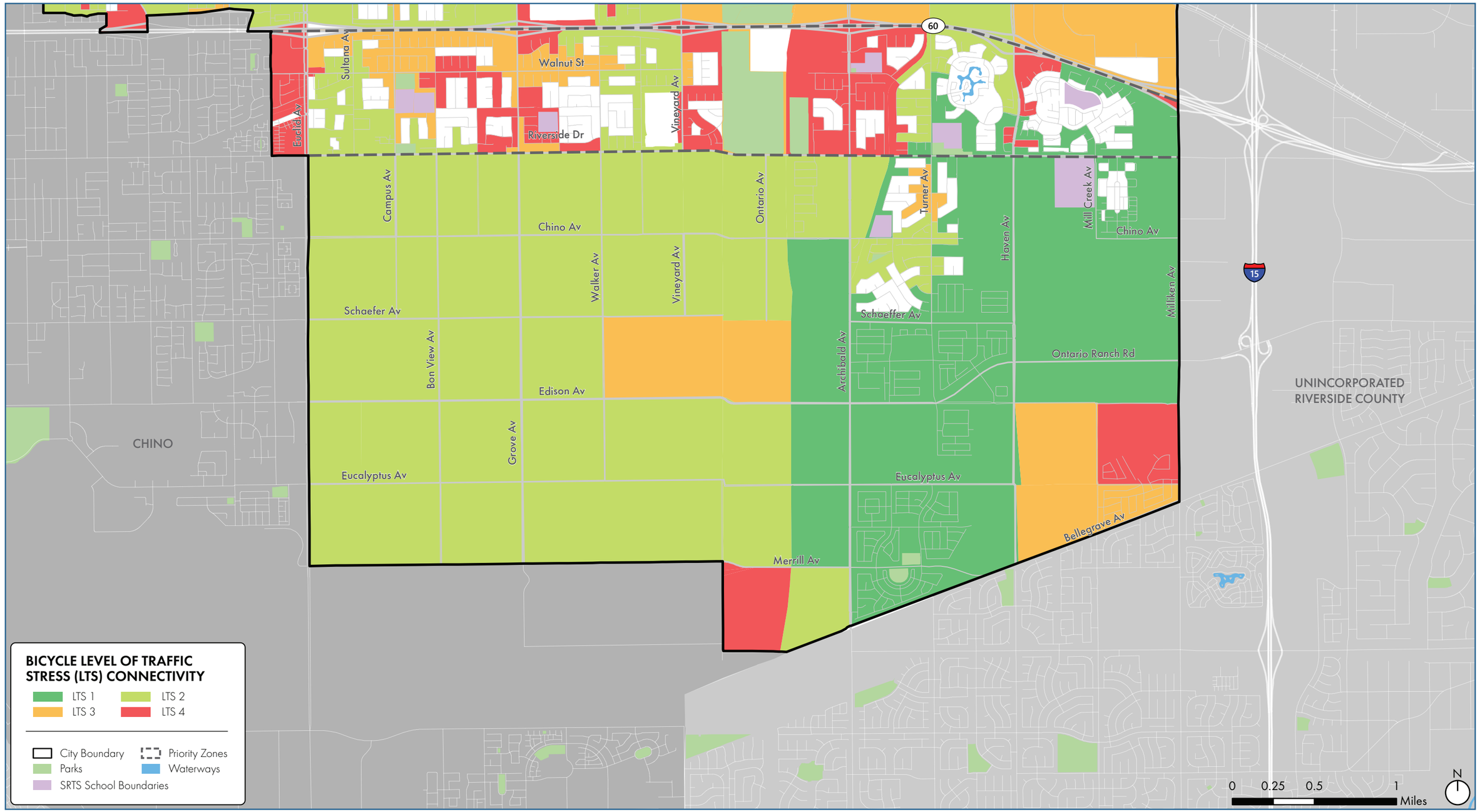
Intersection Pedestrian Level of Comfort: Citywide - A Closer Look at the Southern Portion



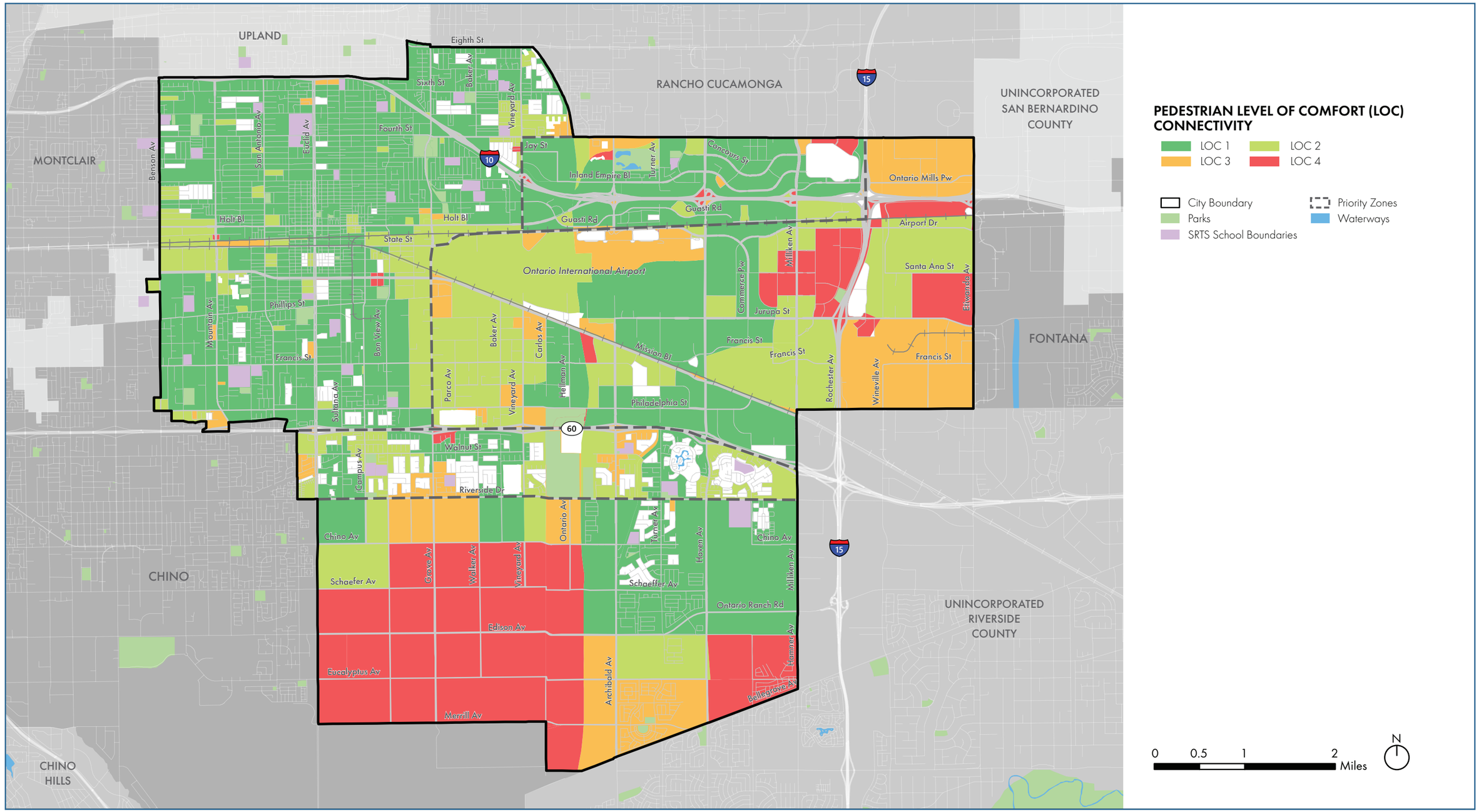
Bicycle Level of Traffic Stress Connectivity: Citywide



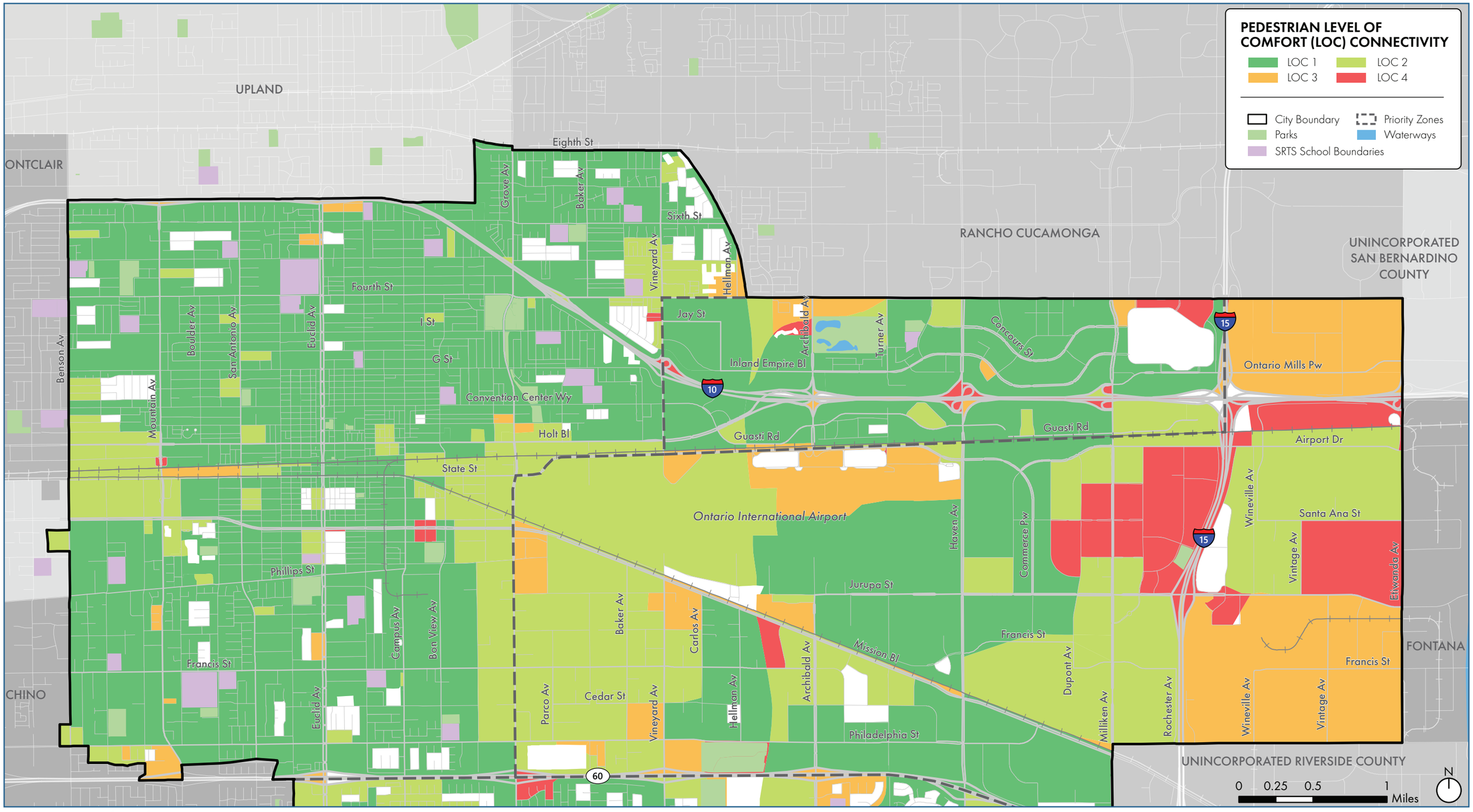
Bicycle Level of Traffic Stress Connectivity: Citywide - A Closer Look at the Northern Portion



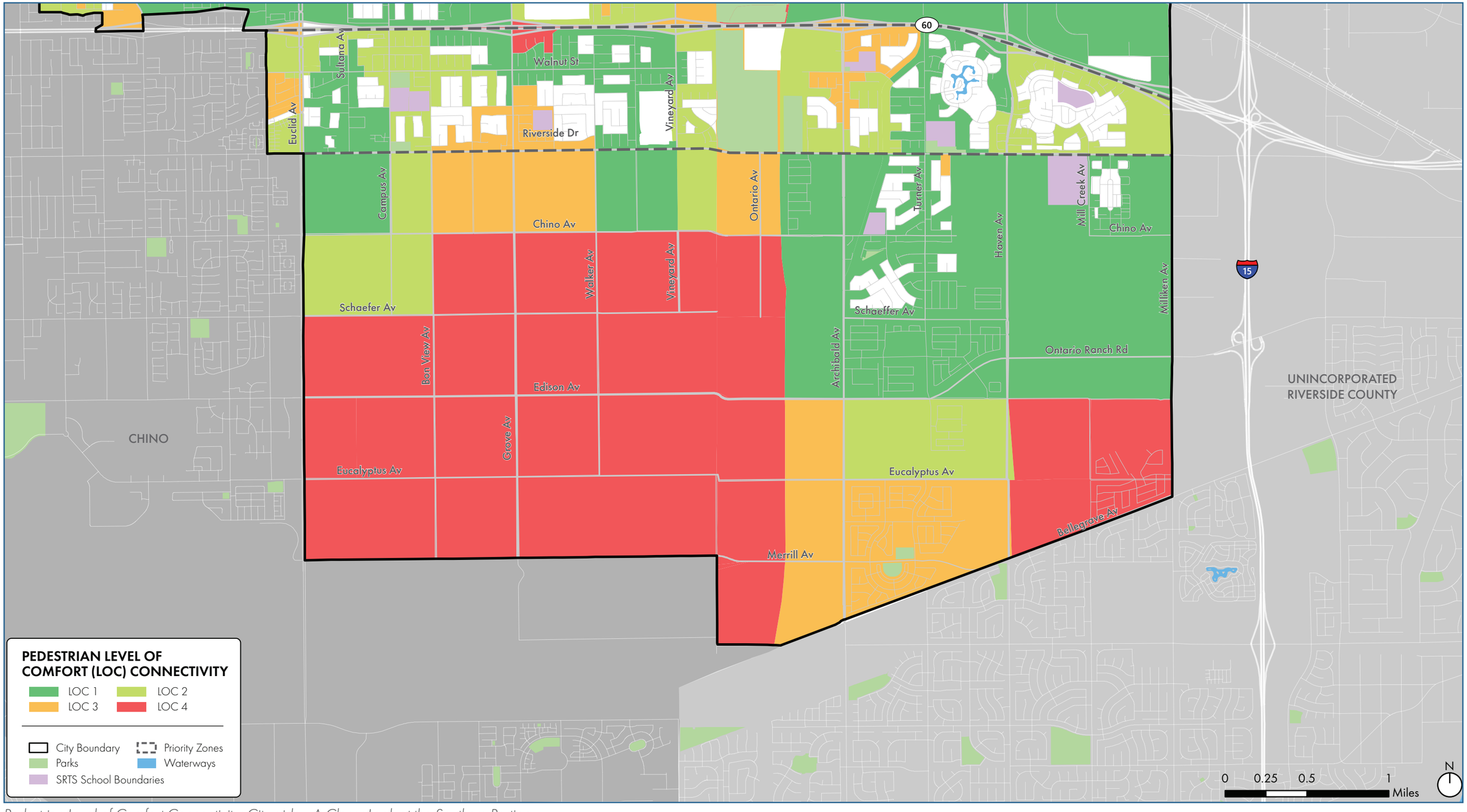
Bicycle Level of Traffic Stress Connectivity: Citywide - A Closer Look at the Southern Portion



Pedestrian Level of Comfort Connectivity: Citywide



Pedestrian Level of Comfort Connectivity: Citywide - A Closer Look at the Northern Portion



Pedestrian Level of Comfort Connectivity: Citywide - A Closer Look at the Southern Portion