GOLDEN GATE NEIGHBORHOODS

PHOENIX TRANSPORTATION 2050

A MOBILITY IMPROVEMENT PROJECT

PHOENIX MOBILITY STUDY

Mobility Assessment Area #4

Current Conditions Report

December 2017

Prepared for:

City of Phoenix
Street Transportation Department
200 West Washington Street
Phoenix AZ 85003

Prepared by:

Michael Baker INTERNATIONAL

Michael Baker International, Inc.
2929 North Central Avenue, Suite 800
Phoenix AZ, 85012

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CHAPTER 1: STUDY INTRODUCTION

Purpose & Need

The City of Phoenix (City) has demonstrated a commitment to create better neighborhoods and a more livable city, and one of the major goals is to improve the city's transportation. On August 25, 2015, Phoenix voters approved the Transportation 2050 (T2050) plan which places emphasis on street needs including street maintenance, new pavement, bike lanes, sidewalks and Americans with Disabilities Act (ADA) compliance and accessibility.

A separate T2050 Mobility Improvements Program was established as a distinct element to implement additional projects that increase ADA accessibility and mobility through construction of new sidewalks and multimodal connectivity through this provision of new bicycle facilities and enhanced pedestrian amenities. The T2050 Mobility Improvements Program has allocated 15% of the T2050 funds for mobility projects. Phoenix Street Transportation staff analyzed 11 datasets to determine geographic areas of the community with the greatest mobility deficiencies and needs. After collection of all datasets, staff combined the data into a heat map, which acknowledged and ranked the 40 priority areas to move forward for additional analysis. The Citizens Transpiration Commission approved the top 11 priority study areas to be part of the first of four phases of Mobility Study Areas.

The primary purpose of the mobility study is to complete a mobility gaps analysis based on available data and information from previous area studies. The gaps analysis will lead to identification of a prioritized list of mobility improvements for presentation to the public for feedback at a public meeting. Upon receipt of project feedback, projects will be re-prioritized if necessary, and design, right-of-way, and construction schedule and cost estimates will be developed by the project team

Study Objectives

The objective is to scope and prioritize sidewalk, bike facility, mid-block crossings, and other improvements that will improve walking and biking to key destinations within and adjacent to the study area. Upon completion of the study, identified and prioritized mobility projects will be considered for inclusion in a 5-Year T2050 Mobility program of projects for design and construction.

Ultimately, the goal of the various mobility studies is to develop and recommend mobility solutions that will improve the safety, accessibility, and multimodal connectivity for all users, regardless of age or ability, to places of employment, schools, markets, and recreational opportunities.

Mobility Assessment Area #4 Overview

Illustrated in **Figure 1**, the T2050 Mobility Assessment Area #4 (MA 4) is approximately 3 miles west of Downtown Phoenix near the Interstate 10 (I-10) and Interstate 17 (I-17) interchange. MA 4 is generally bounded by Encanto Boulevard to the north, Roosevelt Street to the south, 33rd Avenue to the east, and 43rd Avenue to the west. MA 4 includes a mix of single and multi-family residential neighborhoods, schools, Falcon Park, and several retail centers.

I-10 is the most notable transportation feature within MA 4, virtually bisecting the study as it traverses though the middle of the study area. The area to the north of the interstate lies within the Maryvale Urban Village and the area to the south lies within the Estrella Urban Village. The interstate is a major physical barrier negatively effecting mobility within the study area and only has three streets that cross over the interstate, including 43rd Avenue, 39th Avenue, and 35th Avenue.

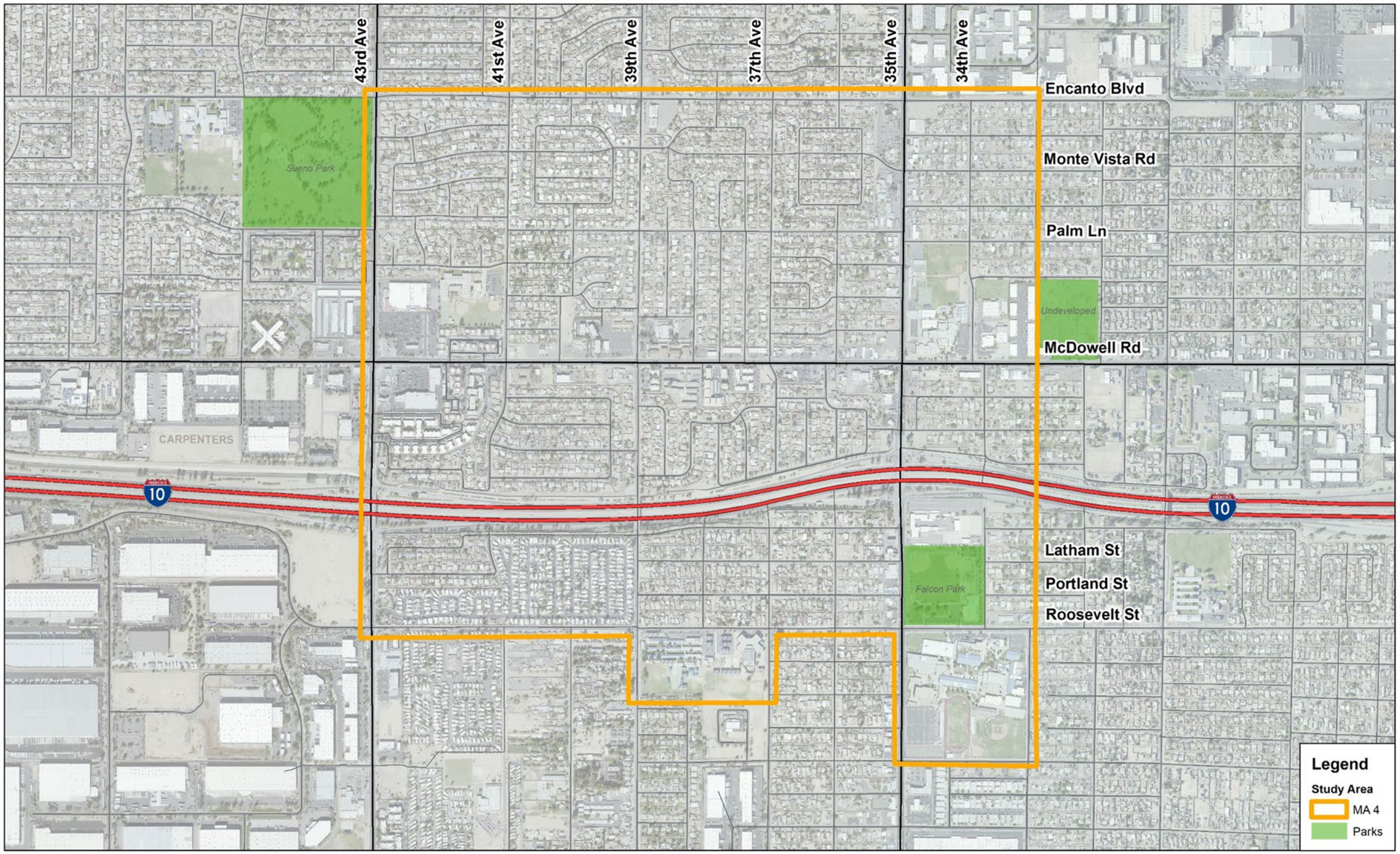
The average age of the housing stock in MA 4 ranges from the post WWII housing boom through the 1960's and 1970's. Established neighborhoods contribute a historic character of the area, but also create opportunities for needed rehabilitation and upkeep in select areas.

There are many different education facilities within MA 4 including five schools and two learning centers. These locations are major destinations which typically attract a high volume of multimodal users, thus exacerbating the importance of mobility and connectivity issues in MA 4. As Illustrated on **Figure 1**, The schools include Mitchell Elementary School, Alta E Butler Elementary School, Morris K. Udall Middle School, Carl Hayden High School, and Isaac Middle School, and the two learning centers are the Active Learning Center and Bret Tarver Learning Center. In addition, the Golden Gate Community Center is located near the center of MA 4 and is one of the most significant destinations within the MA 4 study area.

There is significant concentration of commercial development along McDowell Road between 35th and 39th Avenue that attract frequent multimodal visitors from the adjacent neighborhoods and condominiums. The main commercial node is located at 43rd Avenue and McDowell Road which has two grocery stores, a dollar store, and a variety of other types of supporting services and businesses.

Falcon Park and Sueno Park are both large parks in opposite corner of the study area that generate multimodal activity so ensuring safe and convenient access to and from these parks will be essential.

Figure 1: Mobility Area #4 Study Area



Source: City of Phoenix

CHAPTER 2: REVIEW OF PERTINENT ENGINEERING, PLANNING AND POLICY DOCUMENTS

In order to develop a successful and effective plan for the City, understanding the previous planning efforts is important. Prior to this planning process several plans, studies, and reports have been completed that impact MA 4. A total of six completed or ongoing plans, studies or reports are summarized in **Table 1.** The table identifies the title of the report, the type of report and the year the report was published. The following pages directly describe the document contents and their relevance to this study.

Table 1: Review of Pertinent Engineering, Planning and Policy Documents

Title	Type	Year
2015 Phoenix General Plan	General Plan	2015
City of Phoenix Comprehensive Bicycle Master Plan	Master Plan	2014
City of Phoenix Complete Street Policy	City Policy	2017
MAG Complete Streets Guide	Design Guide	2011
NACTO Urban Street Design Guide	Design Guide	2013
NACTO Urban Bikeway Design Guide	Design Guide	2014

City of Phoenix General Plan

The City of Phoenix General Plan provides the vision and policies that determine phoenix will grow and develop. This plan was updated in 2015 and addresses topics such as land use, zoning, housing, neighborhoods, transportation, environmental, natural resources, energy, and public facilities.

The PlanPHX Leadership Committee and staff identified Five Core Values that will help achieve the Vision and embed the Community Benefits into our city. This effort begins and ends with the residents of Phoenix. These Core Values will provide the framework for the policy portion of the updated General Plan and serve as the new principles for growth and development in the city. Each of the Core Values addresses Phoenix's many assets. By building on and ultimately expanding these assets Phoenix will employ an asset based approach to community development. This approach enhances Phoenix residents' connectivity to the benefits that all of these assets provide, and further enhances Phoenix's unique character and identity.

Figure 2: 5 Core Values of PlanPHX

Source: City of Phoenix General Plan

City of Phoenix Comprehensive Bicycle Master Plan

The purpose of the City of Phoenix Comprehensive Bicycle Master Plan is to establish a direction to transform the city into a bicycle-friendly community over a 20-year timespan. The goal is to improve levels of bicycle friendliness, as defined by the League of American Bicyclists' Bicycle Friendly Communities program. Phoenix received an Honorable Mention in 2011, but the next goal is a Bronze Award, and then progressing up to the Platinum level as the projects recommended out the Bicycle Master Plan are implemented over time. The approach of the master plan, depicted **Figure 3**, called for a prioritization of corridors into the three separate tiers. However, none of the corridors selected in the three tiers fall within the MA 4 planning boundary. The following information describes the projects for each of the three tiers:

1. Completion of Tier I corridor projects will add 32 miles of bikeways and improve bicycle safety and mobility through 50 intersections. The planning level in-house cost estimate to implement these projects is $4,031,000.
2. Completion of Tier II corridor projects will add 33 miles of bikeways, make an important connection across the I-17 freeway, and improve bicycle safety and mobility through 108 intersections. The planning level in-house cost estimate to implement these projects is $14,008,000. An additional $9,320,000 would be invested to pave the Grand Canal Trail.
3. Completion of Tier III corridor projects will add 55 miles of bikeways and improve bicycle safety and mobility through 125 intersections. The planning level in-house cost estimate to implement these projects is $10,798,000. An additional $14,550,000 would be invested to pave the Arizona, Highline, Western, and CAP Canal Trails.

Figure 3: Iterative Approach to Using the Bicycle Corridor/Project Prioritization Methodology

Source: City of Phoenix Comprehensive Bicycle Master Plan

City of Phoenix Complete Streets Policy

On June 28th, 2017, the City Council adopted the City of Phoenix Complete Streets Policy to further advance its goals to create a more sustainable transportation system that is safe and accessible for all users. Complete streets provide an environment that encourages walking, bicycling, transportation choices and increased connectivity.

Through this policy, the primary focus of street design will no longer be solely on the speed and efficiency of automobile travel, but on the safety and comfort of all users of the public right-of-way (ROW).

When designing, constructing and improving rights-of-way, including those in MA 4, City staff will incorporate this Policy to ensure the City's rights-of-way:

- Are planned, designed, constructed, operated, and maintained with the ultimate goal of serving a variety of transportation modes
- Will contribute to active transportation and public health
- Accommodate transportation users of all ages and abilities
- Are economically and environmentally sustainable
- Are designed to be compatible with the surrounding contexts and connecting transportation networks
- Comply with state and federal law and City code and Ordinance S-41094
- Follow the Complete Streets Planning and Design Principles which will be integrated into the Street Transportation Design Guidelines
- Provide new or improved connectivity between all transportation modes and adjacent land uses.

Figure 4: Example of Complete Street in Phoenix

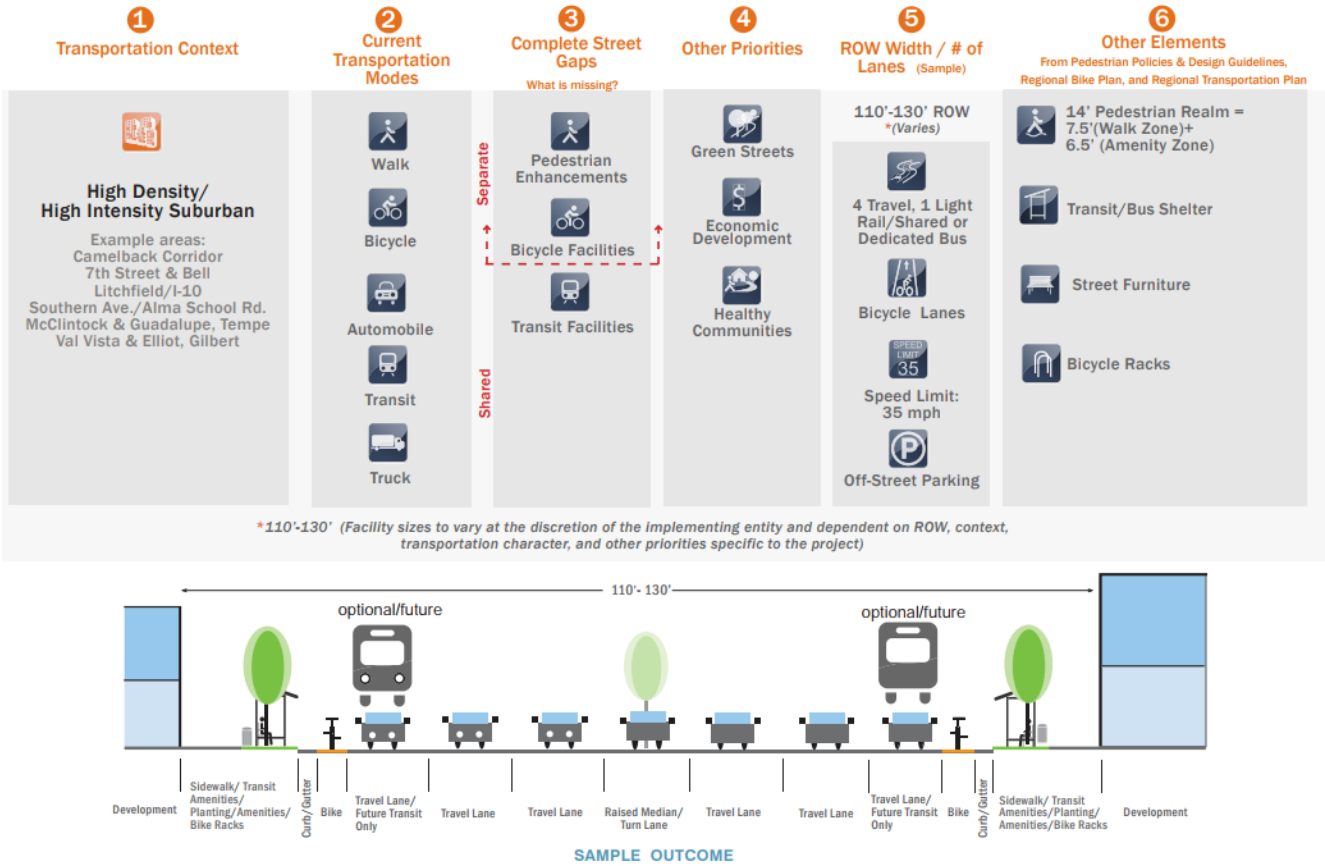
Source: City of Phoenix Complete Streets Initiative

Maricopa Association of Governments (MAG) Complete Streets Guide

The MAG Complete Streets Guide is a step to ensuring that facilities for bicycles, pedestrians, and transit are recognized as integral to a properly designed and functioning street. This policy guide provides sample outcomes, examples of best practices, and policy guidance to help ensure that all new and retrofitted streets in the MAG region serve as many transportation modes as practical and possible. The MAG Complete Streets Guide includes on information on the benefits of Complete Streets, what the MAG region is trying to accomplish with this Guide, how to plan a Complete Street in the MAG region, Complete Street plans and policies in other locations, and how to implement this Guide.

Portions of MA 4 would be categorized as both High Density/High Intensity Urban and Suburban Context, so planning techniques for those development contexts will be used in conjunction with the City's Complete Streets Policy when developing the framework for recommendations related to complete streets within Study Area.

Figure 5: Complete Street Planning Process for High Density/Intensity Suburban Context



Source: Maricopa Association of Governments Complete Streets Guide

NACTO Urban Bikeway Design Guide

The purpose of the Urban Bikeway Design Guide published by National Association of City Transportation Officials (NACTO) is to provide cities with state-of-the-practice solutions that can help create complete streets that are safe and enjoyable for bicyclists. The designs in this document were developed by cities for cities, since unique urban streets require innovative solutions. Most of these treatments are not directly referenced in the current version of the AASHTO Guide to Bikeway Facilities, although they are virtually all (with two exceptions) permitted under the Manual of Uniform Traffic Control Devices (MUTCD).

MA 4 is located in an Urbanized area. The design parameters referenced in the Urban Bikeway Design Guide shall be recognized in conjunction with City of Phoenix and MAG policy guidance during the design of the bike infrastructure for this corridor.

Figure 6: Example of a Buffered Two-Way Cycle Track

Source: NACTO Urban Bikeway Design Guide

NACTO Urban Street Design Guide

The NACTO Urban Street Design Guide shows how streets of every size can be designed to focus on safe driving and transit, biking, walking, and public activity. Unlike older, more conservative engineering manuals, this design guide is graphic oriented and has an emphasis on urban streets as public places and have a different function within communities' other than exclusively being corridors for traffic.

This Guide will be the toolbox and unveil tactics to use to make streets safer, more livable, and more economically vibrant in MA 4. The Guide outlines both a clear vision for complete streets and a basic road map for how to bring them to fruition during the planning process.

Figure 7: Conceptual Design of a Raised Intersection

Source: NACTO Urban Street Design Guide

CHAPTER 3: EXISTING FEATURES INVENTORY

Chapter 3 provides an overview of the existing conditions and features of MA 4. This includes the latest information related to population demographics, land use and zoning, housing, property ownership, infrastructure (stormwater, sewer, water, power, gas, and broadband), and transportation facilities. Each of these topics is described in greater detail in this section. The data summarized is this section was either collected through a series of extensive site visits or provided to the project team by the City in electronic format. Where recent data could be collected, supporting figures and tables have been provided.

Existing Land Use & Zoning

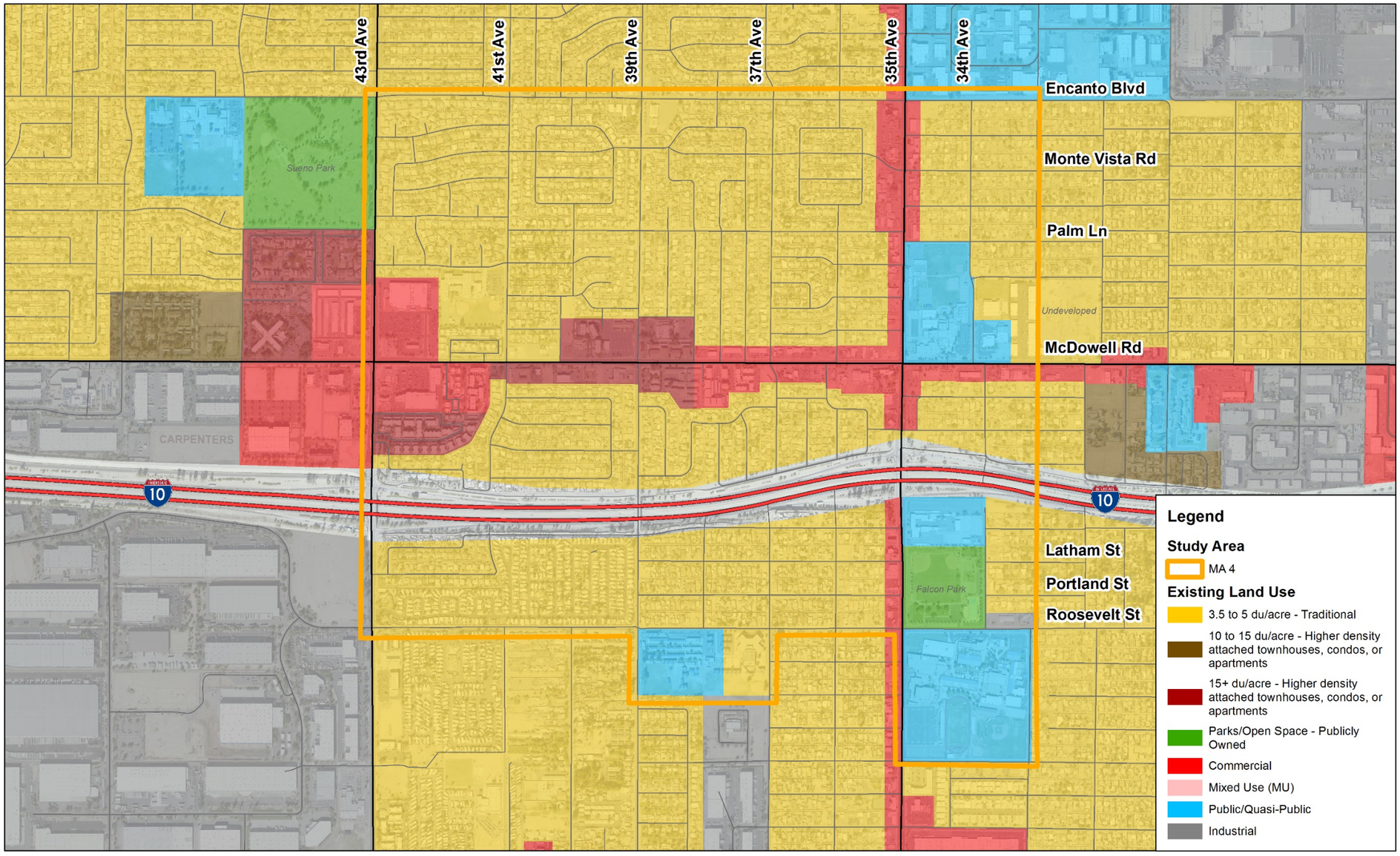
Land Use

The existing land use is reviewed early in the planning process to develop a sense of how various land uses define the character of the planning area. As shown in **Figure 9,** the predominant land use type is traditional single-family residential land use with 3.5 to 5 dwelling unit per acre (du/acre), especially in the northwest portion of the study area north of McDowell Road between 43rd Avenue and 35th Avenue. McDowell Road and 35th Avenue host most of the study areas commercial land uses and McDowell Road has multi-family residential of 15+ du/acre adjacent to the commercial land uses. The various Public/Quasi-Public land uses include Isaac Middle School, Mitchel Elementary School, Carl Hayden High School, and Alta E Butler Elementary School.

Zoning

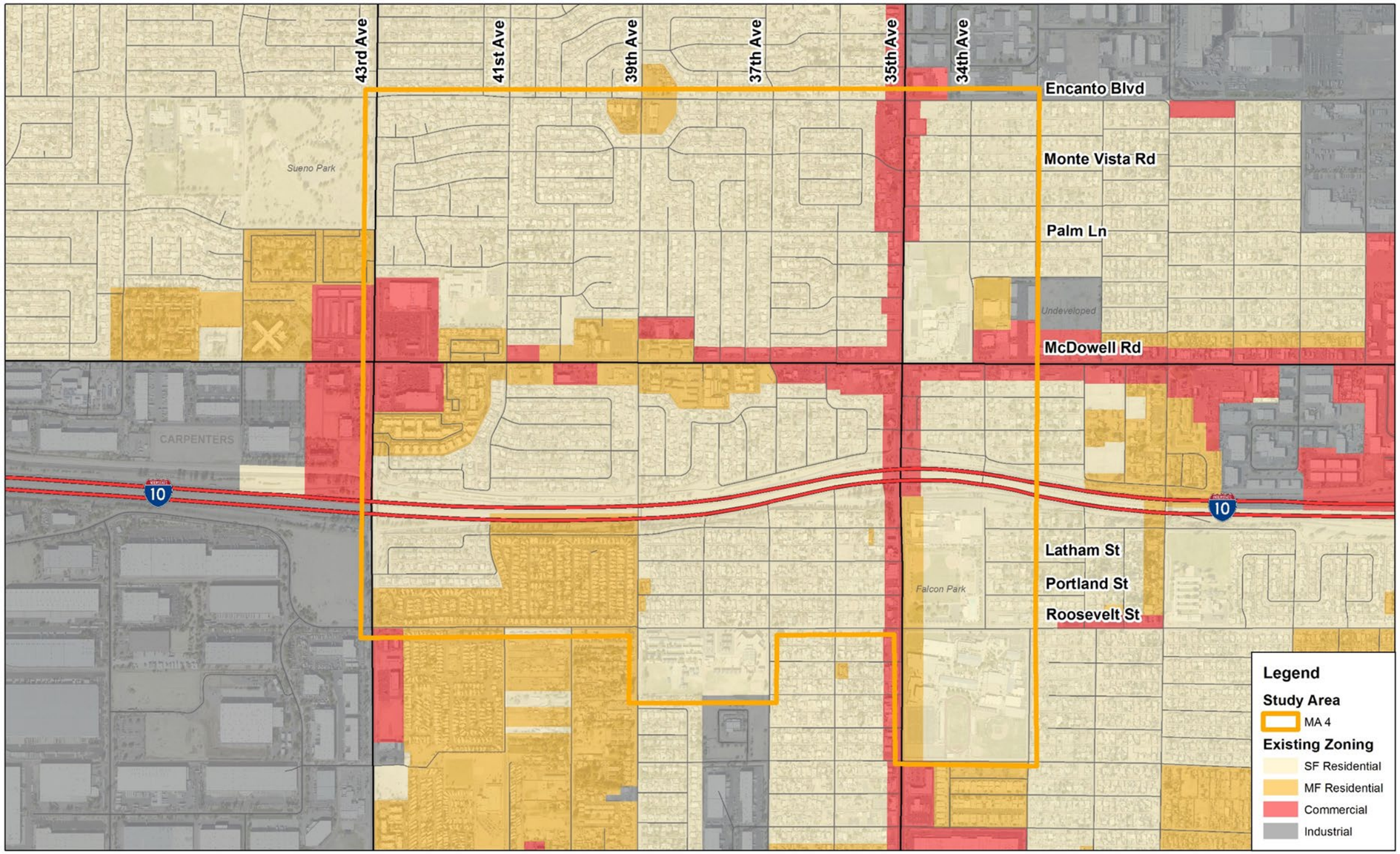
In addition to the early review of existing land uses, existing zoning is also reviewed to understand the regulatory zoning framework that exists and its current and future impact on multimodal trip generation in MA 4. **Figure 9** illustrates the existing zoning within MA 4, indicating the predominant zoning category as Single-Family (SF) Residential, especially in the northwest portion of the study area north of McDowell Road and between 43rd Avenue and 35th Avenue. MA 4 has Multi-Family Residential zoning sprinkled throughout the study area located along arterial streets and a concentration in the southwest corner. The commercial zoning pattern is similar to the typical zoning practice adjacent to the major arterial corridors including McDowell Road and 35th Avenue. Just outside of MA 4 lie two large Industrial zoned areas to the northeast and to the southwest. These two industrial sites act as barriers inhibiting regional connectivity for MA 4 to the northeast and southwest.

Figure 8: Existing Land Use



Source: City of Phoenix

Figure 9: Existing Zoning



Source: City of Phoenix

City Owned Properties

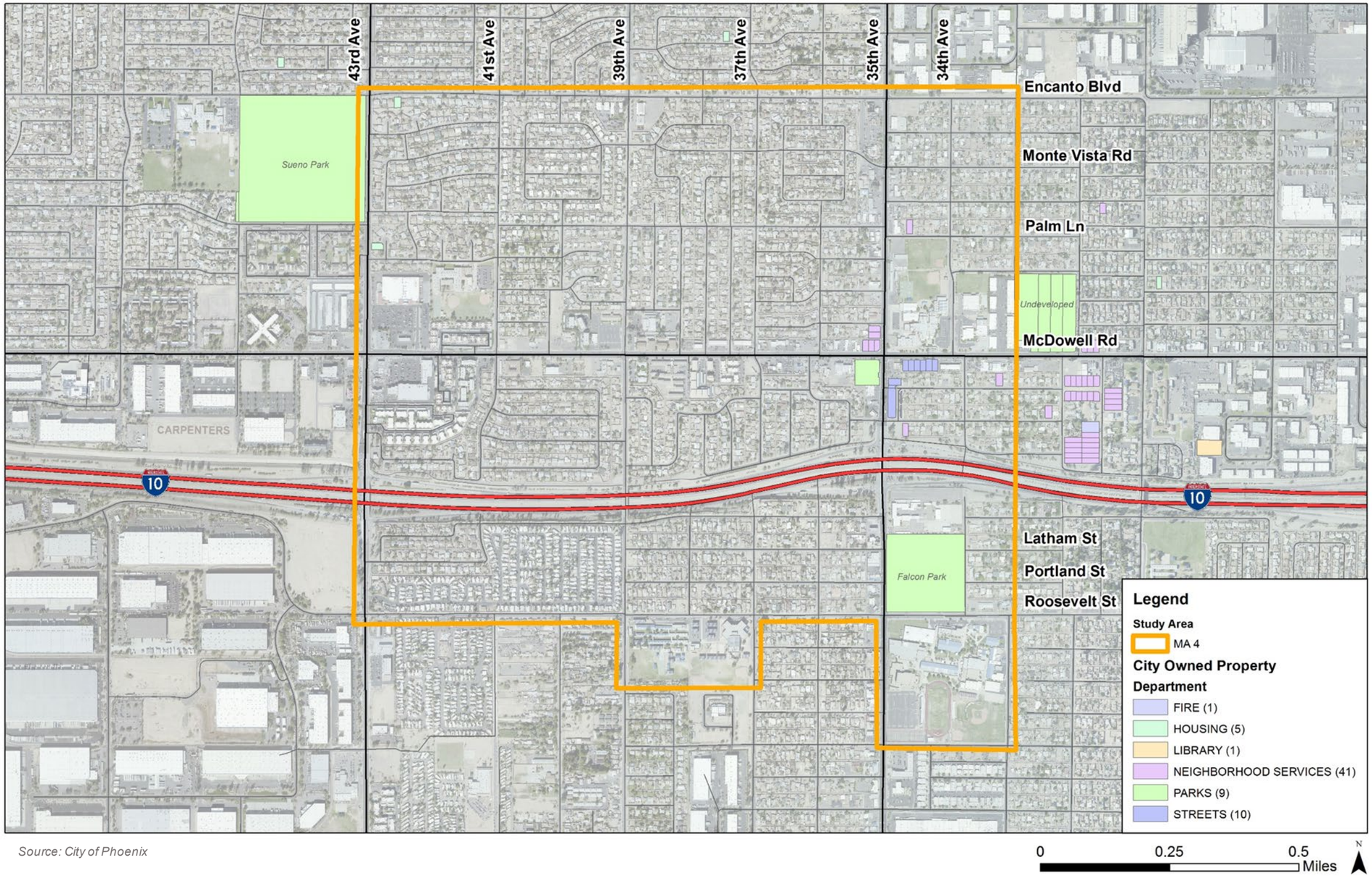
There are 22 city owned properties displayed in MA 4 as shown in **Figure 10**. The properties are owned by various departments for various purposes. There is a concentration of city owned parcels at 35th Avenue and McDowell Road and the majority of the parcels are owned by the Streets or Neighborhood Services Department. The land owned by Neighborhood Services is vacant land at the northwest corner of the intersection which is currently zoned commercial, and the land owned by Streets is utilized by the pedestrian bridge over McDowell Road just east of 35th Avenue, and a landscaping buffer on the east side of 35th Avenue south of McDowell Road.

Major Assets

Assets are the primary destinations and trip generators of the community. These include major employers, schools, historic buildings, community organizations, initiatives, institutions and infrastructure. Asset mapping helps inform the planning process by creating an inventory for preserving, improving or further supporting the areas existing resources. While also identifying where residents and visitors will likely be traveling to and from. The major assets within MA 4 are depicted in **Figure 12** and outlined below:

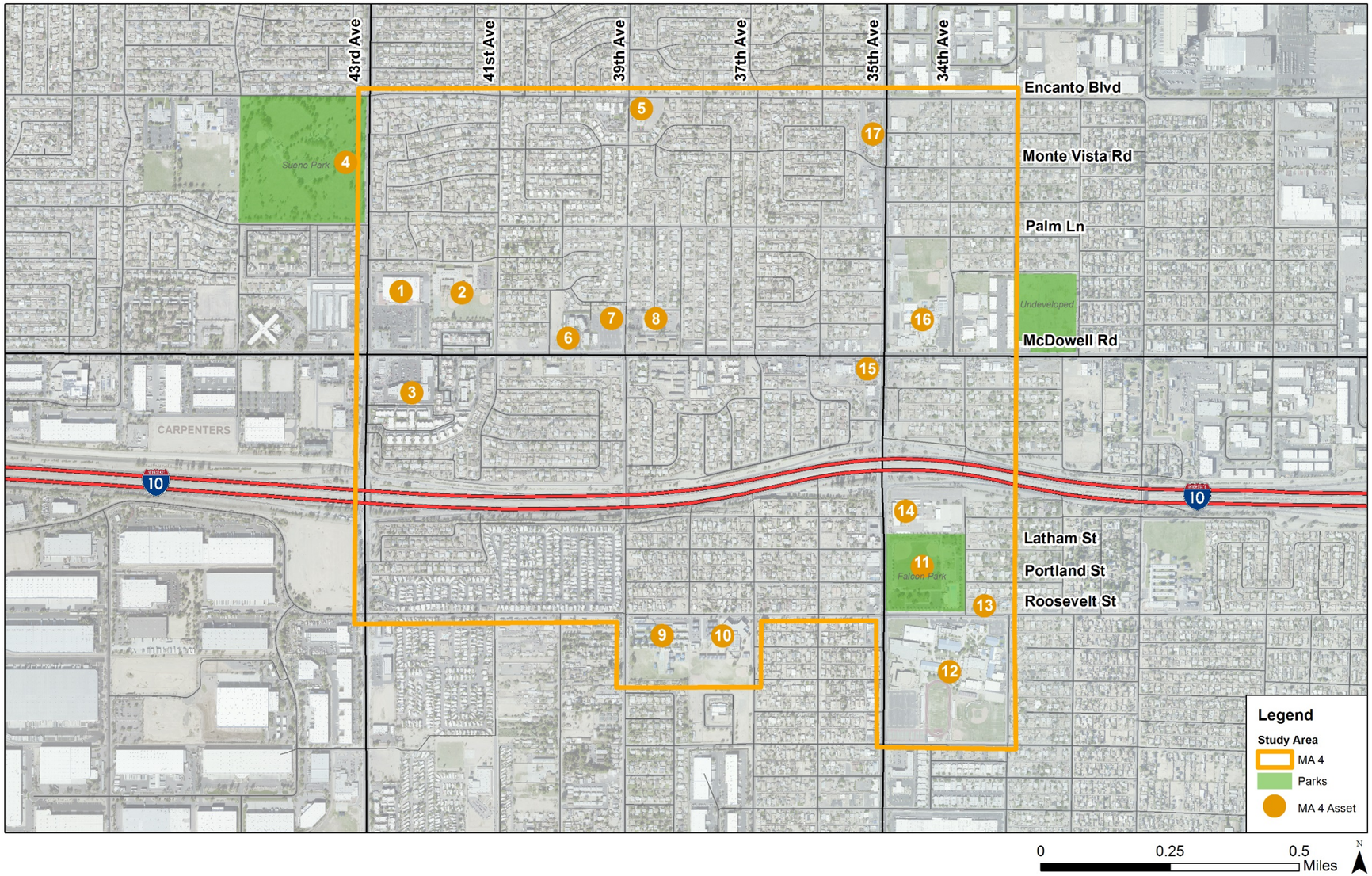
- Fry's Mercado
- Mitchell Elementary School
- Food City
- Sueno Park
- Grace Covenant
- Christian Life Church
- Antioch Missionary Baptist Church
- Golden Gate Community Center
- Alta E Butler Elementary School
- Morris K. Udall Middle School
- Falcon Park
- Carl Hayden Community High School
- Active Learning Center
- US Navy Recruiting Center
- Bret Tarver Learning Center
- Isaac Middle School
- Garcia's Las Avenidas

Figure 10: City Owned Parcels



Source: City of Phoenix

Figure 11: Major Assets



1. Fry's Mercado
2. Mitchell Elementary School
3. Food City
4. Sueno Park
5. Grace Covenant
6. Christian Life Church
7. Antioch Missionary Baptist Church
8. Golden Gate Community Center
9. Alta E Butler Elementary School
10. Morris K. Udall Middle School
11. Falcon Park
12. Carl Hayden Community High School
13. Active Learning Center
14. US Navy Recruiting Center
15. Bret Tarver Learning Center
16. Isaac Middle School
17. Garcia's Las Avenidas

Existing Socioeconomic Conditions in MA 4

This section offers an overview of the demographic, social and economic characteristics of MA 4. The data in used to generate **Figure 13** through **Figure 22** was developed from the MAG Demographic Viewer which generates data from American Community Survey (ACS) conducted by the US Census Bureau

Figure 13: MA 4 Socioeconomic and Demographic Conditions at a Glance

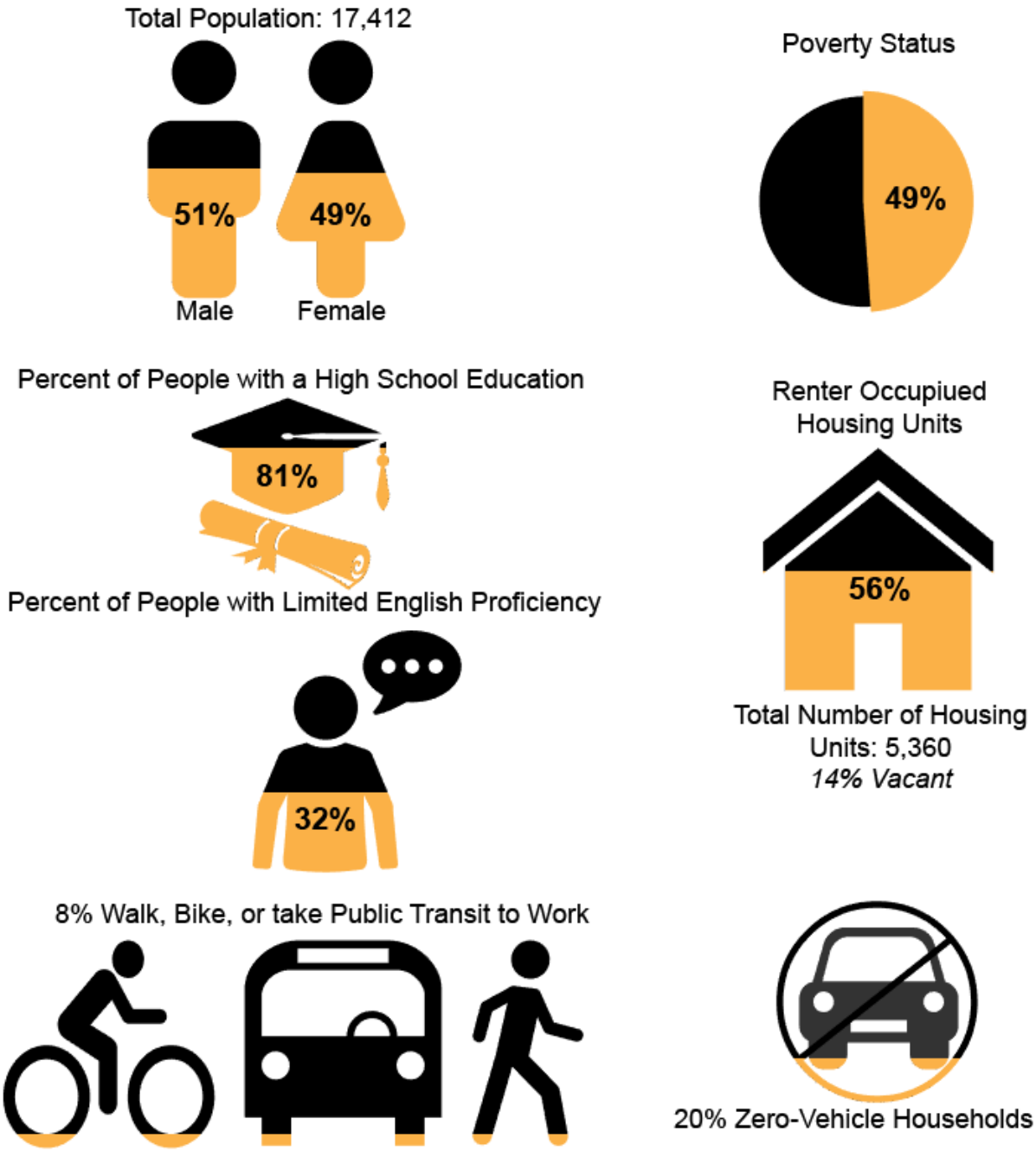
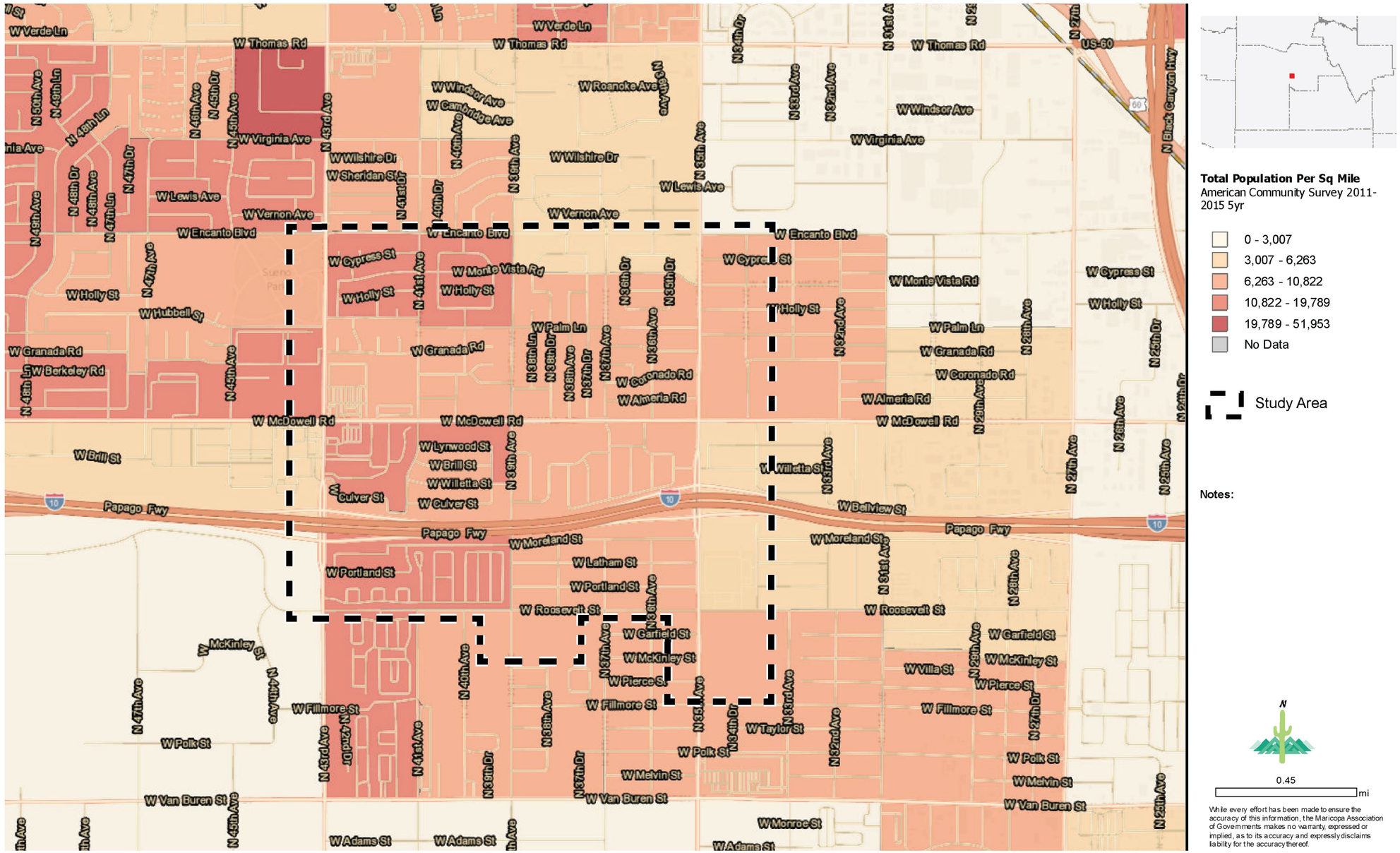
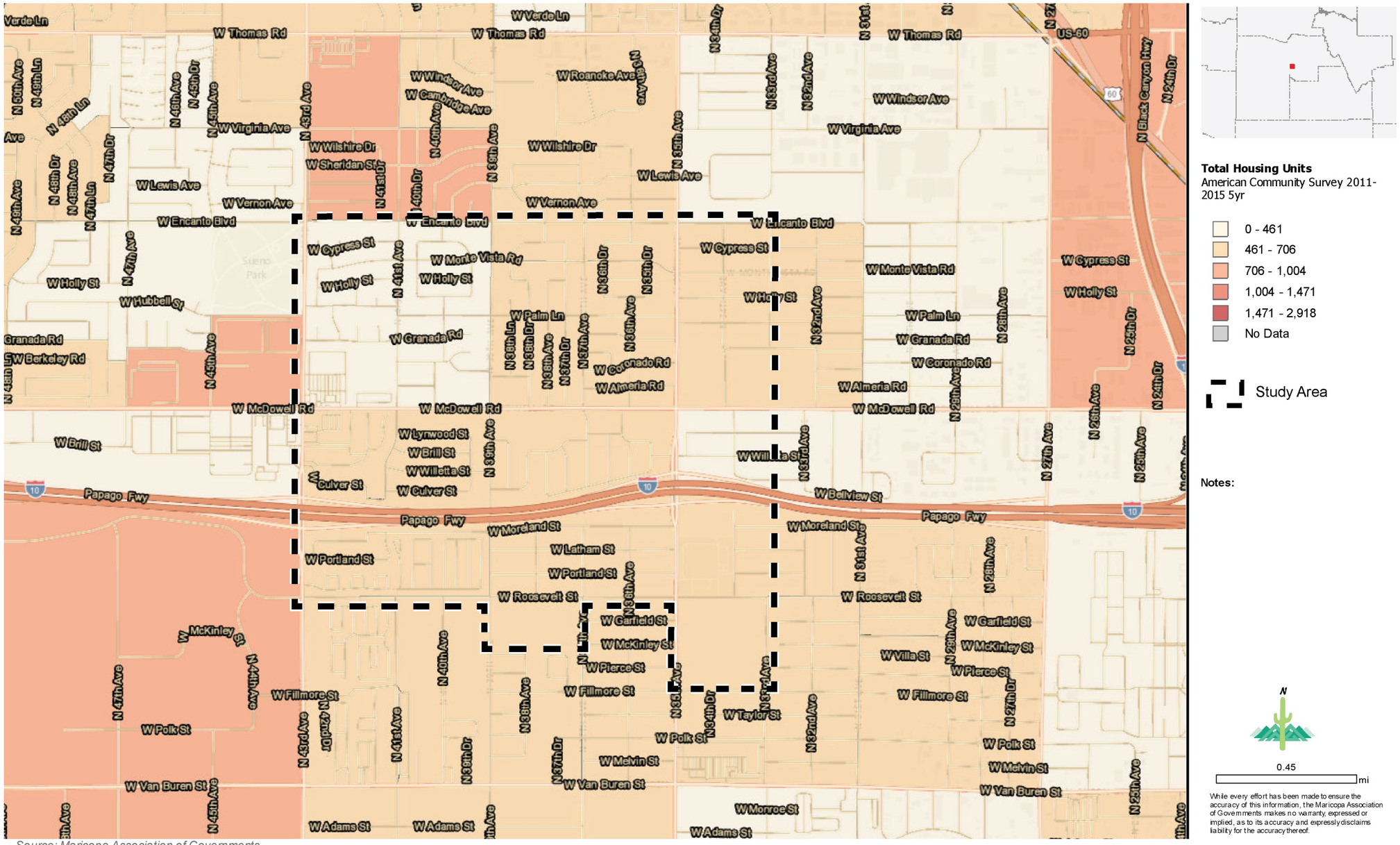


Figure 13: Total Population Density (Per Sq. Mile)



Source: Maricopa Association of Governments

Figure 14: Total Housing Units



Total Housing Units
American Community Survey 2011-2015 5yr

- 0 - 461
- 461 - 706
- 706 - 1,004
- 1,004 - 1,471
- 1,471 - 2,918
- No Data

Study Area

Notes:

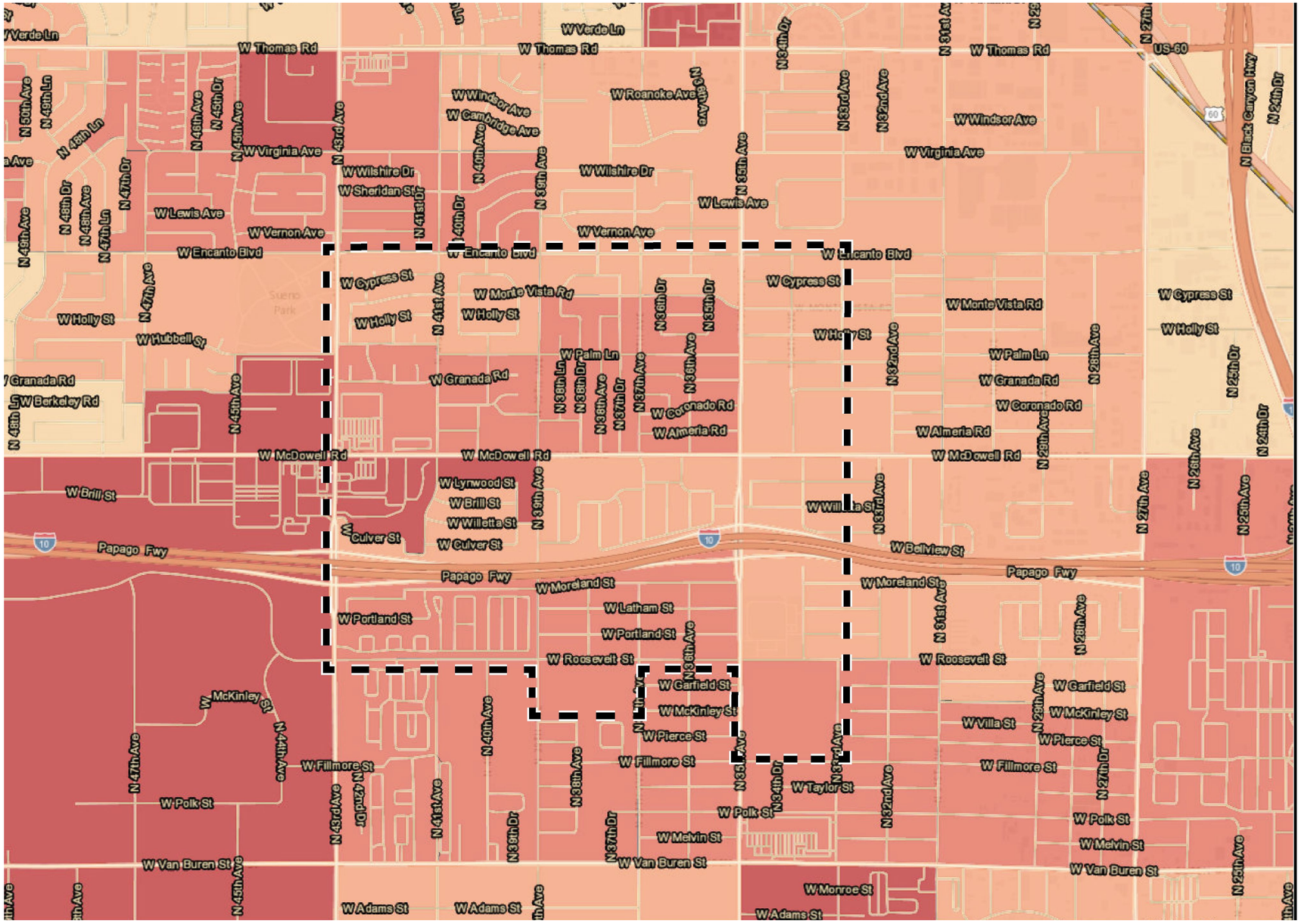
N

0.45 mi

While every effort has been made to ensure the accuracy of this information, the Maricopa Association of Governments makes no warranty, expressed or implied, as to its accuracy and expressly disclaims liability for the accuracy thereof.

Source: Maricopa Association of Governments

Figure 15: Percent Renter Occupied Housing Units



Percent Renter Occupied Housing Units
American Community Survey 2011-2015 5yr

- 0 - 18%
- 18 - 35%
- 35 - 54%
- 54 - 78%
- 78 - 100%
- No Data

Study Area

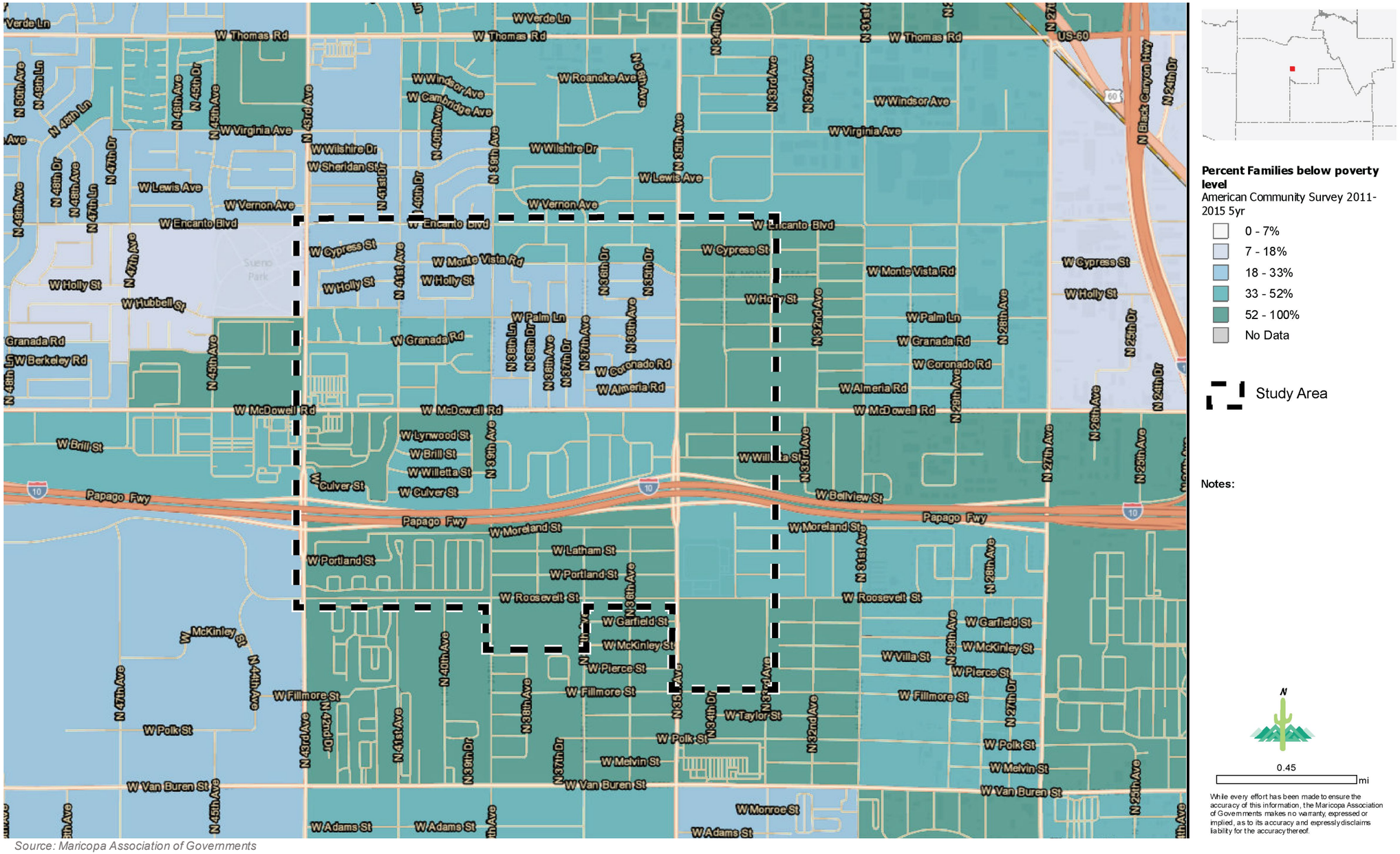
Notes:

N

0.45 mi

Source: Maricopa Association of Governments

Figure 16: Percent of Population Living Below Poverty Level



Percent Families below poverty level
American Community Survey 2011-2015 5yr

- 0 - 7%
- 7 - 18%
- 18 - 33%
- 33 - 52%
- 52 - 100%
- No Data

Study Area

Notes:

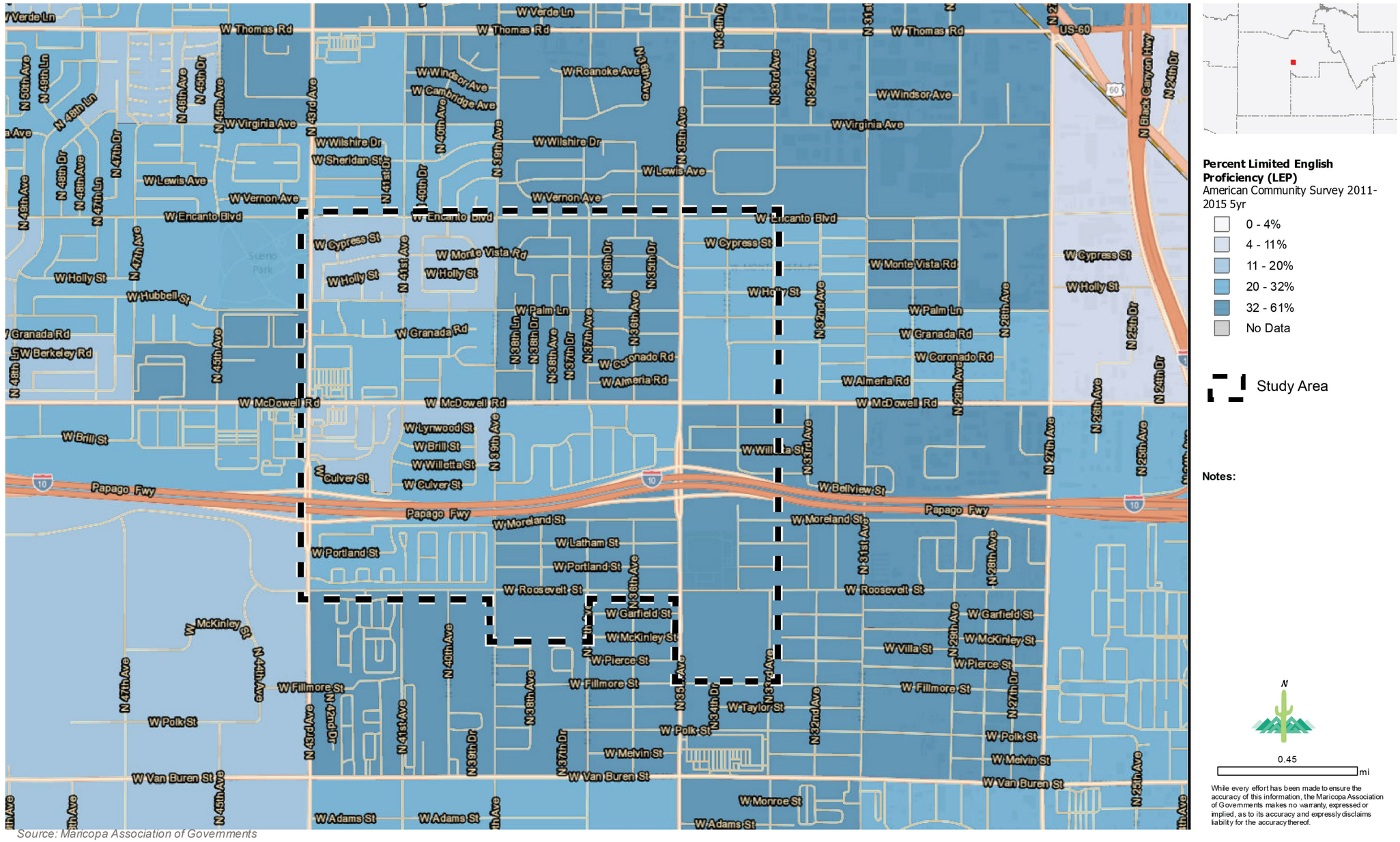
N

0.45 mi

While every effort has been made to ensure the accuracy of this information, the Maricopa Association of Governments makes no warranty, expressed or implied, as to its accuracy and expressly disclaims liability for the accuracy thereof.

Source: Maricopa Association of Governments

Figure 17: Percent of Population with Limited English Proficiency (LEP)



Percent Limited English Proficiency (LEP)
American Community Survey 2011-2015 5yr

- 0 - 4%
- 4 - 11%
- 11 - 20%
- 20 - 32%
- 32 - 61%
- No Data

Study Area

Notes:

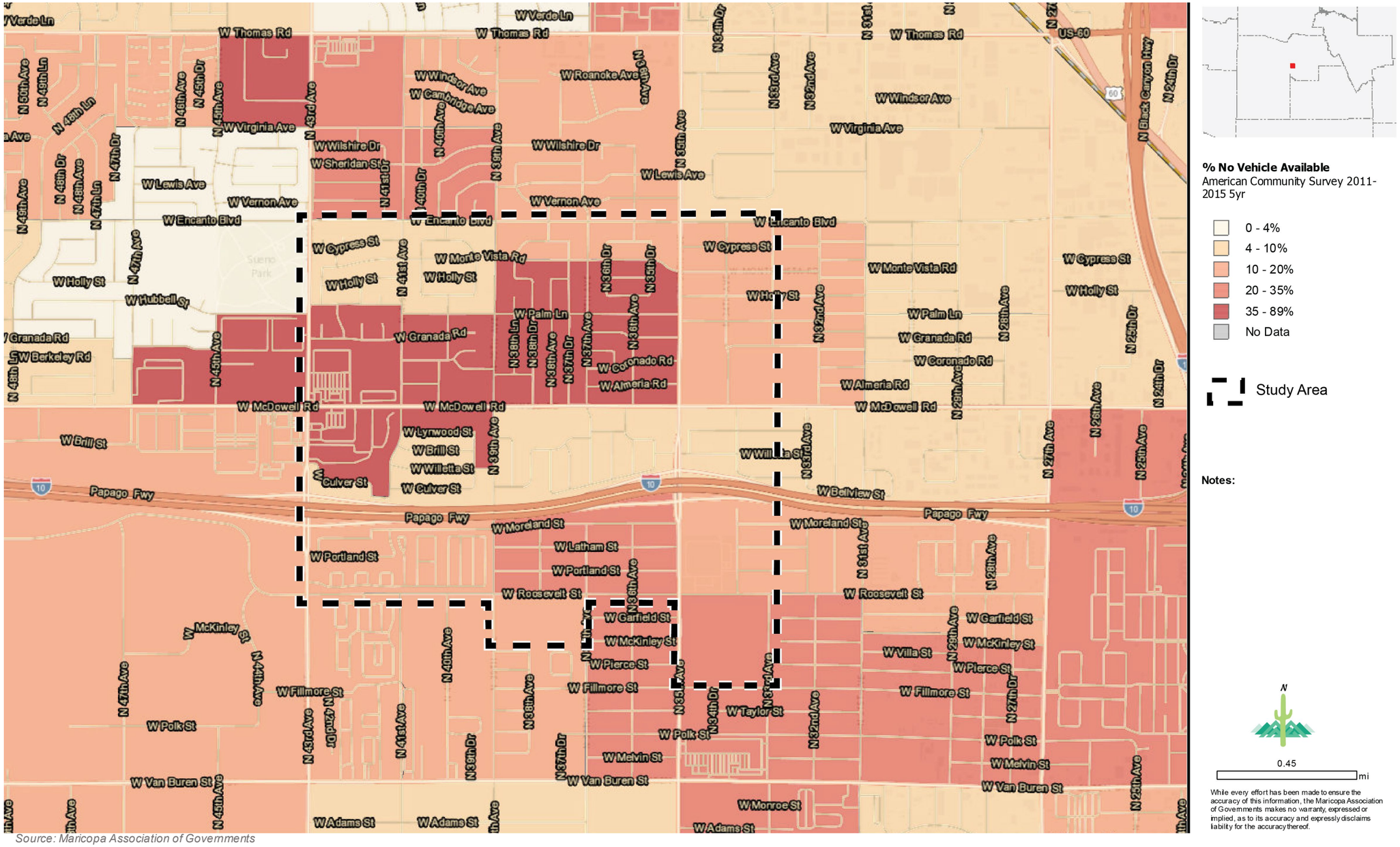
N

0.45 mi

While every effort has been made to ensure the accuracy of this information, the Maricopa Association of Governments makes no warranty, expressed or implied, as to its accuracy and expressly disclaims liability for the accuracy thereof.

Source: Maricopa Association of Governments

Figure 18: Percent No-Vehicle Households



% No Vehicle Available
American Community Survey 2011-2015 5yr

- 0 - 4%
- 4 - 10%
- 10 - 20%
- 20 - 35%
- 35 - 89%
- No Data

Study Area

Notes:

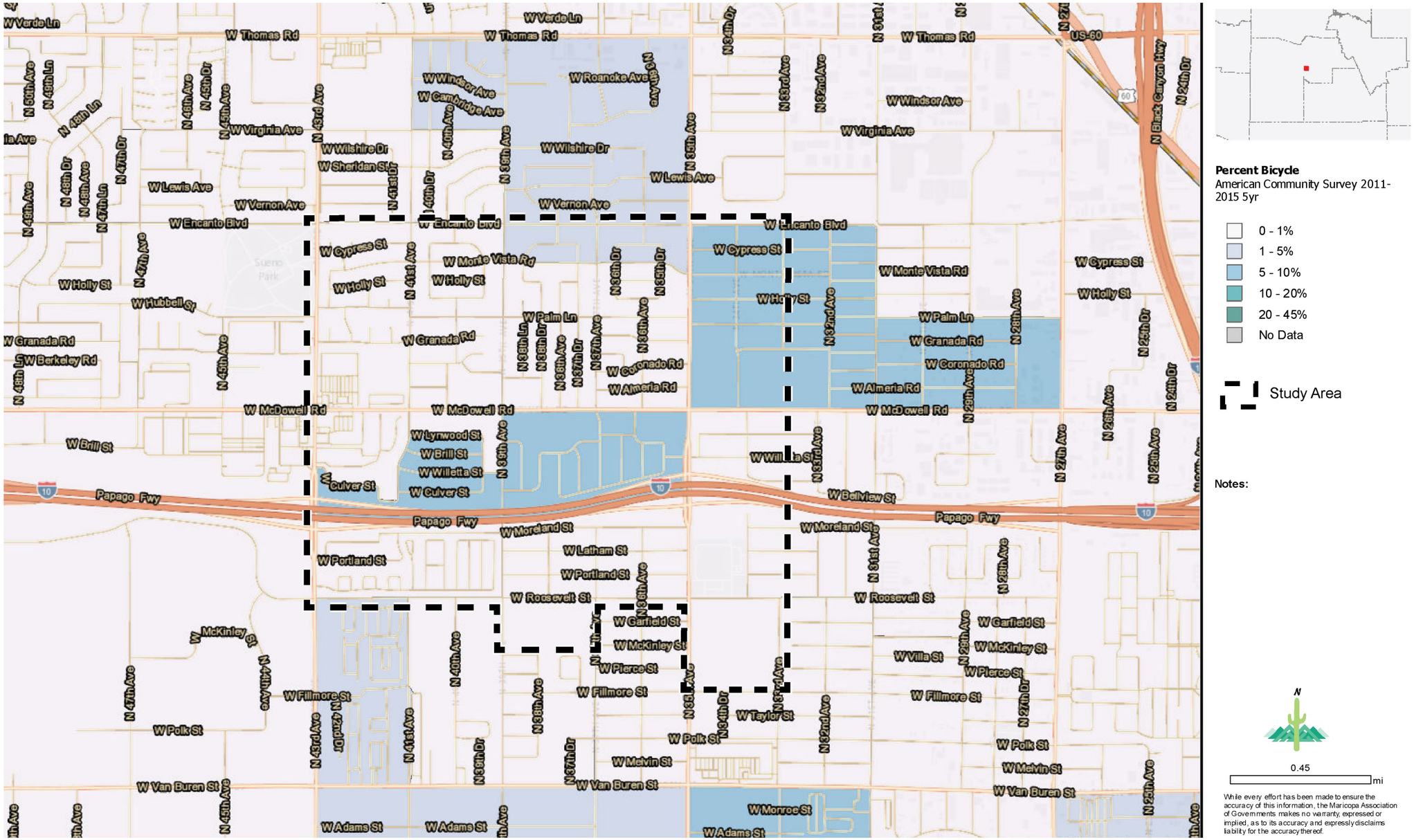
N

0.45 mi

While every effort has been made to ensure the accuracy of this information, the Maricopa Association of Governments makes no warranty, expressed or implied, as to its accuracy and expressly disclaims liability for the accuracy thereof.

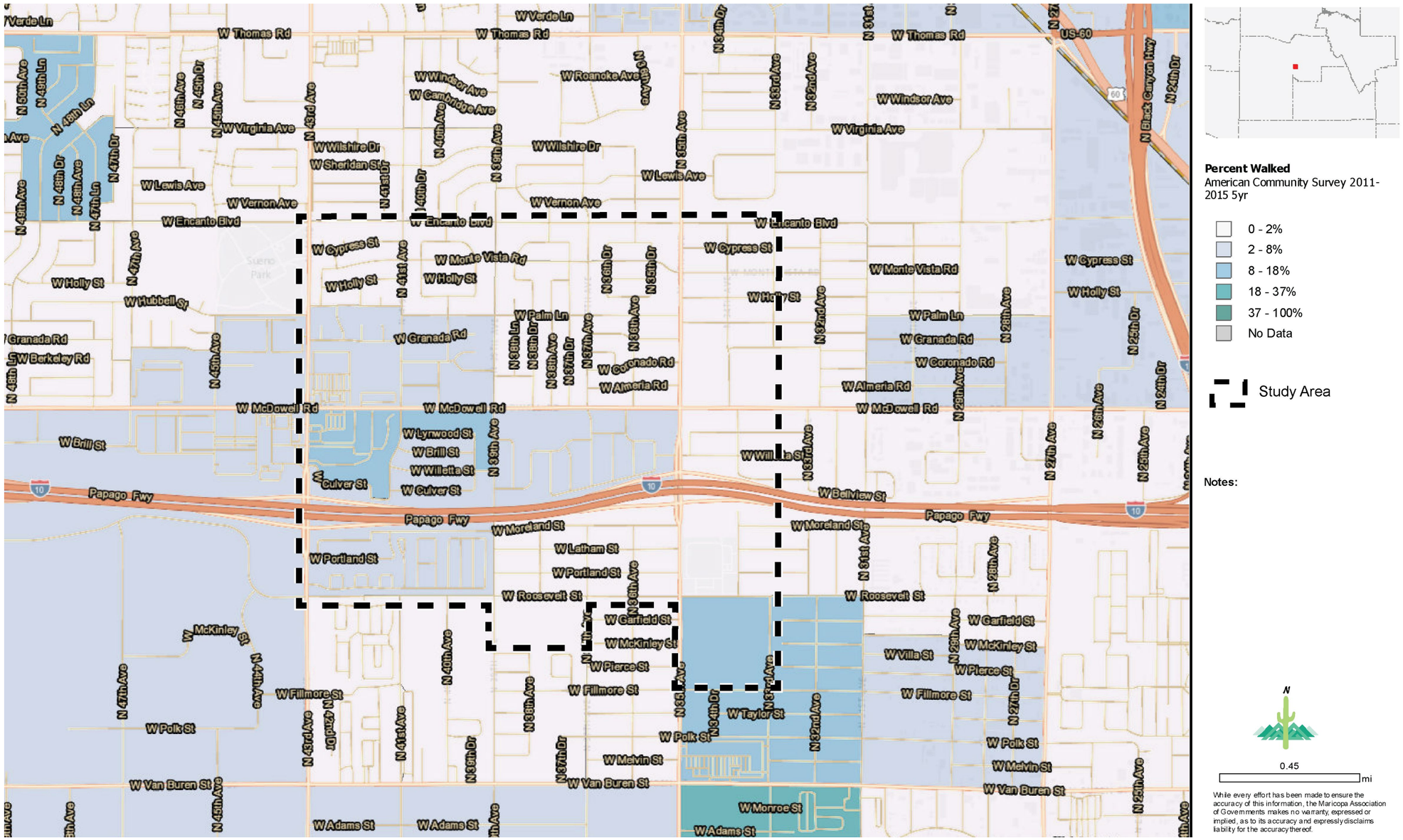
Source: Maricopa Association of Governments

Figure 19: Percent of Population that Bike to Work



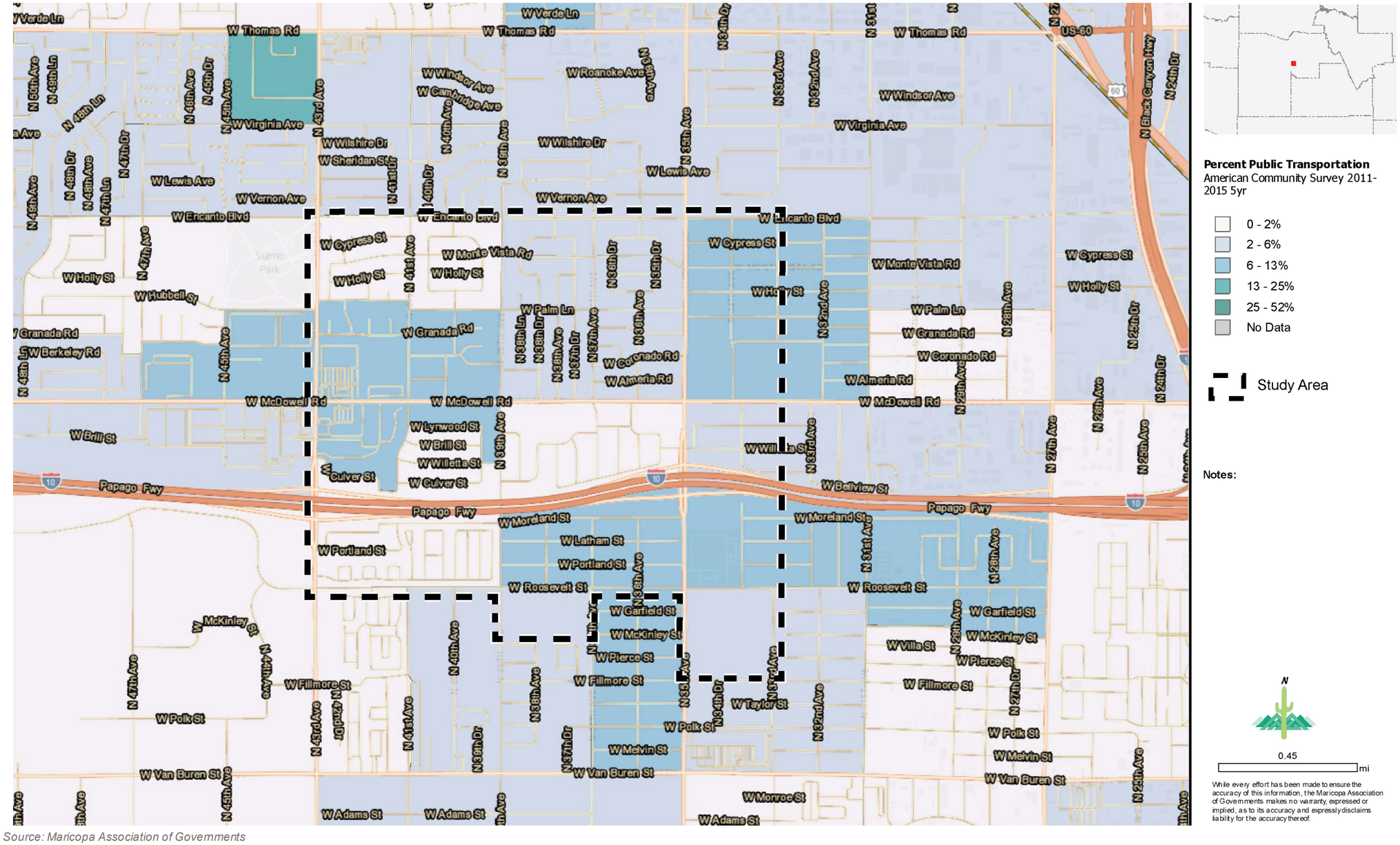
Source: Maricopa Association of Governments

Figure 20: Percent of Population that Walk to Work



Source: Maricopa Association of Governments

Figure 21: Percent of Population that take Public Transit to Work



Source: Maricopa Association of Governments

Existing Roadway and Traffic Conditions

The major elements of the existing transportation system in MA 4 are inventoried and documented in this section. The status or existing condition of each element are also summarized and illustrated. Major elements include pavement cross-sections and conditions and non-motorized modes of transportation such as bikeways, sidewalks and transit in MA 4.

Roadway Functional Classifications

Roadway functional classifications are the grouping of streets and highways into classes according to the level of service in which they are intended to provide. **Figure 22** depicts the current functional classification of the roadways within the MA 4 study area. The City of Phoenix functional classification map identifies arterial and collector roadways only. Roadways within the study area that are not classified as arterial or collector roadways based on the City of Phoenix functional classification map are assumed as local roads (and thus not labeled in **Figure 22**).

Existing Vehicular Traffic Volumes

City of Phoenix provided the 24-hour hourly traffic volume data for the roadways within the MA 4 study limits. The dates when the traffic volume data was collected varied from February 2011 to September 2016. **Figure 23** depicts the 24-hour average daily traffic volumes on roadways within MA 4 study area. 35th Avenue and 43rd Avenue are the two north-south arterial roadways within MA4. Traffic volumes on 35th Avenue range from 30,000 to 40,000 vehicles a day on average, whereas traffic volumes on 43rd Avenue range from 38,000 to 43,000 a day. McDowell Road is the only east-west arterial roadway within MA 4 and hosts between 26,000 and 28,000 daily vehicles. Traffic volumes on the three collector roadways within MA 4, 39th Avenue, Encanto Boulevard and Roosevelt Street, are consistent between 3,800 and 6,600 vehicles a day. The only local street with traffic volumes is 41st Avenue with approximately 2,400 vehicles per day.

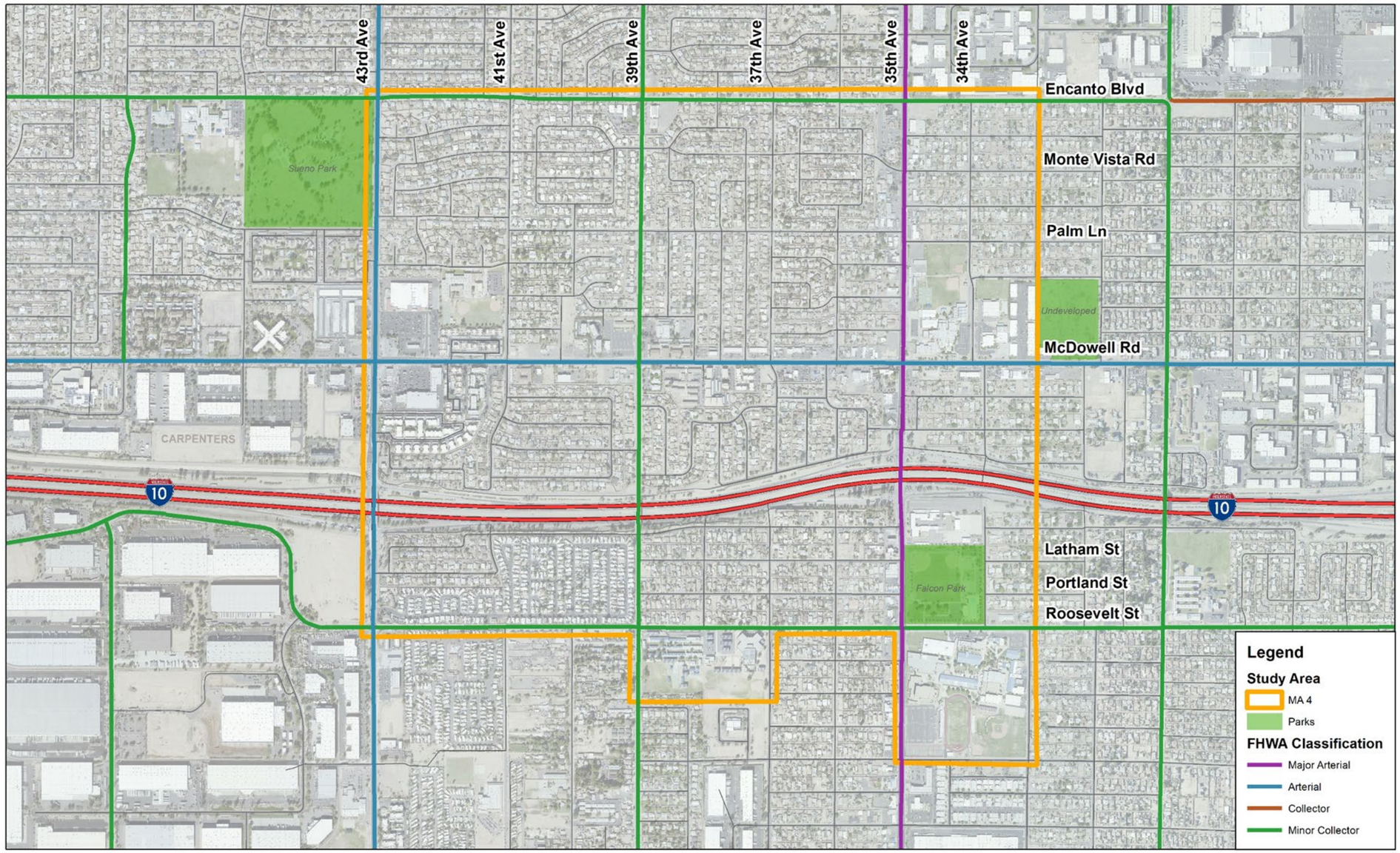
The two north-south arterial roadways within MA 4, 35th Avenue and 43rd Avenue experience the highest number of daily traffic volumes due to their connection to I-10.

Crash Data

Crash data for the study area was obtained to identify trends, patterns, predominant crash types, and high crash locations. Crash data for the five-year period, from January 1, 2012 to December 31, 2016 was obtained from the City of Phoenix.

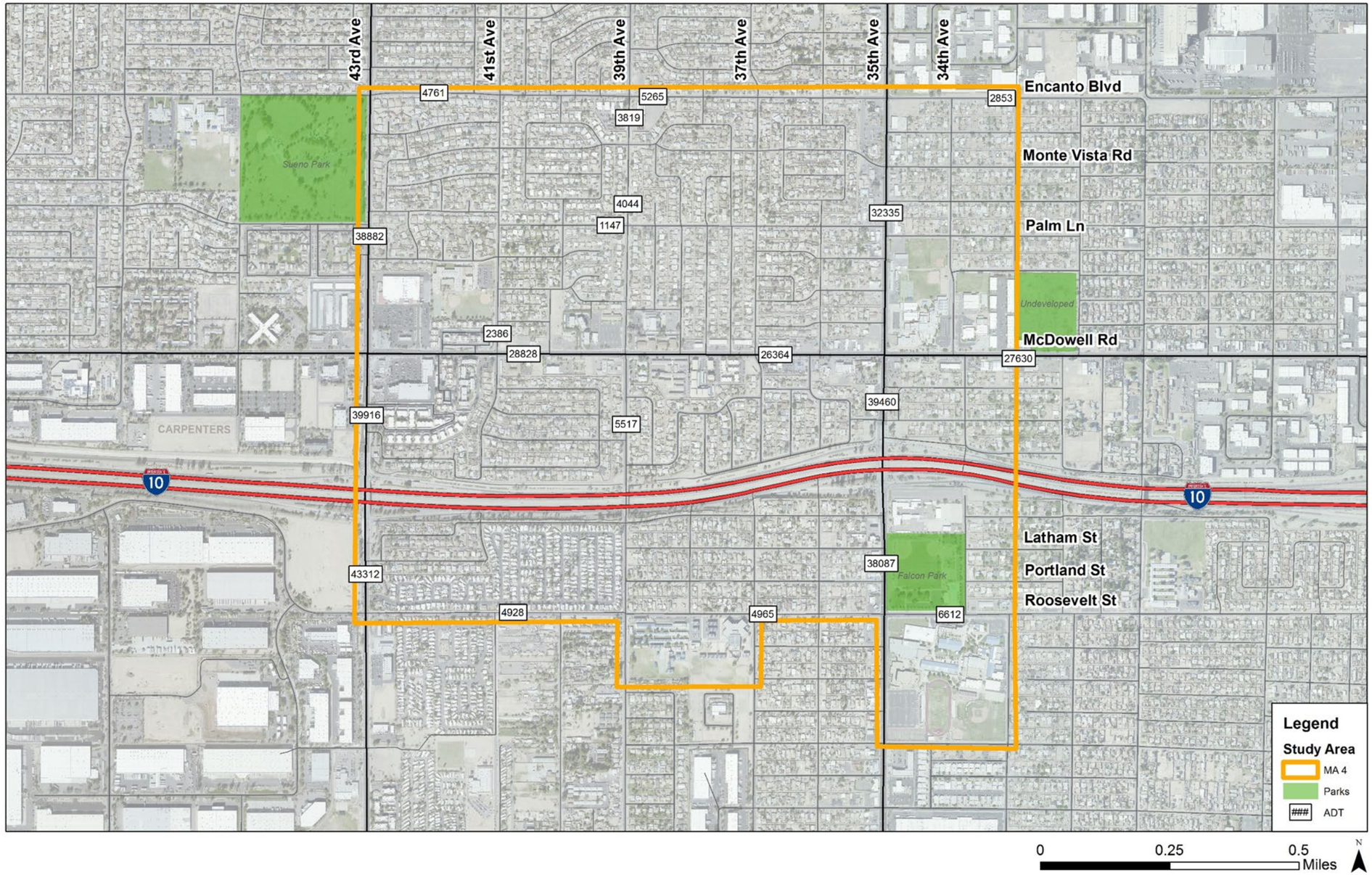
During the five-year period, a total of 1,775 crashes were reported within the MA 4 study area. 1,700 of the 1,775 crashes were vehicular crashes, 29 were bicycle related and the remaining 46 were pedestrian related crashes. Detailed crash analysis for the study area is included within the ***Existing Corridor Safety Conditions*** section of this report.

Figure 22: Functional Classification of Roadways



Source: City of Phoenix Street Classification Map

Figure 23: Daily Traffic Volumes



Existing Pavement Conditions

The pavement surface for all roadways within the MA 4 study area are asphalt concrete. Pavement condition data for the study area was obtained from City of Phoenix. According the data obtained from City of Phoenix, pavement conditions for the study area are defined as:

Excellent Condition: Like new pavement, with no visible distresses and require no maintenance.

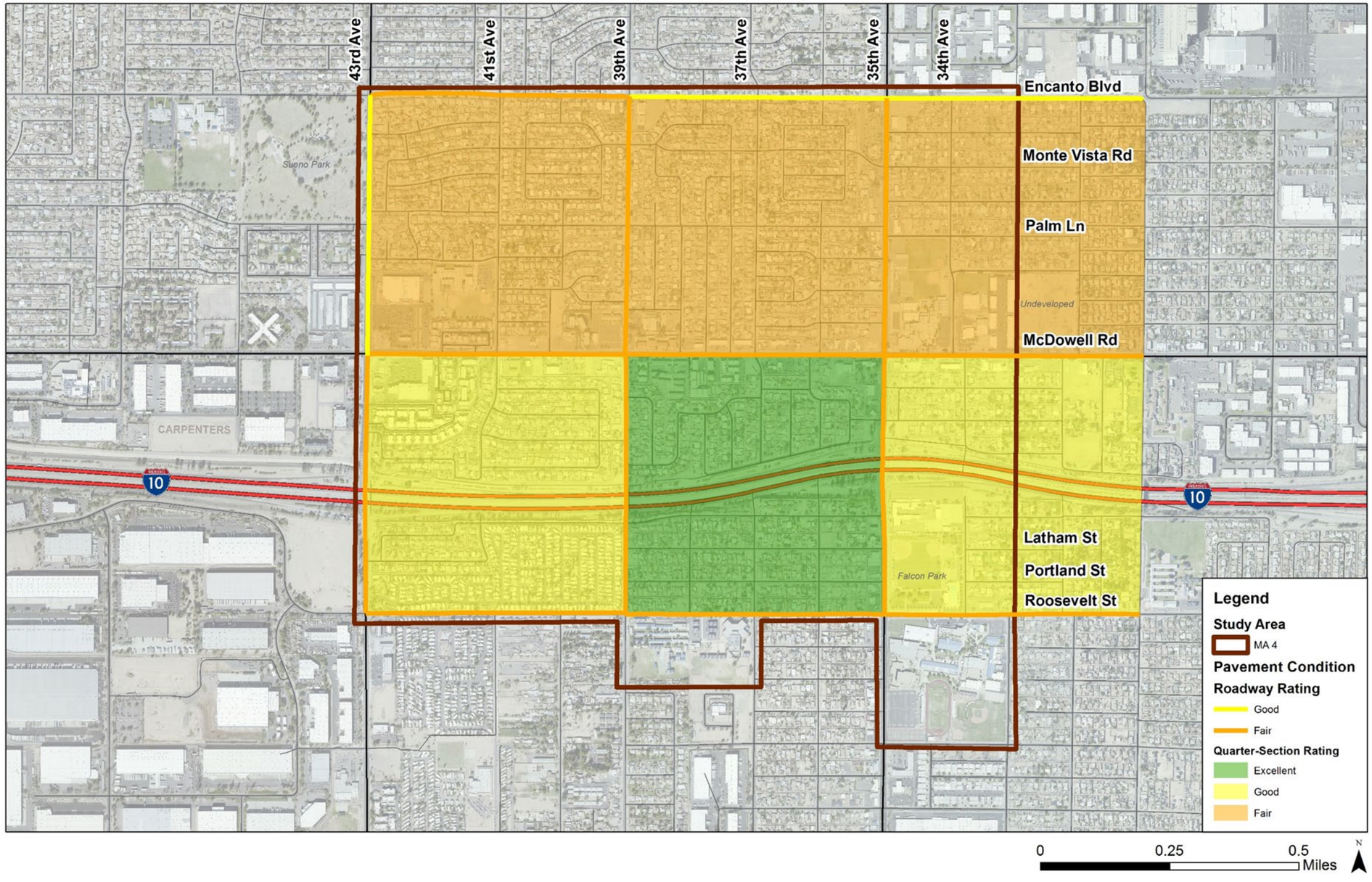
Good Condition: Like new pavement with few defects as perceived by field reviewers, no sign of cracking and pavement deterioration, no maintenance is required as cracks are barely visible or well-sealed.

Fair Condition: Slight rutting, and/or cracking, and/or roughness that became noticeable by field reviewers. The road may also be bumpy but not enough to reduce vehicle speed, and may have some pavement raveling.

Poor Condition: Multiple cracks, potholes, roughness, and/or bleeding are apparent on roadway. Roadway may be uncomfortable to vehicle occupants and drivers may need to correct or avoid road defects. Previous road repairs are deteriorated and require maintenance.

As **Figure 24** demonstrates, the pavement conditions for roadways within MA 4 range from excellent to fair. Roadways north of McDowell Road are in fair condition. Roadway south of McDowell Road between 33rd Avenue and 35th Avenue and between 39th Avenue and 43rd Avenue are in good condition. Roadways south of McDowell Road between 35th Avenue and 39th Avenue are in excellent condition. McDowell Road, Roosevelt Street, 35th Avenue and 39th Avenue within MA 4, 43rd Avenue between McDowell Road and Roosevelt Street and Encanto Boulevard between 39th Avenue and 43rd Avenue are in fair condition. Encanto Boulevard between 33rd Avenue and 39th Avenue and 43rd Avenue between Encanto Boulevard and McDowell Road are considered to be in good condition.

Figure 24: Existing Pavement Conditions



Access Management Guidelines

Access Management is the control and management of every point of access on the public roadway network. The purpose of this control is to limit vehicular and pedestrian conflicts. Access Management guidelines for City of Phoenix are included in *Chapter 8* of the *City of Phoenix Street Planning and Design Guidelines* document published in December 2009.

Access Management guidelines for City of Phoenix are summarized below:

1. Single-family residential driveways should not be located within the curb radius return on a corner lot.
2. A single parcel or contiguous parcels comprising of one development should be limited to one driveway, unless traffic volume or street frontage warrants additional driveways.
3. On major arterial and arterial streets, the sharing of driveways between adjacent properties and common ingress/egress easements are strongly encouraged. Existing driveways that are unnecessary or substandard should be removed or upgraded in conjunction with any new on-site or street construction.
4. On major arterial and arterial streets, large developments should consolidate major driveways at 1/4 or 1/8 mile locations and align them with the driveways on the opposite side of the street.
5. Driveways to corner lots should be located as far away from the intersection as practical.
6. Driveways are prohibited within the passenger waiting area of bus stops unless relocation of the facility is approved by Public Transit. Driveways should be located such that bus stop improvements are beyond the projection of driveway visibility triangles and drivers will be able to see around bus stop improvements, both existing and planned. Driveways are not to be located within the flat portion of the bus bay (bus standing area).
7. Driveway connections should be placed at locations that facilitate the efficient entry and exit of vehicles to properties on both sides of a street and minimize conflicts with transit facilities, left turn pockets as well as traffic on the streets or neighboring properties.
8. The Driveway Ordinance prohibits access from commercial property to alleys that abut residential property. Access to alleys must be applied for and shall be considered by the Development Services Director or designee.
9. Median island opening will be allowed at 660-foot intervals as required in the City of Phoenix Street Classification System General Policy Document and Technical Supplement. Openings other than at the 660-foot locations may be permitted if approved by the Street Transportation Department.

Traffic Calming

Traffic calming uses physical design or other measures to slow or reduce traffic in order to enhance safety for pedestrians and motorists, including narrowed roads, speed humps etc. Traffic calming is the most effective way to reduce speeding on residential streets, avoid traffic accidents and prevent fatalities.

There are a number of traffic management techniques used by City of Phoenix to help alleviate cut-through traffic problems in neighborhoods. Several traffic management techniques used by the City are listed below:

1. Right-turn diverters,
2. Traffic circles,
3. Diagonal diverters,
4. Semi-diverters,
5. Turn restrictions,
6. Chicanes, and
7. Speed humps.

Traffic management technique examples and the standards details for traffic calming devices are included in *Section 7.4* of the *City of Phoenix Street Planning and Design Guidelines*.

Bicycle Infrastructure

Bicycle Lanes

Striped bike lanes exist on various roadways within the study area. Existing striped bike lanes in both directions along the roadways within the study area are shown in **Figure 25** and are listed below:

1. 39th Avenue, between Encanto Boulevard and Roosevelt Street,
2. Encanto Boulevard, between 43rd Avenue and 31st Avenue, and
3. Roosevelt Street, between 39th Avenue and 31st Avenue.

Bicycle Routes

A signed bicycle route is typically designated along more lightly traveled residential or secondary roads and is indicated by signs with or without a specific route number and/or dedicated striping This type of facility should have appropriate directional and informational markers. Signed bicycle routes are designated by the jurisdiction having authority over the roadways included in the bicycle route system. Bicycle routes are often utilized to direct bicyclists to less-congested roadways that may follow the same general corridor as more heavily traveled arterial roadways.

There are no existing bicycle routes within MA 4 study area.

Bicycle Route Wayfinding

A bicycle wayfinding system consists of comprehensive signing and/or pavement marking to guide bicyclists to their destinations along preferred bicycle routes. Signs are typically

placed at decision points along bicycle routes; typically, at the intersection of two or more bikeways and at other key locations leading to and along bicycle routes.

Bicycle wayfinding signs do not exist within MA 4 study area.

Bicycle Volumes

The average weekday bike volumes collected within MA 4 are depicted in **Figure 26**, which highlights only one corridor where bicycle counts have been conducted. Bicycle counts were conducted on 35th Avenue south of McDowell Road. There were an average of 200 to 250 bicyclists on 35th Avenue south of McDowell Road on a weekday.

There is a need for more thorough count data within MA 4, particularly within corridors with existing bike lanes.

Sharrows

Shared Lane Markings (SLM's), or "Sharrows" are road markings used to indicate a shared lane environment for bicycles and automobiles. Among other benefits, shared lane markings reinforce the legitimacy of bicycle traffic on the street, recommend proper bicyclist positioning, and may be configured to offer directional and wayfinding guidance. The shared lane marking is not a facility type, it is a pavement marking with a variety of uses to support a complete bikeway network.

Sharrows do not exist within MA 4 study area.

Bikeway Gaps

Bikeway gaps within MA 4 study area exists on 43rd Avenue, 35th Avenue, McDowell Road and on Roosevelt Street between 43rd Avenue and 39th Avenue within MA 4, and are shown in **Figure 25.**

Bike Share locations

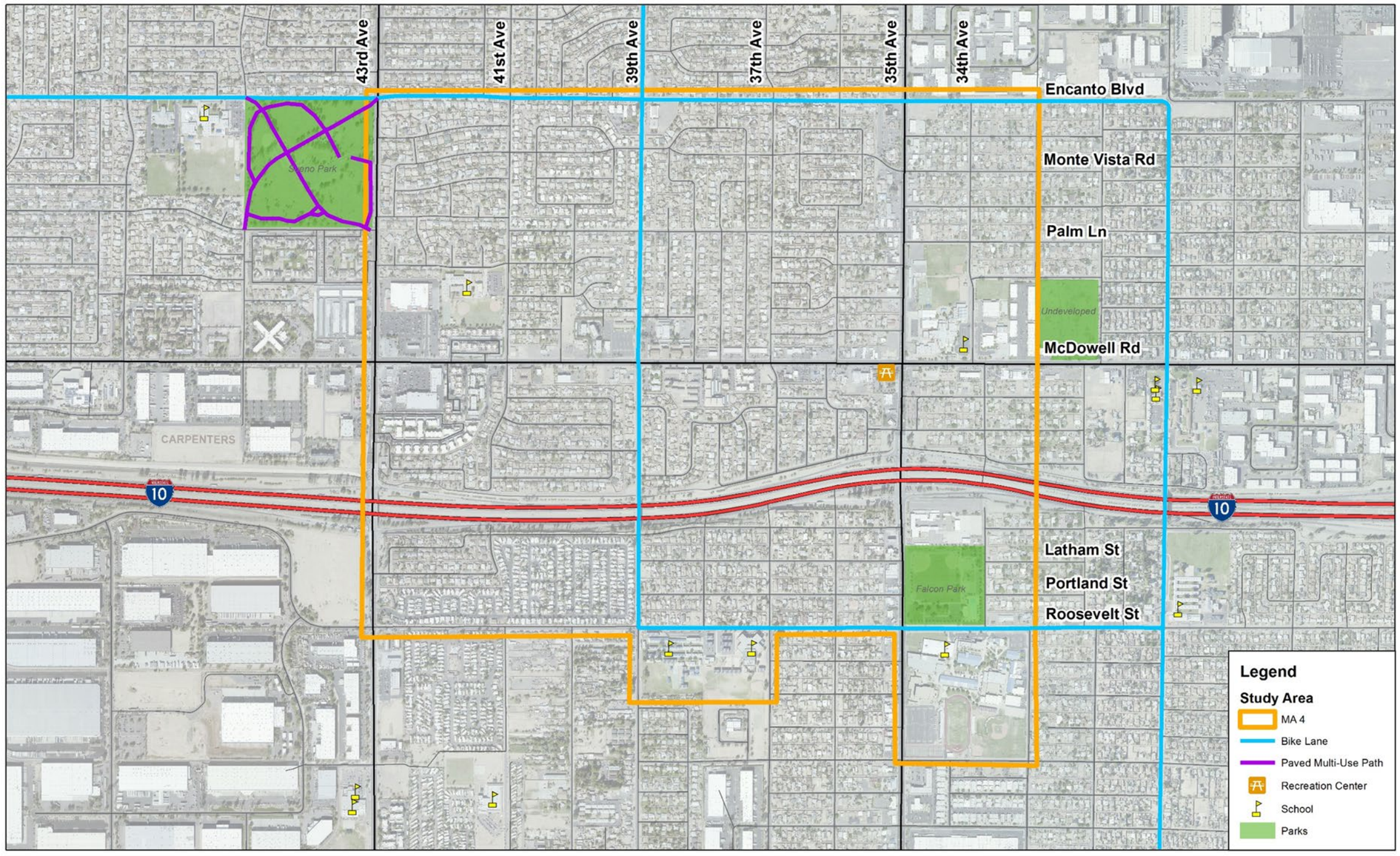
A bicycle sharing system is a service in which bicycles are made available for shared use to individuals on a very short-term basis for a price. Bike share schemes allow people to borrow a bike from one location and return it at another location.

There are no bike share locations within MA 4 study area.

Connection to Trails

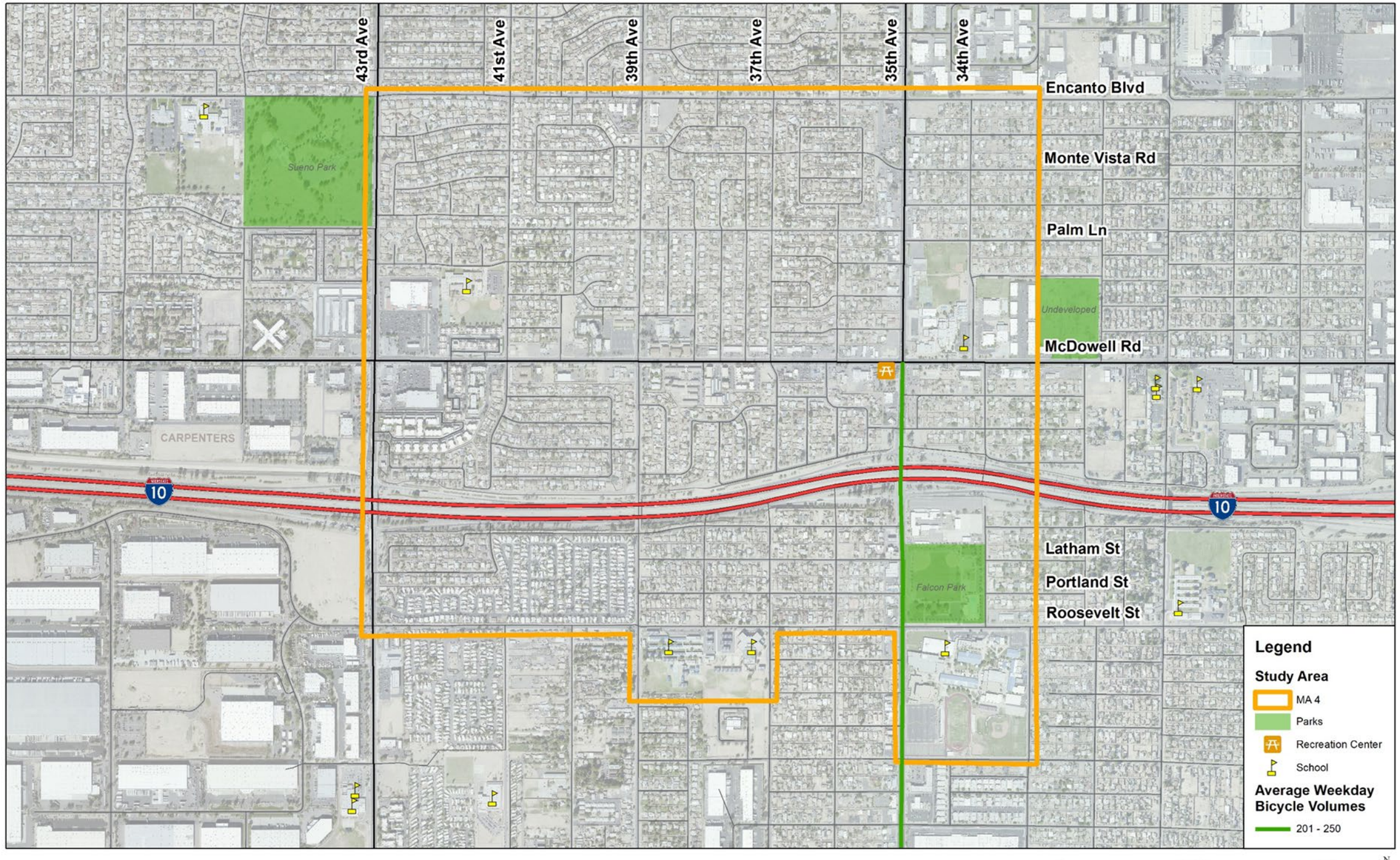
Paved multi-use paths exist just west of the MA 4 study are within Sueno Park.

Figure 25: Existing Bicycle Infrastructure



Source: City of Phoenix Street Transportation Bike Map

Figure 26: Existing Bicycle Volumes



Source: City of Phoenix Comprehensive Bicycle Master Plan

Pedestrian Infrastructure

Pedestrian infrastructure existing within MA 4 is discussed in the following sections.

Sidewalks

Sidewalks exist on the majority of roadways within the study area. **Figure 27** shows the existing sidewalk locations and sidewalk widths within the study area. Based on the observations from the field reviews, the existing sidewalks within the study area are in good condition with no major damages.

The sidewalk gaps identified within MA 4 are illustrated in red on **Figure X**. Many neighborhood streets north of McDowell Road between 41st Avenue and 35th Avenue do not have any sidewalks for pedestrians to utilize. This forces people to navigate the street posing a threat to potential collisions with vehicular traffic. The sidewalk gaps east of 35th Avenue and north of Palm Lane, and south of I-10 and north of Roosevelt Street are more notably concerning due to their proximity to the schools. These gaps need to be addressed immediately.

ADA Compliance

The minimum continuous and unobstructed clear width of a pedestrian access route shall be 1.2 m (4.0 feet), exclusive of the width of the curb. Where a pedestrian access route turns or changes direction, it should accommodate the continuous passage of a wheelchair or a scooter.

As shown in **Figure 27**, all the existing sidewalks within MA 4 study area are 4 feet or greater, therefore, the existing sidewalks are ADA compliant.

Curb Ramps

According to the Americans with Disabilities Act (ADA), detectable warnings at curb ramps shall consist of a surface of truncated domes aligned in a square or radial grid pattern. **Figure 27** depicts the location of curb ramps with truncated domes or non-truncated domes within MA 4 study area. During the field visits, it was observed that 35th Avenue was the only corridor that primarily had truncated domes at the crossing locations. Otherwise, non-truncated domes have been primarily installed on other corridors. In some locations, textured concrete was also used on curb ramps.

Marked Intersection Crossings

Crosswalks exist at all signalized intersections and in the vicinity of schools within the study area. Crosswalks exists at the following unsignalized intersections within the study area:

1. Palm Lane and 34th Avenue,
2. Palm Lane and 35th Avenue,
3. Palm Lane and 39th Avenue,
4. Granada Road and 41st Avenue,

5. McDowell Road and 34th Avenue,
6. McDowell Road and 37th Avenue,
7. McDowell Road and 41st Avenue,
8. Roosevelt Street and 37th Avenue,
9. Roosevelt Street and 38th Avenue,
10. Roosevelt Street and 39th Avenue,
11. Roosevelt Street and 41st Avenue,
12. McKinley Street and 39th Avenue, and
13. Fillmore Street and 33rd Avenue.

Mid-block Crossings and High Intensity Activated Crosswalk Beacon (HAWK)

A HAWK is a traffic control device used to stop road traffic and allow pedestrians to cross safely. There are no existing HAWKs within MA 4 study area. Mid-block crossings exist on Roosevelt Street east and west of 34th Avenue and east of 13th Street.

Rectangle Rapid Flash Beacon (RRFB)

RRFBs are user-actuated amber LEDs that supplement warning signs at unsignalized intersections or mid-block crosswalks. They can be activated by pedestrians manually by a push button or passively by a pedestrian detection system. There are currently no RRFB's within MA 4.

Grade-Separated Crossings

There is an existing pedestrian bridge or grade-separated crossing on McDowell Road between 34th Avenue and 35th Avenue within MA 4.

Connections to trails

Paved multi-use paths exist just west of the MA 4 study are within Sueno Park.

Figure 27: Existing Sidewalks and Curb Ramps

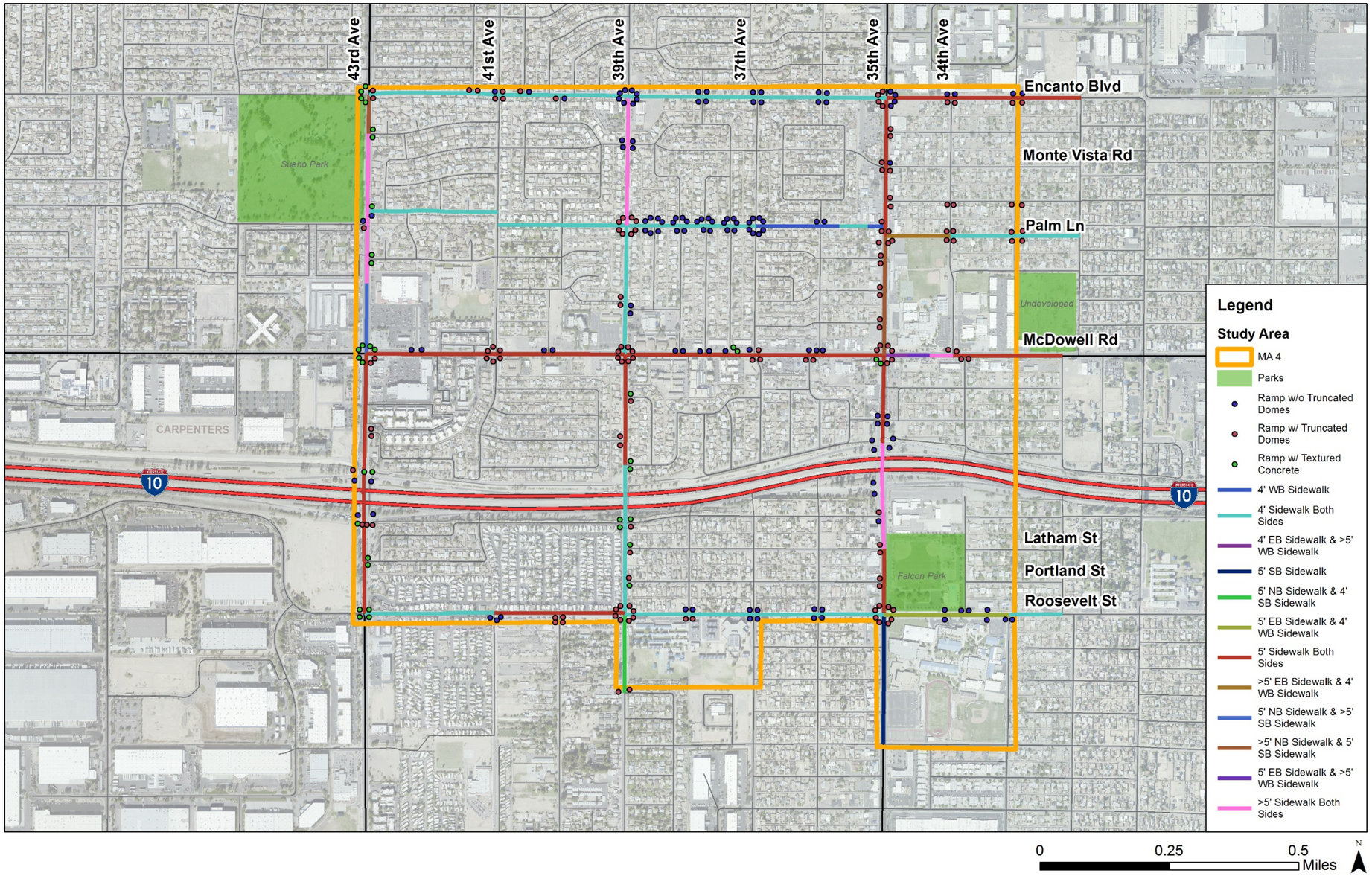


Figure X: Identified Sidewalk Gaps

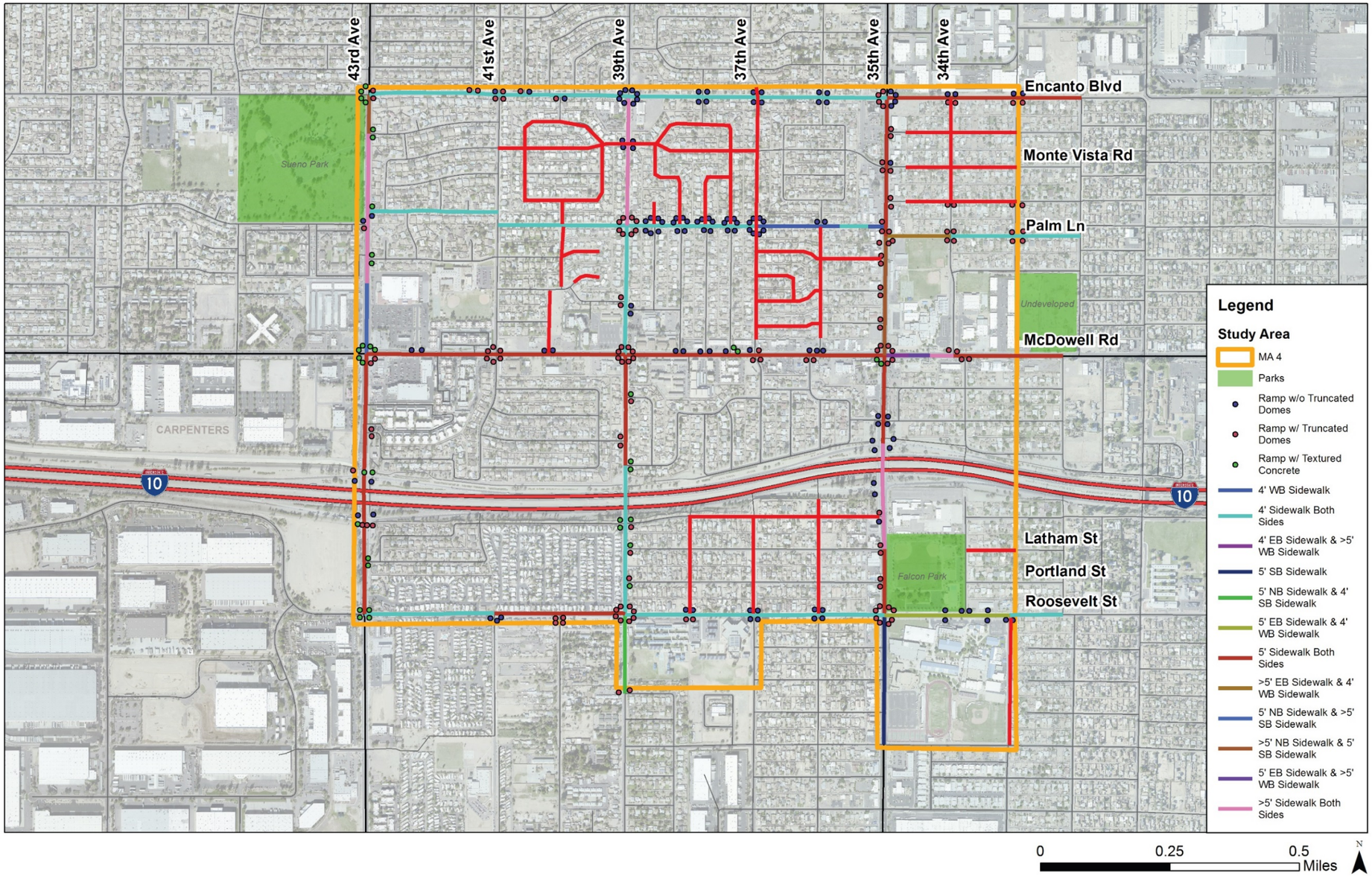
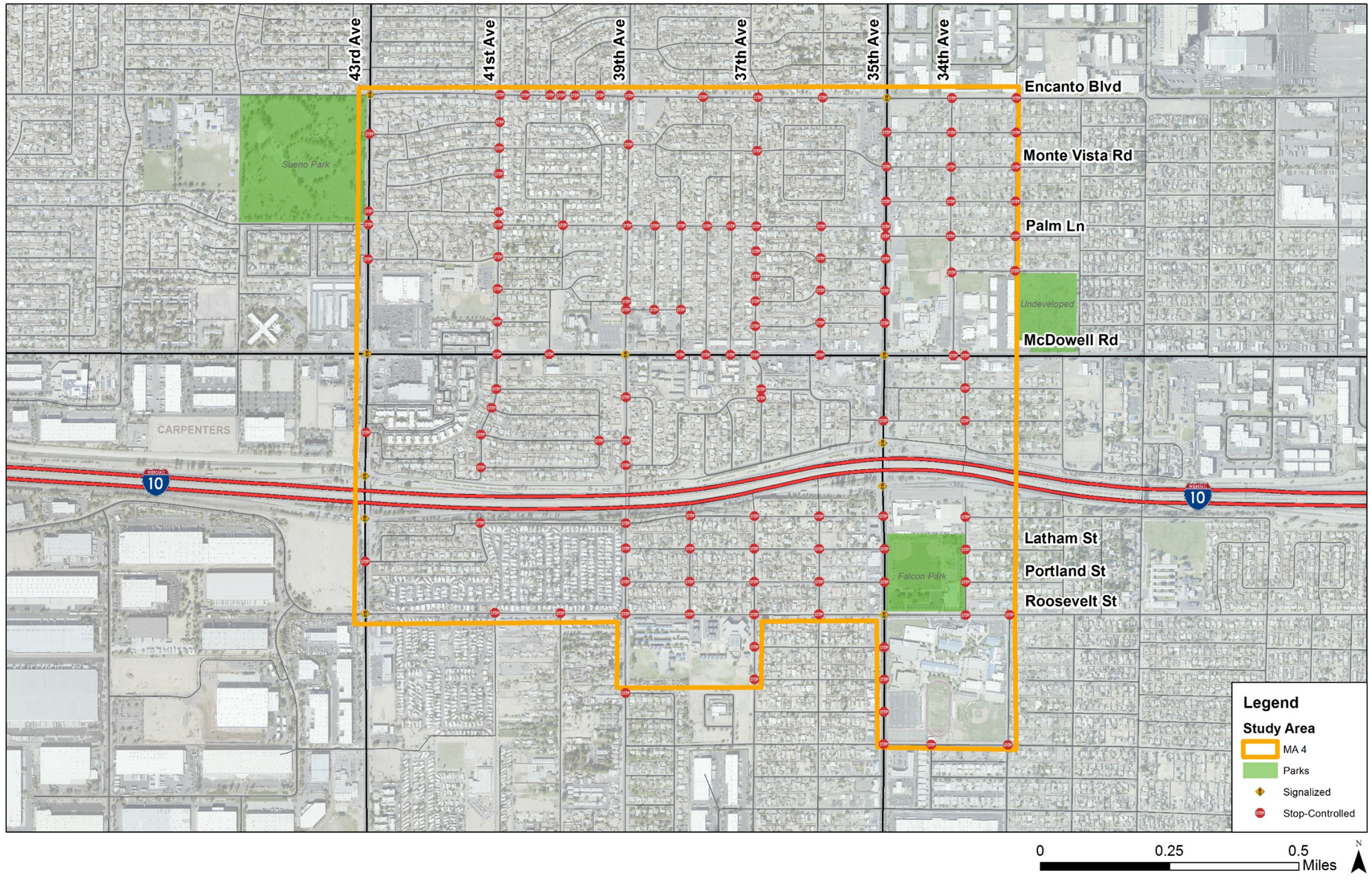


Figure 28: Crossing Types and Locations



Transit Infrastructure

The Valley Metro Regional Public Transportation Authority, more popularly known as Valley Metro, is the unified public brand of the regional transit system in and around the Phoenix, Arizona, metropolitan area. Within the system, it is divided between Valley Metro Bus, which runs all bus operations, and Valley Metro Rail, which is responsible for light rail operations in the valley.

Only the Valley Metro bus system runs within MA 4 study area.

Existing Bus Routes

Valley Metro bus system runs along the following roadways within MA 4 study area:

East-West Direction:

1. McDowell Road through the study area.

North-South Direction:

1. 35th Avenue through the study area, and
2. 43rd Avenue through the study area.

Figure 29 shows the bus routes and the bus stop locations within MA 4 study area.

Light rail routes

The Valley Metro light rail system does not exist within MA 4 study area.

ADA Compliance for Transit

ADA non-compliant bus stops exist at the following locations within MA 4:

1. 35th Avenue north of Moreland Street – southbound direction,
2. 35th Avenue north of Palm Lane – northbound direction, and
3. 35th Avenue south of Encanto Boulevard – southbound direction.

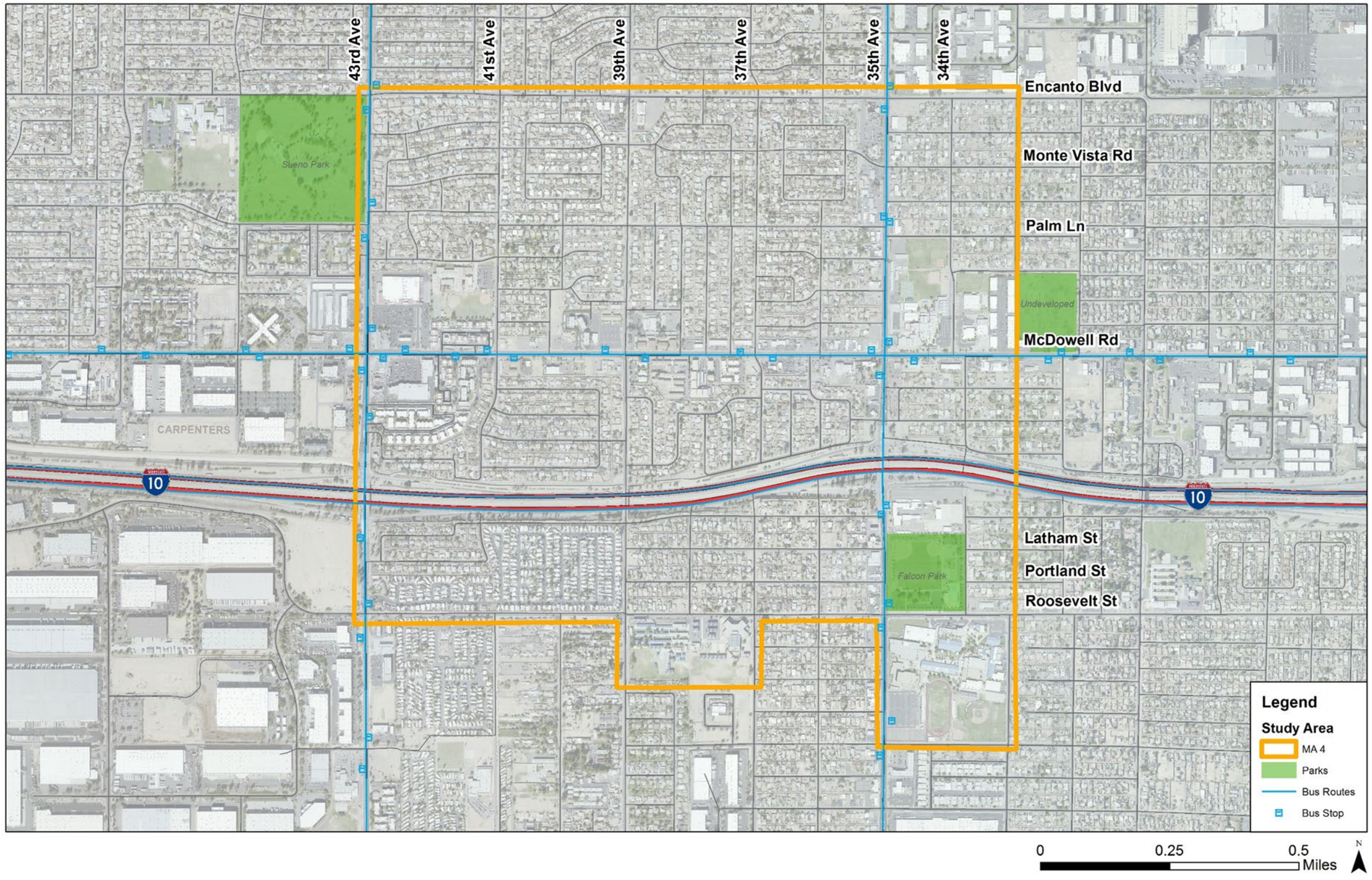
Park-and-Ride Locations

The closest park-and-ride location to the MA 4 is at McDowell Road and 79th Avenue. The park-and-ride can be accessed by Valley Metro bus only.

Transit Gaps

Based on the field observations and as shown in **Figure 29**, no gaps were present along the bus routes through MA 4.

Figure 29: Existing Transit Facilities



Utilities and Lighting Infrastructure

Utilities

There are many existing utilities along the street network within MA 4. These include visible utilities such as overhead telephone and APS power lines, fire hydrants, traffic signal equipment, storm drains, SRP irrigation structures, private irrigation equipment, backflow preventers, and private utility cabinets. Additionally, there are many underground utilities such as Century Link cable TV and fiber, City of Phoenix water and sewer, COX cable TV and fiber, telecommunications, APS electric, communication and fiber, Southwest Gas and XO Communications fiber.

The City worked with various private utility companies to provide pertinent engineering documents and maps to the project team. Due to security and sensitivity of the information, the data was not shared in a form to readily create figures to depict the location of utilities on an exhibit map at this time. However, the provided data and maps of existing utilities will be extensively evaluated when determining recommendations and solution sets to evaluate potential utility conflicts and/or if any improvements to the utilities can be made in tandem with the multimodal mobility and connectivity recommendations produced from this study.

Lighting

As part of an effort to become more sustainable, Phoenix has launched a Citywide initiative to convert all street lights to LED by the end of 2018. The city is divided into 22 zones which all have a dedicated schedule of completion. MA 4 within Zone 3, Zone 4, and Zone 21 which Zone 3 and 4 are scheduled to be completed by February 2018, and Zone 21 is scheduled to be completed by January 2019. During the field visits conducted by the project team, signalized intersections were the only locations with LED converted street lights.

CHAPTER 4: EXISTING CORRIDOR SAFETY CONSIDERATIONS

A crash analysis was conducted for the MA 4 study area to identify trends, patterns, predominant crash types, and high crash intersections. The purpose of the crash analysis is to discover safety hazard locations that need to be addressed to improve area safety. Crash data for the five-year period from January 1, 2012 to December 31, 2016 was obtained from the City of Phoenix.

Generally speaking, the McDowell Road corridor especially at the 35th Avenue and 43th Avenue Intersections' experienced the highest incidents of crashes. Otherwise, the arterial streets typically have the greatest frequency of crashes. A noteworthy observation is the fatal crash at 36th Avenue and Cypress Street intersection and serious injury crashes on local streets (on Monte Vista between 37th Drive and 38th Lane, at the

intersections of 38th Lane and Coronado Drive and at 38th Lane and Culver Street) warranting further consideration.

Vehicular Crash Data Analysis

During the five-year analysis period, 1,775 crashes occurred within MA 4 study area. The following sections discuss the crashes within the study area during the five-year analysis period.

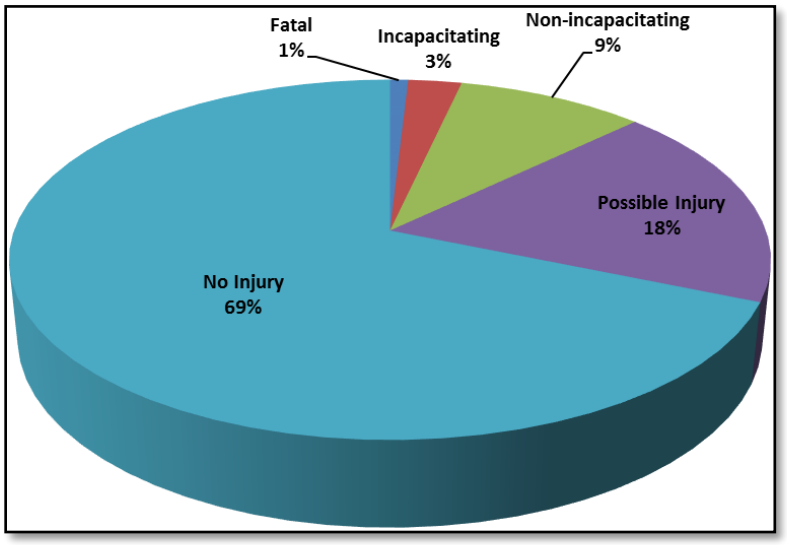
Injury Severity

There were 16 fatalities reported in the analysis period within the study area in the year 2016 at the following locations:

1. 35th Avenue and Monte Vista Road – vehicle related,
2. 35th Avenue and Roosevelt Street – vehicle related,
3. 36th Avenue and Cypress Street – vehicle related,
4. 43rd Avenue and Granada Road – 2 pedestrian related crashes,
5. 43rd Avenue and Hubbell Street – 2 vehicle related crashes,
6. McDowell Road and 32nd Avenue – bicyclist related,
7. McDowell Road and 35th Avenue – 2 vehicle related crashes,
8. McDowell Road and 38th Drive – vehicle related
9. McDowell Road and 39th Avenue – 2 pedestrian related crashes and 2 vehicle related crashes, and
10. I-10 and 43rd Avenue – vehicle related.

Figure 30 illustrates the percentage of crashes that occurred within the study area during the five-year analysis period based in the severity of crashes.

Figure 30: Percentage of Crashes by Injury Severity



A comparison of total crashes that occurred in the five-year period within the MA 4 study and the Statewide average is shown in **Table 2**. As shown in **Table 2,** 539 of 1,775 crashes (30.4%) within the study corridor resulted in an injury crash, which is less than the statewide average injury crash percentage for the year 2012 to 2016 (31%).

Table 2: Crash Severity Comparison

Crash Severity	Number	MA 4 %	Statewide Average %*
Fatal	16	0.9%	1%
Injury	539	30.4%	31%
Property Damage Only	1,220	68.7%	68%

Source: Arizona Department of Transportation (ADOT)

Figure 31 and **Figure 32** illustrate the locations of all crashes based on severity within the study area for all crashes and bicycle/pedestrian related crashes respectively. Consistent with the overall crash data presented above, the McDowell Road corridor (especially at the 43rd Avenue intersection) is the location for the most frequent number of bicycle and pedestrian related collisions.

Figure 31: Location of all Crashes based on Severity

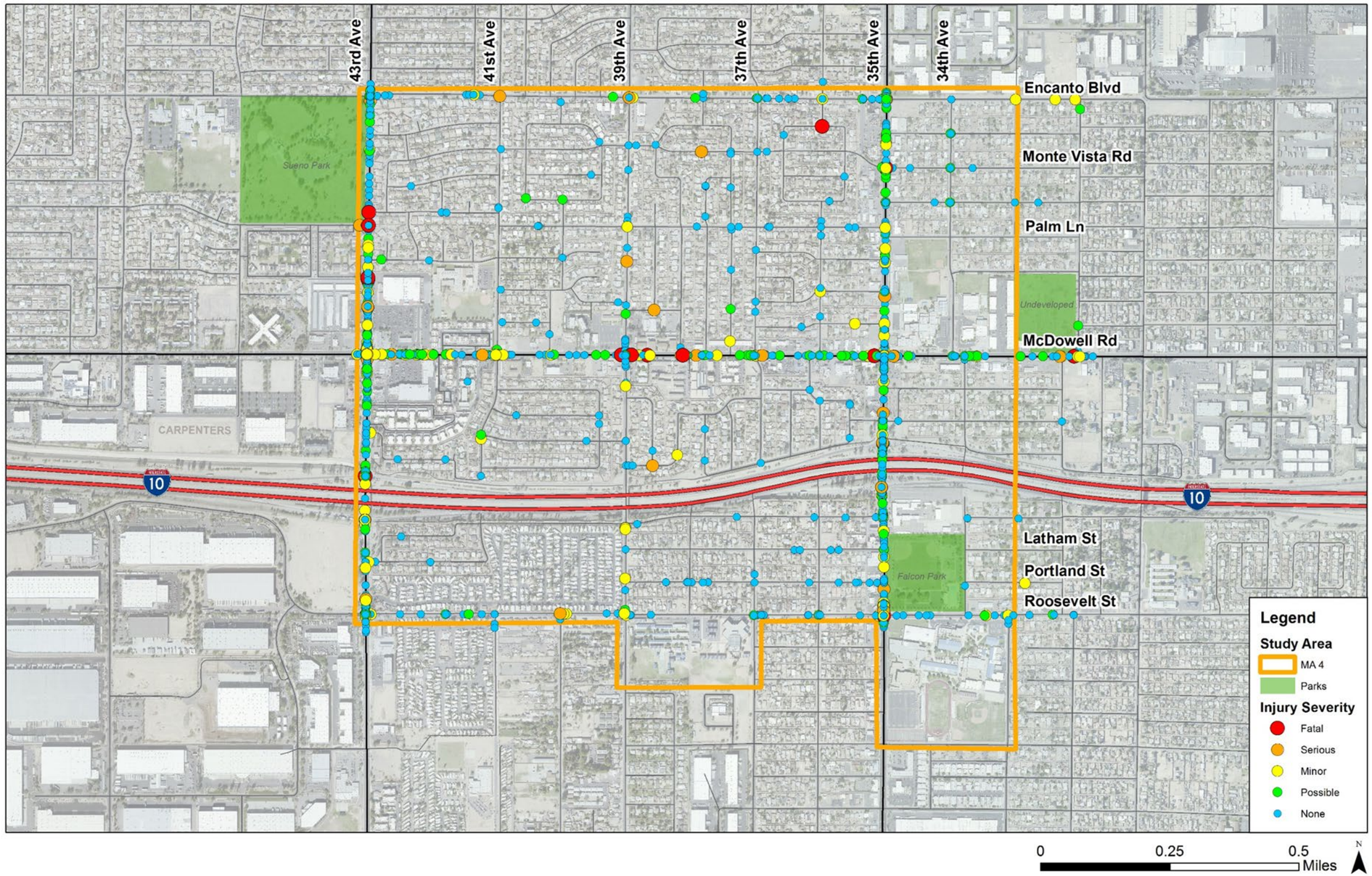
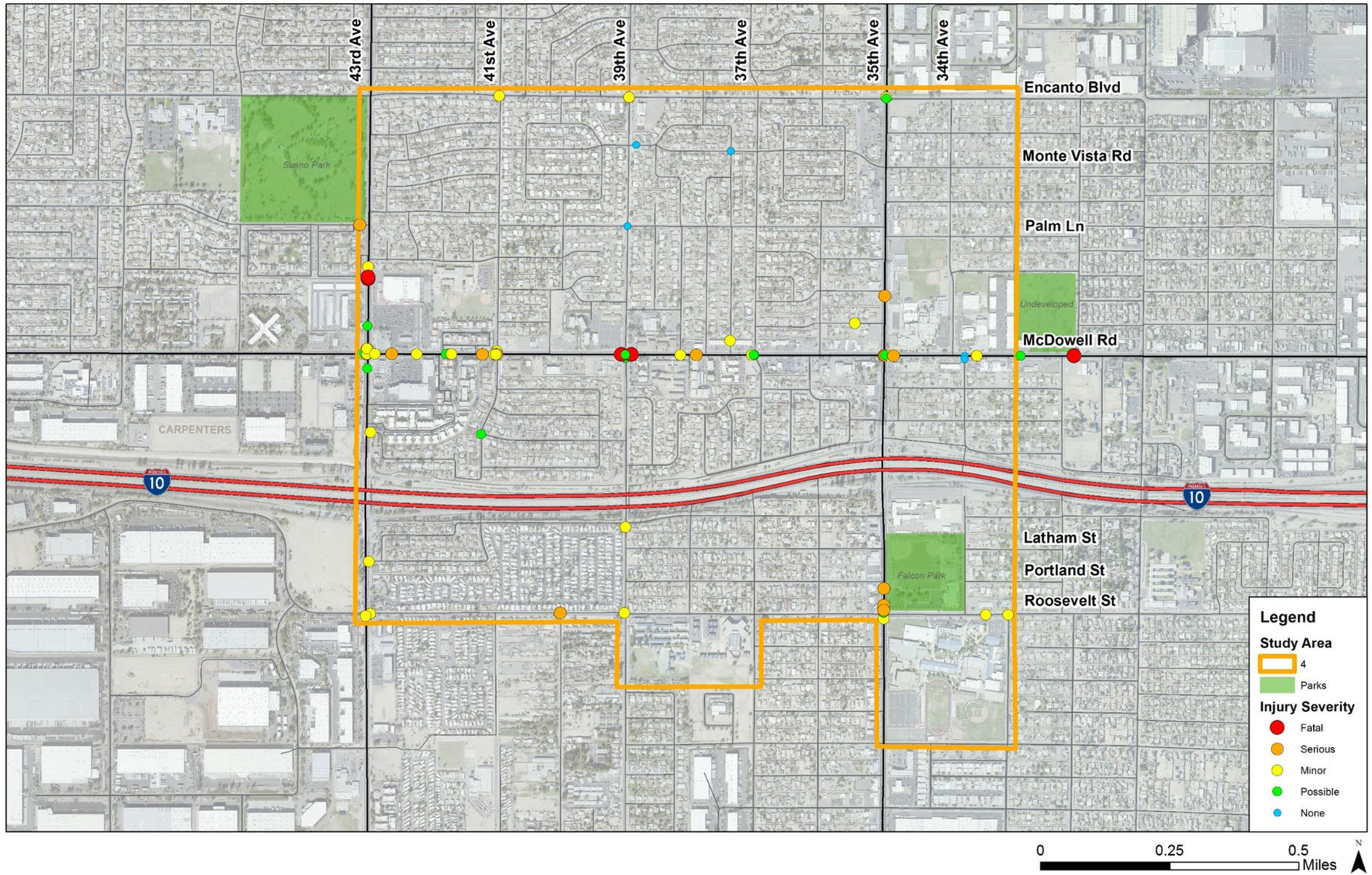


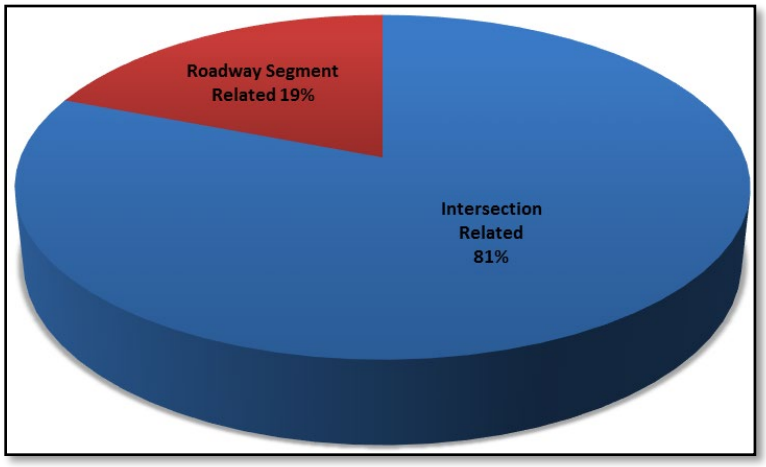
Figure 32: Location of Pedestrian and Bicycle Crashes based on Severity



Intersection Relation

As shown in **Figure 33,** 80.9% of the crashes within MA 4 study area during the five-year analysis period occurred at an intersection. For the purposes of this analysis, intersection related crashes were assumed to be the crashes that occurred within 150 feet of an intersection.

Figure 33: Crash Percentages based on Intersection Relation



Collision Manner

Figure 34 illustrates the percentage of crashes that occurred within the study during the five-year study period by collision manner. As shown in the Figure, 26% of the total crashes during the analysis year were rear end collisions, 23.4% were angled other than left-turns collisions, 19% were left-turn related crashes, 13.7% were sideswipe collisions, 10.6% were single vehicle collisions, 2.6% (46) were pedestrian related crashes and 1.6% (29) were bike related crashes. All other collision types documented were each less than 1% of the total crashes.

Figure 34: Percentage of Crashes by Collision Manner

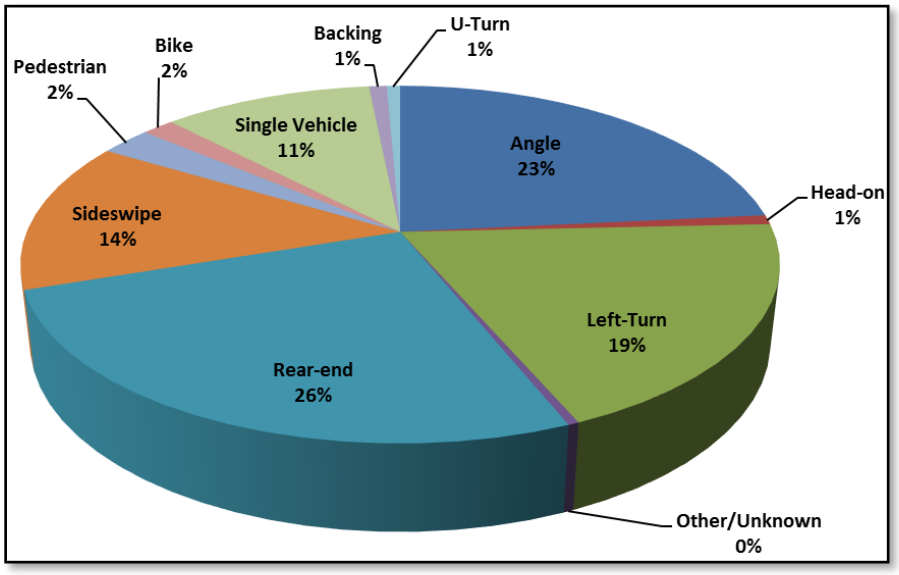
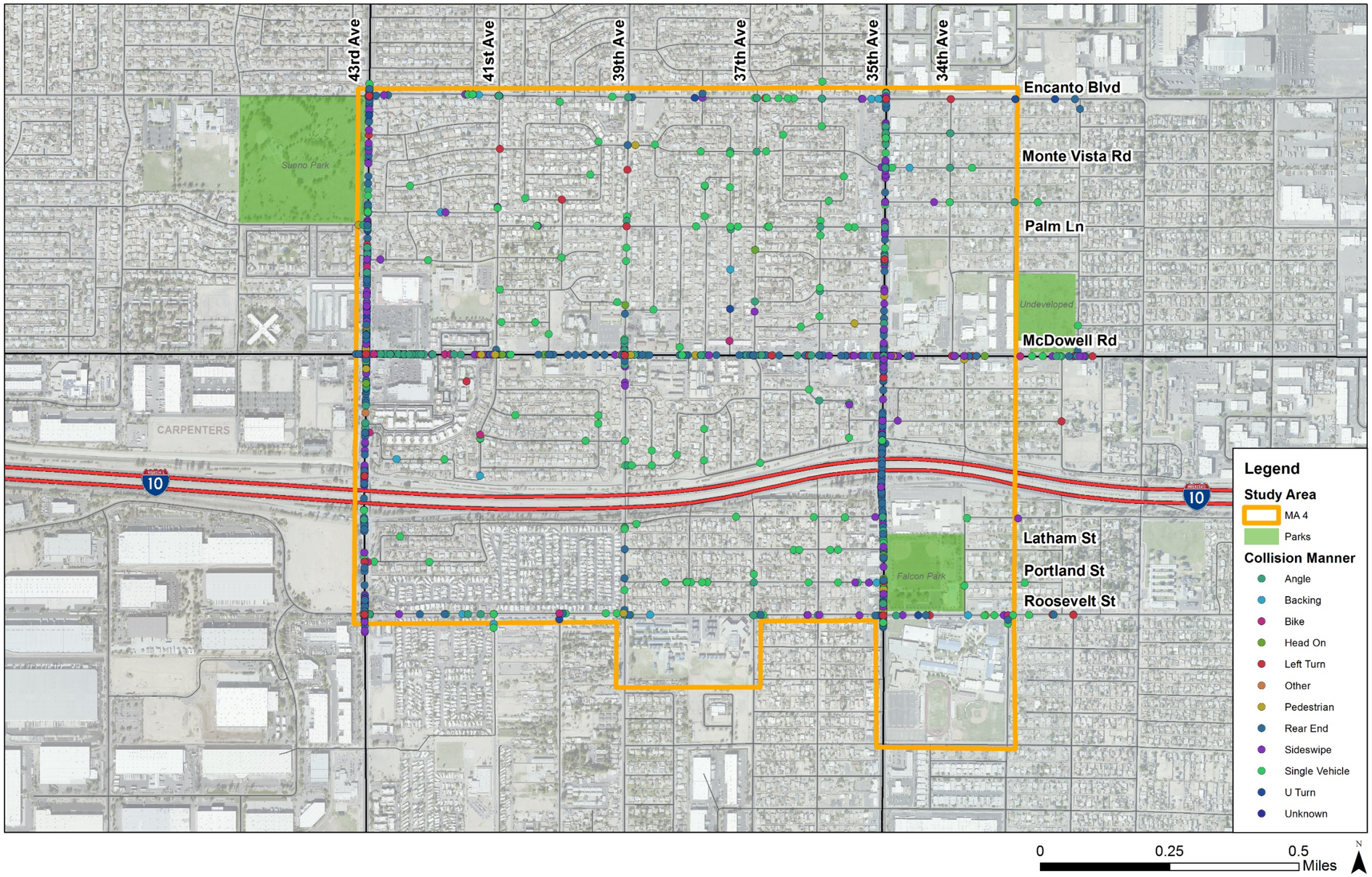


Figure 35 illustrates the locations of all crashes based on the collision manner within the study area.

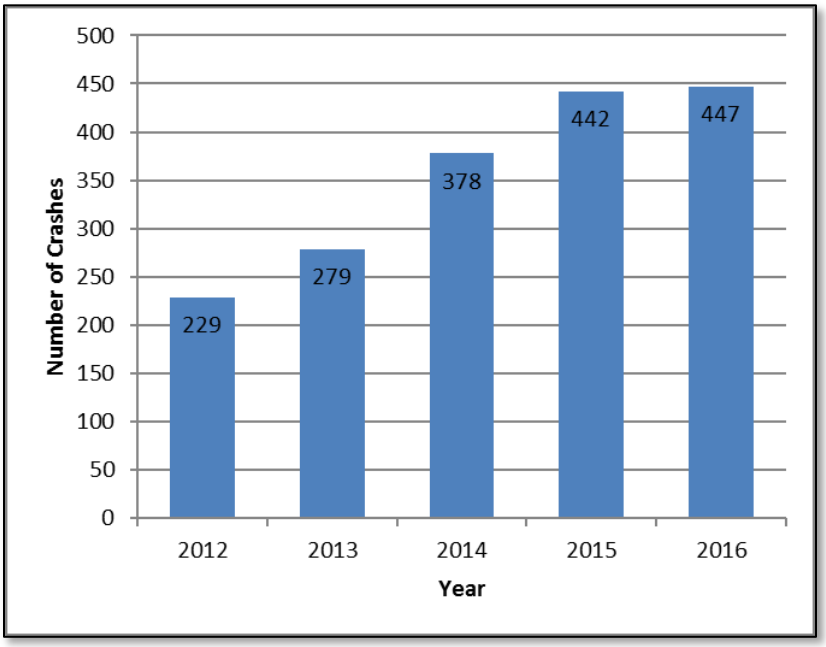
Figure 35: Location of Crashes based on Collision Manner



Crashes by Year

Figure 36 illustrates the total number of crashes that occurred within the MA 4 study area during the five-year study period in each year. As shown in the Figure, the corridor experienced the highest number of crashes in the year 2016 (with total 447 crashes). The number of crashes per year has nearly doubled since 2012.

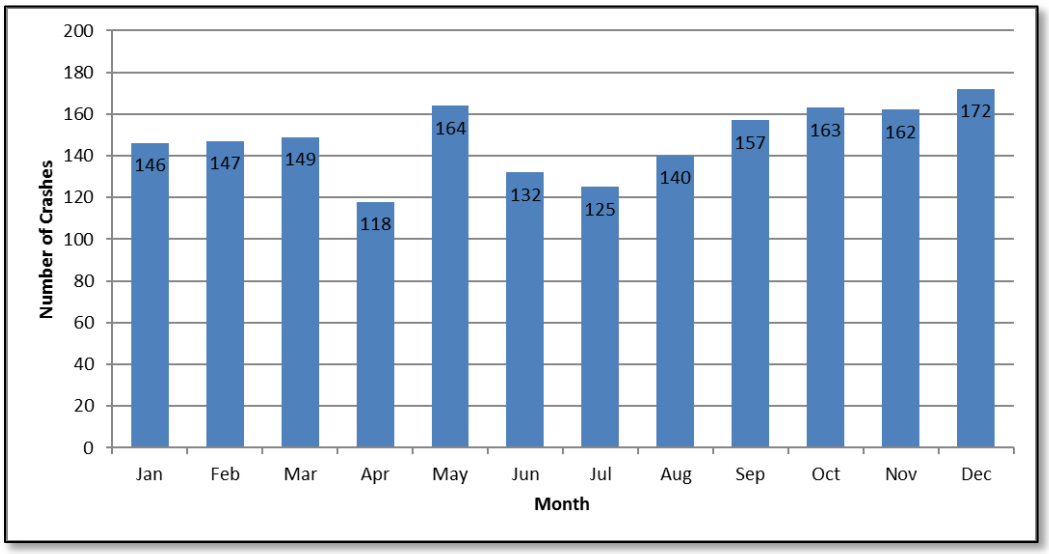
Figure 36: Number of Crashes per Year



Crashes by the Time of the Year

Figure 37 illustrates the total number of crashes that occurred in each month within the study during the five-year analysis period. As shown in the Figure, crashes occur in similar amounts during most of the year. Months with the fewest number of crashes include April, June, and July.

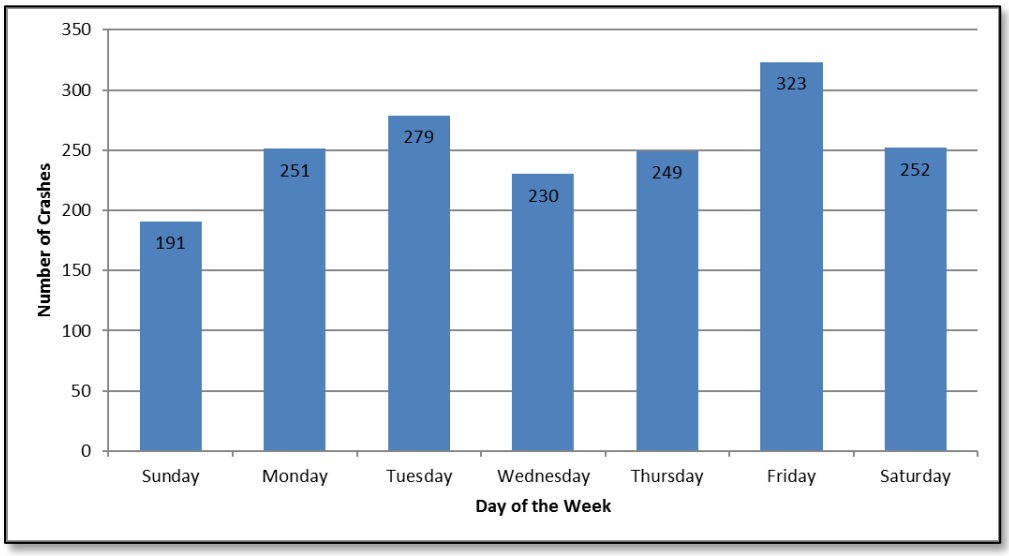
Figure 37: Total Crashes by Month



Crashes by the Day of the Week

Figure 38 illustrates the number of crashes by day of week within the study area during the five-year analysis period. Weekdays tend to experience more crashes than the weekends, with Friday experiencing the most crashes.

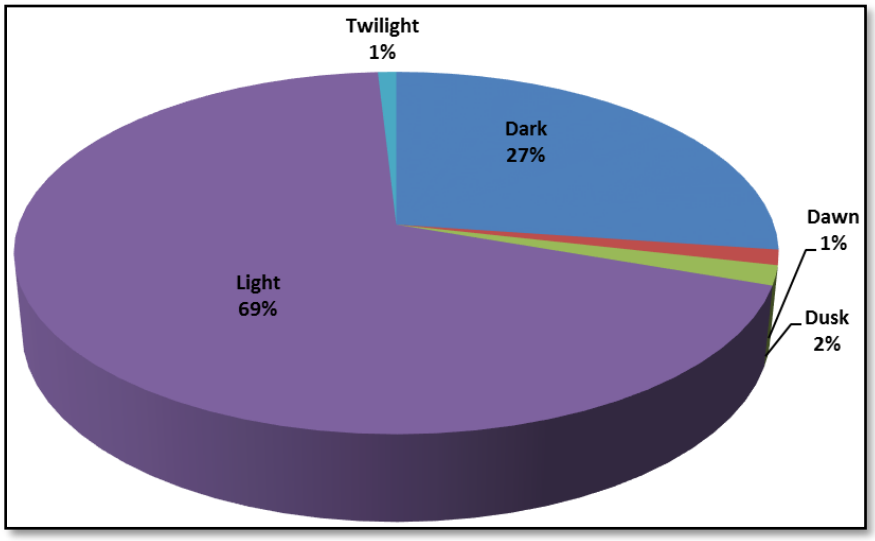
Figure 38: Total Crashes by Day of the Week



Lighting Conditions

Figure 39 illustrates the percentage of total crashes that occurred within the study area during the five-year analysis period based on the lighting conditions of the study area. As shown in the Figure, 69% of the total crashes occurred during daylight and 27% of the crashes occurred during dark conditions.

Figure 39: Crash Percentages by Lighting Conditions

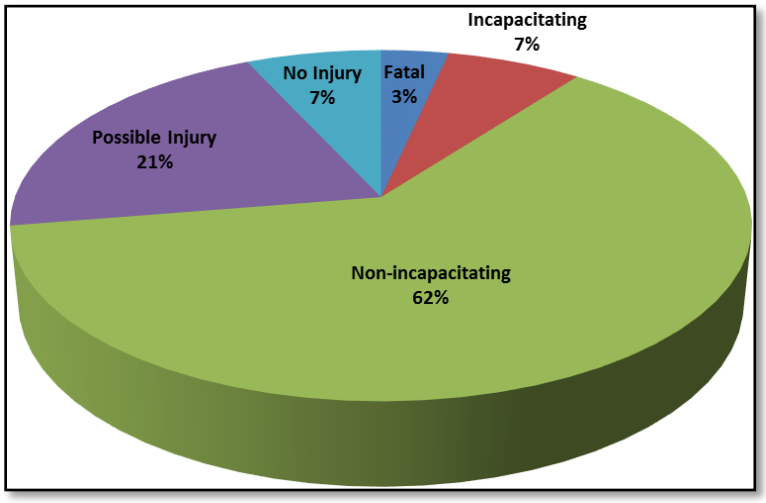


Bicycle Crash Data Analysis

As mentioned in the ***Collision Manner*** section of this report, 29 of the 1,775 crashes (1.6%) within the study area were bicycle related crashes. **Figure 40** illustrates the total number of bicycle related crashes that occurred within the study area during the five-year analysis period based on injury type.

One of the 29 bicycle related crashes resulted in a fatality in the year 2013 at the intersection of McDowell Road and 32nd Avenue. The bicycle related fatality occurred as the bicyclist that was involved in the collision failed to yield to a vehicle and occurred at dusk. Of the remaining bicycle related crashes, two were no injury crashes and 26 were injury crashes.

Figure 40: Bicycle Crash Summary

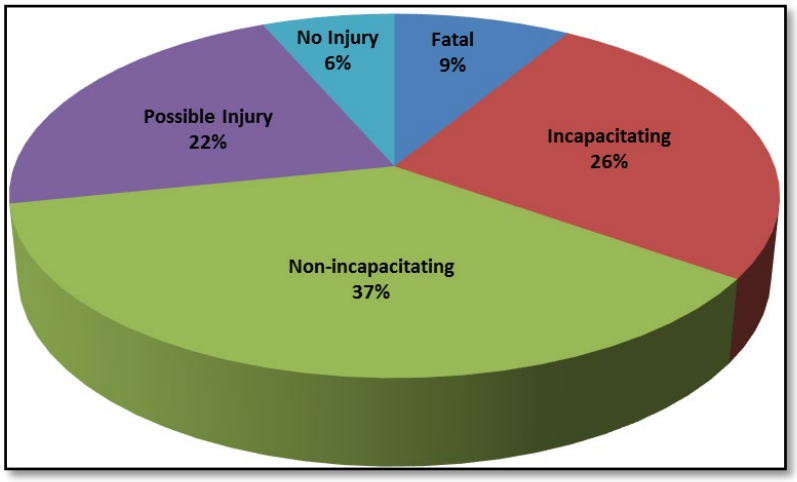


Pedestrian Crash Data Analysis

As mentioned in the ***Collision Manner*** section of this report, 46 of the 1,775 (2.6%) crashes within the study area were pedestrian related crashes. **Figure 41** illustrates the total number of pedestrian related crashes that occurred within the study area during the five-year analysis period.

Four of the 46 pedestrian related crashes resulted in fatalities in the year 2016, two at the intersection of 43rd Avenue and Granada Road and the other two at the intersection of 39th Avenue and McDowell Road. Three of the fatalities occurred because the pedestrian did not use the crosswalk, the other because of a vehicle failing to yield to the pedestrian. All four of the fatalities occurred during dark conditions and alcohol was a factor in one of the reported fatalities. Of the remaining pedestrian related crashes, three were no injury crashes and 39 were injury crashes.

Figure 41: Pedestrian Crash Summary



CHAPTER 6: STAKEHOLDER INTERVIEW SUMMARY

The project team developed a standard stakeholder interview questionnaire designed to focus on daily mobility patterns and safety concerns and considerations. A group of stakeholders were selected to interview to explore the issues, concerns and objectives for mobility challenges, priorities, and desired improvements within MA 4. The interviews were either conducted over the phone or in person and the input is summarized below:

Susan Engdall – Principal at Augustus A. Shaw Elementary School

- Augustus A, Shaw is an elementary school serving students ranging from Pre-kindergarten through 8th grade with approximately 470 students currently enrolled.
- Nearly 85% of the students are picked up and dropped off by their parents and the remaining 15% of the students take the school bus through the school district. Augusts A. Shaw is a _____ type of school so that is why the school does not have ant students commuting to and from school on bikes or by walking.
- The school has a total of four different bus routes and does not have any cross guards.
- Since the majority of students are dropped off and picked, the school experiences congestion issues between 8:00-8:45 am and 3:00-345 pm at their two drop off and pick locations which are their parking lot at 14th Street and Monroe Street, and off of 13th Street adjacent to Adams Street.
- Ms. Engall also noted that the school utilizes the light rail to take field trips and the students often take Adams Street to 12th Street to access the 12th Street Light Rail Station. She complained that the station can be difficult to access.
- Ms. Engall believes more destinations and higher density with additional sidewalks and bike lanes are the key ingredients for an easier, safe and more pleasant environment for walking, biking and using transit.
- Ms. Engdall would like to see are wider sidewalks, buffered bike lanes, more lighting as well as additional incentive programs for students take public transit.

Sylvia Carrizoza – Principal at Mitchell Elementary School

- Mitchell Elementary School is Kindergarten through 5th Grade serving students from the surrounding neighborhood, specifically the neighborhoods north of McDowell Road. The school has approximately 600 students currently enrolled.
- Roughly 60% of the student are picked up and dropped off by their parents and the remaining 40% either walk or bike to school. There are no busses provided by the school.
- The school has cross guards stationed at Granada Road and 41st Avenue and Palm Lane and 39th Avenue.
- The School only has one parking lot which is also the designated pick up and drop off zone so there is major congestions issues along Granada Road and 41st Avenue.

- They recommended some traffic calming and possibly stop sign along 41st Avenue.
- The intersection at 39th Avenue and Palm Lane is a dangerous location and they have had some near instances with students almost being hit there. Opportunity for a raised intersection.
- The destination that draw the highest number of visitors in the mobility area are the Fry's Mercado, Golden Gate Community Center and the Boys & Girls Club.

Nate Dettmar – Principal at Alta E. Butler Elementary School

- Alta E. Butler Elementary School is kindergarten through 5th grade and serves the surrounding neighborhoods with approximately 700 students currently enrolled.
- Nearly 50% of the students are picked up and dropped off by their parents and the other 50% of the student body walks or bikes to and from school, however, more students walk versus bike to school. There are no busses provided by the school.
- All students need to enter the school on the northside of the campus so there is a high amount of congestions off of Roosevelt Street.
- There are a lot of missing sidewalks in the neighborhoods adjacent to the school which is a major concern for the school, especially along 38th Avenue.
- The intersections of 39th Avenue and Roosevelt Street is over congested during pick up and drop off times and require two cross guards at that intersection because motorists don't obey the traffic laws.
- The school has heard about near accidents at 38th and Roosevelt Street and 39th and Roosevelt Street.
- The School would like the ability to have a larger designated school zone along Roosevelt Street, however they are unable to due to a City ordinance about no temporary sign within 600 feet of a stop sign.
- The school would like to see a partnership with the Police Department or the City to create an educational program about safely walking and biking to and from school.

Kristen Robertson – Principal at Esperanza Elementary School

- Esperanza Elementary School is kindergarten through 5th grade and has a neighboring preschool across the street. There are approximately 500 students currently enrolled and they are pretty much at full capacity.
- The school serves the neighboring communities to the north and south, which poise a significant issue for students because McDowell Road to the north and I-10 to the south are huge barriers for the students to cross.

- Nearly 50-60% of the students are dropped off or picked up by there parents and the remaining students walk or bike to school. However, only about 2-3% of those students bike to school and the rest walk.
- The School has two cross guards stationed at McDowell Road and 31st Avenue and one cross guard on 31st Avenue between the neighboring preschool and Esperanza Elementary School.
- The school experiences a lot of the parents illegally parking on 31st Avenue waiting for the students which causes a lot of congestion along 31st Avenue.
- The school unfortunately had to deal with a student and their parent getting hit by a car near the school at Culver Street and 30th lane trying to walk to school. There have also been complaints of near misses along 31st Avenue at McDowell Road and other local street intersections along 31st Avenue north of McDowell Road. There have also been complaints about near accident on the 31st Avenue bridge south of the school.
- There needs to be more traffic calming on local streets adjacent to schools, particularly Palm Lane and other streets near Isaac and Esperanza schools.
- The school would like to see more sidewalks along the local street in the neighborhoods north of the school adjacent to 31st Avenue as well as a complete bike lane on 31st Avenue.
- The biggest concern the school has is how dangerous it is for the students to cross major streets like McDowell Road.