City of Phoenix

Agenda
Transportation, Infrastructure, and Planning

Meeting Location:
City Council Chambers
200 W. Jefferson St.
Phoenix, Arizona 85003

Wednesday, October 20, 2021 **10:00 AM** **phoenix.gov**

OPTIONS TO ACCESS THIS MEETING

Request to speak at a meeting:

- Register online by visiting the City Council Meetings page on phoenix.gov **at least 1 hour prior to the start of this meeting**. Then, click on this link at the time of the meeting and join the Webex to speak:
https://phoenixcitycouncil.webex.com/phoenixcitycouncil/onstage/g.php?MTID=e62cb88a7c47f1ef51d0fc39dc933a1c0

- Register via telephone at 602-262-6001 **at least 1 hour prior to the start of this meeting**, noting the item number. Then, use the Call-in phone number and Meeting ID listed below at the time of the meeting to call-in and speak.

At the time of the meeting:

- Watch the meeting live streamed on phoenix.gov or Phoenix Channel 11 on Cox Cable, or using the Webex link provided above.

- Call-in to listen to the meeting. Dial 602-666-0783 and Enter Meeting ID 2559 799 1492# (for English) or 2551 827 3455# (for Spanish). Press # again when prompted for attendee ID.

Para nuestros residentes de habla hispana:

- Para registrarse para hablar en español, llame al 602-262-6001 **al menos 1 hora antes del inicio de esta reunión** e indique el número del tema. El día de la reunión, llame al 602-666-0783 e ingrese el número de identificación de la reunión 2551 827 3455#. El intérprete le indicará cuando sea su turno de hablar.

- Para solamente escuchar la reunión en español, llame a este mismo número el día de la reunión (602-666-0783; ingrese el número de identificación de la reunión 2551 827 3455#). Se proporciona interpretación simultánea para nuestros residentes durante todas las reuniones.

CALL TO ORDER

000 CALL TO THE PUBLIC

MINUTES OF MEETINGS

1 **Minutes of the Transportation, Infrastructure and Planning Subcommittee Meeting** Page 11

This item transmits the minutes of the Transportation, Infrastructure and Planning Subcommittee Meeting on Sept. 15, 2021, for review, correction or approval by the Transportation, Infrastructure and Planning Subcommittee.

THIS ITEM IS FOR POSSIBLE ACTION.

Responsible Department
This item is submitted by Deputy City Manager Mario Paniagua and the City Manager's Office.

CONSENT ACTION (ITEMS 2-5)

2 **Green Transit Technology Request for Proposals** Page 17

Request the Transportation, Infrastructure and Planning Subcommittee recommend City Council approval for the Public Transit Department to issue a Request for Proposals to procure vehicles and implement a pilot program to operate and evaluate, on a long-term basis, a sub-fleet of heavy-duty transit buses that use zero and/or near-zero emissions technology.

THIS ITEM IS FOR CONSENT ACTION.

Responsible Department
This item is submitted by Deputy City Manager Mario Paniagua and the Public Transit Department.

3 **40-Foot Heavy Duty Transit Bus Contract Award Recommendation** Page 19

Request that the Transportation, Infrastructure and Planning Subcommittee recommend City Council approval to enter into an agreement with Gillig, LLC to manufacture and deliver replacement 40-foot heavy-duty local transit buses.

THIS ITEM IS FOR CONSENT ACTION.

Responsible Department
This item is submitted by Deputy City Manager Mario Paniagua and the Public Transit Department.

4 **Capitol Extension and I-10 West Extension Equitable Housing and Land Use Planning Request for Proposals** Page 21

This report requests that the Transportation, Infrastructure, and Planning Subcommittee recommend City Council approval for issuance of a Request for Proposals to procure services to assist with the research, implementation, and execution of the Capitol Extension and I-10 West Extension Transit-Oriented Development Grant. This Grant will assist with equitable housing strategy development and proactive land use planning.

THIS ITEM IS FOR CONSENT ACTION.

Responsible Department
This item is submitted by Deputy City Manager Mario Paniagua and the Public Transit Department.

5 **Northwest Extension Phase II Active Transportation and Land Use Planning Request for Proposals** Page 25

This report requests that the Transportation, Infrastructure, and Planning Subcommittee recommend City Council approval for issuance of a

Request for Proposals to procure services to assist with the research, implementation, and execution of the Northwest Extension Phase II Transit-Oriented Development Grant. This Grant will assist with active transportation strategy development and proactive land use planning.

THIS ITEM IS FOR CONSENT ACTION.

Responsible Department
This item is submitted by Deputy City Manager Mario Paniagua and the Public Transit Department.

INFORMATION ONLY (ITEMS 6-9)

6 **Metro, Regional Public Transportation Authority, and Maricopa Association of Governments Meetings** Page 29

This report provides the Transportation, Infrastructure and Planning Subcommittee with copies of past and/or upcoming meeting agendas/summaries for METRO light rail, Valley Metro/Regional Public Transportation Authority (RPTA), and the Maricopa Association of Governments.

THIS ITEM IS FOR INFORMATION ONLY.

Responsible Department
This item is submitted by Deputy City Manager Mario Paniagua and the Public Transit Department.

7 **Citizens Transportation Commission Meetings** Page 31

This report provides the Transportation, Infrastructure and Planning Subcommittee with copies of past and/or upcoming meeting agendas/summaries for the Citizens Transportation Commission.

THIS ITEM IS FOR INFORMATION ONLY.

Responsible Department
This item is submitted by Deputy City Manager Mario Paniagua and the Public Transit Department.

8 **Freeway Program Update** Page 32

This report provides the Transportation, Infrastructure and Planning Subcommittee updates on the Arizona Department of Transportation (ADOT) freeway program within the City of Phoenix.

THIS ITEM IS FOR INFORMATION ONLY.

Responsible Department
This item is submitted by Deputy City Manager Mario Paniagua and the City Manager's Office.

9 **Bartlett Dam Modification** Page 38

This report provides the Transportation, Infrastructure and Planning Subcommittee with an overview of a U.S. Bureau of Reclamation and Salt River Project proposal to modify the Bartlett Dam on the Verde River and the potential impacts to the City's water resources.

THIS ITEM IS FOR INFORMATION ONLY.

Responsible Department
This item is submitted by Deputy City Manager Karen Peters and the Water Services Department.

DISCUSSION AND POSSIBLE ACTION (ITEM 10)

10 **Comprehensive Roadway Safety Update** Page 40

This report provides the Transportation, Infrastructure and Planning Subcommittee with an update on the Street Transportation Department's efforts related to comprehensive roadway safety, including current and potential future practices, procedures, and projects to address roadway safety concerns within the City of Phoenix. Additionally, based on the request made by Transportation, Infrastructure, and Planning Subcommittee Chair Stark at the Oct. 12, 2021 Council Policy session relative to bringing a "Vision Zero" safety focus to Phoenix, this item also allows Subcommittee discussion and possible action to provide a Council a recommendation incorporating "Vision Zero" into the goals of the City's Comprehensive Roadway Safety Action Plan.

THIS ITEM IS FOR DISCUSSION AND POSSIBLE ACTION.

Responsible Department
This item is submitted by Deputy City Manager Mario Paniagua and the Street Transportation Department.

INFORMATION AND DISCUSSION (ITEM 11)

11 **Comprehensive Micromobility Program** Page 136

This report provides information to the Transportation, Infrastructure and Planning Subcommittee on the Street Transportation Department's development of a Comprehensive Micromobility Program.

THIS ITEM IS FOR INFORMATION AND DISCUSSION.

Responsible Department
This item is submitted by Deputy City Manager Mario Paniagua and the Street Transportation Department.

DISCUSSION AND POSSIBLE ACTION (ITEMS 12-14)

12 **Capitol Extension Route Recommendation and Design and Preconstruction Services** Page 148

This report requests the Transportation, Infrastructure and Planning Subcommittee recommend City Council approval to amend the current locally preferred alternative (LPA) for the 19th Avenue option of the Capitol Extension (CAPEX), which was formerly known as the Capitol/I-10 West Extension Phase I, as shown in **Attachment A**.

Additionally, this report requests the Transportation, Infrastructure and

Planning Subcommittee recommend City Council approval to enter into an agreement with Valley Metro Rail to fund up to $45.3 million to complete pre-construction activities for the extension. See **Attachment B** for additional details and cost breakdown.

THIS ITEM IS FOR DISCUSSION AND POSSIBLE ACTION.

Responsible Department
This item is submitted by Deputy City Manager Mario Paniagua and the Public Transit Department.

13 **I-10 West Extension Route and Transit Type Recommendation** Page 156

This report requests the Transportation, Infrastructure and Planning Subcommittee recommend City Council approval of an amendment to the current Locally Preferred Alternative of the 10WEST Project (formerly known as the Capitol/I-10 West Light Rail Extension Phase II Project) by selection of the Desert Sky Transit Center as a future phase (Attachment A). This report also requests the Subcommittee recommend that City Council reaffirm the mode of transit on the 10WEST Project as light rail.

THIS ITEM IS FOR DISCUSSION AND POSSIBLE ACTION.

Responsible Department
This item is submitted by Deputy City Manager Mario Paniagua and the Public Transit Department.

14 **West Phoenix High Capacity Transit Recommendation to Initiate Study** Page 162

This report requests the Transportation, Infrastructure and Planning Subcommittee to recommend that the City Council initiate a study of high-capacity transit options for West Phoenix.

THIS ITEM IS FOR DISCUSSION AND POSSIBLE ACTION.

Responsible Department
This item is submitted by Deputy City Manager Mario Paniagua and the Public Transit Department.

000 CALL TO THE PUBLIC

FUTURE AGENDA ITEMS

ADJOURN

For further information or reasonable accommodations, please call the City Council Meeting Request line at 602-262-6001. 7-1-1 Friendly.

Persons paid to lobby on behalf of persons or organizations other than themselves must register with the City Clerk prior to lobbying or within five business days thereafter, and must register annually to continue lobbying. If you have any questions about registration or whether or not you must register, please contact the City Clerk's Office at 602-534-0490.

Members:

Councilwoman Debra Stark, Chair
Councilwoman Betty Guardado
Councilwoman Ann O'Brien
Councilwoman Laura Pastor

City of Phoenix

Report

Agenda Date: 10/20/2021, **Item No.** 1

Minutes of the Transportation, Infrastructure and Planning Subcommittee Meeting

This item transmits the minutes of the Transportation, Infrastructure and Planning Subcommittee Meeting on Sept. 15, 2021, for review, correction or approval by the Transportation, Infrastructure and Planning Subcommittee.

THIS ITEM IS FOR POSSIBLE ACTION.

The minutes are included for review as **Attachment A**.

Responsible Department

This item is submitted by Deputy City Manager Mario Paniagua and the City Manager's Office.

Phoenix City Council
Transportation, Infrastructure, and Planning (TIP) Subcommittee
Summary Minutes
Wednesday, Sept. 15, 2021

City Council Chambers
200 W. Jefferson St.
Phoenix, Ariz.

Subcommittee Members Present	Subcommittee Members Absent
Councilwoman Debra Stark, Chair	
Councilwoman Ann O'Brien	
Councilwoman Betty Guardado	
Councilwoman Laura Pastor*	

*Councilwoman Pastor arrived at 9:37 a.m.

CALL TO ORDER

Chairwoman Stark called the Transportation, Infrastructure, and Planning Subcommittee to order at 9:12 a.m. with Councilwoman Ann O'Brien and Councilwoman Betty Guardado present.

CALL TO THE PUBLIC

None.

MINUTES OF MEETINGS

1. Minutes of the Transportation, Infrastructure, and Planning Subcommittee Meeting

Councilwoman O'Brien made a motion to approve the minutes of the April 7, 2021 Transportation, Infrastructure, and Innovation Subcommittee meeting. Councilwoman Guardado seconded the motion which passed unanimously, 3-0.

INFORMATION ONLY (ITEMS 2-5)

2. Metro, Regional Public Transportation Authority, and Maricopa Association of Governments Meetings

Information only. No Councilmember requested additional information.

3. Citizens Transportation Commission Meetings

Information only. No Councilmember requested additional information.

4. Freeway Program Update

Information only. No Councilmember requested additional information.

5. Drought Resiliency Infrastructure Program Update
Information only. No Councilmember requested additional information.

INFORMATION AND DISCUSSION (ITEM 6)

Before beginning the presentation on Downtown Digital Kiosks, Deputy City Manager Mario Paniagua explained that Item 8 on the Capital Extension Route Recommendation and Agreement for Preconstruction Services would be pushed to the Oct. 20, 2021 Transportation, Infrastructure, and Planning Subcommittee Meeting, but staff was still available to answer any questions.

6. Downtown Digital Kiosks
Street Transportation Department Director Kini Knudson and Deputy Director Chris Ewell provided a presentation on potential interactive informational kiosks in the public right-of-way within certain areas of the downtown Enhanced Municipal Services District.

Mr. Knudson began by describing the previous use of static informational kiosks managed by Downtown Phoenix, Inc (DPI) and a renewed interest in interactive digital kiosks to improve the experiences of those in the downtown area. He noted that downtown digital kiosks had been proposed in the past but were not implemented due to concerns regarding ownership and control of the kiosks, capabilities of the kiosks, use of the right-of-way, financial costs, kiosk advertising, use of kiosk revenues, and responsibilities for kiosk maintenance.

Mr. Ewell described similar digital kiosk programs, the primary uses of kiosks to disseminate information, and additional features of digital kiosks. He reiterated some of the concerns described by Mr. Knudson previously and added that advertising in the public right-of-way was currently not permitted with certain exceptions under City Code. Mr. Ewell described the vendor selection process, beginning with issuing a Request for Information solicitation to the kiosk industry before a Request for Proposals process to select the ultimate kiosk vendor.

Mr. Knudson requested feedback from the Subcommittee regarding the potential for a Downtown Digital Kiosks project, including their interest in the continuation of the project and the procurement process.

Chairwoman Stark asked if this project could be completed before the 2023 Superbowl and when the procurement process would need to begin to meet this goal.

Mr. Knudson indicated that a request for information could be sent out as early as October, and a request for proposals could be released as early as January to have kiosks in place by the Superbowl.

Chairwoman Stark asked if this project could be replicated in other parts of the city, such as the Uptown area or areas with light rail connectivity, if kiosks were found to be successful in the downtown area.

Mr. Knudson indicated that the proposed downtown kiosk project would be implemented in partnership with the Downtown Phoenix, Inc. (DPI), and the City would not be able to utilize the benefits of that partnership in other areas. He also noted that the option of expanding to other areas could be explored if the project was successful, and stipulations for expansion could be included in the procurement and subsequent contract.

Councilwoman O'Brien asked that any applicable ordinances in the City Code regarding buses and advertising in the right-of-way be sent to members of the subcommittee. She also asked if these ordinances could be used as models for City Code changes necessary to implement the downtown kiosk project.

Mr. Knudson explained that the City Code allows advertising in the right-of-way at bus stops if they meet public transit advertising guidelines. He noted that the City Council recently voted to approve an exception to the City Code to allow advertising on some billboards in the right-of-way in the downtown area, using guidelines set by the Legends Entertainment District. He indicated these examples could be used to establish guidelines for kiosk advertising.

Councilwoman O'Brien noted her appreciation of this project to further community engagement and technological advancement in the City and to create an additional revenue stream.

Chairwoman Stark reiterated her two previous comments and questions.

Councilwoman O'Brien concurred with Chairwoman Stark's suggestions to expand the program beyond the downtown area, highlighting the potential in areas with light rail access and the area surrounding Metrocenter.

Chairwoman Stark agreed and indicated that the area surrounding Metrocenter, the Uptown portion of Central Avenue, and the area surrounding the former Paradise Valley Mall would be good candidates for kiosk expansion.

Councilwoman Guardado also agreed with Chairwoman Stark's and Councilwoman O'Brien's comments on expanding the program beyond just the downtown area, particularly in areas with light rail access, university campuses, and Innovation 27.

DISCUSSION AND POSSIBLE ACTION (ITEM 7-8)

7. Bus Rapid Transit Program Analysis, Outreach, and Initial Corridor Recommendation

Mr. Paniagua introduced the Bus Rapid Transit Program as an item presented on the Proposition 104 Ballot for the Transportation 2050 program. Public Transit Department Director Jesus Sapien further explained that City of Phoenix Voters approved the Bus Rapid Transit (BRT) Program in August 2015.

Public Transit Department Bus Rapid Transit Administrator Sara Kotecki began the presentation of this project by describing the background of the project, including the benefits of BRT service, previous community engagement, planning and analysis, and the unanimous vote by the Citizens Transportation Commission on May 27, 2021 to approve an initial Bus Rapid Transit corridor along 35th Avenue and Van Buren Street.

HDR Design staff member Matthew Taunton then explained the transit analysis conducted, including the impact of COVID-19, ridership data, transit propensity, transit performance, and ridership forecasting. Ms. Kotecki described the community education and engagement efforts surrounding the BRT program. Mr. Taunton described how the results of these efforts and the transit analysis were used to determine the top potential BRT routes of Camelback/24th Street, Thomas/44th Street, and 35th Avenue/Van Buren Street.

Ms. Kotecki explained next steps, including a request for the Transportation, Infrastructure, and Planning Subcommittee to recommend City Council Approval of an initial BRT Corridor of 35th Avenue/Van Buren Street. She explained that, although the analysis supported three potential corridors, only one north/south corridor was recommended for approval because the other two potential corridors would be impacted by ongoing efforts towards high-capacity transit in west Phoenix.

Councilwoman Pastor joined the meeting at 9:37 a.m.

Chairwoman Stark asked for clarification on why only one corridor was recommended for approval, rather than the three top corridors indicated by transit analysis and public outreach efforts.

Ms. Kotecki described the ongoing analysis of high-capacity transit in west Phoenix and indicated that it was recommended to wait for these results to better understand if the east/west BRT corridors would be appropriate to implement.

Chairwoman Stark noted that Councilwoman Pastor had joined the meeting, and Councilwoman Pastor confirmed her attendance.

Councilwoman Guardado made a motion to approve the initial Bus Rapid Transit corridor along 35th Avenue and Van Buren Street. Councilwoman O'Brien seconded the motion which passed unanimously, 4-0.

8. Capitol Extension Route Recommendation and Agreement for Preconstruction Services
This item was moved to the Oct. 20, 2021 Transportation, Infrastructure, and Planning Subcommittee Meeting.

CALL TO THE PUBLIC
None.

FUTURE AGENDA ITEMS
None.

ADJOURNMENT
Chairwoman Stark adjourned the meeting at 9:44 a.m.

Respectfully submitted,

Sara Del Valle
Management Intern

City of Phoenix

Report

Agenda Date: 10/20/2021, **Item No.** 2

Green Transit Technology Request for Proposals

Request the Transportation, Infrastructure and Planning Subcommittee recommend City Council approval for the Public Transit Department to issue a Request for Proposals to procure vehicles and implement a pilot program to operate and evaluate, on a long-term basis, a sub-fleet of heavy-duty transit buses that use zero and/or near-zero emissions technology.

THIS ITEM IS FOR CONSENT ACTION.

Summary

The Public Transit Department (PTD) has worked for many years to ensure that our fleet has the most up-to-date, environmentally friendly buses with the best-proven technology available to operate within Phoenix's environment. This RFP would allow the department to establish a sub-fleet of green buses and test, on a long-term basis, a contingent of zero-emission or near-zero-emission buses, including their ability to operate in our environment and support local operating needs such as regional route distances, peak passenger loads, on-board equipment, and higher-capacity air conditioning systems. This sub-fleet would serve as a pilot program, allowing the PTD to gain experience with newer technologies and determine how best to integrate them into the City's transit fleet.

Procurement Information

The RFP will be issued in Spring 2022 and request proposals to manufacture buses using battery electric, electric hybrid, and/or hydrogen power, along with detailing any associated charging and fueling equipment and infrastructure changes needed to support these buses. The PTD will then assemble a pilot fleet of buses using one or more of these available technologies.

Contract Term

The term of the awarded contract shall be five years and consist of approximately 20 buses to be delivered.

Financial Impact

The term of the awarded contract shall be five years with an aggregate value of

approximately $25 million. In conjunction with the purchase of these vehicles, staff will continue researching and applying for grant opportunities as they arise.

Based on research, it is estimated that the purchase of the buses will cost in the range of $4 to $5 million annually through the life of the contract. Staff estimates that additional infrastructure costs related to special charging/fueling requirements will cost an additional $3 million at a single transit garage over the life of the project and will be procured separately.

Responsible Department
This item is submitted by Deputy City Manager Mario Paniagua and the Public Transit Department.

City of Phoenix

Report

Agenda Date: 10/20/2021, **Item No.** 3

40-Foot Heavy Duty Transit Bus Contract Award Recommendation

Request that the Transportation, Infrastructure and Planning Subcommittee recommend City Council approval to enter into an agreement with Gillig, LLC to manufacture and deliver replacement 40-foot heavy-duty local transit buses.

THIS ITEM IS FOR CONSENT ACTION.

Summary

The purpose of this Request for Proposals (RFP #PTD20-003) is to enter into a five-year agreement with a transit vehicle manufacturing firm to manufacture and deliver 40 -foot heavy-duty local transit buses that use compressed natural gas (CNG) as the fuel source. City Council approved the issuance of this solicitation at their Feb. 17, 2021 formal meeting. Buses will be ordered based on the Public Transit Department's replacement schedule for local buses that have met or exceeded their useful life, per Federal Transit Administration guidelines.

Procurement Information

RFP #PTD20-003 was issued on April 15, 2021, with two firms submitting proposals for consideration. An evaluation committee of qualified staff from PTD and Valley Metro was appointed to conduct detailed evaluations of all proposals received, establish a competitive range, and select a proposer to receive the contract award.

A technical advisory team was also established to provide technical assistance to the evaluation committee based on the advisors' knowledge and experience with transit vehicle manufacturing and long-term maintenance practices. The technical advisory team's role was to review the technical portions of each proposal for compliance with RFP specifications.

Each RFP was evaluated and scored based on the following criteria (1,000 points total possible):

- Design, Quality, and Production Process (up to 400 points);
- Price (up to 400 points); and
- Warranty (up to 200 points).

Two proposals were received from the following firms:

- Gillig, LLC; and
- New Flyer.

The evaluation recommendations were reached by consensus in consideration of published selection criteria, with the committee selecting GILLIG, LLC. for award. The following summarizes the results:

Proposers	Total points
GILLIG, LLC	820
New Flyer	775

In accordance with Phoenix City Code SEC 43-14 (J), a contract shall be awarded to the most highly rated responsible firm whose offer conforms in all material respects to the requirements and criteria outlined in the solicitation. Therefore, the Public Transit Department's Procurement Officer recommends the award to Gillig, LLC.

Financial Impact

The term of the awarded contract shall be five years with an aggregate value of $145,023,384. Buses are funded 85 percent with federal funds and 15 percent with regional funds. The Public Transit Department estimates purchasing 265 buses utilizing this contract over the five-year period.

Responsible Department

This item is submitted by Deputy City Manager Mario Paniagua and the Public Transit Department.

City of Phoenix

Report

Agenda Date: 10/20/2021, **Item No.** 4

Capitol Extension and I-10 West Extension Equitable Housing and Land Use Planning Request for Proposals

This report requests that the Transportation, Infrastructure, and Planning Subcommittee recommend City Council approval for issuance of a Request for Proposals to procure services to assist with the research, implementation, and execution of the Capitol Extension and I-10 West Extension Transit-Oriented Development Grant. This Grant will assist with equitable housing strategy development and proactive land use planning.

THIS ITEM IS FOR CONSENT ACTION.

Summary

The Federal Transit Administration awarded to the City of Phoenix this Transit-Oriented Development (TOD) Grant on Sept. 1, 2020. The Grant's purpose is to assist cities in developing equitable housing strategies and proactive land use planning along transit project corridors. Land use planning will advance TOD in the corridors and the region by advancing efforts with residents, business owners, and community leaders to create a comprehensive plan that lays the groundwork for new development that is urban, mixed used, and built to a pedestrian scale. Such planning will also strengthen and improve opportunities for equitable housing that, when combined with new light rail lines, will improve the community's quality of life and economic vitality.

The TOD Grant will cover the Capitol Light Rail Extension (CAPEX), as well as the subsequent I-10 West Light Rail Extension (10WEST), recognizing that the project is being evaluated to identify an end-of-line at either the 79th Avenue Park-and-Ride or the Desert Sky Transit Center (**Attachment A**). The CAPEX TOD planning area is generally bounded by 7th Avenue on the east, Interstate 17 on the west, Interstate 10 on the north, and the Union Pacific Railroad on the south. The 10WEST TOD planning area is generally bounded by I-17 on the east, 83rd Avenue on the west, Encanto Boulevard/Osborn Road on the north, and Van Buren Street on the south.

This TOD Grant will also provide resources for the City of Phoenix to work closely with the community to develop and implement policy plans in the corridor by collecting a detailed inventory of existing land uses, hosting community stakeholder workshops

and meetings, working with the community to develop a community vision, and identifying strategies and performance measures to implement the vision. Additionally, the TOD Grant will fund the development of an Equitable Housing Strategy, as well as two TOD policy plans (one each for the CAPEX and 10WEST light rail extensions). The scope of work summary for these planning efforts are included in **Attachment B**.

Financial Impact

The estimated total expenditure of the project is $2.5 million from the following funding sources:

- Federal Transit Administration TOD Grant - $2 million; and
- City of Phoenix Transportation 2050 Funds - $500,000.

The project will be administered over two Fiscal Years:

- Fiscal Year 2021-22 - $750,000; and
- Fiscal Year 2022-23 - $1.75 million.

Concurrence/Previous Council Action

The Citizens Transportation Commission recommended approval of this item on Sept. 23, 2021, by a vote of 11-1.

Location

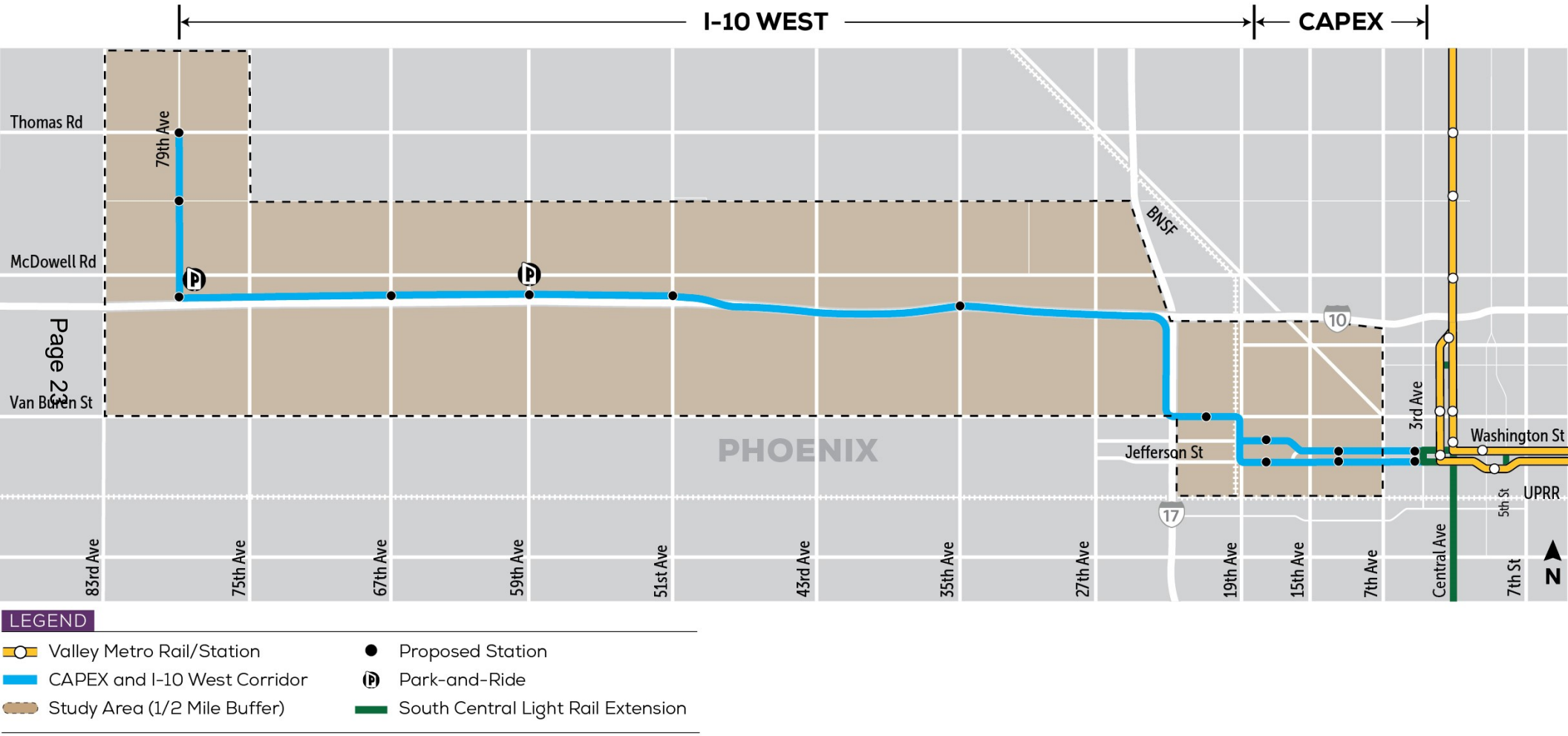
Capitol Extension will extend light rail from downtown Phoenix west to the Arizona State Capitol Complex.
Council District: 7

I-10 West Extension runs from the Arizona State Capitol to the Desert Sky Transit Center.
Council Districts: 5 and 7

Responsible Department

This item is submitted by Deputy City Manager Mario Paniagua and the Public Transit Department.

Attachment A



Attachment B

CAPITOL/I-10 TRANSIT ORIENTED DEVELOPMENT (TOD) PLANNING GRANT
FTA TOD PLANNING GRANT PROPOSED SCOPE OF WORK SUMMARY

Phase, Task, & Subtasks	Description	Deliverables
PHASE ONE (WHO WE ARE)		**Two Draft "Who We Are" Sections of Policy Plans**
Task 1: Community Profile and Existing Conditions		
Subtask 1.1: Record Existing Conditions	Understand the unique characteristics, inventory, and evaluate the corridor through the six planning element framework (Land Use, Housing Economic Development, Health Mobility, and Green Systems).	Two Existing Conditions and Needs Assessment Reports (One for Capitol Area and One for I-10 Area)
Subtask 1.2: Create a Community Profile	Build upon the six planning element existing conditions assessment and clearly articulate community needs towards innovative "best practice community investments".	Two Community Profile reports (One for Capitol Area and One for I-10 Area)
Subtask 1.3: Capacity Building	Identify stakeholders and develop a plan to focused on reducing displacement and ensuring equitable engagement opportunities are provided early and throughout the process.	Two Stakeholder/Early Action Recommendations Memos (One for Capitol Area and One for I-10 Area)
PHASE TWO (WHAT WE WANT)		**Two Draft "What We Want" Sections of Policy Plans**
Task 2: Public Engagement and Early Action Implementation		
Subtask 2.1: Build Trust and Relationships	Listen to the community voice, concerns, needs, and shared understanding of the current state of their communities. Learn with the community what the existing conditions and community profile begin to reveal.	Two Early action public involvement plan (One for Capitol Area and One for I-10 Area)
Subtask 2.2: Meaningful Opportunities to Engage	Two week-long Public Engagement Workshops to engage and gather perspectives on current and desired conditions in the context of the six planning elements to generate a shared and collective community vision for the future.	Two Public Engagement Workshop Summary Reports (One for Capitol Area and One for I-10 Area)
Subtask 2.3: Early Action Implementation	Considering the results thus far, begin formulating early action implementation strategies to be considered prior to the start of construction and operation impacts and create report detailing suggested strategies	Two Early Action Implementation Reports (One for Capitol Area and One for I-10 Area)
Task 3: Community Vision and Master Plan		
Subtask 3.1: Conceptual Design Workshop	Two week-long Community Design Workshops building off previous tasks to demonstrate appropriate scale and intensity in alignment with community prioritized investments and the community vision.	Two Community Design Workshop Summary Reports (One for Capitol Area and One for I-10 Area)
Subtask 3.2: Illustrative Plans	A written and graphical series of illustrative plans and renderings which will delineate a generalized block pattern, building, street and open space typologies, consistent with the community identified and prioritized areas of change, investments, and vision for the future.	Two series of Illustrative Plans and written narratives describing the design components and development concepts reflecting the community vision for the future. (One for Capitol Area and One for I-10 Area)
Subtask 3.3: Character Areas	Provide distinct and descriptive character areas and associated building and housing typologies to be applied and consistent with the community vision for adoption into the Walkable Urban Code.	Form-Based Code recommendations Memo.
PHASE THREE (HOW WE GET THERE)		**Two Draft "How We Get There" Sections to bring Two full Draft Policy Plans to completion (One for Capitol Area and One for I-10 Area)**
Task 4: TOD Policy Plan(s)		
Subtask 4.1: Capitol Mall TOD Policy Plan	The State Capitol Complex is made up of mostly publicly held property, owned by either City of Phoenix, Maricopa County, or the State of Arizona. There is a large amount of vacant or underutilized land (parking lots and low-density development) in the State Capitol Complex area, providing significant opportunities for new TOD. This policy plan will also address how this new development will complement the existing neighborhoods in the State Capitol Complex area.	*Deliverables are reiterative of the all tasks and represent a synthesis of the full project scope formatted into representative Sections of the 3 key steps: "Who We Are", "What We Want", "How We Get There":*
Subtask 4.2: I-10 TOD Policy Plan	High capacity transit along Interstate 10 corridor may create challenges for pedestrian connectivity, higher densities, and TOD. This strategic plan will include peer analysis to determine best practices for developing TOD adjacent to a highway corridor. It will also address specific solutions for connectivity, especially to the areas north and south of Interstate 10.	*Deliverables are reiterative of the all tasks and represent a synthesis of the full project scope formatted into representative Sections of the 3 key steps: "Who We Are", "What We Want", "How We Get There":*
Task 5: Equitable Housing Strategy		
Subtask 5.1: Existing Housing Preservation	Understand the existing housing choices available prior to light rail and or high capacity transit, identify housing choices that provide the most just, fair, and inclusive (equitable) opportunities for residents in TOD environments.	One Full Draft Equitable Housing Strategy Report (inclusive of content and recommendations from subtasks 5.1, 5.2, and 5.3)
Subtask 5.2: New Housing Assessment	Identify the preferred locations for New Housing options and provide recommendations on the appropriate Housing Typologies to be consistent with the existing character and context.	One Full Draft Equitable Housing Strategy Report (inclusive of content and recommendations from subtasks 5.1, 5.2, and 5.3)
Subtask 5.3: Equitable Housing Typologies	Delineate the general boundaries of district character areas and develop a menu of potential building and housing typologies that will fit existing lot sizes and integrate with a transit-oriented environment.	One Full Draft Equitable Housing Strategy Report (inclusive of content and recommendations from subtasks 5.1, 5.2, and 5.3)

City of Phoenix

Report

Agenda Date: 10/20/2021, **Item No.** 5

Northwest Extension Phase II Active Transportation and Land Use Planning Request for Proposals

This report requests that the Transportation, Infrastructure, and Planning Subcommittee recommend City Council approval for issuance of a Request for Proposals to procure services to assist with the research, implementation, and execution of the Northwest Extension Phase II Transit-Oriented Development Grant. This Grant will assist with active transportation strategy development and proactive land use planning.

THIS ITEM IS FOR CONSENT ACTION.

Summary

The Federal Transit Administration awarded to the City of Phoenix this Transit-Oriented Development (TOD) Grant on Dec. 15, 2020. The Grant's purpose is to assist cities in developing active transportation strategies and proactive land use planning along transit project corridors. Land use planning will advance TOD in the corridors and the region by working with residents, business owners, and community leaders to create a comprehensive plan that lays the groundwork for new development that is urban, mixed used, and built to a pedestrian scale. Such planning will also strengthen and improve opportunities for multi-modal transportation that, when combined with new light rail lines, will improve the community's quality of life and economic vitality.

The TOD Grant will cover the Northwest Extension Phase II Light Rail Extension (NWEII) project area, generally bounded by 19th Avenue on the east, 35th Avenue on the west, Peoria Avenue on the north, and Butler Road on the south (**Attachment A**).

This TOD Grant will also provide resources for the City of Phoenix to work closely with the community to develop and implement policy plans in the corridor by collecting a detailed inventory of existing land uses, hosting community stakeholder workshops and meetings, working with the community to develop a community vision, and identifying strategies and performance measures to implement the vision. Additionally, the TOD Grant will fund the development of an Active Transportation Plan and a TOD policy plan for the project area. The scope of work summary for the planning efforts are included in **Attachment B**.

Financial Impact

The estimated total expenditure of the project is $1.25 million from the following funding sources:

- Federal Transit Administration TOD Grant - $1 million; and
- City of Phoenix Transportation 2050 Funds - $250,000.

The project will be administered over three fiscal years as follows:

- FY 2021-22 - $250,000;
- FY 2022-23 - $750,000; and
- FY 2023-24 - $250,000.

Concurrence/Previous Council Action

The Citizen Transportation Commission recommended approval of this item on Sept. 23, 2021, by a vote of 11-1.

Location

The TOD Grant will cover the Northwest Extension Phase II Light Rail Extension project area.
Council Districts: 3, 4 and 5

Responsible Department

This item is submitted by Deputy City Manager Mario Paniagua and the Public Transit Department.

LEGEND

- Valley Metro Rail/Station
- Northwest Extension Phase II/Station
- TOD Planning Study Area
- Existing Transit Center
- Relocated Transit Center
- Existing Park-and-Ride
- Proposed Park-and-Ride

Attachment B

NWEII TRANSIT ORIENTED DEVELOPMENT (TOD) PLANNING GRANT
FTA TOD PLANNING GRANT PROPOSED SCOPE OF WORK SUMMARY

Phase, Task, & Subtasks	Description	Deliverables
PHASE ONE (WHO WE ARE)		**One "Who We Are" Section of Policy Plan**
Task 1: Community Profile and Existing Conditions		
Subtask 1.1: Record Existing Conditions	Understand the unique characteristics, inventory, and evaluate the corridor through the six planning element framework (Land Use, Housing Economic Development, Health, Mobility, and Green Systems).	One Existing Conditions and Needs Assessment Reports
Subtask 1.2: Create a Community Profile	Build upon the six planning element existing conditions assessment and clearly articulate community needs towards innovative “best practice community investments”.	One Community Profile reports
Subtask 1.3: Capacity Building	Identify stakeholders and build capacity towards reducing displacement and ensuring equitable engagement opportunities are provided early and throughout the process.	One Stakeholder/Early Action Recommendations Memos
PHASE TWO (WHAT WE WANT)		**One Draft "What We Want" Section of Policy Plan**
Task 2: Public Engagement and Early Action Implementation		
Subtask 2.1: Build Trust and Relationships	Listen to the community voice, concerns, needs, and shared understanding of the current state of their communities. Learn with the community what the existing conditions and community profile begin to reveal.	One Early action public involvement plan
Subtask 2.2: Meaningful Opportunities to Engage	One week-long Public Engagement Workshop to engage and gather perspectives on current and desired conditions in the context of the six planning elements to generate a shared and collective community vision for the future.	One Public Engagement Workshop Summary Report
Subtask 2.3: Early Action Implementation	Considering the results thus far, begin formulating early action implementation strategies to be considered prior to the start of construction and operation impacts.	One Early Action Implementation Report
Task 3: Community Vision and Master Plan		
Subtask 3.1: Conceptual Design Workshop	One week-long Community Design Workshop building off previous tasks to demonstrate appropriate scale and intensity in alignment with community prioritized investments and the community vision.	One Community Design Workshop Summary Reports
Subtask 3.2: Illustrative Plans	A written and graphical series of illustrative plans and renderings which will delineate a generalized block pattern, building, street and open space typologies, consistent with the community identified and prioritized areas of change, investments, and vision for the future.	One series of Illustrative Plans and written narratives describing the design components and development concepts reflecting the community vision for the future.
Subtask 3.3: Character Areas	Provide distinct and descriptive character areas and associated building and housing typologies to be applied and consistent with the community vision for adoption into the Walkable Urban Code.	Form-Based Code recommendations Memo.
PHASE THREE (HOW WE GET THERE)		**One Draft "How We Get There" Section to bring One full Draft Policy Plan to completion**
Task 4: Active Transportation Implementation Plan		
Subtask 5.1: Active Transportation Assessment	Understand the existing transportation network available prior to light rail, identify evaluation metrics for recommending an inclusive and equitable transportation network.	One Full Draft Active Transportation Implementation Plan Report (inclusive of content and recommendations from subtasks 5.1, 5.2, and 5.3)
Subtask 5.2: Active Transportation Decision Making	Conduct a planning and decision making process to identify an overarching vision for the area and propose specific recommendations consistent with the transit oriented environments.	One Full Draft Active Transportation Implementation Plan Report (inclusive of content and recommendations from subtasks 5.1, 5.2, and 5.3)
Subtask 5.3: Active Transportation Master Plan	Finalize recommendations for the active transportation infrastructure network and recommend implementation strategies, policies, and actions to achieve the vision.	One Full Draft Active Transportation Implementation Plan Report (inclusive of content and recommendations from subtasks 5.1, 5.2, and 5.3)

City of Phoenix

Report

Agenda Date: 10/20/2021, **Item No.** 6

Metro, Regional Public Transportation Authority, and Maricopa Association of Governments Meetings

This report provides the Transportation, Infrastructure and Planning Subcommittee with copies of past and/or upcoming meeting agendas/summaries for METRO light rail, Valley Metro/Regional Public Transportation Authority (RPTA), and the Maricopa Association of Governments.

THIS ITEM IS FOR INFORMATION ONLY.

Summary

Within Maricopa County, there are several agencies with different charges relating to public transit and transportation planning.

Valley Metro/RPTA: In 1993, the Regional Public Transportation Authority Board adopted the name Valley Metro as the identity for the regional transit system in metropolitan Phoenix. Under the Valley Metro brand, local governments fund the transit system which the public sees on Valley streets today. Valley Metro Board member agencies include Avondale, Buckeye, Chandler, El Mirage, Gilbert, Glendale, Goodyear, Maricopa County, Mesa, Peoria, Phoenix Queen Creek, Scottsdale, Surprise and Tempe.

METRO: METRO is the brand name for Valley Metro Rail Inc., a nonprofit, public corporation charged with the design, construction and operation of the light rail system. The cities that participate financially in the light rail system each have a representative on the METRO Board of Directors. Cities on the board include Chandler, Glendale, Mesa, Phoenix and Tempe. METRO is structured on a "pay to play basis," with voting power allocated based on investment in the system.

The Maricopa Association of Governments (MAG): MAG is a council of governments that serve as the regional agency for the metropolitan Phoenix area. When MAG was formed in 1967, elected officials recognized the need for long-range planning and policy development on a regional scale. Issues such as transportation, air quality and human services affect residents beyond the borders of individual jurisdictions. MAG is the designated metropolitan planning organization (MPO) for transportation planning in

the Maricopa County region.

The goal of staff is to provide the Transportation, Infrastructure and Planning Subcommittee with agendas for future meetings of these bodies. At times, meeting dates do not coincide and agendas are not available until close to the meeting date. However, prior to reach each Board of Directors meeting, most agenda items are reviewed by staff committees which include City of Phoenix members.

Meeting agendas and/or additional information for previous and upcoming METRO, RPTA and MAG meetings will be distributed to Transportation, Infrastructure and Planning Subcommittee members at the meeting.

These materials can also be found via the pages below:

MAG - https://www.azmag.gov/About-Us/Calendar

Valley Metro - https://www.valleymetro.org/news-events

Responsible Department
This item is submitted by Deputy City Manager Mario Paniagua and the Public Transit Department.

City of Phoenix

Report

Agenda Date: 10/20/2021, **Item No.** 7

Citizens Transportation Commission Meetings

This report provides the Transportation, Infrastructure and Planning Subcommittee with copies of past and/or upcoming meeting agendas/summaries for the Citizens Transportation Commission.

THIS ITEM IS FOR INFORMATION ONLY.

Summary

The Citizens Transportation Commission advances transparency, public input, and government accountability by reviewing appropriations provided by the Phoenix Transportation 2050 plan (T2050), as approved by the voters on Aug. 25, 2015.

The Commission reviews T2050 appropriations and program recommendations of the Public Transit Department and the Street Transportation Department; annually review the revenues and expenditures of T2050 funds, as well as funding from other sources; conducts public meetings; and formulates and presents recommendations to the Phoenix City Council related to revenues, expenditures, projections, programs and major projects as called for by T2050.

Meeting agendas and/or additional information for previous and upcoming Citizens Transportation Commission meetings will be distributed to Transportation, Infrastructure and Planning Subcommittee members at each Subcommittee meeting.

Meeting minutes can be found through a search via the City of Phoenix Public Records Search page below:

https://www.phoenix.gov/cityclerk/services/public-records-search.

Responsible Department

This item is submitted by Deputy City Manager Mario Paniagua and the Public Transit Department.

City of Phoenix

Report

Agenda Date: 10/20/2021, **Item No.** 8

Freeway Program Update

This report provides the Transportation, Infrastructure and Planning Subcommittee updates on the Arizona Department of Transportation (ADOT) freeway program within the City of Phoenix.

THIS ITEM IS FOR INFORMATION ONLY.

Summary

The Maricopa Association of Governments (MAG) Regional Transportation Plan reflects numerous freeway construction projects and studies underway within the City of Phoenix. These projects are funded from the voter approved Proposition 400 half-cent sales tax as well as from state and federal revenue sources. City of Phoenix staff are embedded with ADOT on these major construction projects to ensure coordination of all construction activities with City departments. This report is an overview of the current major freeway projects. A monthly report will be provided to the Transportation, Infrastructure and Planning Subcommittee reflecting project changes as well as new projects.

Interstate 10 - Interstate 17 to Avondale Boulevard Pavement Improvement

This project is to extend the life of the pavement and improve the driving experience on Interstate 10 (I-10) from Interstate 17 (I-17) to Avondale Boulevard. This project was initiated by ADOT to address the potholes and uneven pavement in this corridor.

The major elements of this project include removing the existing asphalt pavement and using a diamond grinding treatment to provide a smooth roadway surface. The recently -installed section of rubberized asphalt on I-10 near the connection to the Loop 202 freeway between 43rd and 67th avenues will not be removed. An additional travel lane on westbound I-10 between 67th Avenue and Avondale Boulevard will be added by reducing the shoulder and lane widths. The striping on the southbound Loop 101 ramp to westbound I-10 will be modified to create two lanes.

There will be regular weekend closures and overnight lane restrictions on I-10 during the year-long construction project.

Construction began in September 2021 and will conclude in late 2022.

Loop 101 - I-17 To Pima Road Widening
This project is widening and improving the Loop 101 (Pima Freeway) from I-17 in Phoenix east to Pima Road in Scottsdale. The improvements are needed to address growing traffic demands in the northeast Valley and relieve traffic congestion on the Loop 101 during the morning and evening peak travel periods.

The major elements of this project include adding one general purpose lane in each direction between I-17 and Pima Road, adding an auxiliary lane in each direction between Seventh Street and Cave Creek Road, and modifying freeway ramps and frontage road connections at 11 interchanges. Additional components include construction of noise or retaining walls where warranted, improvements to drainage and pavement markings, and noise reduction features.

Construction began in February 2019 and is scheduled for completion in late 2021.

I-17 Frontage Road Drainage Improvement
This ADOT project will replace the existing pump stations at the I-17 traffic interchanges at Greenway Road, Thunderbird Road, Cactus Road and Peoria Avenue with a gravity storm drain system that will discharge the storm water into the Arizona Canal Diversion Channel (ACDC). The purpose of the project is to improve the drainage facilities that remove storm runoff from the cross streets, helping to reduce the potential for flooding at the I-17 overpasses.

The project includes the installation of 30- to 90-inch diameter reinforced concrete pipe along the I-17 frontage road, two detention basins at the I-17 and Thunderbird Road traffic interchange, pavement replacement on the frontage road, signing, striping, improvements to ADA features within the project area, and removal of the four existing pump stations.

Construction began in January 2020 and is expected to take two years to complete.

Update:
Construction activity around Thunderbird will be finished by December and work will start at Greenway in January.

I-17 - Central Avenue Bridge Reconstruction
The scope of this project is to replace the existing I-17 and Central Avenue bridge. The bridge was constructed in 1962 and is nearing the end of its useful service life. The existing vertical clearance of 13 feet and 11 inches over Central Avenue does not meet

current design standards, prohibiting high-profile vehicles from using Central Avenue beneath the bridge, and cannot accommodate the Valley Metro South Central Light Rail Extension. The bridge will be widened to accommodate auxiliary lanes between successive ramps on I-17. The project includes new I-17 roadway approaches, retaining walls, FMS improvements, lighting improvements, drainage improvements, and signing and striping.

Construction began in April 2020 and is expected to be completed in fall 2021.

I-17 - Indian School Traffic Interchange Study

ADOT has completed an environmental study and Design Concept Report (DCR) for a project to improve traffic flow and safety at I-17 and Indian School Road. The study area encompasses Indian School Road between 19th and 31st avenues and I-17 from approximately one-half mile south and one-half mile north of Indian School Road.

After evaluating options for a new traffic interchange in this location, a three-level diamond interchange was advanced as the Recommended Build Alternative. If constructed, this interchange would include:

- A flyover bridge along Indian School Road to allow east-west through traffic to bypass the intersections at the I-17 ramps and frontage roads;
- New roadways approaching the flyover bridge with embankments and retaining walls;
- A reconstructed and widened Indian School Road to accommodate the flyover bridge and new approaches; and
- Two new pedestrian bridges - one north and one south of Indian School Road - to allow pedestrians to cross I-17 safely.

Construction funding has been moved to FY2022. When started, construction will last 18 to 24 months.

Update:

- **ADOT completed 30-percent design efforts and the plans remain on hold. MAG and ADOT recently met to discuss additional options at the 27th Avenue intersection, including intersection re-configuration, structure length, and turning movement options. An analysis of alternatives is being completed now and MAG plans to share new design options to the City.**

I-10 - Broadway Curve Reconstruction

The I-10 Broadway Curve project is planned to improve a segment of I-10 between the I-10/I-17 Split Traffic Interchange and the South Mountain Freeway/Congressman Ed

Pastor Freeway Loop 202 near Pecos Road. The project encompasses one of the most heavily traveled segments of freeway in the Valley. Traffic volumes within this 11-mile section of I-10 exceed 250,000 vehicles per day and include vital connections to I-17, State Route 143, US-60, and Loop 202.

The proposed improvements studied included:

- Adding general purpose and High Occupancy Vehicle (HOV) lanes;
- Adding a collector-distributor road system to reduce the number of lane changes on the freeway;
- Improving connections between I-10 and the State Route 143 and Broadway Road to improve HOV lane connections;
- Improving connections of I-10 and US 60 (Superstition Freeway);
- Constructing new bridges to accommodate new interchange facilities and additional lanes;
- Building retaining and sound walls; and
- Constructing pedestrian bridge crossings to improve pedestrian access across the freeway.

Construction is scheduled to begin in late 2021 and is scheduled for completion in 2024.

Loop 101 - I-17 to 75th Avenue Widening

The scope of this project is to add one general purpose lane in each direction to Loop 101/Agua Fria Freeway from I-17 to 75th Avenue. The project includes bridge widening of existing structures to accommodate the new general-purpose lanes. The project work includes diamond grind surface treatment, new concrete pavement, retaining walls, lighting, ADA improvements, drainage improvements, FMS improvements, and signing and striping.

Construction is expected to begin in 2024.

I-17 - I-10 Split to 19th Avenue Widening

The scope of this project is the construction of auxiliary lanes on I-17 between successive interchanges from 16th Street to 19th Avenue. The project includes drainage improvements, lighting improvements, retaining walls, sound walls, FMS improvements, landscaping restoration within the project area, and signing and striping. It also includes improvements to 19th Avenue to allow better access to I-17.

Construction is expected to begin in 2024.

I-10 Deck Park (Hance Park) Tunnel Repair

The Deck Park Tunnel is an underpass that carries the I-10 freeway beneath downtown Phoenix between 3rd Avenue and 3rd Street. The tunnel consists of a series of nineteen side-by-side bridge structures. Construction of the facility began in 1983 and opened to traffic on Aug. 10, 1990. The tunnel carries approximately 230,000 vehicle trips per day and provides a critical link for regional connectivity and mobility.

Leaks in the ceiling structure of the Deck Park Tunnel have occurred in the past and continue to appear. The water infiltration caused by the leaks can lead to deterioration of the tunnel infrastructure and impacts the ventilation and electrical systems, which could force closure of the tunnel to traffic. There is also concern that any damage could produce a need for repairs that would require excavation of Margaret T. Hance Park, which is undergoing a major, $100 million revitalization expected to begin in March 2020.

ADOT, MAG and the City of Phoenix initiated an I-10 Deck Park Tunnel Waterproofing Study in May 2019 because of concern with the integrity of the tunnel.

The study recommended that all joints that have not been repaired in the last five years be replaced, which comprises 15 of the 19 total joints. ADOT intends on working closely with the City of Phoenix to coordinate construction activities of the joint work with the Hance Park revitalization project to minimize cost and public disturbance.

Construction began in March 2020.

US60 (Grand Avenue) - 35th Avenue - Indian School Road Study

ADOT and the Federal Highway Administration (FHWA), in coordination with the BNSF Railway, City of Phoenix and MAG, are initiating a Draft Environmental Assessment (EA) and initial DCR for the US 60 (Grand Avenue), 35th Avenue and Indian School Road intersection.

The study proposes that improvements need to be made to the US 60 corridor functionality, arterial street network multimodal opportunities (e.g., expansion of bicycle lane network), and BNSF Railway corridor capacity. These improvements would reduce traffic congestion, improve pedestrian and vehicular safety and enhance multimodal transportation options.

This project is currently in the predesign stage through mid-2022.

Loop 303 - I-17 to Lake Pleasant Parkway Update

At the request of the City of Phoenix, MAG and ADOT are conducting a DCR Update

for Loop 303 from I-17 to Lake Pleasant Parkway. A 2006 DCR identified the ultimate footprint and alignment for Loop 303. The purpose of this project is to prepare a DCR update and environmental document for additional general-purpose lanes in each direction of travel. The update includes establishing new traffic models and developing, evaluating, and costing conceptual alternatives for the improvements including Traffic Interchanges (TIs) at 67th, 51st, and 43rd Avenues, as well as the system interchange at I-17. The existing Loop 303 was constructed to accommodate the future construction of these TIs.

The DCR project was initiated in October 2020 and is scheduled for completion in fall 2021.

Phoenix, MAG, and ADOT have agreed to accelerate design and construction of the new TIs at 51st and 43rd Avenues to accommodate the schedule of the new Taiwan Semiconductor Manufacturing Company (TSMC) facility. Construction of the new TIs will be completed in summer 2023.

Update:

- **A virtual public meeting about a study of planned improvements along Loop 303 between Interstate 17 and Lake Pleasant Parkway in the north Valley is scheduled for Wednesday, Oct. 20 from 6:00 to 7:00 p.m. The community can participate via computer or smartphone at azdot.gov/L303PublicMeeting or via Zoom.us/join (Meeting Number (Access Code) is 879 3592 4208. Password is 303303.**

Responsible Department

This item is submitted by Deputy City Manager Mario Paniagua and the City Manager’s Office.

City of Phoenix

Report

Agenda Date: 10/20/2021, **Item No.** 9

Bartlett Dam Modification

This report provides the Transportation, Infrastructure and Planning Subcommittee with an overview of a U.S. Bureau of Reclamation and Salt River Project proposal to modify the Bartlett Dam on the Verde River and the potential impacts to the City's water resources.

THIS ITEM IS FOR INFORMATION ONLY.

Summary

Sedimentation in Horseshoe Reservoir on the Verde River is adversely impacting the storage capacity in the reservoir, reducing the amount of water available to Salt River Project (SRP) customers. The City is particularly impacted because it has additional, separate water storage rights in the reservoir based on a 1950 investment in gates installed on Horseshoe Dam (Gatewater supplies). A recent appraisal study by the U.S. Bureau of Reclamation (Bureau) determined that the appropriate response to the loss of storage capacity is a modification of the existing Bartlett Dam downstream of Horseshoe to create a larger reservoir in Bartlett Lake. The larger reservoir would restore the lost storage capacity of Horseshoe Reservoir for SRP customers and the City, in addition to adding storage capacity which would make additional water resources available for interested parties.

The proposals for a modified Bartlett Dam are a 62-foot expansion which would create a 422,000 acre-foot reservoir (increasing water storage by 145,000 acre-feet), or a 97-foot expansion which would create a 628,000 acre-foot reservoir (increasing water storage by 352,000 acre-feet). For reference, this additional storage capacity is enough to serve 180,000 to 345,000 homes every year. Numerous water users, including the City, have expressed interest in this additional water, which will alleviate reliance on Colorado River supplies and reduce the risk of increased groundwater pumping.

The next step is a feasibility study led by the Bureau and SRP to determine the size of a modified Bartlett Dam, the cost, the need for additional water resources in the area, local interest, and environmental impact. SRP has asked the City and other interested parties to share the costs of the feasibility study. Due to the City's existing rights in

Horseshoe Reservoir, SRP proposes that the City contribute $100,000 to the costs of the feasibility study and participate as a member of the Steering Committee. Staff anticipates requesting Council approval of the cost share agreement this fall.

If the Bureau of Reclamation recommends and Congress approves construction of a modified Bartlett Dam after completing the feasibility study, a construction cost sharing agreement with the parties who are allocated a share of the resulting increased reservoir capacity will be required. The total cost of the infrastructure could be $1 billion. The timeline for the project includes a feasibility study (two to four years), followed by Congressional authorization for construction, and construction (five to 10 years). Based on those estimates, a modified Bartlett Dam could be completed between 2028 and 2035.

The benefits to the City of a modified Bartlett Dam include recovery of the City's existing Gatewater supplies (135,000 acre-feet), as well as the opportunity to receive an additional allocation of capacity in a new Bartlett Reservoir. Considering the anticipated shortfalls in Colorado River supplies and the desire to maintain sustainable groundwater pumping, the additional water resources would increase the City's water security at a cost that is less than other options.

Location
Council District: Out of City

Responsible Department
This item is submitted by Deputy City Manager Karen Peters and the Water Services Department.

City of Phoenix

Report

Agenda Date: 10/20/2021, **Item No.** 10

Comprehensive Roadway Safety Update

This report provides the Transportation, Infrastructure and Planning Subcommittee with an update on the Street Transportation Department's efforts related to comprehensive roadway safety, including current and potential future practices, procedures, and projects to address roadway safety concerns within the City of Phoenix. Additionally, based on the request made by Transportation, Infrastructure, and Planning Subcommittee Chair Stark at the Oct. 12, 2021 Council Policy session relative to bringing a "Vision Zero" safety focus to Phoenix, this item also allows Subcommittee discussion and possible action to provide a Council a recommendation incorporating "Vision Zero" into the goals of the City's Comprehensive Roadway Safety Action Plan.

THIS ITEM IS FOR DISCUSSION AND POSSIBLE ACTION.

Summary

This update addresses the status of the Comprehensive Roadway Safety Action Plan (RSAP) and near-term safety improvements at three intersections specifically identified for funding at the March 2, 2021, City Council meeting as well as an update on other ongoing transportation safety initiatives. This item also provides an opportunity for the Subcommittee to recommend City Council approve incorporating "Vision Zero" into the goals of the City's Comprehensive RSAP.

Background

Recent traffic fatalities within the City increased from 177 fatalities in 2019 to 185 fatalities in 2020. Of the 185 fatalities, 69 were pedestrians (a decrease of 13 percent), 3 were bicyclists (a decrease of 3 fatalities) and 113 were motor vehicle related, an increase of 23 percent (excluding pedestrian and bicycle collisions). For the first six months of 2021, a total of 114 traffic fatalities have occurred with 52 pedestrian-related fatalities, 4 bicyclists, and 58 motor vehicle-related fatalities.

The Street Transportation Department (Streets) strives to provide an accessible City with safe mobility options for everyone regardless of their mode of transportation. Streets works with Citywide data related to traffic collisions to make sound decisions about roadway safety. These efforts are best described by the "Four E's" approach to

traffic safety that is based on the strategic interaction between Evaluation, Engineering, Enforcement and Education. Streets recognizes that investments in Evaluation and Engineering programs can yield significant dividends and greatly improve roadway safety. However, roadway users' behaviors that frequently disregard traffic laws greatly impact roadway safety, and so Enforcement and Education are also key components to addressing overall traffic safety.

In 2018, the Council approved the formation of the Office of Pedestrian Safety to address pedestrian safety issues. Due to overall roadway safety issues and to provide a comprehensive approach to all traffic collisions, on March 2, 2021, Council unanimously approved funding for the development of a Comprehensive RSAP, funding for safety enhancements for three intersections listed on Maricopa Association of Governments' Top 100 Intersections Ranked by Crash Risk - Using 2015-19 Crash Data (MAG Top 100 List) and additional staff to support those efforts. The three intersections on the MAG Top 100 List specified for safety enhancements were:

- 75th Avenue and Indian School Road;
- 19th Avenue and Southern Avenue; and
- 16th Street and Camelback Road.

Roadway Safety Action Plan

The RSAP will be a comprehensive safety plan that will apply a data-driven decision-making process to guide the identification and prioritization of transportation safety improvements with a "Four E's" approach. Streets immediately began the process to recruit a transportation safety professional to lead and manage the development and implementation of the RSAP, and to also develop the scope of work to identify and select a consultant to assist Streets staff in the preparation of the RSAP. In April 2021, Streets hired a traffic engineer to lead the comprehensive roadway safety efforts. Additionally, Streets selected and issued a notice to proceed to Y2K Engineering in June 2021 to serve as the prime consulting firm to develop the RSAP, safety analysis tools, and an interactive safety dashboard.

Multiple discovery workshops have been held by the RSAP team to identify, evaluate, and coordinate the roadway safety efforts with multiple City departments and divisions within Streets. The goal of these workshops has been to build inter- and intra-departmental support; open additional lines of communication; and better evaluate existing data, processes, and procedures that impact roadway safety.

Two inter-departmental Visioning and Emphasis Area Workshops are being conducted to bring various stakeholders together within the City to gain a stronger understanding and provide input into the RSAP development. The first workshop was held on Sept.

28, 2021 and provided RSAP background information and visioning, and the second will focus on proposals for safety emphasis areas for the RSAP.

Public Involvement Plan

Public engagement is crucial to the ultimate success of the RSAP. Streets has developed a draft Public Involvement Plan (PIP) working with our consultant and in coordination with Council. The draft PIP establishes a website for public information and comments, and interactive participation in two Citywide meetings and eight Council District-specific meetings for each phase of the two-phase traffic safety improvements effort. Whether these events and meetings are virtual or in person will depend on guidelines related to COVID. The intent of the PIP effort is to engage with the community to establish residents' localized priorities for roadway safety, create awareness, educate, and receive comments and feedback regarding the RSAP. The project team is working diligently to launch the public website and schedule the public engagement meetings for late 2021.

RSAP - Evaluation and Engineering

With respect to the Evaluation and Engineering components of the Four E's, the RSAP team has reviewed and utilized the crash data from MAG's Regional Transportation Safety Information Management System (RTSIMS) and drafted the Phoenix Crash Safety Review (**Attachment A**), which was finalized in mid-September. The Phoenix Crash Safety Review provides a high-level summary of crash data for the City and will be utilized to help identify safety emphasis areas. The RSAP team has also begun the review of nearly 40 completed Road Safety Assessments to identify potential common themes that may warrant modifying existing standards, processes, or procedures.

As the RSAP is a data-driven plan, data and data integration is of primary concern. Multiple data sources from various City departments have been identified and will be reviewed for integration. Various technologies and business analytics tools, such as Microsoft Power BI Business Data Analytics (MS Power BI) and Geographic Information System (GIS), will be used to identify safety related patterns. Additionally, a high injury network will be developed to identify locations with strong potential for safety enhancements. Finally, a safety dashboard will also be developed to report on safety performance metrics.

These safety analytic tools will be updated and managed to scan the roadway network for locations where safety may be improved by installing a traffic signal, a High-Intensity Activated CrossWalk (HAWK) signal, or left turn phase protection. The automation of the screening process will reduce the manpower currently required to identify potential safety improvement locations.

Streets also plans to improve the speed at which it can act upon traffic safety issues. Currently, crash data is obtained from the Arizona Department of Transportation (ADOT), which may lag up to 18 months before a completed, official calendar year of data is available. Streets is working to obtain crash data directly from the Phoenix Police Department, which would likely reduce the lag in crash data analysis to a few months. With more direct access to and evaluation of crash data, Streets can identify and program safety measures more quickly.

RSAP - Enforcement and Education

Streets and the Phoenix Police Department (Police) will work in partnership in the development of the RSAP. The scope for the consultant includes evaluating additional data analytics tools that can assist the Police with enforcement and education activities. The RSAP team anticipates that additional Enforcement and Educational opportunities will be identified and developed as the Evaluation and Engineering tasks near completion.

RSAP - Near-Term Safety Projects

Development of the RSAP and completion of the community engagement process is expected to be complete by September 2022. As the RSAP is developed, Streets is also focused on the implementation of the near-term safety projects through known and proven safety-improvement strategies.

As presented at the March 2, 2021, Council meeting, Streets will make improvements to three intersections from the MAG Top 100 List. These intersections will be redesigned and reconstructed to updated traffic signal standards. The process of reconstructing traffic signals has demonstrated substantial safety benefits, while furthering the City's ability to manage traffic capacity and congestion. The three intersections (75th Avenue and Indian School Road, 19th and Southern avenues and 16th Street and Camelback Road) will receive expedited traffic safety improvements in a two-phase effort.

Phase I improvements will primarily modernize the traffic signals at each location with design and construction utilizing in-house and on-call contractor capabilities. The signal modernization is comprised of providing new traffic signal heads above each through lane, improved intersection illumination with a street light fixture at each side of marked crosswalks, emergency vehicle preemption, vehicular video detection, Closed-Circuit Television (CCTV) cameras, Americans with Disabilities Act (ADA) accessibility, signal-related signage, network communication, Flashing Yellow Arrow (FYA) capabilities, as well as new poles, mast arms, wiring, conduit, mounting hardware, control cabinets and controller equipment. Phase I improvements can be

completed within existing right-of-way and without the need for construction easements or utility relocations. Phase I design plans for all three intersections have been completed, and construction is expected to begin by December 2021. For the 19th and Southern avenues intersection, the third southbound curb lane that ends just south of Southern Avenue will transition into an exclusive right-turn lane north of Southern Avenue, allowing for an extension of the southbound bike lane with a buffer from Southern Avenue to Lynne Lane.

Phase II improvements will begin immediately after Phase I improvements. Phase II safety improvements may require the acquisition of additional right-of-way, construction easements and utility relocations; all of which can have an impact on delivery timelines. Phase II safety improvements are expected to include additional streetlights along the approaches to the intersections to improve illumination and visibility, as well as signing and pavement striping/marking modifications. For the 16th Street and Camelback Road intersection, there will be additional evaluation for enhanced crosswalk locations, including installation of a HAWK signal(s) to address the pedestrian activity associated with the retail, residential, dining and car dealerships in the area. On-street parking and loading zones may also be evaluated for this intersection.

As the total costs for improvements to these three intersections are identified, Streets will identify additional intersections from the MAG Top 100 List to receive similar safety improvements.

Office of Pedestrian Safety

The Office of Pedestrian Safety (OPS) uses a data-driven approach also with emphasis on the Four E's. The OPS is allocated an annual budget of $2 million to address pedestrian safety across the City through various projects and programs. To date, the City has installed 68 HAWK signals with another 25 locations currently programmed for installation. The OPS has initiated an effort to upgrade all mid-block arterial street crosswalks to high visibility crosswalks with improve signage and markings.

The OPS has also initiated a study to evaluate mid-block marked crosswalks and the conversion of Rectangular Rapid Flashing Beacons (RRFB) to either circular yellow flashing beacons or HAWK signals. A significant portion of pedestrian fatalities occur at night where there is no or limited street lighting. The OPS has initiated several projects to provide additional streetlights in those areas. Education is also a major component of pedestrian safety with education primarily focused on school-aged children through the Safe Routes to School Program.

Traffic Operations and Intelligent Transportation Systems

Streets has additional existing programs and initiatives that address roadway safety concerns and needs. Neighborhood traffic mitigation evaluations, primarily utilizing signing, striping, and speed cushions/humps to deter excessive speed and cut-through traffic, is a regular activity. Review of access control of new developments to provide safer ingress and egress by restricting certain traffic movements is also conducted on a regular basis. As Streets completes its pavement preservation projects, lane narrowing to provide dedicated bike lanes or add bike lane buffers is also considered to improve bicycle safety and lower vehicular speeds.

The City has 1,162 standard traffic signals, many of which are not designed to current national standards. To address this, each year Streets implements signal modernization projects, which are typically comprised of providing new traffic signal heads above each through lane, improved intersection illumination with a street light fixture at each side of marked crosswalks, emergency vehicle preemption, vehicular video detection, CCTV cameras, ADA accessibility, signal related signing, network communication, FYA capabilities, as well as new poles, mast arms, wiring, conduit, mounting hardware, control cabinets and controller equipment. To highlight how signal modernization projects can address safety, the addition of an individual signal head per traffic lane is a proven traffic safety measure that is shown to improve driver compliance with traffic signals and should reduce the frequency of drivers running red lights. Red light running crashes, which are caused by a failure to yield right-of-way or disregarding traffic signals at intersections often lead to severe angle or left-turn crashes, which are the most violent and deadly roadway crashes.

Streets has utilized HAWK signals to reduce risk and improve safety for pedestrians at high or critical crossing locations. To improve HAWK signal user experience and compliance, Streets modified its HAWK signals for quicker actuation when the activation button is pressed. Previously, HAWK signals were activated only after the progression window ended but now are active immediately after the button is pushed if there is not a conflict with traffic progression, reducing the wait time for pedestrians to safely cross at a HAWK signal location.

Streets has also increased its deployment of Flashing Yellow Arrows (FYAs) at its signalized intersections. A significant number of roadway fatalities are due to drivers not yielding the right-of-way while making left turns and being struck by oncoming vehicles. The use of FYAs provides a protected phase and/or permitted phase dependent upon traffic conditions, and is a proven traffic safety measure that improves safety and vehicular delay.

The use of network communication technologies enables real-time traffic control to reduce unexpected bottle necks that may result in reduced rear-end crashes due to unexpected traffic queuing. Streets is actively working to further expand its fiber communication network to allow this improved connectivity to between our traffic signals and our Traffic Management Center to improve our response to incidents and events within our transportation system.

Regional, State, and Federal Funding

Streets continues to leverage local funding with opportunities for regional, state, and federal funding to improve roadway safety, taking advantage of the Highway Safety Improvement Program (HSIP) administered by ADOT and MAG's Road Safety Program (RSP). Streets completed a HSIP grant funding application for enhanced corridor street lighting improvements for 14 locations Citywide with a grant value exceeding $3 million. Streets has also completed applications for the current MAG RSP cycle requesting two additional HAWK signals and two traffic signals on behalf of the OPS. The RSAP will improve the process that Streets' uses for screening of safety needs and increase our competitiveness for these grant programs.

Financial Impact

The City Council approved the allocation of $3 million in Streets' Transportation T2050 (T2050) revenues and $3 million in General Fund resources over five years to support the RSAP. Streets allocated and encumbered $600,000 in Fiscal Year (FY) 2021. The balance of the $6 million RSAP funding is programmed in Streets' Capital Improvement Program at $1.2 million per year in FY 2021-22 through FY 2024-25, with the remaining $600,000 in FY 2025-26.

Concurrence/Previous Council Action

The Citizens Transportation Commission recommended the development of the Roadway Safety Action Plan for City Council approval on Jan. 28, 2021.

The Transportation, Infrastructure and Innovation Subcommittee recommended City Council approval for the development of the RSAP on Feb. 3, 2021.

The City Council approved development of the RSAP and near-term projects on March 2, 2021.

Responsible Department

This item is submitted by Deputy City Manager Mario Paniagua and the Street Transportation Department.

Phoenix Crash Safety Review Using MAG RTSIMS Data

City of Phoenix Roadway Safety Action Plan

Final Report

September 28, 2021

PREPARED FOR:

Streets PHX
STREET TRANSPORTATION DEPARTMENT

PREPARED BY:

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PROVIDING VALUE FIRST

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EXECUTIVE SUMMARY

The City of Phoenix is currently in the process of developing a Comprehensive Roadway Safety Action Plan, which will further shape the City's planning efforts in roadway safety. This project involves a review of current safety trends, existing programs and processes, and public/stakeholder involvement to create a vision and plan for the future. This memorandum is intended to provide a preliminary overview of historical crash trends within the City of Phoenix within the past five years. In later stages of this project, a dynamic crash dashboard will be developed to provide enhanced abilities in data analytics and reporting.

In the initial stages of this project, crash queries were obtained through the Maricopa Association of Governments (MAG) software tool for crash analysis, the Regional Transportation Safety Information Management System (RTSIMS). This report uses existing tools to conduct a safety analysis of the past five years, and compares trends to regional and statewide data. The following key findings are based on a review of RTSIMS crash data from 2015 to 2019:

- An annual average 30,376 crashes per year were reported during the five year study period. This equates to 83 crashes per day.
- Crashes on arterial and local roadways in the City of Phoenix increased by a rate of about 4.4% per year. This trend suggests that the crash frequency increased at a higher rate than the City's population, which in the same period grew 1.5% per year, on average.
- Most crashes result in no injury (70%), approximately one-quarter result in possible or minor injury (27%), 2.6% result in serious injury, and 0.6% result in fatal injury. This equates to two serious injury crashes occurring each day, and one fatal crash occurring every other day.
- The percentage of fatal and serious injury crashes has remained generally consistent over the past five years; however the percentage of no injury crashes has steadily increased over time.
- For all crash severities, rear end crashes were the most common collision manner, followed by left-turn crashes. These two crash types account for about half of all crashes.
- For fatal and serious injury crashes, the "Other" collision manner was reported most frequent (25%), which is commonly selected for crashes involving pedestrians and bicyclists. Other frequent crash types for fatal and serious injury crashes were left-turn (23%) and angle (21%).
- Crashes involving unrestrained drivers (i.e, lack of seatbelt or helmet use) have reduced in frequency.
- Due to lack of protection on impact, pedestrians and bicyclists (vulnerable users) are more frequently seriously injured when involved in motor vehicle crashes. In the City of Phoenix, crashes involving bicyclists and pedestrians represent nearly half (48%) of all fatal crashes.
- A greater share of pedestrian crashes is occurring in Phoenix compared to other agencies within the MAG Region. Phoenix represents 36% of Maricopa County's population and about 43% of the County's local and arterial road crashes; however, 63% of County crashes involving pedestrians occurred on City of Phoenix's local and arterial roads.
- Bicyclist crashes are occurring at a greater rate in Phoenix than in other agencies within the MAG Region. About 43% of all crashes involving bicyclists in Maricopa County occurred on City of Phoenix's local and arterial roads.
- For all crash severities, the majority of crashes occur during daylight hours (71%), with the remaining 29% of crashes occurring during dawn, dusk, or dark conditions.
- A correlation exists between injury severity and lighting condition; fatal and serious injury crashes occurred more frequently during dawn, dusk, and dark conditions (45%) compared to daylight conditions (55%).

MAG RTSIMS tool provided the ability to retrieve data quickly for numerous Citywide statistics. During the analysis process, several discrepancies were identified when comparing to past Phoenix data, which is common when comparing different datasets. The City of Phoenix conducts a robust data scrubbing process each year, which confirms crashes exist within the City of Phoenix boundaries, omits freeway crashes, and reviews characteristics of crashes in detail to correct the manner of collision if originally mis-coded. The RTSIMS crash data is not scrubbed, and comes directly from ADOT ACIS. These differences, along with variations in the querying process, are acknowledged as part of this report. This data contained in this report is intended to provide preliminary information; later stages of this project will modernize the existing City of Phoenix crash analysis process to improve and enhance data analytics and visualization.

INTRODUCTION

The City of Phoenix is currently in the process of developing a Comprehensive Roadway Safety Action Plan, which will further shape the City's planning efforts in roadway safety. This project involves a review of current safety trends, existing programs and processes, and public/stakeholder involvement to create a vision and plan for the future. This memorandum is intended to provide a preliminary overview of historical crash trends within the City of Phoenix within the past five years. Through the development of the project, a dynamic crash dashboard will be developed to provide enhanced abilities in data analytics and reporting. In the initial stages of the project, crash queries were obtained through the Maricopa Association of Governments (MAG) software tool for crash analysis, the Regional Transportation Safety Information Management System (RTSIMS).

The City of Phoenix prepares comprehensive collision summary reports each year, documenting the past year of motor vehicle, pedestrian, and bicycle-related crashes. This report uses existing tools (RTSIMS) to conduct a supplementary safety analysis of the past five years, and compare trends to regional and statewide data.

Crash data within the City of Phoenix was obtained for the past five years through the RTSIMS tool, from January 1, 2015, to December 31, 2019. At the time of the analysis, 2020 crash data was not available. The RTSIMS platform compiles historical crash data from the Arizona Crash Information System (ACIS) crash database maintained by the Arizona Department of Transportation (ADOT). The RTSIMS data excludes freeways, highways, and ramps; only arterial, collector, and local roadways are included. RTSIMS refers to this group as "Arterial and Local Roads". This naming refers to roadway classification and does not imply roadway ownership. The results of traffic safety data queries may differ slightly based on data source, filtering assumptions, modifications to raw data, and/or query techniques. The RTSIMS safety review is intended to identify trends and inform decisions to support roadway safety.

Due to the limited sample size of fatal crashes, fatal and serious injury crashes were combined to analyze trends in critical crashes. Unlike less severe crashes, the most common collision manner for fatal and serious injury crashes is "Other", which primarily represents bicyclist and pedestrian crashes, followed by left-turn and angle crashes. It was also observed that KA crashes are overrepresented in non-daylight conditions.

According to the US Census Bureau Annual Population Estimates (Figure 1), the City of Phoenix's population has grown about 6% during the five years under study, from 2015 to 2019. In 2020, the City of Phoenix's residents represented 23% of Arizona's population and 36% of Maricopa County's Population.

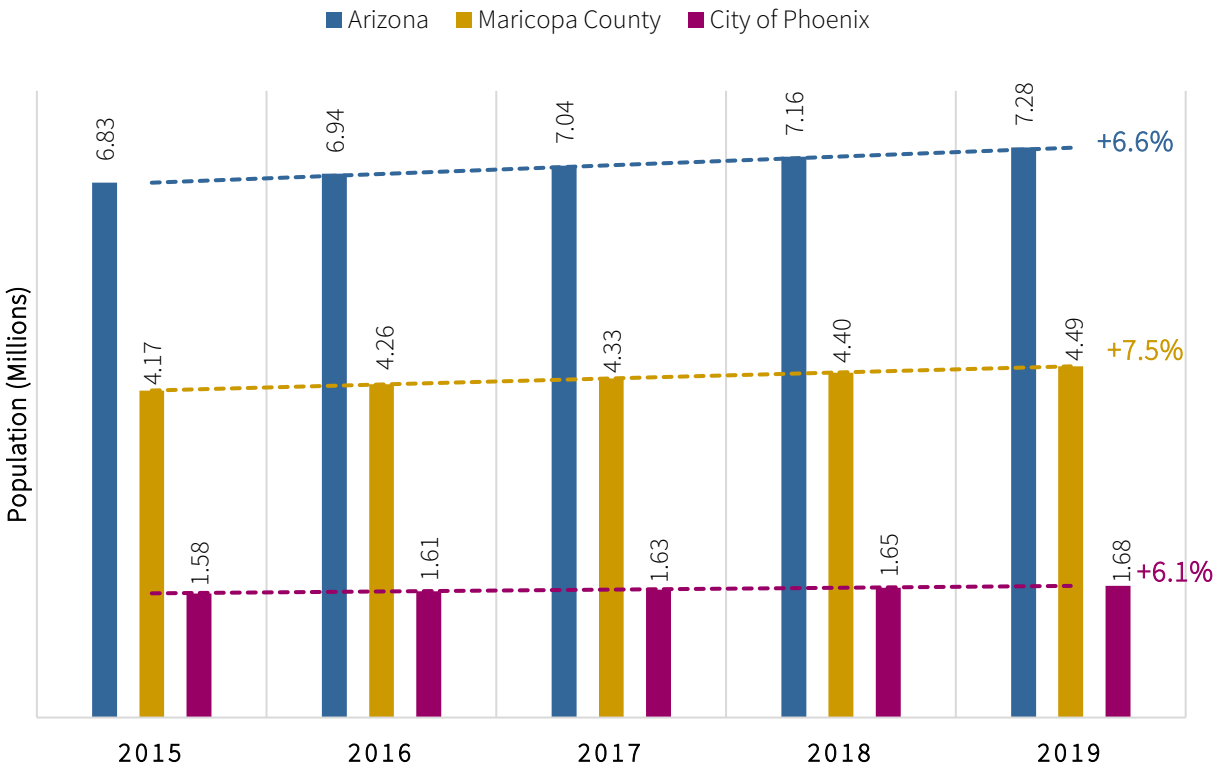


Figure 1: City of Phoenix Population Comparison to State and County
(Source: US Census Bureau, Annual Estimates of Resident Population)

GENERAL TRENDS

Since 2015, the total number of crashes within the City of Phoenix has been steadily increasing, with a total of 31,827 crashes occurring in 2019 on the City's local and arterial roadway network. Figure 2 shows the number of crashes by injury severity for each year in the analysis period. The percentage of fatal crashes has stayed relatively constant, ranging from 0.5% to 0.7% of all crashes. The percentage of serious injury crashes varied between 2.1% and 3.2% of fatal crashes. The combined minor injury and possible injury ranged has steadily decreased over the past five years, from 30.7% (2015) to 23.8% (2019). The share of no injury crashes has increased over the past five years, from 66.0% (2015) to 73.6% (2019). This data suggests a slight downward trend in the severity of crashes.

Figure 3 shows the number of fatal and serious injury crashes from 2015 to 2019, which combined are trending towards fewer crashes since 2016.

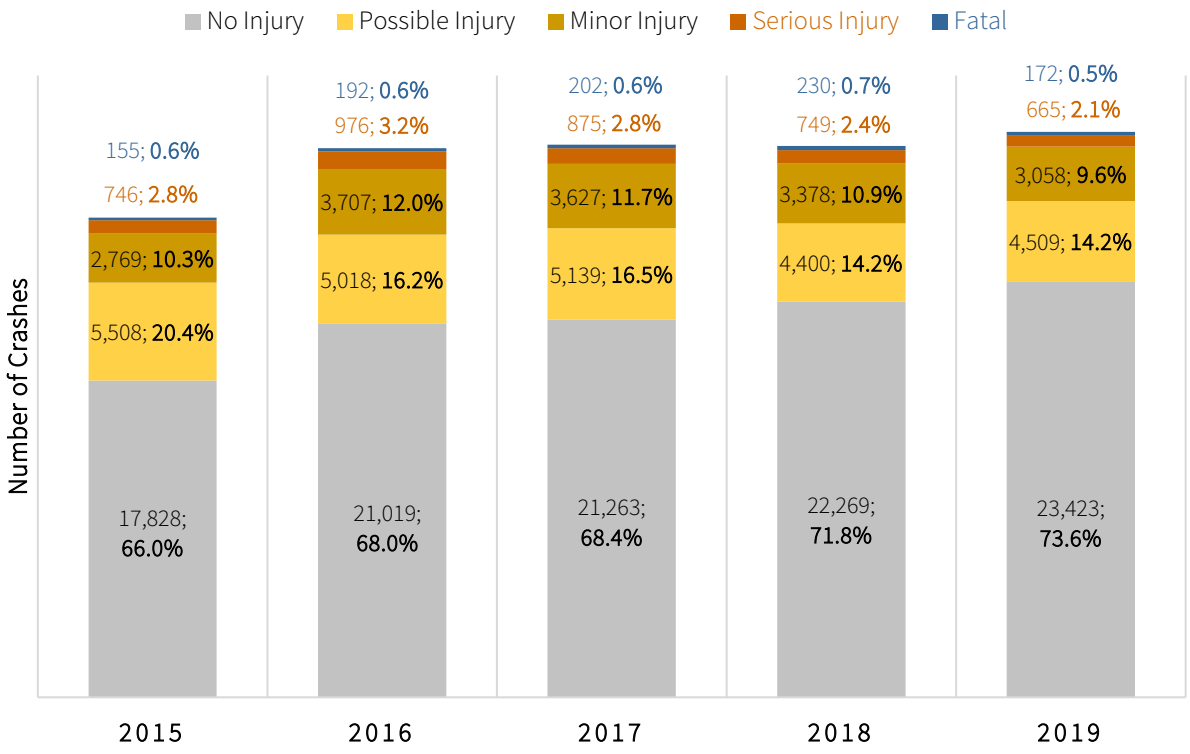


Figure 2: Total Number of Crashes per Year and Injury Severity (Local and Arterial Roads)

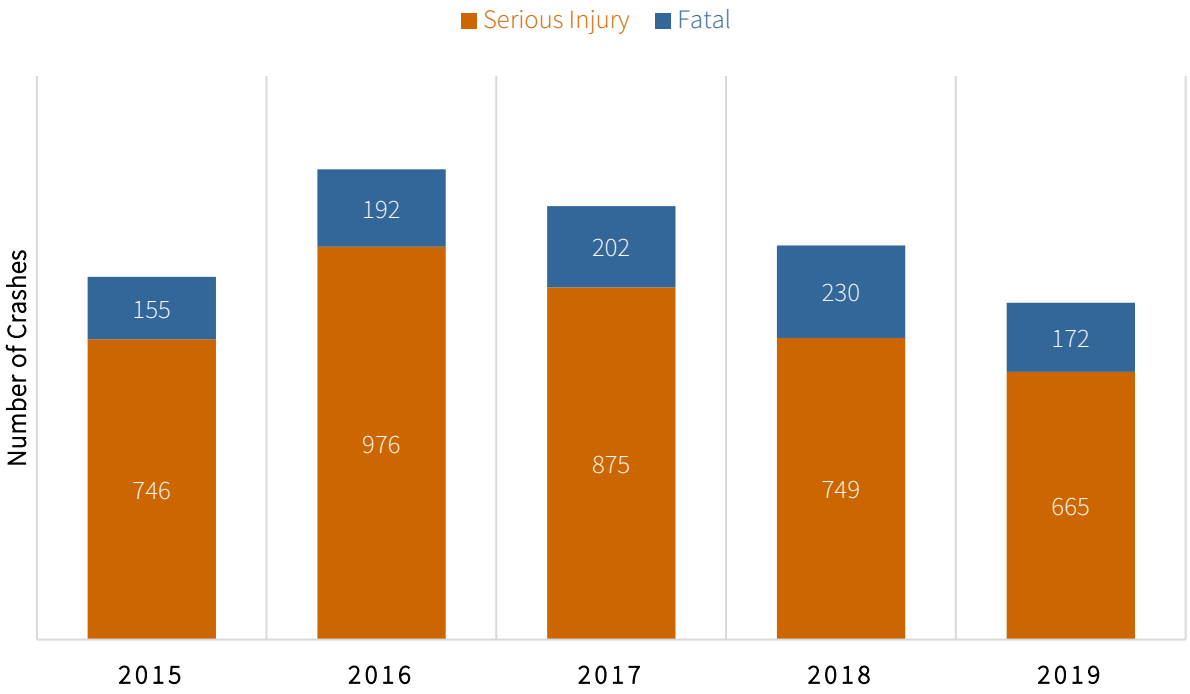


Figure 3: Total Number of Fatal and Serious Injury Crashes per Year (Local and Arterial Roads)

Crash data from 2020 was not available through RTSIMS at the time of this report. Based on a preliminary review of 2020 crash data, total number of crashes decreased by about 20% from 2019 crashes, which is presumed to be related to lower vehicle miles travelled as a result of the COVID-19 pandemic. The share of fatal and incapacitating injury crashes remained generally consistent with the previous five years; however, the share of no injury crashes followed the same positive trend (increasing from 73.6% in 2019 to 74.2% in 2020). Preliminary 2021 crash data, obtained through the Phoenix Police Department Vehicle Crimes Unit (VCU), indicate that there were 114 fatal crashes during the first six months of 2021.

Table 1 shows the distribution of crashes on City of Phoenix local and arterial roads by collision manner for the past five years. The most frequently-reported crash types were rear-end crashes (29% of all reported crashes) followed by left-turn crashes (23% of all crashes). Together, rear-end and left-turn crashes represent about half of all crashes.

Table 1: Number of Crashes per Year and Collision Manner

	2015	2016	2017	2018	2019	Total	%
Rear-end (Front-To-Rear)	8,319	9,144	9,002	8,811	8,870	44,146	29.1%
Left Turn	5,864	6,658	7,070	7,120	7,678	34,390	22.6%
Angle (Front to Side) (Other Than Left Turn)	5,246	5,434	5,448	5,434	5,404	26,966	17.8%
Sideswipe, Same Direction	3,259	4,176	4,149	4,374	4,602	20,560	13.5%
Single Vehicle	2,045	2,223	2,192	2,224	2,191	10,875	7.2%
Other (Includes Pedestrians and Bicyclists)	1,002	1,309	1,324	1,116	1,046	5,797	3.8%
Head-on (Front-To-Front) (Other Than Left Turn)	488	666	673	696	743	3,266	2.2%
Sideswipe, Opposite Direction	349	556	616	625	645	2,791	1.8%
Rear-To-Rear	163	430	277	230	195	1,295	< 1 %
Rear-To-Side	161	183	193	193	208	938	< 1%
Unknown	110	133	162	203	245	853	< 1%
Total	27,006	30,912	31,106	31,026	31,827	151,877	

Note: The City of Phoenix uses a data scrubbing process to improve consistency of coding for collision manner. For example, the City of Phoenix defines left-turn crashes as involving vehicles originally traveling in the opposing (parallel) direction. If a crash involves a left-turning movement, but the vehicles originate in perpendicular paths, the collision is defined as an angle crash. The results of Table 1 were summarized using RTSIMS data, which does not involve the City of Phoenix scrubbing process. Therefore, these results vary from City of Phoenix scrubbed data, which identifies that the leading manner of collision is rear-end crashes, followed by angle crashes, then left-turn crashes.

Table 2 shows the number of pedestrian and bicyclist crashes per year, as well as the injury severity. Pedestrian crashes have been slowly increasing over the past five years, while bicyclist crashes have been decreasing. An initial review of 2020 data indicates consistency with these trends.

Over the five-year period, pedestrians were involved in an average of 86 fatal crashes per year, and bicyclists were involved in an average of 8 fatal crashes per year. Combined, crashes involving pedestrians and bicyclists represent nearly half (48.6%) of all fatal crashes. Preliminary 2021 crash data, obtained through the Phoenix Police Department VCU, indicate that there a total of 114 fatal crashes reported in the first six months of 2021, 52 (45.6%) of which involved pedestrians, and 4 (3.5%) of which involved bicyclists.

Table 2: Number of Pedestrian and Bicyclists Crashes per Year and Collision Manner

	2015	2016	2017	2018	2019	Total
Bicyclists	438	485	470	384	298	2,075
No Injury	35	35	17	14	0	101
Possible Injury	157	151	152	129	118	707
Minor injuries	185	219	235	186	147	972
Serious Injury	53	71	52	52	26	254
Fatal	8	9	14	3	7	41
Pedestrians	617	771	813	825	820	3,846
No Injury	30	24	9	9	0	72
Possible Injury	153	164	194	186	247	944
Minor injuries	247	306	319	332	347	1,551
Serious Injury	127	189	197	187	148	848
Fatal	60	88	94	111	78	431
All Crashes	27,006	30,912	31,106	31,026	31,827	151,877

CRASHES BY MONTH

Figure 4 and Figure 5 show the frequency of crashes in the City of Phoenix (arterial and local roads) by month. The month-to-month trends are consistent between all crashes, serious injury crashes, and fatal crashes. March registered the highest number of crashes, including fatal and injury crashes. The month with the fewest reported crashes was July, which correlates with lower summer traffic volumes. Lower traffic volumes in June and July are often associated with school breaks, seasonal resident travel, lower pedestrian and bicyclist activity, and lower traffic volumes in general due to the high temperatures.

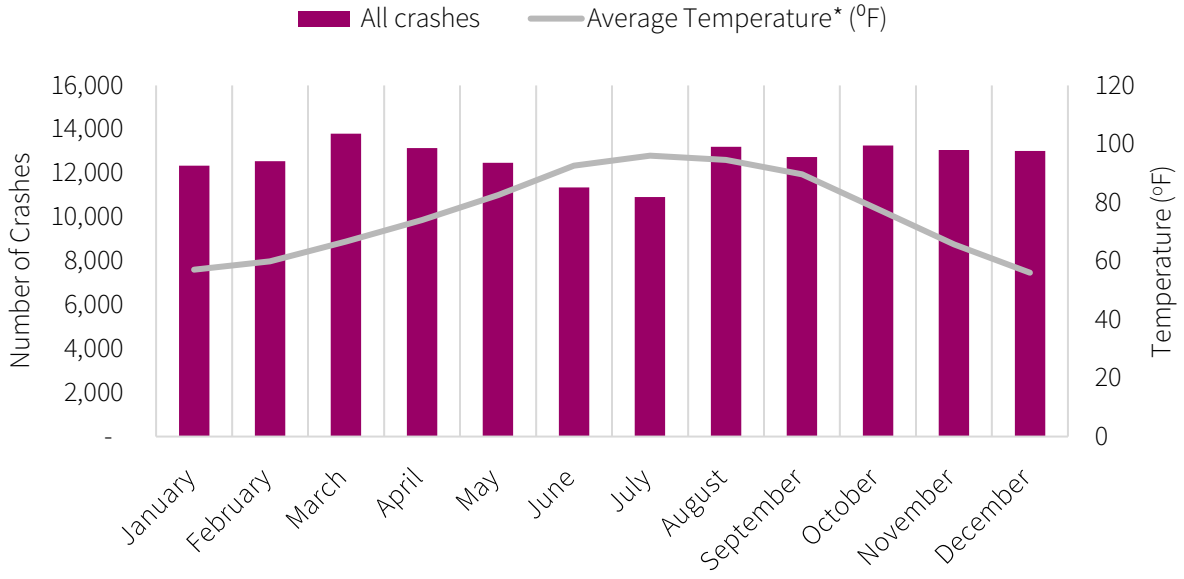


Figure 4: Number of Crashes by Month (2015-2019)

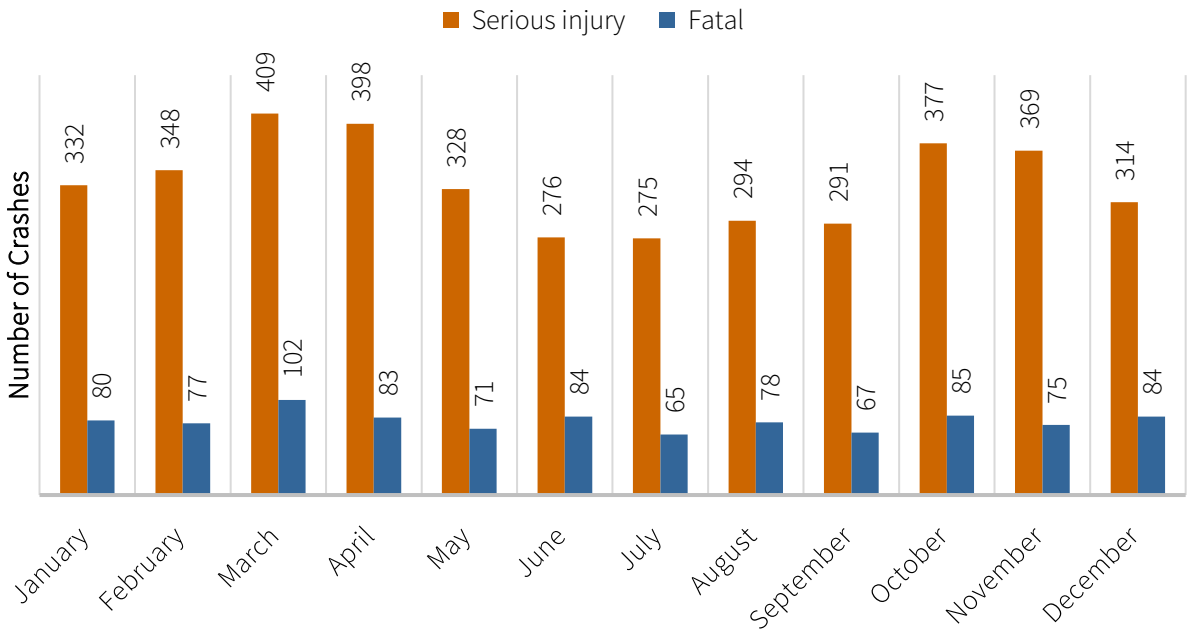


Figure 5: Number of Serious Injury and Fatal Crashes by Month (2015-2019)

CRASHES BY DAY OF WEEK

Figure 6 shows the distribution of crashes by weekday. Crashes occur most frequently on Fridays, while the fewest crashes occur on Sundays. Fatal crashes occur most often on Saturdays and Sundays, and occur less frequently on Mondays.

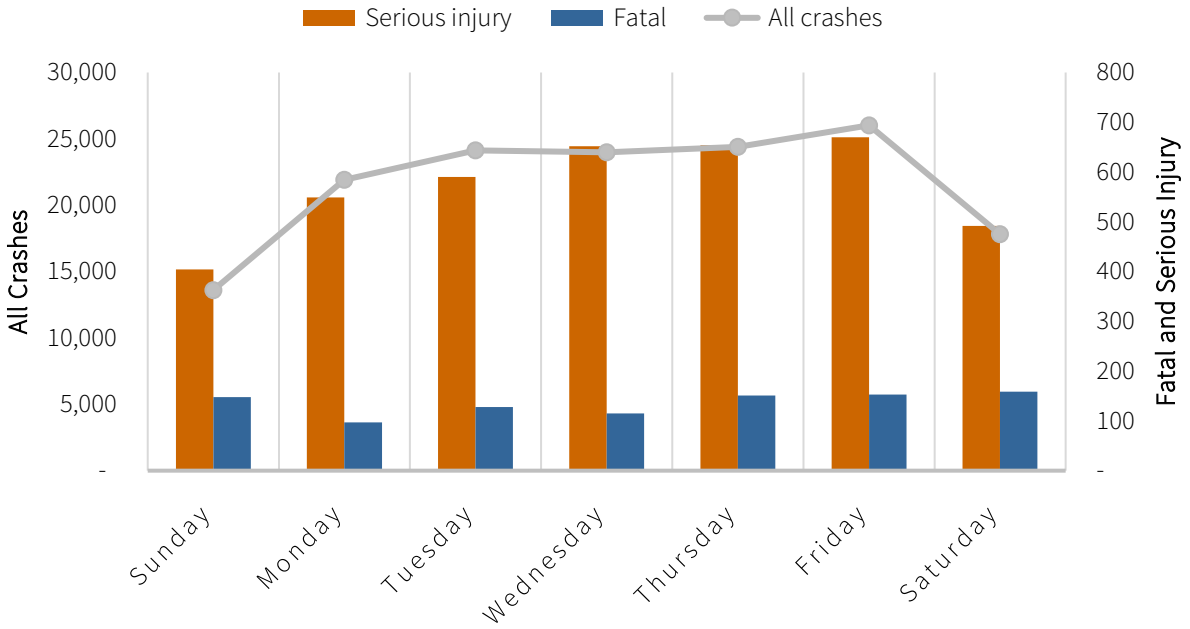


Figure 6: Number of Crashes by Day of the Week (2015-2019)

CRASHES BY TIME OF DAY

Figure 7 shows that the majority of crashes (71%) occurred under daylight conditions, with 29% of crashes occurring during dawn, dusk, or dark conditions.

Figure 8 shows how the crashes are distributed by lighting conditions over the course of the day. In addition to the AM peak around 7 to 8 AM, a large number of crashes occur during the PM peak from 3 to 6 PM.

Crashes involving dawn and dusk conditions were limited between 4 to 7 AM and 4 to 7 PM, respectively.

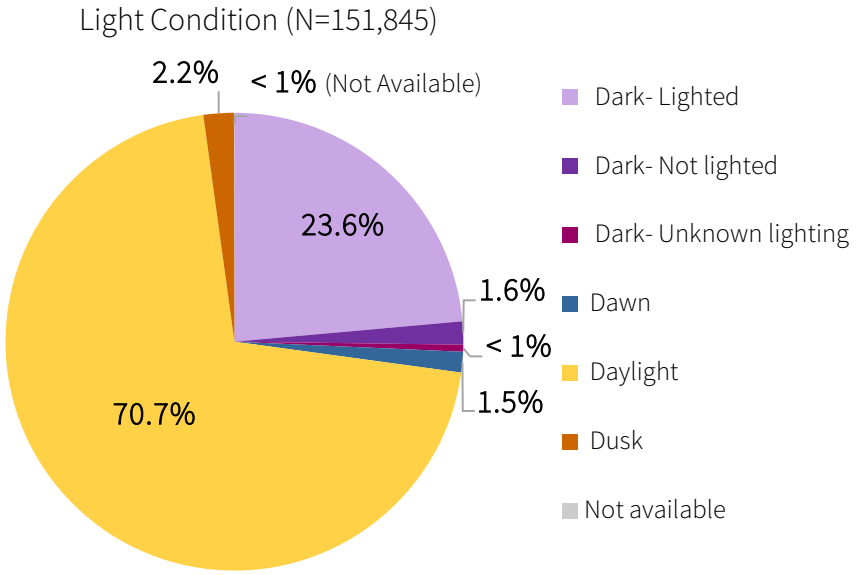


Figure 7: Share of Crashes by Light Condition, 2015-2019

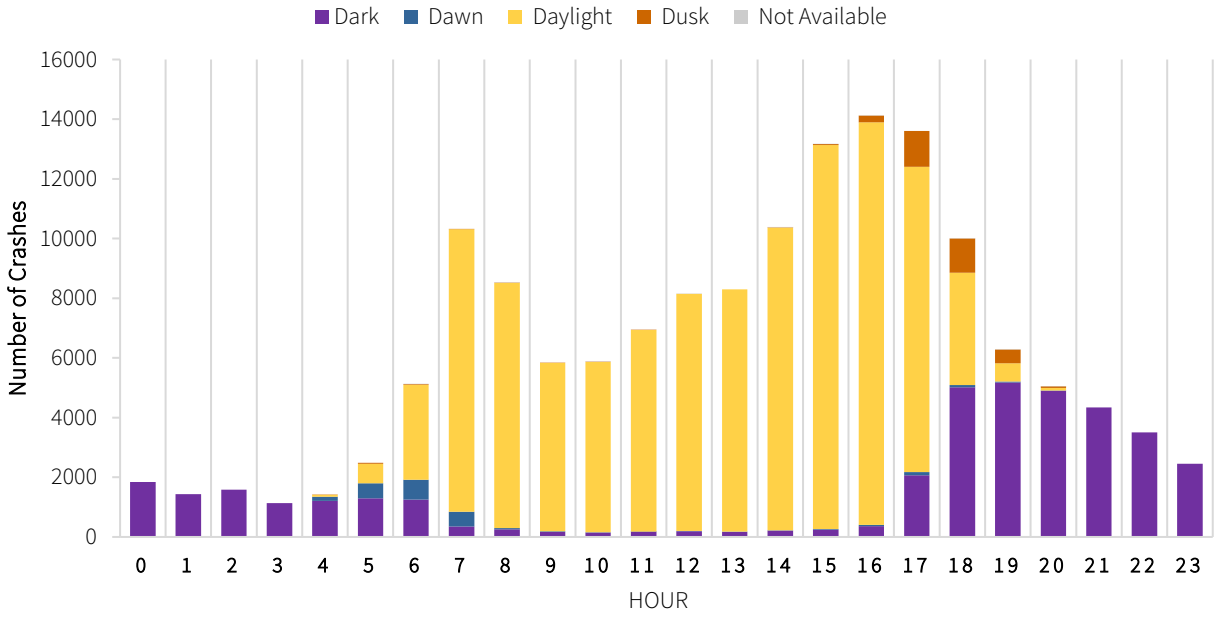


Figure 8: Number of Crashes by Hour of the Day and Light Condition (2015-2019)

CRASHES BY LOCATION

To classify a crash's relation to the junction, crashes were separated by Junction Type as either an Intersection/Interchange crash or a Non-Intersection/Non-Interchange crash. Figure 9 shows where the location type of crashes that occurred during the study period of 2015 to 2019.

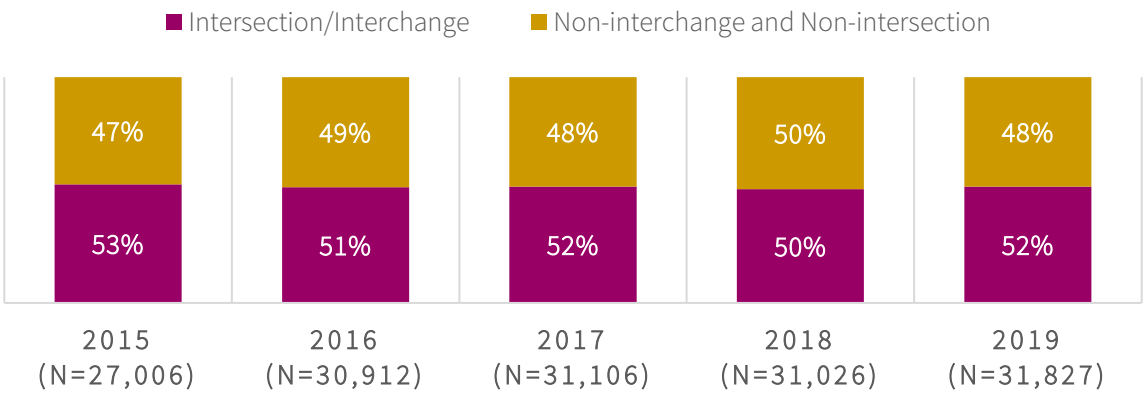


Figure 9: Crash Location Relative to Junctions, by Year

Figure 10 shows the injury severity between the three location types. In general, crashes are slightly more severe at intersections and interchanges, compared to segment collisions, which correlates with the greater frequency and types of collisions/conflict points possible.

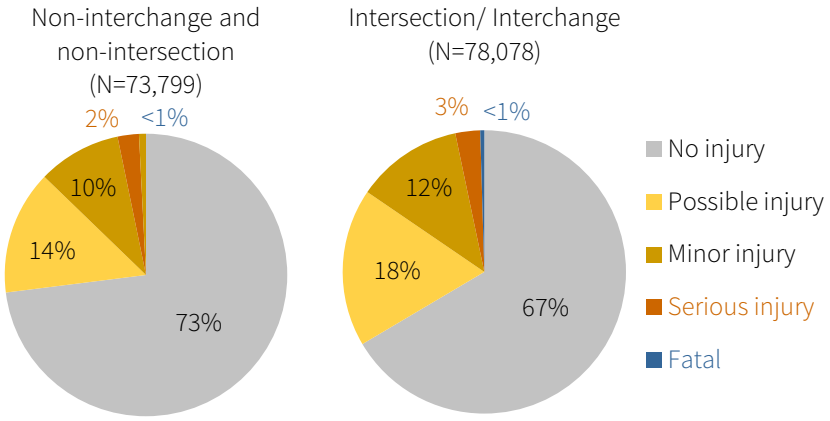


Figure 10: Injury Severity of Intersection/Interchange-Related Crashes

The collision manner of intersection and interchange crashes is shown in Figure 11. The three most common crash types at intersections are left-turns, rear-ends, and angle crashes, respectively.

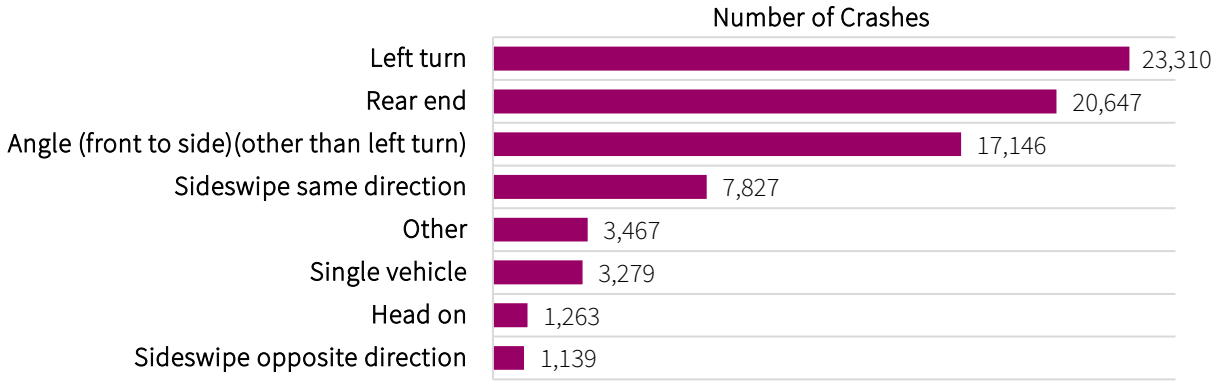


Figure 11: Collision Manner of Intersection/Interchange-Related Crashes

To rank the intersections based on a holistic safety analysis, the MAG's network screening methodology was used to classify the City of Phoenix's intersections per their safety score. The scoring methodology combines three safety attributes on the intersection, including crash frequency, crash severity, and crash type. The three factors are weighted together for the final Intersection Safety Score, with crash severity as 50%, crash frequency as 25%, and crash type as 50% of the weighting. Table 3 and Figure 12 show the Top 20 intersections with the highest Intersection Safety Score within the City of Phoenix.

The intersections with the greatest crash risk exist at 1) 75th Avenue and Indian School Road, 2) 67th Avenue and Indian School Road, and 3) 67th Avenue and McDowell Road. Formal Road Safety Assessments (RSA) have been conducted at 10 of the Top 20 high crash risk intersections.

Table 3: High Crash Risk Intersections (Intersection Safety Score)

Rank, City of Phoenix	Rank, MAG Region	RSA Conducted?	Location	# Crashes	Crash Frequency Score (CF)	Crash Severity Score (CS)	Crash Type Score (CT)	Final Score
1	1	2015*,2021*	75th Ave & Indian School Rd	251	1.06	1.36	1.29	1.26
2	2	2013, 2015*, 2021*	67th Ave & Indian School Rd	273	1.15	1.32	1.18	1.24
3	3	2016	67th Ave & McDowell Rd	246	1.04	1.30	1.27	1.23
4	4		99th Ave & Lower Buckeye Rd	316	1.33	1.23	0.91	1.17
5	6		51st Ave & McDowell Rd	201	0.85	1.09	1.23	1.06
6	8		43rd Ave & Bethany Home Rd	194	0.82	1.08	1.16	1.03
7	9	2021*	75th Ave & McDowell Rd	215	0.91	1.07	0.97	1.01
8	10	2019*	27th Ave & Camelback Rd	203	0.86	1.07	0.97	1.00
9	13		7th Ave & Indian School Rd	191	0.81	0.97	1.10	0.96
10	14		75th Ave & Thomas Rd	192	0.81	1.01	1.01	0.96
11	15		35th Ave & Bethany Home Rd	194	0.82	0.99	1.04	0.96
12	16	2018	43rd Ave & Peoria Ave	196	0.83	1.06	0.89	0.96
13	17	2021	35th Ave & Glendale Ave	188	0.79	0.99	1.05	0.96
14	18	2021	24th St & Baseline Rd	204	0.86	1.00	0.92	0.95
15	19	2013	51st Ave & Indian School Rd	193	0.81	0.96	1.03	0.94
16	21		43rd Ave & Northern Ave	186	0.79	0.95	0.97	0.91
17	23		43rd Ave & McDowell Rd	184	0.78	0.97	0.90	0.91
18	24	2021*	83rd Ave & Indian School Rd	170	0.72	0.95	1.00	0.90
19	27		43rd Ave & Glendale Ave	190	0.80	0.94	0.82	0.88
20	28	2018	35th Ave & Bell Rd	150	0.63	0.89	1.08	0.87

*Note: *Location was studied as part of a corridor RSA.*

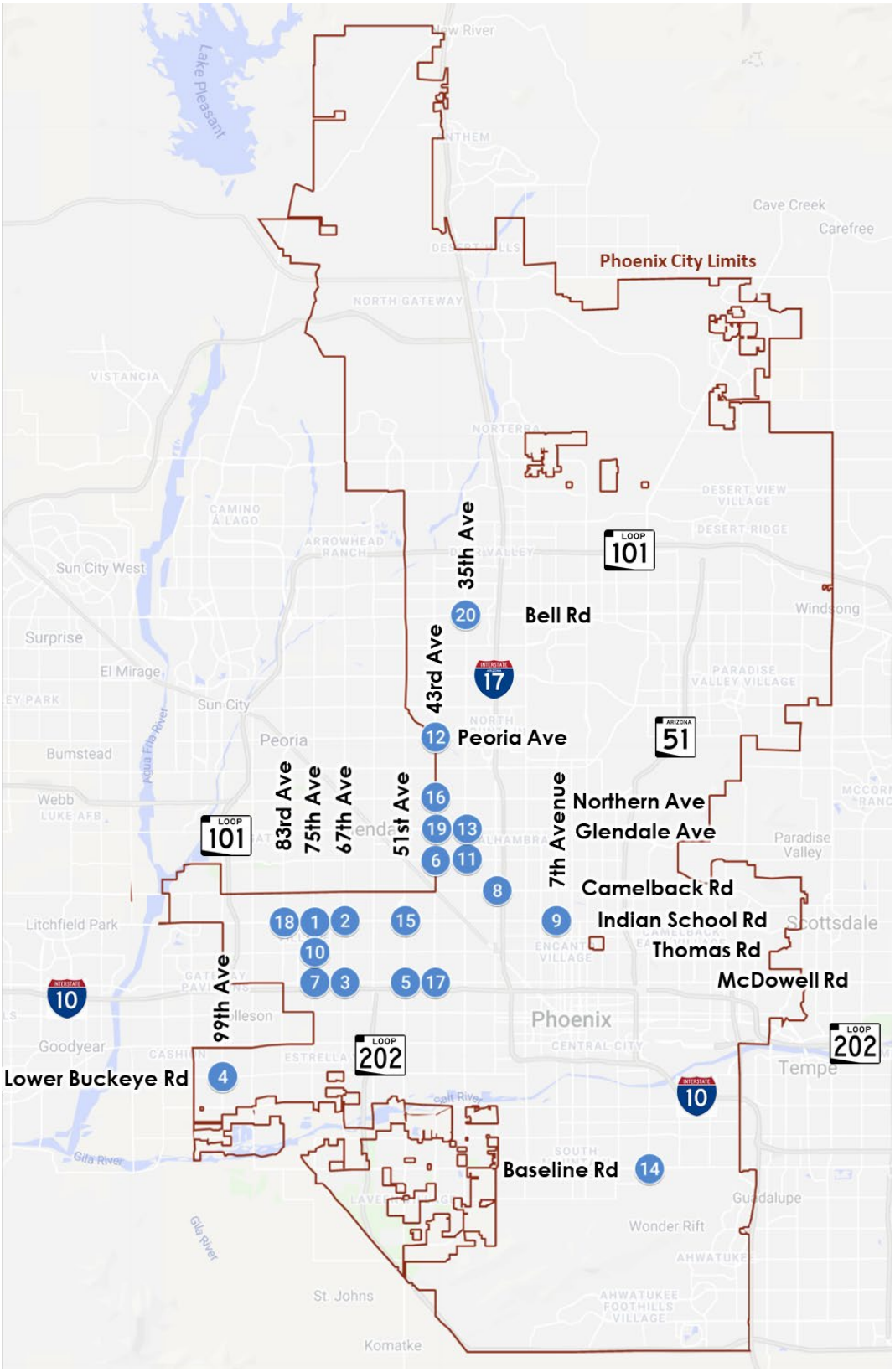


Figure 12: High-Crash Intersections (Top 20 Intersection Safety Score)

BEHAVIOR CHARACTERISTICS

In the period of 2015 to 2019, alcohol and drug-impaired drivers were responsible for 7,487 crashes, which represents 5% of all crashes on local and arterial roads in the City of Phoenix. However, of all 4,962 fatal and serious injury crashes, 1,117 (22%) were associated with impaired drivers. Figure 13 shows the distribution of crashes involving impaired drivers (alcohol, drugs) by the hour of the day. Unlike the total number of crashes that show two distinct peaks of crashes over the AM and PM traffic peaks (Figure 8), crashes involving impaired drivers are mostly concentrated during the late hours of the night (7 PM to 3 AM).

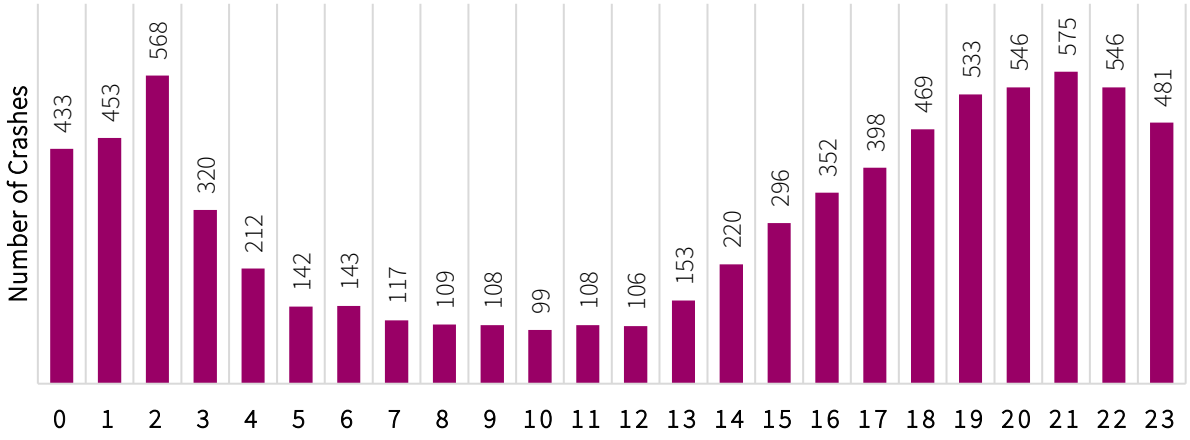


Figure 13: Number of Crashes Involving Impaired Drivers, by Hour

During the five years analyzed in this report, the total number of crashes involving unrestrained drivers show a steady decline. From 2015 to 2019, unrestrained driver crashes have reduced by approximately 20%. Figure 14 shows the injury severity of such crashes over the years. On average, about 7% of unrestrained driver crashes are fatal crashes, which is a significantly larger share compared to all crashes.

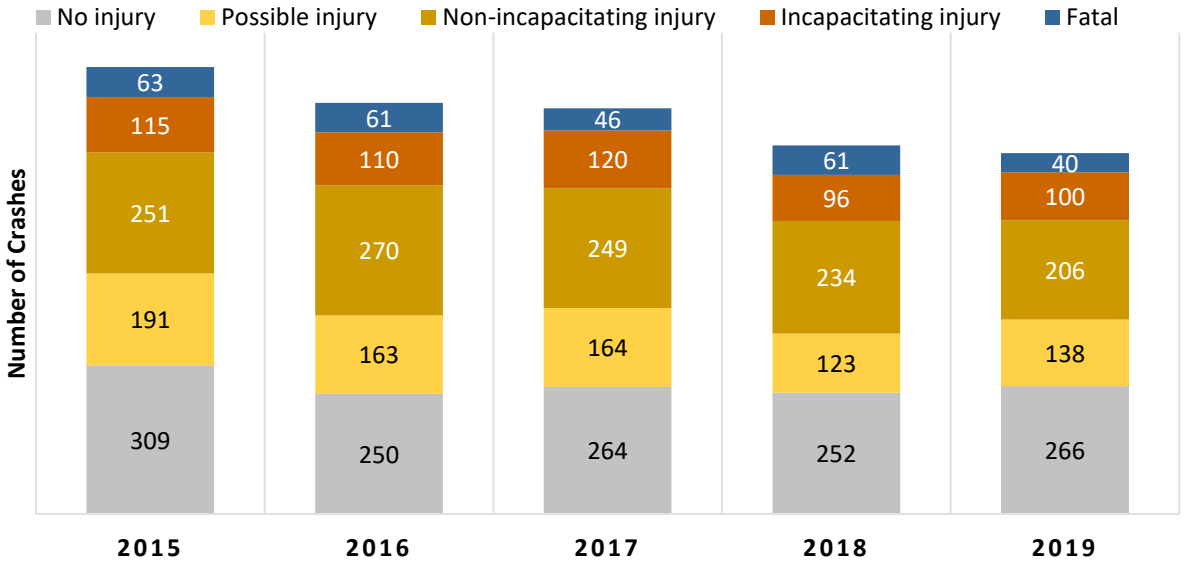
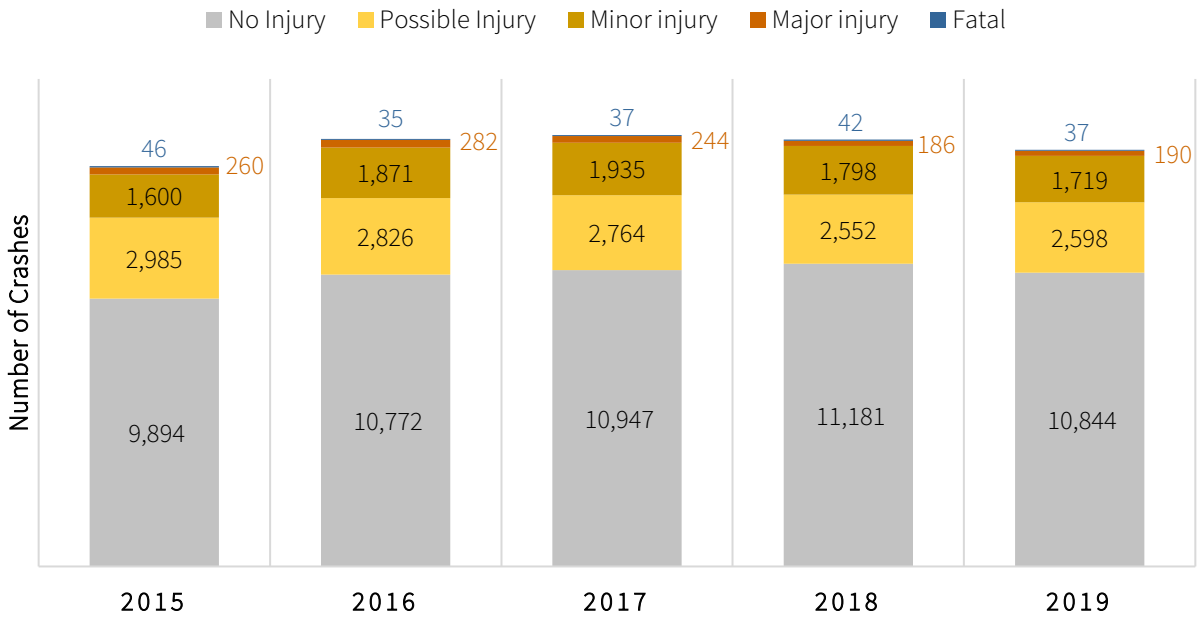


Figure 14: Number of Crashes Involving Unrestrained Drivers, by Year and Injury Severity

Figure 15 shows the severity associated with speed-related crashes across the study period. While on average about 70% of speed-related crashes result in no injury, close to 2% of such crashes result in serious injury or fatality.



Note: Violation considered was "Speed too fast for conditions".

Figure 15: Speed-Related Collisions, by Year and Injury Severity

TRENDS BY PERSON TYPE

This sub-section of the report further explores crashes involving pedestrians, bicyclists, older drivers, and younger drivers. The analysis period is from 2015 to 2019. Pedestrian and bicyclists are considered to be vulnerable roadway users; as there is little to no protection in collisions with motor vehicles. Crashes involving pedestrians and bicyclists are more likely to result in critical injuries.

PEDESTRIANS

Figure 16 shows the injury severity of crashes involving pedestrians on the City of Phoenix's local and arterial roads from 2015 to 2019. While most (70%) motor-vehicle crashes result in no injury, that is not the case for crashes that involve pedestrians. Rather, 11% of crashes involving pedestrians were fatal and 22% resulted in serious injuries. In the five studied years, the number of crashes involving pedestrians trended upward, with 2019 crashes representing a 33% increase from 2015.

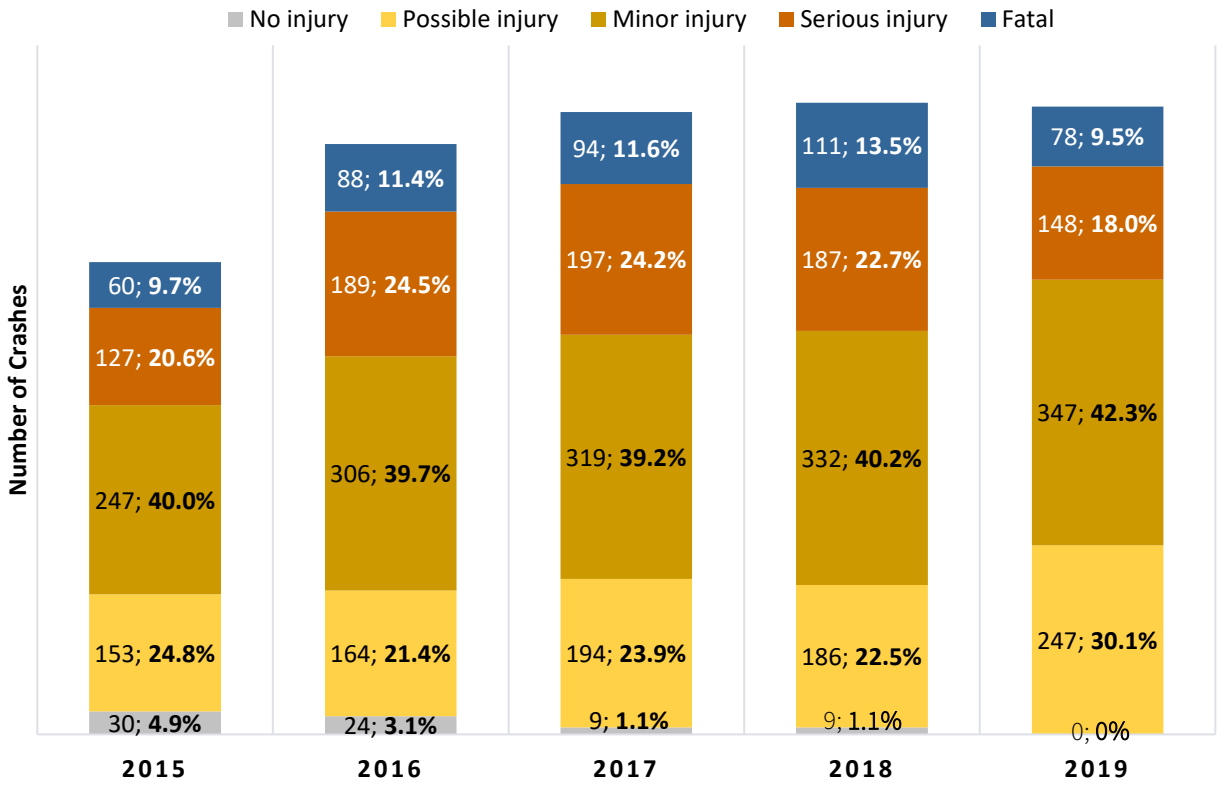


Figure 16: Injury Severity for Crashes Involving Pedestrians, by Year

Figure 17 shows the collision manner for the crashes involving pedestrians. As most of the collision manner categories developed for the Arizona Crash Report form are oriented towards motor vehicles, the most common collision manner reported on pedestrian crashes was "Other", which is often selected by the responding police officer for crashes involving pedestrians or bicyclists.

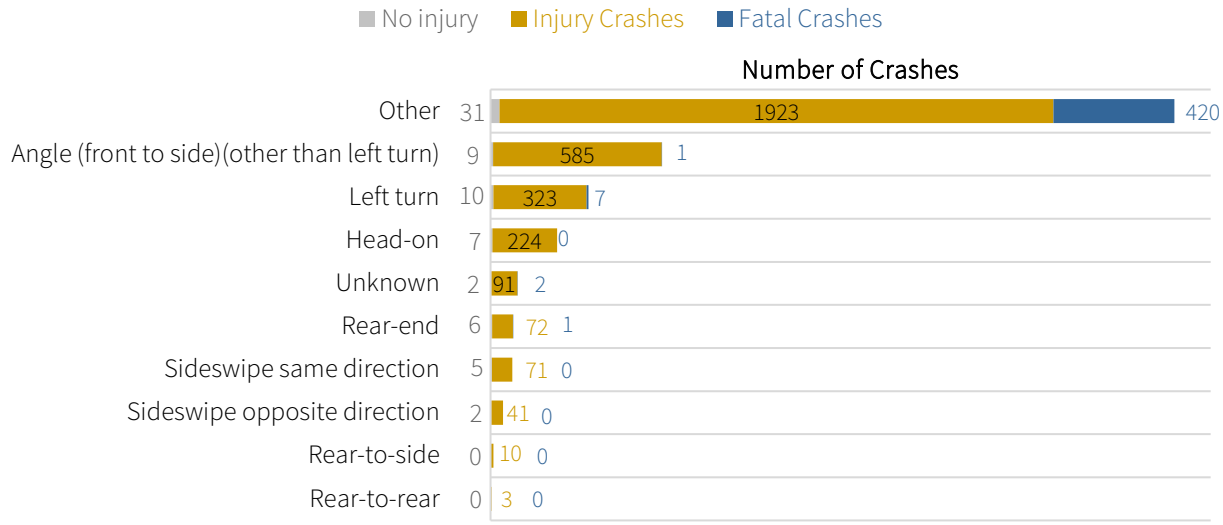


Figure 17: Collision Manner for Crashes Involving Pedestrians, by Year

Figure 18 and Figure 19 show the distribution of pedestrian crashes by month and by hour, respectively. The months with the highest frequency of crashes involving pedestrians are November and December. The hours with the highest frequency of crashes involving pedestrians occur in the evening, from 6:00 pm to 9:00 pm.

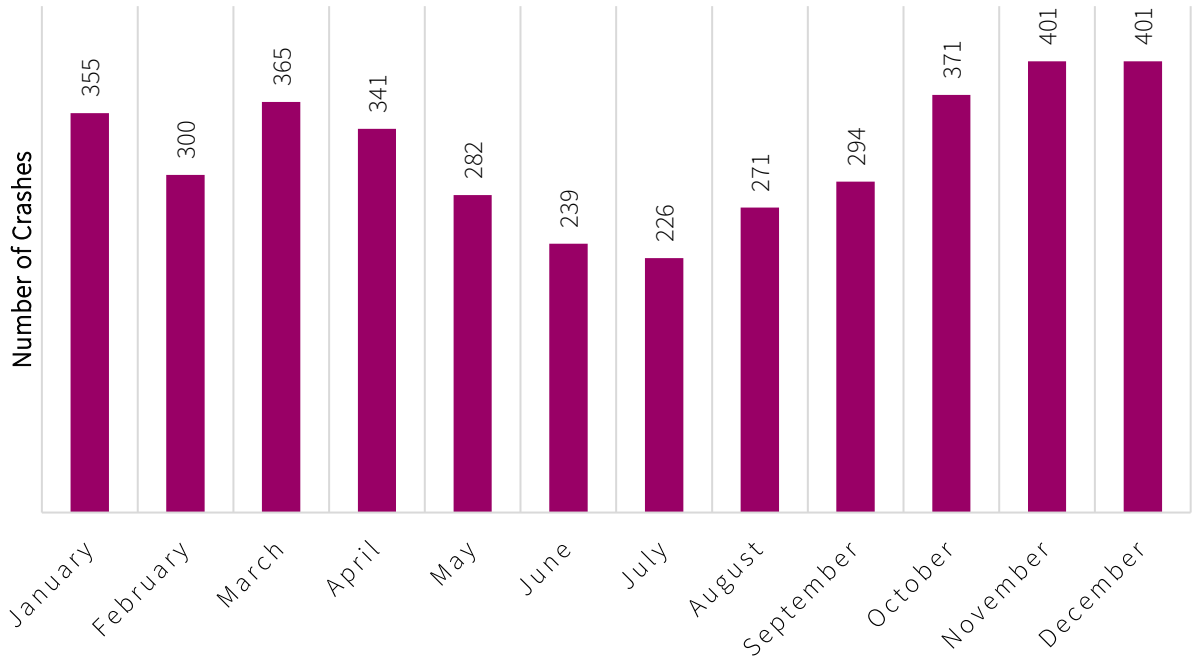


Figure 18: Number of Crashes Involving Pedestrians, by Month

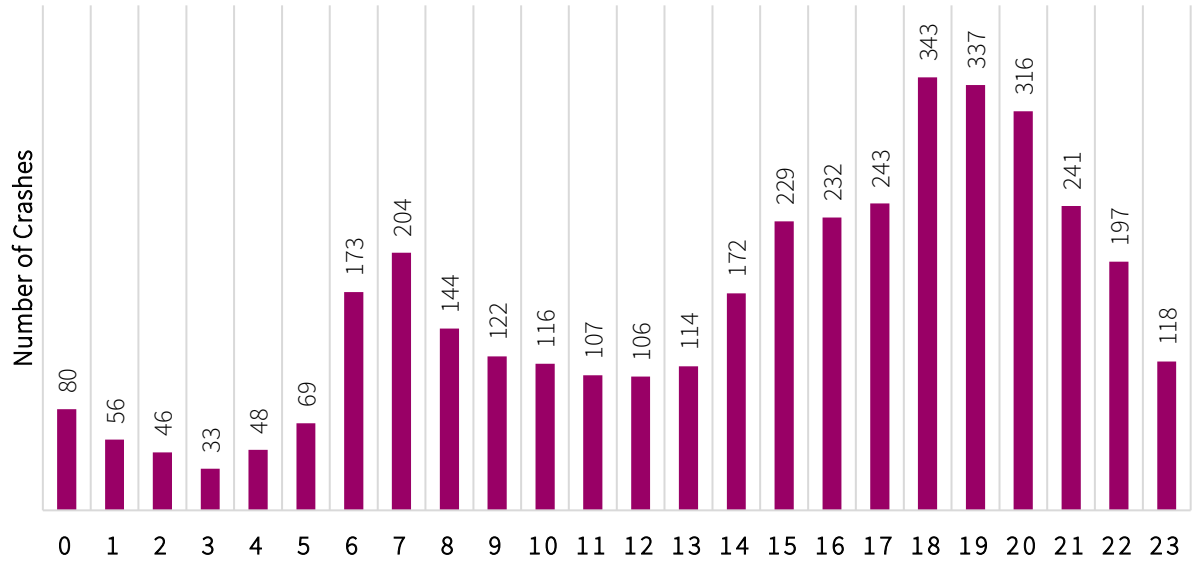


Figure 19: Number of Crashes Involving Pedestrians, by Hour

BICYCLISTS

Similar to pedestrian crashes, crashes involving bicyclists registered higher rates of fatalities and serious injuries, with virtually no crashes being reported as property damage only (Figure 20). During the past five years, the number of bicycle-related crashes have trended downward. From 2015 to 2019, the number of crashes involving bicyclists has reduced by 32%.

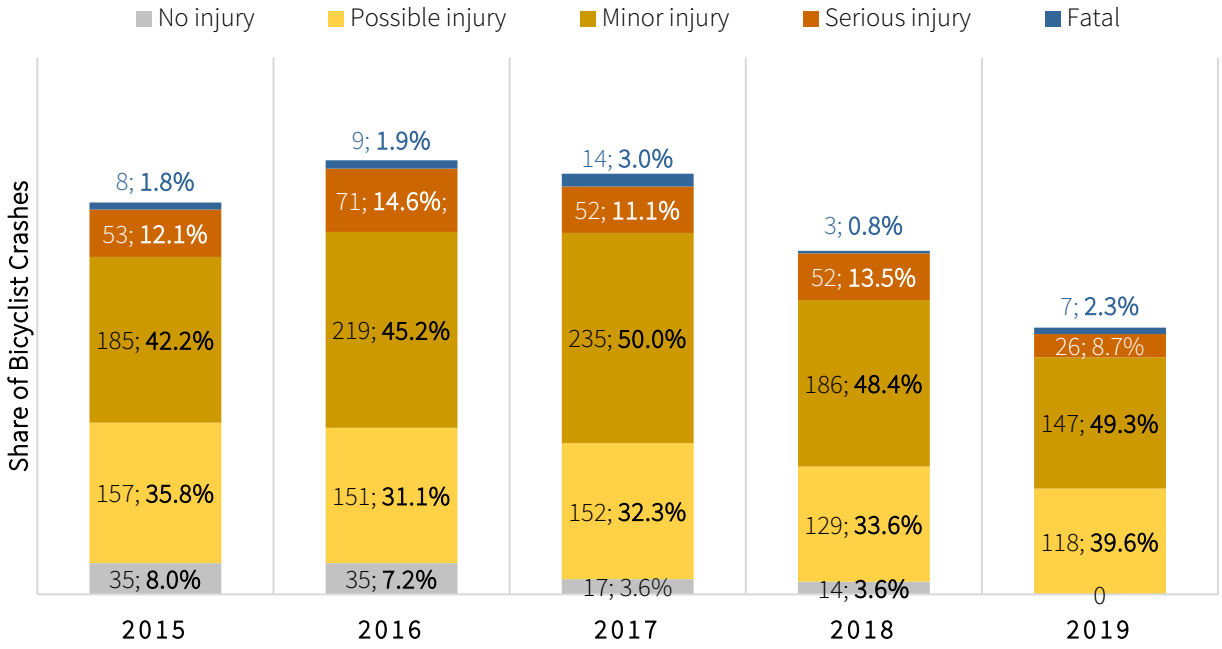


Figure 20: Injury Severity for Crashes Involving Bicyclists, by Year

Figure 21 shows the collision manner for crashes involving bicyclists. As it was observed for pedestrian crashes, the most common collision manner was "Other". However, for crashes involving bicyclists, a significant share of crashes was a result of angle crashes.

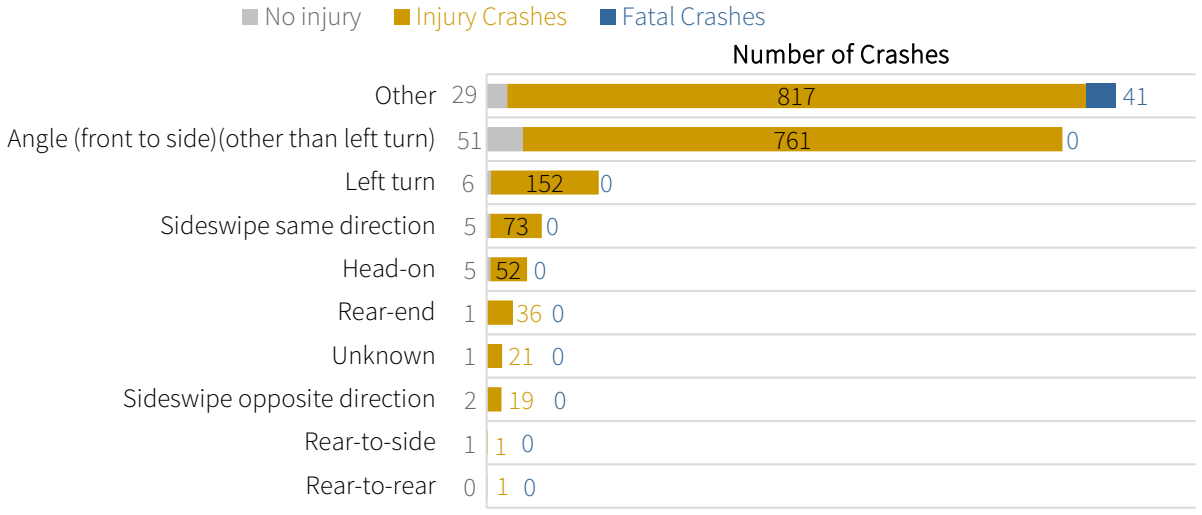


Figure 21: Injury Severity for Crashes Involving Bicyclists, by Collision Manner (2015-2019)

Figure 22 and Figure 23 show the distribution of crashes involving bicyclists by month and by hour, respectively. The month with the highest number of crashes involving bicyclists was March. The highest number of crashes involving bicyclists correlates with vehicular morning and afternoon peak hours.

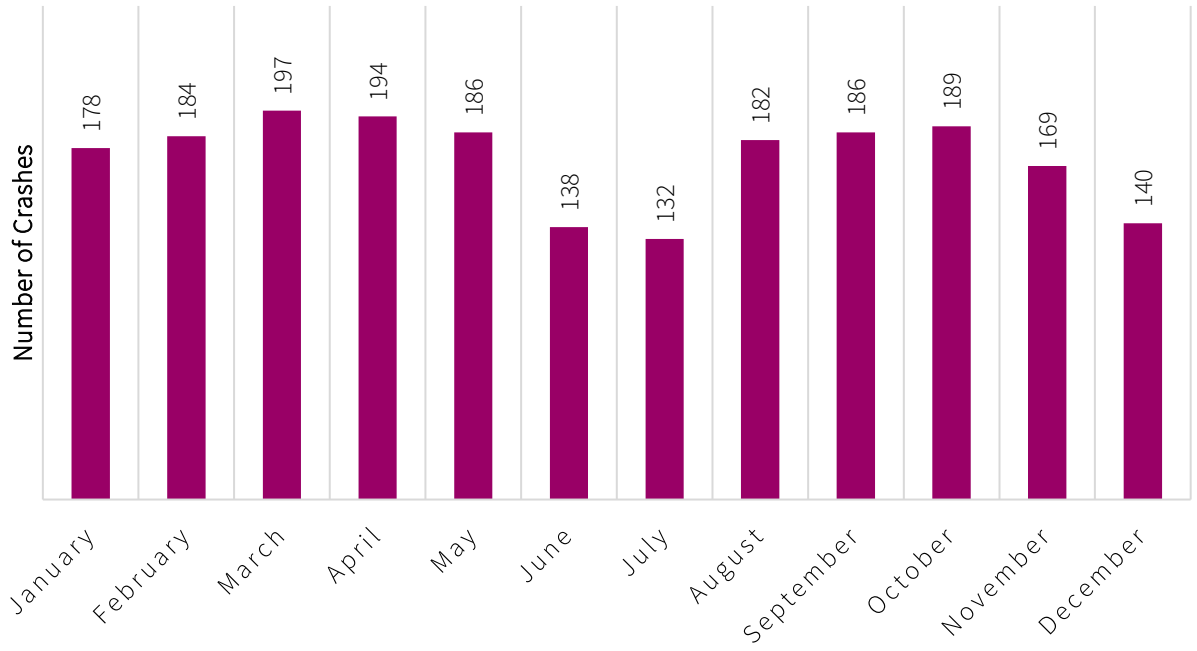


Figure 22: Number of Crashes Involving Bicyclists, by Month

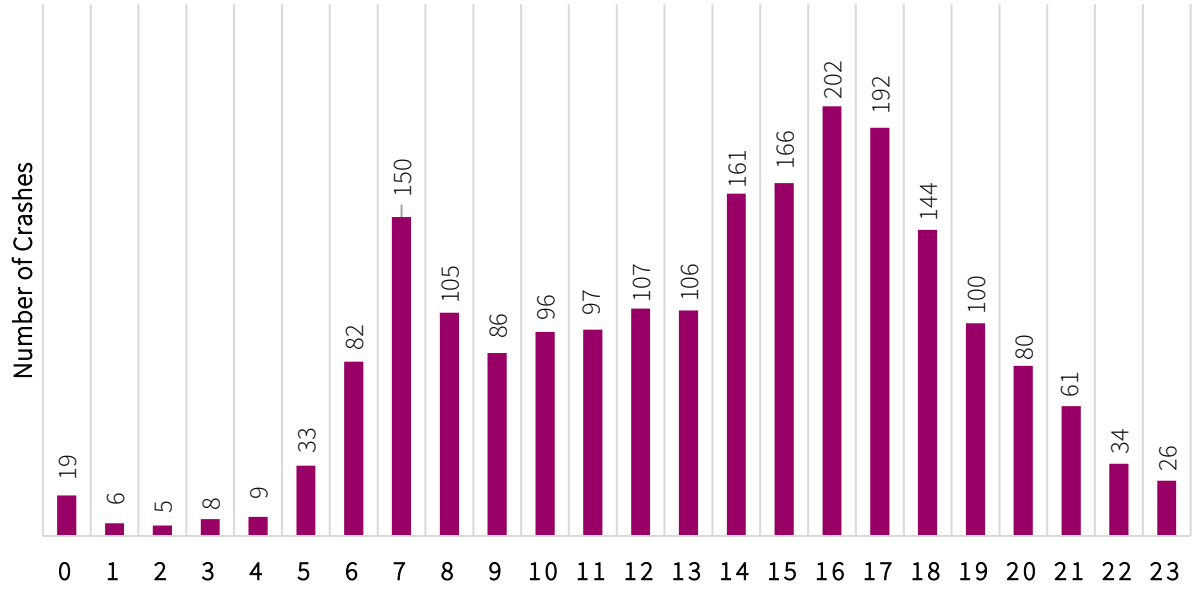


Figure 23: Number of Crashes Involving Bicyclists, by Hour

OLDER DRIVERS (Age 65 and Older)

Older drivers (age 65 and older) were involved in 20,425 (13%) of all incidents reported in the City of Phoenix's local and arterial roads from 2015 to 2019. Figure 24 shows the injury severity of those crashes.

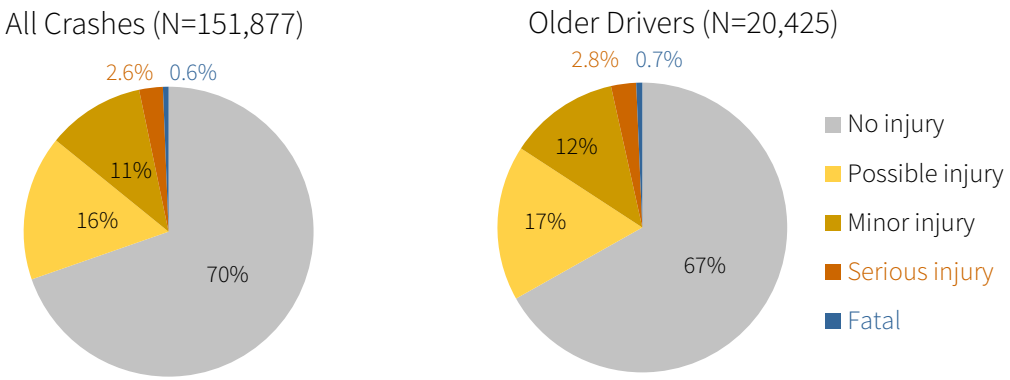


Figure 24: Injury Severity for Crashes Involving Older Drivers, 2015-2019

The most common collision manner of crashes involving older drivers were rear-end and left-turn crashes are shown in Figure 25. Figure 26 shows the distribution of older driver crashes by month and Figure 27 shows the distribution by hour of the day. The month with the highest number of crashes involving older drivers was March. The greatest frequency of older driver crashes occurs in the afternoon, from 2pm to 4pm.

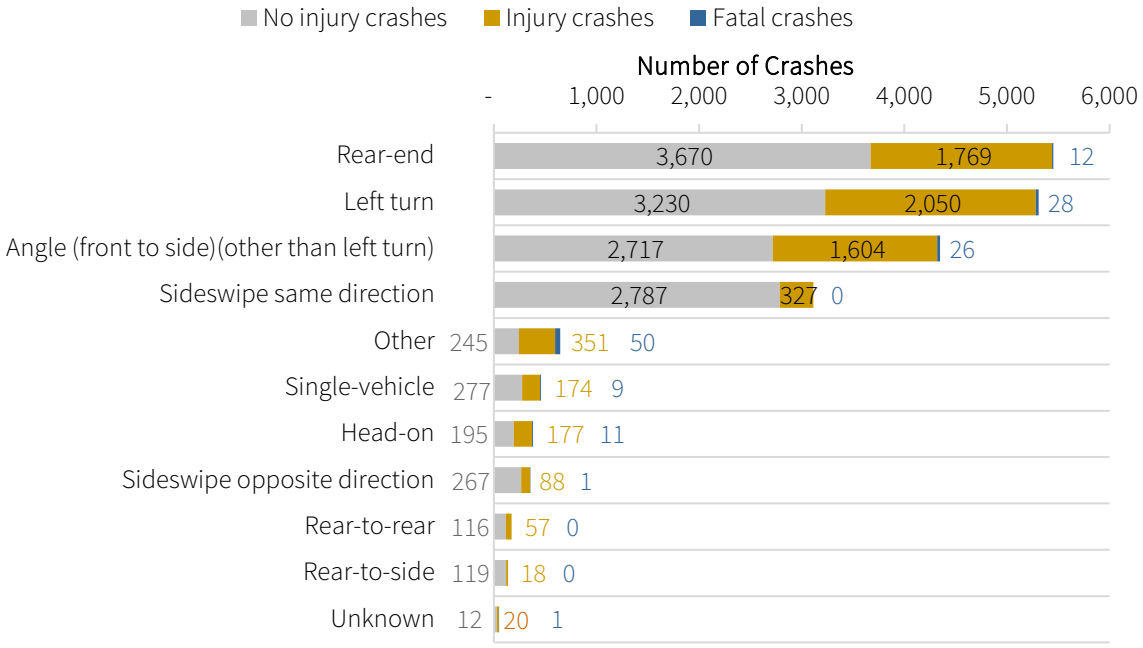


Figure 25: Collision Manner for Crashes Involving Older Drivers, by Year

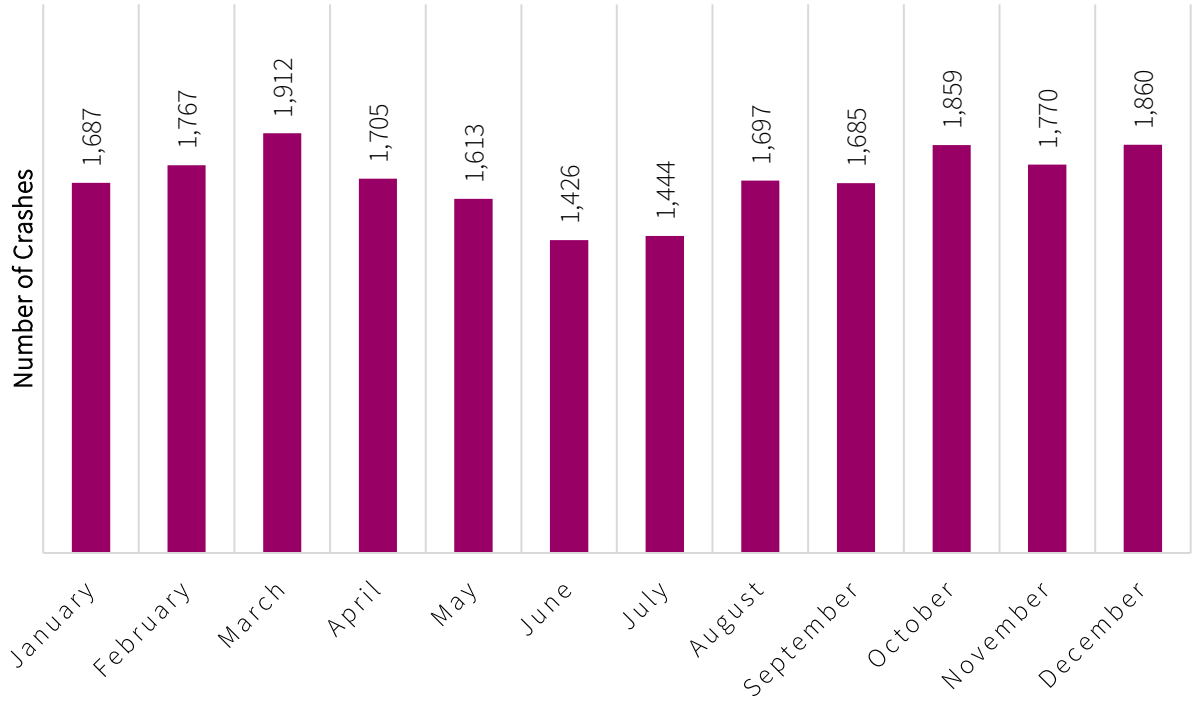


Figure 26: Number of Crashes Involving Older Drivers, by Month

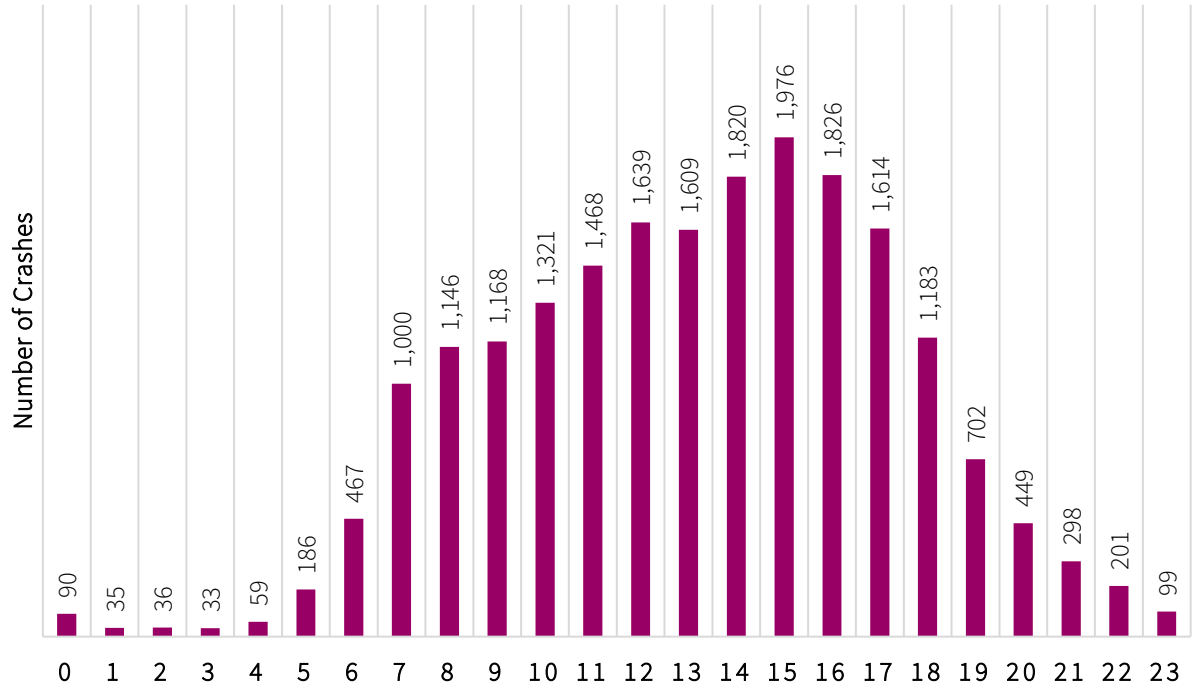


Figure 27: Number of Crashes Involving Older Drivers, by Hour

YOUNGER DRIVERS (Age 24 and Younger)

Younger drivers (age 24 and below) were involved in 62,512 (41%) of all incidents reported in the City of Phoenix's local and arterial roads from 2015-2019. Figure 28 shows the injury severity of those crashes.

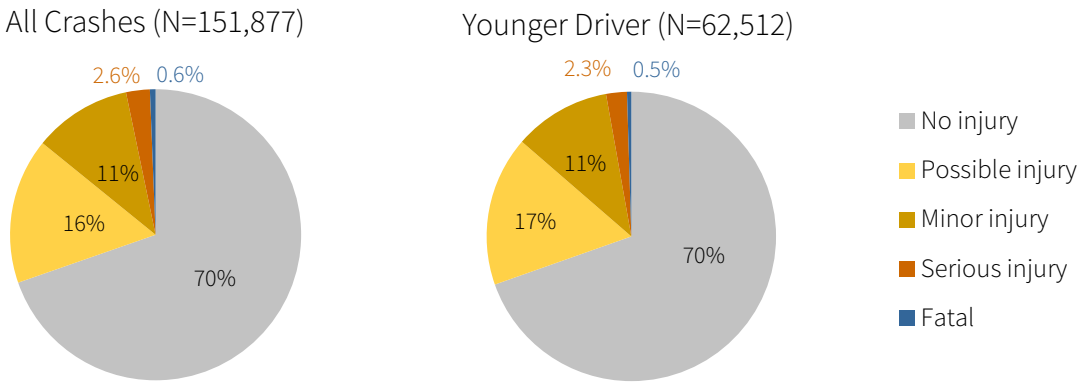


Figure 28: Injury Severity for Crashes Involving Younger Drivers, 2015-2019 (N=62,512)

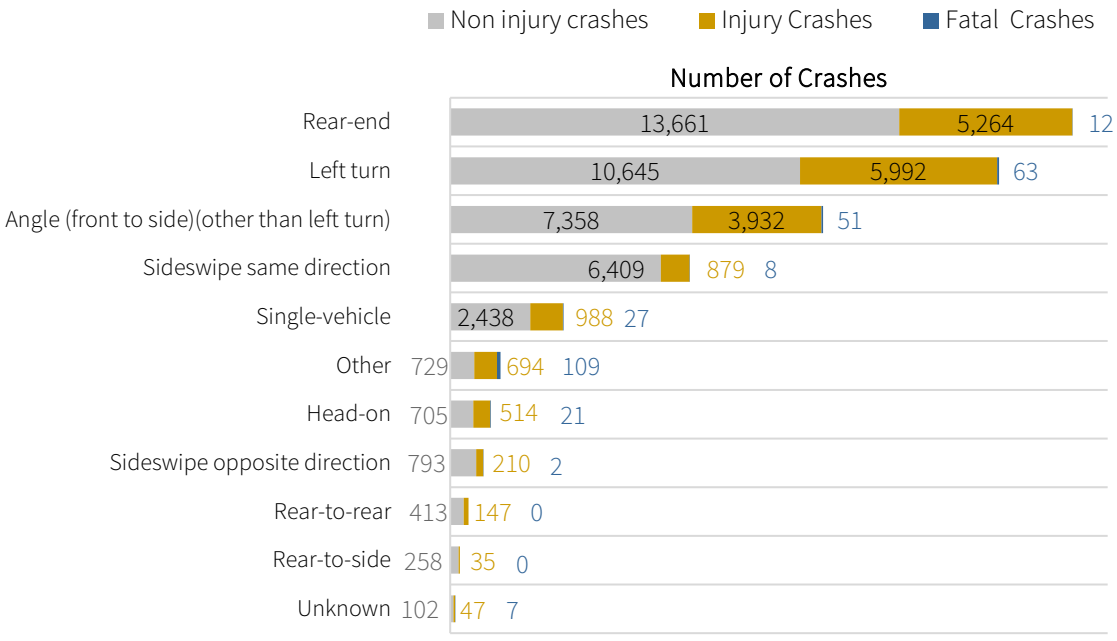


Figure 29: Collision Manner for Crashes Involving Younger Drivers, by Year

The most common collision manners of crashes involving younger drivers were rear-end and left-turn crashes (Figure 29). Figure 30 shows the distribution of younger driver crashes by month and Figure 31 shows the distribution by hour of the day. The month with the highest number of crashes involving younger drivers was March. An increase in crash frequency was associated with the AM and PM peaks of vehicular travel.

Figure 30: Number of Crashes Involving Younger Drivers, by Month

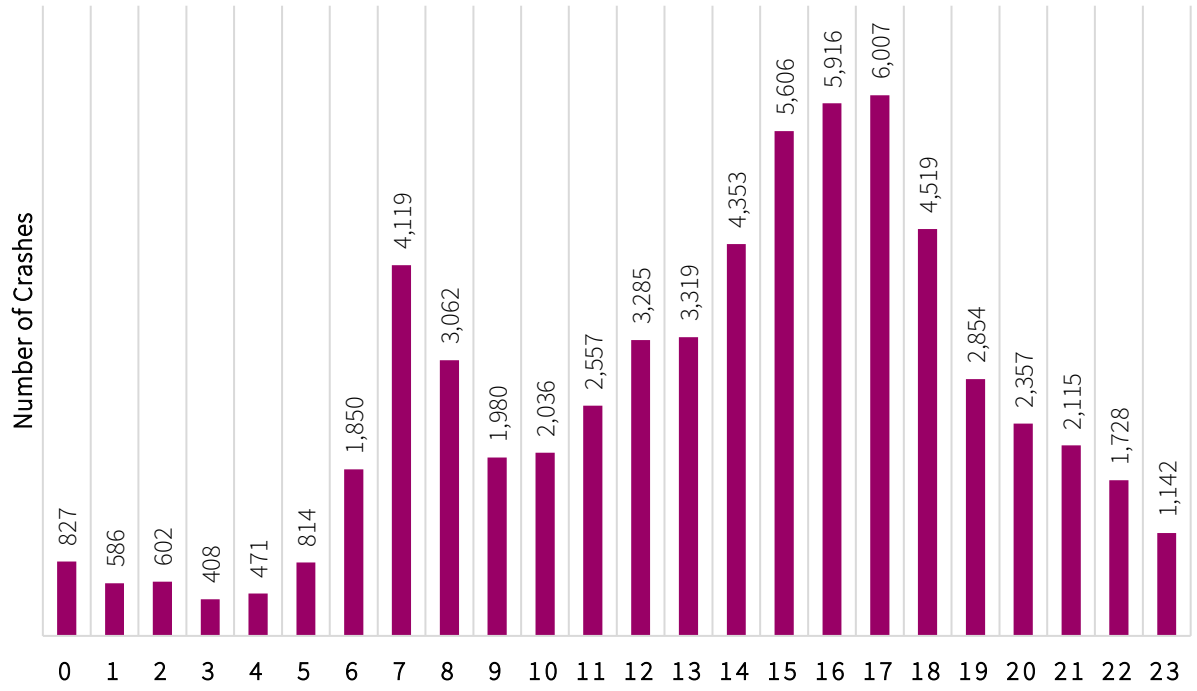


Figure 31: Number of Crashes Involving Younger Drivers, by Hour

TRENDS OF FATAL AND SERIOUS INJURY CRASHES

This analysis uses the KABCO scale of crash severity, where "K" denotes a fatal crash, "A" is a serious injury crash, "B" is a minor injury crash, "C" is a possible injury crash, and "O" is a property damage-only crash. This subsection of the report further details crashes that resulted in at least one serious injury or fatality, and this sub-set of crashes are referred to as "KA" or "KSI" Crashes. A review of critical crashes can identify key trends for further investigation. Compared to reviewing fatal crashes only, reviewing the combination of fatal and serious injury crashes provides a greater sample size and reduces the volatility between years.

KA CRASHES BY COLLISION MANNER

Figure 32 compares the collision manner of KA crashes with crashes that resulted in no injury, possible injury, or minor injuries (BCO crashes). The most common collision manner of BCO crashes is rear-end crashes, while the most common collision manner for KA crashes is "Other". It is important here to note that the "Other" category is often used to describe the collision manner of crashes involving pedestrians (Figure 17) and crashes involving bicyclists (Figure 21). The second and third most common collision manners for KA crashes are left-turn and angle crashes, respectively.

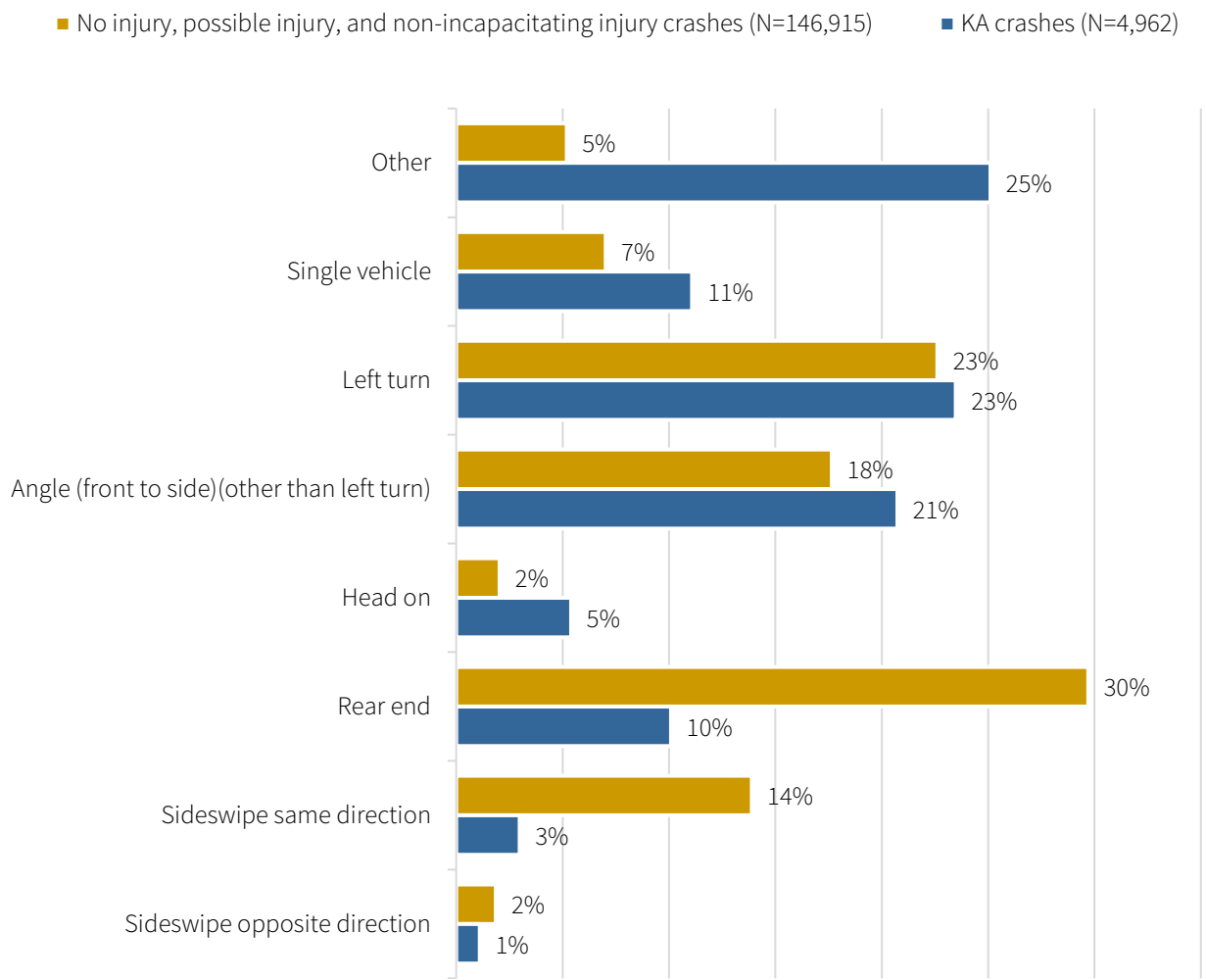


Figure 32: Crashes by Collision Manner and Severity, 2015-2019

KA CRASHES BY MONTH

Figure 33 shows the distribution of KA crashes by month in the period of 2015 to 2019. Consistent with overall crash trends, the month with the highest number of fatal crashes was March and the lowest number of fatal crashes was observed in July.

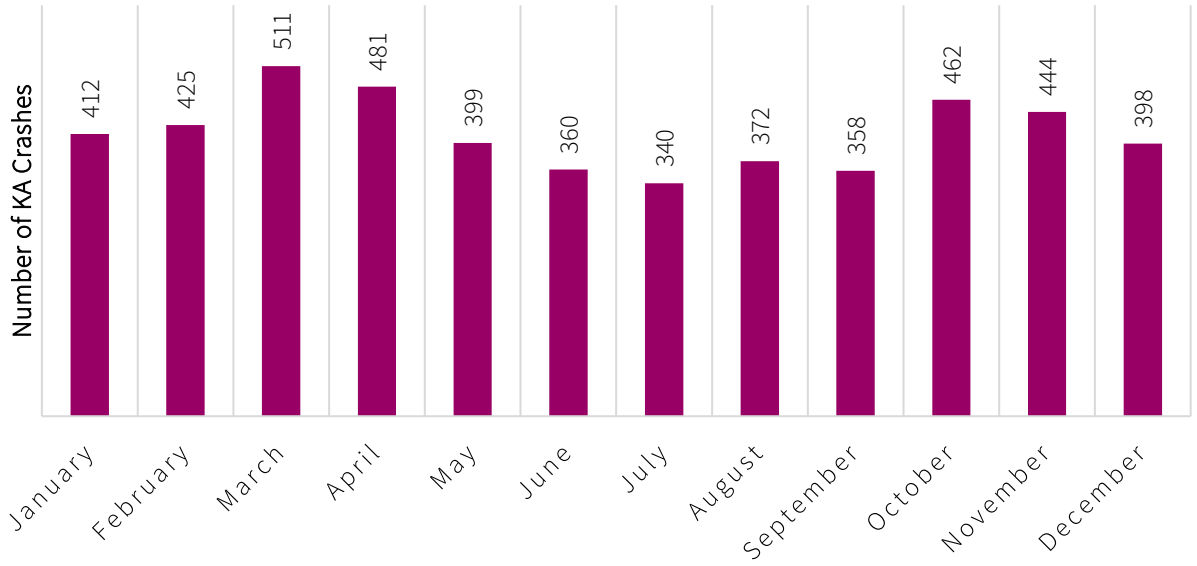


Figure 33: Number of Fatal and Serious Injury Crashes, by Month, 2015-2019

KA CRASHES BY DAY OF WEEK

Figure 34 shows the distribution of fatal and serious injury crashes by day of the week. The day with the highest frequency of serious crashes was Friday, and Sunday was the day with the lowest frequency of KA crashes.

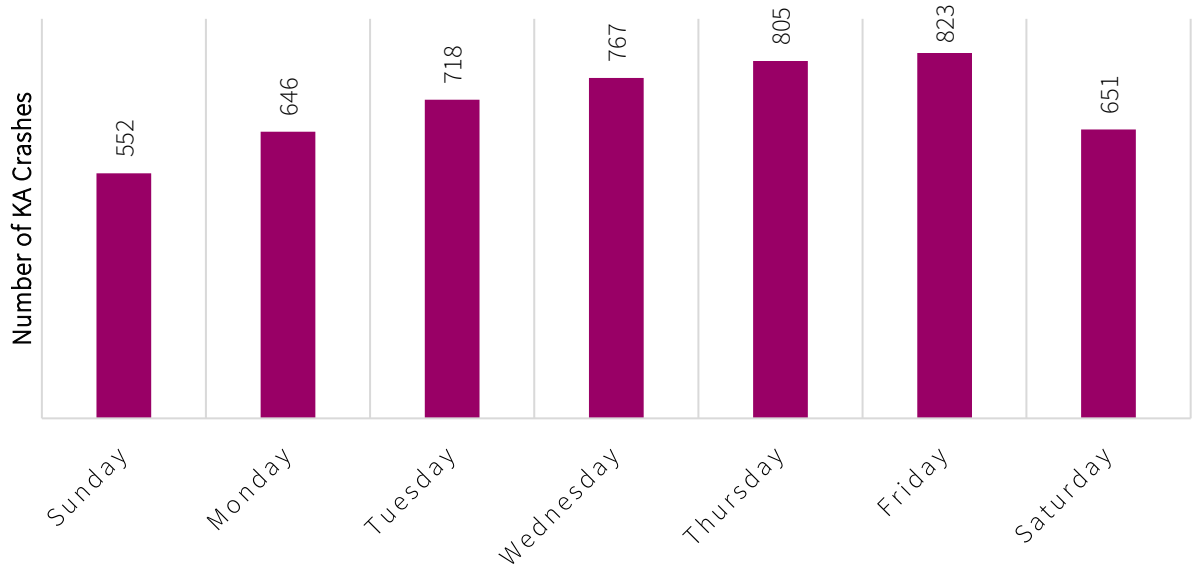


Figure 34: Number of Fatal and Serious Injuries Crashes, by Day of the Week

KA CRASHES BY TIME OF DAY

When analyzing all crashes in the City of Phoenix's local and arterial roads together, only 26% of them occur in dark conditions (Figure 7). However, 40% of KA crashes were reported to have occurred in dark conditions.

Figure 35 shows that KA crashes are overrepresented in non-daylight conditions.

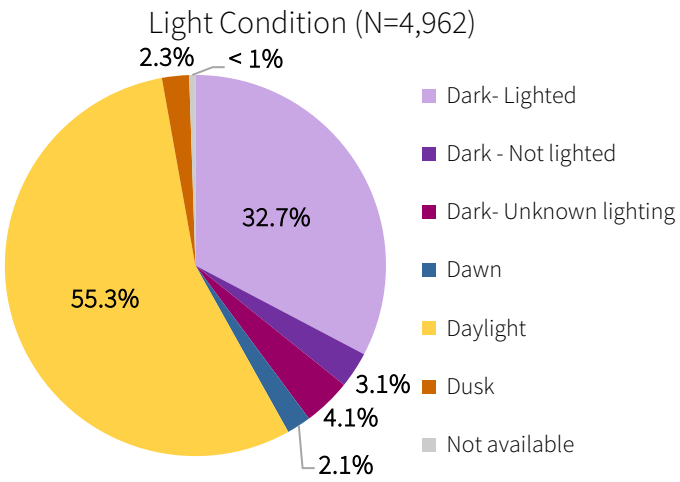


Figure 35: Share of Fatal and Serious Injuries Crashes by Light Condition, 2015-2019

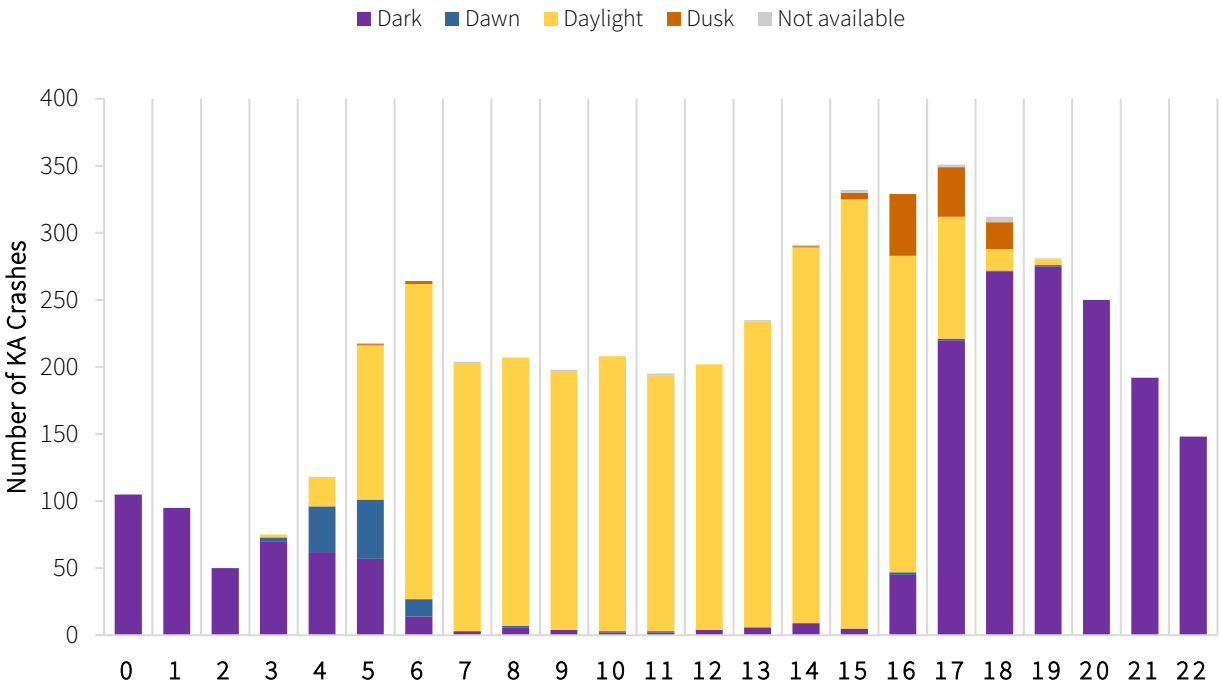


Figure 36: Number of Fatal and Serious Injuries Crashes, by Hour and Lighting Condition

KA CRASHES BY LOCATION

The same criteria to determine the relationship to the closest junction applied to all crashes was applied to KA crashes. Figure 37 shows the crash location by year; about 50% of KA crashes were related to intersections or interchanges.

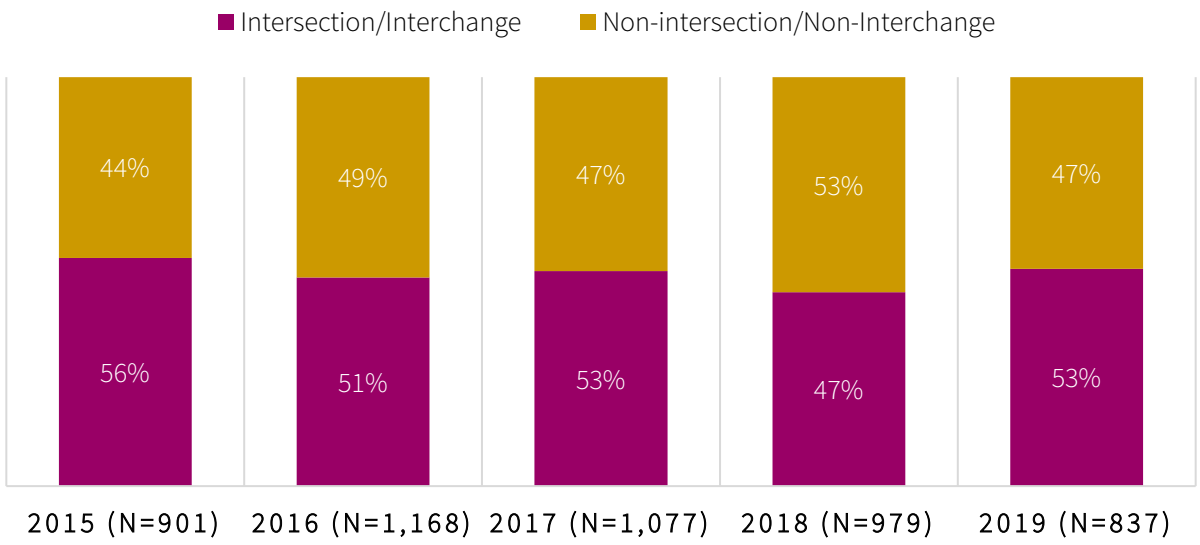


Figure 37: Number of Fatal and Serious Injuries Crashes, by Relation to the Intersection

When comparing the collision manner on intersection-related serious crashes (Figure 38) and all crashes (Figure 11), it can be seen that while rear-end crashes are the second most common intersection-related crashes, they represent less than 10% of serious crashes. The most common collision manner of intersection-related KA crashes were left-turn and angle crashes.

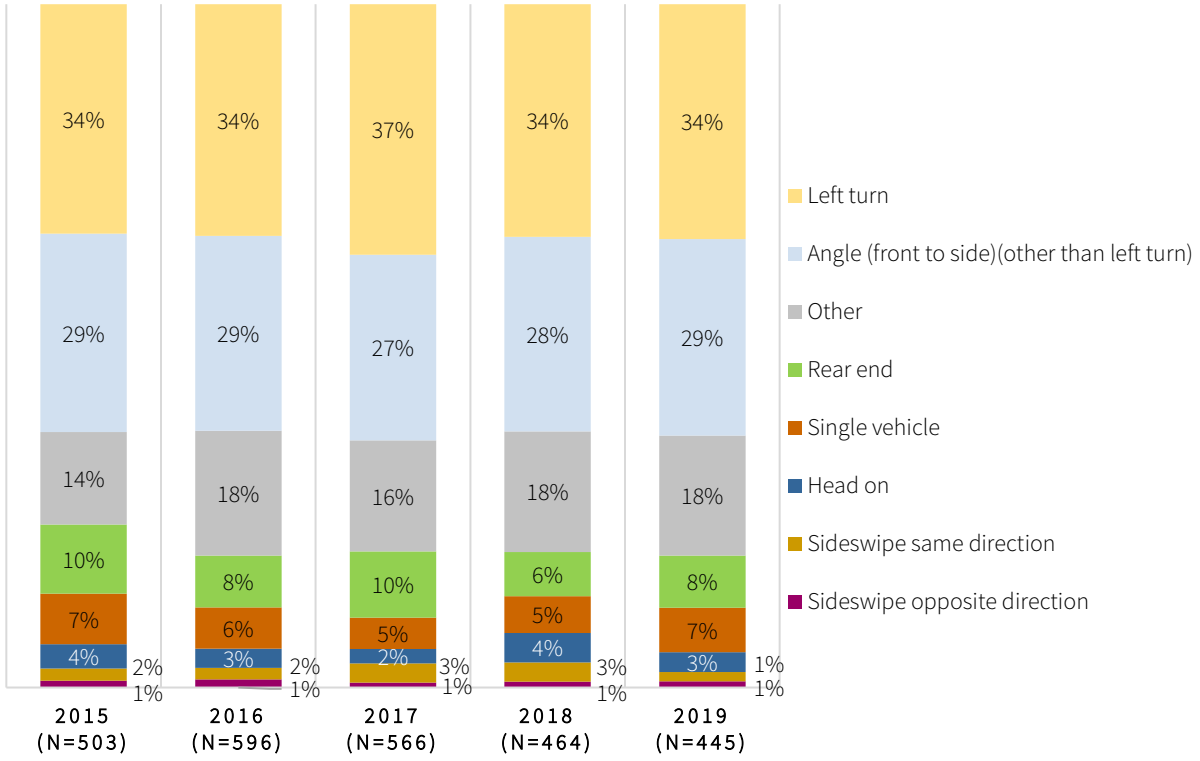


Figure 38: Number of Intersection/Interchange-Related Fatal and Serious Injuries Crashes, by Collision Manner

KA CRASHES BY BEHAVIOR

Figure 39 depicts the frequency of unrestrained driving and speed violation in serious injury and fatal injury crashes. Crashes involving unrestrained drivers represent 16% of KA crashes, and speed-related crashes represent 29% of KA crashes.

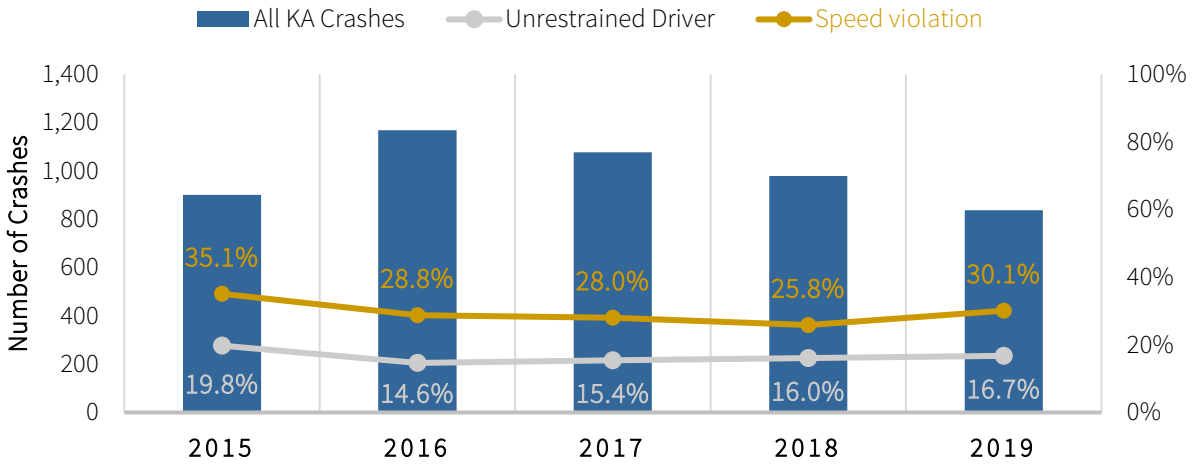


Figure 39: Frequency of Unrestrained Driving and Speed Violation in KA Crashes

COMPARISON TO STATEWIDE AND REGIONAL SAFETY TRENDS

Nationwide summaries of all crashes are available from the National Highway Traffic Safety Administration (NHTSA) Annual Report Tables. NHTSA reports on a yearly basis crash summaries by diverse aspects, such as injury severity, first harmful event, and collision manner.

The Arizona Strategic Traffic Safety Plan (ADOT STSP), published in October 2019, summarizes crash data from the ACIS database from 2009 to 2018. The crash statistics in the ADOT STSP are primarily reported at the person-level, which varies from the RTSIMS reporting, which is primarily at the crash-level. Furthermore, the ADOT STSP does not make any distinction between local roads and freeways while RTSIMS reports (for the purpose of this summary) focus on local and arterial roads only. For the purposes of this comparison, statewide data at the crash-level was retrieved from the ACIS database.

From 2015 to 2018, 43% of the MAG Region's local and arterial road collisions were registered in the City of Phoenix (Figure 40). In terms of population, City of Phoenix residents represent 36% of Maricopa County's population. Figure 41 compares the injury severity of collisions reported in the state of Arizona, MAG Region local and arterial roads, and City of Phoenix local and arterial roads. The results indicate that the fatality rate (at the crash level) is rather similar among the geographies; from 2015 to 2018, 0.6% of all crashes reported on local and arterial roads were fatal crashes, both in the City of Phoenix and in the MAG Region, at the state level, about 0.7% of all reported crashes were fatal.

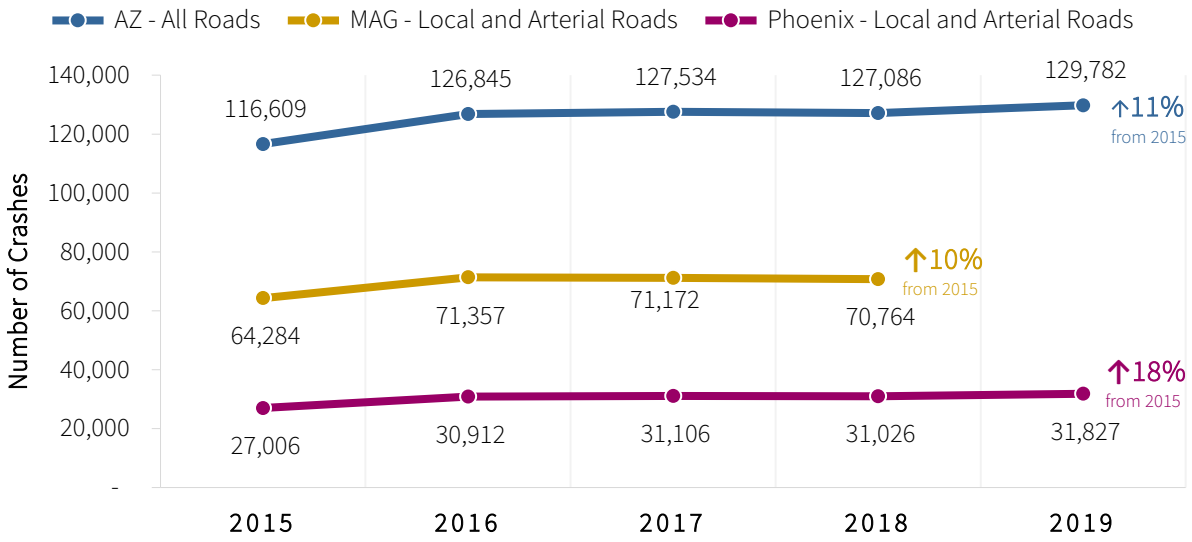


Figure 40: Total Crashes Comparison of State of Arizona, MAG Region, and City of Phoenix

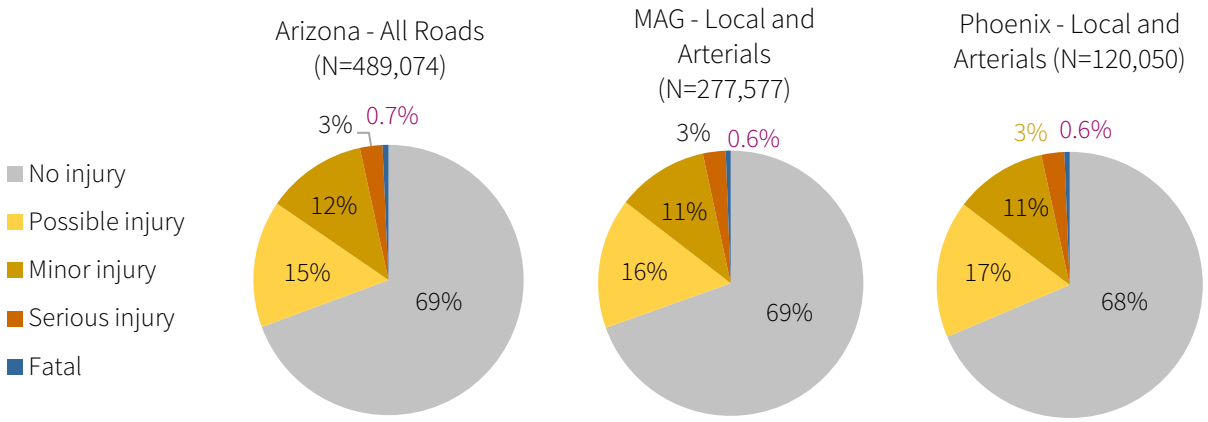
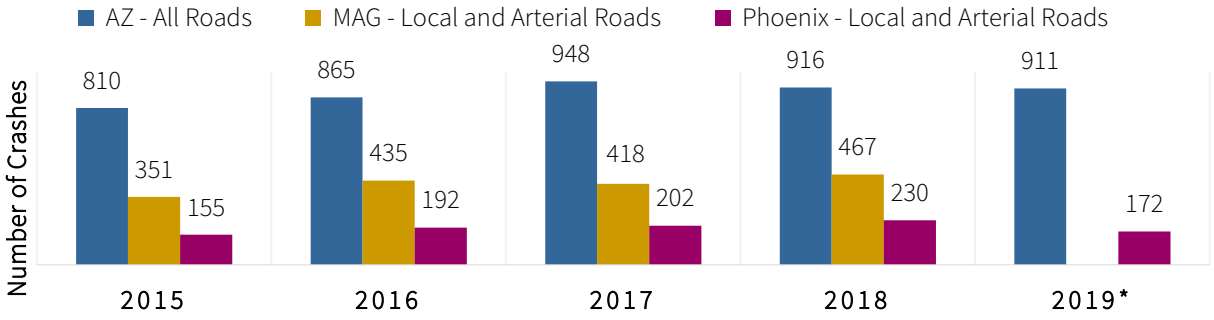


Figure 41: Crash Severity Comparison of State of Arizona, MAG Region, and City of Phoenix (2015-2018)

In the same period, fatal crashes in the City of Phoenix corresponded to 46.6% of the MAG Region's fatal crashes. Figure 42 shows a similar comparison for fatal crashes registered on the two areas, in addition to the total crashes in the state of Arizona. Figure 43 shows the number of fatalities (person-level) registered per year in the state of Arizona and the City of Phoenix. During the five years under study, fatalities on the City of Phoenix's local and arterial roads represented 21% of all Arizona's traffic-related fatalities. This percentage is slightly lower than the share of Arizona residents living in Phoenix in the same period (23%).



Note: MAG data was sourced from the MAG Strategic Transportation Safety Plan, which analyzed data from 2009 to 2018. Data from 2019 was not available for comparison.

Figure 42: Fatal Crashes Comparison of Arizona, Maricopa County, and City of Phoenix

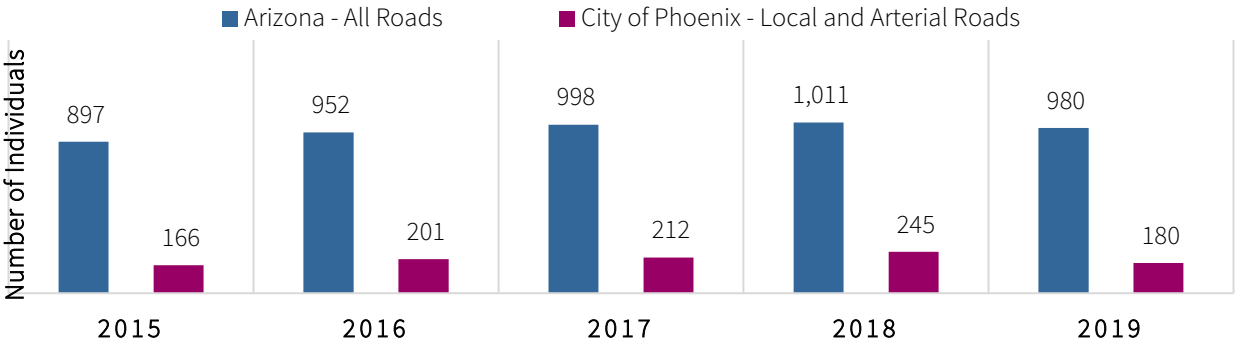
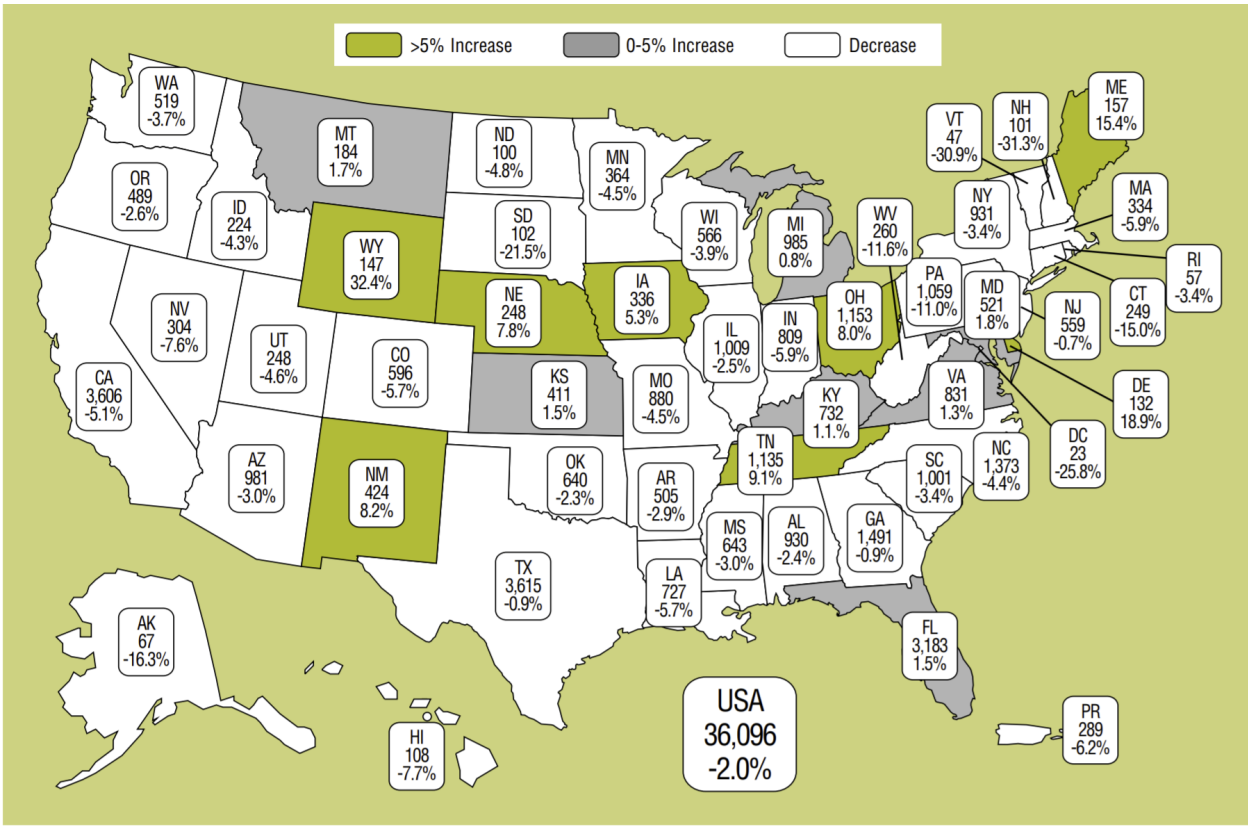


Figure 43: Total Number of Fatalities (Persons) per Year Comparison, Arizona and City of Phoenix

From 2018 to 2019, the number of fatalities in Arizona decreased by 3%. Fatalities in the City of Phoenix (local and arterial roads) decreased by 26% from 2018 to 2019 (Figure 43); however, the year-to-year fluctuation in this data does not indicate a clear trend. National statistics on 2019 fatalities and percent change trends from 2018 are shown in Figure 44.

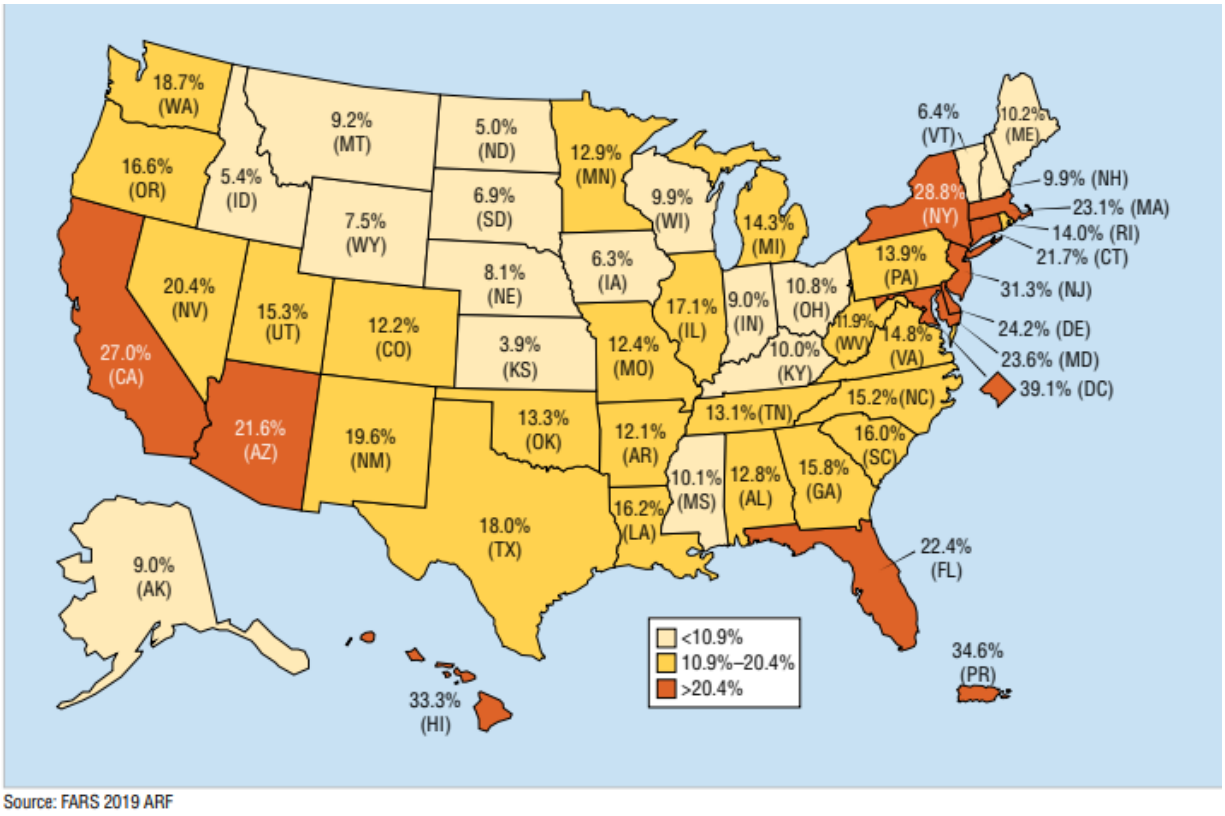


Source: FARS 2018 Final File, 2019 ARF
Note: Puerto Rico is not included in the USA total.

Figure 44: 2019 Fatalities and Percent Changes From 2018, by State (Person-Level).
(Source: FARS Data, NHTSA Graph)

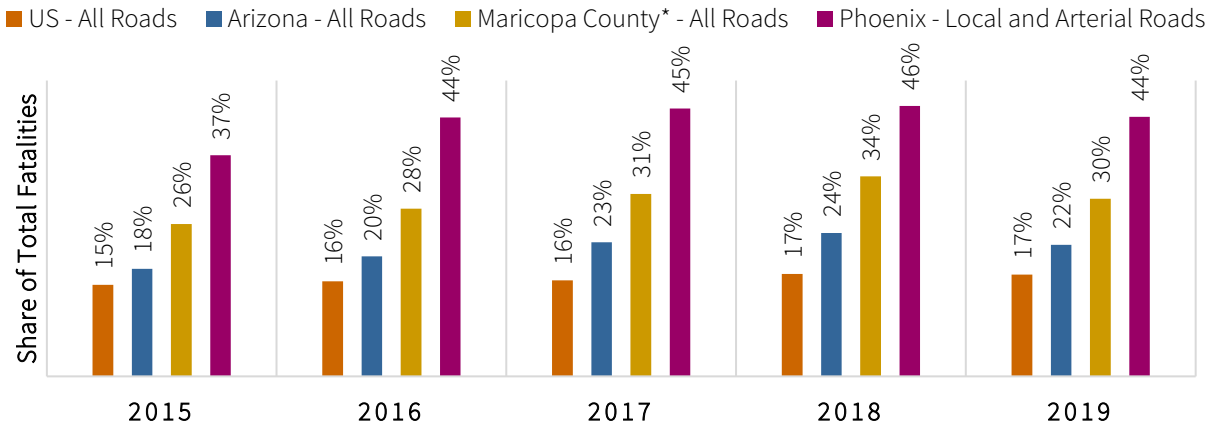
PEDESTRIANS

A large share of traffic fatalities involve pedestrians. Figure 45 shows that the State of Arizona was above the national average, with pedestrians accounting for approximately 22% of 2019 fatalities. In the City of Phoenix, the share of fatalities that is represented by pedestrians grew from 37% in 2015 to 44% in 2019 (Figure 46).



Source: FARS 2019 ARF

Figure 45: Percentage of Total Fatalities Involving Pedestrians, by State (Persons)
Source: FARS Data, NHTSA Graph

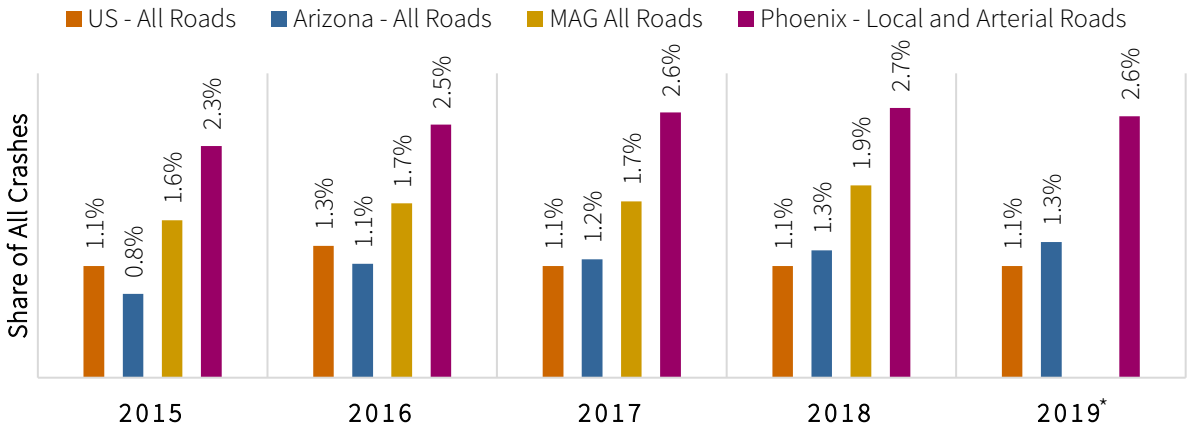


**Note: Maricopa County information obtained from ACIS database.*

Figure 46: Share of Total Fatalities Who Were Pedestrians, Comparison across Geographies

Although the MAG STSP data does not exclude freeway crashes, an analysis of the data found that 98% of total pedestrian crashes in the 10-year studied period (2009-2018) occurred off-freeway, on the local and arterial roadway network. The analysis also found that the same percentage was true for bicycle-related crashes. Therefore; the MAG STSP and RTSIMS datasets are reasonably similar for comparison purposes. As shown in Figure 47, The percentage of pedestrian-related crashes was found to be 1.1% in all United States, 1.1% in the State of Arizona, 1.7% in the MAG region, and 2.5% in the City of Phoenix.

Phoenix represents 36% of the County's population and about 43% of local and arterial road crashes; however, 63% of Maricopa County's pedestrian-related crashes occurred in the City of Phoenix's local and arterial roads.



**Note: MAG data was sourced from the MAG Strategic Transportation Safety Plan, which analyzed data from 2009 to 2018. Data from 2019 was not available for comparison.*

Figure 47: Pedestrian Crashes per Year, Comparison across Geographies

In terms of injury severity, the distribution of pedestrian-related crashes is very similar in the MAG Region and the City of Phoenix (Figure 48). The majority of crashes (63%) of both datasets result in possible or minor injury, while nearly one-quarter (22-23%) result in serious injury, and about 12% result in fatal injury. Only a very small portion of pedestrian-related crashes result in no injuries (2-3%).

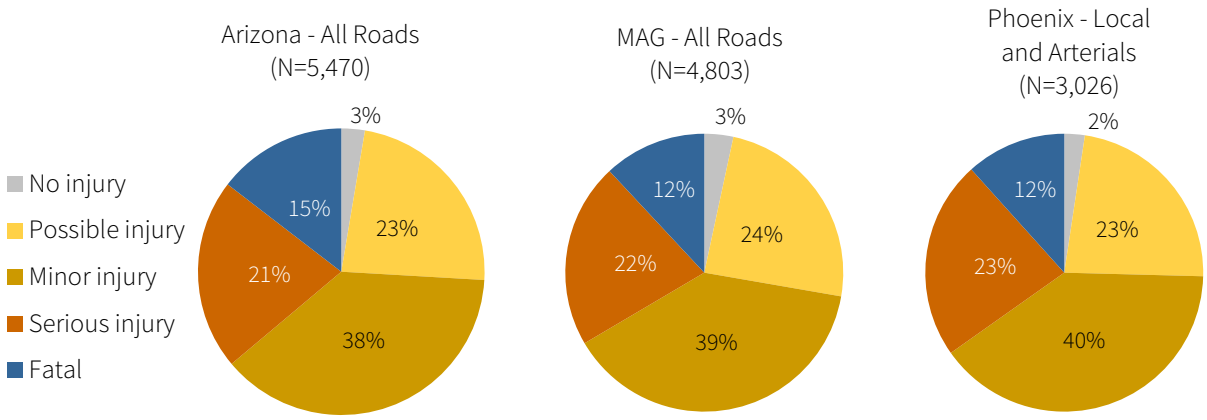
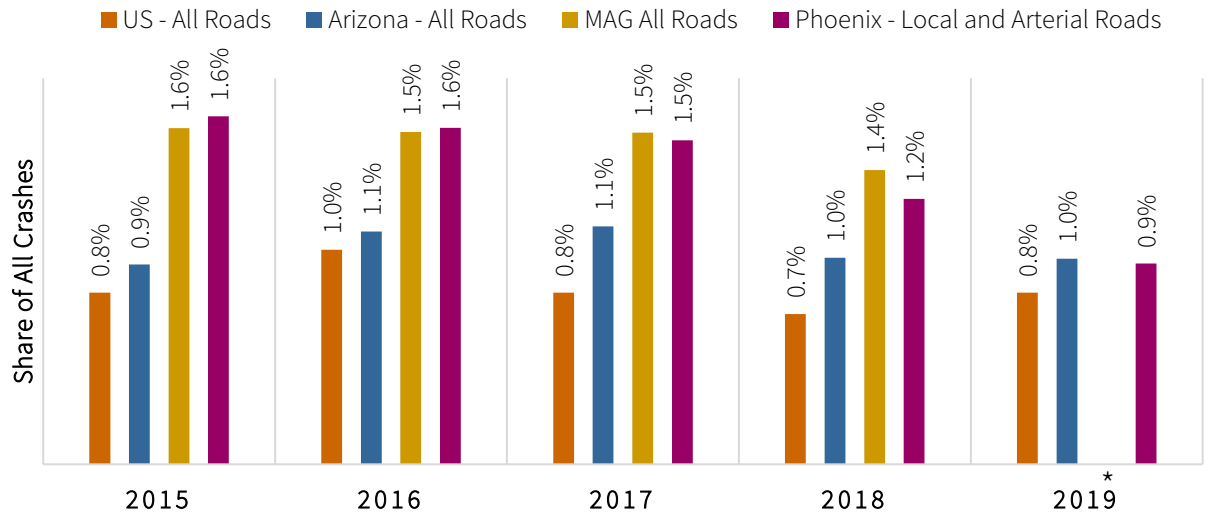


Figure 48: Severity of Pedestrian Crashes, Comparison across Geographies (2015-2018)

BICYCLISTS

As shown in Figure 49, the percentage of crashes involving bicyclists was similar between the two areas, with an average of 1.5% of total crashes in the MAG Region and 1.5% in the City of Phoenix. The injury severity distribution of bicyclist-related crashes is also similar between the two areas, as shown in Figure 50. The majority of crashes (78-79%) of both datasets result in possible or minor injury, 13% result in serious injury, and 2% result in fatal injury. About 6-7% of bicyclist-related crashes resulted in no injuries.



**Note: MAG data was sourced from the MAG Strategic Transportation Safety Plan, which analyzed data from 2009 to 2018. Data from 2019 was not available for comparison.*

Figure 49: Bicycle Crashes per Year, Comparison across Geographies

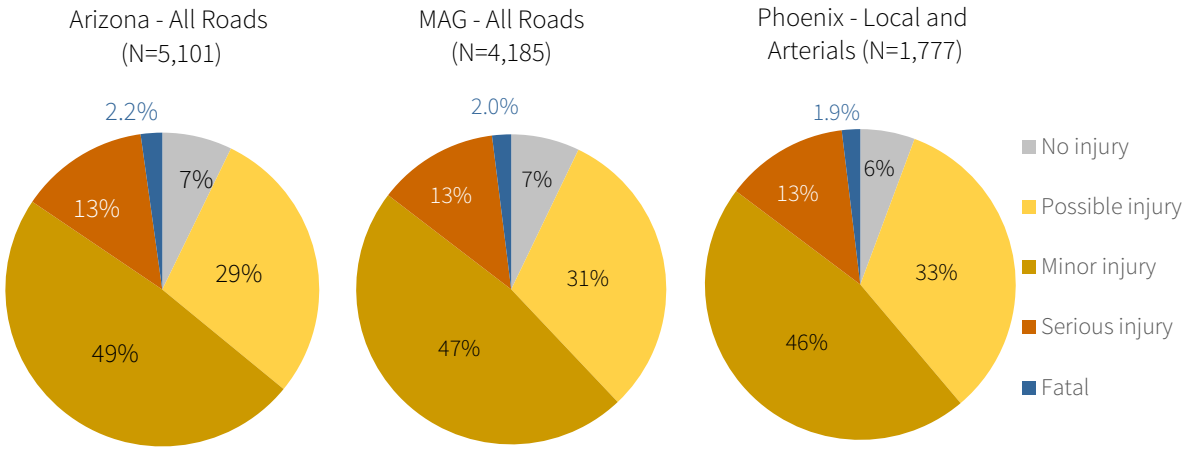
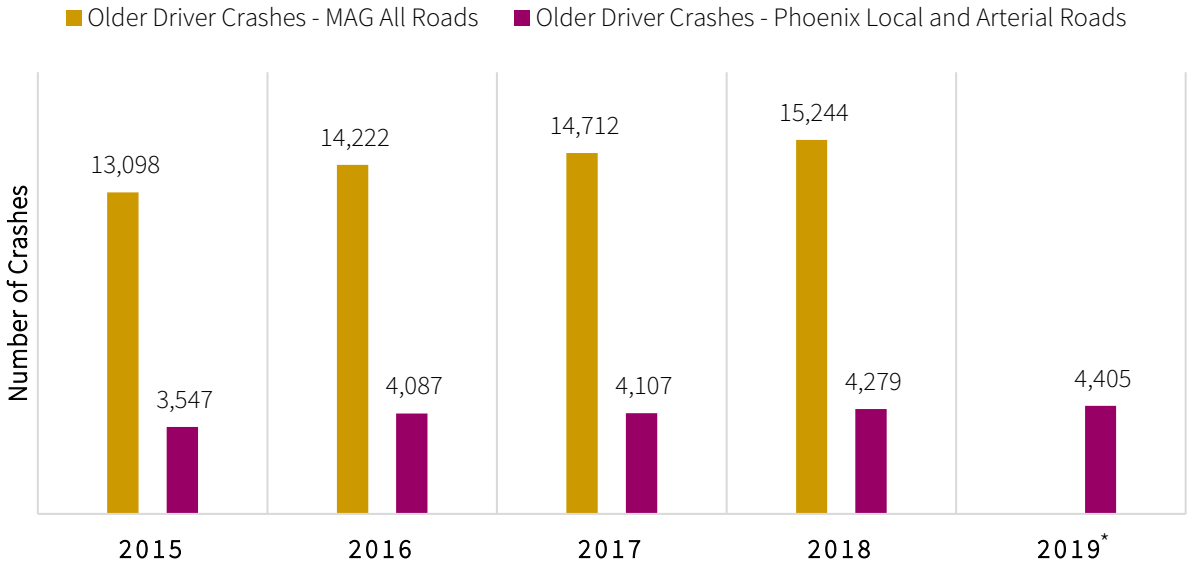


Figure 50: Severity of Bicycle Crashes, Comparison across Geographies (2015-2018)

OLDER DRIVERS (65 and older)

Other vulnerable user groups were also analyzed, including older drivers and younger drivers. Figure 51 compares the number of crashes involving older drivers on all roads of the MAG Region and City of Phoenix's local and arterial roads. Approximately 28% of the older driver crashes in the MAG Region were registered on City of Phoenix's local and arterial roads.



Note: 2019 data was not available for the MAG Region per its Strategic Transportation Safety Plan.

Figure 51: Older Driver Crashes per Year, MAG Region, and City of Phoenix

Figure 52 shows a breakdown by injury severity for crashes on local and arterial roads involving older drivers in the period of 2015-2018. Compared to crashes involving all age groups, the percentage of fatal and serious injury crashes remained the same, with a slight shift from no injury to possible and minor injury crashes. The trends of older drivers are quite similar between the MAG Region and City of Phoenix.

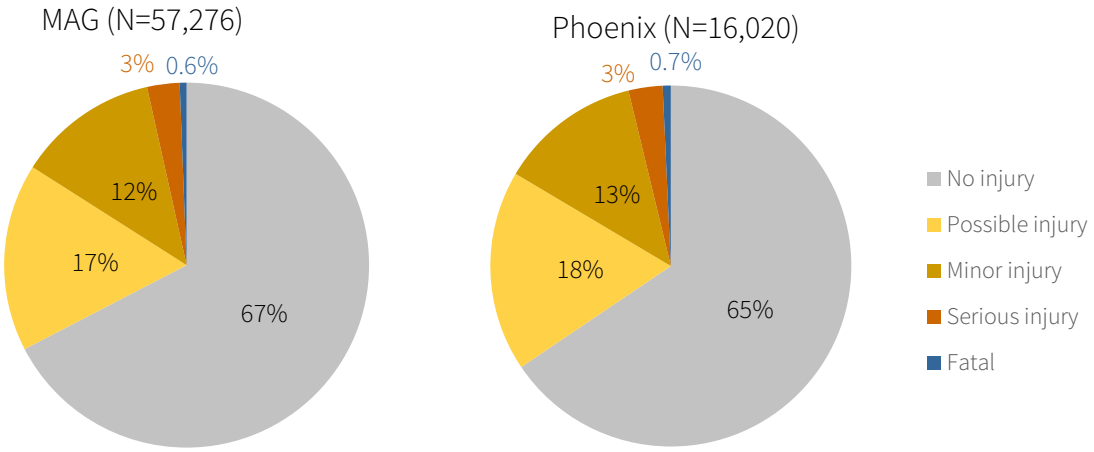
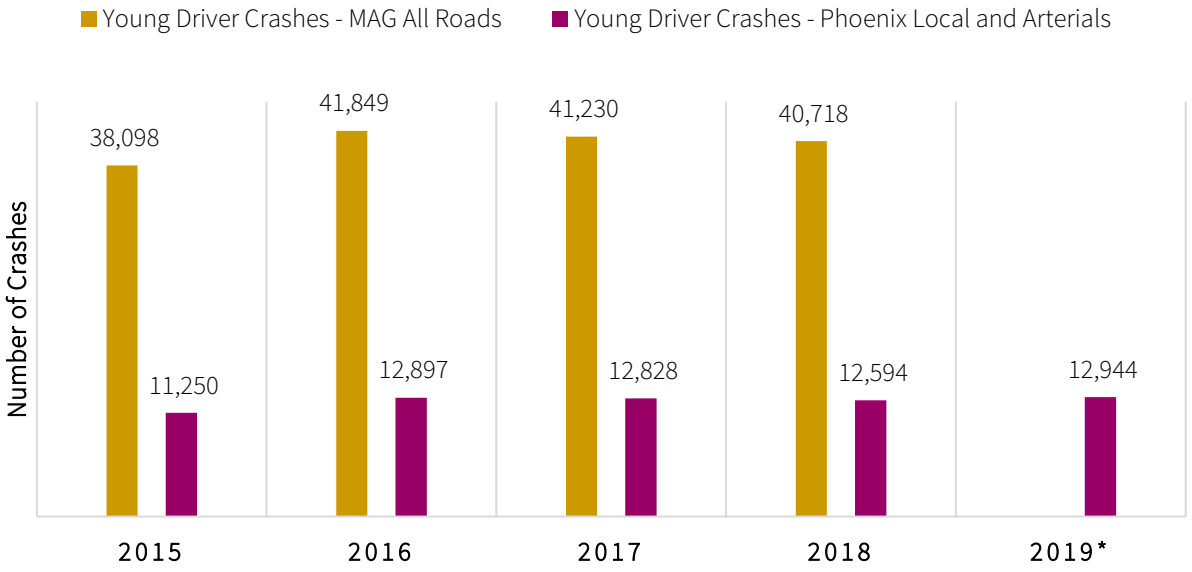


Figure 52: Severity of Older Driver Crashes, MAG Region and Phoenix (2015-2018)

YOUNGER DRIVERS (24 and below)

Figure 53 compares the number of crashes involving younger drivers on all roads of the MAG Region and City of Phoenix's local and arterial roads. Younger driver crashes on the City of Phoenix's local and arterial roads represented about 31% of crashes involving younger drivers in the MAG Region.



**Note: MAG data was sourced from the MAG Strategic Transportation Safety Plan, which analyzed data from 2009 to 2018. Data from 2019 was not available for comparison.*

Figure 53: Younger Driver Crashes per Year, MAG Region, and City of Phoenix

Figure 54 shows that the severity of crashes on local and arterial roads involving younger drivers was similar in both geographies. In addition, the younger driver crashes are generally consistent with the overall crash summaries of each area for all age groups.

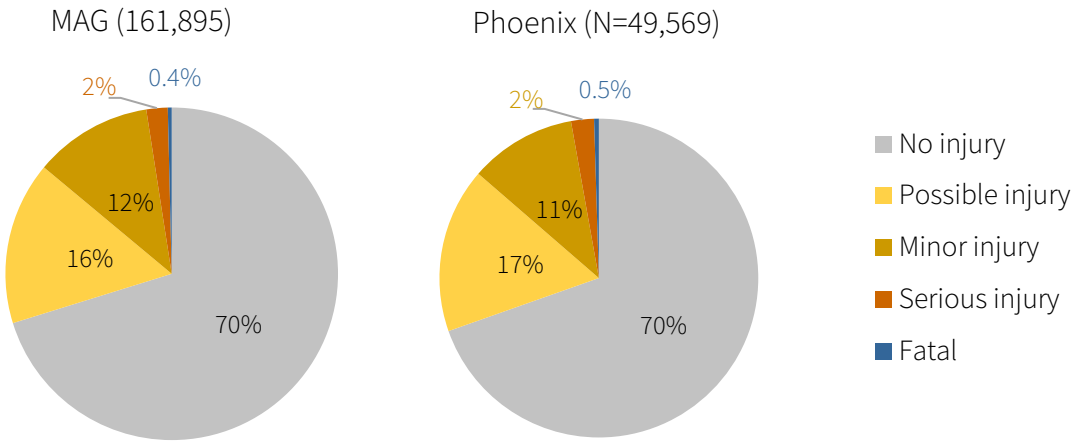


Figure 54: Severity of Younger Driver Crashes, MAG Region and Phoenix (2015-2018)

CONCLUSION

Crash queries were obtained through the Maricopa Association of Governments (MAG) software tool for crash analysis, the Regional Transportation Safety Information Management System (RTSIMS). This report used existing tools to conduct a safety analysis of the past five years, and compared trends to regional and statewide data. The following key findings are based on a review of RTSIMS crash data from 2015 to 2019:

- An annual average 30,376 crashes per year were reported during the five year study period. This equates to 83 crashes per day.
- Crashes on arterial and local roadways in the City of Phoenix increased by a rate of about 4.4% per year. This trend suggests that the crash frequency increased at a higher rate than the City's population, which in the same period grew 1.5% per year, on average.
- Most crashes result in no injury (70%), approximately one-quarter result in possible or minor injury (27%), 2.6% result in serious injury, and 0.6% result in fatal injury. This equates to two serious injury crashes occurring each day, and one fatal crash occurring every other day.
- The percentage of fatal and serious injury crashes has remained generally consistent over the past five years; however the percentage of no injury crashes has steadily increased over time.
- Rear end crashes were the most common collision manner, followed by left-turn crashes. These two crash types account for about half of all crashes.
- For fatal and serious injury crashes, the "Other" collision manner was reported most frequent (25%), which is commonly selected for crashes involving pedestrians and bicyclists. Other frequent crash types for fatal and serious injury crashes were left-turn (23%) and angle (21%).
- Crashes involving unrestrained drivers (i.e, lack of seatbelt, helmet use) have reduced in frequency.
- Due to lack of protection on impact, pedestrians and bicyclists (vulnerable users) are more frequently seriously injured when involved in motor vehicle crashes. In the City of Phoenix, crashes involving bicyclists and pedestrians represent nearly half (48%) of all fatal crashes.
- A greater share of pedestrian crashes is occurring in Phoenix compared to other agencies within the MAG Region. Phoenix represents 36% of Maricopa County's population and about 43% of the County's local and arterial road crashes; however, 63% of County crashes involving pedestrians occurred on City of Phoenix's local and arterial roads.
- Bicyclist crashes are occurring at a greater rate in Phoenix than in other agencies within the MAG Region. About 43% of all crashes involving bicyclists in Maricopa County occurred on City of Phoenix's local and arterial roads.
- For all crash severities, the majority of crashes occur during daylight hours (71%), with the remaining 29% of crashes occurring during dawn, dusk, or dark conditions.
- A correlation exists between injury severity and lighting condition; fatal and serious injury crashes occurred more frequently during dawn, dusk, and dark conditions (45%) compared to daylight conditions (55%).

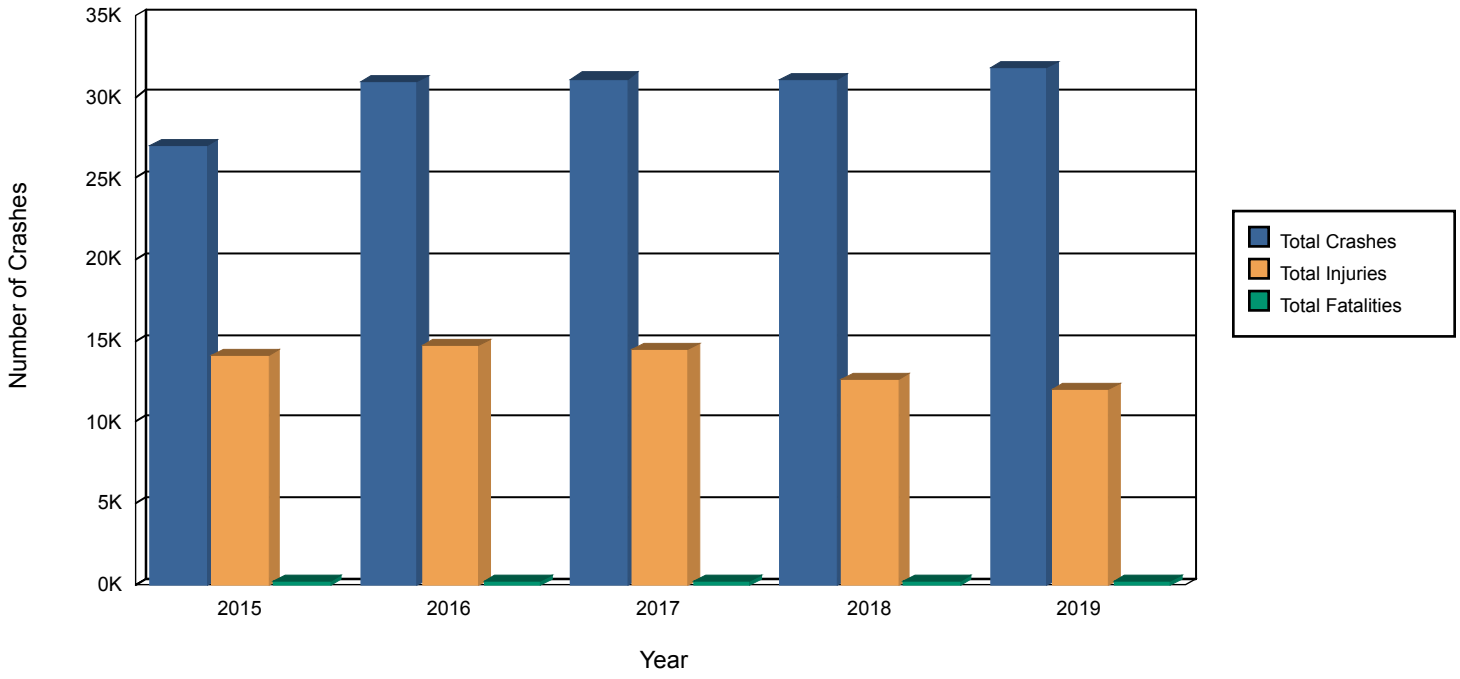
The MAG RTSIMS tool provided the ability to retrieve data quickly for numerous Citywide statistics. During the analysis process, several discrepancies were identified when comparing to past Phoenix data, which is common when comparing different datasets. The City of Phoenix conducts a robust data scrubbing process each year, which confirms crashes exist within the City of Phoenix boundaries, omits freeway crashes, and reviews characteristics of crashes in detail to correct the manner of collision if originally mis-coded. The RTSIMS crash data is not scrubbed, and comes directly from ADOT ACIS. These differences, along with variations in the querying process, are acknowledged as part of this report. This data contained in this

report is intended to provide preliminary information; later stages of this project will modernize the existing City of Phoenix crash analysis process to improve and enhance data analytics and visualization.

APPENDIX A: RTSIMS QUERY OUTPUTS

Safety Analysis Report

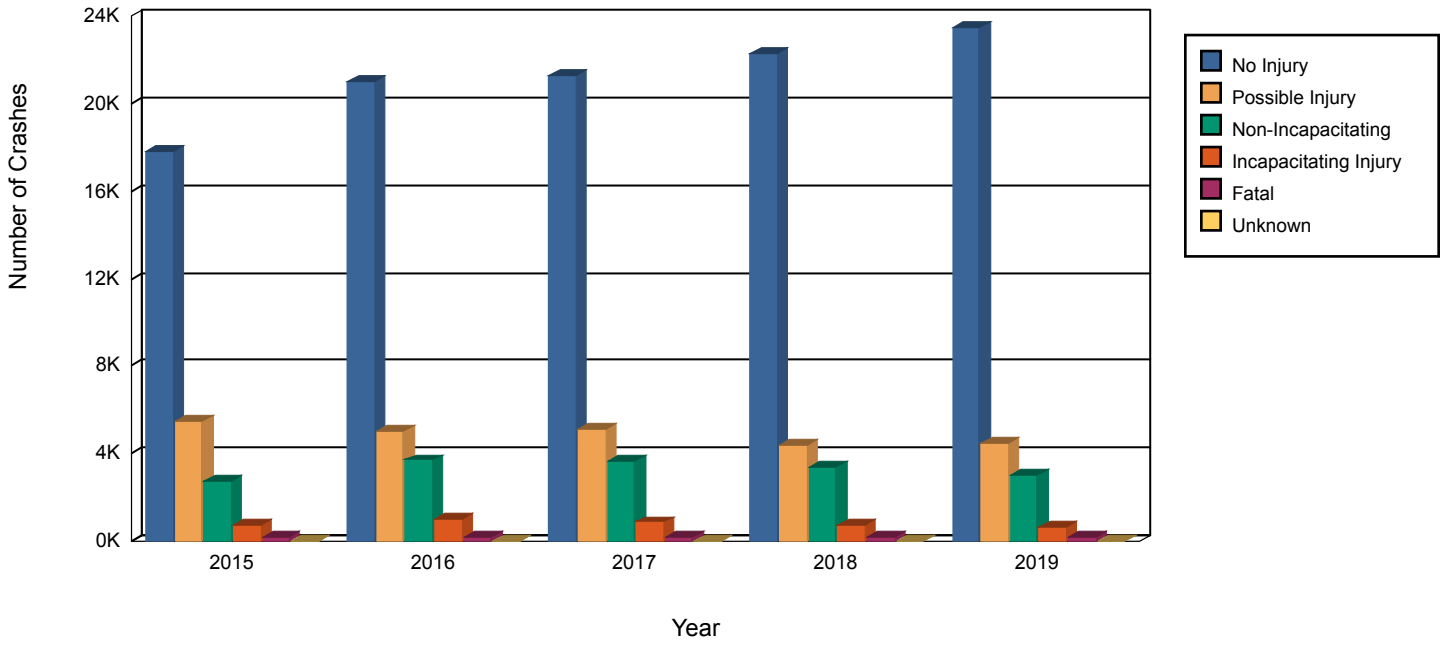
All Arterials and Local Roads Crashes by Year (Phoenix)



Year	All Crashes	Injury Crashes	Fatal Crashes	Total Injuries	Total Fatalities
2015	27,006	9,023	155	14,120	166
2016	30,912	9,701	192	14,688	201
2017	31,106	9,641	202	14,463	212
2018	31,026	8,527	230	12,637	245
2019	31,827	8,232	172	12,008	180

Safety Analysis Report

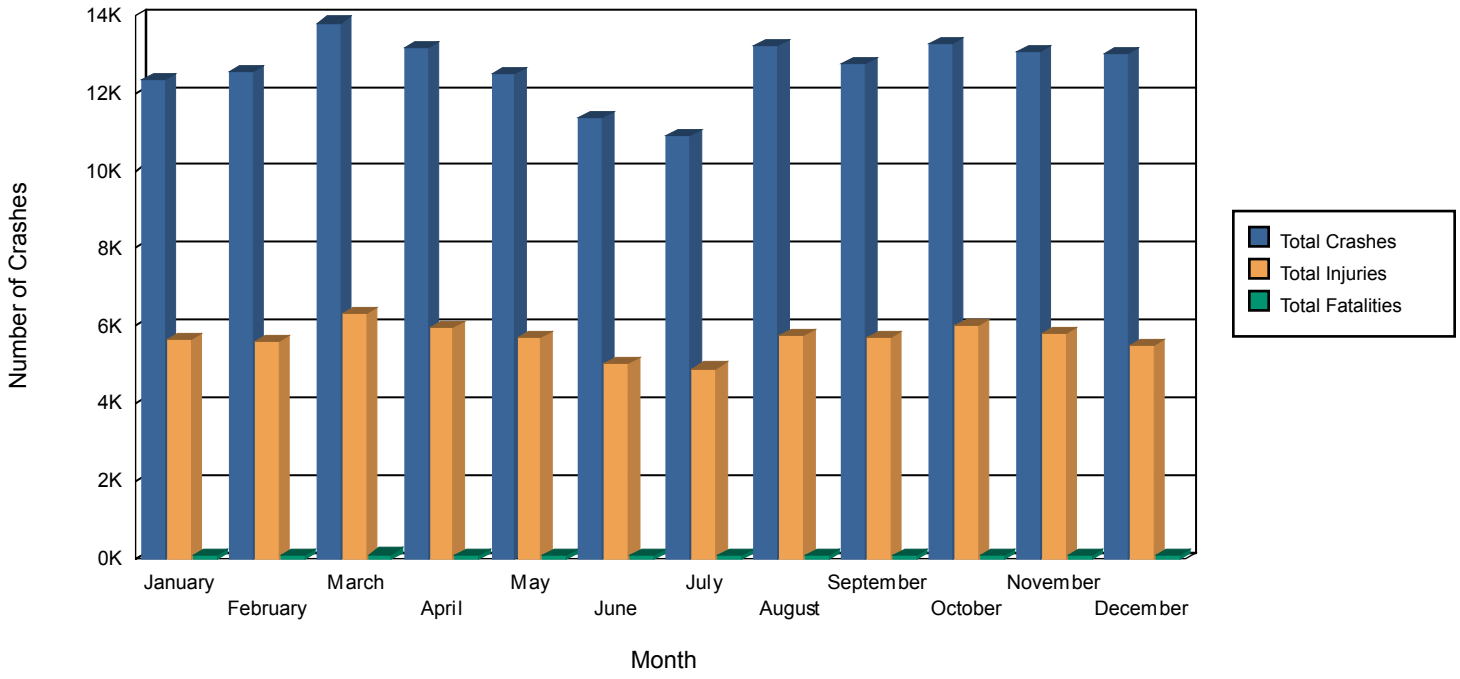
All Arterials and Local Roads Crashes by Year (Phoenix)



Year	No Injury	Possible Injury	Non Incapacitating	Incapacitating Injury	Fatal	Unknown	Total
2015	17,828	5,508	2,769	746	155	0	27,006
2016	21,019	5,018	3,707	976	192	0	30,912
2017	21,263	5,139	3,627	875	202	0	31,106
2018	22,269	4,400	3,378	749	230	0	31,026
2019	23,423	4,509	3,058	665	172	0	31,827

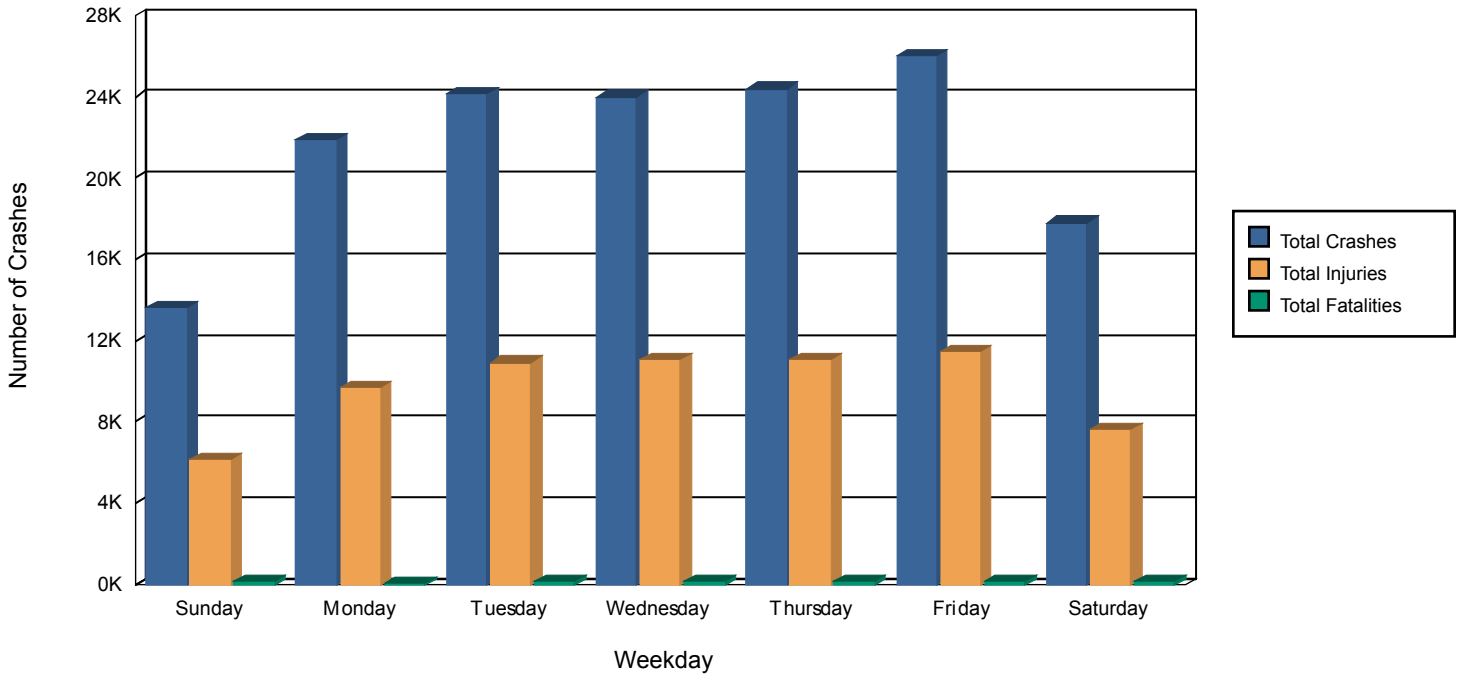
Safety Analysis Report

All Arterials and Local Roads Crashes by Month (Phoenix)



Month	All Crashes	Injury Crashes	Fatal Crashes	Total Injuries	Total Fatalities
January	12,337	3,781	80	5,668	87
February	12,553	3,726	77	5,602	83
March	13,809	4,188	102	6,320	107
April	13,146	3,948	83	5,978	88
May	12,474	3,761	71	5,679	75
June	11,359	3,334	84	5,035	86
July	10,920	3,239	65	4,901	67
August	13,199	3,800	78	5,732	83
September	12,736	3,786	67	5,698	68
October	13,267	4,028	85	6,009	93
November	13,065	3,825	75	5,789	80
December	13,012	3,708	84	5,505	87

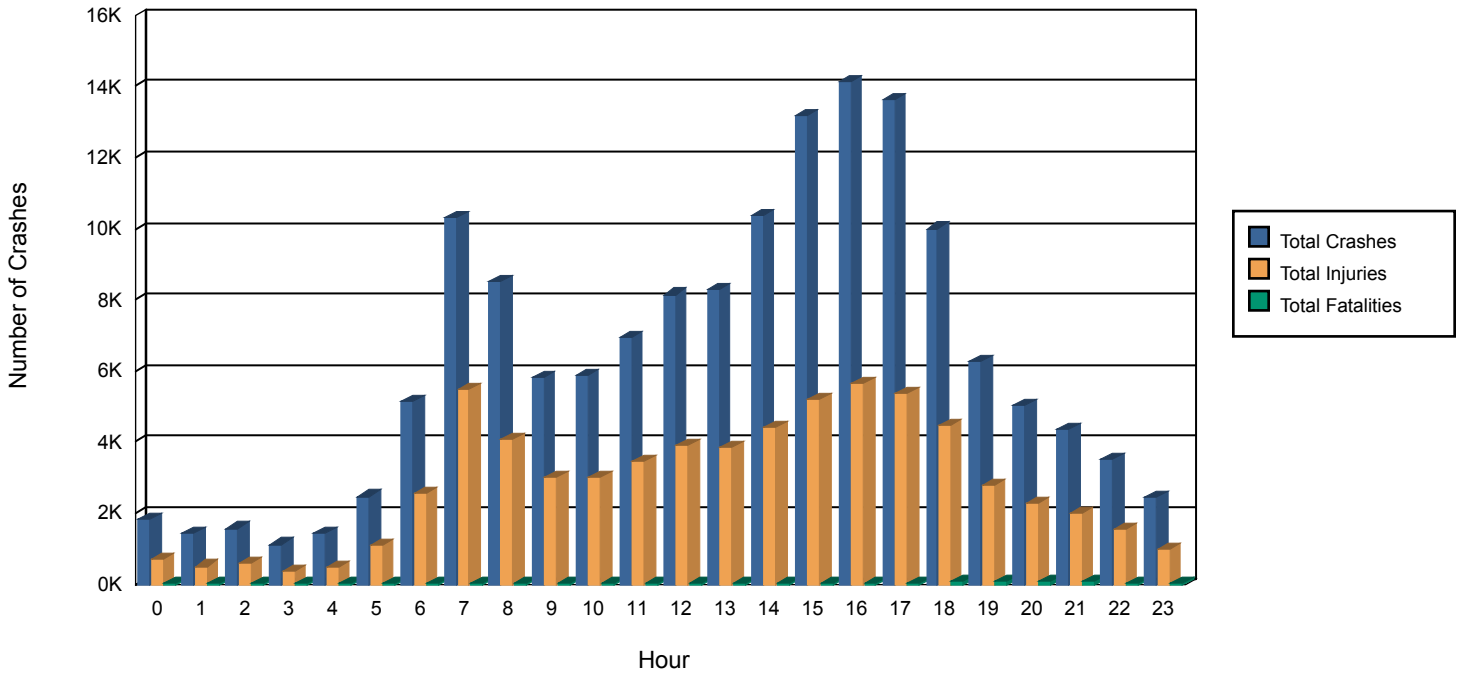
All Arterials and Local Roads Crashes by Weekday (Phoenix)



Weekday	All Crashes	Injury Crashes	Fatal Crashes	Total Injuries	Total Fatalities
Sunday	13,603	3,924	148	6,163	165
Monday	21,920	6,501	97	9,677	104
Tuesday	24,139	7,352	128	10,925	128
Wednesday	23,994	7,462	115	11,067	124
Thursday	24,394	7,367	151	11,059	162
Friday	26,020	7,533	153	11,430	157
Saturday	17,807	4,985	159	7,595	164

Safety Analysis Report

All Arterials and Local Roads Crashes by Hour (Phoenix)

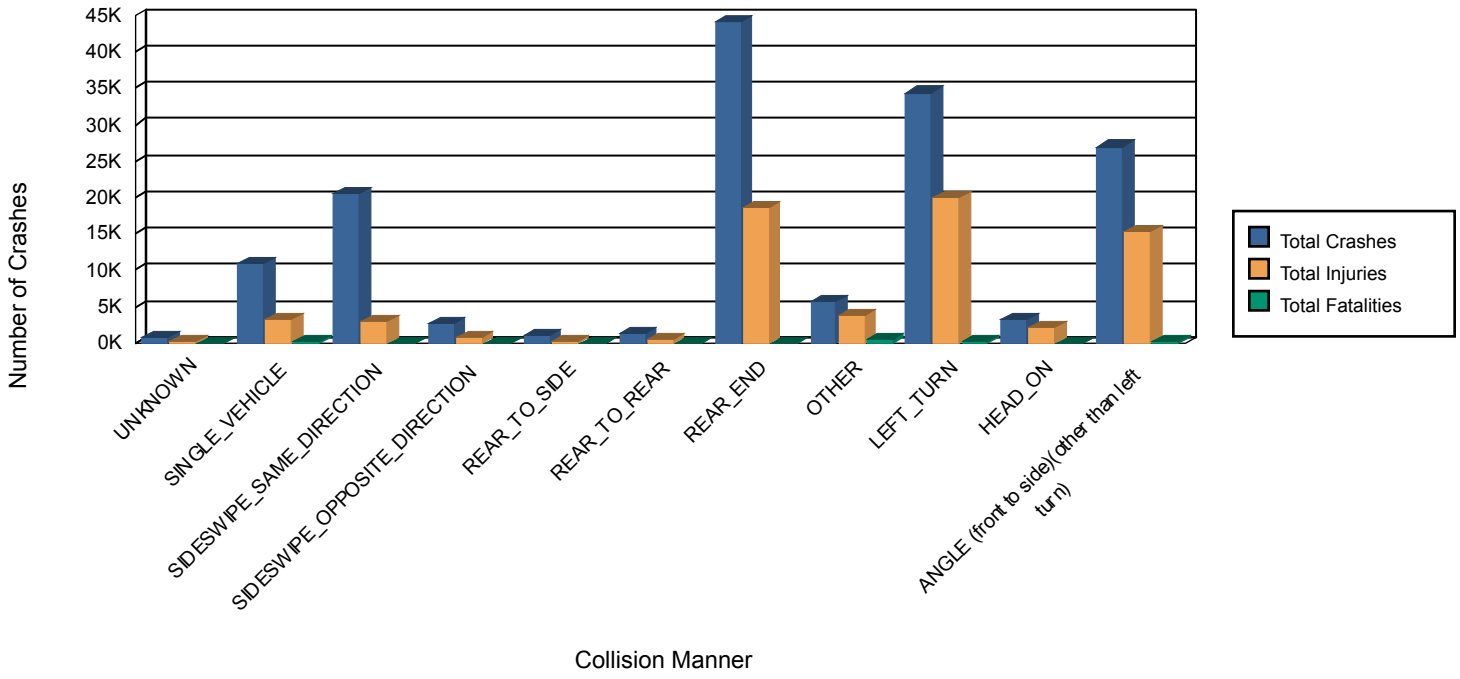


Hour	All Crashes	Injury Crashes	Fatal Crashes	Total Injuries	Total Fatalities
0	1,846	492	43	686	45
1	1,438	357	43	515	49
2	1,581	415	31	603	34
3	1,133	282	15	384	15
4	1,424	367	24	492	26
5	2,481	791	24	1,123	24
6	5,128	1,709	46	2,551	48
7	10,326	3,447	22	5,498	22
8	8,515	2,684	17	4,081	18
9	5,832	1,949	21	3,008	27
10	5,866	1,962	20	2,995	21
11	6,934	2,247	23	3,454	24
12	8,150	2,553	22	3,902	22
13	8,296	2,485	28	3,847	28
14	10,377	2,924	30	4,396	32
15	13,166	3,529	33	5,222	34
16	14,120	3,817	48	5,662	50
17	13,608	3,668	47	5,387	48
18	10,005	2,944	67	4,493	68
19	6,286	1,875	81	2,799	88

Hour	All Crashes	Injury Crashes	Fatal Crashes	Total Injuries	Total Fatalities
20	5,054	1,584	88	2,270	91
21	4,345	1,332	81	1,994	88
22	3,508	1,027	51	1,553	56
23	2,458	684	46	1,001	46

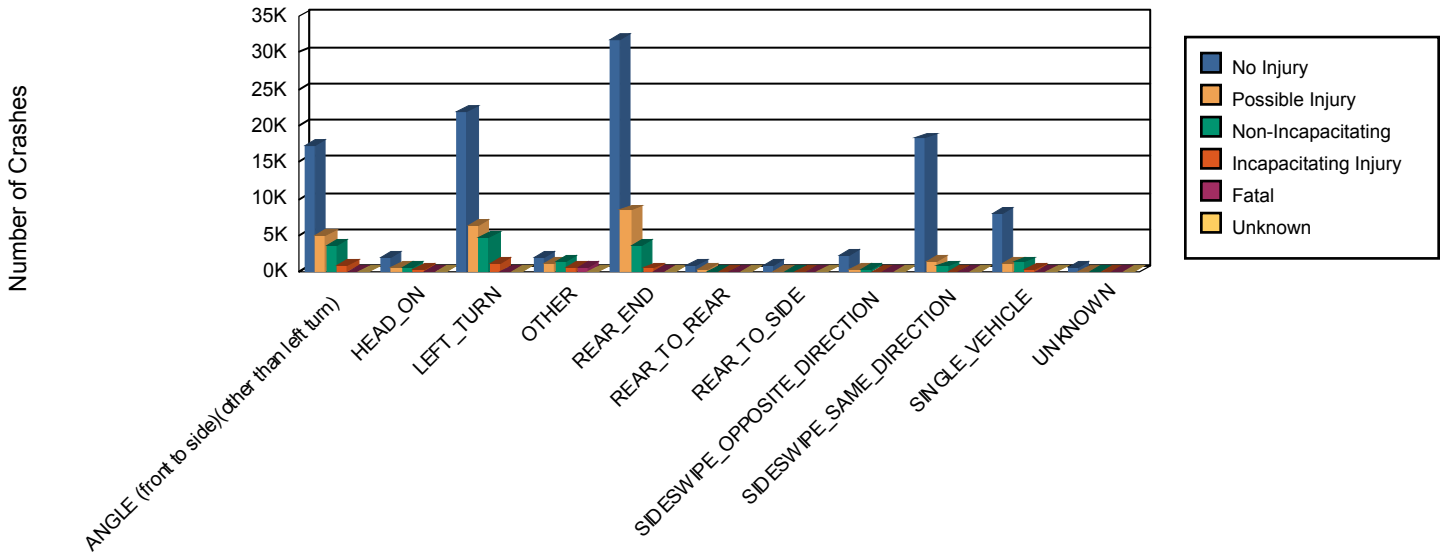
Safety Analysis Report

All Arterials and Local Roads Crashes by Collision Manner (Phoenix)



Collision Manner	All Crashes	Injury Crashes	Fatal Crashes	Total Injuries	Total Fatalities
UNKNOWN	853	208	21	267	23
SINGLE_VEHICLE	10,875	2,824	114	3,301	129
SIDESWIPE_SAME_DIRECTION	20,560	2,312	11	3,071	13
SIDESWIPE_OPPOSITE_DIRECTION	2,791	530	4	801	5
REAR_TO_SIDE	938	88	0	123	0
REAR_TO_REAR	1,295	315	0	483	0
REAR_END	44,146	12,372	42	18,618	43
OTHER	5,797	3,264	491	3,718	504
LEFT_TURN	34,390	12,247	117	20,044	123
HEAD_ON	3,266	1,340	43	2,226	50
ANGLE (front to side)(other than left turn)	26,966	9,624	108	15,264	114

All Arterials and Local Roads Crashes by Collision Manner (Phoenix)

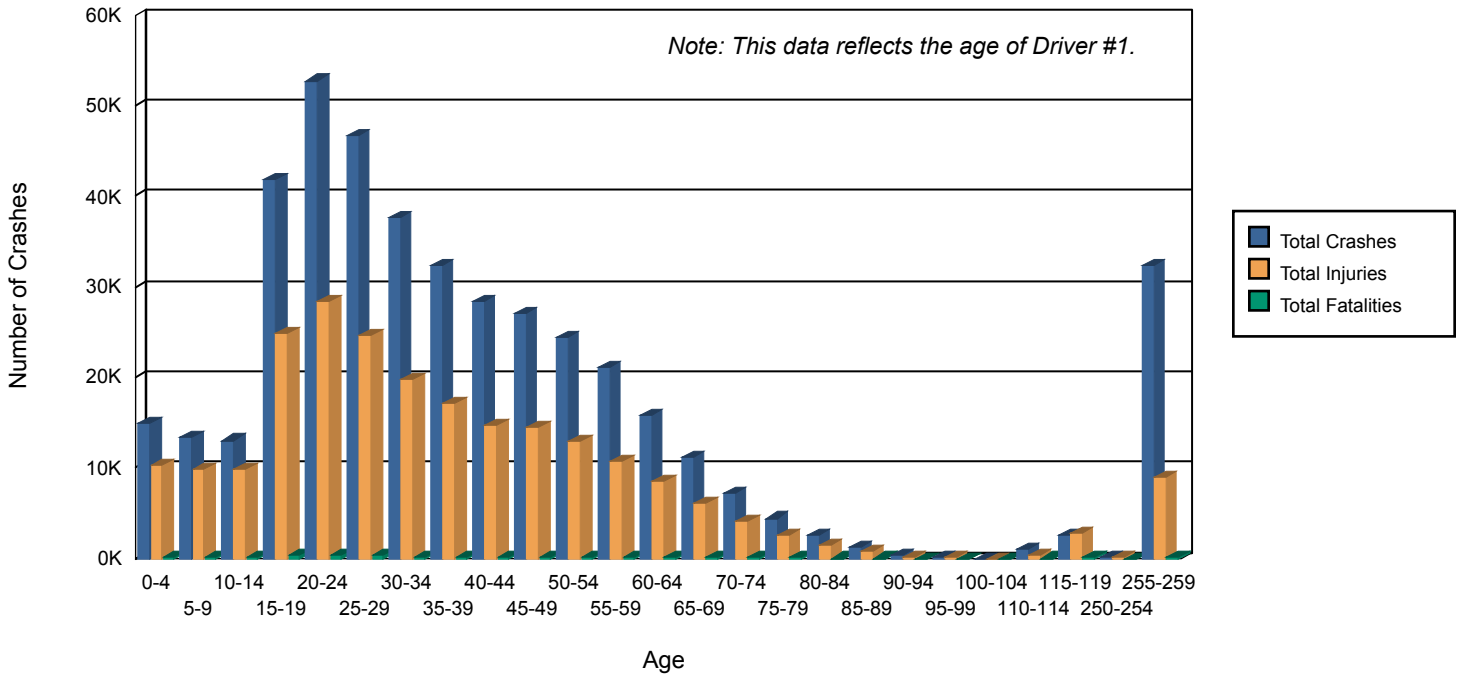


Collision Manner

Collision Manner	No Injury	Possible Injury	Non Incapacitating	Incapacitating Injury	Fatal	Unknown	Total
UNKNOWN	624	92	83	33	21	0	853
SINGLE_VEHICLE	7,937	1,092	1,296	436	114	0	10,875
SIDESWIPE_SAME_DIRECTION	18,237	1,434	741	137	11	0	20,560
SIDESWIPE_OPPOSITE_DIRECTION	2,257	273	206	51	4	0	2,791
REAR_TO_SIDE	850	51	32	5	0	0	938
REAR_TO_REAR	980	214	87	14	0	0	1,295
REAR_END	31,732	8,394	3,519	459	42	0	44,146
OTHER	2,042	1,118	1,464	682	491	0	5,797
LEFT_TURN	22,026	6,375	4,824	1,048	117	0	34,390
HEAD_ON	1,883	547	568	225	43	0	3,266
ANGLE (front to side) (other than left turn)	17,234	4,984	3,719	921	108	0	26,966

Safety Analysis Report

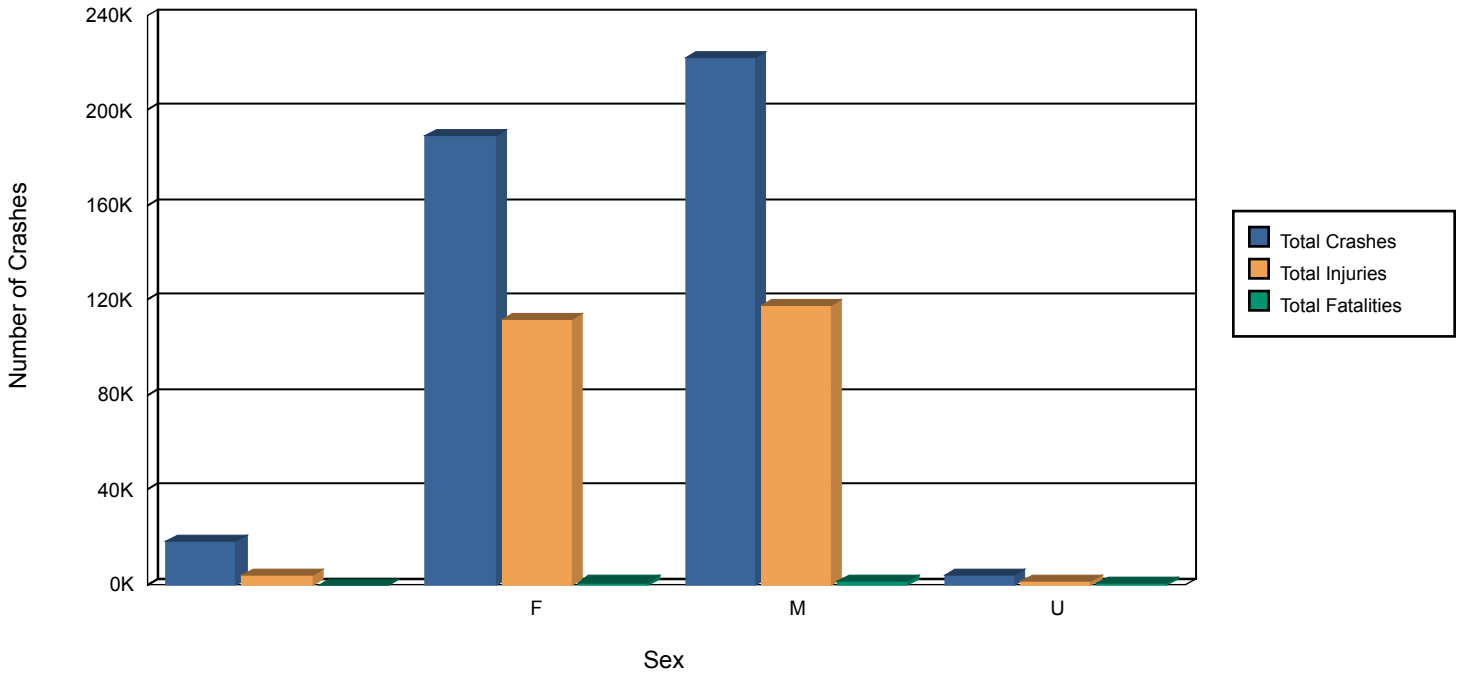
All Arterials and Local Roads Crashes by Age (Phoenix)



Age	All Crashes	Injury Crashes	Fatal Crashes	Total Injuries	Total Fatalities
0-4	15,012	5,044	58	10,327	79
5-9	13,433	4,610	57	9,807	72
10-14	13,047	4,686	66	9,808	74
15-19	41,762	13,697	216	24,805	275
20-24	52,790	16,849	312	28,302	352
25-29	46,706	14,698	255	24,645	283
30-34	37,610	12,038	194	19,859	212
35-39	32,390	10,307	189	17,208	207
40-44	28,351	9,012	150	14,790	159
45-49	27,132	8,924	146	14,531	153
50-54	24,501	8,072	186	13,036	192
55-59	21,184	6,869	148	10,821	153
60-64	15,723	5,305	136	8,482	138
65-69	11,171	3,798	91	6,159	93
70-74	7,282	2,520	64	4,168	64
75-79	4,441	1,567	55	2,594	57
80-84	2,528	887	31	1,510	31
85-89	1,327	465	20	755	21
90-94	386	134	8	225	9
95-99	60	23	1	40	1

Age	All Crashes	Injury Crashes	Fatal Crashes	Total Injuries	Total Fatalities
100-104	4	2	1	8	1
110-114	1,088	260	22	441	22
115-119	2,525	1,137	163	2,842	178
250-254	151	38	0	58	0
255-259	32,424	6,618	43	8,987	45

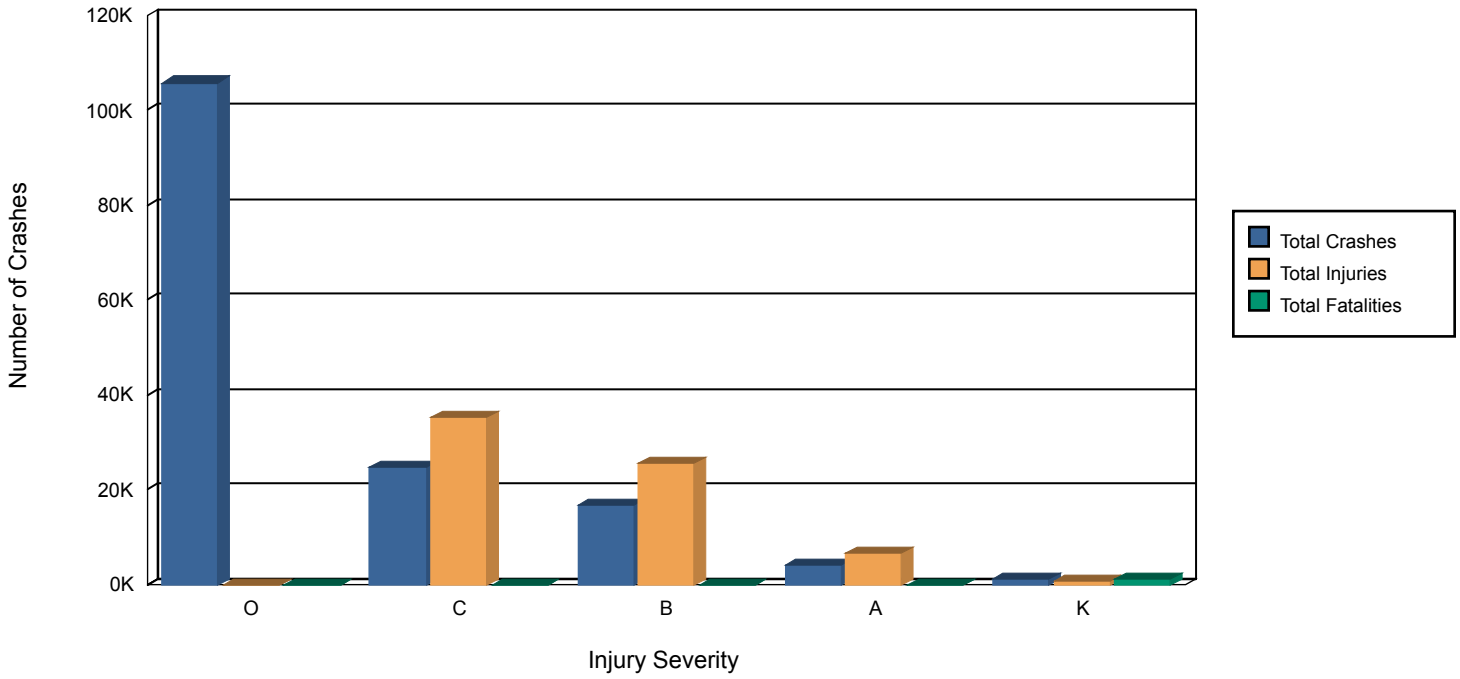
All Arterials and Local Roads Crashes by Sex (Phoenix)



Sex	All Crashes	Injury Crashes	Fatal Crashes	Total Injuries	Total Fatalities
	18,466	3,093	43	3,885	45
F	188,984	63,102	841	111,383	937
M	221,819	70,564	1,581	117,777	1,731
U	3,759	801	147	1,163	158

Safety Analysis Report

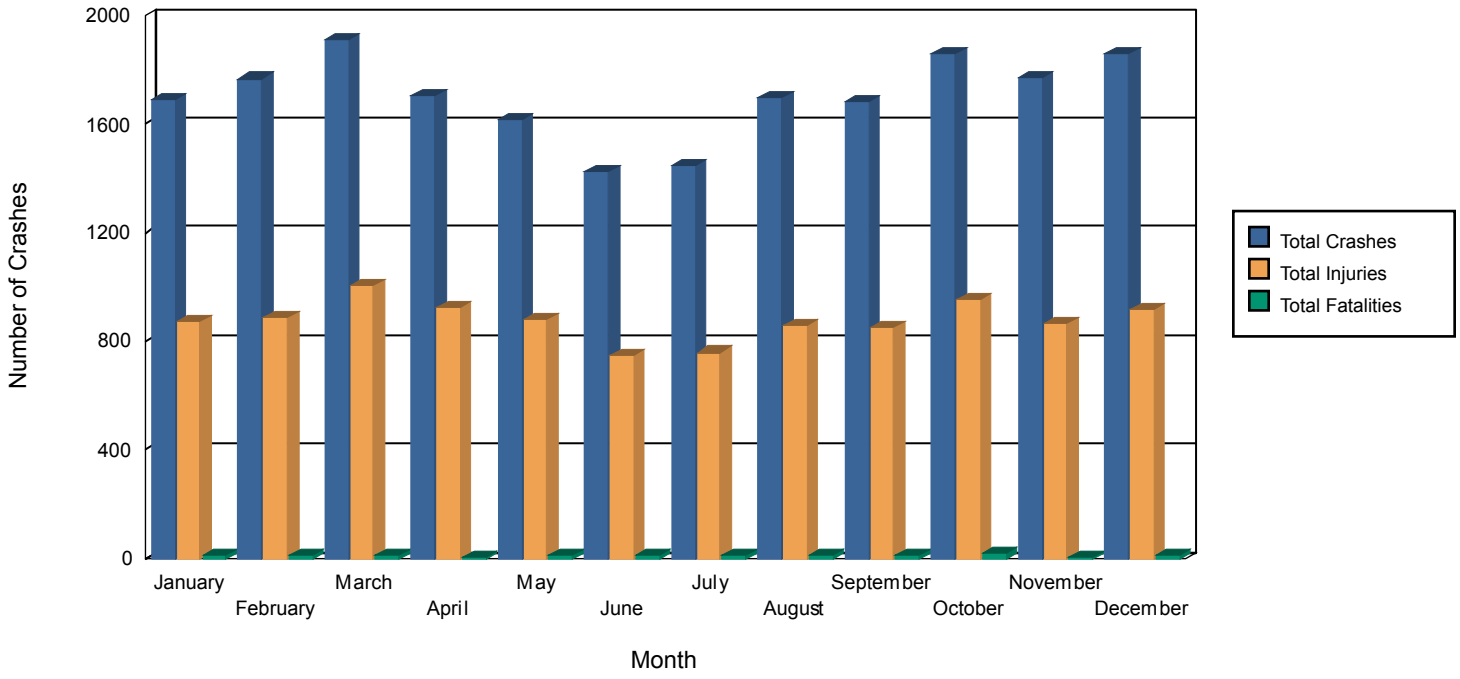
All Arterials and Local Roads Crashes by Injury Severity (Phoenix)



Injury Severity	All Crashes	Injury Crashes	Fatal Crashes	Total Injuries	Total Fatalities
O	105,802	0	0	0	0
C	24,574	24,574	0	35,153	0
B	16,539	16,539	0	25,533	0
A	4,011	4,011	0	6,710	0
K	951	0	951	520	1,004

Safety Analysis Report

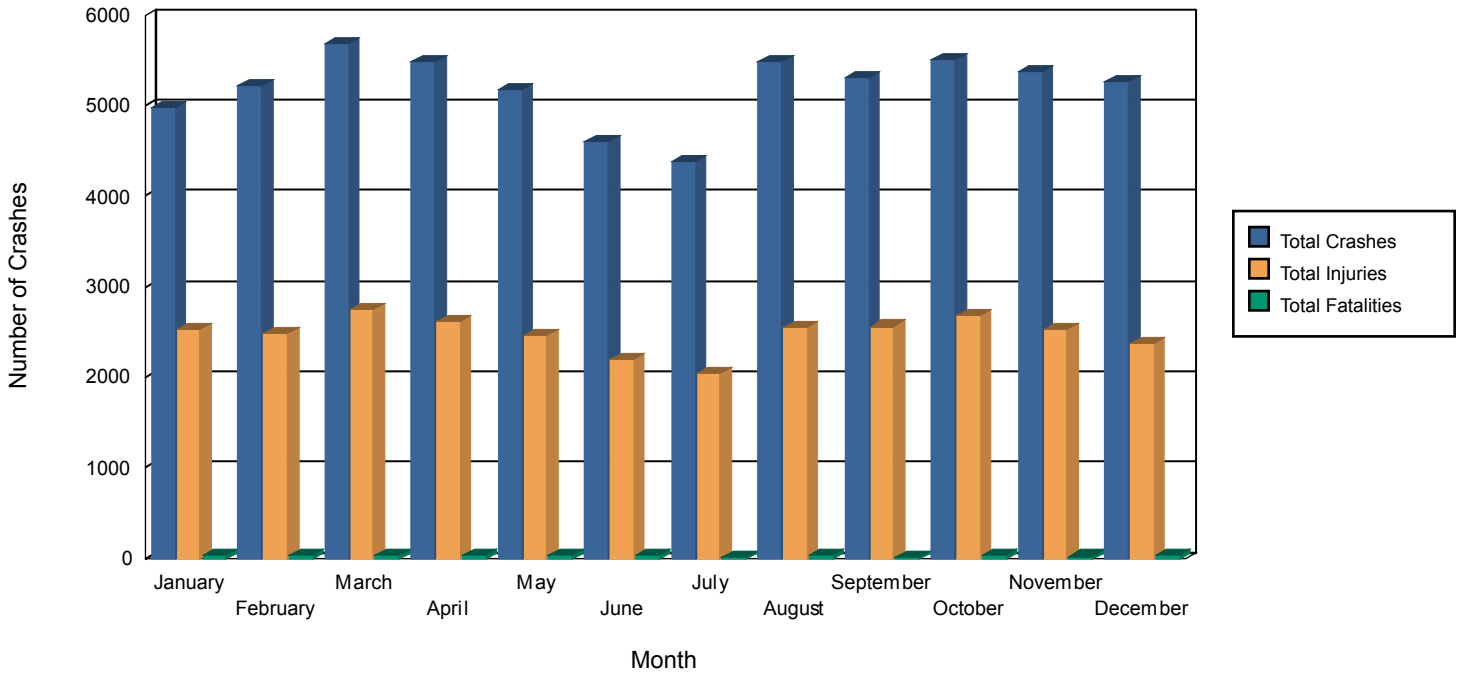
All Arterials and Local Roads Older Driver Crashes by Month (Phoenix)



Month	All Crashes	Injury Crashes	Fatal Crashes	Total Injuries	Total Fatalities
January	1,687	556	11	874	11
February	1,767	575	14	885	14
March	1,912	619	12	1,004	14
April	1,705	590	7	925	7
May	1,613	556	11	881	11
June	1,426	457	12	748	13
July	1,444	463	9	759	9
August	1,697	536	9	856	9
September	1,685	539	14	854	14
October	1,859	595	18	955	18
November	1,770	560	7	864	7
December	1,860	589	14	914	14

Safety Analysis Report

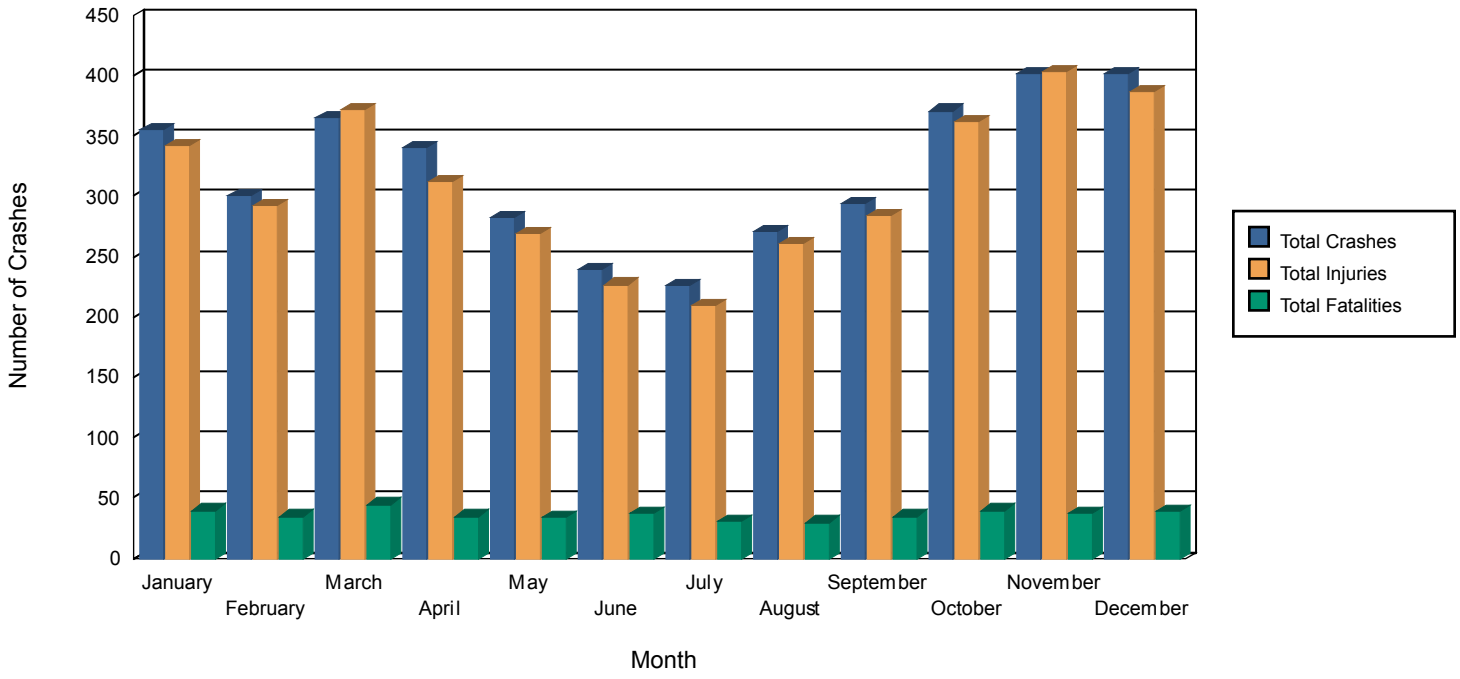
All Arterials and Local Roads Younger Driver Crashes by Month (Phoenix)



Month	All Crashes	Injury Crashes	Fatal Crashes	Total Injuries	Total Fatalities
January	4,975	1,579	31	2,538	33
February	5,225	1,567	23	2,477	29
March	5,685	1,724	35	2,749	38
April	5,496	1,607	29	2,627	30
May	5,180	1,557	28	2,471	30
June	4,604	1,386	26	2,195	28
July	4,383	1,297	15	2,053	17
August	5,494	1,587	26	2,556	29
September	5,317	1,618	15	2,563	15
October	5,516	1,703	22	2,686	30
November	5,380	1,576	24	2,536	26
December	5,258	1,501	26	2,375	28

Safety Analysis Report

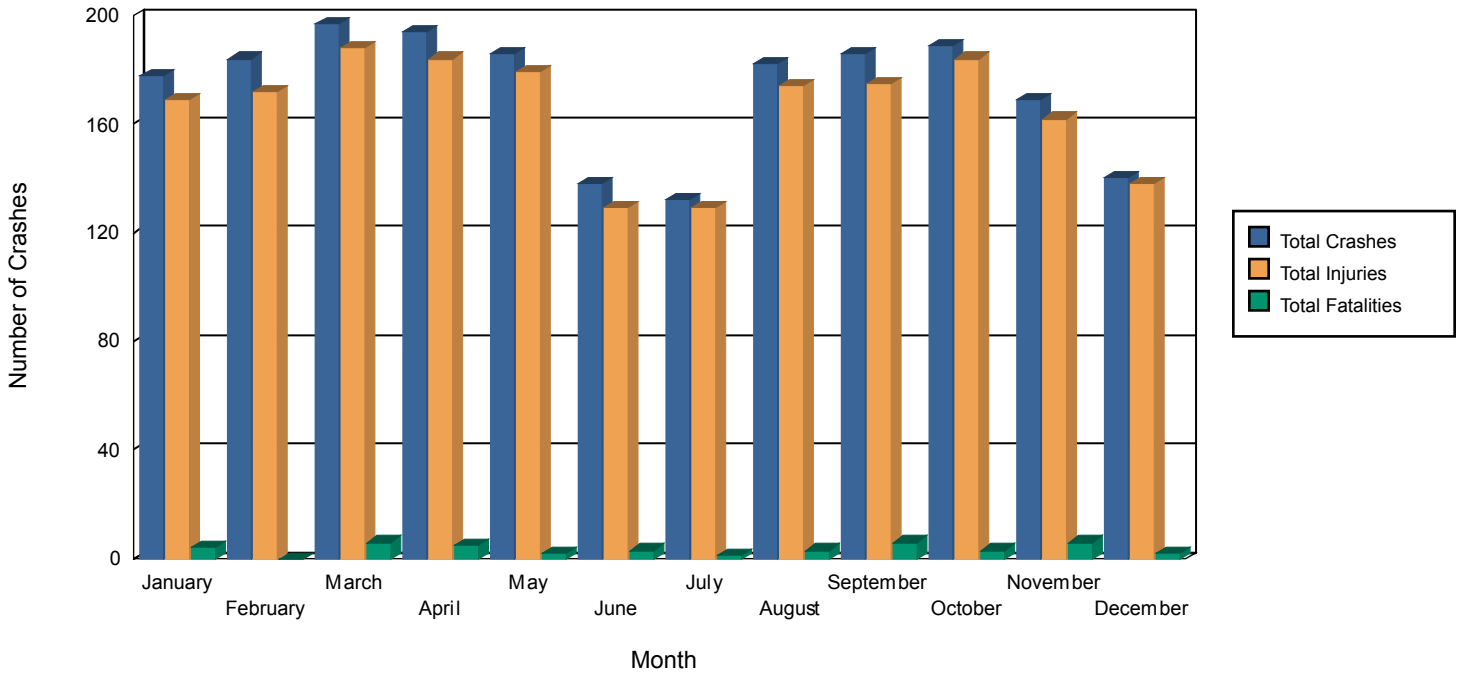
All Arterials and Local Roads Pedestrian Crashes by Month (Phoenix)



Month	All Crashes	Injury Crashes	Fatal Crashes	Total Injuries	Total Fatalities
January	355	310	40	342	40
February	300	260	35	293	35
March	365	314	44	372	45
April	341	294	35	313	35
May	282	240	32	269	34
June	239	200	36	227	37
July	226	192	30	209	31
August	271	237	29	261	30
September	294	254	34	284	35
October	371	325	40	362	40
November	401	361	37	403	38
December	401	356	39	387	39

Safety Analysis Report

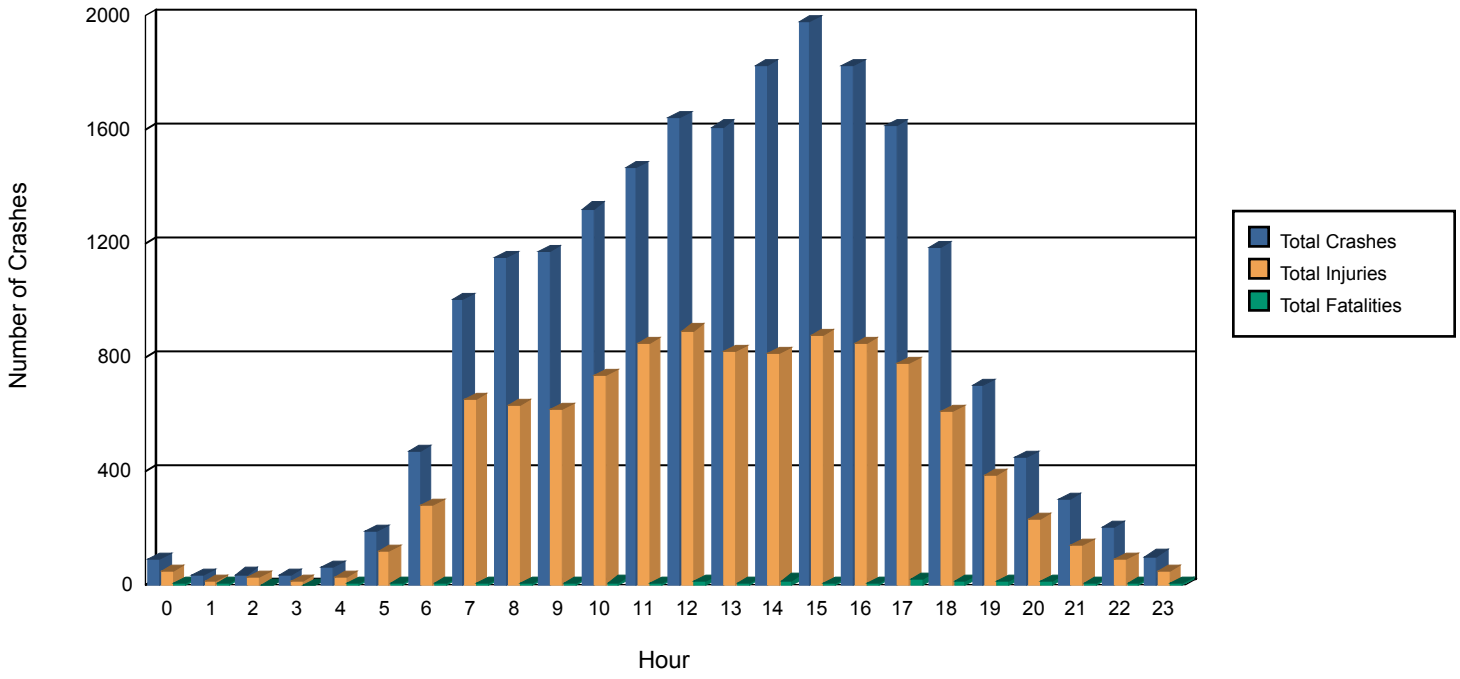
All Arterials and Local Roads Bicyclist Crashes by Month (Phoenix)



Month	All Crashes	Injury Crashes	Fatal Crashes	Total Injuries	Total Fatalities
January	178	163	4	169	4
February	184	169	0	172	0
March	197	182	6	188	6
April	194	179	5	184	5
May	186	175	2	179	2
June	138	128	3	129	3
July	132	128	1	129	1
August	182	169	3	174	3
September	186	171	6	175	6
October	189	177	3	184	3
November	169	158	6	162	6
December	140	134	2	138	2

Safety Analysis Report

All Arterials and Local Roads Older Driver Crashes by Hour (Phoenix)

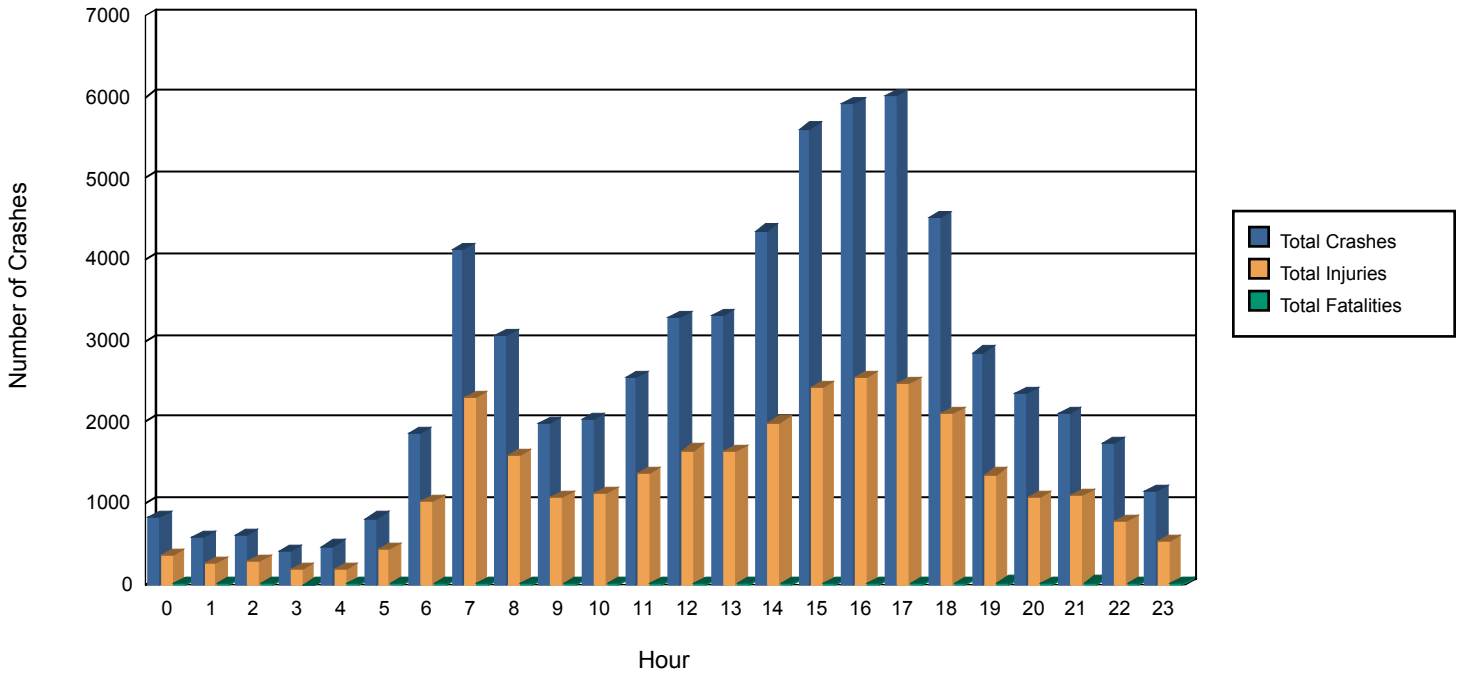


Hour	All Crashes	Injury Crashes	Fatal Crashes	Total Injuries	Total Fatalities
0	90	30	2	46	2
1	35	10	2	14	2
2	36	19	0	25	0
3	33	10	0	14	0
4	59	15	4	24	4
5	186	72	2	117	2
6	467	170	4	280	4
7	1,000	373	3	652	3
8	1,146	399	5	629	5
9	1,168	408	4	616	4
10	1,321	468	8	734	8
11	1,468	504	4	849	5
12	1,639	569	9	893	9
13	1,609	501	4	818	4
14	1,820	521	14	811	15
15	1,976	571	6	877	6
16	1,826	535	7	848	7
17	1,614	471	17	777	17
18	1,183	402	11	611	12
19	702	246	11	386	11

Hour	All Crashes	Injury Crashes	Fatal Crashes	Total Injuries	Total Fatalities
20	449	153	10	226	10
21	298	96	5	138	5
22	201	61	2	88	2
23	99	31	4	46	4

Safety Analysis Report

All Arterials and Local Roads Younger Driver Crashes by Hour (Phoenix)

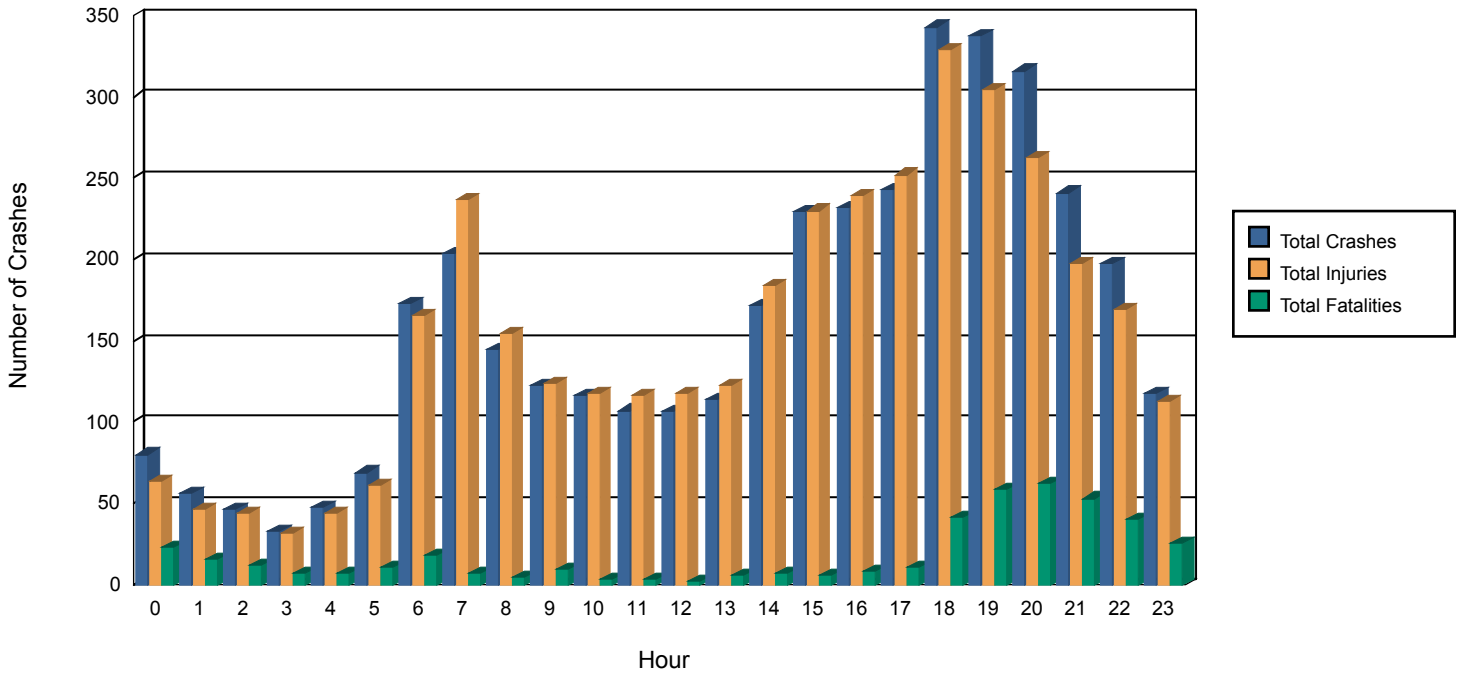


Hour	All Crashes	Injury Crashes	Fatal Crashes	Total Injuries	Total Fatalities
0	827	233	16	359	18
1	586	165	14	266	20
2	602	180	8	282	11
3	408	123	3	179	3
4	471	138	6	193	8
5	814	274	7	428	7
6	1,850	654	11	1,022	12
7	4,119	1,383	8	2,294	8
8	3,062	990	6	1,599	7
9	1,980	660	10	1,078	14
10	2,036	696	10	1,122	10
11	2,557	846	11	1,359	12
12	3,285	1,031	10	1,649	10
13	3,319	1,015	10	1,634	10
14	4,353	1,212	12	1,995	13
15	5,606	1,547	11	2,417	12
16	5,916	1,634	12	2,542	12
17	6,007	1,592	9	2,468	10
18	4,519	1,310	15	2,114	15
19	2,854	824	23	1,356	27

Hour	All Crashes	Injury Crashes	Fatal Crashes	Total Injuries	Total Fatalities
20	2,357	703	21	1,066	24
21	2,115	672	28	1,089	28
22	1,728	484	21	786	24
23	1,142	336	18	529	18

Safety Analysis Report

All Arterials and Local Roads Pedestrian Crashes by Hour (Phoenix)

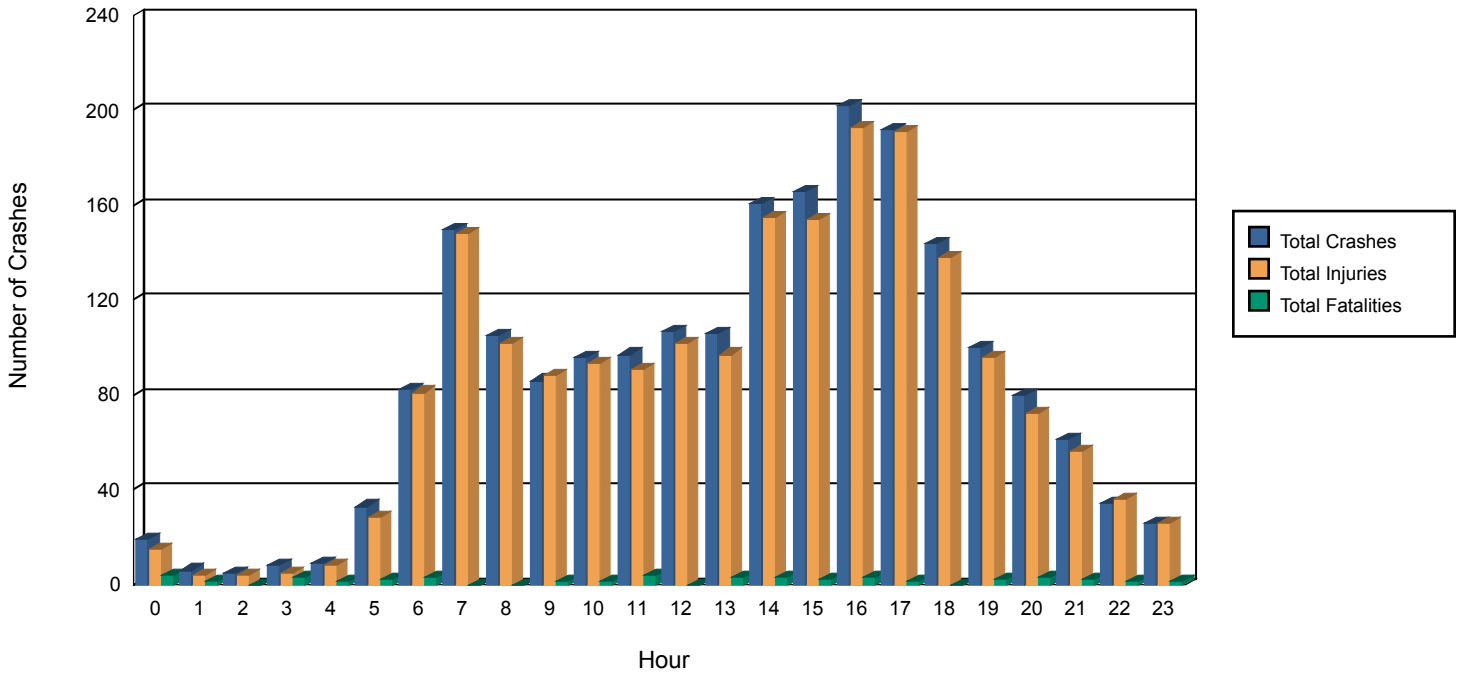


Hour	All Crashes	Injury Crashes	Fatal Crashes	Total Injuries	Total Fatalities
0	80	57	23	63	23
1	56	39	16	46	16
2	46	34	12	44	12
3	33	26	7	31	7
4	48	41	7	44	7
5	69	58	11	61	11
6	173	152	18	165	18
7	204	194	7	237	7
8	144	139	4	154	4
9	122	113	9	124	9
10	116	113	2	118	3
11	107	97	3	116	3
12	106	101	2	117	2
13	114	106	6	122	6
14	172	163	6	184	7
15	229	218	6	230	6
16	232	216	8	239	8
17	243	224	11	252	11
18	343	296	41	329	41
19	337	278	56	304	58

Hour	All Crashes	Injury Crashes	Fatal Crashes	Total Injuries	Total Fatalities
20	316	245	60	263	62
21	241	184	53	197	53
22	197	156	38	169	40
23	118	93	25	113	25

Safety Analysis Report

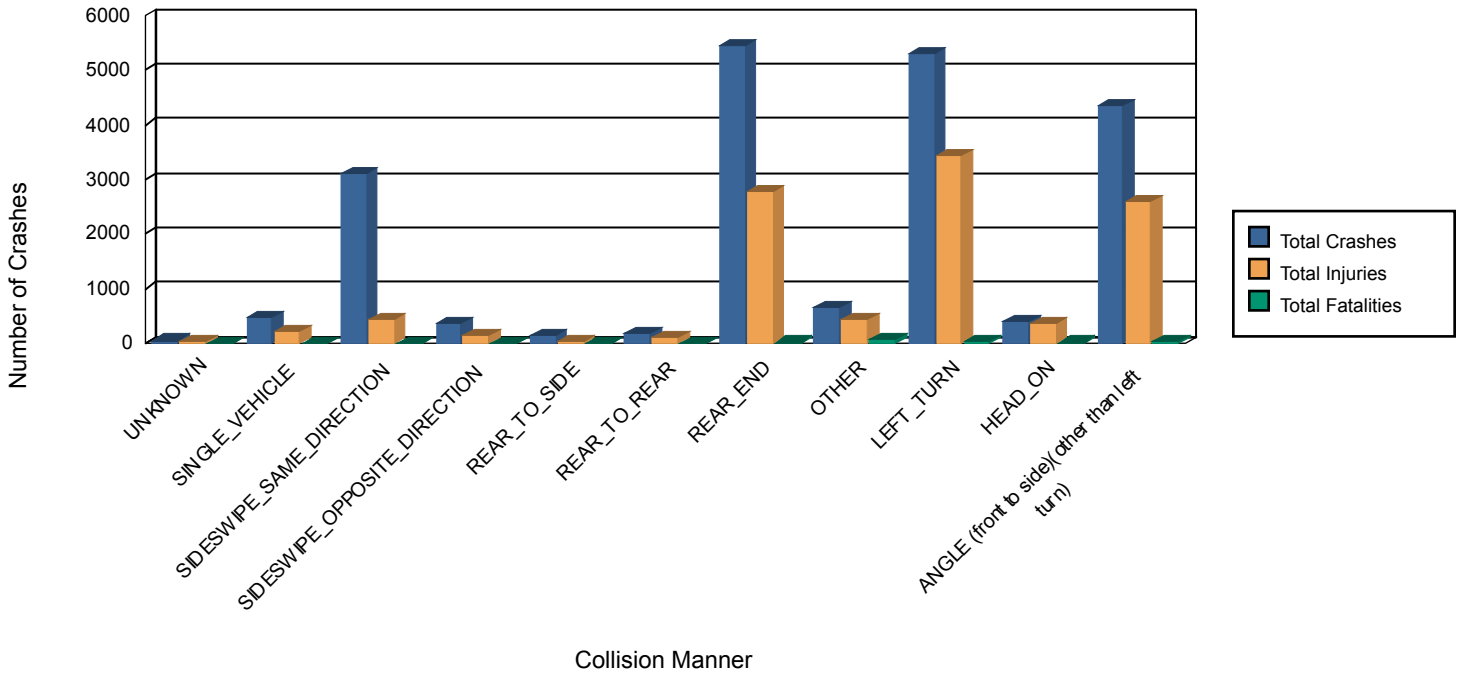
All Arterials and Local Roads Bicyclist Crashes by Hour (Phoenix)



Hour	All Crashes	Injury Crashes	Fatal Crashes	Total Injuries	Total Fatalities
0	19	15	4	15	4
1	6	4	1	4	1
2	5	4	0	4	0
3	8	5	3	5	3
4	9	8	1	8	1
5	33	28	2	28	2
6	82	76	3	81	3
7	150	141	0	148	0
8	105	101	0	102	0
9	86	85	1	88	1
10	96	92	1	93	1
11	97	89	4	91	4
12	107	102	0	102	0
13	106	96	3	97	3
14	161	152	3	155	3
15	166	153	2	154	2
16	202	190	3	193	3
17	192	183	1	191	1
18	144	137	0	138	0
19	100	91	2	96	2

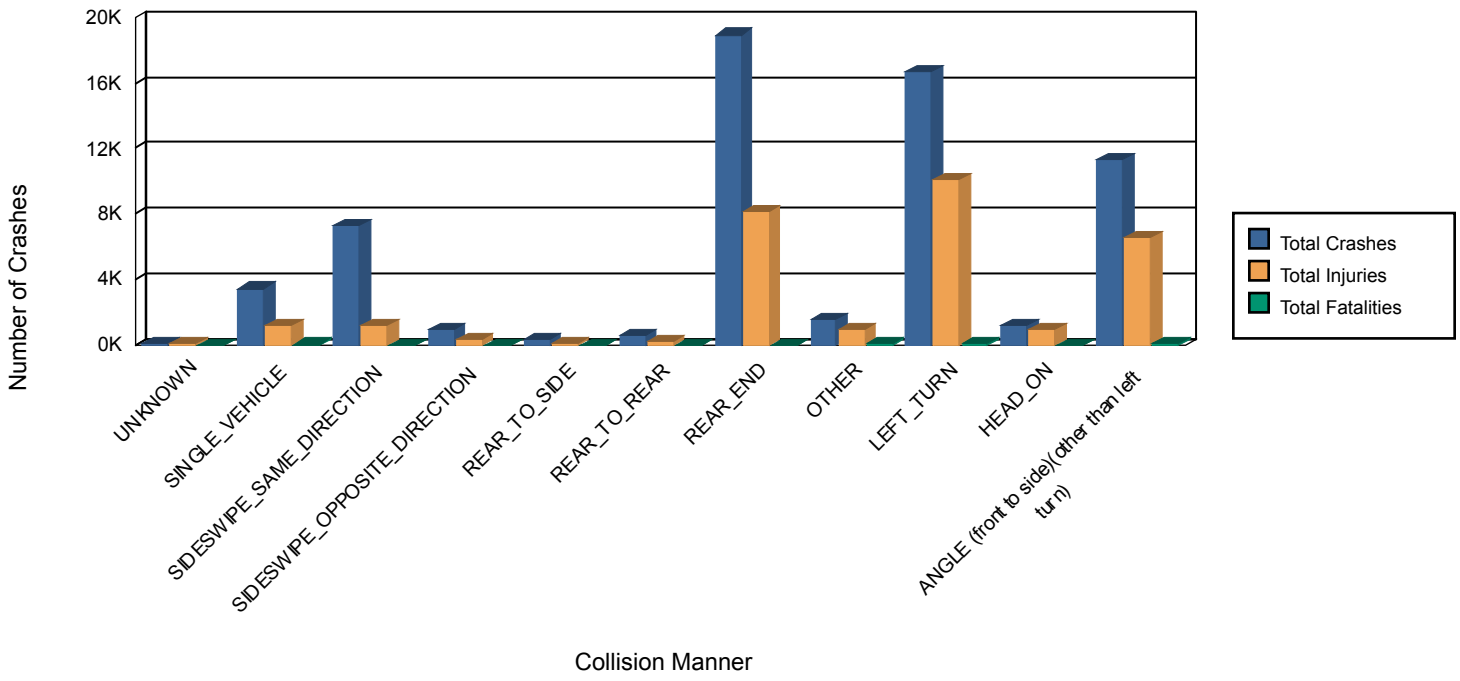
Hour	All Crashes	Injury Crashes	Fatal Crashes	Total Injuries	Total Fatalities
20	80	70	3	72	3
21	61	55	2	56	2
22	34	31	1	36	1
23	26	25	1	26	1

All Arterials and Local Roads Older Driver Crashes byCollision Manner (Phoenix)



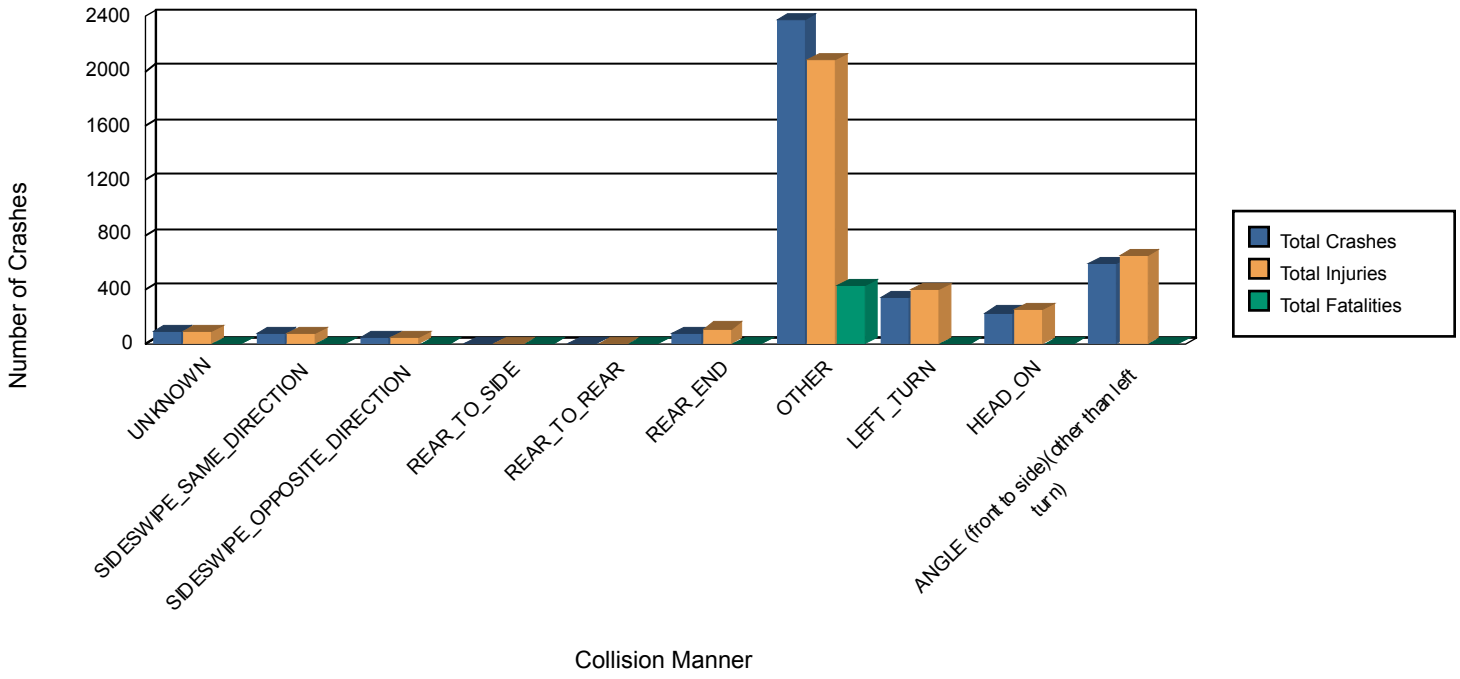
Collision Manner	All Crashes	Injury Crashes	Fatal Crashes	Total Injuries	Total Fatalities
UNKNOWN	50	20	1	26	1
SINGLE_VEHICLE	460	174	9	198	10
SIDESWIPE_SAME_DIRECTION	3,114	327	0	431	0
SIDESWIPE_OPPOSITE_DIRECTION	356	88	1	155	1
REAR_TO_SIDE	137	18	0	27	0
REAR_TO_REAR	173	57	0	96	0
REAR_END	5,451	1,769	12	2,774	12
OTHER	646	351	50	441	51
LEFT_TURN	5,308	2,050	28	3,430	28
HEAD_ON	383	177	11	346	11
ANGLE (front to side)(other than left turn)	4,347	1,604	26	2,595	27

All Arterials and Local Roads Younger Driver Crashes by Collision Manner (Phoenix)



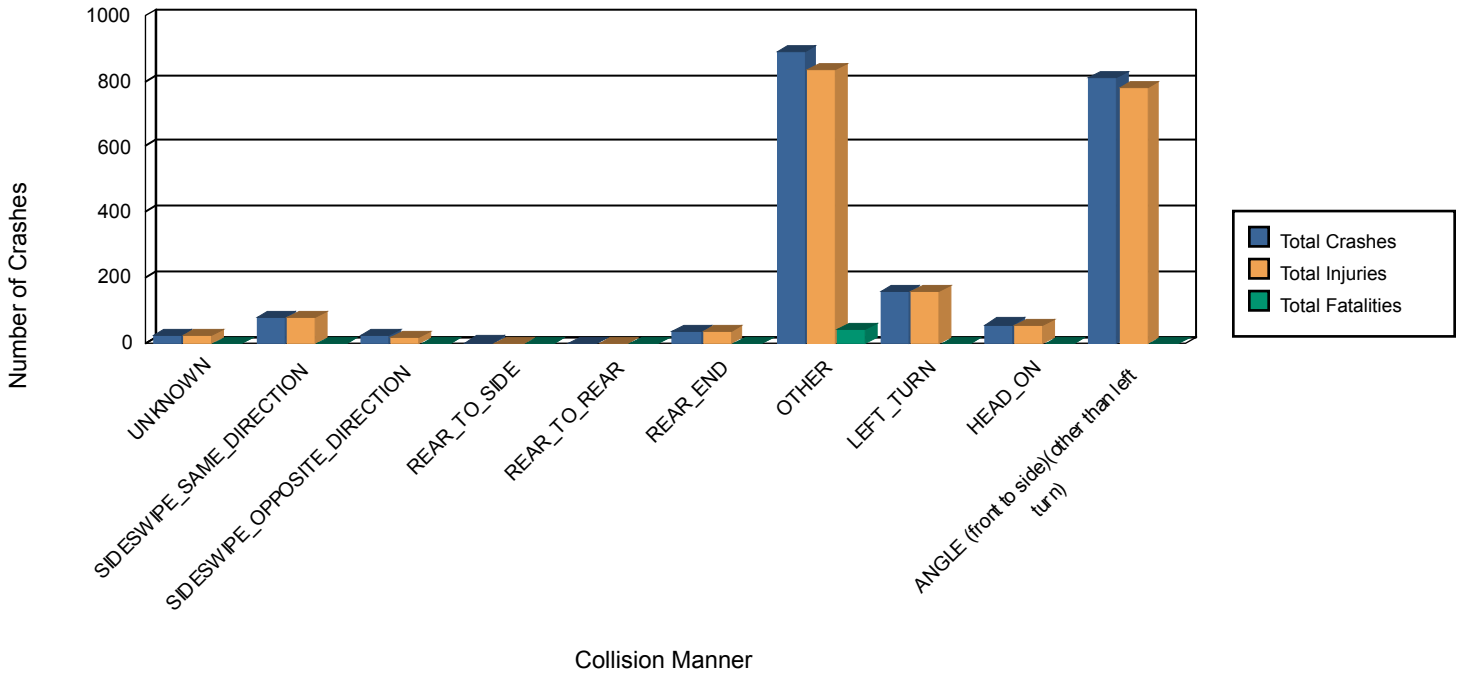
Collision Manner	All Crashes	Injury Crashes	Fatal Crashes	Total Injuries	Total Fatalities
UNKNOWN	156	47	7	75	9
SINGLE_VEHICLE	3,453	988	27	1,210	36
SIDESWIPE_SAME_DIRECTION	7,296	879	8	1,240	10
SIDESWIPE_OPPOSITE_DIRECTION	1,005	210	2	344	3
REAR_TO_SIDE	293	35	0	50	0
REAR_TO_REAR	560	147	0	240	0
REAR_END	18,937	5,264	12	8,162	13
OTHER	1,532	694	109	902	116
LEFT_TURN	16,700	5,992	63	10,079	66
HEAD_ON	1,240	514	21	915	25
ANGLE (front to side)(other than left turn)	11,341	3,932	51	6,609	55

All Arterials and Local Roads Pedestrian Crashes by Collision Manner (Phoenix)



Collision Manner	All Crashes	Injury Crashes	Fatal Crashes	Total Injuries	Total Fatalities
UNKNOWN	95	91	2	98	2
SIDESWIPE_SAME_DIRECTION	76	71	0	82	0
SIDESWIPE_OPPOSITE_DIRECTION	43	41	0	47	0
REAR_TO_SIDE	10	10	0	10	0
REAR_TO_REAR	3	3	0	3	0
REAR_END	79	72	1	113	1
OTHER	2,374	1,923	420	2,076	427
LEFT_TURN	340	323	7	394	8
HEAD_ON	231	224	0	250	0
ANGLE (front to side)(other than left turn)	595	585	1	649	1

All Arterials and Local Roads Bicyclist Crashes by Collision Manner (Phoenix)

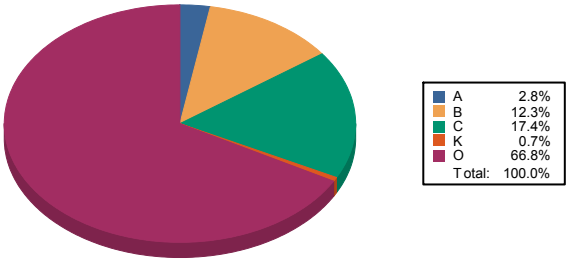


Collision Manner	All Crashes	Injury Crashes	Fatal Crashes	Total Injuries	Total Fatalities
UNKNOWN	22	21	0	21	0
SIDESWIPE_SAME_DIRECTION	78	73	0	77	0
SIDESWIPE_OPPOSITE_DIRECTION	21	19	0	19	0
REAR_TO_SIDE	2	1	0	1	0
REAR_TO_REAR	1	1	0	1	0
REAR_END	37	36	0	38	0
OTHER	887	817	41	836	41
LEFT_TURN	158	152	0	159	0
HEAD_ON	57	52	0	54	0
ANGLE (front to side)(other than left turn)	812	761	0	777	0

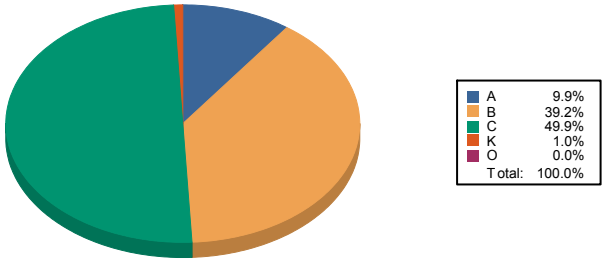
Safety Analysis Report

All Arterials and Local Roads Older Driver Crashes by Injury Severity (Phoenix)

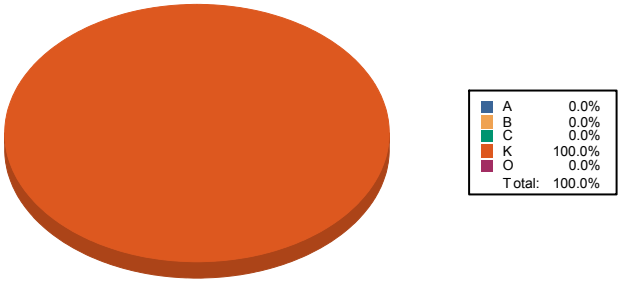
All Crashes



Injury Crashes



Fatal Crashes

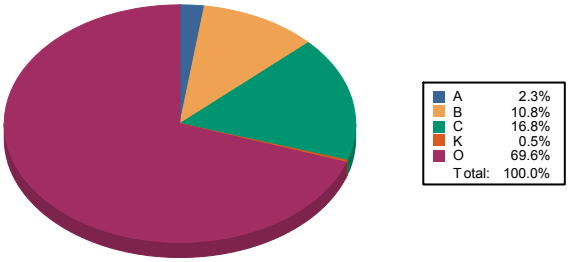


Injury Severity	All Crashes	Injury Crashes	Fatal Crashes	Total Injuries	Total Fatalities
O	13,652	0	0	0	0
C	3,545	3,545	0	5,248	0
B	2,518	2,518	0	4,127	0
A	572	572	0	1,044	0
K	138	0	138	100	141

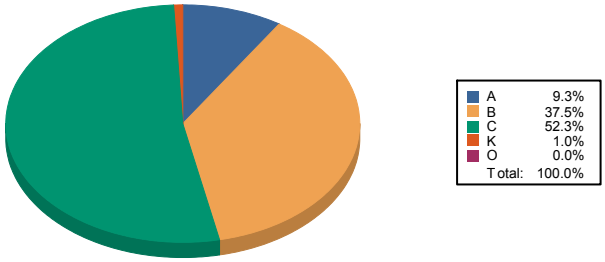
Safety Analysis Report

All Arterials and Local Roads Younger Driver Crashes by Injury Severity (Phoenix)

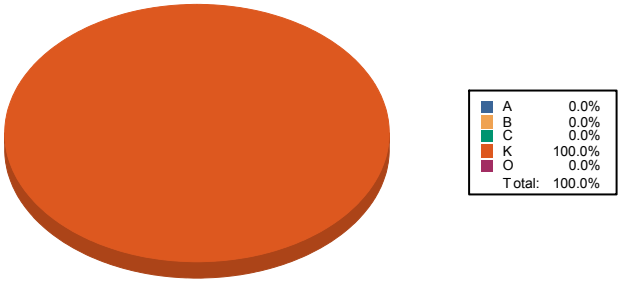
All Crashes



Injury Crashes



Fatal Crashes

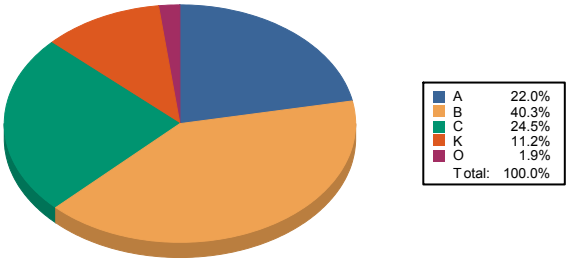


Injury Severity	All Crashes	Injury Crashes	Fatal Crashes	Total Injuries	Total Fatalities
O	43,511	0	0	0	0
C	10,472	10,472	0	15,597	0
B	6,776	6,776	0	11,170	0
A	1,454	1,454	0	2,773	0
K	300	0	300	286	333

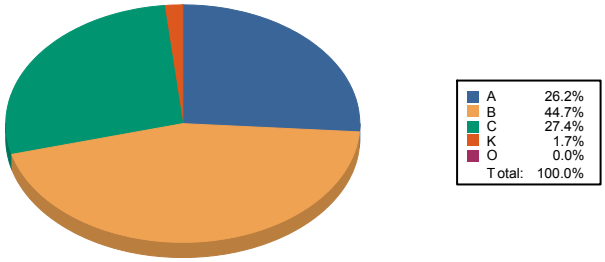
Safety Analysis Report

All Arterials and Local Roads Pedestrian Crashes by Injury Severity (Phoenix)

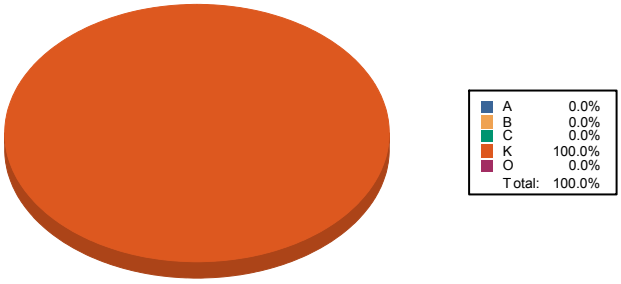
All Crashes



Injury Crashes



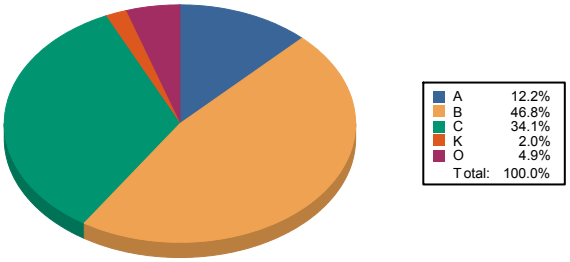
Fatal Crashes



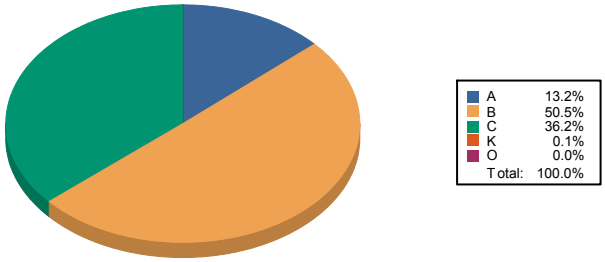
Injury Severity	All Crashes	Injury Crashes	Fatal Crashes	Total Injuries	Total Fatalities
O	72	0	0	0	0
C	944	944	0	1,021	0
B	1,551	1,551	0	1,664	0
A	848	848	0	974	0
K	431	0	431	63	439

All Arterials and Local Roads Bicyclist Crashes by Injury Severity (Phoenix)

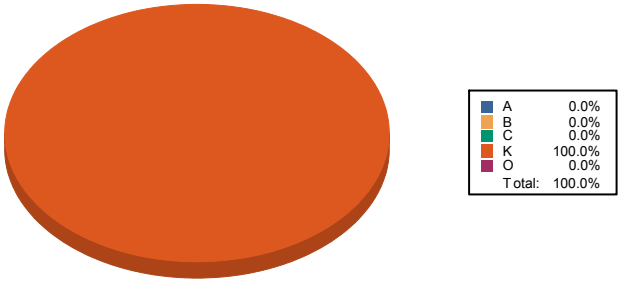
All Crashes



Injury Crashes

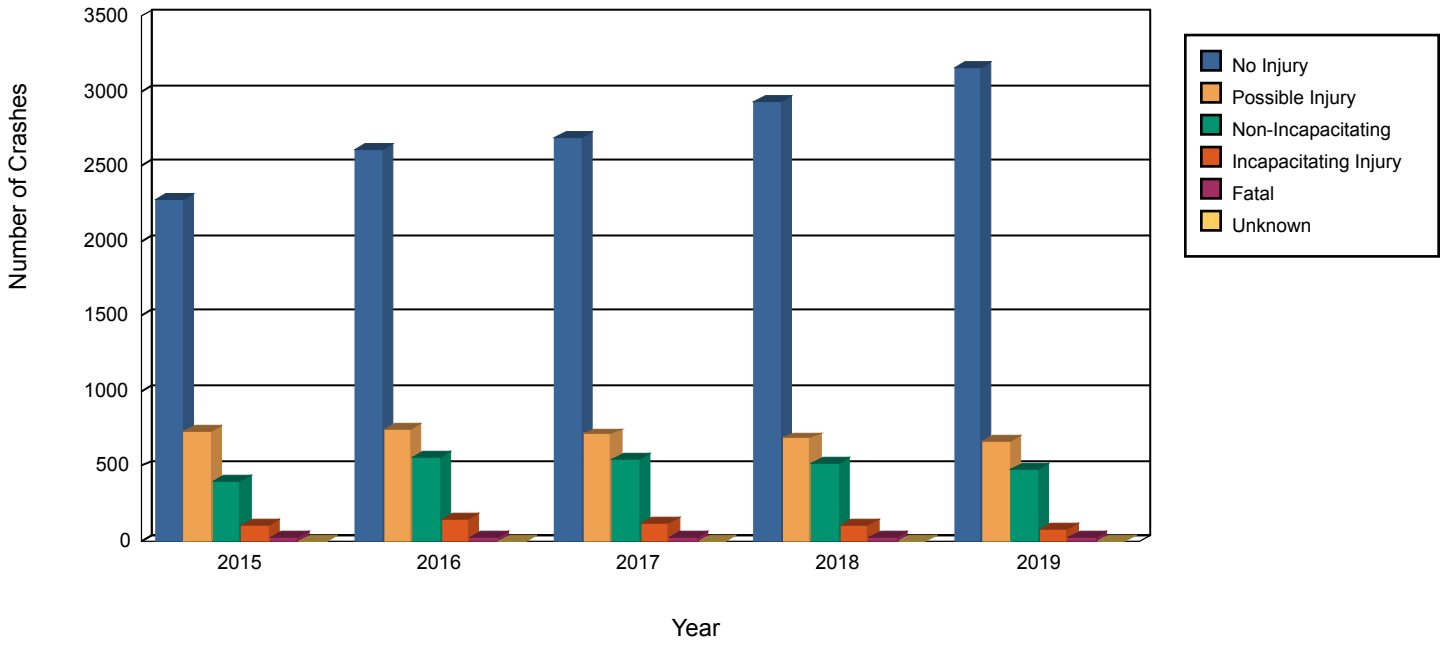


Fatal Crashes



Injury Severity	All Crashes	Injury Crashes	Fatal Crashes	Total Injuries	Total Fatalities
O	101	0	0	0	0
C	707	707	0	718	0
B	972	972	0	1,001	0
A	254	254	0	262	0
K	41	0	41	2	41

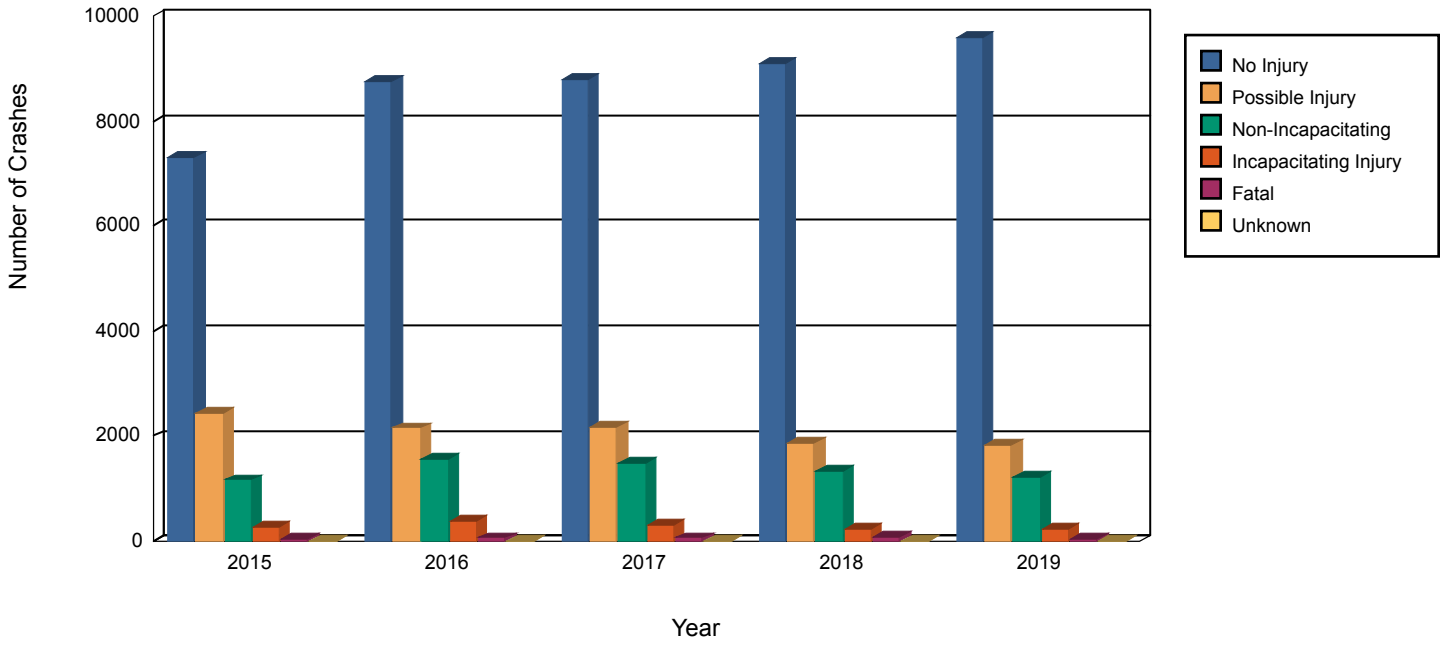
All Arterials and Local Roads Older Driver Crashes by Year (Phoenix)



Year	No Injury	Possible Injury	Non Incapacitating	Incapacitating Injury	Fatal	Unknown	Total
2015	2,273	732	403	112	27	0	3,547
2016	2,604	750	559	146	28	0	4,087
2017	2,691	713	552	120	31	0	4,107
2018	2,932	687	519	111	30	0	4,279
2019	3,152	663	485	83	22	0	4,405

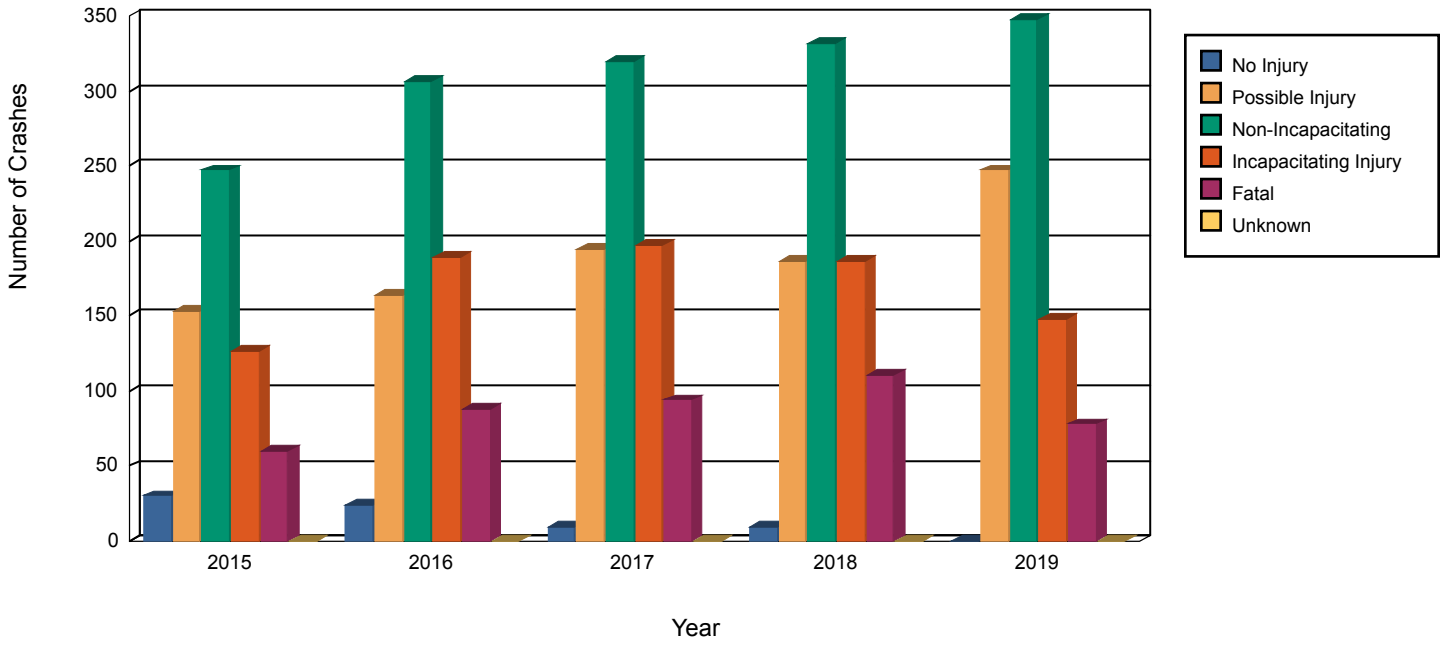
Safety Analysis Report

All Arterials and Local Roads Younger Driver Crashes by Year (Phoenix)



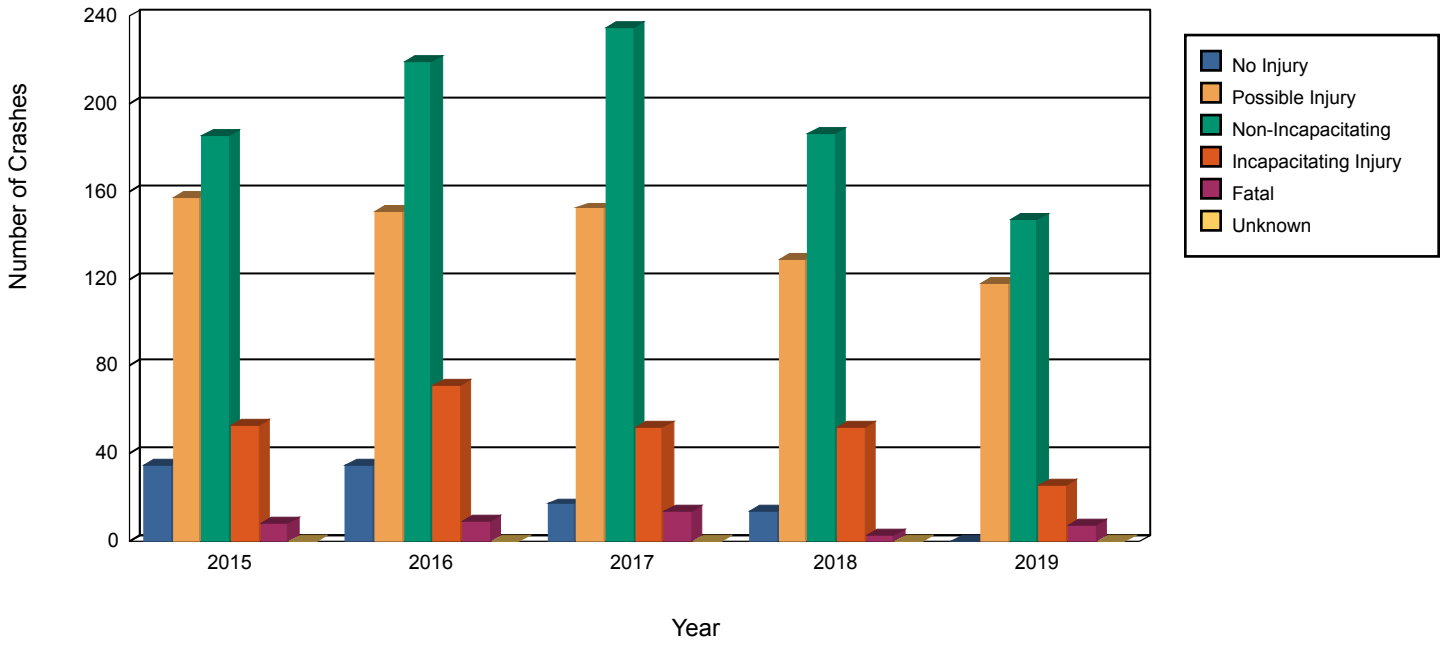
Year	No Injury	Possible Injury	Non Incapacitating	Incapacitating Injury	Fatal	Unknown	Total
2015	7,302	2,448	1,163	285	52	0	11,250
2016	8,758	2,150	1,552	378	59	0	12,897
2017	8,773	2,179	1,501	313	62	0	12,828
2018	9,089	1,859	1,334	240	72	0	12,594
2019	9,589	1,836	1,226	238	55	0	12,944

All Arterials and Local Roads Pedestrian Crashes by Year (Phoenix)



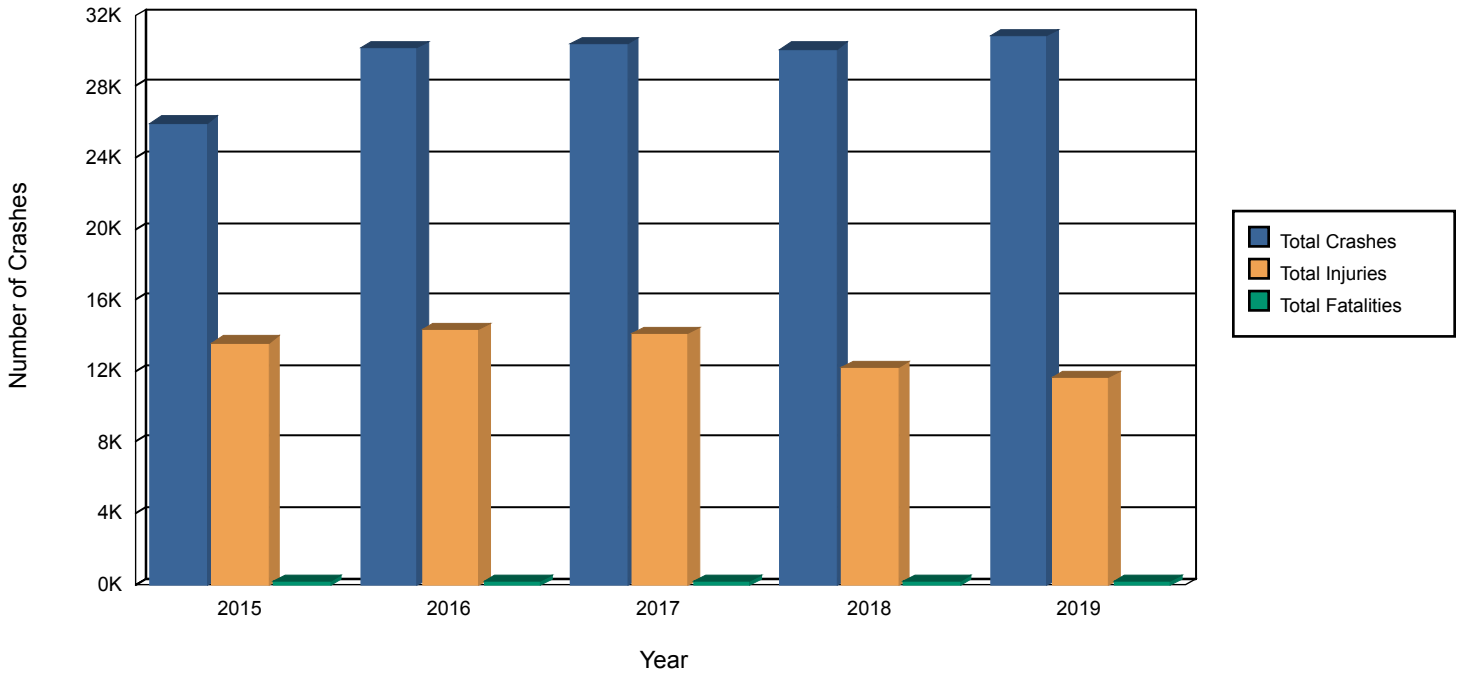
Year	No Injury	Possible Injury	Non Incapacitating	Incapacitating Injury	Fatal	Unknown	Total
2015	30	153	247	127	60	0	617
2016	24	164	306	189	88	0	771
2017	9	194	319	197	94	0	813
2018	9	186	332	187	111	0	825
2019	0	247	347	148	78	0	820

All Arterials and Local Roads Bicyclist Crashes by Year (Phoenix)



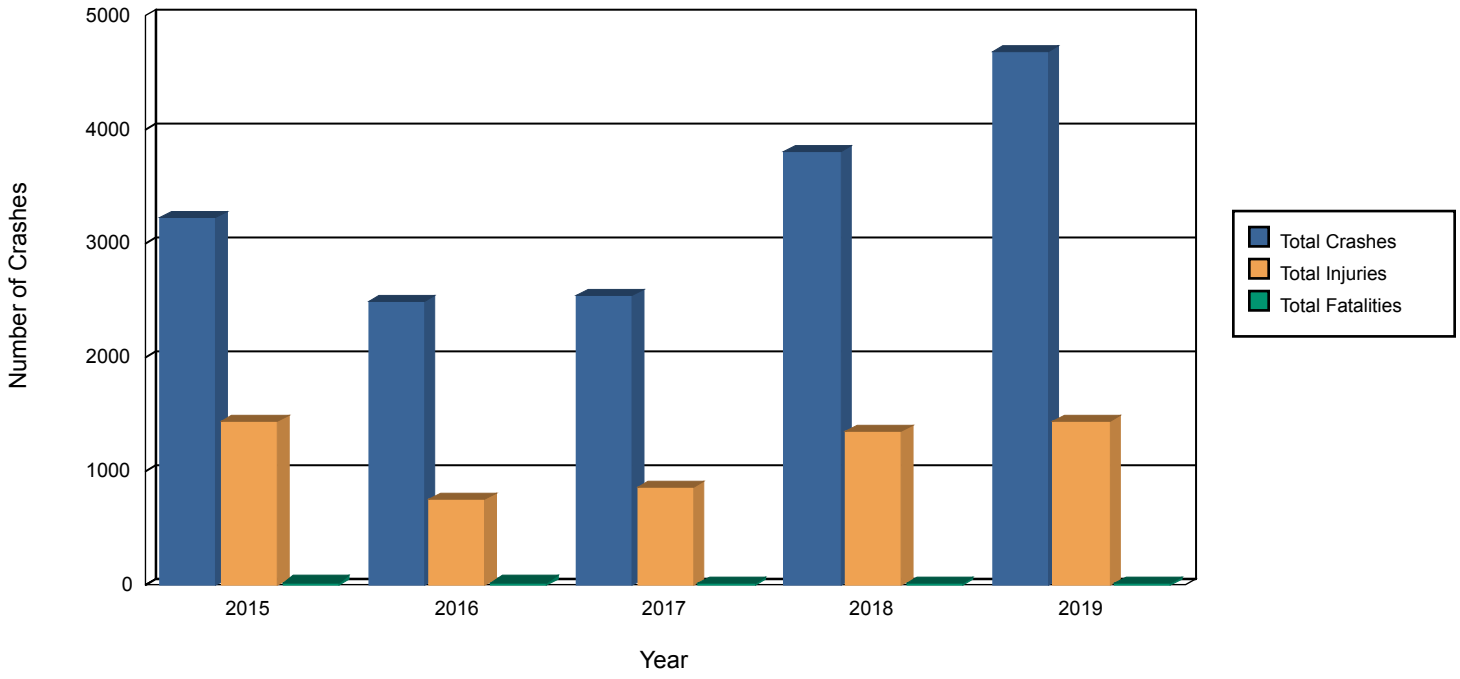
Year	No Injury	Possible Injury	Non Incapacitating	Incapacitating Injury	Fatal	Unknown	Total
2015	35	157	185	53	8	0	438
2016	35	151	219	71	9	0	485
2017	17	152	235	52	14	0	470
2018	14	129	186	52	3	0	384
2019	0	118	147	26	7	0	298

All Arterials and Local Roads Car Involved Crashes by Year (Phoenix)



Year	All Crashes	Injury Crashes	Fatal Crashes	Total Injuries	Total Fatalities
2015	25,962	8,605	137	13,604	147
2016	30,195	9,393	167	14,343	175
2017	30,426	9,330	175	14,120	185
2018	30,130	8,148	182	12,196	197
2019	30,847	7,897	147	11,620	155

All Arterials and Local Roads Truck Involved Crashes by Year (Phoenix)

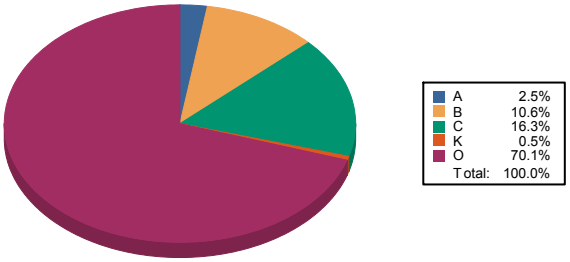


Year	All Crashes	Injury Crashes	Fatal Crashes	Total Injuries	Total Fatalities
2015	3,218	884	17	1,433	19
2016	2,487	511	19	746	19
2017	2,543	557	15	847	15
2018	3,807	905	18	1,347	18
2019	4,683	986	15	1,431	18

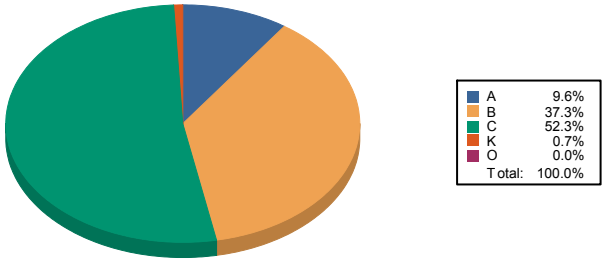
Safety Analysis Report

All Arterials and Local Roads Car Involved Crashes by Injury Severity (Phoenix)

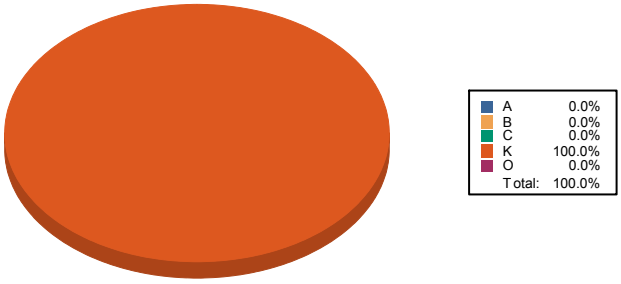
All Crashes



Injury Crashes

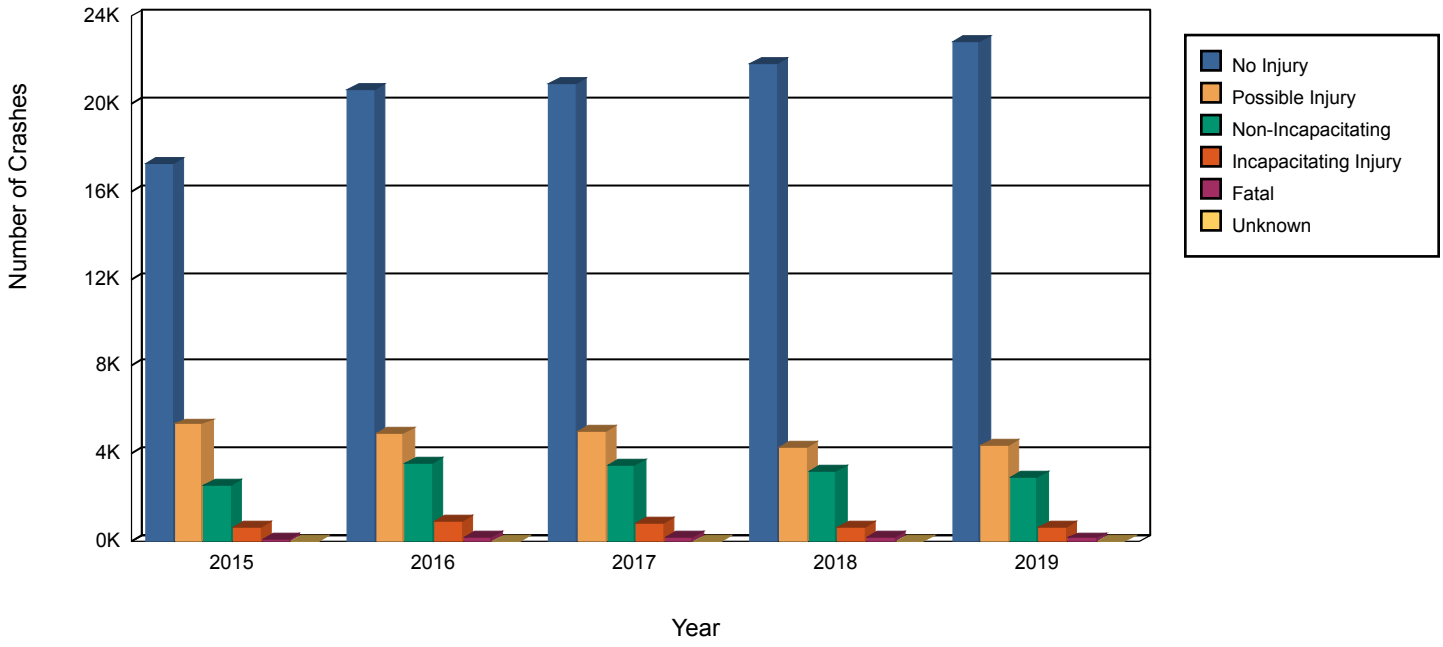


Fatal Crashes



Injury Severity	All Crashes	Injury Crashes	Fatal Crashes	Total Injuries	Total Fatalities
O	103,379	0	0	0	0
C	23,984	23,984	0	34,446	0
B	15,709	15,709	0	24,602	0
A	3,680	3,680	0	6,343	0
K	808	0	808	492	859

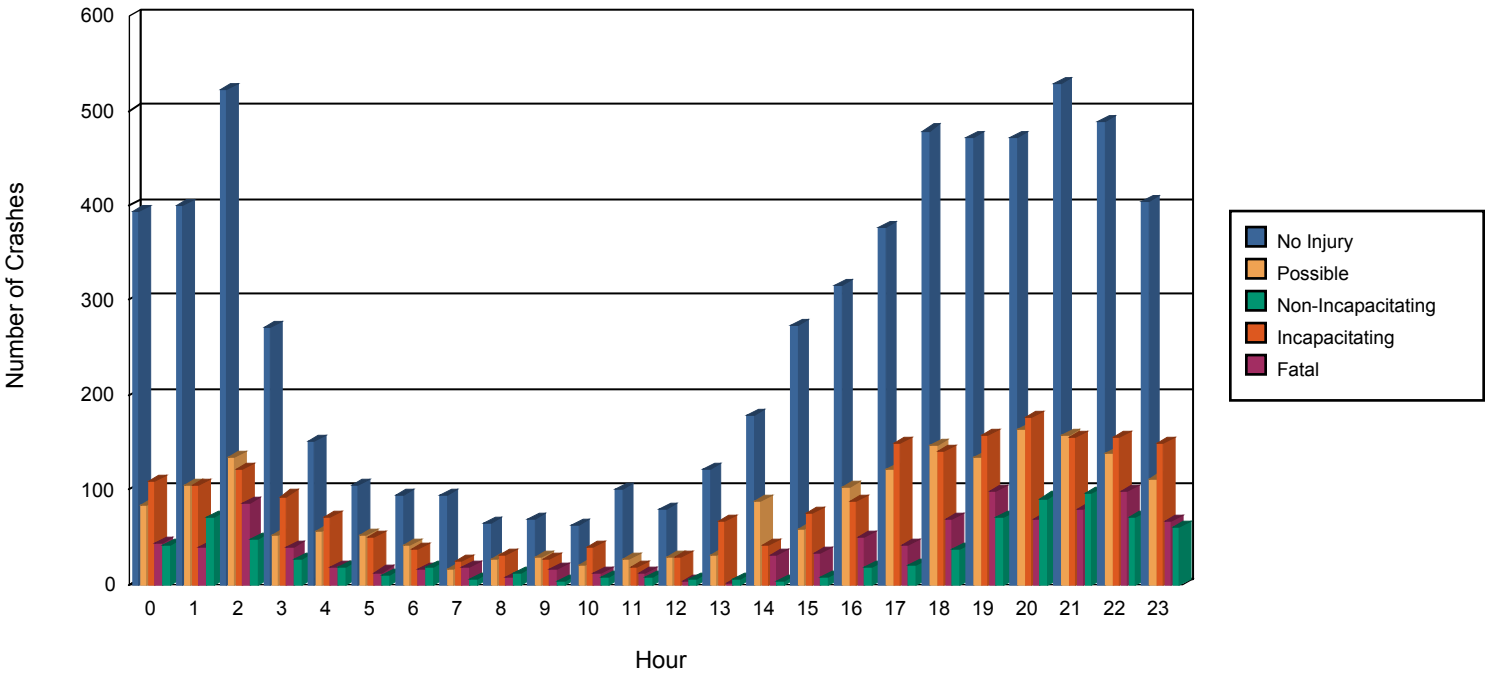
All Arterials and Local Roads Car Involved Crashes by Year (Phoenix)



Year	No Injury	Possible Injury	Non Incapacitating	Incapacitating Injury	Fatal	Unknown	Total
2015	17,220	5,347	2,589	669	137	0	25,962
2016	20,635	4,930	3,558	905	167	0	30,195
2017	20,921	5,051	3,468	811	175	0	30,426
2018	21,800	4,275	3,200	673	182	0	30,130
2019	22,803	4,381	2,894	622	147	0	30,847

Safety Analysis Report

Alcohol Impaired Drivers, 2015-2019 (Phoenix)



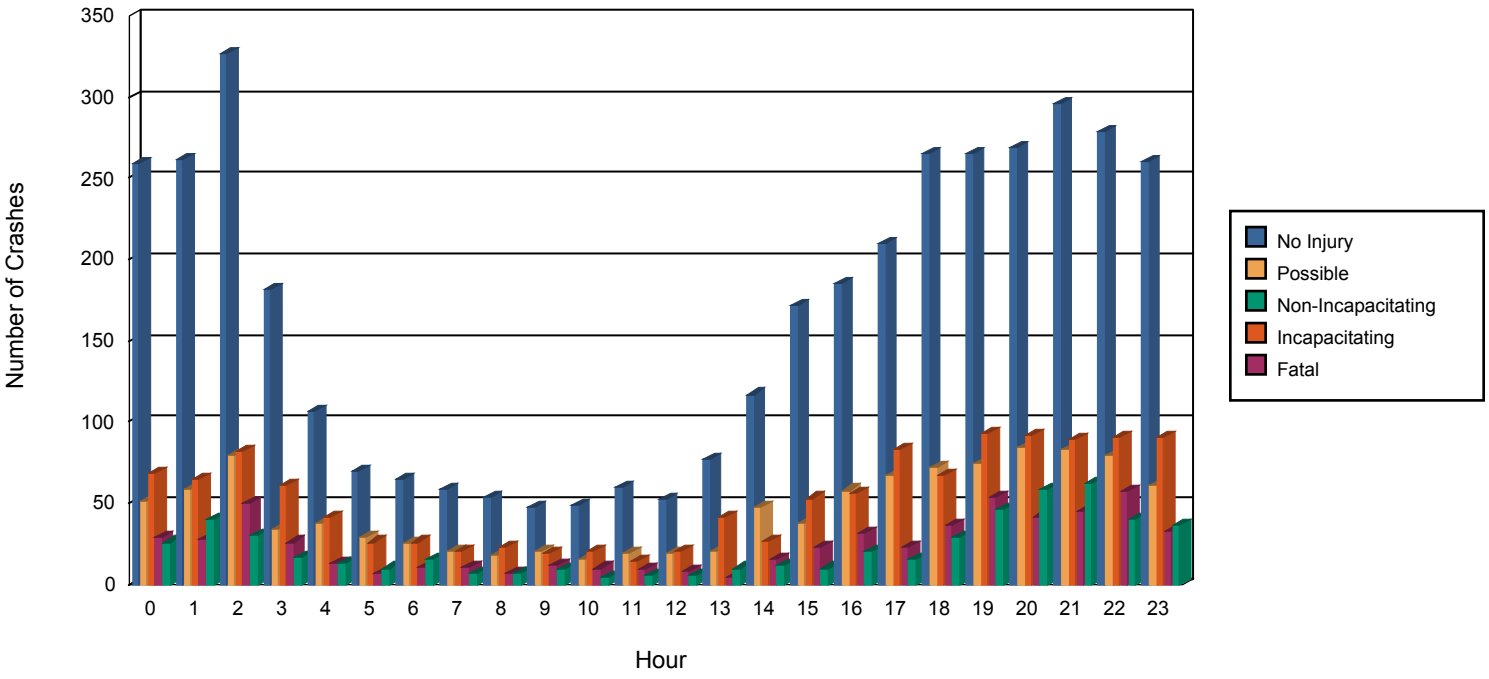
Hour	No Injury	Possible Injury	Non-Incapacitating	Incapacitating	Fatal	Unknown	Total
0	394	83	108	43	42	0	670
1	399	105	104	39	71	0	718
2	522	135	122	86	47	0	912
3	271	52	93	40	27	0	483
4	151	56	70	18	19	0	314
5	104	51	49	13	10	0	227
6	95	41	37	16	18	0	207
7	95	17	25	18	5	0	160
8	65	26	30	7	11	0	139
9	69	28	26	16	4	0	143
10	63	20	39	11	7	0	140
11	100	27	19	11	7	0	164
12	79	29	29	4	6	0	147
13	121	30	67	2	6	0	226
14	179	87	42	30	4	0	342
15	273	59	76	33	7	0	448
16	316	103	87	50	19	0	575
17	376	121	148	42	21	0	708
18	479	147	140	68	38	0	872

Hour	No Injury	Possible Injury	Non-Incapacitating	Incapacitating	Fatal	Unknown	Total Total
19	472	135	158	99	70	0	934
20	472	164	176	69	91	0	972
21	529	158	155	80	96	0	1,018
22	489	139	156	99	70	0	953
23	404	112	149	67	61	0	793

Filters:
TrafficUnit.UnitType = DRIVER
Person.Physical = ALCOHOL
Year Between 2015 2019

Safety Analysis Report

Impaired Drivers 2015 - 2019 (Phoenix)



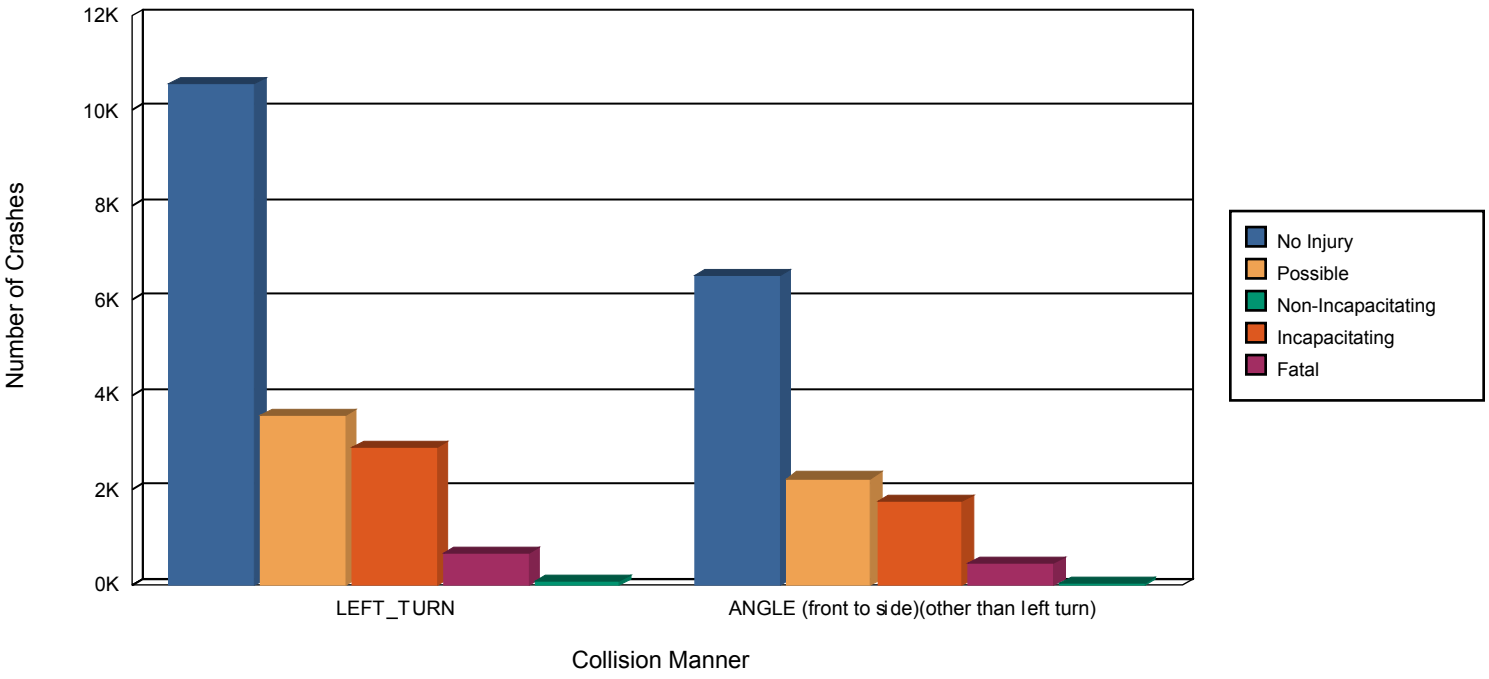
Hour	No Injury	Possible Injury	Non-Incapacitating	Incapacitating	Fatal	Unknown	Total
0	259	51	68	29	26	0	433
1	261	59	65	28	40	0	453
2	327	79	82	50	30	0	568
3	182	34	61	26	17	0	320
4	107	38	41	13	13	0	212
5	70	29	26	7	10	0	142
6	65	25	26	11	16	0	143
7	59	20	20	11	7	0	117
8	54	18	23	7	7	0	109
9	48	20	19	12	9	0	108
10	49	16	20	10	4	0	99
11	60	19	14	9	6	0	108
12	52	19	21	8	6	0	106
13	77	21	41	4	10	0	153
14	117	48	27	16	12	0	220
15	172	38	53	23	10	0	296
16	185	58	56	32	21	0	352
17	210	67	83	23	15	0	398
18	265	72	67	36	29	0	469

Hour	No Injury	Possible Injury	Non-Incapacitating	Incapacitating	Fatal	Unknown	Total Total
19	265	75	93	54	46	0	533
20	269	84	92	42	59	0	546
21	296	83	89	45	62	0	575
22	279	79	91	57	40	0	546
23	260	61	91	33	36	0	481

Filters:
Person.PersonType = DRIVER
Year Between 2015 2019
Person.Physical = ALCOHOL,DRUGS

Safety Analysis Report

Signalized Intersection Left Turn and Angle Collisions 2015 - 2019 (Phoenix)



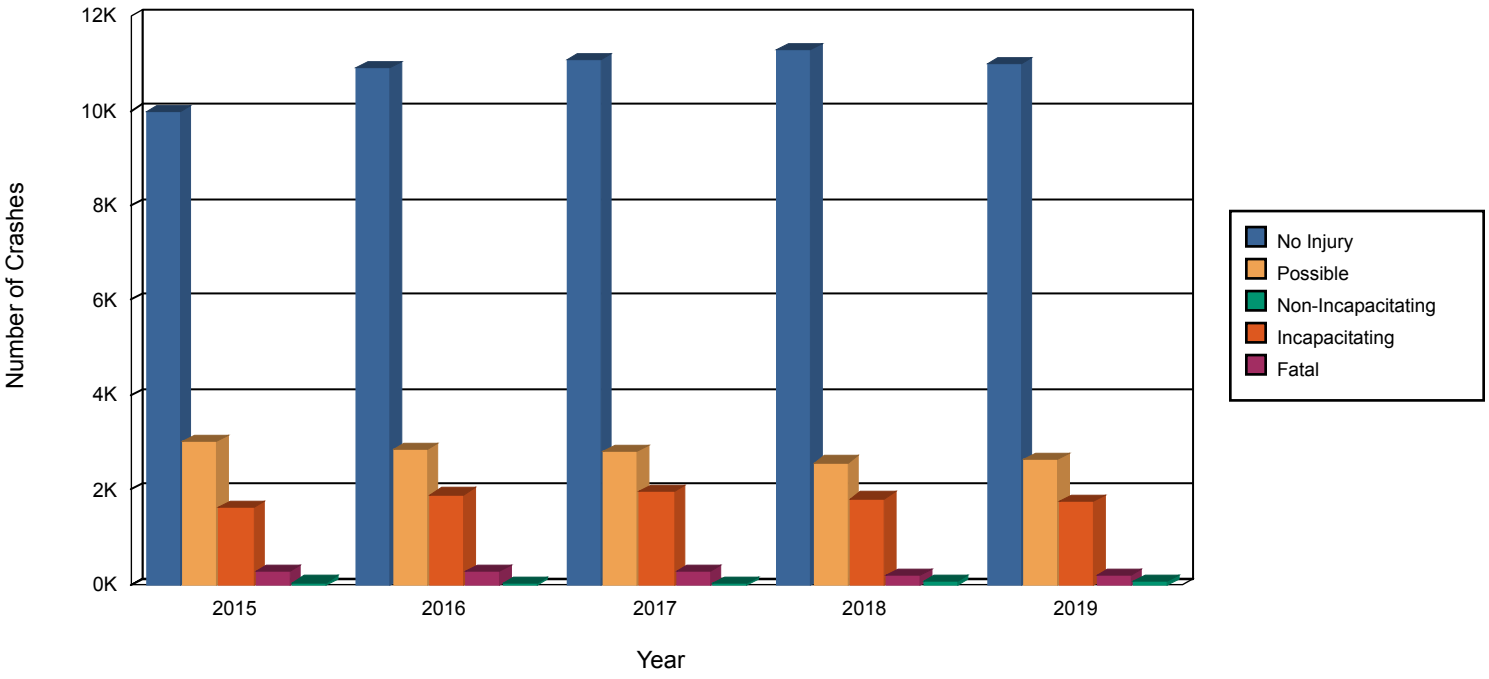
Collision Manner	No Injury	Possible Injury	Non-Incapacitating	Incapacitating	Fatal	Unknown	Total
LEFT_TURN	10,555	3,555	2,880	656	72	0	17,718
ANGLE (front to side)(other than left turn)	6,523	2,244	1,751	445	44	0	11,007

Filters:
Incident.CollisionManner = ANGLE (front to side)(other than left turn),LEFT_TURN
TrafficUnit.ControlType = TRAFFIC_CONTROL_SIGNAL,FLASHING_TRAFFIC_CONTROL_SIGNAL,SIGNAL

Year Between 2015 2019

Safety Analysis Report

Speed-Related Collisions 2015 - 2019 (Phoenix)

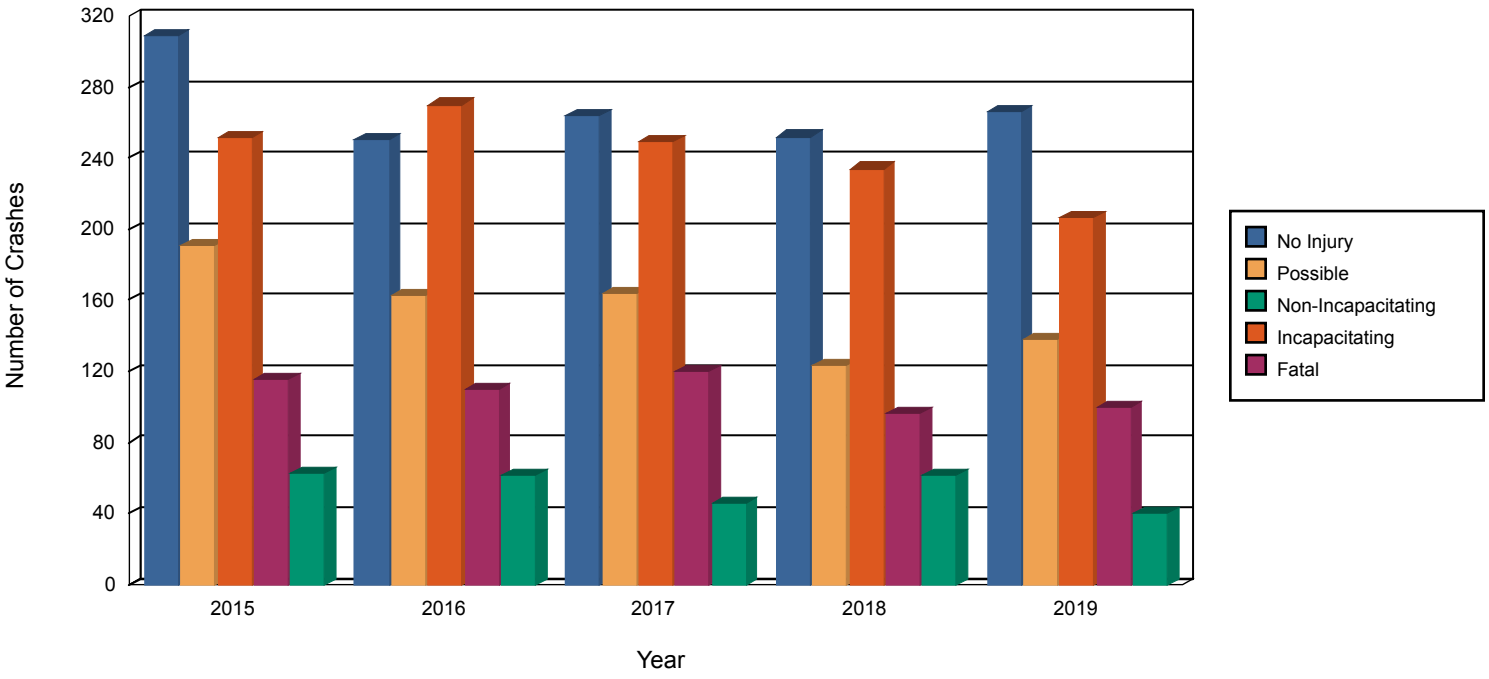


Year	No Injury	Possible Injury	Non-Incapacitating	Incapacitating	Fatal	Unknown	Total
2015	9,974	3,017	1,631	268	48	0	14,938
2016	10,894	2,860	1,902	297	39	0	15,992
2017	11,084	2,795	1,967	261	41	0	16,148
2018	11,282	2,580	1,818	199	54	0	15,933
2019	10,980	2,623	1,743	201	51	0	15,598

Filters:
Person.Violation = SPEED_TO_FAST_FOR_CONDITIONS,EXCEEDED_LAWFUL_SPEED
Person.PersonType = DRIVER
Year Between 2015 2019

Safety Analysis Report

Unrestrained Driver Collisions 2015 - 2019 (Phoenix)



Year	No Injury	Possible Injury	Non-Incapacitating	Incapacitating	Fatal	Unknown	Total
2015	309	191	251	115	63	0	929
2016	250	163	270	110	61	0	854
2017	264	164	249	120	46	0	843
2018	252	123	234	96	61	0	766
2019	266	138	206	100	40	0	750

Filters:

Year Between 2015 2019
Person.PersonType = DRIVER
Person.SafetyDevice = None Used

City of Phoenix

Report

Agenda Date: 10/20/2021, **Item No.** 11

Comprehensive Micromobility Program

This report provides information to the Transportation, Infrastructure and Planning Subcommittee on the Street Transportation Department's development of a Comprehensive Micromobility Program.

THIS ITEM IS FOR INFORMATION AND DISCUSSION.

Summary

The Street Transportation Department (Streets) is exploring the feasibility of a Comprehensive Micromobility Program to address the growing demand for a micromobility transportation system and additional mobility options in the City of Phoenix.

Background

The Federal Highway Administration is advancing research on the rapidly evolving field of micromobility and defines micromobility as, "…any small, low-speed, human or electric-powered transportation device, including bicycles, scooters, electric-assist bicycles (e-bikes), electric scooters (e-scooters), and other small, lightweight, wheeled conveyances." Micromobility initiatives and programs have increased in cities nationwide, primarily due to the deployment of shared fleets by private companies, and have become a popular transportation option for many users.

In early iterations of micromobility efforts nationwide, a small number of cities began operating docked bike share programs. Phoenix followed suit in November 2014 with the introduction of the GRID Bike Share program within the central City, which enjoyed great success initially but eventually resulted in the vendor electing to cease operations in Phoenix in December 2020, citing a drop in demand and a changing landscape in the micromobility industry. By 2017, dockless bike share programs emerged as an alternative to station-based (docked) bike share systems. Due to backlash from the public, who saw the proliferation and scattering of these bikes as a public nuisance and eyesore, cities began strongly regulating or even prohibiting dockless bike share systems within their jurisdictions. In 2018, e-scooters entered the micromobility market in a similar manner as dockless bikes. Although very popular with some residents, this newest iteration of shared micromobility came with a host of

issues, including safety concerns for riders and non-riders. Similar to dockless bikes, there were public nuisance and eyesore issues, primarily due to improperly parked e-scooters blocking pedestrian pathways, which has been especially hazardous to the disabled community.

Currently, e-scooters are the only micromobility option in Phoenix, with the launch of the Downtown Shared Electric Scooter Pilot Program (e-scooter Program) in September 2019. This e-Scooter Program allows companies to operate a shared e-scooter service on City streets within downtown Phoenix under a permit-based program. Most recently, in March 2021, Council approved an extension of the Program through March 31, 2022, to support micromobility options in downtown Phoenix while allowing staff time to explore a more comprehensive program to include additional choices, including the possible return of pedal-powered bike share.

Downtown Shared Electric Scooter Pilot Program Update

From initial launch to the most recent extension, Streets staff has worked with the e-scooter industry and its vendors, to monitor, evaluate, and modify the operation of the e-scooter Program, including the fees to ensure the program is cost neutral to the City.

During the first 12 months of the e-scooter Program, vendors were required to pay a $500 application fee and a $5,000 permit fee. Vendors were also required to pay a surcharge of $0.10 per trip as well as a relocation parking fee of $80 per incident. In April 2021, Council approved a staff-recommended fee increase for the permit fee to $7,500, an increase to the surcharge up to $0.25 per trip and an increase to the relocation parking fee to $100 per incident. Streets established new fees within the Council-approved authority, but set the surcharge fee increase at $0.15 per trip.

During the first 18 months of the e-scooter Program, the City collected $40,333 in application and permit fees, and $55,074 in surcharge and relocation parking fees, providing a total revenue of $95,407 to the City. The City contracted with an e-scooter retrieval company, SWEEP, during the initial 12 months of the e-scooter Program to monitor, report and correct any vendor violations. This contract expired, and the City ended services with SWEEP in April 2021 in an effort to reduce expenses. In lieu of a e-scooter retrieval company's services, Streets staff has instead worked with the two current vendors to hire their own staff to proactively monitor and relocate improperly parked e-scooters. However, the total cost of e-scooter retrieval company's services amounted to $111,110, and Streets' staff cost to administer the e-Scooter Program to date is $63,080, making the City's total investment $174,190 through the first 18 months of the program.

During the most recent six months of operations, which began in April 2021, the City

has collected $13,333 in application and permit fees and $5,280 in surcharge fees, providing total revenue of $18,613 to the City. Over the same period, Streets staff provided approximately four hours of program management efforts per week, at a total estimated cost to the City of $15,080.

The e-scooter Program is intended to be cost neutral to the City, and although this did not occur in the first twelve months of operation, Streets has made the necessary changes to make this a reality, as evidenced by the program's revenues and expenses over the past six months.

Comprehensive Micromobility Program

As the City moves from a downtown area e-Scooter Program to a permanent, expanded, and more comprehensive micromobility program, a number of elements of the existing e-scooter Program need to be evaluated. The information below is a summary of research conducted by Streets staff to understand best practices of micromobility programs in various peer cities in order to design a program that best suits the needs of Phoenix. The major focus areas of discussion include operational boundaries, type of micromobility devices, fleet size limits, parking requirements and addressing equity in availability of micromobility options.

Operational Boundaries

Cities commonly institute boundaries to control where micromobility vehicles can operate. Enforcement relies on geofencing technology where Global Positioning System (GPS) technology tracks vehicles and disables them once they leave the operating boundary. Phoenix’s current e-scooter Program boundary is unique in that it only allows riders to operate within a two-square-mile area in the downtown core. In contrast, Chicago allows micromobility vehicles to operate in every area throughout the city except the downtown core. Most other cities allow e-scooters and e-bikes to be used throughout their cities. It is also common for cities to designate “no-ride” zones in high pedestrian traffic areas such as universities and prominent tourist sites where riders are prohibited from riding micromobility devices. In our current e-scooter Program, the City has identified government complexes, Arizona State University Downtown buildings and Margaret T. Hance Park as "no-ride" zones, and are geofenced to not allow riders.

Staff has considered the possibility of expanding the program boundaries as part of a Comprehensive Micromobility Program based on input from the community. A boundary expansion could contribute positively to sustainability and air quality goals due to its potential to reduce single occupancy vehicle usage. In 2020, a national survey of micromobility users suggest that 36 percent of car trips (private and ride share) were replaced by bike or e-scooter share. Furthermore, shared micromobility

can complement public transit usage. People are often deterred from using transit due to the long distance at either ends of the trip (first mile, last mile). According to a North American Bikeshare and Scootershare Association survey, 16 percent of all shared micromobility trips were for the purpose of connecting to transit. This suggests that by strategically locating micromobility vehicles near transit stops, a Comprehensive Micromobility Program can be poised to support the overall transportation network and reduce automobile dependence.

Streets staff recommends an appropriate operational boundary expansion to allow for the program to cover and support existing and future light rail alignments with either a one-mile buffer (**Attachment A**) or two-mile buffer (**Attachment B**) from those alignments. Even with an operational boundary expansion, the program would still need to consider "no-ride" zone designations, such as parks and government facilities.

Devices and Fleet Sizes

Types of Devices

The current market for shared micromobility is dominated by e-scooters and increasingly e-bikes. Many cities have a program with a mixture of these two options; however, e-scooters make up a strong majority of trips. National data shows that people prefer e-scooters over e-bikes and dockless over docked vehicles. Out of 136 milliion vehicle trips, 96 million trips were dockless. Of those 96 million dockless trips, 86 million were e-scooter trips, versus 10 million e-bike trips.

A number of local community advocates have stressed the need for traditional (pedal-powered) bikes within a Comprehensive Micromobility Program. Recent research has found that traditional bikes are becoming less common in shared micromobility programs in most cities. The introduction of e-bikes has reduced demand for traditional bikes. Most micromobility vendors find e-bikes to be more popular and, therefore, more profitable and have drastically reduced their offerings of traditional bikes. Tacoma, for instance, pursued traditional bikes in their recent solicitation process but only received proposals for e-scooters. Similarly, Denver launched their program with traditional bikes, but as of August 2021, they are no longer offered due to lack of demand. If Phoenix were to pursue a return of traditional bikes for its shared micromobility program, it may be difficult for the City to get vendors to supply them without a potential need to subsidize this aspect of the program. Staff recommends that our Comprehensive Micromobility Program, including any solicitation for vendors, be open for the following micromobility devices: e-scooters, e-bikes and traditional bikes.

Fleet Sizes

Micromobility device fleet size for cities varies considerably, and there is no standard methodology of determining appropriate size. Most cities have taken an iterative

approach to arrive at their current cap, but still allow for adjustments. Vendors typically have a better handle on determining the appropriate size, but City-established limitations may still be necessary. Generally, cities dictate maximums and, in some cases, require a minimum number of vehicles to ensure availability and coverage. See **Attachment C** for a comparison of fleet sizes of different cities.

Parking Requirements

Cities have developed novel approaches and used technological innovations to manage and mitigate parking for micromobility devices. A popular approach is the parking corral system where users must end their rides within designated, marked spots in the public right-of-way. These corrals use GPS beacons to ensure micromobility devices are properly parked. Currently, Phoenix is the only city that is 100 percent corral-based parking. It is the preferred model for cities because it allows for better accountability. Vehicles that are not properly parked can be reported, and vendors must recover them within a certain timeframe (normally two hours). For Phoenix and other cities, the installation and maintenance costs of corrals are a major drawback, but these costs can be offset by incorporating them into fees for vendors.

A low-cost alternative is the use of pavement markings, which can be applied easily, but it also results in reduced corral visibility. However, pavement markings are especially useful in congested areas where street space is limited. Unfortunately, the corral system becomes less feasible as operating areas expand. A larger operating area exponentially increases the number of corrals necessary, which drives up material costs for managing and maintaining them. For vendors, more corrals can be difficult and cost ineffective for operations as vendors must dedicate more time and resources to ensure compliance.

Another alternative is the use of “lock-to” parking requirements, where users are required to lock vehicles to fixtures in the public right-of-way as long as it is compliant with the Americans With Disabilities Act. Vendors provide locks on vehicles and ensure vehicles are locked before riders can end their trips. Lock-to is easier to enforce than soley relying on geofencing and corrals, and is more feasible in larger operating areas. Chicago and Minneapolis have seen success using "lock-to" parking requirements. Chicago saw a dramatic decrease in complaints during their second pilot program where 97.3 percent of vehicles were locked and parked correctly. The two main considerations with this method are whether operators will need to lock vehicles during rebalancing efforts and decisions on what fixtures users can lock vehicles to such as street sign poles or bike racks. The "lock-to" requirement relies on a robust network of bike racks, which may pose a challenge for Phoenix where limited bike racks exist. The requirement may also interfere with people parking personal bikes if shared vehicles are taking up bike rack space. To make this a successful strategy, Phoenix

would need to consider investments in public bike racks throughout the service area.

Addressing Equity

As cities have launched and grown their micromobility programs, they have also sought to address equity concerns in their programs, which may come in the form of micromobility device geographic distribution policies, equitable payment systems and reduced rates for people with lower incomes.

Geographic distribution policies, also called “opportunity zones” or “equity priority areas,” have been used to ensure an equitable distribution of micromobility vehicles in areas that have been determined to be “historically underserviced." In fact, 66 percent of North American cities with a micromobility program have such a policy in place. Cities impose a requirement that a certain number of vehicles (either a set number or a proportion of the fleet) be available in these key areas upon rebalancing. Each city varies in how they determine which areas are deemed in need of intervention. Seattle, for example, uses their own locally developed Access to Opportunity Index which compares levels of access to education, economic opportunity, transit, public services, and public health. Minneapolis uses a simpler measure where they focus on census tracts where 40 percent or more of family and individual incomes are less than 185 percent of the federal poverty threshold. Tucson uses four categories to assess their opportunity areas: socioeconomic status; household composition and disability; minority status and language; and housing and transportation.

Alternative payment systems are another important facet of an equitable program. Early docked micromobility systems used payment kiosks to rent vehicles, but most systems have migrated to rentals and payments through mobile phone applications, preventing some residents from accessing the system. Equitable payment systems focus on the small set of the population that does not own a smartphone and/or does not have a bank account or credit card. According to the Pew Research Center, roughly 15 percent of adults in the U.S. do not own a smartphone. In the Phoenix metro area, about 4 percent of the population is considered “unbanked” (do not have a checking account). About 21 percent of American consumers do not have at least one credit card. As of 2020, 74 percent of micromobility programs offer alternative payment options. For people without a smartphone, one option is to use text messaging to unlock vehicles and pay for rides. Users usually must contact a customer service number to set up the service ahead of time. People without a bank account or credit card can use prepaid debit cards to rent vehicles.

Cities can also stipulate in their solicitations that vendors must offer discounted rates to riders living on low incomes. There are two main methods vendors use to qualify users for reduced rates: users verify enrollment in a local, state or federal assistance

program; or rates for trips that begin or end in designated low-income zones are automatically reduced. A combination of these strategies can reduce barriers to low-income communities. Roughly 83 percent of cities have some sort of discounted program.

Streets staff recommend Phoenix's Comprehensive Micromobility Program, and any potential vendor solicitations, include requirements to address geographic distribution and balancing, alternative payment systems, and discounted rates for riders living on low incomes.

Fees for Vendors

The fee structures used to recoup the costs of maintaining micromobility programs vary between cities. All cities have an upfront fee to cover administrative costs in the form of application and permit fees. These can be a flat fee or a per-unit fee ($30/vehicle). Cities typically apply a surcharge to cover operational and maintenance costs tied to the number of trips reported by the vendor or the number of vehicles in the fleet. The decision to charge per trip or per vehicle can be consequential to revenue and each has its tradeoffs. A per-trip model can be more volatile and is subject to ridership trends but has the potential to generate more revenue to a city. Alternatively, a per-vehicle fee allows for more stability in revenue, but a city may miss out on higher revenues when trips are high. Some cities also tend to institute fines to recoup the costs of recovering incorrectly parked vehicles. Phoenix's current e-scooter Program fees are largely comparable to other cities, with the following highlights:

- Phoenix has a relatively low application fee compared to other cities;
- Phoenix is within the same range of recurring fees as some cities;
- Phoenix falls in the middle of what other cities have set for trip surcharge fees; and
- Phoenix has established parking fines that are relatively higher than other cities.

See **Attachment D** for a comparison of Phoenix's fee structure relative to other cities.

Procurement Information

Streets staff researched micromobility procurement and regulation in peer cities to understand what would be appropriate for Phoenix. Phoenix's current Program is operated through a permit process. An alternative, used by many of Phoenix's peer cities, is to use a Request for Proposals (RFP) process because of the benefits of a competitive selection process. With an RFP process, cities are able to retain more control and ensure alignment between the City's goals and the vendor's goals. Cities can work with vendors to balance community needs with ensuring a profitable program.

The RFP process also allows cities to narrow down the number of vendors in a transparent and fair manner. Minneapolis city staff stated that with such a high-profile program, it is vital that the process be transparent to the public and to the vendors. Additional feedback from other cities recommended limiting the number of operators as too many vendors in a market can be incredibly taxing on city staff time and resources. Chicago, for instance, allowed ten vendors to operate during their first pilot program, and the required coordination was deemed "incredibly hectic." From a rider's perspective, it is also a challenge and impractical to download and utilize ten different mobile applications. A limited number of vendors is easier to manage for all.

In general, cities across the nation are moving toward the RFP process to secure vendors for their shared micromobility programs. Some of the cities that have already completed the process and have launched their programs include: Tacoma; San Antonio; Denver; Boulder; Tampa; and Omaha. In addition, the cities of Tempe, Minneapolis, and Portland (Oregon) are expected to release their own RFPs this fall.

The timeline to complete the RFP process is different for every city and is largely dependent on the procurement process. For example, the City of San Antonio completed the process in nine months from subcommittee approval to program launch. On the other hand, the City of Tacoma attempted a quick timeline of three months from subcommittee approval to program launch but was delayed due to both contracting delays and the COVID-19 pandemic. The standard timeline for RFPs in the City of Phoenix is one year; however, procurement staff has laid out an expedited timeline that could be completed in as little as five months and aligns with the expiration of the current e-scooter pilot program on March 31, 2022.

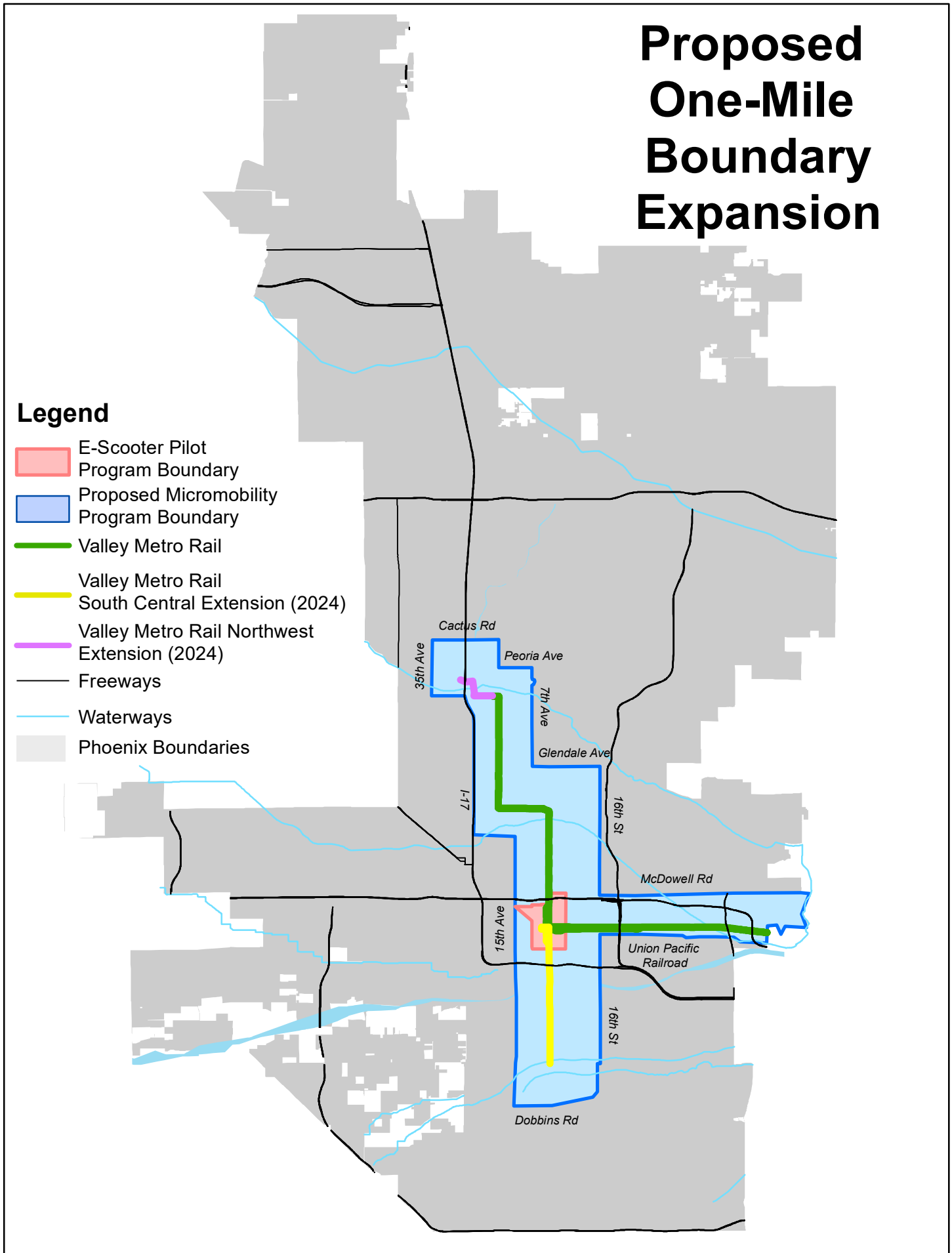
Next Steps

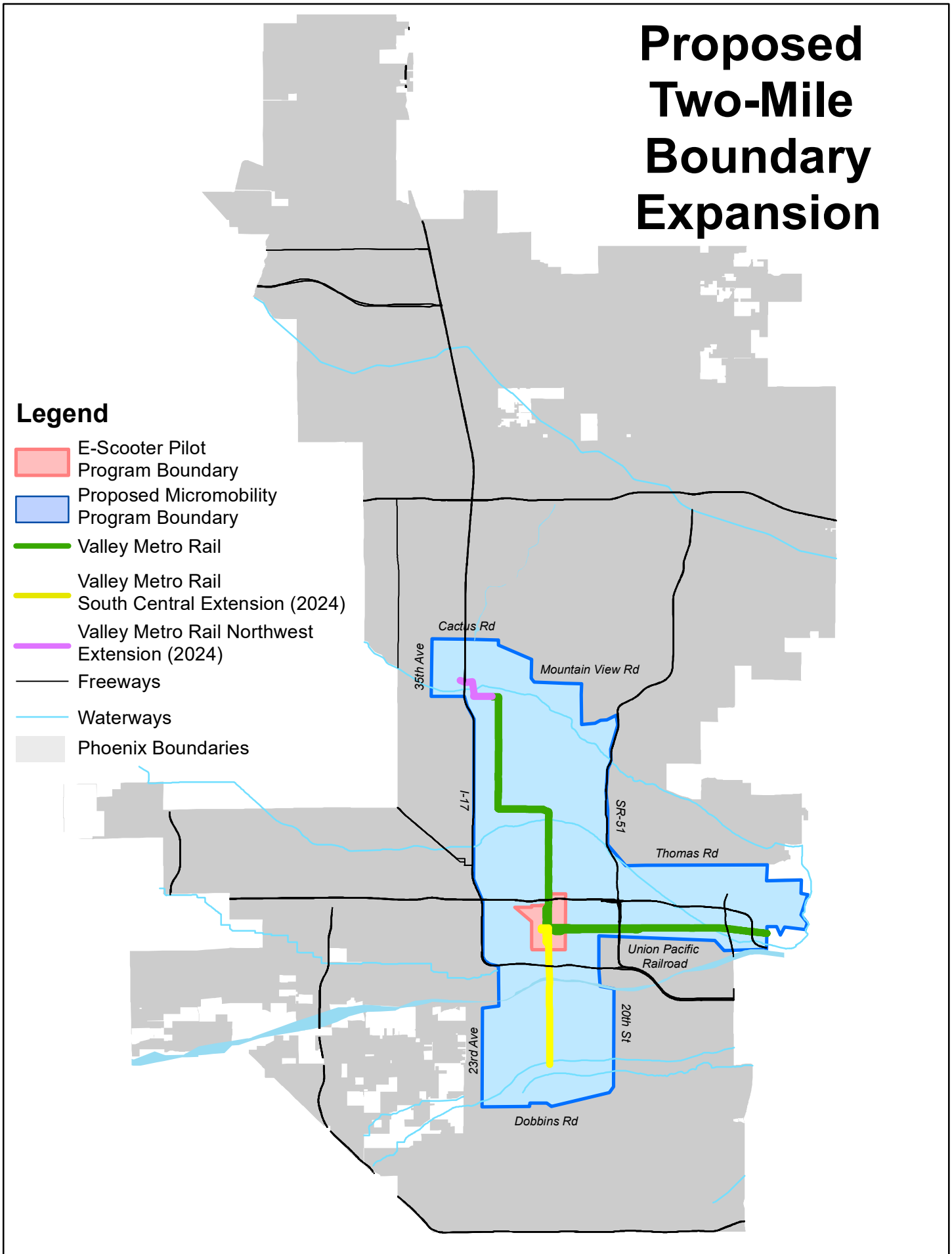
Staff will continue to work toward establishing a Comprehensive Micromobility Program through the RFP process. Currently, e-bikes are prohibited from operating on public roadways, so staff would also pursue an amendment to the motorized play vehicles ordinance to allow the use of micromobility vehicles on public roadways.

Responsible Department

This item is submitted by Deputy City Manager Mario Paniagua and the Street Transportation Department.

Attachment A




Proposed Two-Mile Boundary Expansion
Legend
E-Scooter Pilot Program Boundary
Proposed Micromobility Program Boundary
Valley Metro Rail
Valley Metro Rail South Central Extension (2024)
Valley Metro Rail Northwest Extension (2024)
Freeways
Waterways
Phoenix Boundaries
Cactus Rd
35th Ave
Mountain View Rd
I-17
SR-51
Thomas Rd
Union Pacific Railroad
20th St
23rd Ave
Dobbins Rd
0 1.25 2.5 5 7.5 10
Miles

Attachment C

Comparison of Fleet Sizes

	Phoenix *(Proposed)*	**Denver**	**Omaha**	**Boulder**	**Tampa**	**Minneapolis**	**Los Angeles**	**Chicago**
Approximate Boundary Size (Sq Mi)	76	154.9	144.6	25.7	170.6	57.5	503	234
Number of Vendors	2	2	2	1	4	Not Specified	5	3
Max Fleet Size (per vendor)	1,500	1,500	1000	200	4,500 SVR* 1,000 MVR*	2,500	6,000	3,333
Total E-Scooter Fleet	3,000	3,000	2,000	200	5,500	2,500	30,000	10,000
Traditional Bike Fleet Size per vendor	>125					1,000	Combined with E-Scooter Fleet Size	Not Specified
E-Bike Fleet Size per vendor	>125	600		500	1,500 SRV* 1,000 MRV*	1,000		
Adaptive Bike Fleet Size per vendor	>50				60			
Total Bike Fleet Size	>300	600		500	2560	2,000	Not Specified	16,500

**SRV – Single Rider Vehicle, MRV – Multiple Rider Vehicle*

Attachment D

Variation in Fees for Vendors Among Select Cities

	Phoenix *(Current)*	**Tucson**	**Austin**	**Salt Lake City**	**Boulder**	**Tampa**	**Tacoma**	**Seattle**
Application/ Permit	$500	$4,000	$30 per vehicle (~$363,000 between 4 vendors)	$30 per vehicle	$3,300 (for first year)			$232 (Issuance) $176 (Renewal) + $296/hr of Permit Review
Recurring Fee	$7,500 (6 months)	$15,000 (Annual)			$1,800 (Annual)	$5,000 (Annual)(SRV) $2,500 (Annual)(MRV) $0 (AV)	$10,000 + $100 per vehicle (Annual)	$150 per vehicle (Annual)
Surcharge	$0.15 per trip	$0.20 per trip		$0.10 per trip	$0.15 per trip	$0.30 per trip (SRV) $0.15 per trip (MRV) $0 per trip (AV)		
Fines	$100 per violation	Not Specified	Not Specified	Not Specified	Not Specified	$50 per violation	Not Specified	Not Specified

SRV: Single-rider vehicle; MRV: Multi-rider vehicle; AV: Adaptive vehicle

City of Phoenix

Report

Agenda Date: 10/20/2021, **Item No.** 12

Capitol Extension Route Recommendation and Design and Preconstruction Services

This report requests the Transportation, Infrastructure and Planning Subcommittee recommend City Council approval to amend the current locally preferred alternative (LPA) for the 19th Avenue option of the Capitol Extension (CAPEX), which was formerly known as the Capitol/I-10 West Extension Phase I, as shown in **Attachment A**.

Additionally, this report requests the Transportation, Infrastructure and Planning Subcommittee recommend City Council approval to enter into an agreement with Valley Metro Rail to fund up to $45.3 million to complete pre-construction activities for the extension. See **Attachment B** for additional details and cost breakdown.

THIS ITEM IS FOR DISCUSSION AND POSSIBLE ACTION.

Summary

In 2012, the City Council approved the current LPA (**Attachment C**). In 2016, the City Council and Valley Metro Rail Board of Directors approved a phased approach to the project, shown below:

- Phase I - Connect downtown Phoenix to the State Capitol Complex; and
- Phase II - Extend the system west along I-10 to 79th Avenue.

In 2019, the City Council requested additional public input on both phases. Public input was sought in three key areas, shown below:

- Identify a preferred CAPEX option;
- Explore a potential extension to Desert Sky Transit Center; and
- Review all options for high-capacity, high-frequency transit modes for the I-10 West Extension (10WEST).

<u>Technical Analysis Summary</u>

Opportunities to refine the CAPEX project emerged due to robust downtown development and the evolution of the South Central Extension/Downtown Hub (SCE/DH) project. Accordingly, the route between downtown Phoenix and the State Capitol Complex along Jefferson Street has been reevaluated, with input on all

potential alternatives solicited from the public and local stakeholders.

Based on Valley Metro's technical analysis, the use of Washington Street (as opposed to the double-track on Jefferson Street as identified in the previous LPA) was given further consideration recognizing the volume of residential and employment land uses in proximity to Washington Street, as well as the opportunity to provide an improved connection to the State Capitol Complex and to the 10WEST extension.

During the CAPEX reassessment process, Valley Metro identified and evaluated five potential alignments:

- 2012 LPA Route - Double-track on Jefferson Street, west of 8th Avenue;
- Concept A - Double-track on Washington Street, west of 8th Avenue;
- Concept B - 15th Avenue loop;
- Concept C - Separate 18th or 19th Avenue loop options (**Attachment D**); and
- Washington Street - Double-track west of 3rd Avenue (this option was removed due to design challenges that could have negative impacts to the downtown core).

The technical analysis revealed that Concept C would outperform the other options given the benefits of the 18th/19th Avenue Loop compared to other options, including:

- More service to residential and employment centers;
- Maximized potential ridership and access for current and future users;
- Higher operational efficiencies and improved preparation for a 10WEST connection;
- Lower impacts to historic and government properties;
- Mitigated impacts to bus operations and other vehicular traffic; and
- Greater opportunity to implement Council-approved "Complete Streets" concepts and multimodal transportation elements along Washington and Jefferson streets.

Concurrent with the technical evaluation, the project team pursued an extensive public engagement effort that included:

- Attending meetings with various community groups;
- Attending meetings with key stakeholders and businesses along the corridor, including state government representatives; and
- Conducting and participating in public meetings and community events.

Next Steps

Once approved by City Council, the City of Phoenix and Valley Metro staff will advance design and environmental assessment processes for the revised alignment. To advance these phases, Phoenix and Valley Metro will need to enter into an agreement for Phoenix to fund up to $45.3 million for pre-construction activities. Specific project

elements that will be addressed as the design advances include, among other project components: station locations, street configurations, and turnaround tracks.

Valley Metro and City of Phoenix will then need to amend the funding agreement when the project is ready to advance to the construction phase.

Financial Impact
The City of Phoenix will fund an amount not to exceed $45.3 million for pre-construction activities. Transportation 2050 funds are available in the Public Transit Capital Improvement Program budget.

Concurrence/Previous Council Action
The Citizens Transportation Commission recommended approval of this item on Aug. 26, 2021, by a vote of 13-2.

Public Outreach
In January 2020, Valley Metro held three public meetings (two in English and one in Spanish) to present the four CAPEX options. Respondents expressed the greatest support for the 18th/19th Avenue Loop option (Concept C), with approximately 54 percent of the 183 surveys favoring the option. The results of these meetings were used to refine the meeting materials for the next series of public meetings.

Due to the COVID-19 pandemic, outreach shifted to utilizing online platforms from May 27 to June 30, 2020. Throughout the process, members of the public had the ability to submit questions and comments to be evaluated by and responded to by project staff, with all meeting information presented in both English and Spanish. Additionally, four live (call-in) meetings were conducted (two in English and two in Spanish) in June 2020. In total, 356 people participated via either the online public meeting or live call-in sessions, as well as 183 individuals responding to a survey.

Given the advantages of Concept C compared to the other options, and the results of the January 2020 public meetings, the May/June 2020 online public meeting presented Concept C as the “leading alternative.” Staff asked participants to document whether they felt “positive,” “neutral,” or “negative” toward the option. Of the 183 responses received from the online survey, 67 percent of respondents expressed feeling positive about Concept C as the leading alternative, with 19 percent neutral and 14 percent negative.

<u>State Stakeholder Coordination</u>
In October 2020, the Arizona Department of Public Safety (DPS) sent a letter to the Phoenix City Council expressing concerns with the 18th Avenue option, resulting in a

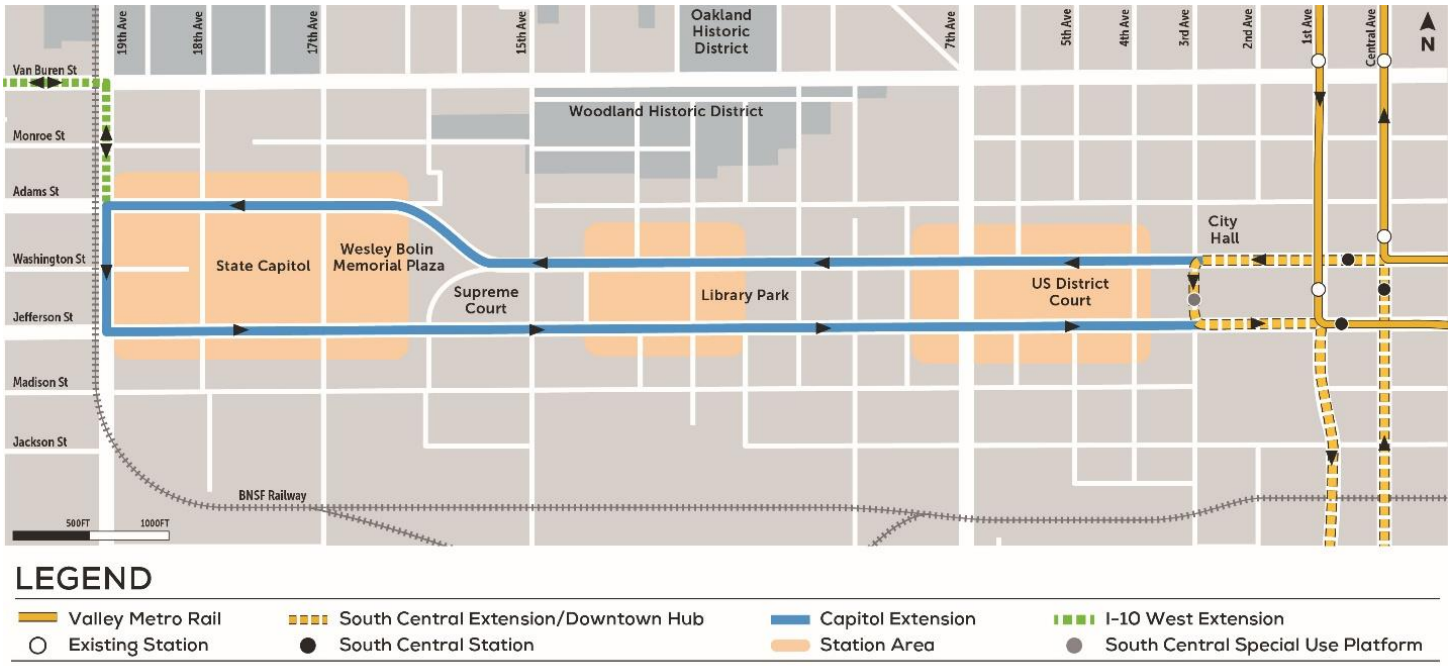
delay to the LPA approval process. Since then, the project team has held multiple meetings with representatives from the State of Arizona, including DPS, the Arizona Department of Administration, Arizona Governor's Office, and staff from the State Senate and House of Representatives, to further examine the 18th Avenue segment of Concept C. As a result of these discussions and after further evaluation, Concept C was amended to remove 18th Avenue from consideration. As a result of these comprehensive efforts, the project team conducted preliminary analysis and conceptual designs to refine and recommend 19th Avenue as the preferred north/south location of the loop portion of the LPA. Staff has conducted additional community engagement, including public notification and stakeholder meetings, to convey this update to the community.

Location
Capitol Extension will extend light rail from downtown Phoenix west to the State Capitol Complex.
Council District: 7

Responsible Department
This item is submitted by Deputy City Manager Mario Paniagua and the Public Transit Department.

Attachment A

Recommended Alignment "19th Avenue Option"



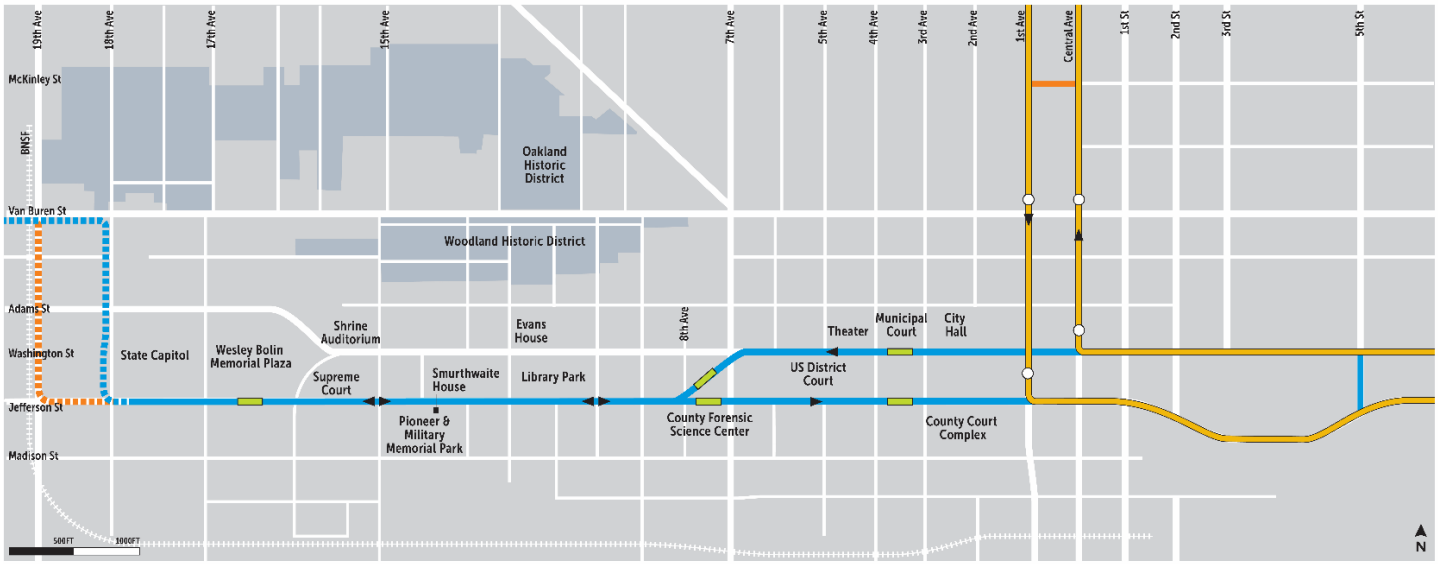
Attachment B

Estimated Design and Pre-construction Activities Budget

Activity	Estimated Budget	Notes
Preliminary Engineering (PE)	$5,400,000	Preliminary engineering including 15% and 30% designs, and community outreach during the PE and EA phases.
Environmental Assessment (EA)	$1,800,000	N/A
Final Design	$23,300,000	Includes design up to 100% with community outreach during this phase.
Pre-Construction	$10,600,000	Constructability, third party utility design and real estate support
Contingency	$4,200,000	Contingency at 10% of PE, EA, Final Design and Pre-construction total.
TOTAL	**$45,300,000**	

Attachment C

2012 Locally Preferred Alternative

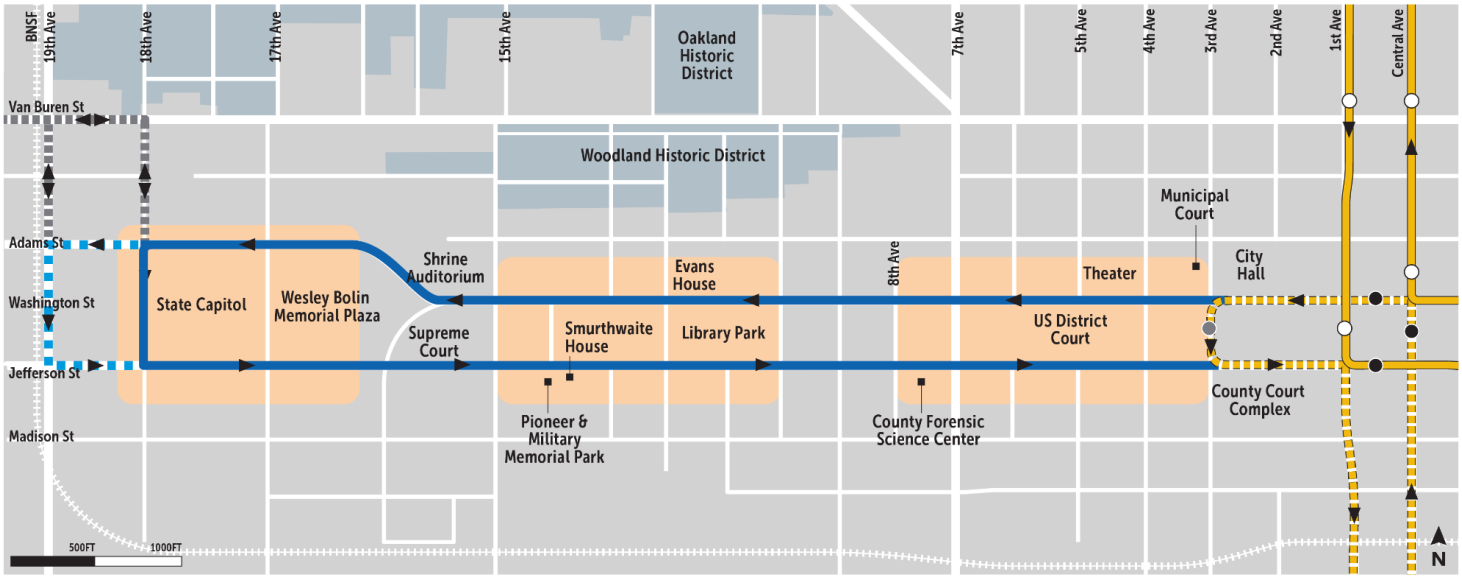


LEGEND

- Valley Metro Rail
- Existing Station
- Capitol/I-10 West Phase I
- Capitol/I-10 West Phase II
- Potential Station
- South Central Stations
- McKinley St Turnaround Design Option
- 19th Ave Design Option

Attachment D

Previously Recommended Route (2020) "Concept C"



LEGEND

- Valley Metro Rail
- Capitol/I-10 West Phase I
- South Central Extension/Downtown Hub
- Capitol/I-10 West Phase II
- Additional Route Under State Consideration
- Existing Station
- South Central Special Use Platform
- South Central Stations
- Station(s) Area

City of Phoenix

Report

Agenda Date: 10/20/2021, **Item No.** 13

I-10 West Extension Route and Transit Type Recommendation

This report requests the Transportation, Infrastructure and Planning Subcommittee recommend City Council approval of an amendment to the current Locally Preferred Alternative of the 10WEST Project (formerly known as the Capitol/I-10 West Light Rail Extension Phase II Project) by selection of the Desert Sky Transit Center as a future phase (Attachment A). This report also requests the Subcommittee recommend that City Council reaffirm the mode of transit on the 10WEST Project as light rail.

THIS ITEM IS FOR DISCUSSION AND POSSIBLE ACTION.

Summary

In 2012, the Phoenix City Council approved the current Locally Preferred Alternative (LPA) (see Attachment B), extending light rail from downtown Phoenix to the 79th Avenue/I-10 Park-and-Ride facility. Then in 2016, the Council and Valley Metro Rail Board of Directors approved a phased approach to the Project:

- Phase I - connect downtown Phoenix to the State Capitol Complex; and
- Phase II - extend the system west along I-10 to the 79th/I-10 Avenue park-and-ride.

In 2019, the Phoenix City Council requested additional public input on both phases. Public input was sought in three key areas:

- Identify a preferred Capitol Extension option;
- Explore a potential 10WEST extension to the Desert Sky Transit Center; and
- Review all options for high-capacity, high-frequency transit types for the 10WEST extension.

Technical Analysis Summary

As part of the analysis of other transit types for 10WEST, staff considered other high-capacity transit (HCT) types for the corridor, including bus rapid transit (BRT).

Staff evaluated the following criteria in considering other transit types:

- Community input;
- Ridership potential;
- Capital and operating cost;

- Constructability;
- Operational characteristics;
- Consistency with other local plans; and
- Economic development potential.

The technical analysis involving all of the criteria above revealed that light rail is still warranted as the transit type for 10WEST because it provides the highest ridership potential of all other HCT types considered, with the potential for approximately 50 percent more riders than BRT. Although light rail involves higher upfront capital costs, the total lifecycle cost of light rail when accounting for all associated costs and total project ridership is comparable to enhanced BRT.

Since most of the project corridor is not located within an existing local roadway, traditional light rail constructability challenges (such as utility relocations and right-of-way acquisition) are also significantly lowered. This should produce cost savings and schedule improvements during construction, as compared to other light rail construction projects, as well as improved travel times and reliability during operations.

Operationally, light rail would seamlessly integrate into the region's HCT system by connecting with the Capitol Extension just west of the State Capitol Complex, providing west valley residents with a one-seat ride to notable destinations (like Phoenix Sky Harbor International Airport and ASU's Main Campus, among others). It also would be able to travel approximately 10 percent faster than other HCT types, while providing a higher peak rider capacity. Lastly, the public has expressed support for light rail as the transit type for 10WEST, both during the public meetings summarized below and in local plans, such as the Maryvale Village Core Urban Design Plan and the Maryvale Character Area Plan. Both of these community documents favor light rail due to the associated economic development impacts that light rail can provide compared to other transit modes.

<u>Desert Sky Transit Center Extension</u>
Regarding extending service to the Desert Sky Transit Center, staff looked at the following criteria:

- Ridership potential;
- Competitiveness for federal funding;
- Connections to activity centers and other transit routes; and
- Consistency with local plans and public input.

The technical analysis revealed that extending 10WEST service to the Desert Sky Transit Center is warranted because it will serve additional riders with the potential of

generating approximately 18 percent additional passenger boardings. The extension will connect two regional activity centers, Ak-Chin Pavilion and Desert Sky Mall, both of which have been identified as community assets in the Maryvale Character Area Plan. In addition, the added potential ridership is supported by the proximity of two schools, as well as existing and planned multi-family housing. Also, the Desert Sky Transit Center, located adjacent to the mall, provides connectivity to existing and future transit service, including three local routes, a rural route to Ajo, and the MARY neighborhood circulator, as well as the potential to connect with BRT in the future. Lastly, the public has expressed support for this extended service, both during the public meetings and in the Maryvale Village Core Urban Design Plan.

Next Steps

Once approved by City Council, City of Phoenix and Valley Metro staff will:

- Conduct the necessary steps to progress the Project into preliminary engineering and environmental assessment; and
- Continue coordination with West Valley communities.

Financial Impact

Funding for the 10WEST Project is expected to be a mix of local, regional, and federal dollars. Federal funding for fixed guideway transit projects is generally provided through the Federal Transit Administration's Capital Investment Grant (CIG) program. Based on current eligibility criteria and preliminary analysis, the 10WEST Project remains competitive for federal funding.

Concurrence/Previous Council Action

The Citizens Transportation Commission to recommend approval of this item on Aug. 26, 2021, by a vote of 14-0.

Public Outreach

In January 2020, Valley Metro held three public meetings (two in English and one in Spanish) to provide information and seek input on the Project, including the Desert Sky Transit Center extension, phasing options to possibly accelerate the Project, and transit-type options. Approximately 84 percent of the 183 survey respondents favored extension to the Desert Sky Transit Center. Respondents also expressed interest in exploring different transit types.

Due to the COVID-19 pandemic, outreach shifted to utilizing online platforms between May and June 2020. Throughout the process, members of the public had the ability to submit questions and comments to be evaluated by and responded to by project staff, and all meeting information was presented in English and Spanish. Additionally, four

live (call-in) meetings were conducted (two in English and two in Spanish). In total, the online public meeting website was visited 1,355 times, and 334 people provided feedback, either by general questions and comments or through a feedback survey form.

At the public meetings, Valley Metro provided information regarding a potential extension of 10WEST to the Desert Sky Transit Center. In response, 77 percent of the 198 survey respondents felt positive about adding this extension to the Project, with 14 percent neutral and 9 percent negative. The survey also sought input on 10WEST transit-type options (light rail compared to an exclusive bus way). Of the 149 responses to this question, 75 percent stated they preferred light rail over an exclusive bus way, with 16 percent preferring the bus way and 9 percent expressed no preference.

Location
10WEST will extend north to I-10 and along I-10 west to the Desert Sky Transit Center in a future phase via 79th Avenue.
Council Districts: 4 and 7

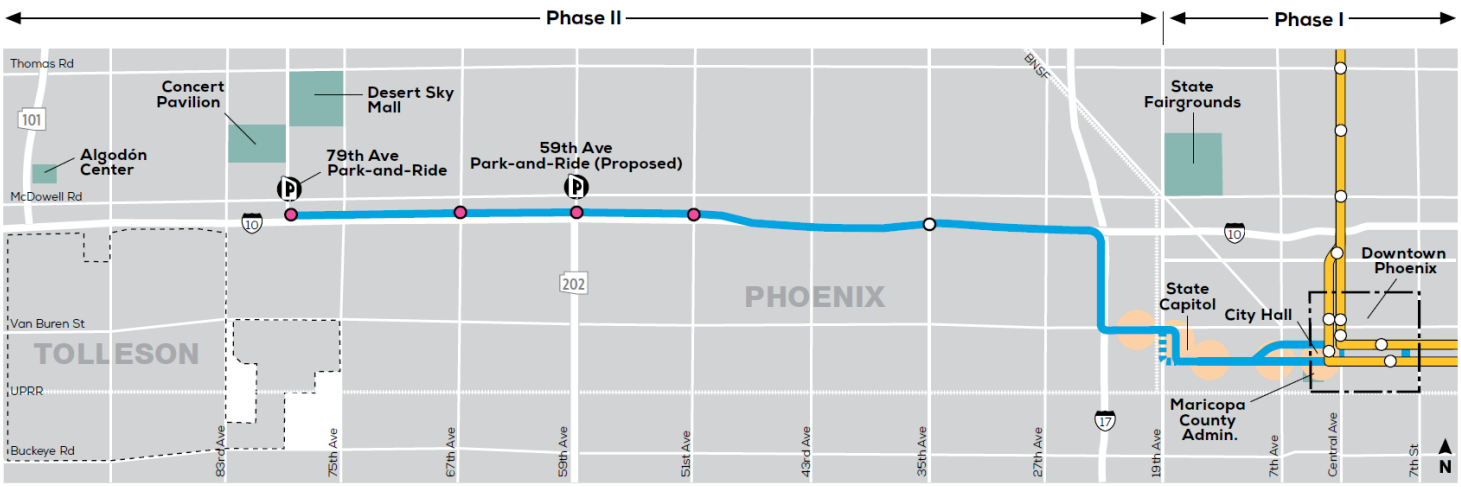
Responsible Department
This item is submitted by Deputy City Manager Mario Paniagua and the Public Transit Department.

Attachment A

Recommended Route: 10West

Attachment B

2012 Locally Preferred Alternative



LEGEND

- Valley Metro Rail / Station
- Approved Route
- 19th Avenue Design Option
- Park-and-Ride
- Station Target Area
- Median Station Site
- North Side Station Site
- Activity Center
- City of Tolleson
- Unincorporated Maricopa County

City of Phoenix

Report

Agenda Date: 10/20/2021, **Item No.** 14

West Phoenix High Capacity Transit Recommendation to Initiate Study

This report requests the Transportation, Infrastructure and Planning Subcommittee to recommend that the City Council initiate a study of high-capacity transit options for West Phoenix.

THIS ITEM IS FOR DISCUSSION AND POSSIBLE ACTION.

Summary

In partnership with Valley Metro, City of Phoenix staff are recommending the study of high-capacity transit (HCT) options in West Phoenix. This study will build upon previous planning efforts to continue expanding mobility options for West Phoenix residents, workers, and visitors.

Adding HCT in West Phoenix is a key component of the expanded transit program outlined in the voter-approved Transportation 2050 (T2050) plan. The study would be funded by regional transit funds (Prop. 400) and also potentially funded by a Federal Transit Administration (FTA) grant available for areas of persistent poverty, as further explained in this report.

Background of previous HCT studies

HCT in West Phoenix was first studied in coordination with the City of Glendale in 2010. Planning efforts progressed in three studies until a Phoenix City Council action in 2019 put the project on hold. The three studies were as follows:

- Study I: Glendale HCT Study (2010-12);
- Study II: West Phoenix/Central Glendale Light Rail Extension Study (2013-17); and
- Study III: West Phoenix Light Rail Extension Study (2017-19).

Study I explored bringing HCT to the Westgate Entertainment District. Five preferred corridors were identified, two of which connected to Phoenix's Northwest Phase I extension (running along Glendale Avenue to Westgate). The remaining three corridor options connected to the future I-10 West Extension (running north from 79th Avenue/I-10 to Westgate). The results of the study advanced an option to extend light rail west on Glendale Avenue from 19th Avenue, with stations approximately every mile along Glendale Avenue to the Westgate area.

Study II built on the Glendale HCT Study, but with two major changes in scope:

- Changing the end-of-line from the Westgate Entertainment District to downtown Glendale; and
- Comparing alternative alignments in West Phoenix to better serve activity centers in the area.

While Study I focused on extending light rail along Glendale Avenue, Study II evaluated a total of six alignments to identify the most productive corridor. At Study II's conclusion, the proposed alignment would begin at the existing 19th Avenue/Camelback Road light rail station, head west along Camelback Road to 43rd Avenue, and then head north toward Glendale Avenue, where the alignment would then turn west toward downtown Glendale.

The benefits of this alignment for West Phoenix residents included higher ridership projections than Study I and better connectivity to activity centers, such as Grand Canyon University and Alhambra High School. In the selection of this alignment, a total of 110 public outreach activities were conducted and numerous stakeholders were engaged. Study II concluded in December 2017, at which time the Glendale City Council voted to withdraw from the project.

Study III explored building the Phoenix-only portion of the proposed Study II corridor, which would extend light rail on Camelback Road between 19th and 43rd avenues (**Attachment A**). Study III concluded in March 2019 when Council voted to defer the Camelback Road light rail project to the end of the T2050 program.

Phoenix BRT Status

The Phoenix BRT Program recently concluded its 2020 Council-directed analysis of potential corridors in Phoenix (**Attachment B**). At their May 21, 2021 meeting, the Citizens Transportation Commission unanimously recommended that Council approve the 35th Avenue/Van Buren option as the initial BRT corridor in Phoenix. The same recommendation was approved unanimously at the Sept. 15, 2021 Transportation, Infrastructure and Planning Subcommittee meeting.

Next Steps

If this high-capacity study is approved, Valley Metro and the City of Phoenix will complete the West Phoenix HCT Study by building upon the previous studies and expanding the scope to further analyze how to better serve the West Phoenix Area (**Attachment C**), bounded by 35th and 67th avenues, and McDowell and Camelback roads. Data from Valley Metro’s 2019 Origin and Destination Survey shows this area is

one of the top areas in the region where transit trips begin.

Much of the area also qualifies as “Areas of Persistent Poverty” under federal guidelines, with a poverty rate of at least 20 percent of the population. The FTA's Areas of Persistent Poverty Program Grant is available to provide 90 percent of funds for planning, engineering, and technical studies to improve transit services in such identified communities.

Any work conducted for this West Phoenix HCT Study would be in close coordination with the Phoenix BRT Program to ensure that the planning efforts are cohesive and the preferred corridors identified for HCT will integrate into the overall transit plan to improve connections to West Phoenix. This Study and associated community outreach would analyze potential alternatives, looking both to identify the most productive corridors and HCT modes for West Phoenix.

Phoenix and Valley Metro staff would follow the outline below for the Study’s scope:
- Provide project management from both Valley Metro and City of Phoenix staff;
- Prioritize and further develop community and stakeholder relationships;
- Identify existing and future conditions;
- Define purpose and needs;
- Analyze potential corridors for HCT;
- Develop and propose preferred networks;
- Define preferred alternatives for light rail corridors;
- Develop an implementation strategy; and
- Prepare results for City Council adoption of a HCT corridor.

Financial Impact
It is anticipated that the duration of this study effort would take 18-24 months. The total estimated cost of the study is approximately $950K. Phoenix has applied for FTA's Areas of Persistent Poverty Program Grant to fund up to 90 percent of the study cost. Matching grant funds are available through regional (Prop. 400) funds.

Concurrence/Previous Council Action
The Citizens Transportation Commission recommend approval of this item on Aug. 26, 2021, by a vote of 14-0.

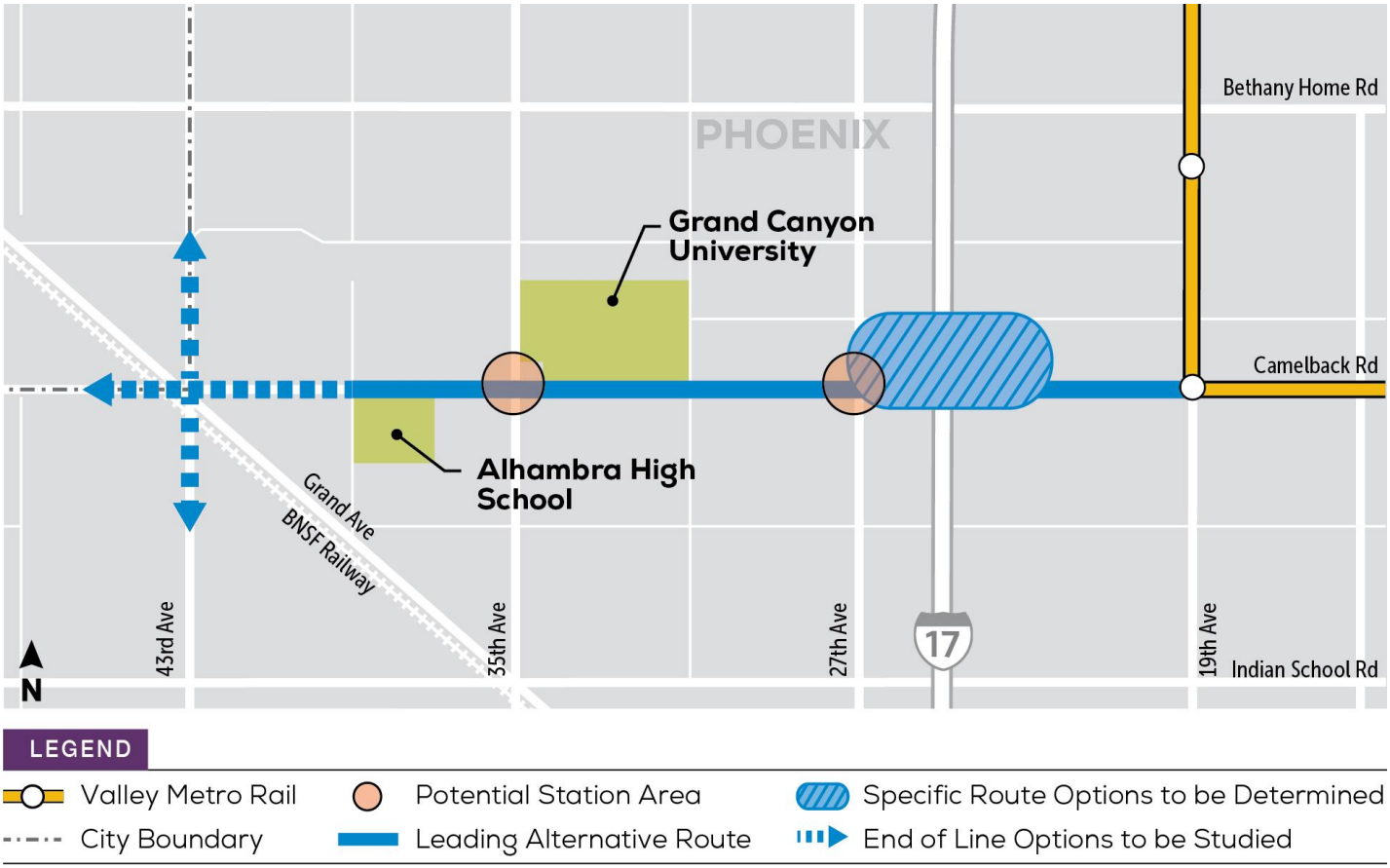
Location
West Phoenix HCT would expand transit access in the greater Maryvale area of West Phoenix, with a primary study area of roughly 35th to 67th avenues and McDowell to Camelback roads.

Council Districts: 4, 5 and 7

Responsible Department
This item is submitted by Deputy City Manager Mario Paniagua and the Public Transit Department.

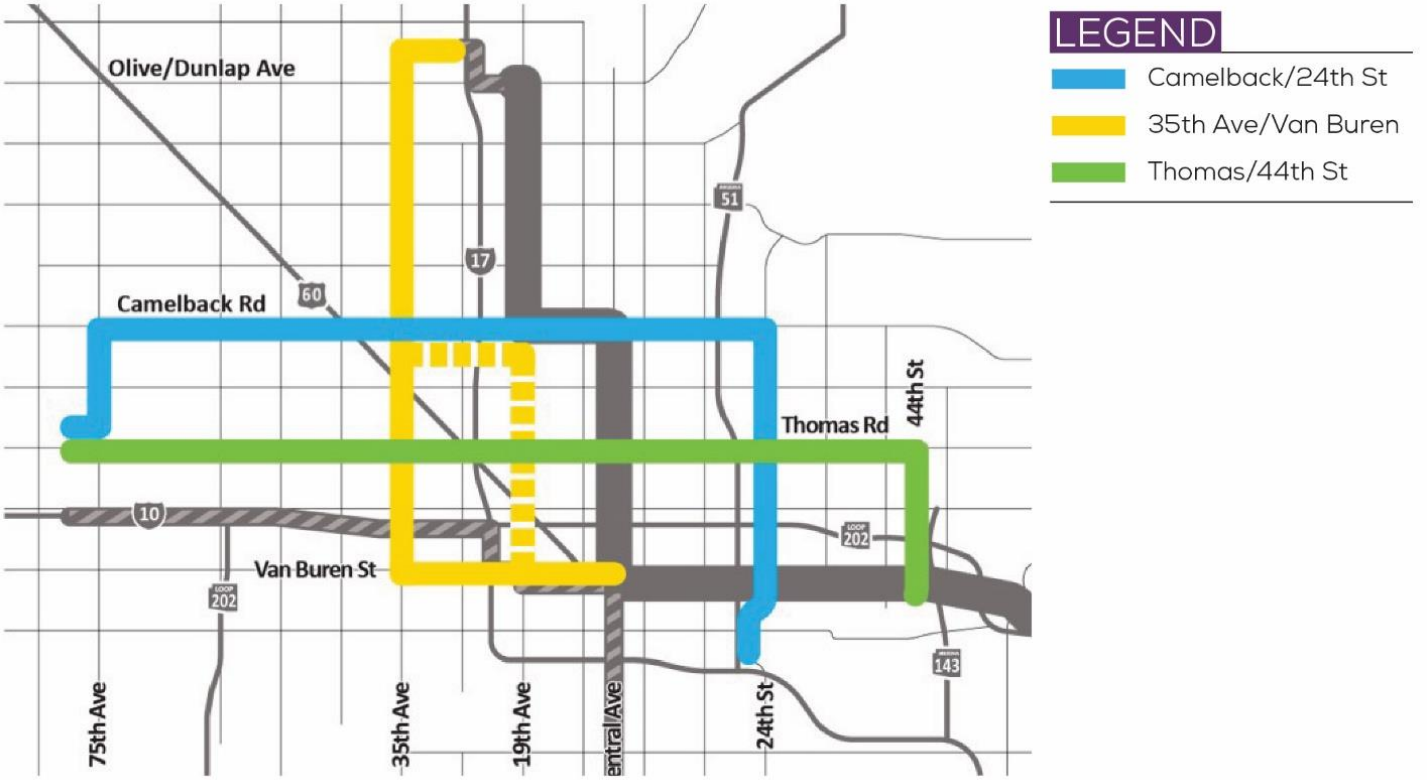
Attachment A

Study III: West Phoenix Light Rail Extension Study (2017-19)



Attachment B

Phoenix BRT: Most Preferred Network Scenario



Attachment C

West Phoenix Council Districts and Study Area