MEMORANDUM

TO: Mayor and City Council

FROM: Howard S. Lazarus, City Administrator

DATE: February 18, 2020

SUBJECT: Response to Council Resolution R-18-497 – Resolution to Address Crosswalk Improvements and Maintenance

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This memorandum is provided in response to approved Council Resolution R-18-497 – Resolution to Address Crosswalk Improvements and Maintenance. This memo is the final report provided to Council to satisfy the requirements set forth in Resolution R-18-497. Please note, that Resolution R-19-460 establishes a new quarterly reporting requirement for transportation projects. Staff is currently working on this quarterly report and the report will be provided to City Council for the first quarter of calendar year 2020.

As a reminder, the requirements of Resolution R-18-497 and the corresponding statuses are as follows:

1. Provide an update on the status of the City's crosswalk design guidelines and a firm date by which the standard will be completed and in force not later than January 15, 2019.
    - As was previously reported to City Council, the crosswalk design guideline took effect on January 15, 2019. This crosswalk design guideline (Attachment A) has been actively used by staff over the course of the year and will continue to be used in the future. It also bears mention that this crosswalk design guideline has been identified as a best practice in the State and has been adapted for use by other communities.
2. Provide a listing of all significant pedestrian safety improvements completed within the past three years (2016-2018) and the schedule of improvements for calendar year 2019 not later than January 31, 2019, including both ongoing maintenance and any plans for new or substantially improved crosswalks.
    - This was originally reported to City Council on February 4, 2019. The list has been updated to reflect the work completed in 2019 (Attachment B).

      The work for 2019 can be summarized as follows:
        - **Rectangular Rapid Flashing Beacons (19 total at 10 locations)**
            - Overhead - 2 New overhead RRFB at 1 location (Stadium Blvd. in front of Pioneer High School)
            - Roadside - 16 New roadside RRFBs at 8 locations (3 on N Maple Rd., 1 on S Maple Rd., 1 on Eisenhower Pkwy., 1 on Green Rd., 1 on Geddes Rd., 1 on S Main St.)

        - Repair/Maintenance - Replaced 1 damaged RRFB at 1 location (Stadium Blvd. at Ferdon Rd.); Conducted preventive maintenance on all RRFBs
    - **School Zone "Reduced Speed when Flashing" signs (18 Total at 6 schools)**
        - New - 16 new school zone "reduced speed when flashing" signs were installed around 5 schools (Huron High School, Pioneer High School, Tappan Middle School, Michigan Islamic Academy, Central Academy)
        - Upgraded - 2 school zone "reduced speed when flashing" signs were upgraded around 1 school (Scarlett/Mitchell)
    - **In-Road Crosswalk Signs (R1-6a) signs (166 Total at 47 locations)**
        - Placed - Installed 102 R1-6a signs at 47 locations
        - Replaced - Replaced 64 damaged signs
    - **New Crosswalks (13 Total at 13 locations); Crosswalk Signage (16 Total at 8 locations); Pedestrian Signal (2 Total at 1 location); Crosswalk Pavement Markings (344 Total at 344 locations)**
        - New crosswalks - Installed 13 new crosswalks (Dicken Dr., Scio Church Rd., Scio Church Rd. service drive, Gralake Ave., Liberty St., Geddes Rd., 3 on N. Maple Rd., S Maple Rd., 2 on Fifth Ave, Washtenaw Ave at Pittsfield Blvd.)
        - Crosswalk signage (not RRFB) - Installed/upgraded 16 crosswalk signs at 8 locations
        - Pedestrian signal - Installed 2 new pedestrian signals at 1 location (Washtenaw Ave. at Pittsfield Blvd.)
        - Crosswalk Pavement Markings - Restriped/refreshed 178 Major Street crosswalk markings; Restriped/refreshed 166 Minor (local) Street crosswalk markings
        - Relocated Crosswalk - State St. and Hoover Ave. crosswalk was relocated
    - **Pedestrian Refuge Islands (3 Total at 3 locations) and Bumpouts (8 Total at 6 locations)**
        - New Pedestrian Refuge Islands - Installed 3 new pedestrian refuge islands (Fuller Rd., S. Seventh St., Fifth Ave.)
        - New Bumpouts - Installed 8 new bumpouts (2 on Runnymede Blvd, 1 at Waltham Dr. and Warwick Ct., demonstration bumpout on Fifth Ave., 2 demonstration bumpouts on Bluett Rd., 2 on Fourth Ave.)
3. Provide an inventory of significant crosswalk assets and assessments of their conditions with respect to the design guidelines, including markings, signage, and illumination as appropriate not later than January 31, 2019.
    - This was originally reported to City Council on February 4, 2019. The inventory has been updated to fill in some of the information that were previously unknown at the time (Attachment C). As a reminder, this inventory is under constant refinement and is used as a planning and programming tool. As such, the target design may change as a specific site is investigated in more detail.
4. Incorporate crosswalk infrastructure elements into the City's asset database and provide an estimate of the costs and schedule to bring significant crosswalks into substantial compliance with the guidelines. The cost and schedule data for the next two years will be presented as an attachment to the City Administrator's FY2020/2021 Financial Plan submittal to Council.

- Reflective of the work done on item #3 above, the estimated cost to bring significant crosswalks into substantial compliance with the guidelines has been updated as well and has been incorporated into the inventory spreadsheet (Attachement C).

5. Beginning in April 2019, provide monthly updates to Council on crosswalk maintenance and improvements completed/scheduled for the 2019 construction season.
    - Monthly reports were provided to City Council between April and November (Attachment D). This final report as discussed in item #2 above and identified in Attachment B provides the specifics of the work performed.

Additional work that bears mention:

- Streetlights - street lighting has been of interest to City Council especially as it relates to pedestrian safety. Therefore, it is noteworthy to mention streetlight improvements in this report as well:
    - 60 new streetlights were installed at 41 locations. Of these 37 were at locations for uncontrolled crosswalks
    - DTE serviced 818 outage events from April to December 2019 (note: an outage event may be include multiple light outages)
- Crash Report – City staff developed the first crash report and presented it to the Transportation Commission in August and September (Attachment E). The report shows trends over the past five years as well as geographic representations of where crashes have occurred. Additionally, crash data for 2014-2018 has been uploaded to an interactive map: www.a2gov.org/a2crashmap.
- Mobility Fact Book – Sam Schwartz developed a Mobility Fact Book as part of the work performed for the Transportation Plan Update (Attachment F). The Fact Book provides an insightful overview of the state of the system of transportation in Ann Arbor.

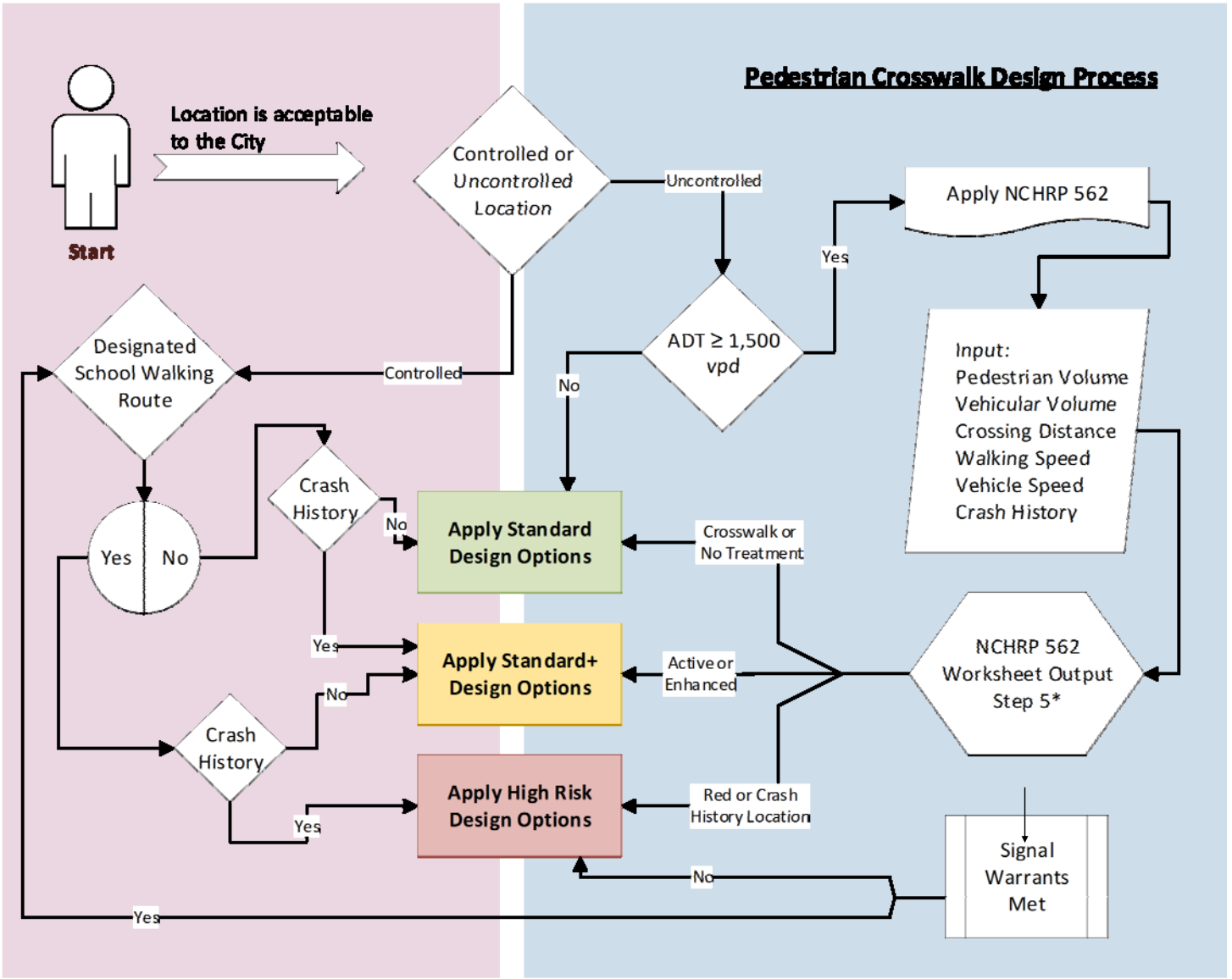
As always, please do not hesitate to contact me if I can be of further assistance.

cc: J Fournier
R Hess
S Higgins
C Hupy
N Hutchinson
C Redinger

ATTACHMENT A

Crosswalk Design Guidelines: Overview

City of Ann Arbor



Data Needs:

Pedestrian Volume, hourly
Vehicular Volume, hourly,
Crossing Distance
Walking Speed
Vehicular Speed
Crash History

Special Considerations:

Sensitive population?
Adjacent School?
Published school walk route?

Notes:

If adjacent to a school or on published school walking route map, design to results plus one level.

Evaluation of street lighting conditions is a concurrent process. Street light installation is managed through the street light Asset Management Team.

Street Lighting:

Street lighting is considered through the Street Light Asset Management Team. New crossings installed on collector streets and higher classification will have positive contrast lighting as part of the design and in collaboration with the lighting team.

Crosswalk Design Guidelines: Uncontrolled

City of Ann Arbor

Street Type	Uncontrolled Design Options		
	Standard	**Standard+**	**High Risk Location**
Local	Unmarked	Pavement Markings	High Visibility Markings
			Pedestrian Warning Series (W11-2) or School Warning Series (S1-1)
Collector	High Visibility Markings	Pedestrian Warning Series (W11-2) or School Warning Series (S1-1)	Bright Sides
			In-Lane Signs (R1-6a)
			Pedestrian Islands
			R1-6a Signs on Island
			Bump Outs
			Stop Here for Ped. (R1-5b) Signs w/ Stop Bar on Multilane Approach
Minor & Major Arterials ≤ 3 Lanes	High Visibility Markings	Pedestrian Warning Series (W11-2) or School Warning Series (S1-1)	Rectangular Rapid Flashing Beacon (RRFB) - Side Mounted
			Pedestrian Hybrid Beacon (PHB)
		Bright Sides	Pedestrian Signal
		In-Lane Signs (R1-6a)	
		Pedestrian Islands	
		R1-6a Signs on Island	
		Bump Outs	
		Stop Here for Ped. (R1-5b) Signs w/ Stop Bar on Multilane Approach	
Minor & Major Arterials ≥ 3 Lanes	High Visibility Markings	In-Lane Signs (R1-6a)	Rectangular Rapid Flashing Beacon (RRFB) - Additional Mounting Overhead or on Island
	Pedestrian Warning Series (W11-2) or School Warning Series (S1-1)	Pedestrian Islands	Pedestrian Hybrid Beacon (PHB)
		R1-6a Signs on Island	Pedestrian Signal
	Bright Sides	Bump Outs	Overhead Mounted "Local Law, Stop for Ped" (R1-9a)
	Mid-block: Stop Here for Ped. (R1-5b) Signs w/ Stop Bar	Stop Here for Ped. (R1-5b) Signs w/ Stop Bar on Multilane Approach	

Notes:

Design options are a suite of devices that are appropriate for a particular design level.

The final design for a given location will be tailored to meet the needs of that particular location.

Final design is subject to the opinion of the City Engineer.

Street Lighting:

Project Managers and Designers must work with the Street Light Asset Management Team to determine the best lighting practice for each location.

Crosswalk Design Guidelines: Controlled

City of Ann Arbor

Control Type	Street Type	Design Options: Standard	Standard+	High Risk Location
Stop Controlled	Local	Unmarked	Pavement Markings	High Visibility Markings
				Pedestrian Warning Series (W11-2) or
				School Warning Series (S1-1)
	Collector, Minor Arterial, & Major Arterial	High Visibility Markings	Pedestrian Warning Series (W11-2) or	Bright Sides
			School Warning Series (S1-1)	In-Lane Signs (R1-6a)
				Pedestrian Islands
				R1-6a Signs on Island
				Bump Outs
Signalized	All Types	High Visibility Markings	Enhanced High Visibility Marking, e.g. 10' wide crosswalk	Advanced Pedestrian Phase
		Stop Bars		Pedestrian Only Phase
		Count Down Pedestrian Heads		Pedestrian Scramble Phase
Roundabout	Local & Collector: Single Lane	Standard Markings	High Visibility Markings	Stop (Yield) Bars
		R1-6a Signs on Island		Stop Here for Ped. (R1-5b) Signs
				Audible warning strips
	Minor Arterial & Major Arterial: Single Lane	High Visibility Markings	Stop (Yield) Bars	Pedestrian Warning Series (W11-2) or
		R1-6a Signs on Island	Stop Here for Ped. (R1-5b) Signs	School Warning Series (S1-1)
		Audible warning strips		
	Minor Arterial & Major Arterial: Multi Lane	High Visibility Markings	Rectangular Rapid Flashing Beacon (RRFB) - Side Mounted	Pedestrian Hybrid Beacon (PHB)
		R1-6a Signs on Island		
		Audible warning strips		
		Stop (Yield) Bars		
		Stop Here for Ped. (R1-5b) Signs		

Notes:

Design options are a suite of devices that are appropriate for a particular design level.

The final design for a given location will be tailored to meet the needs of that particular location.

Final design is subject to the opinion of the City Engineer.

Street Lighting:

Project Managers and Designers must work with the Street Light Asset Management Team to determine the best lighting practice for each location.

ATTACHMENT B

Pedestrian Safety Improvements 2016-2019
2/18/20

			New Crosswalk				RRFB				Pedestrian Island				Gateway Treatments				Updated Pavement Markings*				Bump Outs				Lighting				Updated Signage				Ped Signal Improvement				School Speed Zone				School Safety Improvement			
Location Type	Street Name	Cross Street	2016	2017	2018	2019	2016	2017	2018	2019	2016	2017	2018	2019	2016	2017	2018	2019	2016	2017	2018	2019	2016	2017	2018	2019	2016	2017	2018	2019	2016	2017	2018	2019	2016	2017	2018	2019	2016	2017	2018	2019	2016	2017	2018	2019
Mid-Block	Ann Arbor-Saline	South of S Main																			X																							
Mid-Block	Ann Arbor-Saline	North of Northbrook/W Oakbrook																			X																							
Controlled - Stop	Archwood	Sequoia																														X									X			
Mid-Block	Barton	Outside Ann Arbor STEAM														X				X																								
Uncontrolled	Beakes	Summit														X				X											X												
Uncontrolled	Beakes	Fifth Ave														X						X				X																	
Uncontrolled	Beakes	Fourth Ave															X													X													
Uncontrolled	Beakes	Carey															X														X												
Mid-Block	Bluett	East of Prairie																		X						X						X									X		
Uncontrolled	Brockman	Shadford																		X										X										X		
Controlled - Stop	Brockman	Copley																		X												X									X		
Controlled - Stop	Brooks	Miller																														X									X		
Uncontrolled	Carey	Division																	X																								
Mid-Block	Catherine	Zina Pitcher																																									
Controlled - Stop	Catherine	N State																												X												
Controlled - Stop	Champagne	Santa Rosa																		X												X									X		
Mid-Block	Church	Between N University and S University		X																												X											
Uncontrolled	Crest	Buena Vista																							X																X		
Controlled - Stop	Crestland	Carhart																																							X		
Uncontrolled	Crestland	Hall																														X									X		
Uncontrolled	Dicken	Pathway to elementary school				X															X													X									X
Uncontrolled	Depot	Carey St																		X	X									X				X									
Uncontrolled	Depot	Fifth																X																									
Uncontrolled	Depot	Fourth Ave	X															X																									
Uncontrolled	Dexter	Allen																			X																						
Mid-Block	Dhu Varren	At Olson Park	X																			X						X						X									
Uncontrolled	Dhu Varren	Carrot Way	X																			X						X						X									
Uncontrolled	Division	Ann															X		X																								X	
Uncontrolled	Division	Lawrence														X			X	X	X				X					X				X								X	X	
Uncontrolled	Division	Broadway Bridge														X																											
Uncontrolled	Division	Detroit															X		X	X										X													
Uncontrolled	Division	Jefferson														X								X																			
Uncontrolled	Dorchester	Medford																		X																					X		
Uncontrolled	Dorchester	Yorkshire																		X										X										X		
Uncontrolled	Duncan	Haisley Elementary School Entrance																		X												X									X		
Mid-Block	Earhart	South of Kipling																															X										
Uncontrolled	Earhart	Pine Brae (south)																		X																							
Uncontrolled	Earhart	Pine Brae (north)																		X											X												
Uncontrolled	Earhart	Waldenwood																		X											X												
Uncontrolled	Earhart	Greenhills (north)																												X	X												
Uncontrolled	Earhart	Greenhills (south)																												X	X												
Uncontrolled	Earhart	Glazier Way																			X									X													
Uncontrolled	Earhart	Geddes (north)				X																X													X									X
Uncontrolled	Eberwhite	Madison																														X									X		
Mid-Block	Eighth	South of Washington		X																												X									X		
Uncontrolled	Eisenhower Pkwy	Plaza Rd								X																			X													
Uncontrolled	Eisenhower Pkwy	Waymarket/Northbrook, east side							X																				X													
Uncontrolled	Eisenhower Pkwy	Waymarket/Northbrook, west side							X																				X													
Mid-Block	Ellsworth	West of Jonathan Ct							X																							X											
Controlled - Signal	Ellsworth	Research Park				X																																				
Uncontrolled	Fifth Ave	Beakes St																								X																
Uncontrolled	Fifth Ave	Detroit											X			X		X		X									X				X							X	X	
Uncontrolled	Fifth Ave	Detroit			X								X	X			X												X				X								X	
Uncontrolled	Fifth Ave	Detroit			X								X				X												X				X								X	
Mid-Block	Fifth St	South of Liberty																										X												X		
Controlled - Stop	Fifth St	Jefferson																														X									X		
Controlled - Stop	Fourth St	Jefferson																														X									X		
Controlled - Signal	Fourth St	Huron St.																								X																
Mid-Block	Fuller	Outside VA Hospital										X			X														X		X												
Mid-Block	Fuller	East of Cedar Bend																	X		X								X			X											
Mid-Block	Fuller	East of Bonisteel										X							X										X			X											
Mid-Block	Fuller	At Fuller Park							X												X								X					X									
Mid-Block	Fuller	East of Gallup Park entrance						X						X		X			X		X						X					X						X				X	
Mid-Block	Geddes	West of Ridgeway																		X								X														
Mid-Block	Geddes	East of Geddes Ridge Ave																					X																				
Uncontrolled	Geddes	Linden																		X																							
Uncontrolled	Geddes	Arlington	X																																							
Uncontrolled	Geddes	Hickory	X																																							
Mid-Block	Geddes	Outside Concordia College				X				X												X								X												
Mid-Block	Geddes	Observatory																																								
Controlled - Stop	Georgetown	Bluett																												X										X		
Uncontrolled	Glazier Way	Tremont																		X											X												
Mid-Block	Gralake	Near school entrance				X																																	X			X
Uncontrolled	Gralake	Sunnywood																														X									X		
Controlled - Stop	Granger	Lincoln																														X									X		
Mid-Block	Green	West of Kilburn																												X												
Uncontrolled	Green	Burbank Dr (South)																		X																							
Uncontrolled	Green	Green Brier Blvd								X																						X											
Uncontrolled	Green	Hubbard																			X																						
Uncontrolled	Green	Vintage Valley																			X											X											
Mid-Block	Green	East of Whisperwood																																								
Mid-Block	Green	At Sugarbush Playground			X								X																X					X									
Uncontrolled	Hill	Oakland Ave																	X	X										X												
Uncontrolled	Hill	Tappan																	X	X										X												
Uncontrolled	Hill	Oxford																	X	X																						
Uncontrolled	Hill	Ruthven																	X		X																						
Uncontrolled	Hill	Onondaga																	X																								
Mid-Block	Hill	Between Adams and Greene																			X																						
Uncontrolled	Hoover	Sybil																	X	X																						
Uncontrolled	Hoover	Division																	X	X																						
Uncontrolled	Huron Pkwy	Huron High School Entrance					X												X	X												X	X					X			X	
Uncontrolled	Huron Pkwy	Glazier Way																			X																						
Uncontrolled	Huron Pkwy	Baxter	X																																							

Pedestrian Safety Improvements 2016-2019
2/18/20

			New Crosswalk				RRFB				Pedestrian Island				Gateway Treatments				Updated Pavement Markings*				Bump Outs				Lighting				Updated Signage				Ped Signal Improvement				School Speed Zone				School Safety Improvement			
Location Type	Street Name	Cross Street	2016	2017	2018	2019	2016	2017	2018	2019	2016	2017	2018	2019	2016	2017	2018	2019	2016	2017	2018	2019	2016	2017	2018	2019	2016	2017	2018	2019	2016	2017	2018	2019	2016	2017	2018	2019	2016	2017	2018	2019	2016	2017	2018	2019
Mid-Block	Huron St	East of Thayer																												X																
Mid-Block	Huron St	Arbana																																												
Uncontrolled	Industrial Hwy	Jewett																		X																								X		
Uncontrolled	Industrial Hwy	Rosewood																		X																										
Uncontrolled	Industrial Hwy	Astor				X				X										X		X																								
Mid-Block	Industrial Hwy	Entire Corridor																																												
Mid-Block	Jackson	At Weber's																																												
Mid-Block	Jackson	Between Revena and Maple																																												
Controlled - Stop	Jefferson	Fourth St																		X												X												X		
Controlled - Stop	Jefferson	Fifth St																		X												X												X		
Uncontrolled	John A Woods	Peach																			X				X								X											X		
Uncontrolled	Kingsley	Ashley																		X																										
Controlled - Stop	Kuehnle	Kim																														X												X		
Controlled - Stop	La Salle	Lorraine																														X												X		
Mid-Block	Liberty	West of Liberty Point																	X	X								X																	
Uncontrolled	Liberty	Westwood Apt Dr																	X																											
Uncontrolled	Liberty	Virginia																	X		X									X																
Uncontrolled	Liberty	Dartmoor				X																X																								
Uncontrolled	Liberty	Crest															X		X		X											X												X	X	
Uncontrolled	Liberty	Murray															X		X	X																										
Uncontrolled	Liberty	Fourth St															X		X	X																										
Controlled - Stop	Lincoln	Granger																														X												X		
Uncontrolled	Lorraine	Fernwood																		X												X														
Uncontrolled	Lorraine	At Scarlett/Mitchell Entrance																		X												X														
Uncontrolled	Madison	Fourth St																														X												X		
Controlled - Signal	Main	Stadium																														X												X		X
Uncontrolled	Manchester	Dorchester																														X												X		
Controlled - Stop	Manchester	Essex																														X												X		
Uncontrolled	Maple	Bens				X				X												X																								
Uncontrolled	Maple	Dicken																															X														
Uncontrolled	Maple	Pennsylvania						X																																						
Uncontrolled	Maple	Maple Village Ct		X					X													X								X																
Mid-Block	Maple	Outside Peace Neighborhood Center				X				X												X																								
Mid-Block	Maple	Outside Alano Club				X				X												X																								
Mid-Block	Maple	Between Dexter and Miller				X				X												X																								
Mid-Block	Miller	West of Miner															X																													
Uncontrolled	Miller	Keuhnle		X																												X														
Uncontrolled	Miller	Chapin															X																													
Uncontrolled	Miller	Gott															X																													
Uncontrolled	Miller	Brooks															X																													
Uncontrolled	Miller	Pomona															X				X																								
Mid-Block	Miller	East of Saunders Crest																			X																										
Uncontrolled	Miller	Pine Tree															X				X																										
Uncontrolled	Miller	Newport																												X		X												X		
Uncontrolled	Miller	Hatcher Crescent																			X																										
Uncontrolled	Miller	Fulmer																			X																										
Uncontrolled	Miller	Bruce															X				X																										
Uncontrolled	Miller	Wesley																												X																
Uncontrolled	Mt Pleasant	Mt Vernon																														X												X		
Uncontrolled	Mt Vernon	Park																														X												X		
Uncontrolled	N State	Lawrence																		X																										
Uncontrolled	N State	McKinley																		X																										
Controlled - Stop	Newport	Sunset																		X										X		X														
Mid-Block	Newport	North of Red Oak															X																X												X	X	
Controlled - Stop	Ninth	Washington																														X												X		
Uncontrolled	Nixon	Bluett														X			X	X																								X		
Uncontrolled	Nixon	Clague																												X																
Uncontrolled	Nixon	Sandalwood																												X																
Mid-Block	Observatory	North of Geddes	X																																										
Mid-Block	Packard	South of King George Blvd						X								X				X										X								X						X		
Mid-Block	Packard	North of Coler																	X		X									X														X		
Mid-Block	Packard	West of Hikone							X																					X				X											
Mid-Block	Packard	East of Burton																										X																
Uncontrolled	Packard	Woodmanor							X												X									X														X		
Controlled - Signal	Packard	Stone School																														X												X		
Mid-Block	Pauline	East of St. Charles																													X														
Uncontrolled	Pauline	Arbordale			X																	X						X					X											
Uncontrolled	Pauline	Edgewood															X																												
Uncontrolled	Pauline	Fifth St															X					X									X		X											X		
Uncontrolled	Pauline	Hutchins															X																												
Uncontrolled	Pauline	Redeemer																	X	X		X						X					X												
Mid-Block	Platt	Between Sharon and Redwood																			X												X												X	
Mid-Block	Platt	North of Redwood																			X												X													
Mid-Block	Platt	North of Williamsburg							X												X												X													
Mid-Block	Platt	South of Washtenaw																X													X													X	
Uncontrolled	Platt	Edgewood																			X									X															
Controlled - Stop	Platt	Oakwood																												X															
Mid-Block	Plymouth	East of Willowtree																	X		X																								X	
Mid-Block	Plymouth	West of Beal																	X		X									X														X	
Mid-Block	Plymouth	At Traver Village																	X		X																									
Mid-Block	Plymouth	West of Commonwealth Blvd																			X																									
Mid-Block	Pontiac Trail	South of Arrowwood														X																													
Uncontrolled	Pontiac Trail	Polson																												X															
Uncontrolled	Pontiac Trail	Montana																												X															
Uncontrolled	Pontiac Trail	Bowen															X				X																									
Uncontrolled	Pontiac Trail	Apple														X					X																									
Uncontrolled	Pontiac Trail	Taylor														X														X		X													
Uncontrolled	Pontiac Trail	Moore/Longshore															X																													
Uncontrolled	Prairie	Aurora																			X																									
Uncontrolled	Prairie	Renfrew																			X																									
Uncontrolled	Red Oak	Lois																		X																									
Mid-Block	Research Park	Outside US Social Security Office																																												
Uncontrolled	Runnymede	Wimpole																		X			X																							

Pedestrian Safety Improvements 2016-2019
2/18/20

			New Crosswalk				RRFB				Pedestrian Island				Gateway Treatments				Updated Pavement Markings*				Bump Outs				Lighting				Updated Signage				Ped Signal Improvement				School Speed Zone				School Safety Improvement			
Location Type	Street Name	Cross Street	2016	2017	2018	2019	2016	2017	2018	2019	2016	2017	2018	2019	2016	2017	2018	2019	2016	2017	2018	2019	2016	2017	2018	2019	2016	2017	2018	2019	2016	2017	2018	2019	2016	2017	2018	2019	2016	2017	2018	2019	2016	2017	2018	2019
Uncontrolled	Runnymede	Dicken School Entrance																								X																			
Uncontrolled	S Main	Fieldcrest								X											X																								
Uncontrolled	S Main	Keech Ave																			X																								
Mid-Block	S Main	North of Oakbrook																			X									X														
Mid-Block	S Main	South of Liberty																			X																								
Mid-Block	S State	North of S University																	X																										
Uncontrolled	S State	Monroe																	X		X									X														
Uncontrolled	S State	Granger																	X	X																								
Mid-Block	S State	South of Granger																																										
Mid-Block	S State	Outside U of M Angell Hall			X														X																								
Uncontrolled	S State	Arch																	X	X																								
Uncontrolled	S University	Tappan																														X												
Uncontrolled	S University	Linden																		X												X												
Controlled - Stop	S University	Oxford																		X																								
Uncontrolled	Scio Church	Chaucer				X																								X			X					X			X	X
Uncontrolled	Scio Church	Greenview							X										X		X									X														
Uncontrolled	Scio Church Service Drive	Chaucer				X																X																							
Uncontrolled	Sequoia	Archwood (south)																		X												X												
Uncontrolled	Sequoia	Archwood (north)																		X												X												
Controlled - Stop	Sequoia	Center																		X												X												
Controlled - Signal	Seventh	Stadium																														X											X		X
Mid-Block	Seventh	Between Jefferson and Liberty		X												X					X											X												
Uncontrolled	Seventh	Willow														X					X																								
Uncontrolled	Seventh	Bath													X	X					X																								
Uncontrolled	Seventh	Princeton																			X																								
Uncontrolled	Seventh	Potter																			X																								
Uncontrolled	Seventh	Snyder																			X																								
Uncontrolled	Seventh	Murray														X					X																								
Uncontrolled	Seventh	Davis														X					X																								
Uncontrolled	Seventh	Franklin															X				X																							X	
Uncontrolled	Seventh	Lutz	X													X					X																							X	
Uncontrolled	Seventh	Washington													X						X																								
Uncontrolled	Seventh	Delaware																			X																							X	
Uncontrolled	Seventh	Morehead																		X												X												
Mid-Block	Seventh	West of Pioneer High School						X									X			X	X												X									X			
Uncontrolled	Seventh	Delaware																		X	X				X																		X	
Controlled - Stop	Seventh	Greenview																		X	X				X																		X	
Controlled - Signal	Seventh	Scio Church												X																														
Uncontrolled	Shadowood	Blain																														X												
Uncontrolled	Soule	Madison																		X																								
Uncontrolled	Soule	Lutz																		X												X												
Uncontrolled	South University	Walnut																		X																								
Uncontrolled	South University	Linden																		X																								
Controlled - Signal	Stadium	Seventh																														X												
Controlled - Signal	Stadium	Brockman																														X												
Mid-Block	Stadium	Northwest of Kay Pkwy							X										X													X												
Mid-Block	Stadium	West of Greenview							X										X													X												
Mid-Block	Stadium	South of Liberty					X														X											X												
Uncontrolled	Stadium	Thaler					X														X											X												
Uncontrolled	Stadium	Collingwood					X														X											X												
Uncontrolled	Stadium	Edgewood					X			X										X									X										X		X	X	X		X
Mid-Block	Stadium	East of Kipke										X															X					X												
Controlled - Signal	Stone School	Packard																														X												
Uncontrolled	Stone School	Pheasant Run																											X				X										X	
Uncontrolled	Stone School	Champagne																											X				X										X	
Uncontrolled	Stone School	Pebble Creek	X																		X									X														
Uncontrolled	Stone School	Birch Hollow	X																		X									X				X										
Uncontrolled	Sunnywood	Mason																		X																								
Controlled - Stop	Sunnywood	Gralake																		X																								
Controlled - Stop	Sunset	Newport																												X		X												
Uncontrolled	Taylor	Pear																			X																							X	
Uncontrolled	Taylor	Peach																			X																							X	
Uncontrolled	Traver	At Logan Elementary School Entrance																		X																								
Uncontrolled	Waldenwood	King Elementary School Driveway (north)																		X												X												
Uncontrolled	Waldenwood	King Elementary School Driveway (south)																		X												X												
Controlled - Stop	Waldenwood	Tremont																														X												
Mid-Block	Walter	Leona																														X												
Uncontrolled	Waltham	Warwick																		X		X				X						X											X	X
Uncontrolled	Waltham	Covington																		X		X				X						X											X	X
Mid-Block	Washington	East of Division																			X																								
Uncontrolled	Washington	Crest																		X					X																		X	X	
Uncontrolled	Washington	Eighth																		X					X																		X	X	
Uncontrolled	Washington	Ninth																		X					X																		X	X	
Controlled - Signal	Washtenaw	Pittsfield				X																X																		X					
Mid-Block	Washtenaw	At Tappen Middle School																												X														X
Controlled - Stop	Wells	Baldwin																		X																								
Uncontrolled	Wells	Martin																		X																								
Controlled - Stop	Wells	Lincoln																		X												X												
Mid-Block	William	Between First and State																																										
Controlled - Stop	Woodlawn	Packard																												X												
Uncontrolled	Yost	Oakwood																												X												

*A separate list is attached which shows all crosswalk pavement marking work performed in 2019

MAJOR STREET CROSSWALK PAVEMENT MARKINGS					
Date	Street	Cross Street	Thermo 6"XW	Thermo 24"XW	Thermo 12"XW
4/22/2019	Geddes Ave.	Earhart Rd. Roundabout		264	
4/22/2019	Stone School Rd.	Ellworth Rd.			384
4/22/2019	King George Blvd.	Page Ave.	70		
4/23/2019	Madison Ave. W	Main St. S			240
4/23/2019	Main St. S	Mosley St.	138		
4/23/2019	Granger Ave.	Golden Ave.	80		
4/24/2019	Ann St. W	First St. N	116		
4/24/2019	First St. N	Huron St. E		60	
4/24/2019	First St. S	Madison St. W	128	60	
4/24/2019	Madison St. W	Ashley St. S	130	66	
4/24/2019	Madison St. W	Second St.	124	66	
4/24/2019	Madison St. W	Third St.	127		
4/25/2019	Madison St. W	Sixth St.	65		
4/25/2019	Madison St. W	Seventh St. S			264
4/25/2019	South University Ave.	East University Ave.			96
4/25/2019	Greenview Dr.	Glen Leven Rd.			112
4/25/2019	Maple Rd. S	Winewood Blvd.			112
4/25/2019	South Forest Ave.	Willard St.	160	30	
4/25/2019	Madison St. W	Fourth St.	65		
4/25/2019	Madison St. W	Turner Park Dr.	34	66	
4/25/2019	Madison St. W	Fifth St.	132		
5/4/2019	Hill St.	South Forest			336
5/4/2019	Hill St.	Church St.			328
5/4/2019	Hill St.	E University Ave.			344
5/5/2019	Packard Rd.	Fourth Ave. S		320	
5/5/2019	Packard Rd.	Fifth Ave. S		290	
5/5/2019	Madison St. E	Thompson St.		232	
5/5/2019	Hill St.	Tappan Ave.		40	152
5/5/2019	Hill St.	Oakland Ave.			288
5/5/2019	Division St. N	Catherine St.		88	160
5/5/2019	Ann St.	Fifth Ave. S to Division St. N (Parking T's and 6" lines)	400		
5/5/2019	Packard Rd.	Main St. S		70	
5/8/2019	Stadium Blvd. E	Baldwin Ave.	106	88	
5/8/2019	Stadium Blvd. E	Ferdon St.	64	88	
5/8/2019	Packard Rd.	Iriquois Blvd.	63		
5/8/2019	Packard Rd.	Baldwin Ave.	49		
5/8/2019	Packard Rd.	Coler Rd.	83	48	
5/8/2019	Packard Rd.	Indepencence Blvd.	49		
5/9/2019	Packard St.	Jewett Ave.	115	120	
5/9/2019	Stadium Blvd. E	Brockman Blvd.	71	160	56
5/10/2019	Maple Rd. S	Liberty St. W			680
5/10/2019	Maple Rd. S	Pennsylvania Blvd.	82		104
5/10/2019	Maple Rd. S	Dicken Rd.	87	56	
5/10/2019	Stadium Blvd. E	Pauline Blvd.			370
5/10/2019	Stadium Blvd. E	Brockman Blvd.		16	40

MAJOR STREET CROSSWALK PAVEMENT MARKINGS					
Date	Street	Cross Street	Thermo 6"XW	Thermo 24"XW	Thermo 12"XW
5/11/2019	State St. S	Packard St.			252
5/11/2019	State St. S	Hill St.		160	
5/11/2019	Packard St.	Mary St.	69		
5/11/2019	State St. S	Monroe	132		128
5/11/2019	Monroe St.	Oakland Ave.			168
5/11/2019	State St. S	Madison E		56	96
5/11/2019	State St. S	South University Ave		266	
5/11/2019	State St. S	Mid-Block Crossing at Student Union			96
5/11/2019	South University Ave.	Tappan St.			216
5/14/2019	Stat St. S	Wiliam St. E	168		
5/14/2019	Stat St. S	North University Ave.	272		
5/14/2019	Plymouth Rd.	Huron Parkway		104	472
5/14/2019	Nixon Rd.	Midblock Crossing north of Plymouth Rd.			58
5/14/2019	Nixon Rd.	Huron Parkway Roundabout			261
5/14/2019	Nixon Rd.	Aurora St.		56	
5/14/2019	Plymouth Rd.	Prairie St.			104
5/15/2019	Catherine St.	Glen Ave.		290	
5/15/2019	Mille Ave.	First St. N		160	
5/15/2019	State st. S	Liberty St. E	232		
5/15/2019	Liberty St. E	Thompson St.	86	48	220
5/15/2019	Liberty St. E	Maynard St.			
6/18/2019	Pennsylvania	North of Commerce			88
6/27/2019	Pauline Blvd.	Fifth St.		40	
6/30/2019	Division St. N	Detroit St.	71		120
6/30/2019	Division St. N	Carey St.	45		64
6/30/2019	Division St. N	Beakes	157	32	64
6/30/2019	Division St. N	Kingsley St.		96	176
6/30/2019	Division St. N	Lawrence St.		88	72
6/30/2019	Maple Rd. S	Bens St.			96
7/10/2019	Geddes Rd.	Concordia Mid-block Crossing			100
7/10/2019	Maple Rd. N	Soouth of Sequoia Pkway Mid-block			140
7/10/2019	Maple Rd. N	Haisley Dr.			140
7/10/2019	Maple Rd. N	Walter Dr.			140
7/10/2019	Maple Rd. S	Pauline Blvd.			320
7/12/2019	Miller Rd.	Pomona Rd.	60	56	
7/12/2019	Ann St. E	Glen Ave.		294	
7/12/2019	State St. S	Dewey Ave.	60		
7/12/2019	State St. S	Granger Ave.			80
7/12/2019	State St. S	McKinley			208
7/12/2019	State St. S	Arch			208
7/12/2019	State St. N	Catherine St.			328
7/19/2019	Newport Rd.	Westport Rd.	72		
7/19/2019	Newport Rd.	Red Oak Rd.	64	40	
7/19/2019	Newport Rd.	Sunset Rd.		40	64
7/19/2019	Newport Rd.	Coley St.			72

MAJOR STREET CROSSWALK PAVEMENT MARKINGS					
Date	**Street**	**Cross Street**	**Thermo 6"XW**	**Thermo 24"XW**	**Thermo 12"XW**
7/20/2019	Huron Parkway S	Traverwood Dr.			184
7/20/2019	Huron Parkway S	Tubingern Parkway			120
7/20/2019	Traver Rd.	Tubingern Parkway			
7/20/2019	Traver Rd.	Logan School		72	72
7/20/2019	Nixon Rd.	Glague School Mid-block Crossing		56	
7/20/2019	Nixon Rd.	Bluett Rd.		56	72
7/22/2019	Green Rd.	Plymouth Rd.			
7/22/2019	Green Rd.	Frederick Dr.	115		
7/22/2019	Plymouth Rd.	Barton Dr.		258	
7/22/2019	Plymouth Rd.	Upland Dr.		304	
7/22/2019	Plymouth Rd.	Broadway St.		72	
7/22/2019	Glazier Way	Tremont Dr.	70	64	
7/22/2019	Glazier Way	Markberry Dr.	66		
7/22/2019	Green Rd.	Windemere Dr.	136		
7/22/2019	Green Rd.	Larchmont Dr.	115		
7/22/2019	Plymouth Rd.	Mid-block Crossing West of Green Rd.		88	
7/22/2019	Plymouth Rd.	Commonwealth Blvd.			144
7/23/2019	Barton Dr.	Traver Rd.			336
7/23/2019	Barton Dr.	Pontiac Tr.		176	
7/23/2019	Beakes St.	Fifth Ave. N	127	110	
7/23/2019	Beakes St.	Fourth Ave. N	167	110	
7/24/2019	Miller Rd.	Miner St.	64	40	
7/24/2019	Miller Rd.	Gott St.	56	40	
7/24/2019	Miller Rd.	Brooks St.	70	40	
7/24/2019	Miller Rd.	Wesley Ave.	50		
7/24/2019	Miller Rd.	Linda Vista	52		
7/24/2019	Miller Rd.	Pine Tree Dr.	64	40	
7/24/2019	Miller Rd.	Wines Dr.	60		
7/24/2019	Miller Rd.	Saunders Crescent	68	48	
7/24/2019	Miller Rd.	Bruce St.	54	40	
7/24/2019	Miller Rd.	Duncan St.	54		
7/24/2019	Miller Rd.	Hatcher Crescent	60	48	
7/24/2019	Miller Rd.	Fulmer St.	54	48	
7/24/2019	Dexter Ave.	Fairview Dr.	58		
7/24/2019	Dexter Ave.	Worden Ave.	60		
7/24/2019	Dexter Ave.	Allen Dr.	48	40	
7/24/2019	Dexter Ave.	Doty Ave.	45		
7/24/2019	Dexter Ave.	Glendale Dr.	62		
7/24/2019	Dexter Ave.	Westwood Ave.	56		
7/24/2019	Dexter Ave.	Grandview Dr.	44	40	
7/24/2019	Dexter Ave.	Pine Ridge St.	44		
7/24/2019	Dexter Ave.	Wildwood Ave.	58		
7/24/2019	Maple Rd. N	Sequoia Pkwy	100		
7/24/2019	Maple Rd. N	N Circle Dr.	68		
7/24/2019	Maple Rd. N	S Circle Dr.	62		
7/24/2019	Maple Rd. N	Haisley Dr.	62		
7/24/2019	Maple Rd. N	Hollywood Dr.	62		
7/24/2019	Maple Rd. N	Walter	62		
7/24/2019	Packard St.	Mid-block Crossing West of Stone School		56	

MAJOR STREET CROSSWALK PAVEMENT MARKINGS					
Date	**Street**	**Cross Street**	**Thermo 6"XW**	**Thermo 24"XW**	**Thermo 12"XW**
8/8/2019	Green Rd.	Green Brier			90
8/8/2019	South Industrial Hwy	Astor Ave.			104
8/8/2019	South Industrial Hwy	RosewoodDr.			104
8/8/2019	South Industrial Hwy	Jewett Ave.			104
8/8/2019	South Industrial Hwy	Mid-block Crossing at Marlborough			76
8/9/2019	Brooks	Hiscock		120	
8/10/2019	Fifth Ave. N	Beakes St.			81
8/29/2019	Washtenaw Ave.	Pittsfield Blvd.			184
10/1/2019	Zina Pitcher Pl.	Catherine St.		48	96
10/1/2019	Zina Pitcher Pl.	E Ann St.			416
10/1/2019	Zina Pitcher Pl.	Washtenaw Ave.			108
10/1/2019	N Ingals	E Kingsley St.			144
10/1/2019	Kingsley St. E	Thayer St. N	108		
10/1/2019	N Ingals	Ann St. E	272		
10/1/2019	Thayer St. N	Catherine St.	230		
10/1/2019	Thayer St. N	Ann St. E	238		
10/4/2019	First St. S	Washington St. W		216	
10/4/2019	Ashley St. S	Washington St. W		224	
10/4/2019	Ashley St. N	Ann St.		184	
10/4/2019	Eisenhower Pkwy	Plaza Dr.		80	
10/5/2019	Jefferson St.	Thompson St.			306
10/5/2019	Jefferson St.	Midblock at Thompson Parking Lot		128	
10/5/2019	Liberty St. E	Fourth Ave. S		224	
10/5/2019	Thayer St. S	North University	246		
10/5/2019	North University	Fletcher St.			272
10/5/2019	Washington St. E	Fletcher St.		112	
10/5/2019	Fletcher St.	Midblock at Washington St.		70	
10/5/2019	Fuller St.	Midblock at Fuller Pool		100	
10/7/2019	Main St. S	Liberty St.		160	96
10/7/2019	Main St. S	Washington St.		224	
10/7/2019	Washington St. E	Fifth St. S		184	
10/7/2019	State St. N	Ann St. E			224
10/8/2019	N. Fifth Ave.	Ann St. E		184	
10/8/2019	Washington St. E	Division St. S			484
10/8/2019	Washington St. E	State St. S		56	264
10/8/2019	Washington St. E	At 425 Midblock Crossing			120
10/8/2019	Broadway	Swift St.		200	
10/8/2019	Packard Rd.	King George Blvd.	122		
10/8/2019	Packard Rd.	Pine Valley Blvd.	123	64	
		Total	**7,758**	**8,478**	**12,818**

MINOR/LOCAL STREET CROSSWALK PAVEMENT MARKINGS					
Date	**Street**	**Cross Street**	**Thermo 6"XW**	**Thermo 12"XW**	**Thermo 24"XW**
4/22/2019	St. Francis	Winchell		80	
4/22/2019	Gralake	Midblock Crossing		56	
4/22/2019	Henry St.	Golden St.	126		
4/23/2019	Henry St.	Ferndale Pl.	220		
4/23/2019	Henry St.	Montclair Pl.	220		
4/23/2019	Henry St.	Westminster Pl.	220		
4/23/2019	Westminster Pl.	Brooklyn Ave.	100		
4/23/2019	White St.	Rose St.		80	
4/23/2019	Golden Ave.	Brooklyn Ave.	54		
4/24/2019	Sheehan Ave.	Woodlawn Ave.	55		
4/24/2019	Sheehan Ave.	Dewey Ae.	42		
4/24/2019	Brockman Blvd.	Freeze St.	61		
4/24/2019	Winchell Dr.	Carhart Ave.	62		
4/25/2019	Ferdon Rd.	Cherokee Rd.	104		
4/25/2019	Ferdon Rd.	Frieze Ave.	54		
4/25/2019	Ferdon Rd.	Brockman Blvd.	67		
4/25/2019	Ferdon Rd.	Andersoon Ave.	123		
4/25/2019	Anderson Ave.	Carhart Ave.	46		
5/8/2019	Shadowwood Dr.	Champagne Dr.	138		
5/8/2019	Shadowwood Dr.	Hemlock Dr.	136		
5/8/2019	Canterbury Rd.	Hampshire Rd.	52		
5/8/2019	Canterbury Rd.	Shrewsbury	52		30
5/8/2019	Canterbury Rd.	Cumberland Ave	60		
5/10/2019	Dicken Rd.	Tudor Dr.	74		
5/10/2019	Dicken Rd.	Kent St.	74		
5/10/2019	Covington Dr.	Agincourt	54		
5/10/2019	Covington Dr.	Brandon Ct.	52		
5/10/2019	Runnymede Blvd.	Carol Dr.	64		
5/10/2019	Carol Dr.	Stephen Terrace	256		
5/10/2019	Covington Dr.	Waltham	128		
5/10/2019	Covington Dr.	Weldon Blvd.	67		
5/10/2019	Covington Dr.	Windsor Dr.	130		
5/14/2019	Green Rd.	Watershed Dr.	250		
5/14/2019	Green Rd.	Narrow Gage Way	164		
5/14/2019	Foxhunt Dr.	Penberton Ct.		200	
5/14/2019	Foxhunt Dr.	Barclay Ct.	86		
5/14/2019	Foxhunt Dr.	Green Rd.	70		
5/14/2019	Green Rd.	Ridgeline Dr.	74		
5/14/2019	Green Rd.	Stanton Ct.	90		
5/15/2019	Saunders Cresent	Cooley Ave.	68		80

MINOR/LOCAL STREET CROSSWALK PAVEMENT MARKINGS					
Date	**Street**	**Cross Street**	**Thermo 6"XW**	**Thermo 12"XW**	**Thermo 24"XW**
5/15/2019	Saunders Cresent	Argyle Crescent	67		
5/15/2019	Saunders Cresent	Creal Crescent	67		
5/15/2019	Bruce St.	Alice St.		168	
5/15/2019	Bruce St.	Arborview Blvd.	66		
5/15/2019	Bruce St.	Arlene St.		336	
5/15/2019	Arborview Blvd.	Doty St.		48	
5/15/2019	Eigth St.	Midblock South of Washington St.		72	
6/9/2019	Wall St.	Maiden Lane Ct.			
6/9/2019	Wall St.	Nielson Ct.			
6/18/2019	Arborview Blvd.	Westwood		336	
6/18/2019	Arborview Blvd.	Wilton Ct.	90		48
6/18/2019	Arborview Blvd.	Briarwood St.	46		
6/18/2019	Arborview Blvd.	Wildwood Ave.	50		
6/18/2019	Arborview Blvd.	Revena PL.	62		
6/18/2019	Arborview Blvd.	Revena Ave. N	62		
6/18/2019	Arborview Blvd.	Linda Vista St.	184		
6/18/2019	Arborview Blvd.	Wesley Ave.	180		
6/18/2019	Arborview Blvd.	Arbana Dr.		160	
6/18/2019	Arborview Blvd.	Paul St.	64		
6/18/2019	Arbordale St.	Sherwood St.	67		
6/18/2019	Arbordale St.	Northwood St.	62		
6/18/2019	Arbordale St.	Sherwood St.	272		
6/18/2019	Arbordale St.	Raymond St.	125		
6/18/2019	Arbordale St.	Lennox St.	68		
6/18/2019	Arbordale St.	Evelyn Ct.	56		
6/18/2019	Commerce Blvd.	Pennsylvaia		168	
6/19/2019	Runnymede	Sue Parkway	64		
6/19/2019	Runnymede	Carol Dr.		140	
6/19/2019	Carol Dr.	Stephen Ter.		266	
6/19/209	Stephen Ter.	Runnymede	65		
6/19/2019	Sue Parkway	Alhambra	127		
6/19/2019	Coronada Dr.	Las Vegas		160	
6/19/2019	Las Vegas	Palomar Dr.	68		
6/19/2019	Las Vegas	Runnymede		160	
6/19/2019	Runnymede	Glastonberry	266		
6/19/2019	Avondale	Granada	64		
6/19/2019	Avondale	Catalina	66		
6/19/2019	Waltham Dr.	Windsor		240	
6/19/2019	Waltham Dr.	Saxon St.	61		
6/19/2019	Morehead Dr.	Newbury Ct.		176	
6/25/2019	Mershon Dr.	Delaware Dr.		336	
6/26/2019	Wall St.	Maiden Ln. Ct.		304	

MINOR/LOCAL STREET CROSSWALK PAVEMENT MARKINGS					
Date	**Street**	**Cross Street**	**Thermo 6"XW**	**Thermo 12"XW**	**Thermo 24"XW**
6/26/2019	Wall St.	Nielson Ct.			228
6/26/2019	Prairie St.	Burlington Dr.		160	
6/26/2019	Prairie St.	Sheffield Ct.		160	
6/26/2019	Summit St.	Fifth Ave. N		160	
6/26/2019	Tappan St.	Monroe St.		240	
6/26/2019	Hutchins Ave.	Monroe St.		320	
6/26/2019	Hutchins Ave.	Franklin Blvd.		144	
6/27/2019	Potter Ave.	Edgewood Ave.		280	
6/27/2019	Potter Ave.	Prescott Ave.	60		
6/27/2019	Potter Ave.	Belmar Pl.	236		
6/27/2019	Snyder Ave.	Belmar Pl.	126		
6/27/2019	Snyder Ave.	Edgewood Ave.	67		
6/27/2019	Snyder Ave.	Prescott Ave.	226		
6/27/2019	Snyder Ave.	Hutchins Ave.	116		
6/27/2019	Potter Ave.	Birk Ave.	165		
6/27/2019	Fifth St.	W Hoover Ave.	58		
6/27/2019	Fifth St.	Princeton Ave.		136	
6/27/2019	W Mosley St.	Third St.		136	
6/27/2019	W Mosley St.	First St.	70		
6/27/2019	W Mosley St.	Second St.	110		
6/27/2019	W Mosley St.	Ashley St.	65		
6/27/2019	First St. S	Koch Ave.		180	
6/27/2019	First St. S	Nob Hill St.		144	
6/27/2019	Arella Blvd.	Martha Ave.	125		
6/29/2019	Oakland	Tappan		280	
6/29/2019	Oakland	E University		224	
6/29/2019	Tappan	E University		90	
6/29/2019	South Forest	Roosevelt	98		
6/29/2019	South Forest	Wells	194		
6/29/2019	South Forest	Woodlawn	40	66	
6/29/2019	Granger Ave.	Olivia		72	
6/29/2019	Granger Ave.	Baldwin		64	
6/29/2019	Winsted Blvd.	Hanover		352	
6/29/2019	Winsted Blvd.	Dunmore Rd.	64		
6/29/2019	Winsted Blvd.	Sanford St.	64		
6/29/2019	Winsted Blvd.	Hartford St.	64		
6/29/2019	Waltham Rd.	Warwick Ct.		120	
6/29/2019	Dicken Dr.	School Midblock Crossing		80	
6/29/2019	Avondale Ave.	Ardmoor ave.	86		
6/29/2019	abbott Ave.	Collingwood	168		
6/29/2019	abbott Ave.	Burwood Ave.	166		
6/29/2019	Burwood Ave.	Fair St.	244		
6/29/2019	Traver Rd.	John A Woods		80	
6/29/2019	Traver Rd.	David Ct.		187	40

MINOR/LOCAL STREET CROSSWALK PAVEMENT MARKINGS					
Date	**Street**	**Cross Street**	**Thermo 6"XW**	**Thermo 12"XW**	**Thermo 24"XW**
6/29/2019	Highlake	Hilltop		85	
6/29/2019	Sunnywood	Highlake	68		
6/29/2019	Lakeview	Parklake	56		
6/29/2019	Sunnywood	Mason		362	
6/29/2019	Mason	Lakeview		320	
6/29/2019	Gralake	Lakeview		303	
6/30/2019	Thaler Ae.	Carolina Ave.		88	
6/30/2019	Thaler Ae.	Garden Circle.		72	
6/30/2019	Fair St.	Collingwood	58		
6/30/2019	Collingwood	Shelby Ave.	52		
6/30/2019	Abbott Ave.	Pleasant Pl.	178		
6/30/2019	Pleasant Pl.	Charlton St.			
6/30/2019	Virginia Ave.	Fair St.		128	
6/30/2019	Virginia Ave.	Charlton St.	198		
6/30/2019	Virginia Ave.	Abbott Ave.	198		
6/30/2019	Glendale Dr.	Charlton St.	46		
6/30/2019	Glendale Cir.	Fair St.		56	
6/30/2019	Fair St.	Glendale Dr.	61		
6/30/2019	Crest Ave.	Bemidji	110		
7/22/2019	Bardstown St.	Charter Pl	273		
7/22/2019	Bardstown St.	Sturbridge Ct.	133		
7/23/2019	Washington St. W	Third St.			
7/23/2019	Gralake Ave.	Hilltop Dr.	59		
7/23/2019	Mason Ave.	Hilltop Dr.	100		
7/23/2019	Burwood Ave.	Winewood Ave.	80		
7/23/2019	Burwood Ave.	Thaler Ave.	58		
7/24/2019	Burwood Ave.	Thaler Ave.	54		
7/24/2019	Weldon Blvd.	Barrington Pl.	280		
7/24/2019	Weldon Blvd.	Glastonbury Rd.	282		
7/24/2019	Weldon Blvd.	Waverly Rd.	72		
10/1/2019	Jefferson W	Third St.	248		
10/7/2019	Essex Rd.	Colony Rd.	136		
10/7/2019	Essex Rd.	Manchester Rd.	260		
10/7/2019	Pine Valley Blvd.	Page Ave.	258		
10/7/2019	Pine Valley Blvd.	Esch Ave.	275		
10/7/2019	Esch Ave.	Page Ave.	130		
10/7/2019	Page Ave.	Page Ct.	85		
10/8/2019	Belvedere St.	Creek Dr.	52		
10/8/2019	Brandywine Dr.	Terhune Rd.	131		
10/8/2019	Brandywine Dr.	Donegal Ct.	131		

MINOR/LOCAL STREET CROSSWALK PAVEMENT MARKINGS					
Date	**Street**	**Cross Street**	**Thermo 6"XW**	**Thermo 12"XW**	**Thermo 24"XW**
10/8/2019	Brandywine Dr.	Gallaway Ct.	70		
		Total	**12,866**	**8,575**	**426**

Crosswalk Design and Cost Assignment

					Cost of Improvement (est)	
Street	**Location**	**Road Type**	**Existing Design**	**Target Design Level***	**Minimum**	**Maximum**
Ann Arbor Saline Rd	318 ft northerly of the W Oakbrook Dr/Northbrook Dr intersection	Minor/Major Arterial ≥ 3 Lanes	High Risk	High Risk	No Improvement Anticipated	
Ann Arbor Saline Rd	368 ft northerly of Village Oaks Ct	Minor/Major Arterial ≥ 3 Lanes	High Risk	High Risk	No Improvement Anticipated	
Barton Dr	Barton Dr at Northside School	Minor/Major Arterial ≤ 3 Lanes	Standard+	Standard+	No Improvement Anticipated	
Beakes St	Beakes St at N Fifth Ave	Minor/Major Arterial ≤ 3 Lanes	Standard+	Standard+	No Improvement Anticipated	
Beakes St	Beakes St at Carey St	Minor/Major Arterial ≤ 3 Lanes	Standard+	Standard+	No Improvement Anticipated	
Beakes St	Beakes St at E Summit St	Minor/Major Arterial ≤ 3 Lanes	Standard+	Standard+	No Improvement Anticipated	
Beakes St	Beakes St at N Fourth Ave	Minor/Major Arterial ≤ 3 Lanes	Standard+	Standard+	No Improvement Anticipated	
Brooks St	Brooks St at Pearl St	Local	Standard	Standard	No Improvement Anticipated	
Brooks St	Brooks St at W Summit St	Local	Standard	Standard	No Improvement Anticipated	
Catherine St	Catherine St at Detroit St	Local	Standard+	Standard	No Improvement Anticipated	
Catherine St	Catherine St at N Ingalls	Local	Standard+	Standard	No Improvement Anticipated	
Catherine St	Catherine St at N Thayer St	Local	Standard+	Standard	No Improvement Anticipated	
Catherine St	Catherine St near Zina Pitcher	Local	Standard+	Standard	No Improvement Anticipated	
Church St	Church St Mid-block	Local	High Risk	Standard	No Improvement Anticipated	
Commerce Dr	Commerce Dr at Pennsylvania	Local	Standard	Standard	No Improvement Anticipated	
Depot St	Depot St at N Fifth Ave	Minor/Major Arterial ≤ 3 Lanes	Standard+	Standard+	No Improvement Anticipated	
Depot St	Depot St at N Fourth Ave	Minor/Major Arterial ≤ 3 Lanes	Standard+	Standard+	No Improvement Anticipated	
Depot St	Depot St at Carey St	Minor/Major Arterial ≤ 3 Lanes	Standard+	Standard+	No Improvement Anticipated	
Dexter Ave	Dexter Ave at Veterans Memorial Park	Minor/Major Arterial ≤ 3 Lanes	Standard	Standard	No Improvement Anticipated	
Dexter Ave	Dexter Ave at Doty Ave	Minor/Major Arterial ≤ 3 Lanes	Standard+	Standard	No Improvement Anticipated	
Dexter Ave	Dexter Ave at Grandview Dr	Minor/Major Arterial ≤ 3 Lanes	Standard+	Standard	No Improvement Anticipated	
Dhu Varren Rd	Dhu Varren Rd at Foxridge Court	Minor/Major Collector	Standard+	Standard+	No Improvement Anticipated	
Dhu Varren Rd	Dhu Varren at Olson Park	Minor/Major Collector	Standard+	Standard+	No Improvement Anticipated	
Dhu Varren Rd	Dhu Varren and Carrot Way	Minor/Major Collector	Standard+	Standard+	No Improvement Anticipated	
E Eisenhower Pkwy	E Eisenhower Pkwy just west of Waymarket Dr	Minor/Major Arterial ≥ 3 Lanes	High Risk	Standard+	No Improvement Anticipated	
E Eisenhower Pkwy	E Eisenhower Pkwy at Plaza Rd	Minor/Major Arterial ≥ 3 Lanes	High Risk	Standard+	No Improvement Anticipated	
E Eisenhower Pkwy	E Eisenhower Pkwy just east of Waymarket Dr	Minor/Major Arterial ≥ 3 Lanes	High Risk	Standard+	No Improvement Anticipated	
E Ellsworth Rd	E Ellsworth Rd west of Jonathon Ct	Minor/Major Arterial ≤ 3 Lanes	High Risk	High Risk	No Improvement Anticipated	
E Hoover Ave	E Hoover Ave at S Division St	Minor/Major Collector	Standard	Standard	No Improvement Anticipated	
E Hoover Ave	E Hoover Ave at Sybil St	Minor/Major Collector	Standard	Standard	No Improvement Anticipated	
E Huron St	E Huron St at N Thayer St	Minor/Major Arterial ≥ 3 Lanes	Standard+	High Risk	$ 21,397.50	$ 81,727.00
E Kingsley St	E Kingsley St and N Ingalls St	Local	Standard+	Standard	No Improvement Anticipated	
E Kingsley St	E Kingsley St at N Thayer St	Local	Standard	Standard	No Improvement Anticipated	
E Madison St	E Madison St by UM West Quad	Minor/Major Collector	High Risk	Standard	No Improvement Anticipated	
E Stadium Blvd	E Stadium Blvd near Ferdon Rd	Minor/Major Arterial ≥ 3 Lanes	High Risk	High Risk	No Improvement Anticipated	
E Stadium Blvd	E Stadium Blvd near Baldwin Ave	Minor/Major Arterial ≥ 3 Lanes	High Risk	High Risk	No Improvement Anticipated	
E Stadium Blvd	E Stadium Blvd at Kipke Dr	Minor/Major Arterial ≥ 3 Lanes	High Risk	High Risk	No Improvement Anticipated	
E University Ave	E University Ave at Willard St	Local	Standard	Standard	No Improvement Anticipated	
E Washington St	E Washington - Division/State	Local	Standard+	Standard+	No Improvement Anticipated	
Earhart Rd	Earhart Rd just north of Greenhills Dr	Minor/Major Collector	Standard+	Standard	No Improvement Anticipated	
Earhart Rd	Earhart Rd at north intersection with Pine Brae Dr	Minor/Major Collector	Standard+	Standard	No Improvement Anticipated	
Earhart Rd	Earhart Rd at Waldenwood Dr	Minor/Major Collector	Standard+	Standard	No Improvement Anticipated	
Earhart Rd	Earhart Rd just south of Greenhills Dr	Minor/Major Collector	Standard+	Standard	No Improvement Anticipated	
Earhart Rd	Earhart Rd just at Glazier Way	Minor/Major Collector	Standard+	Standard	No Improvement Anticipated	
Earhart Rd	Earhart Rd south of Kipling Dr at Glacier Hills	Minor/Major Collector	Standard+	Standard	No Improvement Anticipated	
Earhart Rd	Earhart Rd north of Geddes Ave (near Concordia parking)	Minor/Major Collector	High Risk	High Risk	No Improvement Anticipated	

Crosswalk Design and Cost Assignment

					Cost of Improvement (est)	
Street	**Location**	**Road Type**	**Existing Design**	**Target Design Level***	**Minimum**	**Maximum**
Ellsworth Rd	Ellsworth Rd at Research Park Drive	Minor/Major Arterial ≤ 3 Lanes	High Risk	High Risk	No Improvement Anticipated	
Fletcher St	Fletcher St at University Health Services	Local	Standard+	Standard+	No Improvement Anticipated	
Fletcher St	Fletcher St at E Washtington St	Local	Standard	Standard	No Improvement Anticipated	
Fuller Ct	Fuller Ct at Huron Towners and VA Hospital	Local	High Risk	Standard+	No Improvement Anticipated	
Fuller Rd	Fuller Rd east of North Campus Blvd	Minor/Major Arterial ≥ 3 Lanes	High Risk	High Risk	No Improvement Anticipated	
Fuller Rd	Fuller Rd west of Beal Ave	Minor/Major Arterial ≥ 3 Lanes	High Risk	High Risk	No Improvement Anticipated	
Fuller Rd	Fuller Rd east of Cedar Bend Dr	Minor/Major Arterial ≥ 3 Lanes	High Risk	High Risk	No Improvement Anticipated	
Fuller Rd	Fuller Rd at Gallup Park	Minor/Major Arterial ≤ 3 Lanes	High Risk	High Risk	No Improvement Anticipated	
Fuller Rd	Fuller St at Fuller Park	Minor/Major Arterial ≥ 3 Lanes	High Risk	High Risk	No Improvement Anticipated	
Geddes Ave	Geddes Ave at Geddes Ridge Ave	Minor/Major Arterial ≤ 3 Lanes	High Risk	Standard	No Improvement Anticipated	
Geddes Ave	Geddes Ave at Nichols Arboretum	Minor/Major Arterial ≤ 3 Lanes	Standard+	Standard	No Improvement Anticipated	
Geddes Ave	Geddes Ave at Hill St	Minor/Major Arterial ≤ 3 Lanes	Standard	Standard	No Improvement Anticipated	
Geddes Ave	Geddes Ave at Hickory Ln	Minor/Major Arterial ≤ 3 Lanes	Standard+	Standard	No Improvement Anticipated	
Geddes Ave	Geddes Ave W of Huron Pkwy	Minor/Major Arterial ≤ 3 Lanes	Standard+	Standard	No Improvement Anticipated	
Geddes Ave	Geddes Ave at Linden	Minor/Major Arterial ≤ 3 Lanes	Standard+	Standard	No Improvement Anticipated	
Geddes Ave	Geddes Ave at Arlington Blvd	Minor/Major Arterial ≤ 3 Lanes	Standard	Standard	No Improvement Anticipated	
Geddes Ave	Geddes Ave and Walnut St	Minor/Major Arterial ≤ 3 Lanes	Standard	Standard	No Improvement Anticipated	
Glazier Way	Glazier Way at Tremont Ln	Minor/Major Collector	Standard+	Standard	No Improvement Anticipated	
Green Rd	Green Rd at Vintage Valley Rd	Minor/Major Collector	Standard	Standard	No Improvement Anticipated	
Green Rd	Green Rd at south intersection with Burbank Dr	Minor/Major Collector	High Risk	Standard +	No Improvement Anticipated	
Green Rd	Green Rd at Green Brier Blvd	Minor/Major Collector	Standard+	Standard+	No Improvement Anticipated	
Green Rd	Green Rd west of Kilburn Park Cir	Minor/Major Collector	High Risk	Standard+	No Improvement Anticipated	
Green Rd	Green Rd east of Whisperwood Dr	Minor/Major Collector	High Risk	Standard+	No Improvement Anticipated	
Green Rd	Mid-Block	Minor/Major Collector	High Risk	Standard+	No Improvement Anticipated	
Green Rd	Green Rd at Burbank Dr N	Minor/Major Collector	Standard+	Standard+	No Improvement Anticipated	
Greenview Dr	Greenview Dr at Glen Leven	Local	Standard+	Standard	No Improvement Anticipated	
Hill St	Hill St at Adams St	Minor/Major Collector	Standard	Standard	No Improvement Anticipated	
Hill St	Hill St and Oakland Ave	Minor/Major Collector	Standard	Standard	No Improvement Anticipated	
Hill St	Hill St and Tappan St	Minor/Major Collector	Standard	Standard	No Improvement Anticipated	
Hill St	Hill St and Oxford Rd	Minor/Major Collector	Standard	Standard	No Improvement Anticipated	
Hill St	Hill St and Ruthven Pl	Minor/Major Collector	Standard+	Standard	No Improvement Anticipated	
Hill St	Hill St and Onondaga St	Minor/Major Collector	Standard	Standard	No Improvement Anticipated	
Huron Pkwy	Huron Pkwy south of Lakehaven Dr at Huron High School Entrance	Minor/Major Arterial ≥ 3 Lanes	High Risk	High Risk	No Improvement Anticipated	
Huron Pkwy	Huron Pkwy just south of Glazier Way	Minor/Major Arterial ≥ 3 Lanes	Standard	High Risk	$ 21,397.50	$ 81,727.00
Huron Pkwy	Huron Pkwy at Baxter	Minor/Major Arterial ≥ 3 Lanes	Standard	High Risk	$ 21,397.50	$ 81,727.00
Huron Pkwy	Huron Pkwy just north of Glazier Way	Minor/Major Arterial ≥ 3 Lanes	Standard	High Risk	$ 21,397.50	$ 81,727.00
Maiden Ln	Maiden Ln at Island Dr	Minor/Major Arterial ≤ 3 Lanes	Marked Crossing	High Risk	$ 19,431.50	$ 56,826.00
Maiden Ln	Maiden Ln at Nielsen Ct	Minor/Major Arterial ≤ 3 Lanes	Marked Crossing	Standard+	$ 1,995.00	$ 26,740.00
Miller Ave	Miller Ave east of Newport Rd	Minor/Major Arterial ≤ 3 Lanes	Standard+	Standard+	No Improvement Anticipated	
Miller Ave	Miller Ave at Miner St	Minor/Major Arterial ≤ 3 Lanes	Standard+	Standard+	No Improvement Anticipated	
Miller Ave	Miller Ave at Gott St	Minor/Major Arterial ≤ 3 Lanes	Standard+	Standard+	No Improvement Anticipated	
Miller Ave	Miller Ave east of Saunders Cres	Minor/Major Arterial ≤ 3 Lanes	Standard+	Standard+	No Improvement Anticipated	
Miller Ave	Miller Ave east of Fulmer St	Minor/Major Arterial ≤ 3 Lanes	Standard+	Standard+	No Improvement Anticipated	
Miller Ave	Miller Ave east of Hatcher Cres	Minor/Major Arterial ≤ 3 Lanes	Standard+	Standard+	No Improvement Anticipated	
Miller Ave	Miller Ave at Pomona Rd	Minor/Major Arterial ≤ 3 Lanes	Standard+	Standard+	No Improvement Anticipated	
Miller Ave	Miller Ave at Chapin St	Minor/Major Arterial ≤ 3 Lanes	Standard+	Standard+	No Improvement Anticipated	

Crosswalk Design and Cost Assignment

					Cost of Improvement (est)	
Street	**Location**	**Road Type**	**Existing Design**	**Target Design Level***	**Minimum**	**Maximum**
Miller Ave	Miller Ave at Bruce St	Minor/Major Arterial ≤ 3 Lanes	Standard+	Standard+	No Improvement Anticipated	
Miller Ave	Miller Ave and Pine Tree Dr	Minor/Major Arterial ≤ 3 Lanes	Standard+	Standard+	No Improvement Anticipated	
Miller Ave	Miller Ave and Brooks St	Minor/Major Arterial ≤ 3 Lanes	Standard+	Standard+	No Improvement Anticipated	
Miller Rd	Miller Rd at Kuehnle Ave	Minor/Major Arterial ≤ 3 Lanes	High Risk	High Risk	No Improvement Anticipated	
N Ashley St	N Ashley St at W Ann St	Minor/Major Collector	Standard	Standard	Improvements as part of DDA project	
N Division St	N Division St at Detroit St	Minor/Major Arterial ≤ 3 Lanes	Standard+	Standard	No Improvement Anticipated	
N Division St	N Division St at E Ann St	Minor/Major Arterial ≤ 3 Lanes	Standard+	Standard+	No Improvement Anticipated	
N Division St	N Division St and Lawrence St	Minor/Major Arterial ≤ 3 Lanes	Standard+	Standard+	No Improvement Anticipated	
N Fifth Ave	N Fifth Ave at Detroit St	Minor/Major Collector	Standard+	Standard	No Improvement Anticipated	
N Fifth Ave	N Fifth Ave at Detroit St	Minor/Major Collector	Standard+	Standard	No Improvement Anticipated	
N Fifth Ave	N Fifth Ave at Detroit St	Minor/Major Collector	Standard+	Standard	No Improvement Anticipated	
N Ingalls St	N Ingalls St at Lawrence	Local	Standard+	Standard	No Improvement Anticipated	
N Maple Rd	N Maple Rd at Maple Village Ct	Minor/Major Arterial ≥ 3 Lanes	High Risk	High Risk	No Improvement Anticipated	
N Maple Rd	N Maple Rd at Peace Neighborhood Center	Minor/Major Arterial ≥ 3 Lanes	High Risk	High Risk	No Improvement Anticipated	
N Maple Rd	N Maple Rd at Haisley Dr (Alano Club)	Minor/Major Arterial ≥ 3 Lanes	High Risk	High Risk	No Improvement Anticipated	
N Maple Rd	N Maple Rd at Walter Drive	Minor/Major Arterial ≥ 3 Lanes	High Risk	High Risk	No Improvement Anticipated	
N Seventh St	N Seventh St at Willow St	Minor/Major Arterial ≤ 3 Lanes	Standard+	Standard+	No Improvement Anticipated	
N Seventh St	N Seventh St at Bath St	Minor/Major Arterial ≤ 3 Lanes	Standard+	Standard+	No Improvement Anticipated	
N State St	N State St at Lawrence St	Minor/Major Collector	Standard+	Standard	No Improvement Anticipated	
N University Ave	N University Ave at Ingalls Mall	Minor/Major Collector	Standard+	Standard	No Improvement Anticipated	
N University Ave	N University Ave at U of M CCTC	Minor/Major Collector	Standard+	Standard	$ 21,397.50	$ 81,727.00
Newport Rd	Newport Rd north of Red Oak Rd	Minor/Major Collector	Standard+	Standard	No Improvement Anticipated	
Nixon Rd	Nixon Rd north of Plymouth Rd	Minor/Major Collector	High Risk	High Risk	No Improvement Anticipated	
Nixon Rd	Nixon Rd at Bluett Dr	Minor/Major Collector	High Risk	High Risk	No Improvement Anticipated	
Nixon Rd	Nixon Rd south of Traver Blvd	Minor/Major Collector	Standard+	High Risk	$ 1,202.50	$ 26,047.00
Nixon Rd	Nixon Rd at Aurora St	Minor/Major Collector	Standard	High Risk	$ 1,202.50	$ 26,047.00
Observatory St	Observatory St at Washington Hts	Local	Standard+	Standard	No Improvement Anticipated	
Observatory St	Observatory St N of Geddes Ave	Local	Standard+	Standard	No Improvement Anticipated	
Packard Rd	Packard Rd just east of Hikone Dr at Buhr Park	Minor/Major Arterial ≥ 3 Lanes	High Risk	High Risk	No Improvement Anticipated	
Packard Rd	Packard Rd near Burton Rd	Minor/Major Arterial ≥ 3 Lanes	High Risk	High Risk	No Improvement Anticipated	
Packard Rd	Packard Rd at Woodmanor Ct/Buhr Park	Minor/Major Arterial ≥ 3 Lanes	High Risk	High Risk	No Improvement Anticipated	
Packard St	Packard St at Rosewood	Minor/Major Arterial ≥ 3 Lanes	Standard+	Standard+	No Improvement Anticipated	
Packard St	Packard St NW of Stone School	Minor/Major Arterial ≥ 3 Lanes	Standard+	Standard+	No Improvement Anticipated	
Packard St	Packard St and Morton Ave	Minor/Major Arterial ≤ 3 Lanes	Standard	Standard	No Improvement Anticipated	
Packard St	Packard St and Gardner Ave	Minor/Major Arterial ≤ 3 Lanes	Standard	Standard	No Improvement Anticipated	
Packard St	Packard St and Brooklyn Ave	Minor/Major Arterial ≤ 3 Lanes	Standard	Standard	No Improvement Anticipated	
Packard St	Packard St and Brooklyn Ave	Minor/Major Arterial ≤ 3 Lanes	Standard	Standard	No Improvement Anticipated	
Packard St	Packard St and Woodlawn Ave	Minor/Major Arterial ≤ 3 Lanes	Standard	Standard	No Improvement Anticipated	
Packard St	Packard St and Sylvan Ave	Minor/Major Arterial ≤ 3 Lanes	Standard	Standard	No Improvement Anticipated	
Packard St	Packard St and Brookwood Pl	Minor/Major Arterial ≤ 3 Lanes	Standard	Standard	No Improvement Anticipated	
Packard St	Packard St and E University	Minor/Major Arterial ≤ 3 Lanes	Standard	Standard	No Improvement Anticipated	
Packard St	Packard St and Vaughn St	Minor/Major Arterial ≤ 3 Lanes	Standard	Standard	No Improvement Anticipated	
Packard St	Packard St and Arch St	Minor/Major Arterial ≤ 3 Lanes	Standard	Standard	No Improvement Anticipated	
Packard St	Packard St at Coler	Minor/Major Arterial ≤ 3 Lanes	Standard	Standard	No Improvement Anticipated	
Pauline Blvd	Pauline Blvd at Redeemer Ave	Minor/Major Collector	Standard+	Standard	No Improvement Anticipated	
Pauline Blvd	Pauline Blvd at Fifth St	Minor/Major Collector	Standard+	Standard	No Improvement Anticipated	

					Cost of Improvement (est)	
Street	**Location**	**Road Type**	**Existing Design**	**Target Design Level***	**Minimum**	**Maximum**
Pauline Blvd	Pauline Blvd west of W Stadium Blvd	Minor/Major Collector	Standard+	Standard	No Improvement Anticipated	
Pauline Blvd	Pauline Blvd at Hutchins Ave	Minor/Major Collector	Standard+	Standard	No Improvement Anticipated	
Pauline Blvd	Pauline Blvd at Edgewood	Minor/Major Collector	Standard+	Standard	No Improvement Anticipated	
Pauline Blvd	Pauline Blvd at Arbordale St	Minor/Major Collector	Standard+	Standard	No Improvement Anticipated	
Platt Rd	Platt Rd at Edgewood Dr	Minor/Major Arterial ≥ 3 Lanes	Standard+	Standard+	No Improvement Anticipated	
Platt Rd	Platt Rd south of Redwood Ave	Minor/Major Arterial ≤ 3 Lanes	Standard+	Standard+	No Improvement Anticipated	
Platt Rd	Platt Rd north of Williamsburg Dr	Minor/Major Arterial ≤ 3 Lanes	Standard+	Standard+	No Improvement Anticipated	
Platt Rd	Platt Rd north of Redwood Ave	Minor/Major Arterial ≤ 3 Lanes	Standard+	Standard+	No Improvement Anticipated	
Platt Rd	At Summers Knoll school	Minor/Major Arterial ≤ 3 Lanes	Standard+	Standard	No Improvement Anticipated	
Plymouth Rd	Plymouth Rd east of Traverwood Dr	Minor/Major Arterial ≥ 3 Lanes	High Risk	High Risk	No Improvement Anticipated	
Plymouth Rd	Plymouth Rd west of Commonwealth Blvd	Minor/Major Arterial ≥ 3 Lanes	High Risk	High Risk	No Improvement Anticipated	
Plymouth Rd	Plymouth Rd west of Beal Ave	Minor/Major Arterial ≥ 3 Lanes	High Risk	High Risk	No Improvement Anticipated	
Plymouth Rd	Plymouth Rd west of Bishop St	Minor/Major Arterial ≥ 3 Lanes	High Risk	High Risk	No Improvement Anticipated	
Pontiac St	Pontiac Trl at Taylor St	Minor/Major Arterial ≤ 3 Lanes	Standard+	Standard	No Improvement Anticipated	
Pontiac St	Pontiac St at Apple St	Minor/Major Arterial ≤ 3 Lanes	Standard+	Standard	No Improvement Anticipated	
Pontiac St	Pontiac St at Bowen St	Minor/Major Arterial ≤ 3 Lanes	Standard+	Standard	No Improvement Anticipated	
Pontiac St	Pontiac St at Moore/Longshore	Minor/Major Arterial ≤ 3 Lanes	Standard+	Standard	No Improvement Anticipated	
Pontiac Trl	Pontiac Trl south of Arrowwood Trl	Minor/Major Arterial ≤ 3 Lanes	Standard+	Standard	No Improvement Anticipated	
Pontiac Trl	Pontiac Trl at Montana Way	Minor/Major Arterial ≤ 3 Lanes	Standard+	Standard	No Improvement Anticipated	
Pontiac Trl	Pontiac Trl at Polson St	Minor/Major Arterial ≤ 3 Lanes	Standard+	Standard	No Improvement Anticipated	
S Ashley St	S Ashley St at W Jefferson	Minor/Major Collector	Standard	Standard	No Improvement Anticipated	
S Division St	S Division St at E Jefferson St	Minor/Major Arterial ≤ 3 Lanes	Standard+	Standard	No Improvement Anticipated	
S First St	S First St at W Jefferson	Minor/Major Collector	Standard+	Standard	REMOVE - now STOP controlled	
S Forest Ave	S Forest Ave at Willard	Local	Standard+	Standard+	No Improvement Anticipated	
S Industrial Blvd	S Industrial Blvd and Rosewood St	Minor/Major Arterial ≤ 3 Lanes	High Risk	High Risk	No Improvement Anticipated	
S Industrial	S Industrial at Central Academy	Minor/Major Arterial ≤ 3 Lanes	Standard	High Risk	$ 19,431.50	$ 56,826.00
S Industrial Hwy	S Industrial Hwy at Jewett Ave	Minor/Major Arterial ≤ 3 Lanes	High Risk	High Risk	No Improvement Anticipated	
S Industrial Hwy	S Industrial Hwy at Astor Ave	Minor/Major Arterial ≤ 3 Lanes	High Risk	High Risk	No Improvement Anticipated	
S Main St	S Main St at W Oakbrook Dr	Minor/Major Arterial ≤ 3 Lanes	Standard+	Standard+	No Improvement Anticipated	
S Main St	S Main St at Fieldcrest St	Minor/Major Arterial ≤ 3 Lanes	High Risk	Standard+	No Improvement Anticipated	
S Main St	S Main St and E Hoover Ave	Minor/Major Arterial ≥ 3 Lanes	Marked Crossing	High Risk	$ 21,397.50	$ 81,727.00
S Main St	S Main St and Mosley St	Minor/Major Arterial ≥ 3 Lanes	Marked Crossing	High Risk	$ 21,397.50	$ 81,727.00
S Main St	S Main St at Keech Ave	Minor/Major Arterial ≥ 3 Lanes	Marked Crossing	High Risk	$ 21,397.50	$ 81,727.00
S Maple Rd	S Maple Rd at Dicken Dr	Minor/Major Arterial ≤ 3 Lanes	Standard	Standard+	$ 1,995.00	$ 26,740.00
S Maple Rd	S Maple Rd at Pennsylvania	Minor/Major Arterial ≤ 3 Lanes	High Risk	Standard+	No Improvement Anticipated	
S Maple Rd	S Maple Rd at Winewood Ave	Minor/Major Arterial ≤ 3 Lanes	Standard+	Standard+	No Improvement Anticipated	
S Seventh St	S Seventh St south of W Washington St	Minor/Major Arterial ≤ 3 Lanes	High Risk	Standard+	No Improvement Anticipated	
S Seventh St	S Seventh St near Pioneer High School	Minor/Major Arterial ≤ 3 Lanes	High Risk	High Risk	No Improvement Anticipated	
S Seventh St	S Seventh at Lutz Ave	Minor/Major Arterial ≤ 3 Lanes	Standard+	Standard+	No Improvement Anticipated	
S Seventh St	S Seventh St at Murray Ct	Minor/Major Arterial ≤ 3 Lanes	Standard+	Standard+	No Improvement Anticipated	
S Seventh St	S Seventh St at Princeton Ave	Minor/Major Arterial ≤ 3 Lanes	Standard+	Standard+	No Improvement Anticipated	
S Seventh St	S Seventh St at W Davis St	Minor/Major Arterial ≤ 3 Lanes	Standard+	Standard+	No Improvement Anticipated	
S Seventh St	S Seventh St at Franklin Blvd	Minor/Major Arterial ≤ 3 Lanes	Standard+	Standard+	No Improvement Anticipated	
S Seventh St	S Seventh St at Delaware Dr	Minor/Major Arterial ≤ 3 Lanes	Standard+	Standard+	No Improvement Anticipated	
S Seventh St	S Seventh St north of Jefferson	Minor/Major Arterial ≤ 3 Lanes	Standard+	Standard+	No Improvement Anticipated	
S Seventh St	S Seventh St at Potter	Minor/Major Arterial ≤ 3 Lanes	Standard+	Standard+	No Improvement Anticipated	

					Cost of Improvement (est)	
Street	**Location**	**Road Type**	**Existing Design**	**Target Design Level***	**Minimum**	**Maximum**
S State St	S State St at U of M Angell Hall	Minor/Major Arterial ≤ 3 Lanes	Standard	Standard+	$ 1,995.00	$ 26,740.00
S State St	S State St at Granger Ave	Minor/Major Arterial ≤ 3 Lanes	Standard	High Risk	$ 19,431.50	$ 56,826.00
S State St	S State St Mid-Block at Stadium Bridge	Minor/Major Arterial ≤ 3 Lanes	Standard	High Risk	$ 19,431.50	$ 56,826.00
S State St	S State St Mid-Block near Michigan Union	Minor/Major Arterial ≤ 3 Lanes	Standard+	Standard+	No Improvement Anticipated	
S State St	S State St at Arch St	Minor/Major Arterial ≤ 3 Lanes	Standard	High Risk	$ 19,431.50	$ 56,826.00
S State St	S State St at McKinley Ave	Minor/Major Arterial ≤ 3 Lanes	Standard	High Risk	$ 19,431.50	$ 56,826.00
S University Ave	S University Ave and Walnut St	Local	Standard+	Standard	No Improvement Anticipated	
S University Ave	S University Ave and Linden St	Local	Standard+	Standard	No Improvement Anticipated	
S University Ave	S University Ave at Tappan St	Local	Standard+	Standard+	No Improvement Anticipated	
Scio Church Rd	Scio Church Rd at Greenview Dr	Minor/Major Arterial ≤ 3 Lanes	High Risk	Standard	No Improvement Anticipated	
Scio Church Rd	Scio Church Rd and Chaucer Ct	Minor/Major Arterial ≤ 3 Lanes	Standard+	Standard	No Improvement Anticipated	
Stone School Rd	Stone School Rd at Champagne	Minor/Major Collector	Standard+	Standard	No Improvement Anticipated	
Stone School Rd	Stone School Rd at Pheasant Run	Minor/Major Collector	Standard+	Standard	No Improvement Anticipated	
Stone School Rd	Stone School Rd at Birch Hollow Dr	Minor/Major Collector	Standard+	Standard	No Improvement Anticipated	
Stone School Rd	Stone School Rd at Pebble Creek	Minor/Major Collector	Standard+	Standard	No Improvement Anticipated	
Stone School Rd	Stone School Rd at Baylis N	Minor/Major Collector	Standard+	Standard	No Improvement Anticipated	
Thompson St	Thompson St	Minor/Major Arterial ≤ 3 Lanes	Standard+	Standard	No Improvement Anticipated	
Traver Blvd	Traver Blvd west of Nixon Rd	Local	High Risk	Standard	No Improvement Anticipated	
Tuebingen Pkwy	Tuebingen Pkwy at Lancashire	Local	Standard	Standard	No Improvement Anticipated	
W Liberty St	W Liberty St west of Dartmoor Rd	Minor/Major Arterial ≤ 3 Lanes	Standard+	Standard+	No Improvement Anticipated	
W Liberty St	W Liberty St just west of Virginia Ave	Minor/Major Arterial ≤ 3 Lanes	Standard+	Standard+	No Improvement Anticipated	
W Liberty St	W Liberty St at Liberty Point Dr	Minor/Major Arterial ≤ 3 Lanes	Standard+	High Risk	$ 19,431.50	$ 56,826.00
W Liberty St	W Liberty St just east of Virgina Ave	Minor/Major Arterial ≤ 3 Lanes	Standard+	Standard+	No Improvement Anticipated	
W Liberty St	W Liberty St at Crest Ave	Minor/Major Arterial ≤ 3 Lanes	Standard+	Standard	No Improvement Anticipated	
W Liberty St	W Liberty St at Fourth St	Minor/Major Arterial ≤ 3 Lanes	Standard+	Standard	No Improvement Anticipated	
W Liberty St	W Liberty St at Crest Ave	Minor/Major Arterial ≤ 3 Lanes	Standard+	Standard	No Improvement Anticipated	
W Liberty St	W Liberty St at Fourth St	Minor/Major Arterial ≤ 3 Lanes	Standard+	Standard	No Improvement Anticipated	
W Liberty St	W Liberty St at Murray Ave	Minor/Major Arterial ≤ 3 Lanes	Standard+	Standard	No Improvement Anticipated	
W Liberty St	W Liberty St at Dartmoor Ave	Minor/Major Arterial ≤ 3 Lanes	Standard+	Standard+	No Improvement Anticipated	
W Madison St	W Madison St at Fourth St	Minor/Major Collector	Standard+	Standard	No Improvement Anticipated	
W Madison St	W Madison St at Fifth St	Minor/Major Collector	Standard+	Standard	No Improvement Anticipated	
W Madison St	W Madison St at Third St	Minor/Major Collector	Standard+	Standard	No Improvement Anticipated	
W Madison St	W Madison St at Second St	Minor/Major Collector	Standard+	Standard	No Improvement Anticipated	
W Madison St	W Madison St at S Ashley St	Minor/Major Collector	Standard+	Standard	No Improvement Anticipated	
W Oakbrook Dr	W Oakbrook Dr Midblock at Cranbrook Park	Minor/Major Collector	Standard+	Standard	No Improvement Anticipated	
W Stadium Blvd	W Stadium Blvd at Greenview Dr	Minor/Major Arterial ≤ 3 Lanes	High Risk	High Risk	No Improvement Anticipated	
W Stadium Blvd	W Stadium Blvd at Edgewood Ave	Minor/Major Arterial ≤ 3 Lanes	High Risk	High Risk	No Improvement Anticipated	
W Stadium Blvd	W Stadium Blvd at Thaler Ave	Minor/Major Arterial ≥ 3 Lanes	High Risk	High Risk	No Improvement Anticipated	
W Stadium Blvd	W Stadium Blvd at Collingwood Dr	Minor/Major Arterial ≥ 3 Lanes	High Risk	High Risk	No Improvement Anticipated	
W Stadium Blvd	W Stadium Blvd at Kay Pkwy	Minor/Major Arterial ≤ 3 Lanes	High Risk	High Risk	No Improvement Anticipated	
W Stadium Blvd	W Stadium between W Liberty St and Federal Blvd	Minor/Major Arterial ≥ 3 Lanes	High Risk	High Risk	No Improvement Anticipated	
Washtenaw Ave	Washtenaw Ave at Tappan Middle School	Minor/Major Arterial ≥ 3 Lanes	High Risk	High Risk	No Improvement Anticipated	
				Total Cost Range:	**$ 315,590.50**	**$ 1,183,912.00**

ATTACHMENT D

MEMORANDUM

TO: Mayor and City Council

FROM: Howard S. Lazarus, City Administrator

DATE: April 11, 2019

SUBJECT: Response to Council Resolution R-18-497 – Resolution to Address Crosswalk Improvements and Maintenance

---

This memorandum is provided in response to approved Council Resolution R-18-497 – Resolution to Address Crosswalk Improvements and Maintenance which directed the City Administrator to provide monthly updates on crosswalk improvements. Specifically, the resolution states:

> *Beginning in April 2019, provide monthly updates to Council on crosswalk maintenance and improvements completed/scheduled for the 2019 construction season.*

The following list identifies improvements made to date:

- The crosswalk signage at Stadium Blvd. and Edgewood Ave. in front of Pioneer High School was completely rebuilt to include overhead Rectangular Rapid Flashing Beacons (RRFBs);
- School zone signs were installed on Fuller Rd. and Huron Parkway around Huron High School;
- The school zone signs on Platt Road south of Redwood Ave were replaced and upgraded;
- Preventive maintenance was done on all RRFBs in the City.

In addition to the improvements listed above, 19 streetlights were installed: 10 City locations; 4 DTE locations; 5 locations as part of other projects.

Lastly, we will continue to report in response to the additional items directed in the resolution. As always, please do not hesitate to contact me if I can be of further assistance.

cc: J Fournier
R Hess
S Higgins
C Hupy
N Hutchinson
C Redinger

MEMORANDUM

TO: Mayor and City Council

FROM: Howard S. Lazarus, City Administrator

DATE: May 16, 2019

SUBJECT: Response to Council Resolution R-18-497 – Resolution to Address Crosswalk Improvements and Maintenance

---

This memorandum is provided in response to approved Council Resolution R-18-497 – Resolution to Address Crosswalk Improvements and Maintenance which directed the City Administrator to provide monthly updates on crosswalk improvements. Specifically, the resolution states:

> "Beginning in April 2019, provide monthly updates to Council on crosswalk maintenance and improvements completed/scheduled for the 2019 construction season."

The following list identifies improvements made to date. This is provided as a running list and new/changed language is *italicized*:

- The crosswalk signage at Stadium Blvd. and Edgewood Ave. in front of Pioneer High School was completely rebuilt to include overhead Rectangular Rapid Flashing Beacons (RRFBs);
- School zone signs were installed on Fuller Rd. and Huron Parkway around Huron High School;
- The school zone signs on Platt Road south of Redwood Ave were replaced and upgraded;
- Preventive maintenance was done on all RRFBs in the City.
- *Pedestrian refuge island was installed on S. Seventh Street at the Scio Church Service Drive*
- *91 in-road crosswalk signs (R1-6A) were deployed at 41 locations.*
- *Installed a new crosswalk on Gralake Ave. near Lakewood Elementary school entrance*

In addition to the improvements listed above, 19 streetlights were installed: 10 City locations; 4 DTE locations; and 5 locations as part of other projects. *Additionally, DTE serviced 107 streetlight outages since April 1, 2019.*

Lastly, we will continue to report in response to the additional items directed in the resolution. As always, please do not hesitate to contact me if I can be of further assistance.

cc: J Fournier
R Hess
S Higgins
C Hupy
N Hutchinson
C Redinger

MEMORANDUM

TO: Mayor and City Council

FROM: Howard S. Lazarus, City Administrator

DATE: June 13, 2019

SUBJECT: Response to Council Resolution R-18-497 – Resolution to Address Crosswalk Improvements and Maintenance

---

This memorandum is provided in response to approved Council Resolution R-18-497 – Resolution to Address Crosswalk Improvements and Maintenance which directed the City Administrator to provide monthly updates on crosswalk improvements. Specifically, the resolution states:

> "Beginning in April 2019, provide monthly updates to Council on crosswalk maintenance and improvements completed/scheduled for the 2019 construction season."

The following list identifies improvements made to date. This is provided as a running list and new/changed language is *italicized*:

- The crosswalk signage at Stadium Blvd. and Edgewood Ave. in front of Pioneer High School was completely rebuilt to include overhead Rectangular Rapid Flashing Beacons (RRFBs);
- School zone signs were installed on Fuller Rd. and Huron Parkway around Huron High School;
- The school zone signs on Platt Road south of Redwood Ave were replaced and upgraded;
- Preventive maintenance was done on all RRFBs in the City.
- Pedestrian refuge island was installed on S. Seventh Street at the Scio Church Service Drive
- *97* in-road crosswalk signs (R1-6A) were deployed at *43* locations; *6 damaged signs were replaced.*
- *Pedestrian crossing signs (W11-2 assembly) were upgraded at 2 locations.*
- Installed a new crosswalk on Gralake Ave. near Lakewood Elementary school entrance

In addition to the improvements listed above, 19 streetlights were installed: 10 City locations; 4 DTE locations; and 5 locations as part of other projects. Additionally, DTE serviced *159* streetlight outages since April 1, 2019.

Lastly, we will continue to report in response to the additional items directed in the resolution. As always, please do not hesitate to contact me if I can be of further assistance.

cc: J Fournier
R Hess
S Higgins
C Hupy

N Hutchinson
C Redinger

MEMORANDUM

TO: Mayor and City Council

FROM: Howard S. Lazarus, City Administrator

DATE: July 12, 2019

SUBJECT: Response to Council Resolution R-18-497 – Resolution to Address Crosswalk Improvements and Maintenance

---

This memorandum is provided in response to approved Council Resolution R-18-497 – Resolution to Address Crosswalk Improvements and Maintenance which directed the City Administrator to provide monthly updates on crosswalk improvements. Specifically, the resolution states:

> "Beginning in April 2019, provide monthly updates to Council on crosswalk maintenance and improvements completed/scheduled for the 2019 construction season."

The following list identifies improvements made to date. This is provided as a running list and new/changed language is *italicized*:

- The crosswalk signage at Stadium Blvd. and Edgewood Ave. in front of Pioneer High School was completely rebuilt to include overhead Rectangular Rapid Flashing Beacons (RRFBs);
- School "*reduced speed when flashing* " zone signs were installed on Fuller Rd. and Huron Parkway around Huron High School;
- *School "reduced speed when flashing" zone signs were installed on Seventh Street, Stadium Boulevard, and Main Street around Pioneer High School*
- *School "reduced speed when flashing" zone signs were installed on Stadium Boulevard around Tappan Middle School.*
- The school zone signs on Platt Road south of Redwood Ave were replaced and upgraded;
- *Bumpouts were installed on Runnymede Blvd and Waltham/Warwick by Dicken Elementary.*
- *A new crosswalk was installed on Dicken Dr. to connect to the school pathway to Dicken Elementary.*
- Preventive maintenance was done on all RRFBs in the City.
- Pedestrian refuge island was installed on S. Seventh Street at the Scio Church Service Drive
- *A new crosswalk was installed across Scio Church Rd just west of Chaucer Dr.*
- *A new raised crosswalk was installed as part of the traffic calming project on the Scio Church Rd. service drive just west of Chaucer Dr.*
- *98* in-road crosswalk signs (R1-6A) were deployed at *44* locations; *16* damaged signs were replaced.
- Pedestrian crossing signs (W11-2 assembly) were upgraded at 2 locations.
- Installed a new crosswalk on Gralake Ave. near Lakewood Elementary school entrance

In addition to the improvements listed above, 19 streetlights were installed: 10 City locations; 4 DTE locations; and 5 locations as part of other projects. Additionally, DTE serviced *185* streetlight outages since April 1, 2019.

Lastly, we will continue to report in response to the additional items directed in the resolution. As always, please do not hesitate to contact me if I can be of further assistance.

cc: J Fournier
R Hess
S Higgins
C Hupy
N Hutchinson
C Redinger

MEMORANDUM

TO: Mayor and City Council

FROM: Howard S. Lazarus, City Administrator

DATE: August 15, 2019

SUBJECT: Response to Council Resolution R-18-497 – Resolution to Address Crosswalk Improvements and Maintenance

---

This memorandum is provided in response to approved Council Resolution R-18-497 – Resolution to Address Crosswalk Improvements and Maintenance which directed the City Administrator to provide monthly updates on crosswalk improvements. Specifically, the resolution states:

> "Beginning in April 2019, provide monthly updates to Council on crosswalk maintenance and improvements completed/scheduled for the 2019 construction season."

The following list identifies improvements made to date. This is provided as a running list and new/changed language is *italicized*:

- The crosswalk signage at Stadium Blvd. and Edgewood Ave. in front of Pioneer High School was completely rebuilt to include overhead Rectangular Rapid Flashing Beacons (RRFBs);
- School "reduced speed when flashing " zone signs were installed on Fuller Rd. and Huron Parkway around Huron High School;
- School "reduced speed when flashing" zone signs were installed on Seventh Street, Stadium Boulevard, and Main Street around Pioneer High School
- School "reduced speed when flashing" zone signs were installed on Stadium Boulevard around Tappan Middle School.
- *School "reduced speed when flashing" zone signs were installed on Plymouth Road around the Michigan Islamic Academy.*
- *School "reduced speed when flashing" zone signs were installed on Industrial Hwy around the Central Academy.*
- The school zone signs on Platt Road south of Redwood Ave were replaced and upgraded;
- Bumpouts were installed on Runnymede Blvd and Waltham/Warwick by Dicken Elementary.
- A new crosswalk was installed on Dicken Dr. to connect to the school pathway to Dicken Elementary.
- Preventive maintenance was done on all RRFBs in the City.
- A pedestrian refuge island was installed on S. Seventh Street at the Scio Church Service Dr.
- A new crosswalk was installed across Scio Church Rd. just west of Chaucer Dr.
- A new raised crosswalk was installed as part of the traffic calming project on the Scio Church Rd. service drive just west of Chaucer Dr.

- *99* in-road crosswalk signs (R1-6A) were deployed at *45* locations; *37* damaged signs were replaced.
- Pedestrian crossing signs (W11-2 assembly) were upgraded at 2 locations.
- Installed a new crosswalk on Gralake Ave. near Lakewood Elementary school entrance.
- *New RRFBs were installed at S. Main St. and Fieldcrest St.*
- *New RRFBs were installed at Green Rd. and Green Brier Blvd.*
- *New RRFBs were installed on Geddes Rd. outside of Concordia University*

In addition to the improvements listed above, *25* streetlights were installed: 10 City locations; *10* DTE locations; and 5 locations as part of other projects. Additionally, DTE serviced *278* streetlight outages since April 1, 2019.

Lastly, we will continue to report in response to the additional items directed in the resolution. As always, please do not hesitate to contact me if I can be of further assistance.

cc: J Fournier
R Hess
S Higgins
C Hupy
N Hutchinson
C Redinger

MEMORANDUM

TO: Mayor and City Council

FROM: Howard S. Lazarus, City Administrator

DATE: September 13, 2019

SUBJECT: Response to Council Resolution R-18-497 – Resolution to Address Crosswalk Improvements and Maintenance

---

This memorandum is provided in response to approved Council Resolution R-18-497 – Resolution to Address Crosswalk Improvements and Maintenance which directed the City Administrator to provide monthly updates on crosswalk improvements. Specifically, the resolution states:

> "Beginning in April 2019, provide monthly updates to Council on crosswalk maintenance and improvements completed/scheduled for the 2019 construction season."

The following list identifies improvements made to date. This is provided as a running list and new/changed language is *italicized*:

- The crosswalk signage at Stadium Blvd. and Edgewood Ave. in front of Pioneer High School was completely rebuilt to include overhead Rectangular Rapid Flashing Beacons (RRFBs);
- School "reduced speed when flashing " zone signs were installed on Fuller Rd. and Huron Parkway around Huron High School;
- School "reduced speed when flashing" zone signs were installed on Seventh Street, Stadium Boulevard, and Main Street around Pioneer High School
- School "reduced speed when flashing" zone signs were installed on Stadium Boulevard around Tappan Middle School.
- School "reduced speed when flashing" zone signs were installed on Plymouth Road around the Michigan Islamic Academy.
- School "reduced speed when flashing" zone signs were installed on Industrial Hwy around the Central Academy.
- The school zone signs on Platt Road south of Redwood Ave were replaced and upgraded;
- Bumpouts were installed on Runnymede Blvd and Waltham/Warwick by Dicken Elementary.
- A new crosswalk was installed on Dicken Dr. to connect to the school pathway to Dicken Elementary.
- Preventive maintenance was done on all RRFBs in the City.
- A pedestrian refuge island was installed on S. Seventh Street at the Scio Church Service Dr.
- A new crosswalk was installed across Scio Church Rd. just west of Chaucer Dr.
- A new raised crosswalk was installed as part of the traffic calming project on the Scio Church Rd. service drive just west of Chaucer Dr.

- *101* in-road crosswalk signs (R1-6A) were deployed at *46* locations; 37 damaged signs were replaced.
- Pedestrian crossing signs (W11-2 assembly) were upgraded at *3* locations.
- Installed a new crosswalk on Gralake Ave. near Lakewood Elementary school entrance.
- *Installed a new crosswalk at Liberty St. and Dartmoor Rd.*
- New RRFBs were installed at S. Main St. and Fieldcrest St.
- New RRFBs were installed at Green Rd. and Green Brier Blvd.
- New RRFBs were installed on Geddes Rd. outside of Concordia University
- *New RRFBs were installed on N. Maple Rd. outside the Peace Neighborhood Center*
- *New RRFBs were installed on N. Maple Rd. outside the Alano Club*
- *New RRFBs were installed on N. Maple Rd. near Walter Dr.*
- *New RRFBs were installed on Eisenhower Pkwy. at Plaza Rd.*
- *New RRFBs were installed on S. Maple Rd. near Bens Dr.*

In addition to the improvements listed above, *26* streetlights were installed: 10 City locations; *11* DTE locations; and 5 locations as part of other projects. Additionally, DTE serviced *382* streetlight outages since April 1, 2019.

Lastly, we will continue to report in response to the additional items directed in the resolution. As always, please do not hesitate to contact me if I can be of further assistance.

cc: J Fournier
R Hess
S Higgins
C Hupy
N Hutchinson
C Redinger

MEMORANDUM

TO: Mayor and City Council

FROM: Howard S. Lazarus, City Administrator

DATE: October 17, 2019

SUBJECT: Response to Council Resolution R-18-497 – Resolution to Address Crosswalk Improvements and Maintenance

---

This memorandum is provided in response to approved Council Resolution R-18-497 – Resolution to Address Crosswalk Improvements and Maintenance which directed the City Administrator to provide monthly updates on crosswalk improvements. Specifically, the resolution states:

> "Beginning in April 2019, provide monthly updates to Council on crosswalk maintenance and improvements completed/scheduled for the 2019 construction season."

The following list identifies improvements made to date. This is provided as a running list and new/changed language is *italicized*:

- The crosswalk signage at Stadium Blvd. and Edgewood Ave. in front of Pioneer High School was completely rebuilt to include overhead Rectangular Rapid Flashing Beacons (RRFBs);
- School "reduced speed when flashing " zone signs were installed on Fuller Rd. and Huron Parkway around Huron High School;
- *A new pedestrian refuge island was installed on Fuller Rd. at the pedestrian crossing near Gallup Park which serves Huron High School*
- School "reduced speed when flashing" zone signs were installed on Seventh Street, Stadium Boulevard, and Main Street around Pioneer High School
- School "reduced speed when flashing" zone signs were installed on Stadium Boulevard around Tappan Middle School.
- School "reduced speed when flashing" zone signs were installed on Plymouth Road around the Michigan Islamic Academy.
- School "reduced speed when flashing" zone signs were installed on Industrial Hwy around the Central Academy.
- The school zone signs on Platt Road south of Redwood Ave were replaced and upgraded;
- Bumpouts were installed on Runnymede Blvd and Waltham Dr./Warwick Ct. by Dicken Elementary.
- A new crosswalk was installed on Dicken Dr. to connect to the school pathway to Dicken Elementary.
- Preventive maintenance was done on all RRFBs in the City.
- A pedestrian refuge island was installed on S. Seventh Street at the Scio Church Service Dr.

- A new crosswalk was installed across Scio Church Rd. just west of Chaucer Dr.
- A new raised crosswalk was installed as part of the traffic calming project on the Scio Church Rd. service drive just west of Chaucer Dr.
- *102* in-road crosswalk signs (R1-6A) were deployed at *47* locations; *58* damaged signs were replaced.
- *R1-6A signs that were removed along Liberty Street and Seventh Street due to construction have been reinstalled.*
- Pedestrian crossing signs (W11-2 assembly) were upgraded at 3 locations.
- Installed a new crosswalk on Gralake Ave. near Lakewood Elementary school entrance.
- Installed a new crosswalk at Liberty St. and Dartmoor Rd.
- New RRFBs were installed at S. Main St. and Fieldcrest St.
- New RRFBs were installed at Green Rd. and Green Brier Blvd. *and the crosswalk was relocated*
- New RRFBs were installed on Geddes Rd. outside of Concordia University
- *A new crosswalk was installed with pedestrian crossing signs on Earhart Rd. north of Geddes Rd.*
- A new *crosswalk and* RRFBs were installed on N. Maple Rd. outside the Peace Neighborhood Center
- A new *crosswalk and* RRFBs were installed on N. Maple Rd. outside the Alano Club
- A new *crosswalk and* RRFBs were installed on N. Maple Rd. near Walter Dr.
- A new *crosswalk and* RRFBs were installed on S. Maple Rd. near Bens Dr.
- New RRFBs were installed on Eisenhower Pkwy. at Plaza Rd.
- *A damaged RRFB on Stadium Blvd near Ferdon Rd was replaced*
- *A new pedestrian signal was installed on Washtenaw Ave. at Pittsfield Blvd.*
- *New pedestrian crossing signs were added on Dhu Varren Rd. at Carrot Way*
- *New pedestrian crossing signs were added on Dhu Varren Rd. at Olson Park*
- *New crosswalks and R1-6A signs were installed on Fifth Ave. by Kerrytown as part of DDA's project.*
- *New school crossing signs were installed on Green Rd at Burbank Dr/Gettysburg Rd.*
- *New pedestrian crossing signs were installed on Hoover Ave and Division St.*
- *A demonstration bumpout was installed at Fifth Ave. and Beakes St.*

In addition to the improvements listed above, *28* streetlights were installed: 10 City locations; *13* DTE locations; and 5 locations as part of other projects. Additionally, DTE serviced *657* streetlight outages since April 1, 2019.

Lastly, we will continue to report in response to the additional items directed in the resolution. As always, please do not hesitate to contact me if I can be of further assistance.

cc: J Fournier
R Hess
S Higgins
C Hupy
N Hutchinson
C Redinger

MEMORANDUM

TO: Mayor and City Council

FROM: Howard S. Lazarus, City Administrator

DATE: November 15, 2019

SUBJECT: Response to Council Resolution R-18-497 – Resolution to Address Crosswalk Improvements and Maintenance

---

This memorandum is provided in response to approved Council Resolution R-18-497 – Resolution to Address Crosswalk Improvements and Maintenance which directed the City Administrator to provide monthly updates on crosswalk improvements. Specifically, the resolution states:

> "Beginning in April 2019, provide monthly updates to Council on crosswalk maintenance and improvements completed/scheduled for the 2019 construction season."

The following list identifies improvements made to date. This is provided as a running list and new/changed language is *italicized*:

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- A new pedestrian refuge island was installed on Fuller Rd. at the pedestrian crossing near Gallup Park which serves Huron High School
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- School "reduced speed when flashing" zone signs were installed on Stadium Boulevard around Tappan Middle School.
- School "reduced speed when flashing" zone signs were installed on Plymouth Road around the Michigan Islamic Academy.
- School "reduced speed when flashing" zone signs were installed on Industrial Hwy around the Central Academy.
- The school zone signs on Platt Road south of Redwood Ave were replaced and upgraded;
- Bumpouts were installed on Runnymede Blvd and Waltham Dr./Warwick Ct. by Dicken Elementary.
- A new crosswalk was installed on Dicken Dr. to connect to the school pathway to Dicken Elementary.
- Preventive maintenance was done on all RRFBs in the City.
- A pedestrian refuge island was installed on S. Seventh Street at the Scio Church Service Dr.

- A new crosswalk was installed across Scio Church Rd. just west of Chaucer Dr.
- A new raised crosswalk was installed as part of the traffic calming project on the Scio Church Rd. service drive just west of Chaucer Dr.
- 102 in-road crosswalk signs (R1-6A) were deployed at 47 locations; *64* damaged signs were replaced.
- R1-6A signs that were removed along Liberty Street and Seventh Street due to construction have been reinstalled.
- Pedestrian crossing signs (W11-2 assembly) were upgraded at 3 locations.
- Installed a new crosswalk on Gralake Ave. near Lakewood Elementary school entrance.
- Installed a new crosswalk at Liberty St. and Dartmoor Rd.
- New RRFBs were installed at S. Main St. and Fieldcrest St.
- New RRFBs were installed at Green Rd. and Green Brier Blvd. and the crosswalk was relocated
- New RRFBs were installed on Geddes Rd. outside of Concordia University
- A new crosswalk was installed with pedestrian crossing signs on Earhart Rd. north of Geddes Rd.
- A new crosswalk and RRFBs were installed on N. Maple Rd. outside the Peace Neighborhood Center
- A new crosswalk and RRFBs were installed on N. Maple Rd. outside the Alano Club
- A new crosswalk and RRFBs were installed on N. Maple Rd. near Walter Dr.
- A new crosswalk and RRFBs were installed on S. Maple Rd. near Bens Dr.
- New RRFBs were installed on Eisenhower Pkwy. at Plaza Rd.
- A damaged RRFB on Stadium Blvd near Ferdon Rd was replaced
- A new pedestrian signal was installed on Washtenaw Ave. at Pittsfield Blvd.
- New pedestrian crossing signs were added on Dhu Varren Rd. at Carrot Way
- New pedestrian crossing signs were added on Dhu Varren Rd. at Olson Park
- New crosswalks and R1-6A signs were installed on Fifth Ave. by Kerrytown as part of DDA's project.
- New school crossing signs were installed on Green Rd at Burbank Dr/Gettysburg Rd.
- New pedestrian crossing signs were installed on Hoover Ave and Division St.
- A demonstration bumpout was installed at Fifth Ave. and Beakes St.

In addition to the improvements listed above, *31* streetlights were installed: 13 City locations; *13* DTE locations; and 5 locations as part of other projects. Additionally, DTE serviced *739* streetlight outages since April 1, 2019.

Lastly, we will continue to report in response to the additional items directed in the resolution. As always, please do not hesitate to contact me if I can be of further assistance.

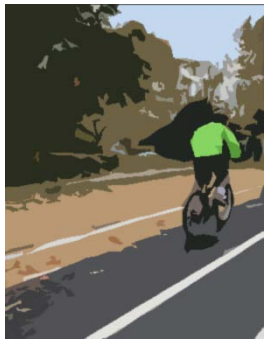
cc: J Fournier
R Hess
S Higgins
C Hupy
N Hutchinson
C Redinger

ATTACHMENT E

City of Ann Arbor

2019 Annual Crash Review

Calendar Years 2014-2018



December 2019

Introduction

City staff have prepared this report to provide the Transportation Commission with an understanding of the City's recent crash history and crash trends. This report is the first version of a report the Transportation Section intends to provide the Transportation Commission on an Annual basis. The report provides a snapshot of recent crash history and trends experienced over the past five years. This report supplements and compliments the regional crash analyses produced by the Southeast Michigan Council of Governments (SEMCOG).

The report is broken up into three distinct subject areas:

- Introduction
- 5 Year Crash Trends
- 5 Year Crash Location Maps

Data Source

The data used in this report comes from the Michigan Certified Crash Data. This data is available for viewing by the public through the Office of Highway Safety Planning's (OHSP) online data tool: www.michigantrafficcrashfacts.org.

The City of Ann Arbor's engineering staff utilize this data through the Roadsoft software package. Roadsoft provides a variety of analysis tools that can be used to better understand traffic crash patterns. The City's engineering staff have been using this software package for over 10 years to conduct analyses similar to those presented in this report. However, this is the first time a comprehensive report has been prepared by staff.

Crash analyses have traditionally been prepared and used in the course of:

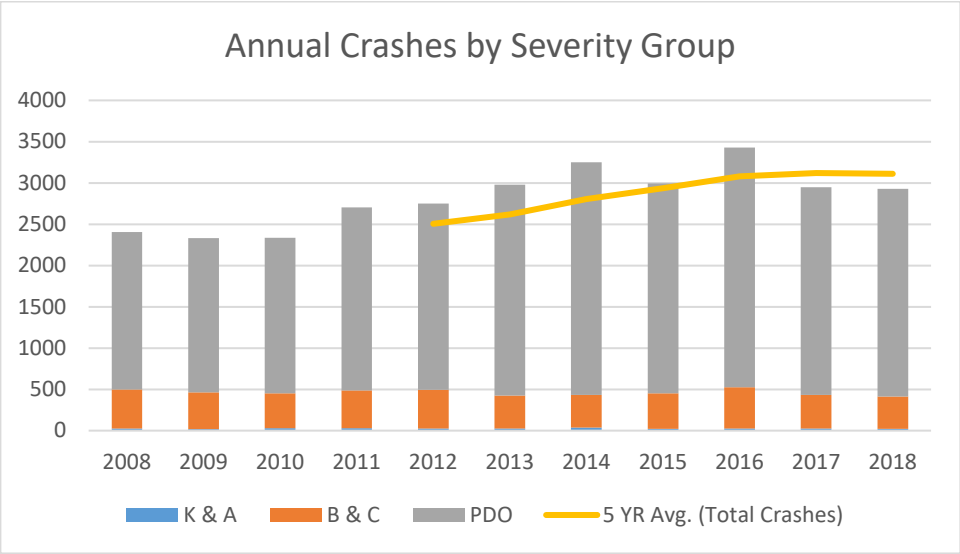
- Responding to a variety of resident requests
- Developing prioritizations for items such as sidewalk gaps
- Identifying needs as part of project design
- Identifying projects that would be eligible for Highway Safety Improvement Program funding

The data provided in this report has been filtered to remove crashes that are outside of the City's control or influence. Freeways and private roads have been eliminated from the data reports. The Michigan Department of Transportation (MDOT) controlled streets, such as Business US-23, have been included in this analysis as the City controls approaches to these intersections. Additionally, animal crashes are excluded from all crash analyses except for the specific animal crash graphs.

Crash Performance by Severity

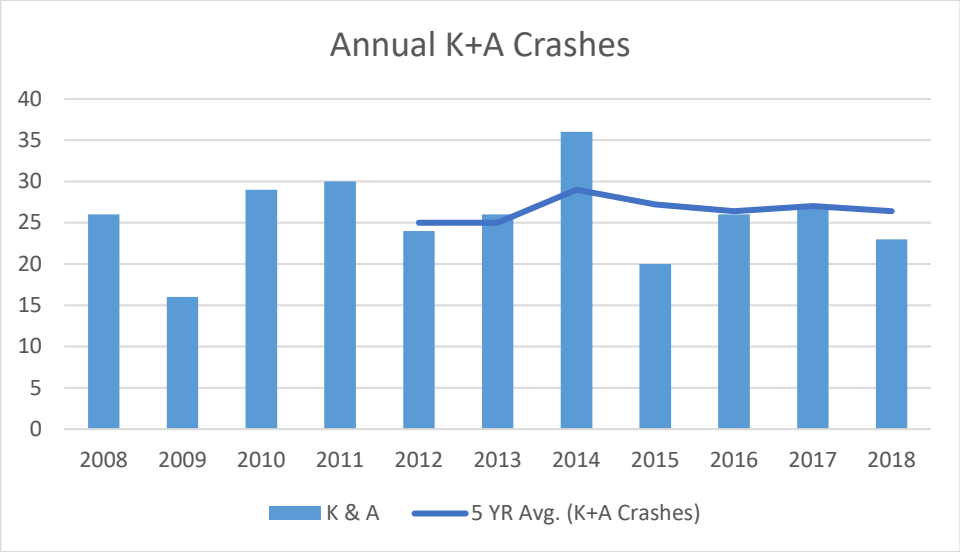
The following sections review crash data based on the severity of injuries. Data are presented as all crashes, pedestrian involved crashes, and bicyclist involved crashes.

All Crashes



Observations:

- The overall number of crashes has an upward trend line from 2012 to 2016.
- The Five Year Average trend line shows stabilization between 2016 and 2018
- 85% of the Five Year Average Crashes result in no injury.
- 14% of the Five Year Average Crashes result in non-severe injury.
- 1% of the Five Year Average Crashes result in serious injury.
- 0.1% of the Five Year Average Crashes result in fatal injury.



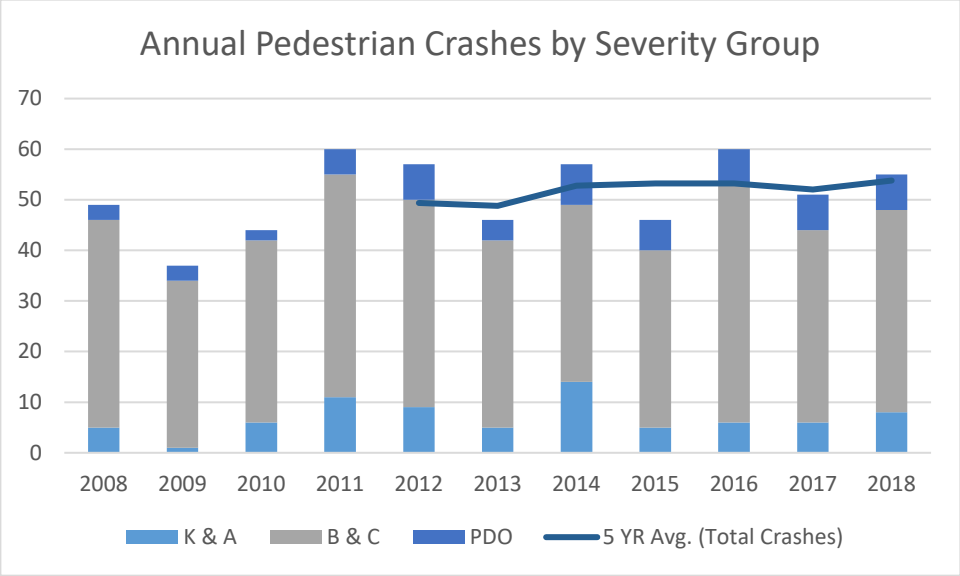
Observations:

- This graph presents annual crash history for all severe injury crashes.
- While 2014 had a significant increase in severe injury crashes, creating a spike in the rolling five year average trend line, the overall trend line shows a steady average.
- The trend line analysis indicates an expected 25 – 30 serious injury crashes based on current conditions.
- The steady trend results in a lower severe injury crash rate per capita, see the following table.

The following table uses the number of reported crashes and the US Census estimated population data to develop per capita crash rates for the City. These rates show a point in time for each year. Although percent change has been reported, please note that these may not be reliable trends.

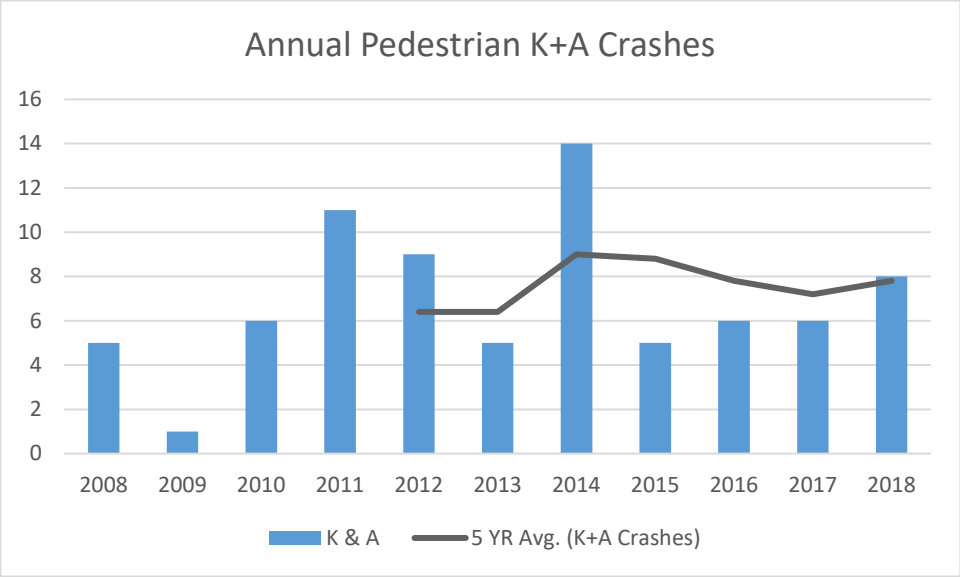
	2010	2018	% Change
U.S. Census Population Estimate	11,3973	121,890	6.9%
Total Crashes	2,337	2,928	25.29%
Crash Rate per Capita	0.020505	0.024022	17.15%
Crash Rate per 1,000 Residents	20.50486	24.02166	17.15%
Severe Injury Crashes	29	23	-20.69%
Crash Rate per Capita	0.000254	0.000189	-25.59%
Crash Rate per 1,000 Residents	0.254446	0.188695	-25.84%

Pedestrian Involved Crashes



Observations:

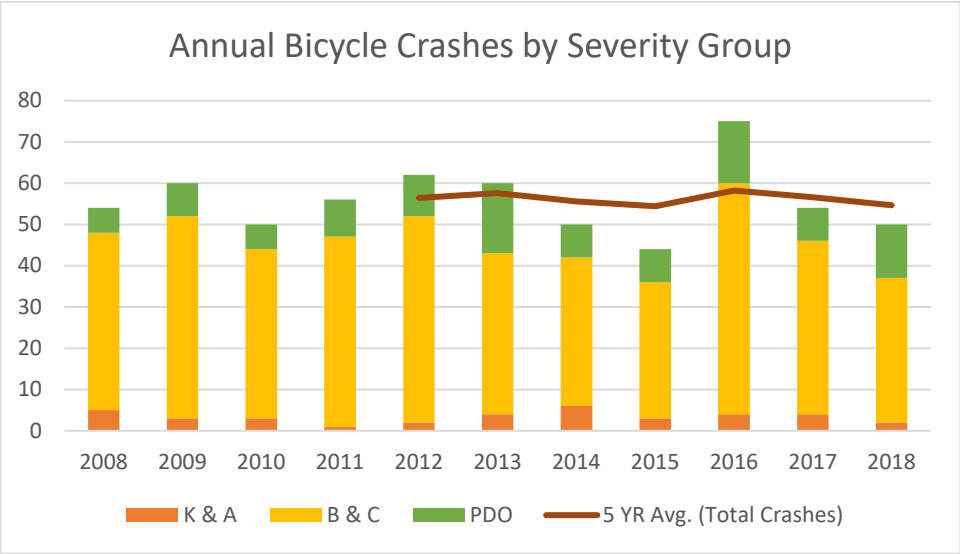
- The overall number of pedestrian crashes elevated after 2009.
- The overall crash occurrence trend has remained steady since 2014.
- The City's crash trend of increased severity of crashes after 2011 is consistent with the national trend.
- 85% of the Five Year Average Crashes result in no injury.
- 14% of the Five Year Average Crashes result in non-severe injury.
- 1% of the Five Year Average Crashes result in serious injury.
- 0.1% of the Five Year Average Crashes result in fatal injury.



Observations:

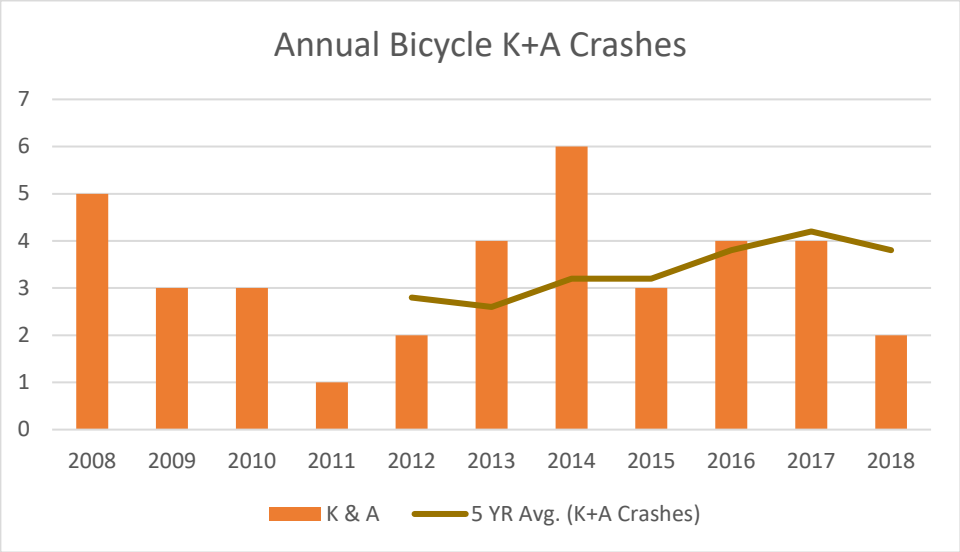
- 2014 had a significant increase in severe injury crashes, 14 crashes.
- The years following 2014 have had significantly fewer occurrences with severe injury crashes ranging from 5-8 crashes annually.

Bicyclist Involved Crashes



Observations:

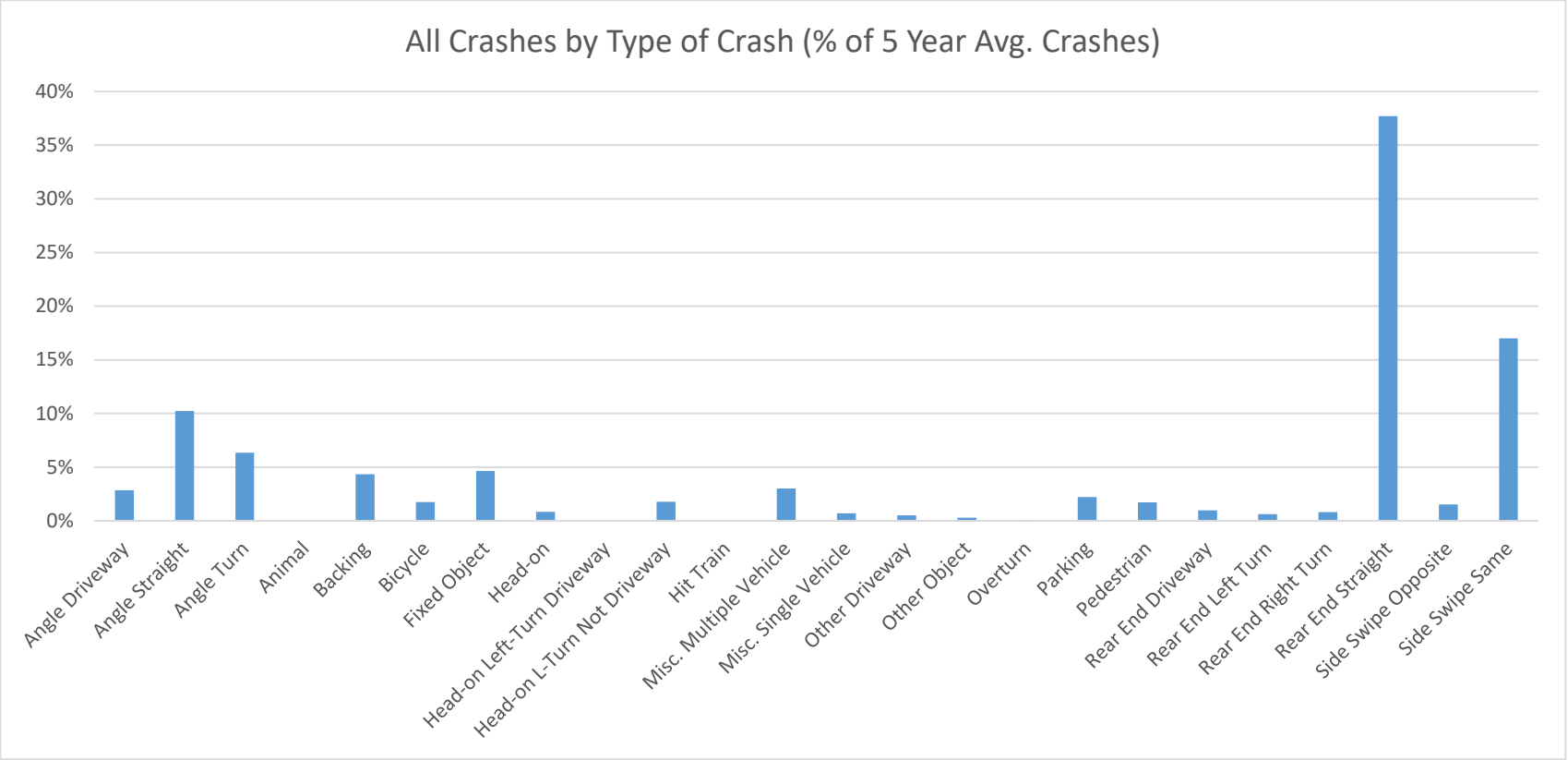
- The overall number of bicyclist crashes does not result in an upward or downward trend as the overall number of bicycle crashes varies widely from year to year.
- The five year rolling average trend line shows a fairly stable average crash history ranging between 54 and 59 crashes in any given year.



Observations:

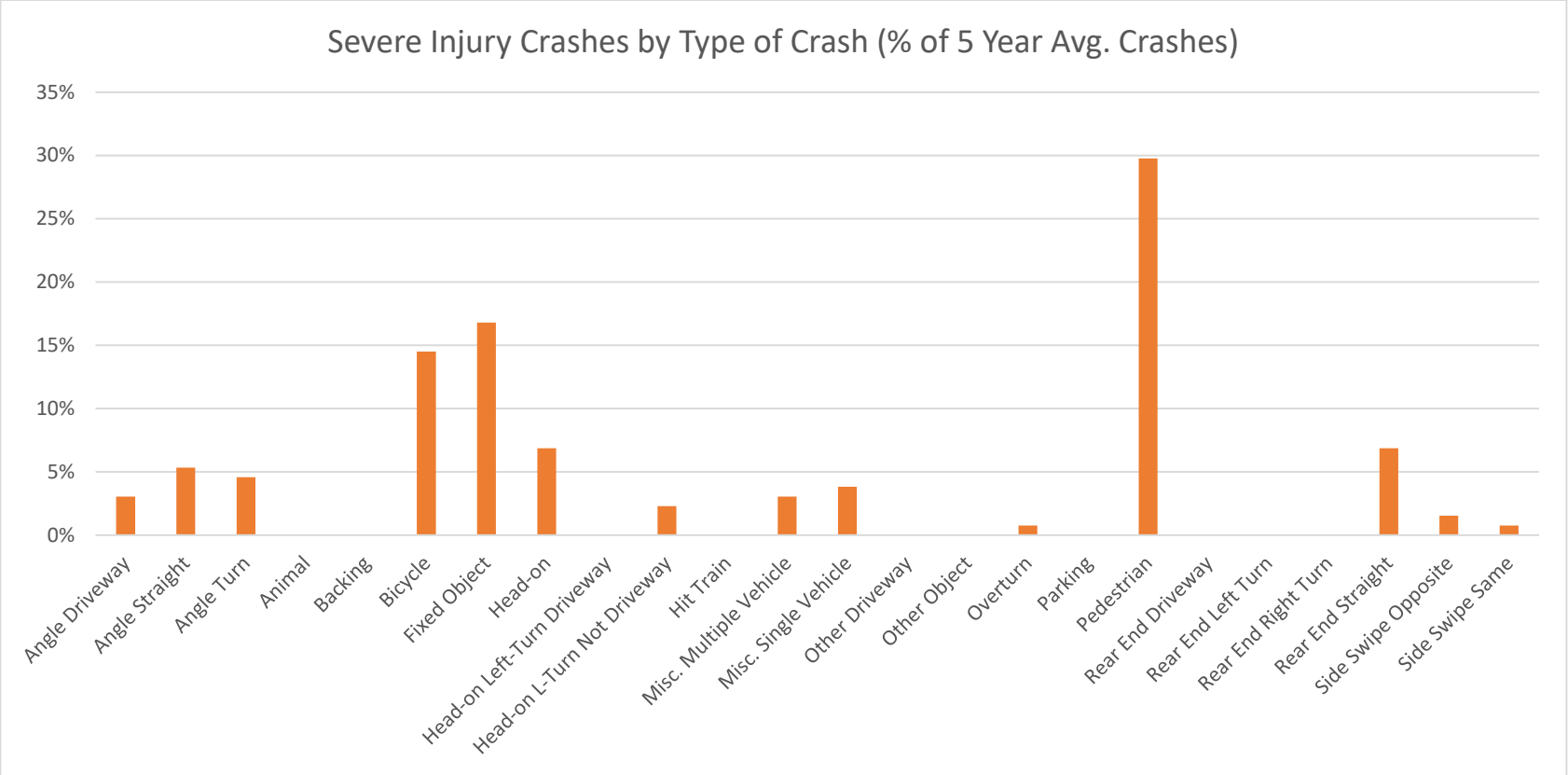
- The overall number of serious injury crashes with people who ride bikes also varies widely from year to year.
- However, unlike overall crashes, the five year rolling average trend line shows a distinctly upwards trend of severe injury crashes.
- 2014 experienced an unusually high number of serious injury crashes (6).
- 2018 experienced the second lowest number of serious injury crashes (2).

Crash Performance by Type



Observations:

- The overall crash pattern is dominated by rear end collisions.
  - 40% of all crashes are rear-end type.
- The second highest type of crash is sideswipe same.
  - 17% of all crashes are side swipe same type.
- The third highest type of crash is angle straight.
  - 10% of all crashes are angle straight.

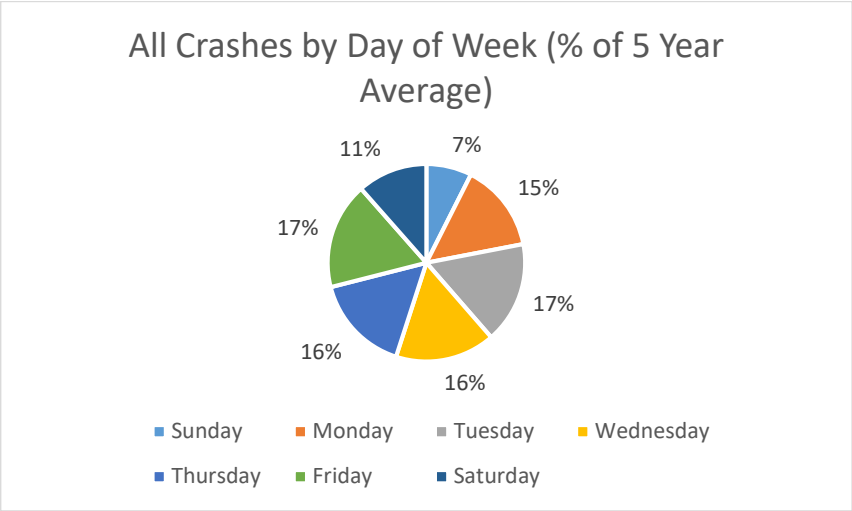


Observations:

- The severe injury crash pattern is dominated by vulnerable road user crashes
  - 30% of all serious injury crashes involve a person walking.
  - 15% of all serious injury crashes involve a person bicycling.
- The second highest severe injury crash type involves crashes with a fixed object.
  - 17% of all serious injury crashes result from striking a fixed object.

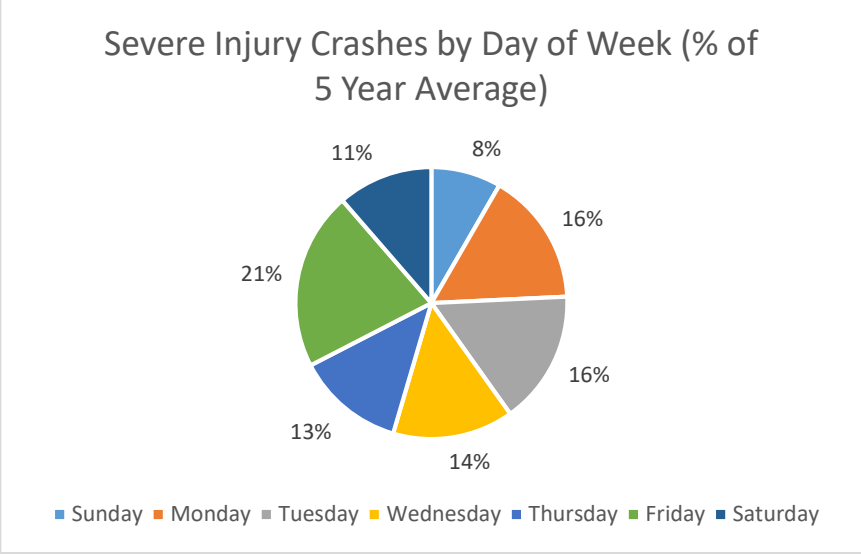
Crash Performance by Temporal Conditions

Day of Week



Observations:

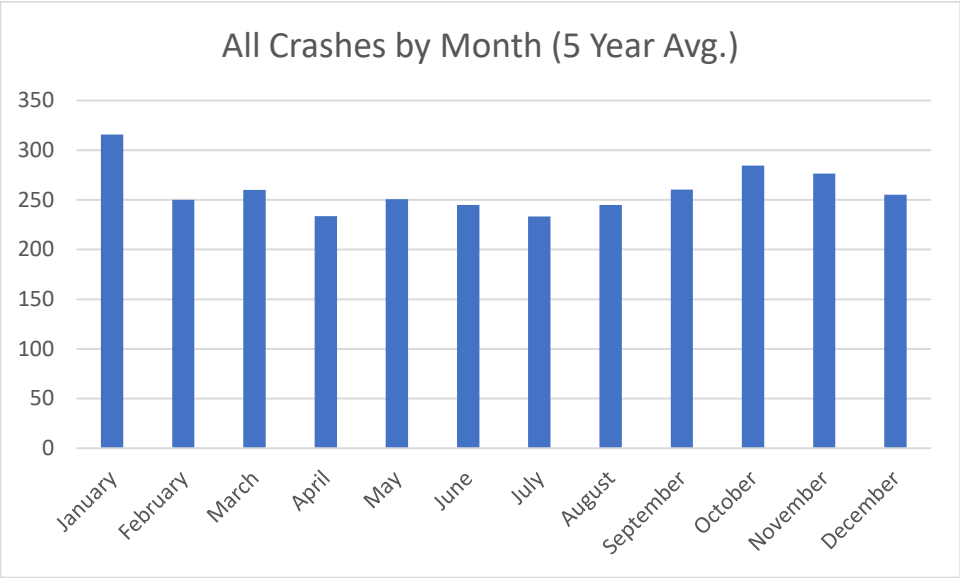
- Sunday receives a slightly lower occurrence of crashes. This result is expected as traffic volumes tend to be significantly lower on Sundays.
- Friday receives a slightly higher occurrence of crashes.



Observations:

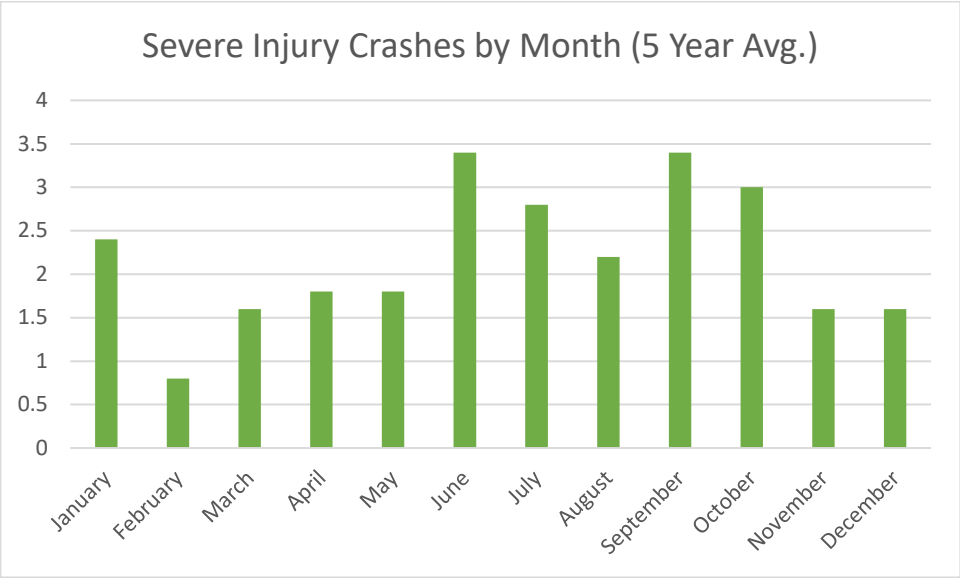
- Severe injury crashes have a similar distribution to the overall crash pattern.

Month of Year



Observations:

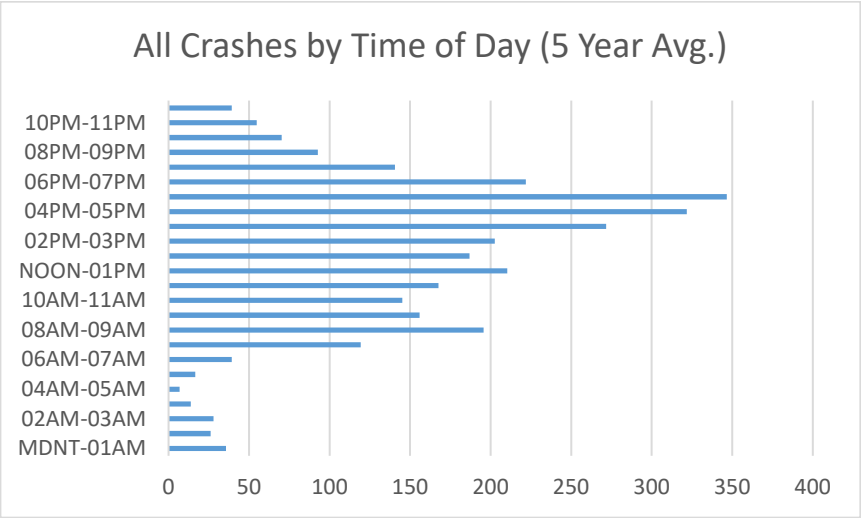
- April and July have the lowest occurrence of crashes over the past five years.
- Crash occurrences elevate in the fall, including September, October, and November. This trend is to be expected as the fall combines generally favorable weather conditions with shortened daylight hours.
- January has the most number of overall crash occurrences; this may be contributed to by weather conditions.
- Overall the number of crashes is evenly distributed throughout the year.



Observations:

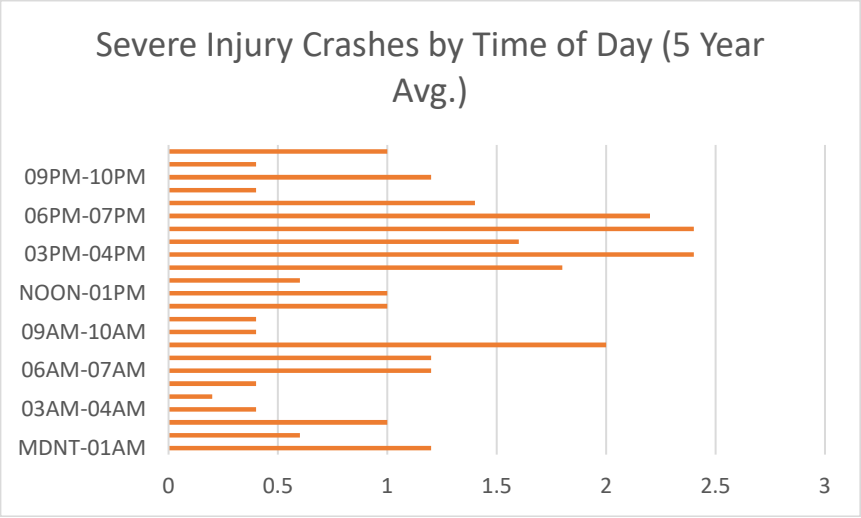
- Severe injury crash occurrences do not following the same trends as the overall crash pattern.
- Severe injury crashes are concentrated in the months between June and October, which is consistent with the highest activity months for vulnerable road users. Additionally, the fall months combine generally favorable weather conditions with shortened daylight hours.
- Severe injury crashes also have a slightly higher occurrence in January.

Time of Day



Observations:

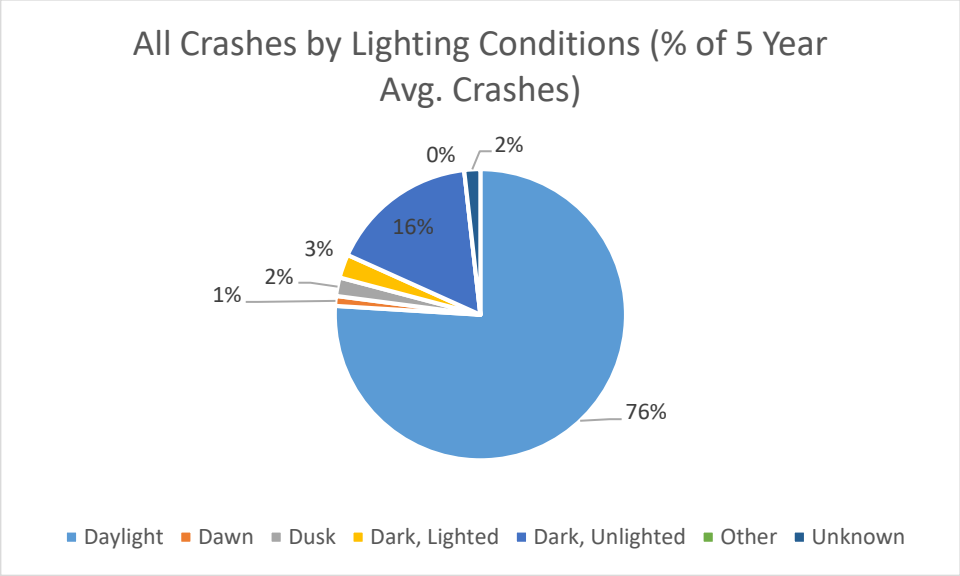
- Overall crash occurrences throughout the day follow a pattern consistent with the general trends of traffic volumes throughout the day.
- The highest number of crashes occur during the hours associated with traditional PM peak travel.



Observations:

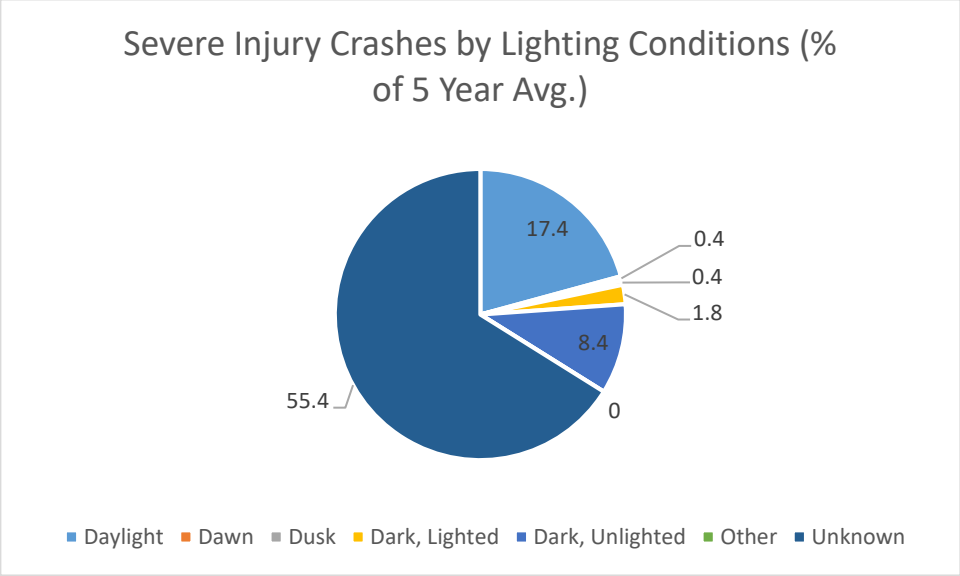
- Overall severe injury crash occurrences throughout the day follow a pattern consistent with daily traffic volumes.
- The increase in severe injury crashes occurring during the traditional AM peak hour is more pronounced than in the overall crash pattern.
- Overnight severe injury crash occurrences are at a level more consistent with mid-day crash occurrences, unlike the overall crash pattern.

Light Conditions



Observations:

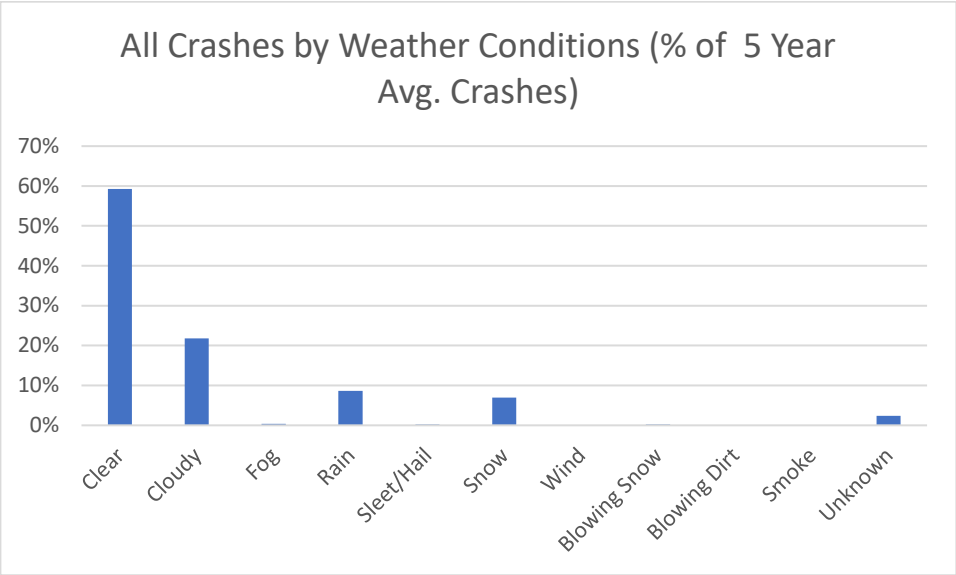
- The majority of crashes occur during daylight hours



Observations:

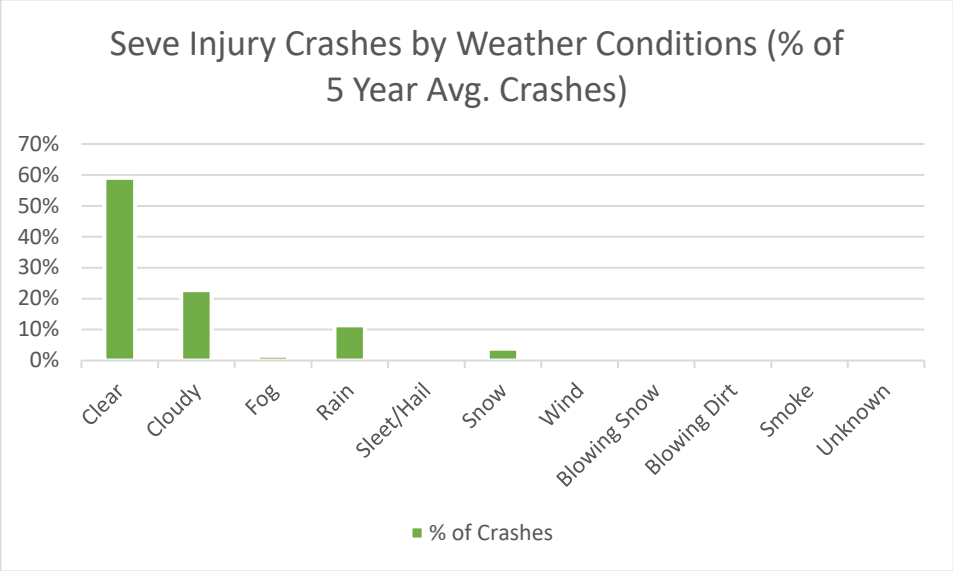
- The majority of severe injury crashes do not have an accurate accounting of lighting conditions.

Weather Conditions



Observations:

- The majority of crashes occur during non-inclement weather



Observations:

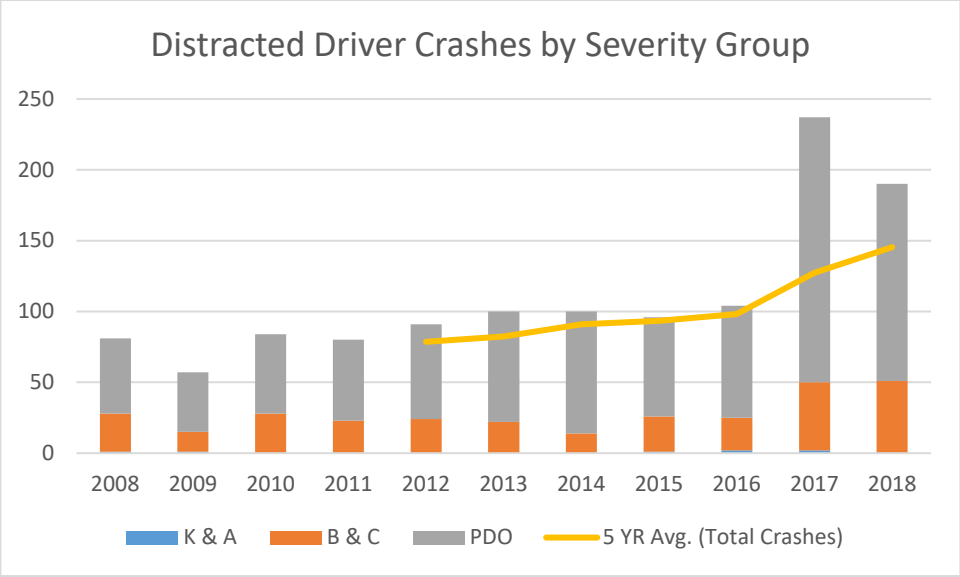
- Severe injury crashes occur in a similar pattern.

Crash Performance by Special Consideration

The following sections present crash results by special consideration. These considerations are being provided at the request of the Transportation Commission. The considerations include:

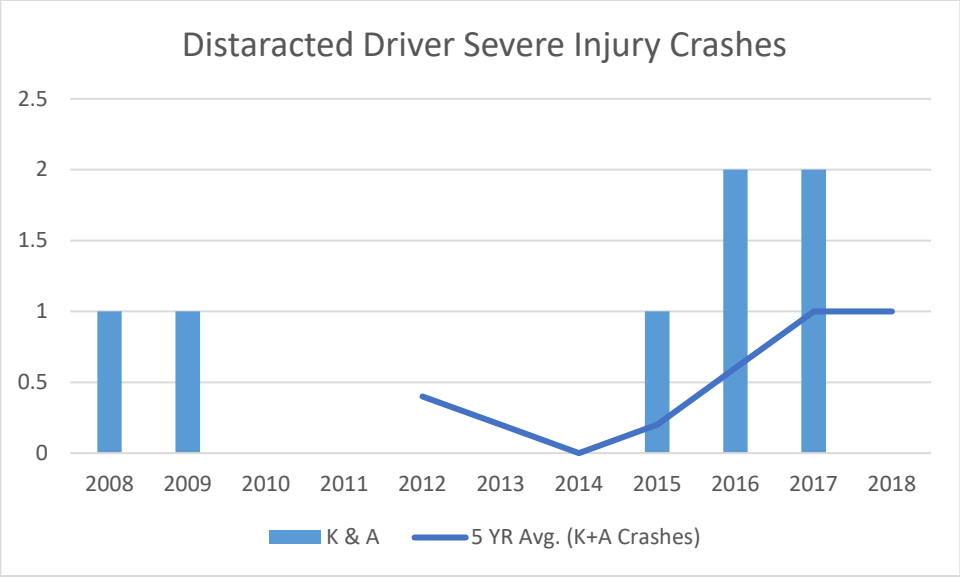
- Crashes noted as including distracted driving
- Crashes by the type of violation (citation) noted
- Crashes with drug or alcohol use noted

Distracted Driving



Observations:

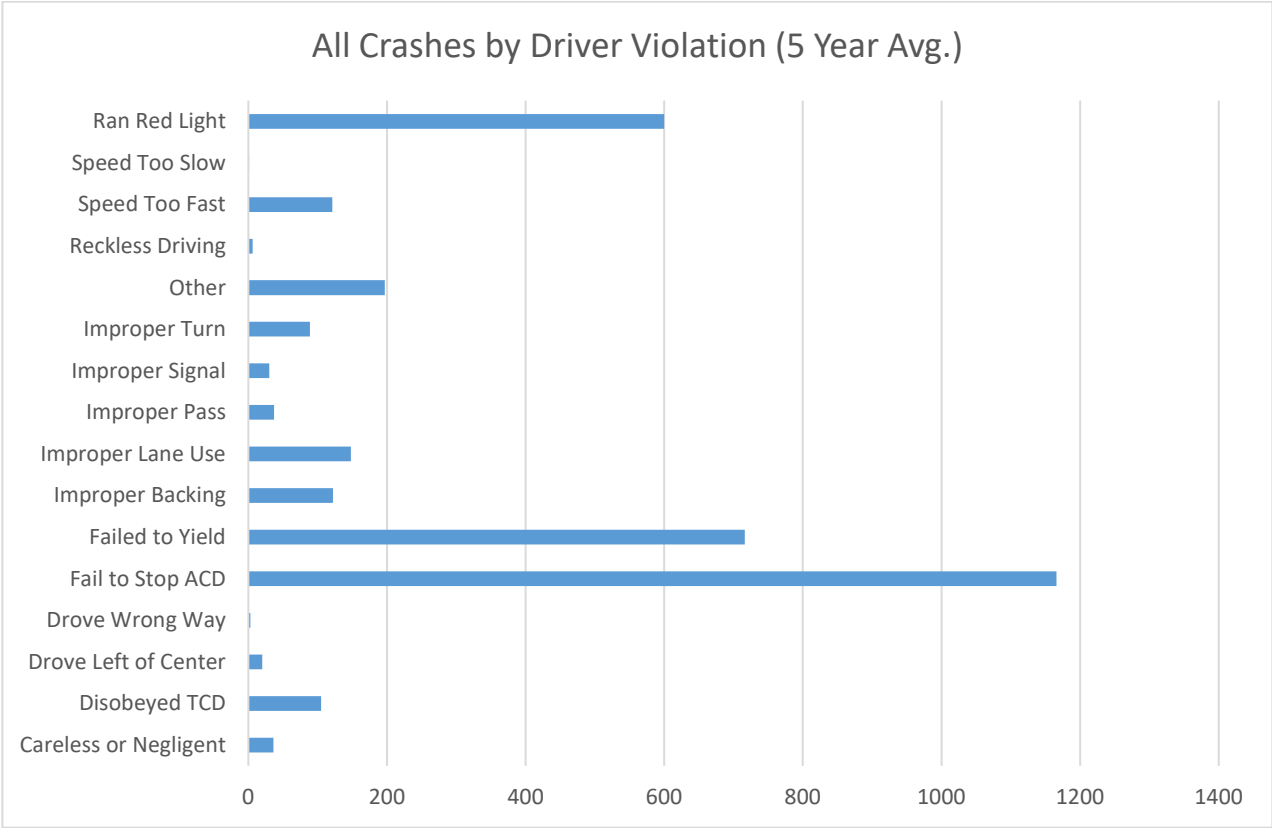
- The number of crashes involving a distracted driver has increased over time.
- The rolling five year average shows a slow, but steady increase between 2012 and 2016.
- Strikingly higher numbers of distracted drivers were reported in 2017 and 2018. However, it is difficult to understand if this is a true increase in behavior or an increase in reporting practice.



Observations:

- Very few severe injury crashes are reported as involving distracted driving.

Driver Citation (Violation)

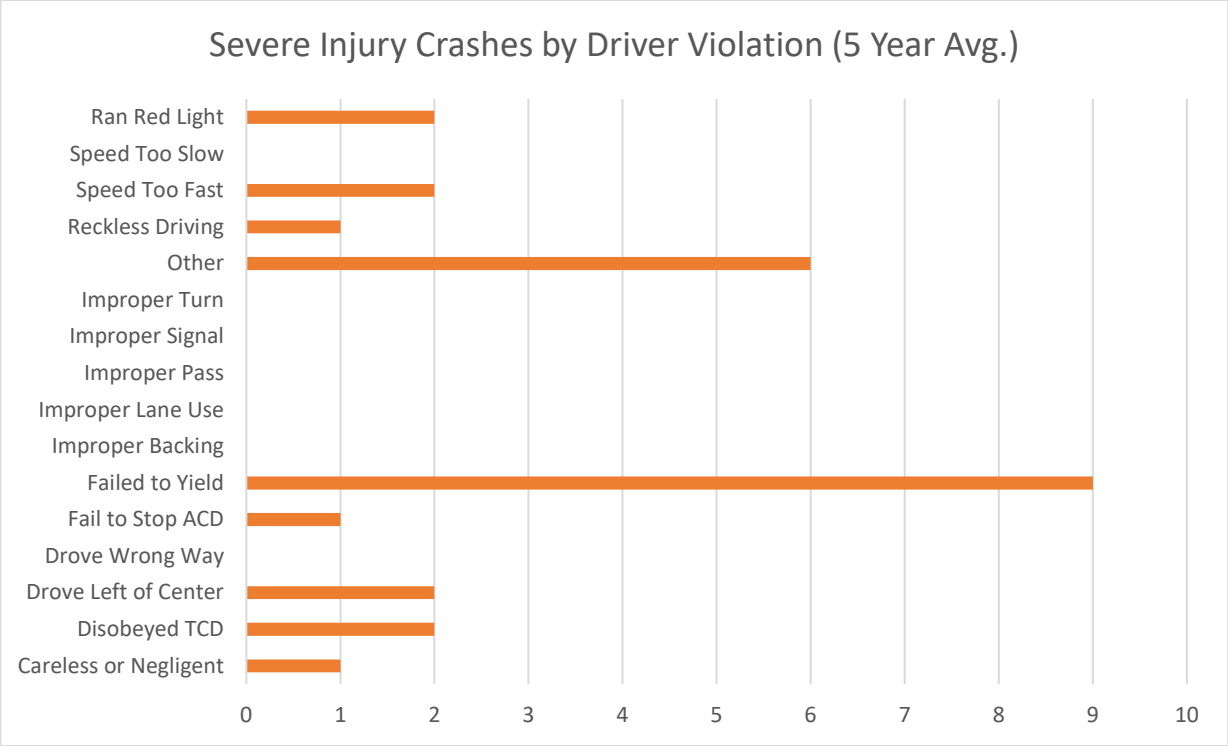


Notes:

- ACD – Assured Clear Distance
- TCD – Traffic Control Device

Observations:

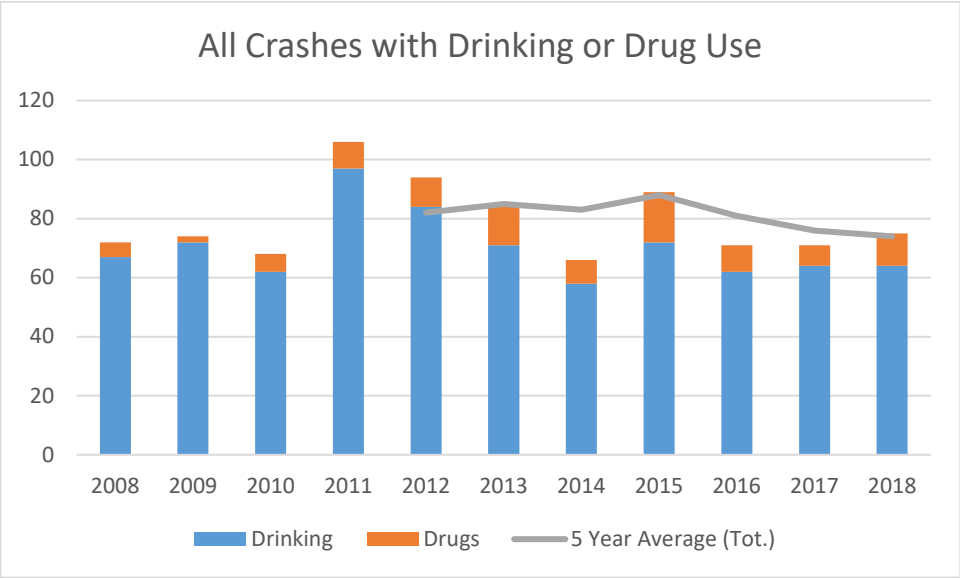
- The most frequent violation reported is failure to stop in assured clear distance. The high occurrence of this violation type corresponds with the high rate of rear-end crashes.
- Failure to yield and running the red light are the other most frequent violations noted.



Observations:

- The most frequent violation among severe injury crashes is failure to yield. The high occurrence of this violation type corresponds with the high proportion of serious injury crashes involving people riding bikes or walking.

Driving While Under the Influence



Observations:

- Drug and alcohol involvement in crashes has fluctuated over the last 10 years with a significant spike in 2011.
- The rolling five year average trend line shows a distinct decrease over time of crashes including drug or alcohol use.

Crash Location Maps

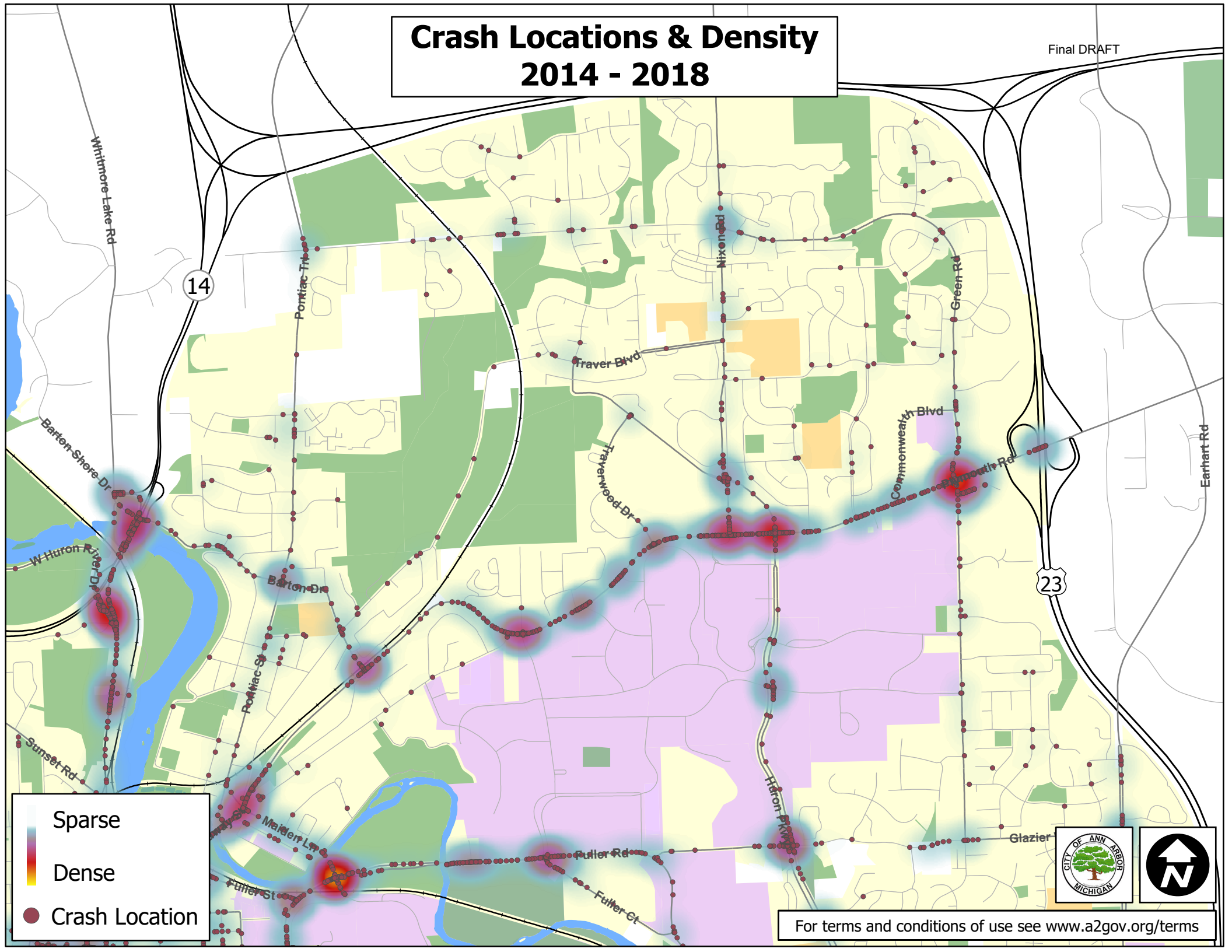
The following maps have been produced by the City Geographical Information Services (GIS) group. The maps provide a way to visualize crash patterns throughout the City.

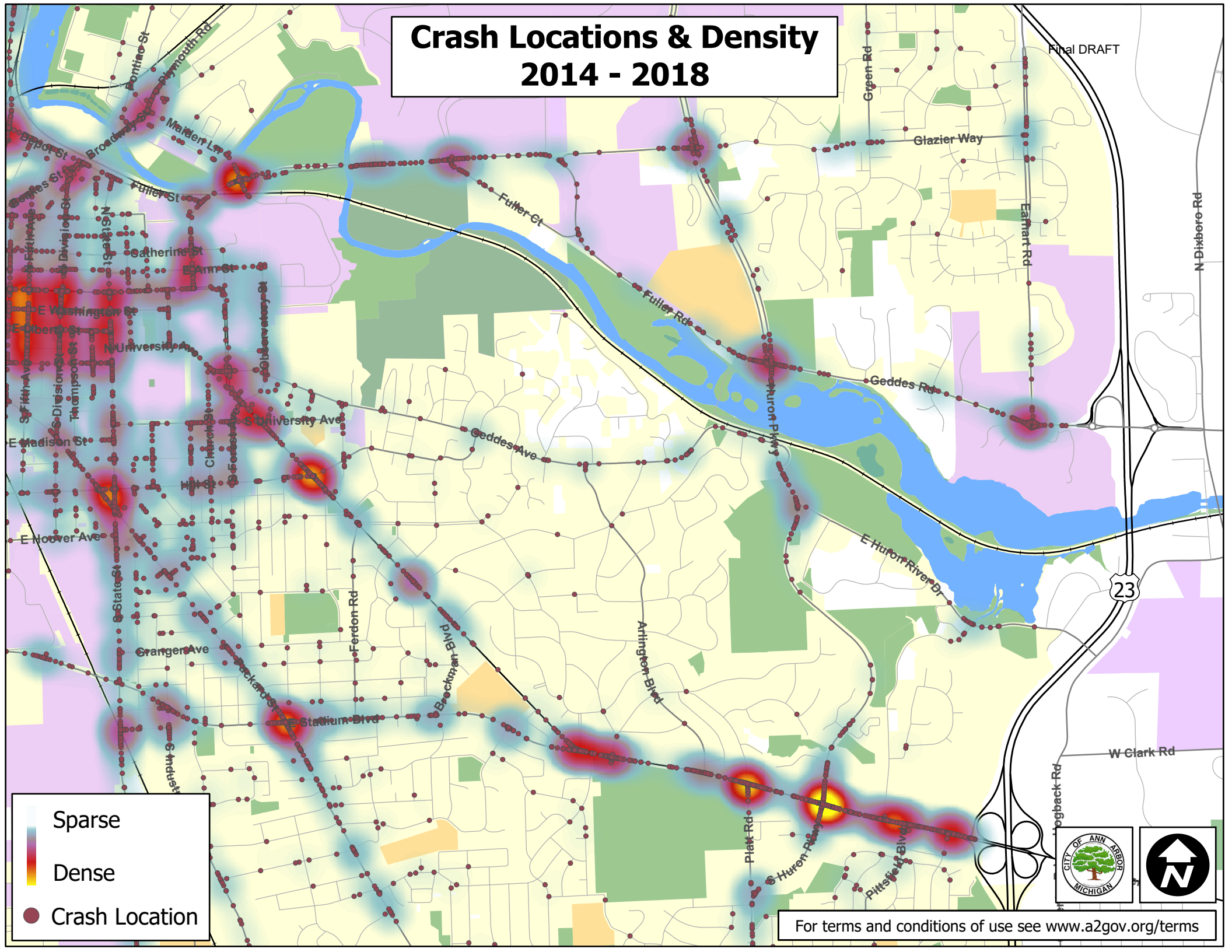
The first set of maps show overall crash occurrences. These maps are presented in a heat map style. Heat maps provide visual weighting to areas where higher concentrations of crashes occur by use of changing colors. The advantage these maps have over location point style maps is that the frequency of crashes is easier to quickly understand.

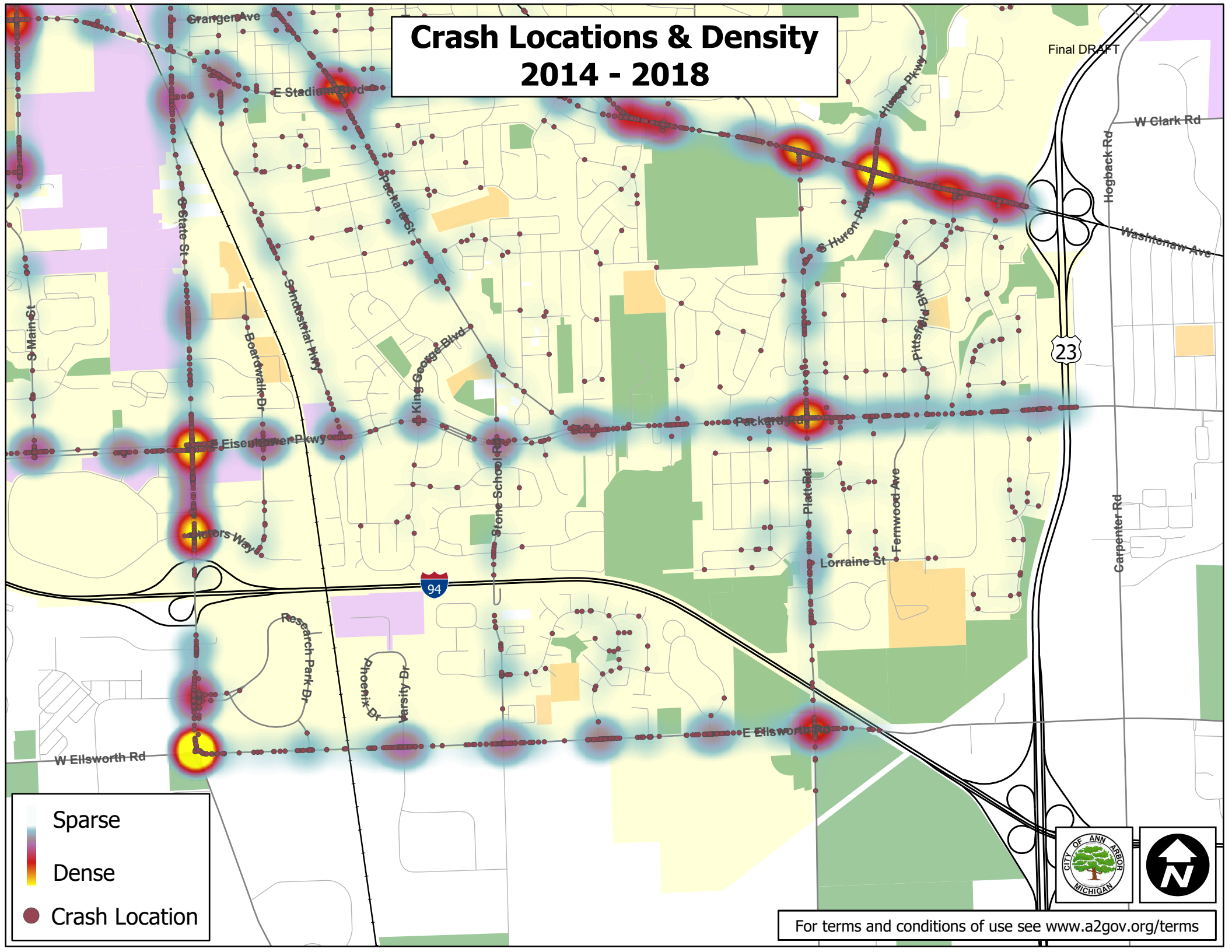
The second set of maps show special consideration crashes overlaid on the all-crash heat maps. The areas of special consideration include severe injury locations and non-motorized crash locations.

Crash Locations & Density
2014 - 2018

Final DRAFT




Crash Locations & Density
2014 - 2018
Final DRAFT
Sparse
Dense
Crash Location
For terms and conditions of use see www.a2gov.org/terms
Fuller St
Fuller Ct
Fuller Rd
Geddes Rd
Geddes Ave
Glazier Way
Earhart Rd
N Dixboro Rd
Green Rd
Huron Pkwy
E Huron River Dr
S University Ave
E Madison St
E Hoover Ave
Church St
S State St
Ferdon Rd
Brockman Blvd
Arlington Blvd
Stadium Blvd
Grange Ave
Platt Rd
S Huron Pkwy
Pittsfield Blvd
W Clark Rd
Dogback Rd
23
Plymouth Rd
Maiden Ln
Broadway St
Depot St
Catherine St
E Ann St
E Washington St
N University Ave
Thompson St
Division St
Fifth Ave
Observatory St


Crash Locations & Density
2014 - 2018
Final DRAFT
Sparse
Dense
Crash Location
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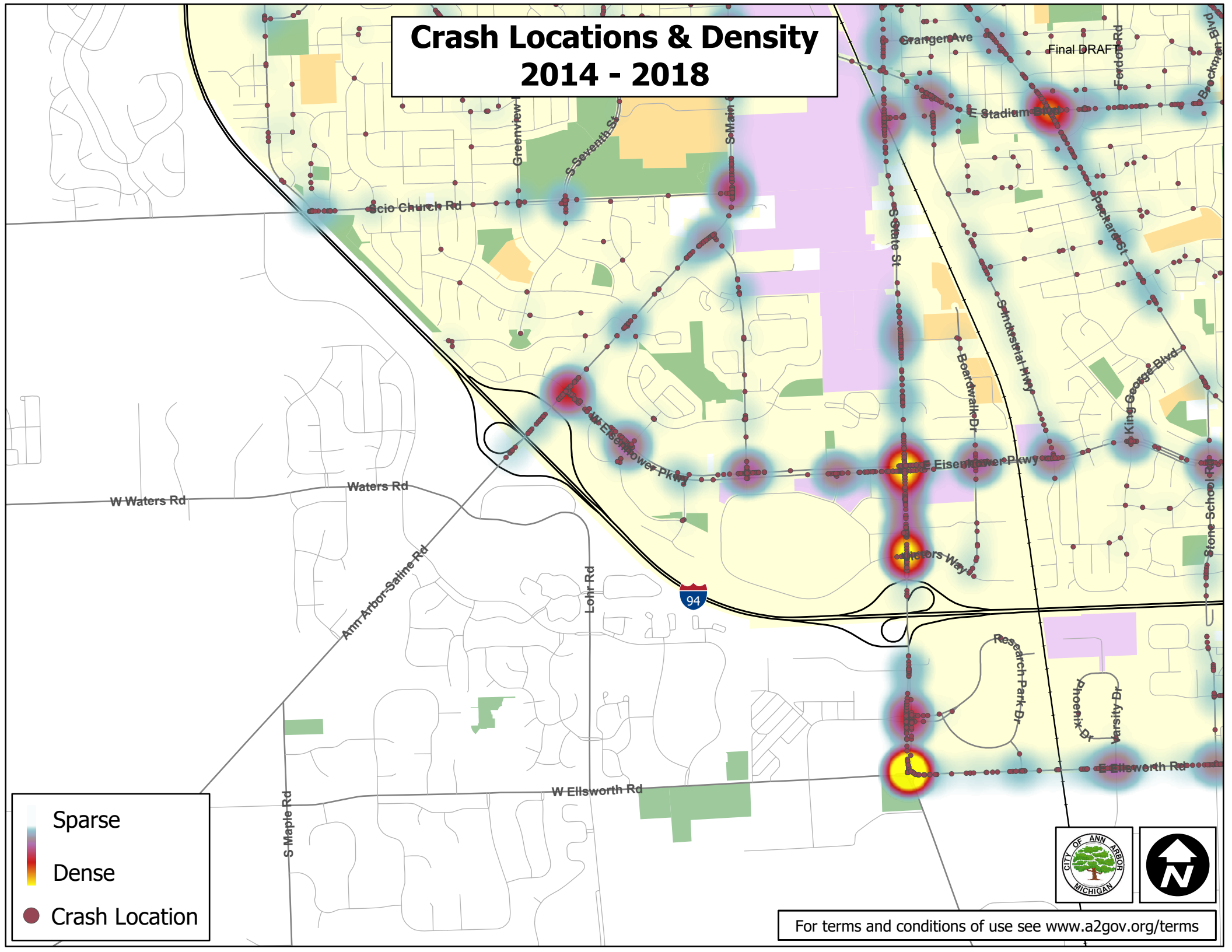
Crash Locations & Density
2014 - 2018
Final DRAFT
Orange Ave
E Stadium Blvd
Ferdon Rd
Buckman Blvd
Greenview
S Seventh St
S Main
Scio Church Rd
S State St
Packard St
Industrial Hwy
Boardwalk Dr
King George Blvd
Stone School Rd
E Eisenhower Pkwy
W Eisenhower Pkwy
W Waters Rd
Waters Rd
Ann Arbor-Saline Rd
Lohr Rd
94
Visitors Way
Research Park Dr
Phoenix Dr
Varsity Dr
E Ellsworth Rd
W Ellsworth Rd
S Maple Rd
Sparse
Dense
Crash Location
CITY OF ANN ARBOR MICHIGAN
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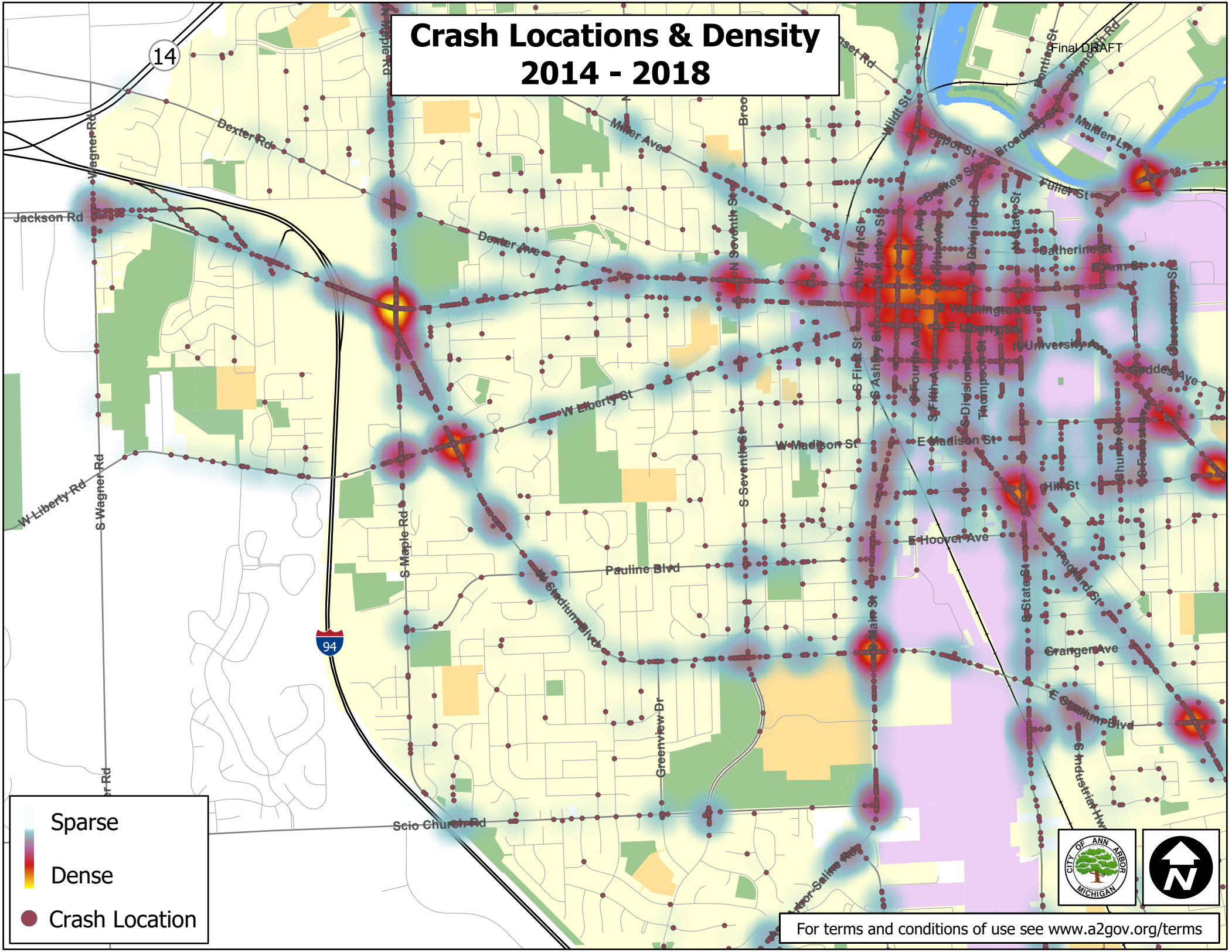
Crash Locations & Density
2014 - 2018

Final DRAFT



Sparse

Dense

Crash Location

CITY OF ANN ARBOR MICHIGAN

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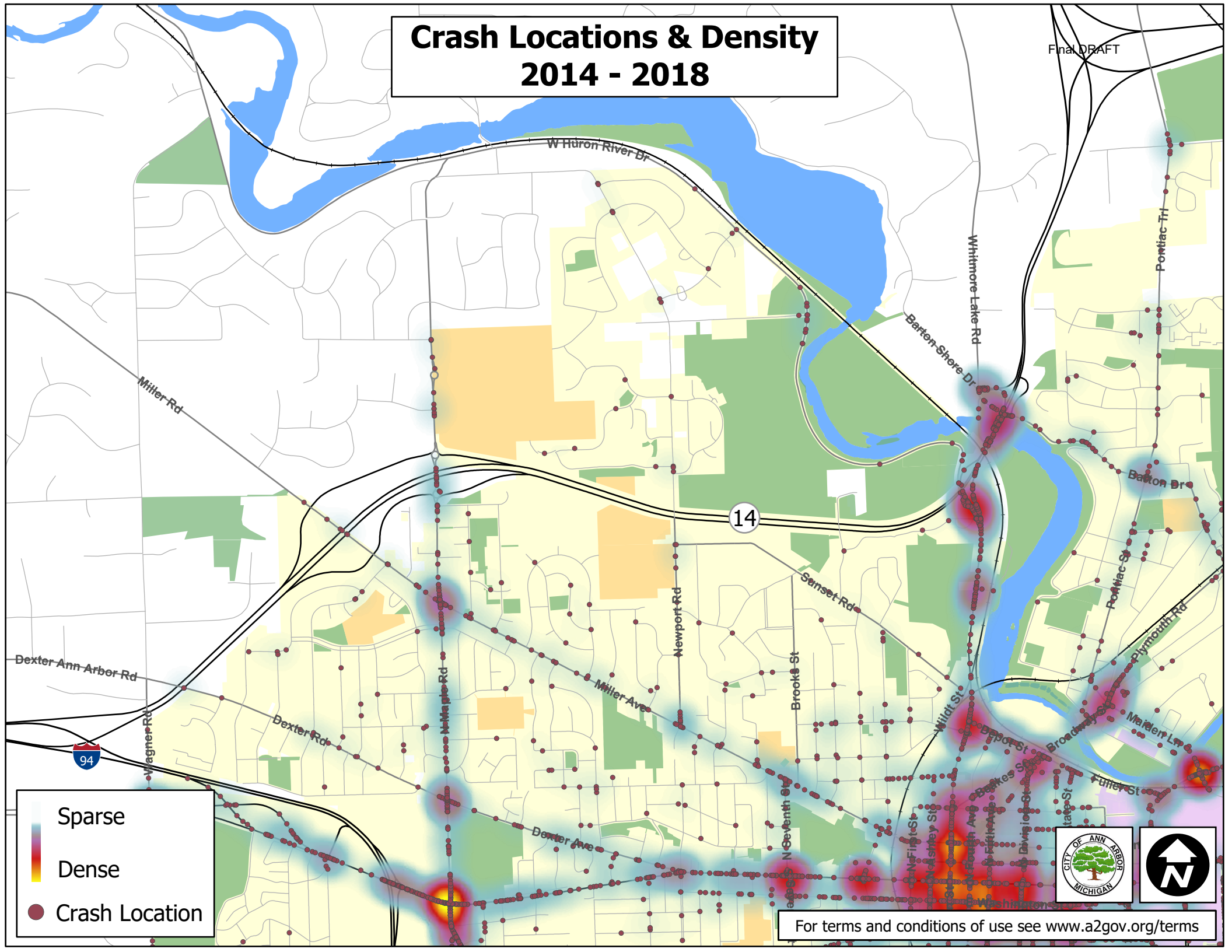
Crash Locations & Density
2014 - 2018
Final DRAFT
W Huron River Dr
Whitmore Lake Rd
Pontiac Trl
Barton Shore Dr
Miller Rd
Barton Dr
14
Sunset Rd
Newport Rd
Pontiac St
Plymouth Rd
Dexter Ann Arbor Rd
Miller Ave
Brooks St
Wildt St
Depot St
Broadway St
Maiden Ln
Wagner Rd
94
Dexter Rd
N Maple Rd
Fuller St
Dexter Ave
N Seventh St
N First St
Ashley St
N Main St
E Washington St
Sparse
Dense
Crash Location
CITY OF ANN ARBOR MICHIGAN
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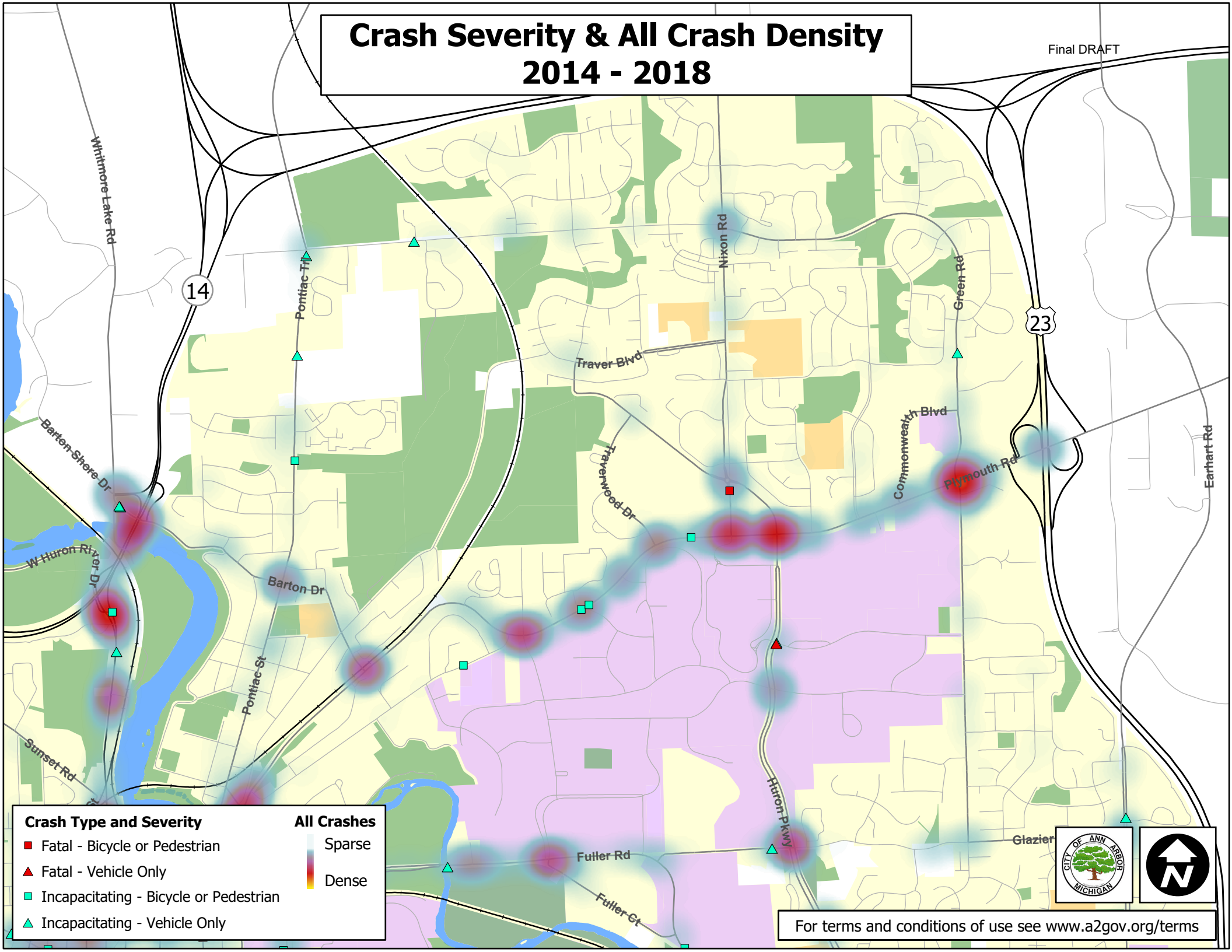
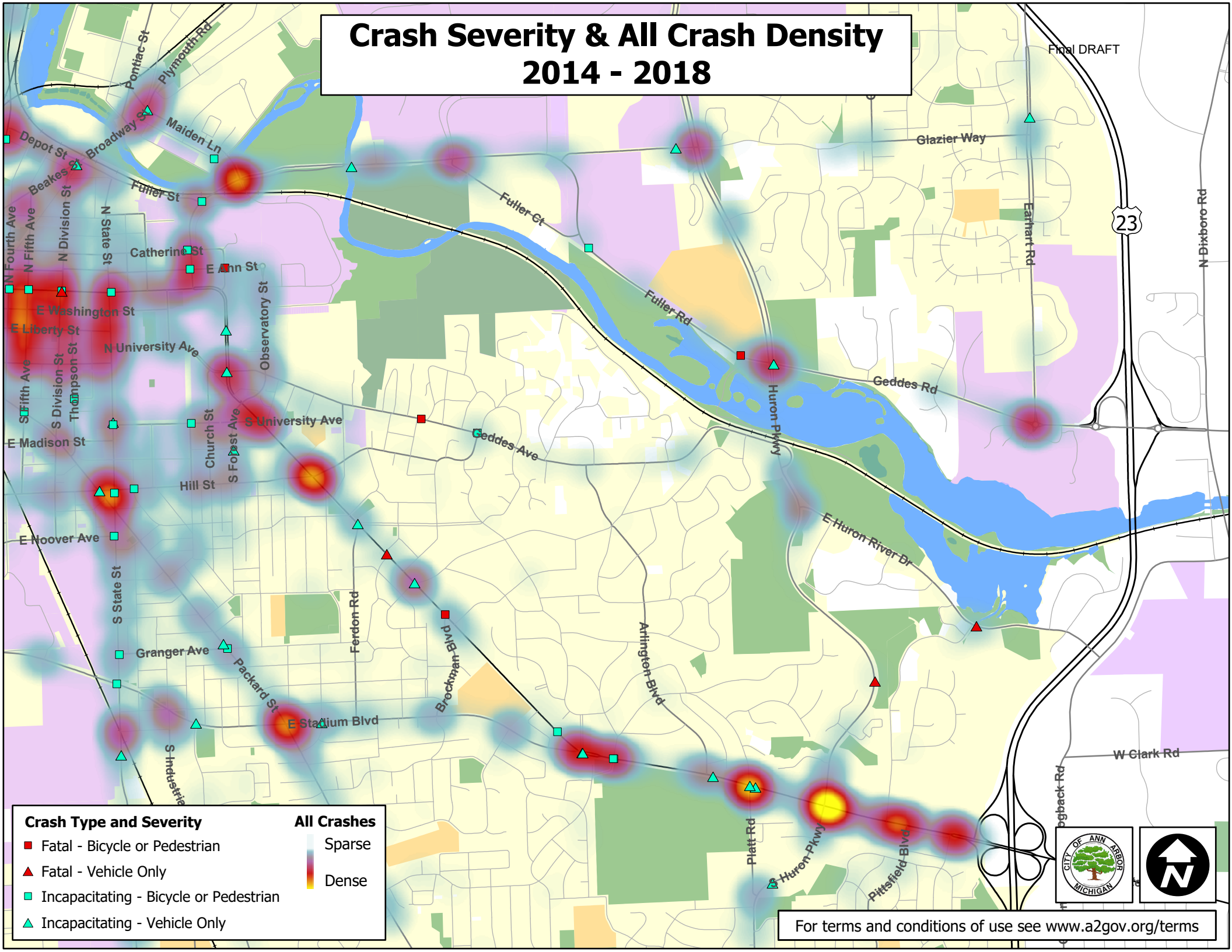
Crash Severity & All Crash Density 2014 - 2018

Final DRAFT



Crash Severity & All Crash Density
2014 - 2018

Final DRAFT



Crash Type and Severity

- Fatal - Bicycle or Pedestrian
- Fatal - Vehicle Only
- Incapacitating - Bicycle or Pedestrian
- Incapacitating - Vehicle Only

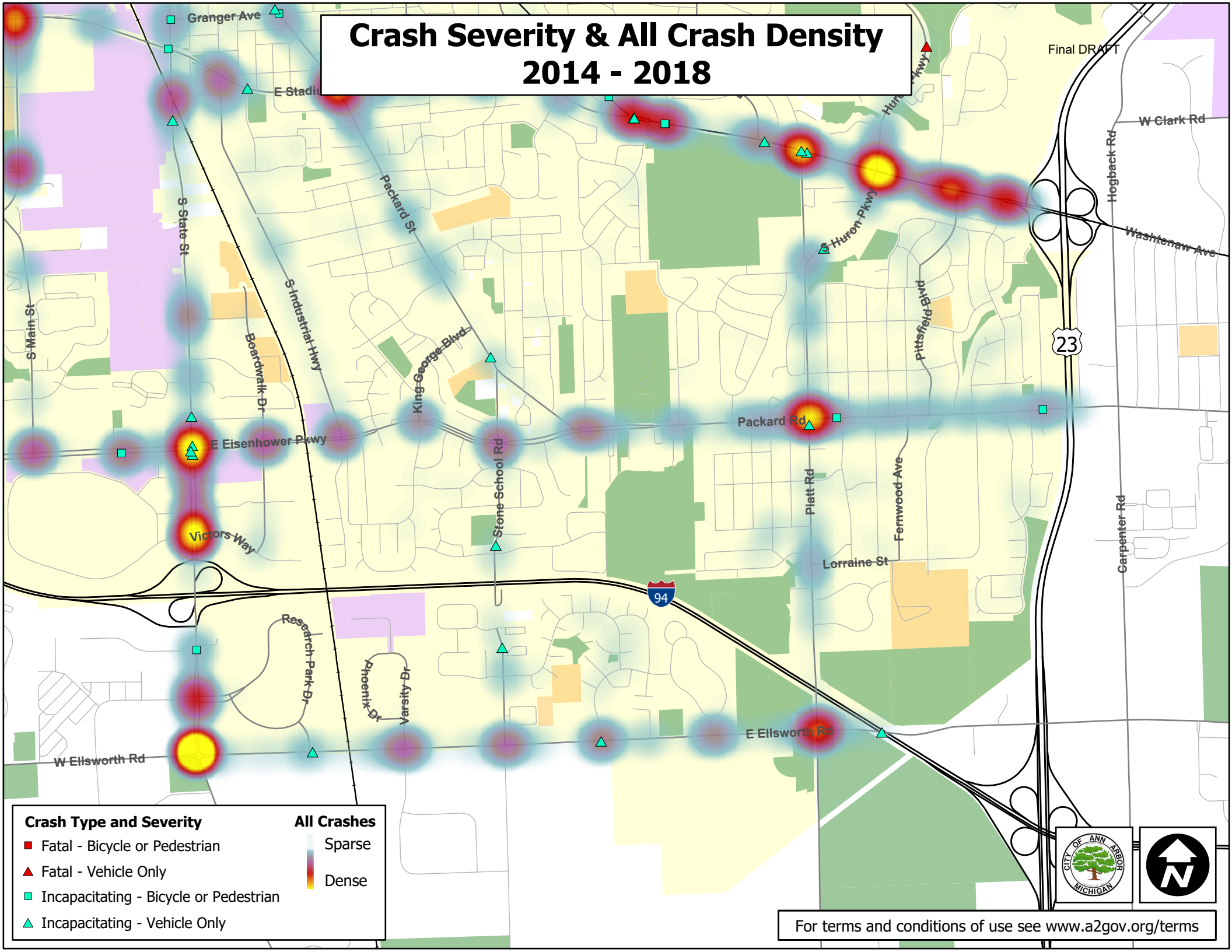
All Crashes

Sparse

Dense

Crash Severity & All Crash Density 2014 - 2018

Final DRAFT



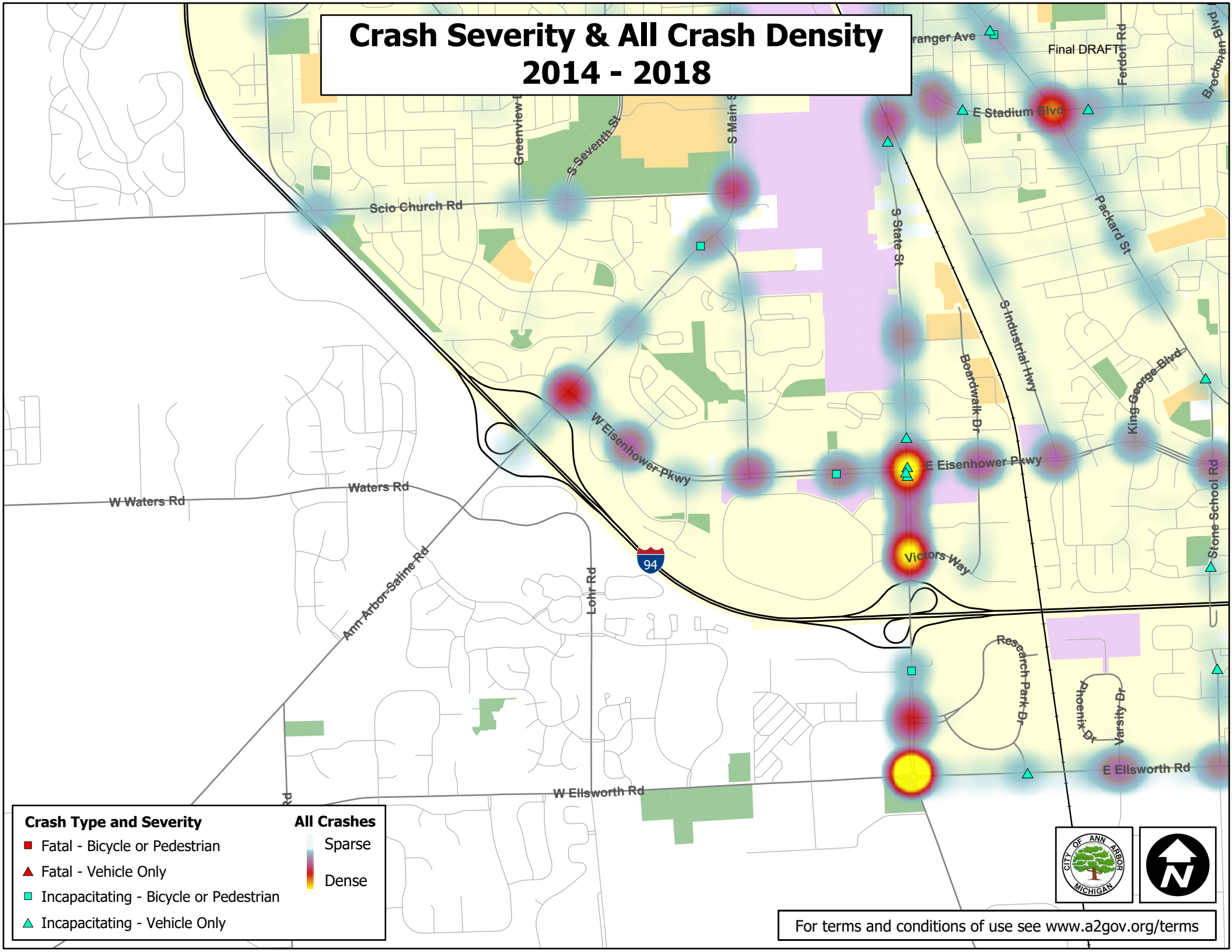
Crash Type and Severity

- Fatal - Bicycle or Pedestrian
- Fatal - Vehicle Only
- Incapacitating - Bicycle or Pedestrian
- Incapacitating - Vehicle Only

All Crashes

Sparse

Dense


Crash Severity & All Crash Density
2014 - 2018
Final DRAFT
Scio Church Rd
Greenview Dr
S Seventh St
S Main St
E Stadium Blvd
Ferdon Rd
Brockman Blvd
S State St
Packard St
S Industrial Hwy
Boardwalk Dr
King George Blvd
W Eisenhower Pkwy
E Eisenhower Pkwy
Stone School Rd
W Waters Rd
Waters Rd
94
Ann Arbor-Saline Rd
Lohr Rd
Victors Way
Research Park Dr
Phoenix Dr
Varsity Dr
E Ellsworth Rd
W Ellsworth Rd
Crash Type and Severity
Fatal - Bicycle or Pedestrian
Fatal - Vehicle Only
Incapacitating - Bicycle or Pedestrian
Incapacitating - Vehicle Only
All Crashes
Sparse
Dense
CITY OF ANN ARBOR MICHIGAN
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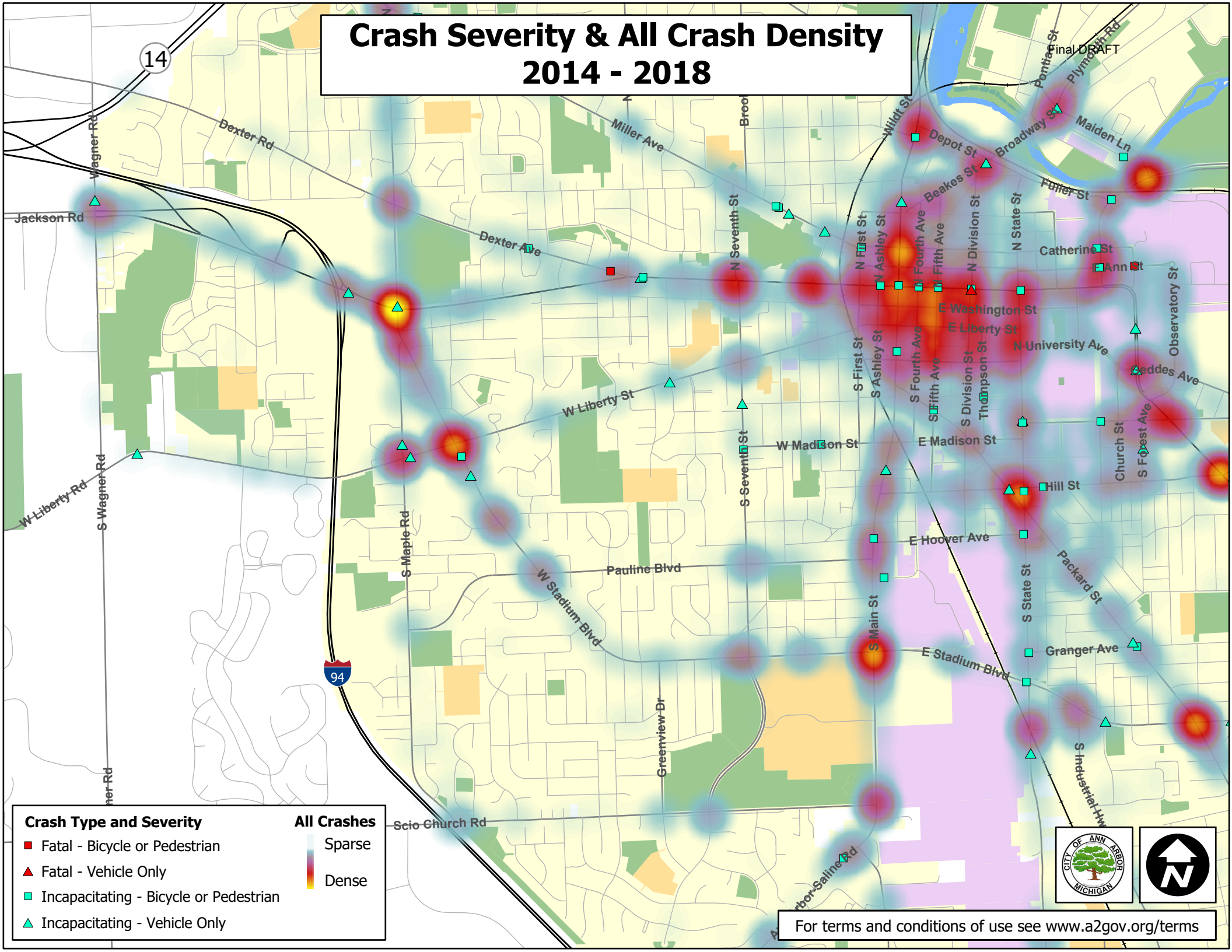
Crash Severity & All Crash Density 2014 - 2018

Final DRAFT



Crash Type and Severity

- Fatal - Bicycle or Pedestrian
- Fatal - Vehicle Only
- Incapacitating - Bicycle or Pedestrian
- Incapacitating - Vehicle Only

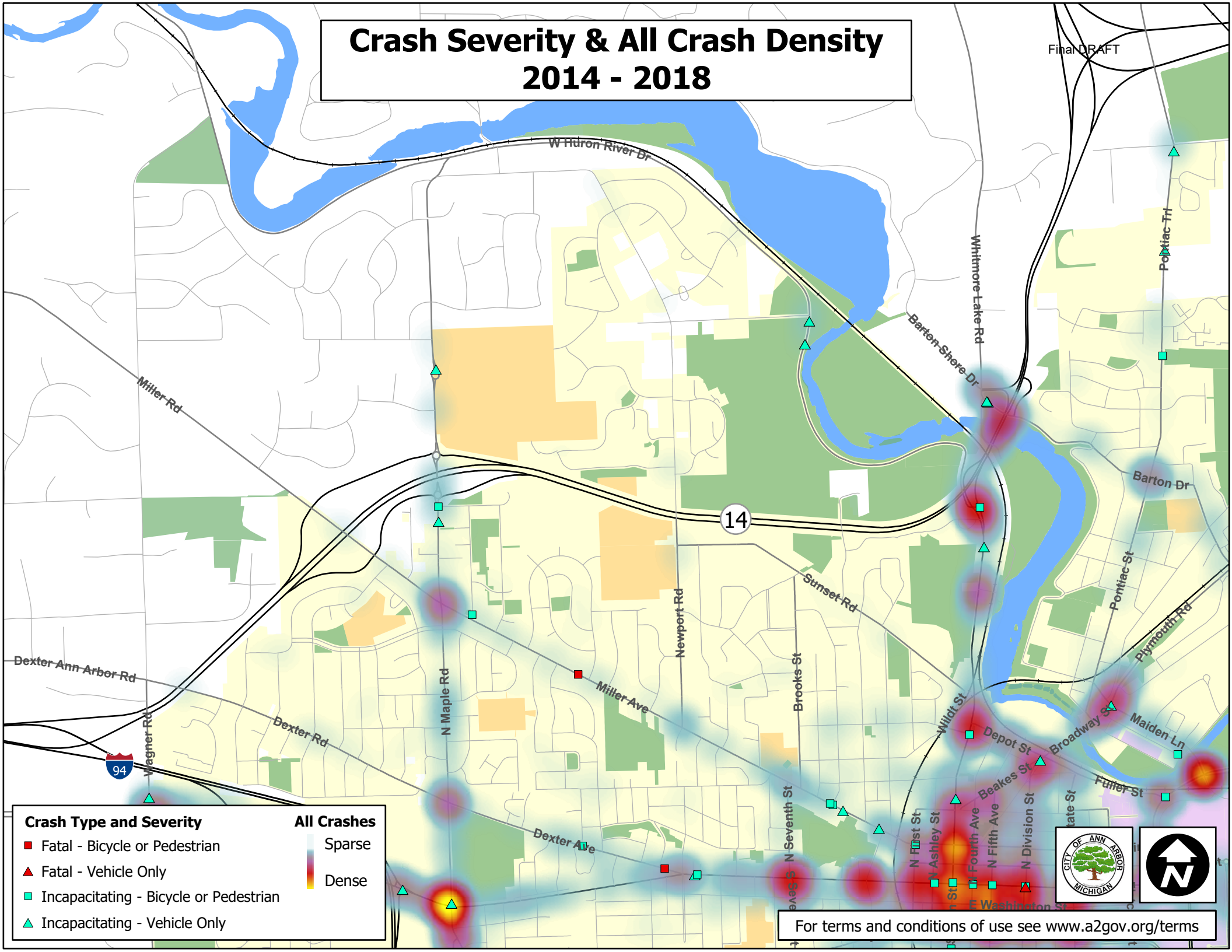
All Crashes

Sparse

Dense

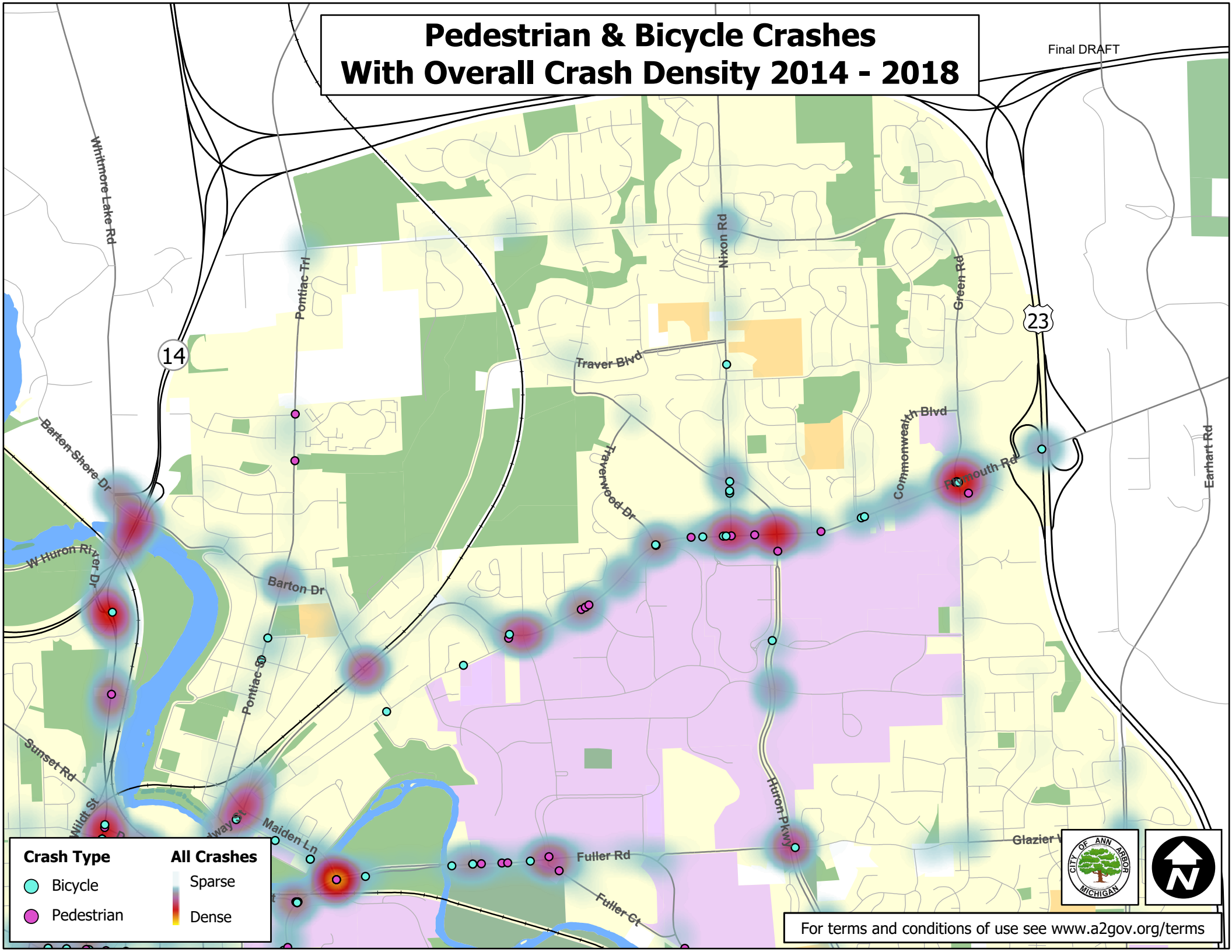
Crash Severity & All Crash Density 2014 - 2018

Final DRAFT



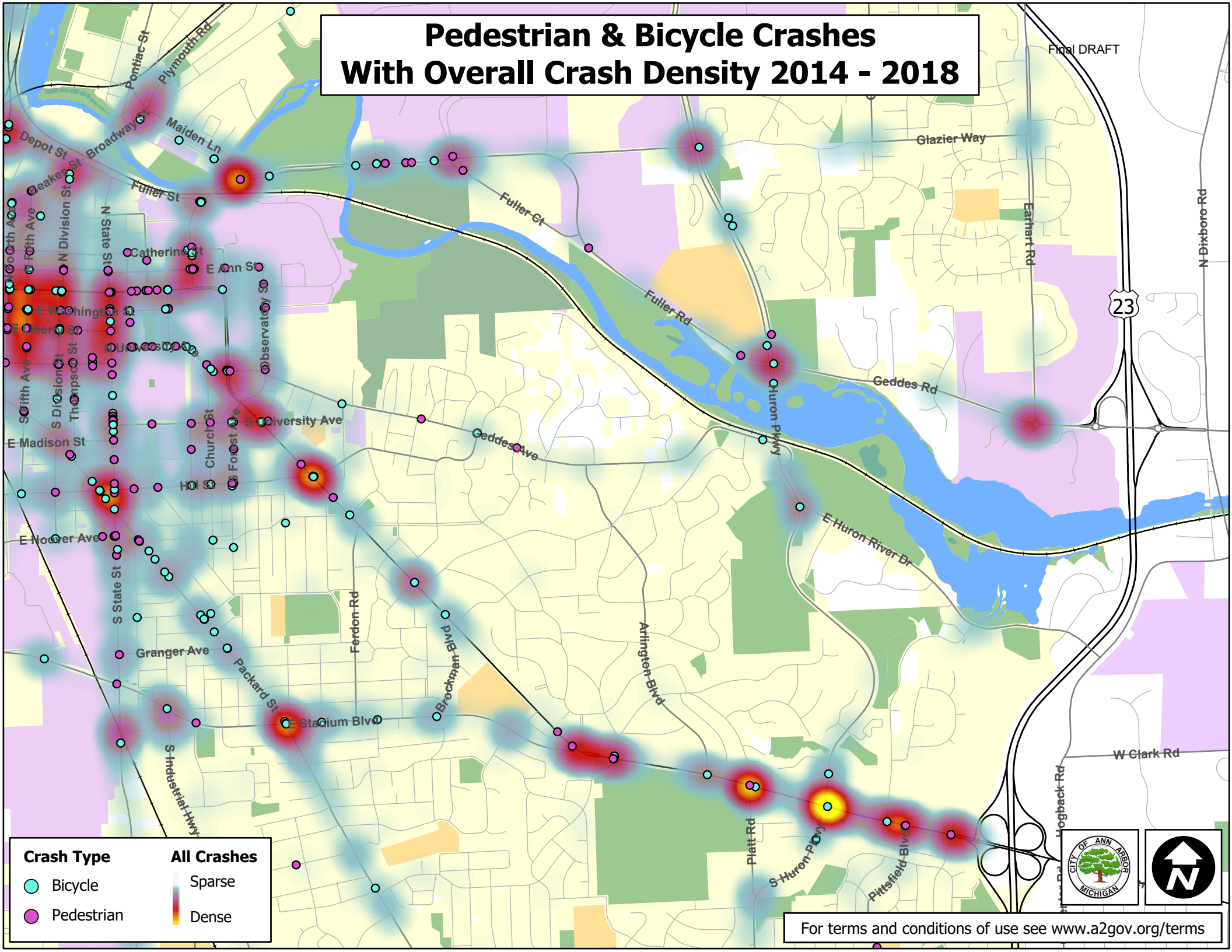
Pedestrian & Bicycle Crashes With Overall Crash Density 2014 - 2018

Final DRAFT



Pedestrian & Bicycle Crashes With Overall Crash Density 2014 - 2018

Final DRAFT



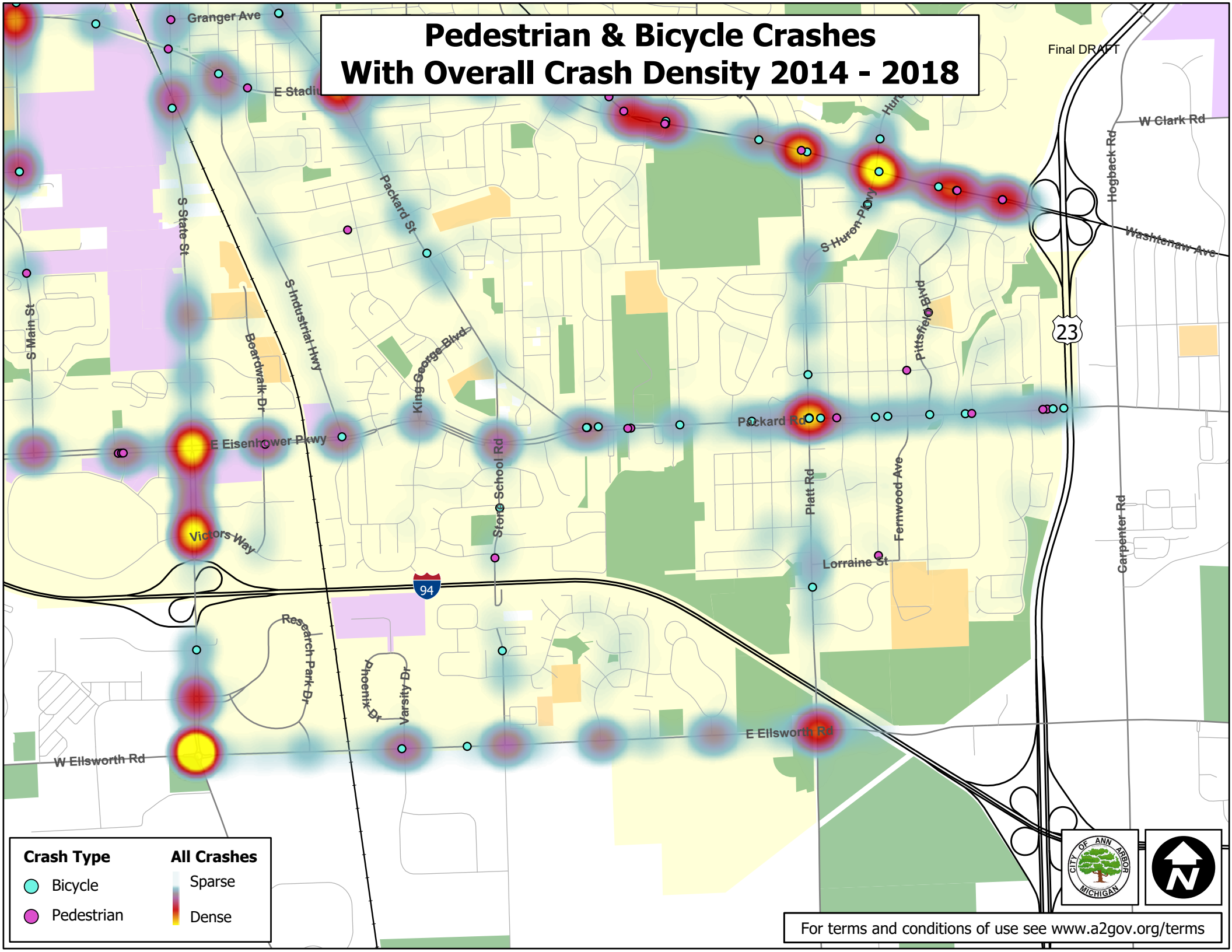
Crash Type

- Bicycle
- Pedestrian

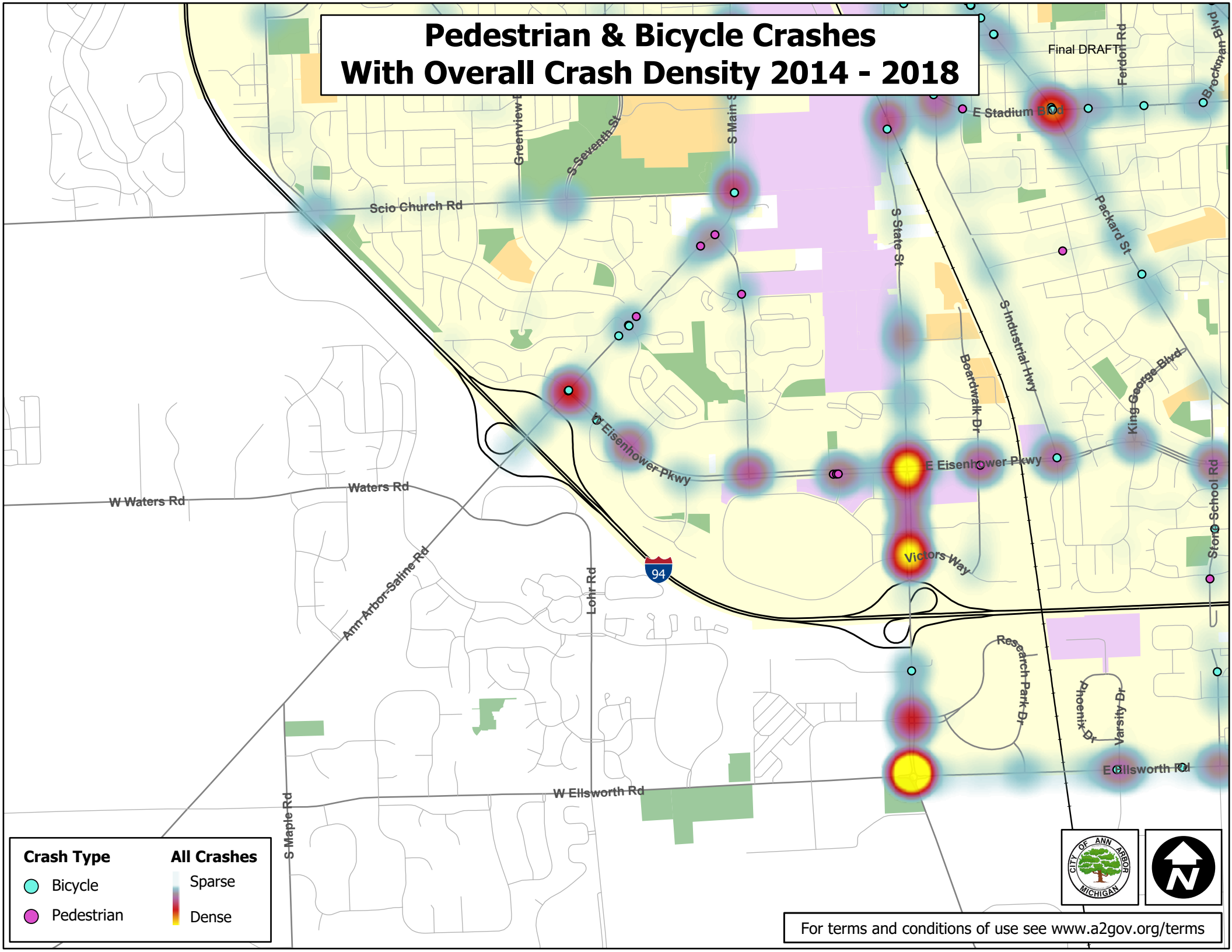
All Crashes

- Sparse
- Dense

Pedestrian & Bicycle Crashes With Overall Crash Density 2014 - 2018

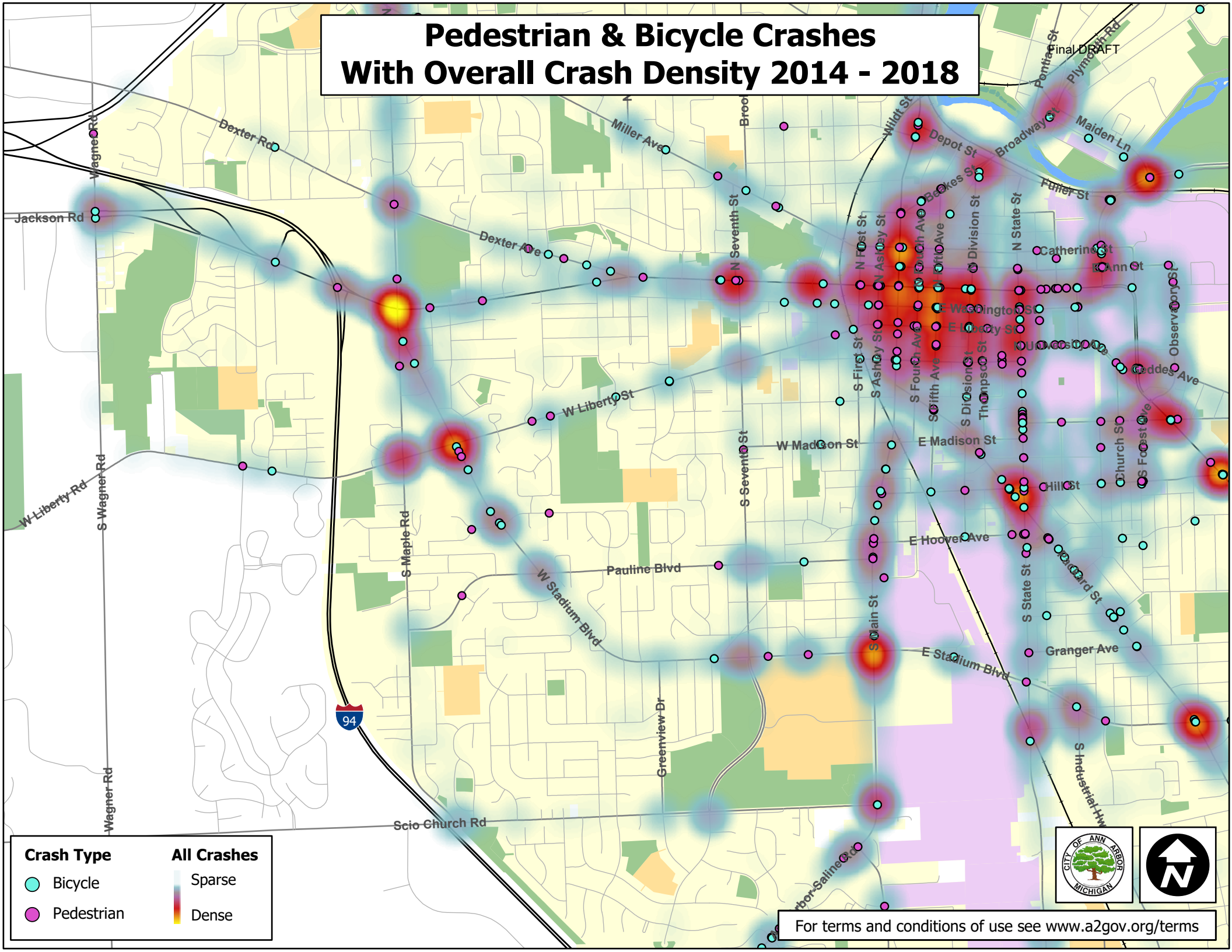


Pedestrian & Bicycle Crashes With Overall Crash Density 2014 - 2018



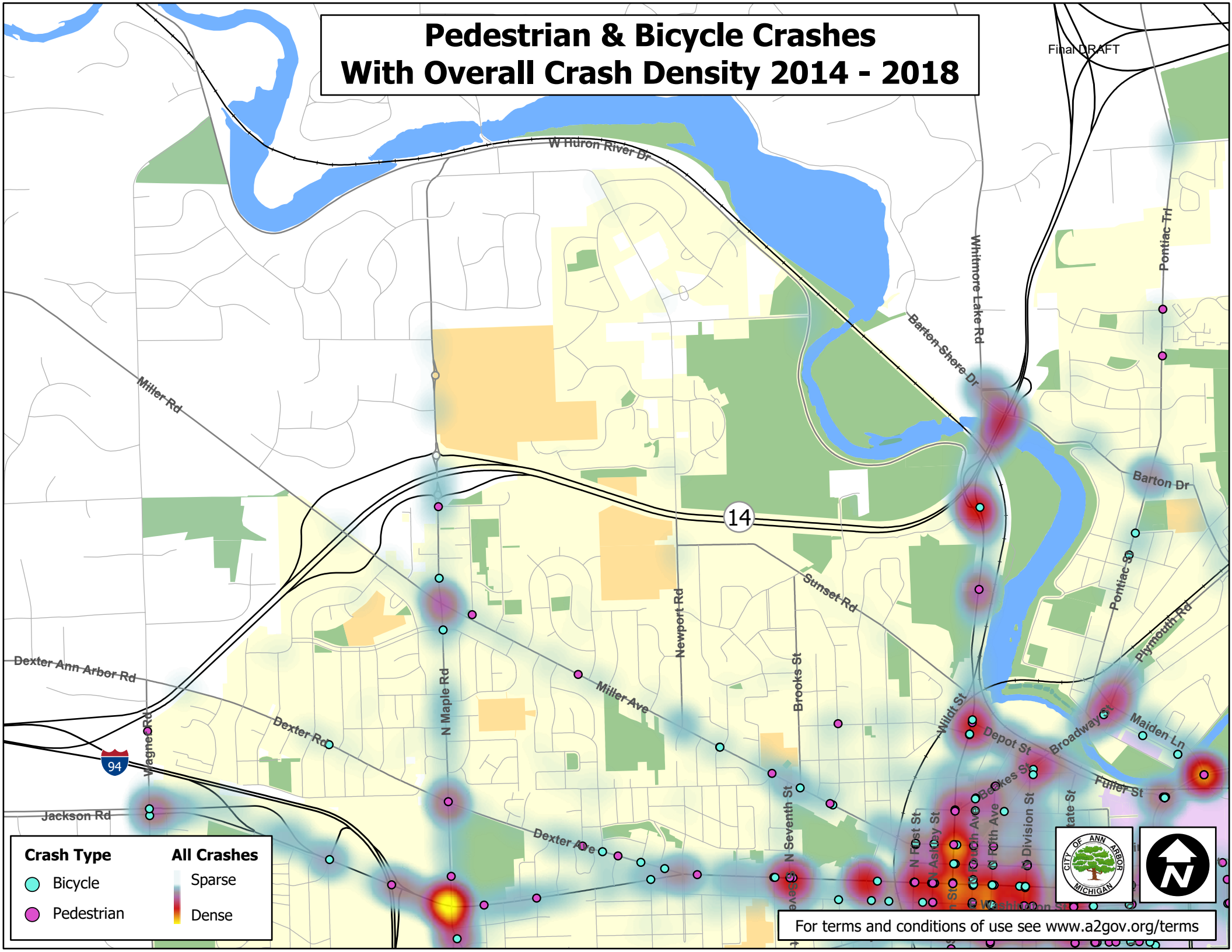
Pedestrian & Bicycle Crashes With Overall Crash Density 2014 - 2018

Final DRAFT



Pedestrian & Bicycle Crashes With Overall Crash Density 2014 - 2018

Final DRAFT



Bicycle & Pedestrian Crashes 2014 - 2018

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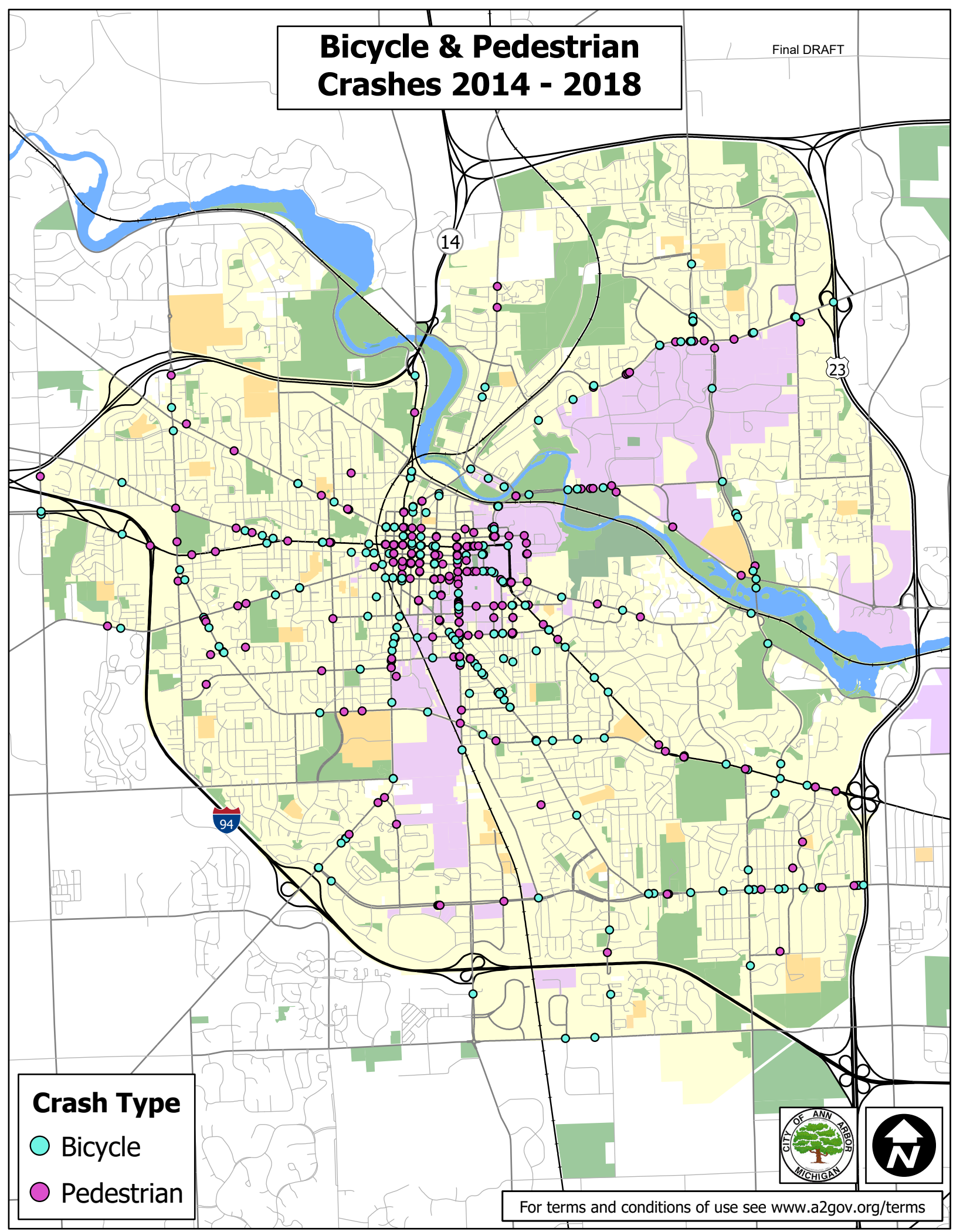
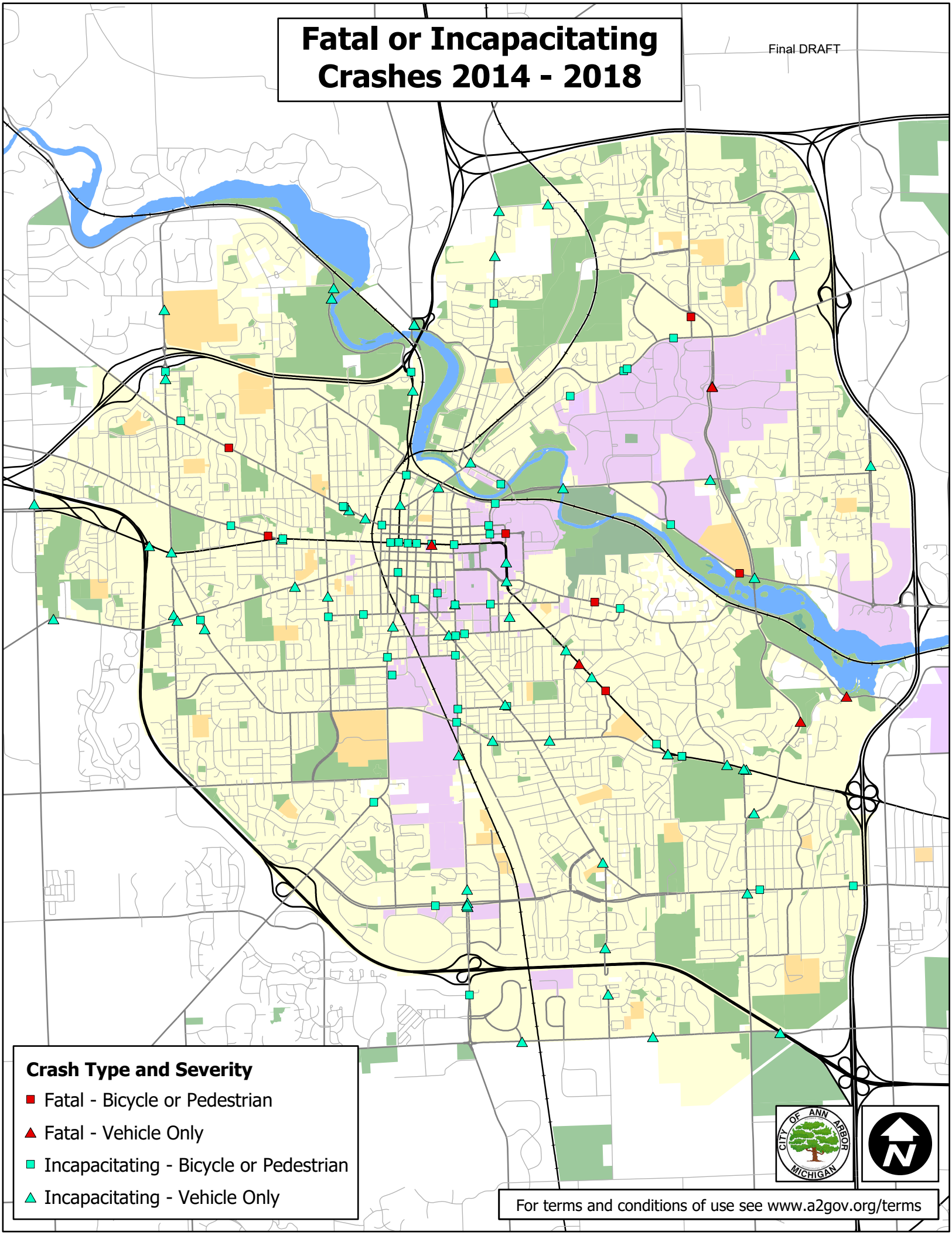


Fatal or Incapacitating Crashes 2014 - 2018

Final DRAFT



ATTACHMENT F

ANN ARBOR MOVING TOGETHER

TOWARDS VISION ZERO

City of Ann Arbor Comprehensive Transportation Plan

Mobility in Ann Arbor: Today Factbook

DRAFT FINAL

November 19, 2019

Above illustrations by Pablo Stanley

Table of Contents

Mobility in Ann Arbor: Today

The City of Ann Arbor is currently the fifth largest city in the State of Michigan and continues to grow. Population has been growing steadily since 2010, after remaining relatively stable for ten years; the population today is 7% higher than in 2009, when the previous Transportation Master Plan Update was completed. Employers are also increasingly choosing Ann Arbor resulting in a 3%[1] job growth since 2009, and an all-time high in August 2019.

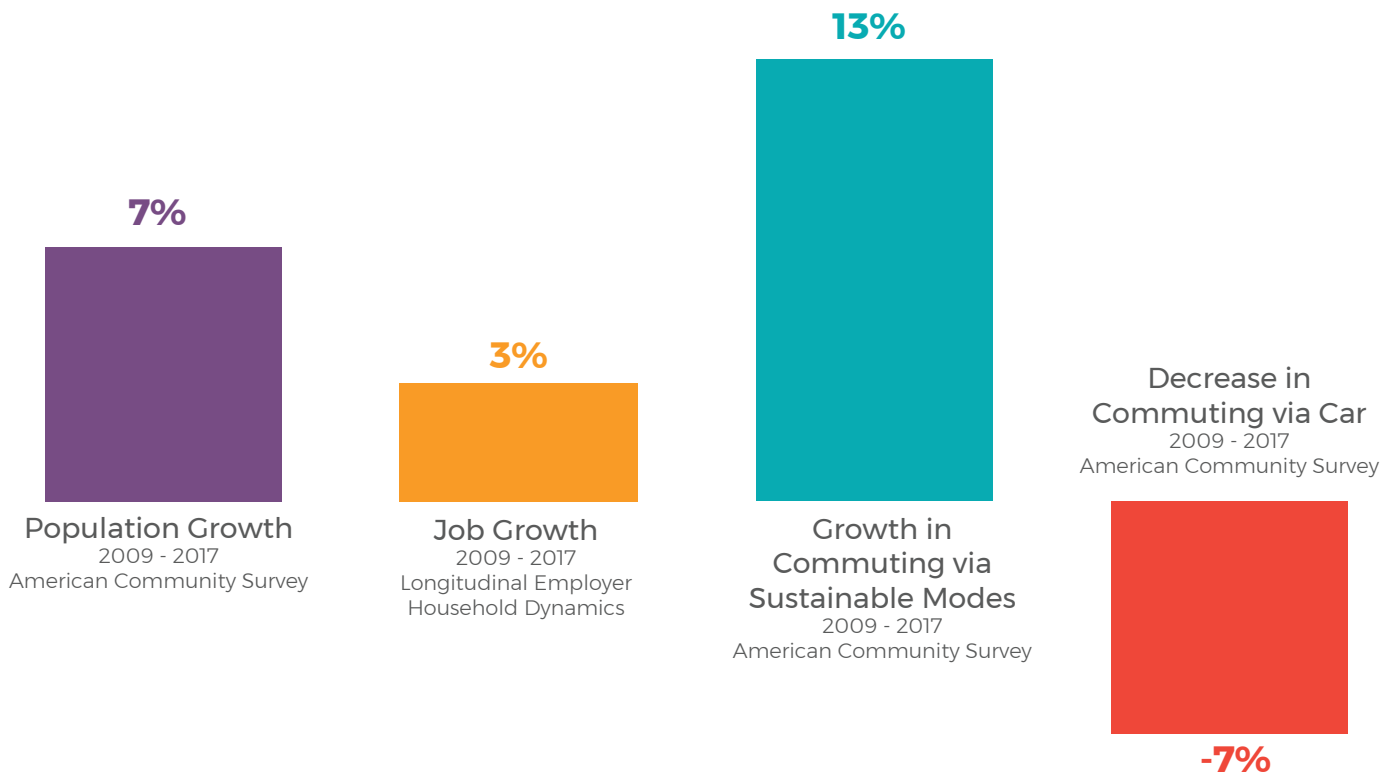
As the city grows and activity increases, Ann Arbor's transportation system is becoming more sustainable and less reliant on cars. The city has made significant investments in making streets safer for people walking and bicycling, providing more choices for residents via more frequent transit service, and improving efficiency through advanced traffic signal technology. Residents are responding to those investments through their actions; fewer residents are driving to work while more are choosing to use public transportation, walk, and bike to work. More households in Ann Arbor are choosing to go car-free and car-light (owning fewer vehicles than the number of workers). However, these behavior shifts are in part counterbalanced by the increase in workforce that has few options but to drive into Ann Arbor, adding strain to the city's transportation network.

Although more people are electing non-car transportation options, transportation remains the largest share of the city's greenhouse gas emissions. In addition, the transportation system must adapt to keep up with current trends, including the growth in jobs, new mobility services such as bikeshare and scooters, and advancing vehicle technology.

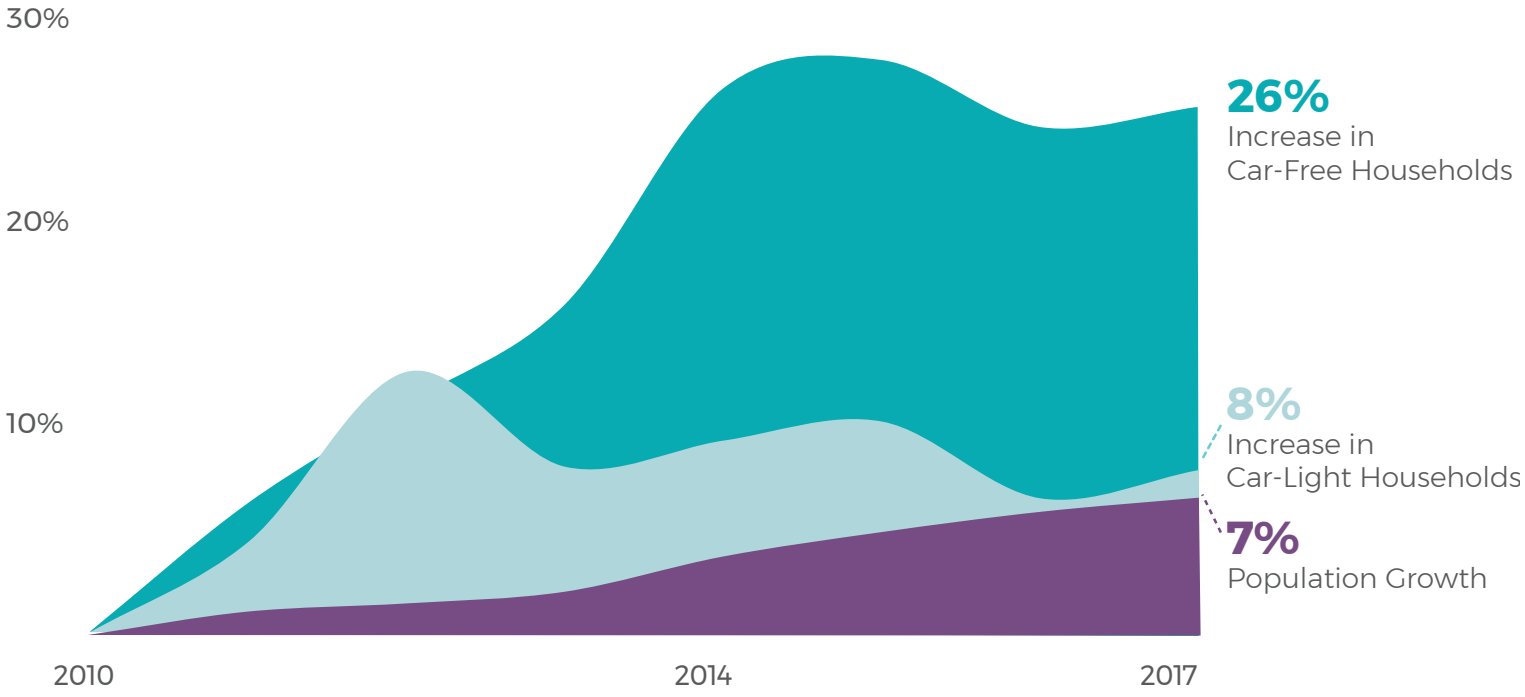
There are also safety challenges that require immediate action: 15 people were killed in traffic crashes from 2014 to 2018.[2] The city has established a goal of zero deaths caused by traffic crashes by the year 2025.

Ann Arbor Moving Together will update the city's 2009 Transportation Master Plan Update to address Ann Arbor's transportation challenges, build on the successes of the past decade, and react to the changing landscape of transportation. This factbook on "Mobility in Ann Arbor: Today" aims to build a common understanding amongst residents, workers, community leaders, and city staff about existing challenges and opportunities. It explores the transportation network and use from the perspective of people walking, bicycling, taking transit, and driving, as well as how transportation impacts the health and well-being of residents and the environment.

Population and Job Growth vs. Changing Commuting Behavior[3]



Growth in Car-Free and Car-Light Households[4]

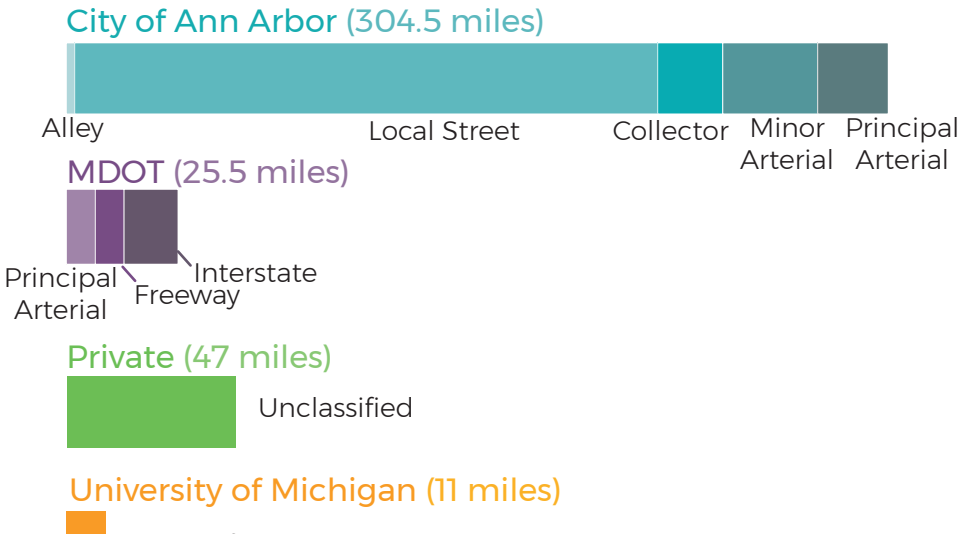


Ann Arbor's Streets

The City of Ann Arbor's street network forms a foundational element of daily life. Ann Arbor's streets connect residents to family and friends, schools and jobs, daily essentials, and opportunities for recreation and entertainment; they move products and goods, enable the city's economy, and provide public spaces where everyone can come together — whether meeting on the sidewalk, attending a street festival, or relaxing at a sidewalk cafe. Streets owned by the city make up 11% of the total land area in Ann Arbor and, as such, have a considerable opportunity to contribute to a welcoming public realm and enhance Ann Arbor's unique quality of place. Due to the many roles the city's streets must play, Ann Arbor uses the concept of 'complete streets'; streets that are designed to balance the needs of all users to guide the planning and design of the street network.

Designing, maintaining, and managing nearly 400 miles of streets involves coordinating numerous city departments with partners throughout Ann Arbor, the region, and the state. Streets in Ann Arbor range in scale from local streets that carry just a few hundred vehicles a day to trunklines that carry tens of thousands of vehicles each day and are owned and managed by the Michigan Department of Transportation (MDOT).

Street Jurisdiction[5] (by street miles)



Streets as Public Spaces[6]

11% of Ann Arbor's total area is made up of city-owned streets., nearly as much as all of Ann Arbor's parks combined.

Speed Limit[7]

(by centerline miles)

81% of streets are 25 MPH.

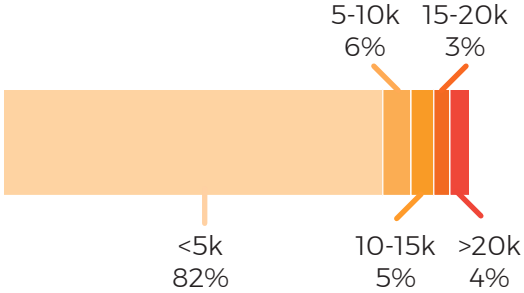
Number of Lanes[8]

(by street miles)

85% of streets have two lanes.

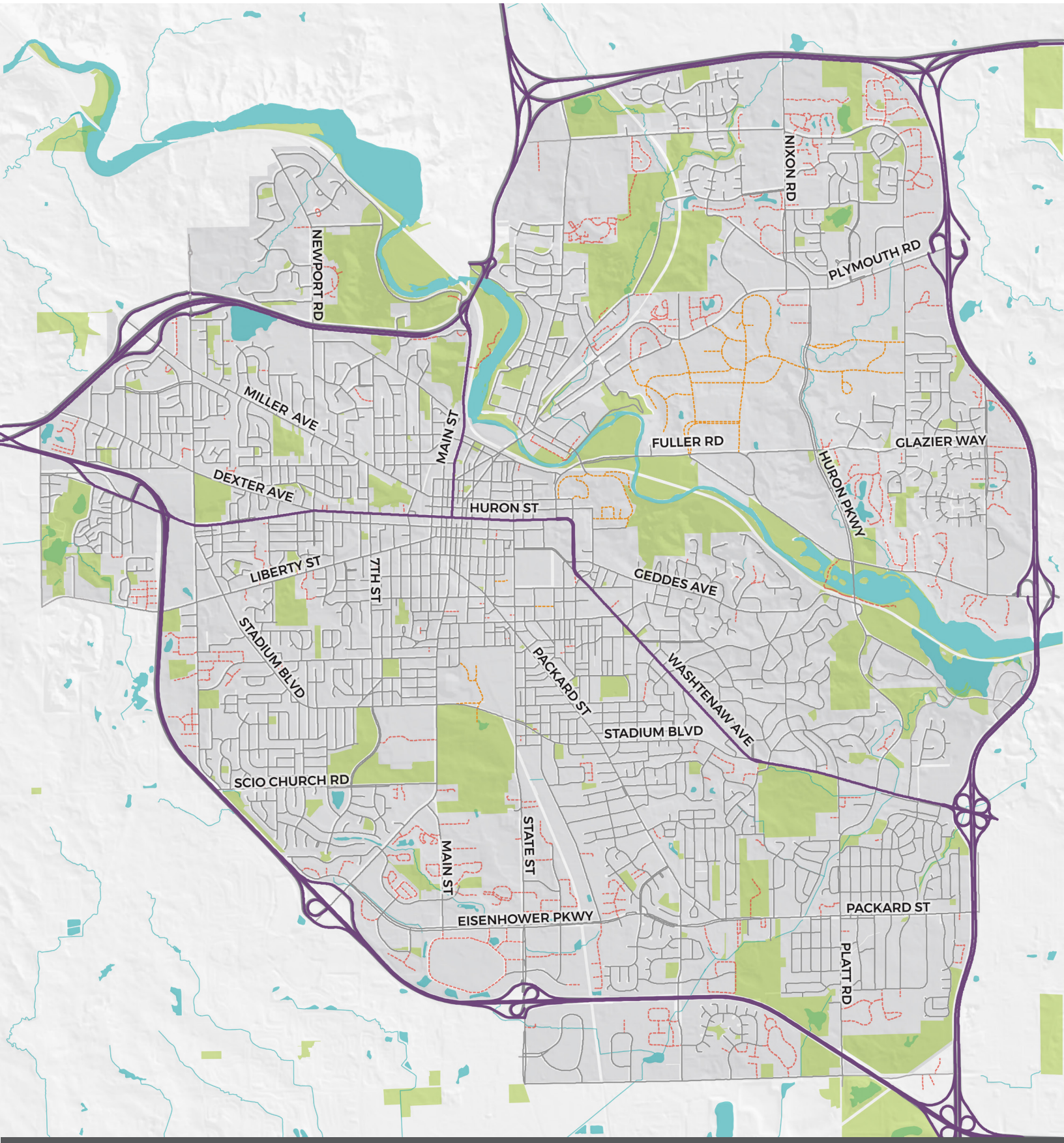
Traffic Volume[9]

(average vehicles/day by street miles)



Excludes interstates/freeways

Street Jurisdiction



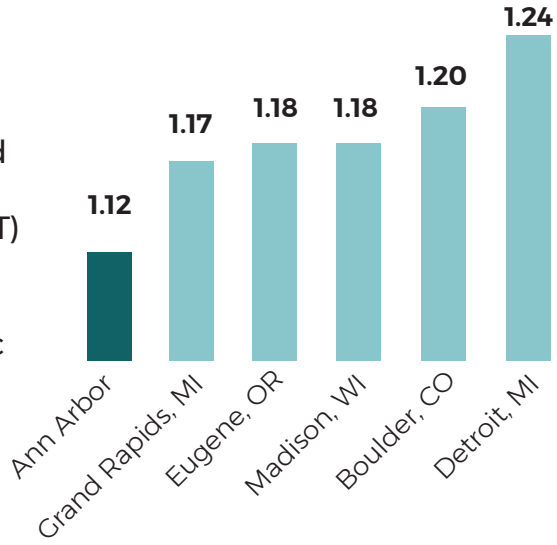
Major Driving Corridors

As Ann Arbor grows, its street system is tasked with accommodating more people traveling around the city. Drivers in Ann Arbor face less congestion than drivers in some comparable cities.

Because of the major inflow and outflow of commuters, the volume of traffic in Ann Arbor is heavily concentrated during the morning (7 – 9 a.m.) and evening (3 – 6 p.m.) peak periods. Half of the total vehicle miles traveled (VMT) in Ann Arbor occur during these peak periods and 94% of the total delay Ann Arbor drivers experience happens during these five hours.[10] Additionally, much of the traffic volume and delay occur on just a few major corridors.

Congestion Comparison[11]

(Travel Time Index)

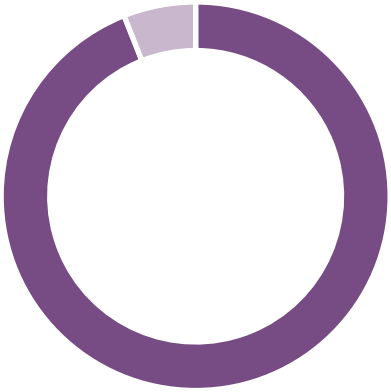


Travel time index (TTI) compares driving speeds during peak periods to speeds with no congestion. A TTI of 1.2 indicates that a trip that takes 10 minutes with no congestion would take 12 minutes during the peak period.

Ann Arbor's Major Corridors

Fuller Rd. corridor includes Geddes Rd. and Glen Ave. Main St. corridor includes Ann Arbor Saline Rd.

Driver Delay[12]



94%

of all *delay experienced by people driving in Ann Arbor occurs between 7-9 AM and 3-6 PM.*

Travel Time and Reliability on Major Corridors

(based on a typical weekday)[13]

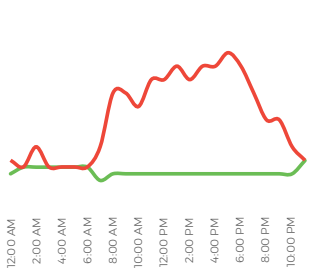
Low-end expected travel time

High-end expected travel time

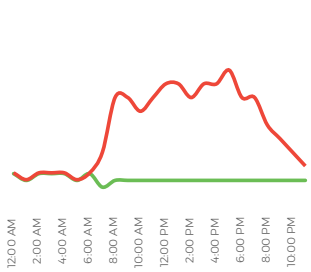
Stadium Boulevard

Travel Time (minutes)

Maple to Washtenaw



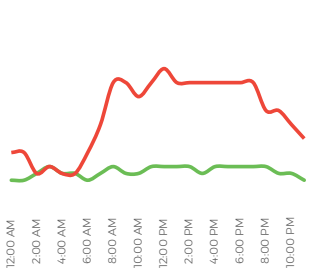
Washtenaw to Maple



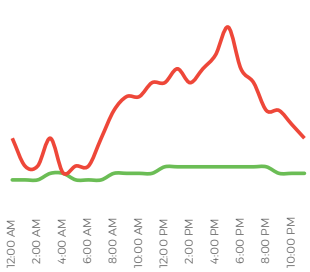
State Street

Travel Time (minutes)

Ellsworth to Huron

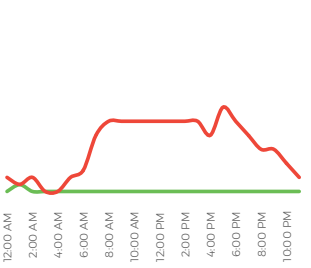


Huron to Ellsworth

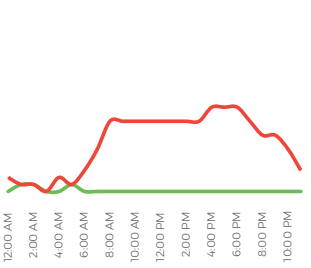


Plymouth Road

US 23 to Depot

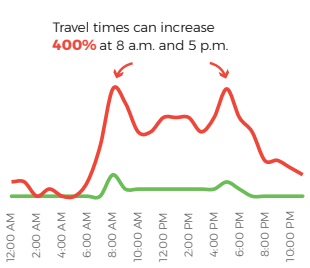


Depot to US 23

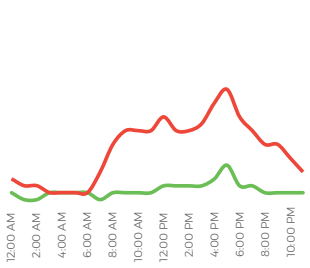


Huron Street

Jackson to Washtenaw

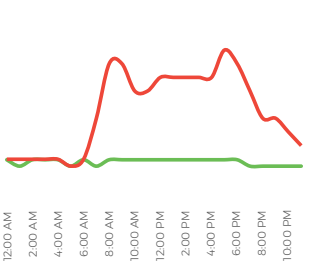


Washtenaw to Jackson

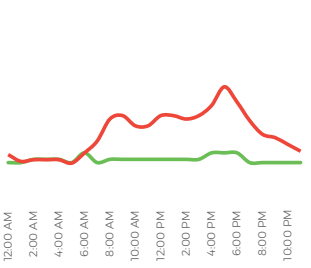


Packard Street

US 23 to Main

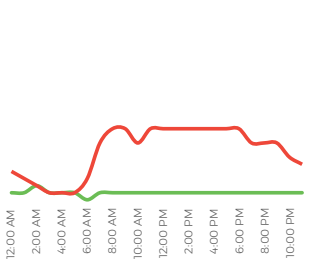


Main to US 23

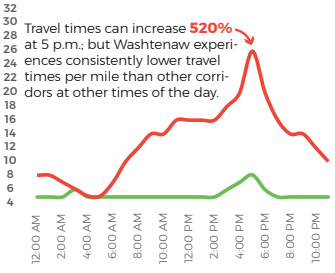


Washtenaw Avenue

US23 to Geddes

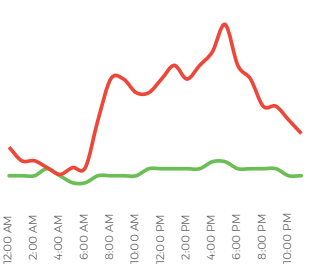


Geddes to US23

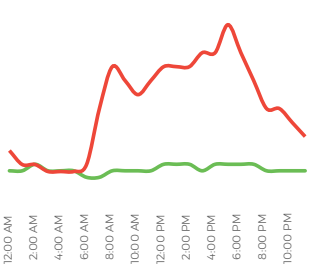


Main Street

I94 to M14

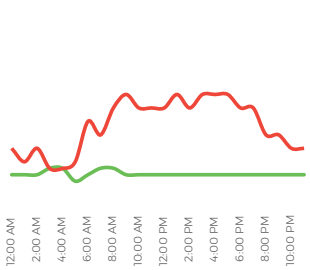


M14 to I94

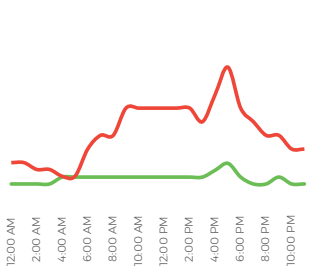


Fuller Road

US23 to Huron



Huron to US23



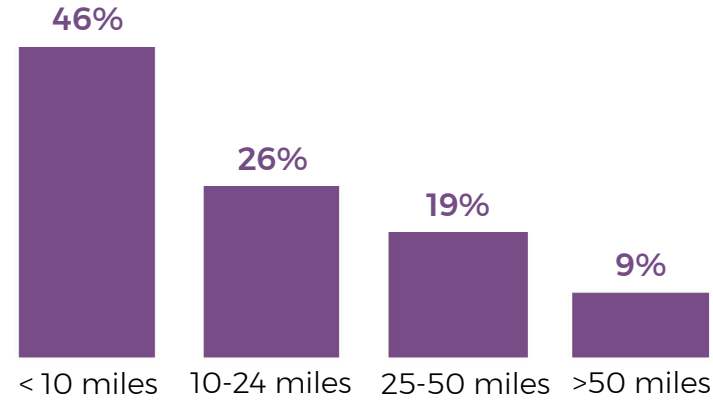
Commute Patterns

Ann Arbor is a regional job center. One out of every 43 people in Michigan work in Ann Arbor, and more than 83,000 people commute into the city on weekdays[1,4] This influx of workers places major strains on the city's, and region's transportation systems during peak periods. Half of the people who work in Ann Arbor commute from the easterly directions. Workers who commute less than 10 miles tend to travel from the southeast or east of the downtown (towards Ypsilanti), while nearly 40% of workers who commute more than 50 miles travel from the northwest or westerly directions.[15]

Workers outside of the city currently have limited options for getting to work besides driving. A number of TheRide's routes connect to Ypsilanti; however, there are only a handful of connections with other cities in the region. The majority of people working in Ann Arbor commute more than 10 miles, meaning that active transportation is not a viable option for many. TheRide and the city manage a network of Park & Ride lots on Ann Arbor's periphery. Ideally commuters would park in a Park & Ride facility then switch to public transit for the final connection to their job. However, to encourage more commuters to do so, the frequency and speed of transit must increase and/or the price of driving to and parking at the workplace must increase in an equitable manner. Various concepts to improve regional connectivity have been proposed and Ann Arbor has actively supported these efforts, including North-South Commuter Rail (WALLY), a commuter rail connection to Detroit, and more regional rapid buses.

Inflow of Workers[17]

Ann Arbor Workers Commuting Distance[16]

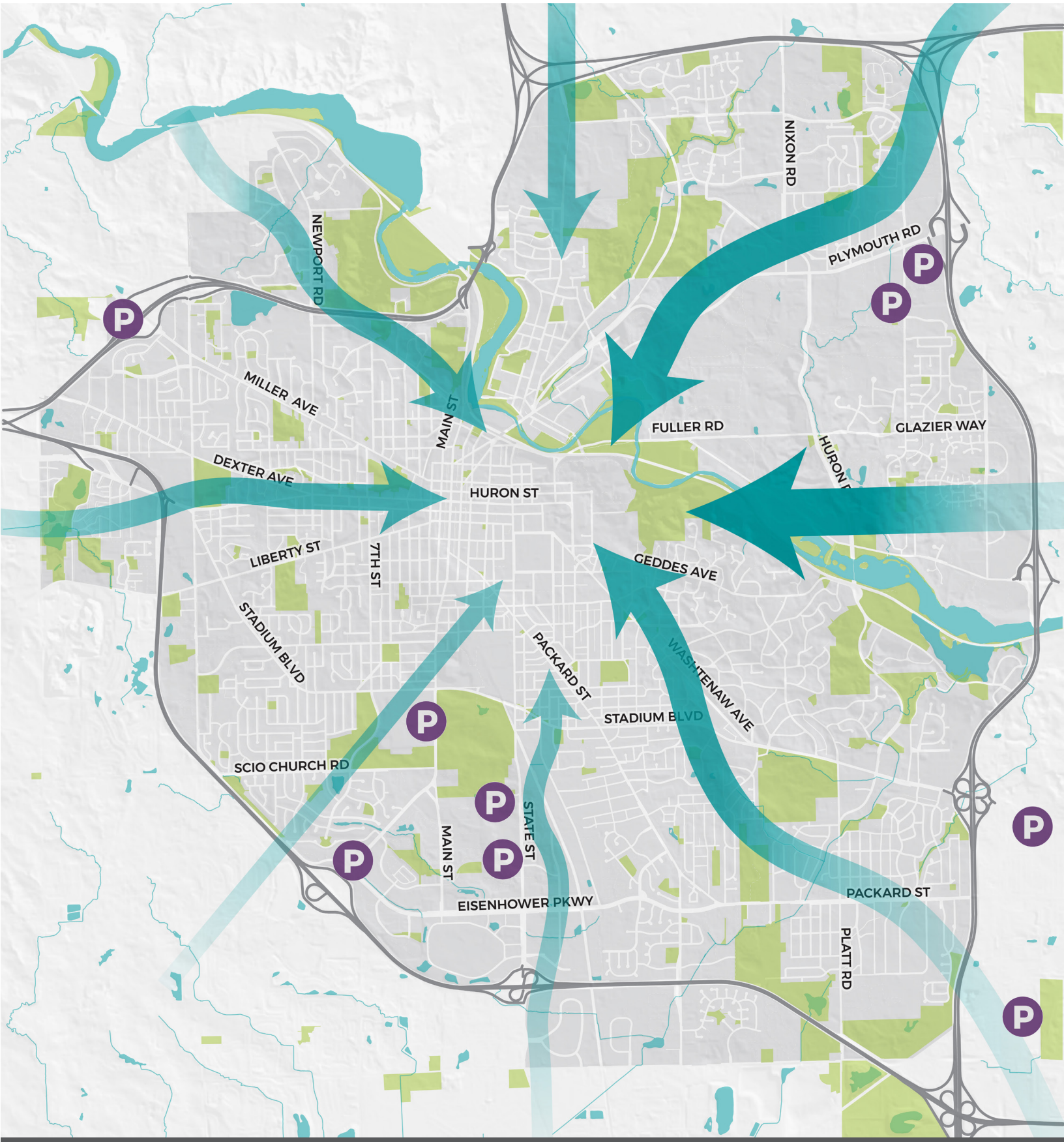


29%

of workers who commute into Ann Arbor come from **outside of Washtenaw County.**[18]

Ann Arbor Workers Commute Flow

Park & Ride lots



0.5 1 2 Miles

Transit System and Use

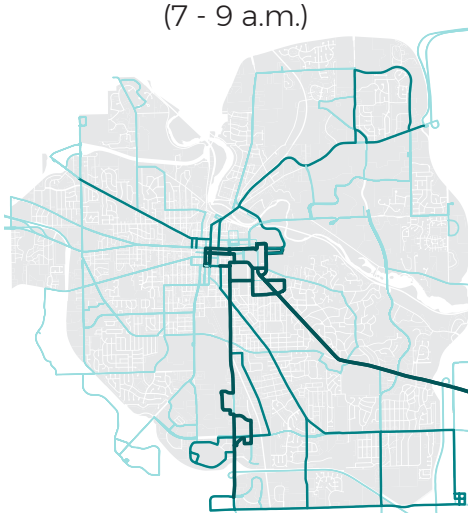
Continuing to build a user-friendly and efficient transit system is essential for Ann Arbor to better connect people to destinations in the city and across the region and achieve the city's climate goals. Over the past five years, the City of Ann Arbor, city residents, and the Ann Arbor Area Transit Authority (AAATA or TheRide) have invested significant resources in expanding transit service across the city and connecting to neighboring communities. Residents overwhelmingly voted to increase their contributions to the transit system in 2014 and 2018, and their decision has led to new transit routes, increased weekend service, extended weekday service later into the evening, and buses running more frequently on many routes.

Overall, through these increased investments, TheRide was able to offer 42% more hours of service in 2017 than in 2013.[19] The city, the Ann Arbor Downtown Development Authority (DDA), and TheRide have also worked together to enhance access to transit via Park and Ride lots and to implement the go!pass program, which offers employees within the DDA free, unlimited use of TheRide fixed-route buses. Increased service and new programs has led to record high ridership; more people used the service in 2018 (6.9 million total trips) than in any previous year.[20] Opportunities for the city and TheRide to further improve service include ways to increase the speed and reliability of buses in Ann Arbor, such as installing transit signal priority equipment and dedicating bus-only lanes in key locations, extending service hours, and adding on-demand service.

Beyond expanded service, Ann Arbor and TheRide will continue to work together to provide a more comfortable and high-quality experience for transit riders through amenities such as transit shelters and seating, clear signage, and lighting. Currently, only 12% of bus stops have a transit shelter and 65% have lighting.[21]

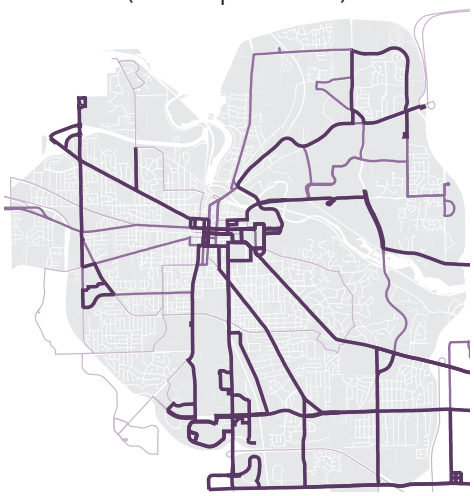
However, the city has made significant progress upgrading stops to meet Americans with Disabilities Act (ADA) standards with 89% of stops meeting ADA standards.

Bus Frequency[22]
(7 - 9 a.m.)



- Every 10 minutes or less
- Every 10-20 minutes
- > 20 minutes

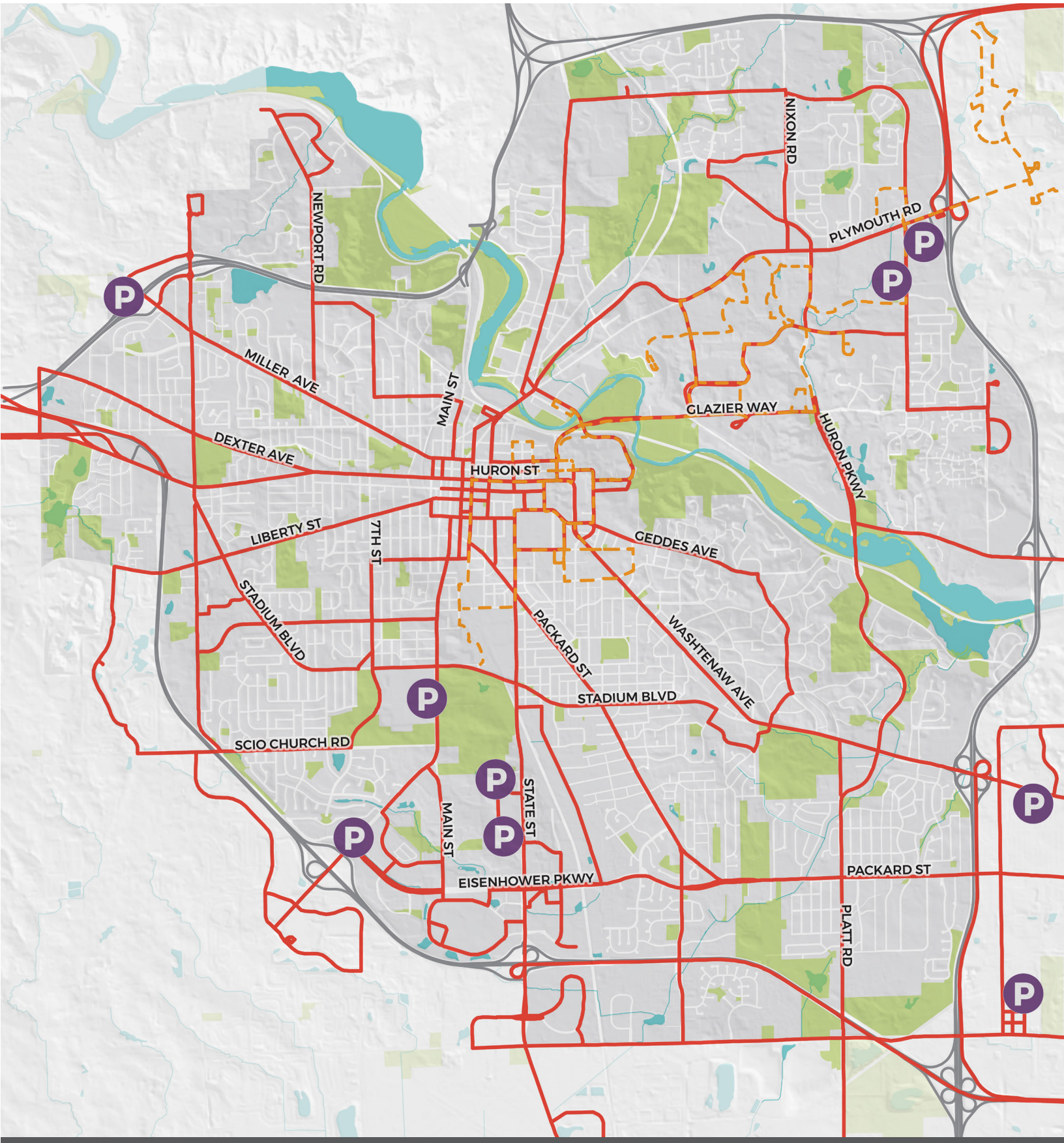
Weekday Boardings[23]
(Feb-April 2018)



- More than 1,000
- 500 - 1,000
- Less than 500

1,324 free parking spaces in Park and Ride lots across the City.

Ann Arbor Transit Routes



Pedestrian Demand

Understanding how many people are walking throughout Ann Arbor is difficult. The city and its partners regularly count people biking and walking at key locations but there is not a comprehensive, citywide dataset. In the absence of concrete numbers, a demand index can help the city understand the likelihood of high pedestrian activity and help to prioritize investments. Factors such land use, nearby destinations and jobs, and certain characteristics of the population (e.g., age, income, and vehicle ownership) influence how much and where people walk. An evaluation of pedestrian demand on Ann Arbor's streets revealed that certain areas have a very high demand for walking trips, most notably downtown and the University of Michigan campus. Counts of people walking in these areas regularly see more than 5,000 people per day and areas with the highest demand can see more than 15,000 pedestrians.

Moving away from downtown and campus areas, pedestrian demand tends to decrease as density decreases and single family land use becomes more common. However, higher pedestrian demand is observed in areas of higher housing density and near schools and commercial centers.

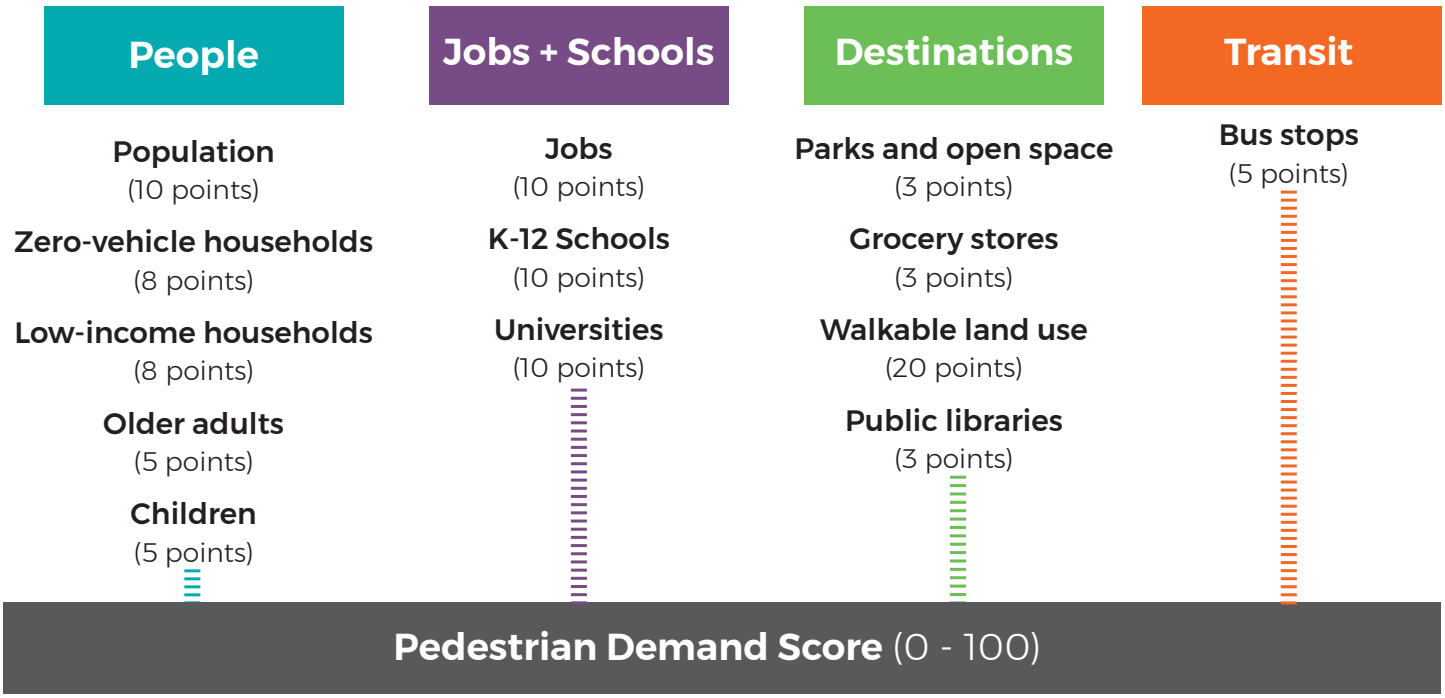
Pedestrian Crashes[24]

60% of all crashes where a person walking was killed or seriously injured occurred **outside of daylight hours.**

44% of all crashes where a person walking was killed or seriously injured were a result of the driving **failing to yield.**

56% of all people walking who were killed or seriously injured were **under 18 or over 65.**

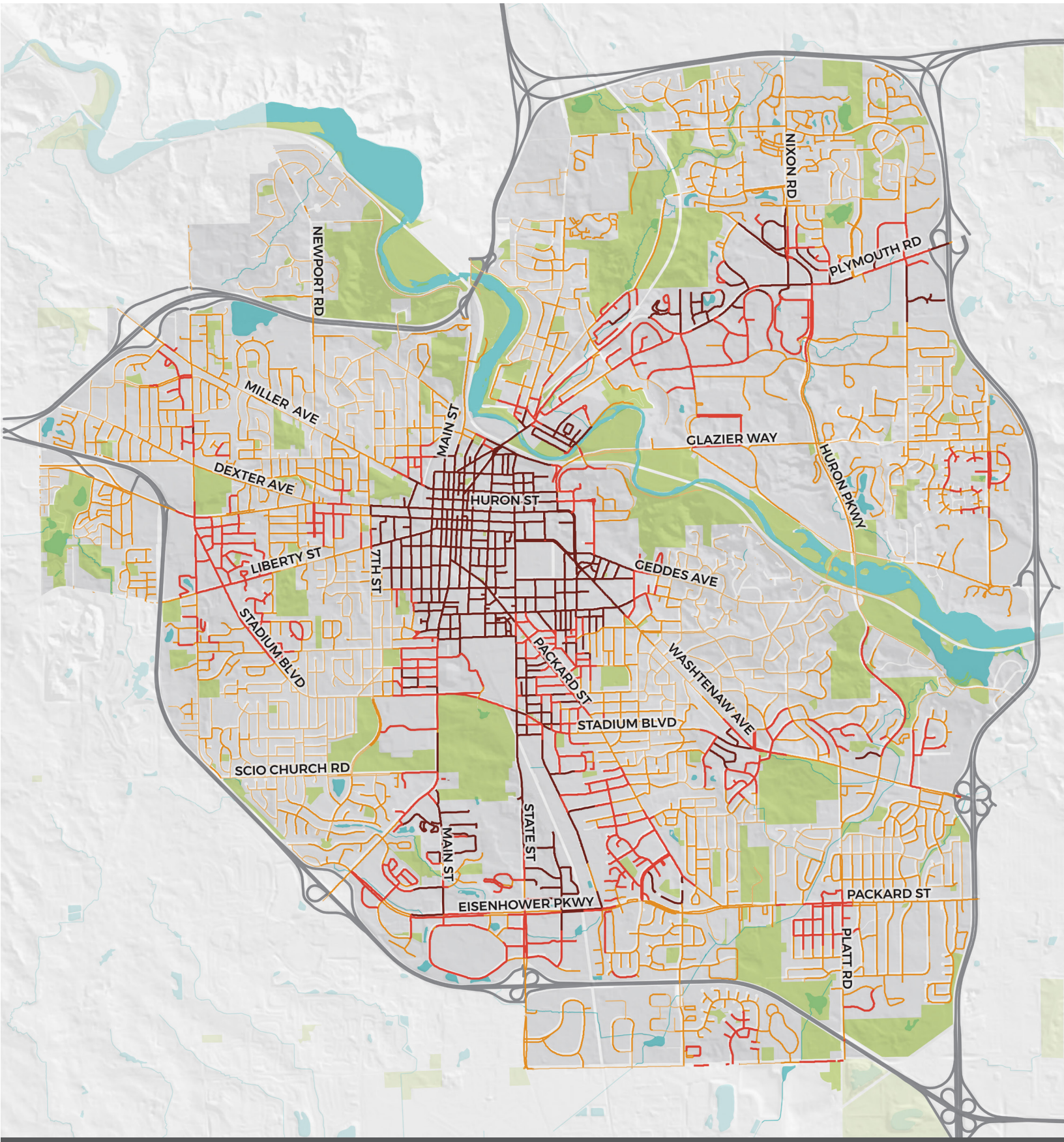
Pedestrian Demand Index



Factors were calculated within a 1/4 mile buffer of individual street segments.

Pedestrian Demand

Lowest Demand — Highest Demand



0.5 1 2 Miles

Pedestrian Network

Everyone is a pedestrian at some point in their journey, even if it is only walking from the parking garage to the office. Providing a connected network of sidewalks with frequent, safe opportunities to cross the street can make walking more convenient for everyone. Creating a welcoming environment for people walking contributes to and encourages active living, reduces emissions from motor vehicles, and fosters social cohesion. Sidewalks and crosswalks should be amenable to pedestrians of all abilities: children, older adults, and people with strollers, vision impairments, or mobility devices.

Ann Arbor has made significant efforts to improve pedestrian safety and create a more walkable city. Since 2007, the city has installed 70 mid-block crossings and 35 rectangular rapid flashing beacons (RRFBs).[25] The city's 2013 Non-Motorized Transportation Plan identified 25 miles of sidewalk gaps that were crucial to fill in the near-term, and, over the last five years, the city has completed 15 miles of these gaps.

Ann Arbor's crosswalk ordinance mandates drivers to stop for pedestrians standing at the curb or within a crosswalk, and the city has developed Crosswalk Design Guidelines to enhance and standardize all crosswalks.

During winter, property owners are responsible for removing snow and ice from sidewalks and the city proactively enforces the policy in areas with high pedestrian activity (e.g., shopping districts, school walking routes, high ridership bus stops, etc.).

Walkability

Block length and intersection density impact walkability and connectivity to goods and services.

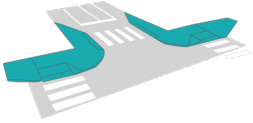
Longest Block Length	Lowest Intersection Density
Boardwalk	Newport
Research Park/ Pheasant Run	Leslie Park/ Arrowood
Briarwood	North Campus

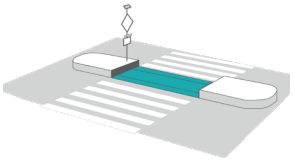
Shorter blocks and more intersections create more walking route options which can decrease travel time and distance.

Shortest Block Length	Highest Intersection Density
Downtown	Downtown
North Central	Virginia Park
Virginia Park	South University

Examples of Crosswalk Features

Curb Bumpout





Pedestrian Refuge Island

RRFB

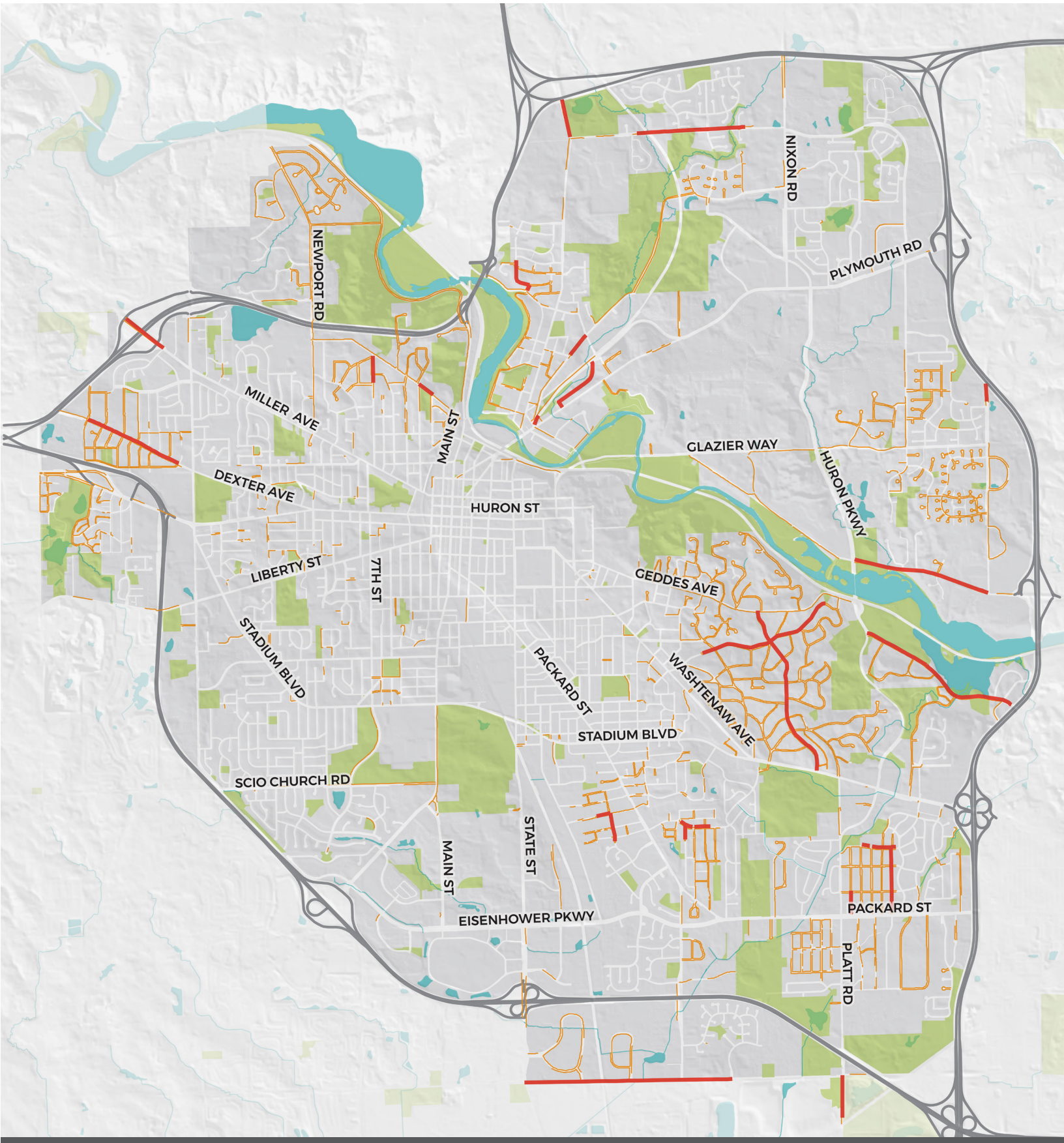
Features at Mid-Block Crosswalks in Ann Arbor[26]

Mid-block crosswalks are important for providing convenient pedestrian access. Depending on the type of street and context, different features are necessary to ensure people walking are visible and safe.

Functional Classification	# of Crosswalks	% with Signage	% with Lighting	% with Island	% with RRFB	% with Gateway	% with Bumpout
Local	28	39%	7%	7%	4%	0%	7%
Collector	53	57%	17%	15%	6%	9%	21%
Minor Arterial	84	61%	18%	29%	14%	35%	4%
Principal Arterial	53	68%	30%	40%	43%	8%	4%
Total	218	59%	19%	25%	18%	18%	8%

Gaps in the Sidewalk System

Remaining Near-Term Sidewalk Gaps
All Sidewalk Gaps



0.5 1 2 Miles

Bicycle Network

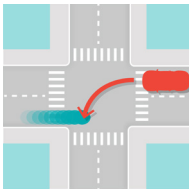
The City of Ann Arbor's 2009 Transportation Master Plan and 2013 Non-Motorized Transportation Plan both articulated the goal of improving the city's bicycle system to create an environment and culture supportive of active transportation. Providing more and better options for active transportation increases transportation choices for people without access to a car and/or driver's license, provides opportunities for physical activity, improves safety, and reduces harmful emissions. Since 2007, Ann Arbor has nearly doubled the total mileage of designated bike routes in the city, installing 77 miles of bike lanes, shared use paths, and marked shared lanes (sharrows). The number of people bicycling to work grew by 39% from 2009 to 2017 and counts of people bicycling at key locations around the city have increased by as much as 266% between 2006 and 2017 (Packard Road between State Street and Hill Street).[27, 28]

To continue increasing the number of bicyclists in Ann Arbor, a network of bikeways that are safe and comfortable for people of all ages and abilities is needed. An evaluation of the level of traffic stress experienced by people biking (based on the volume of traffic, speed limit, and type of bike facility), shows that a majority of streets around the city where sufficient data is available are rated as high stress. 72% of all crashes involving a person biking occurred on these high stress streets. Because of the speed and volume of traffic on many major streets around Ann Arbor, the city has the opportunity to provide convenient, low-stress bicycle routes on local streets.

Crashes at Intersections[29]

80% of crashes where a person biking was killed or seriously injured occured at intersections

Crashes where a **vehicle is turning left** are particularly dangerous due to higher speeds and greater exposure.

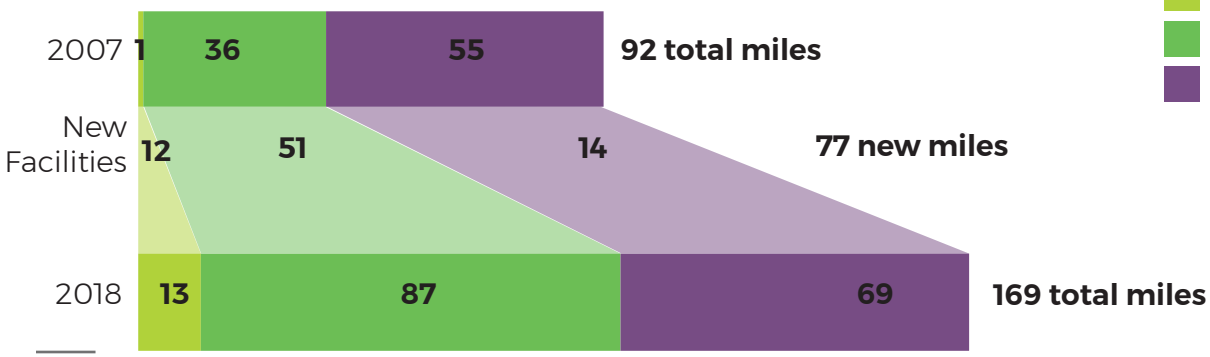


Access to Jobs via Bike

The average Ann Arbor resident can access **42,867 jobs** in 20 minutes via bike, if they are willing to bike on any street...

but can only access **15,231 jobs** using the low-stress network (streets rated LTS 1, 2, and those without data).

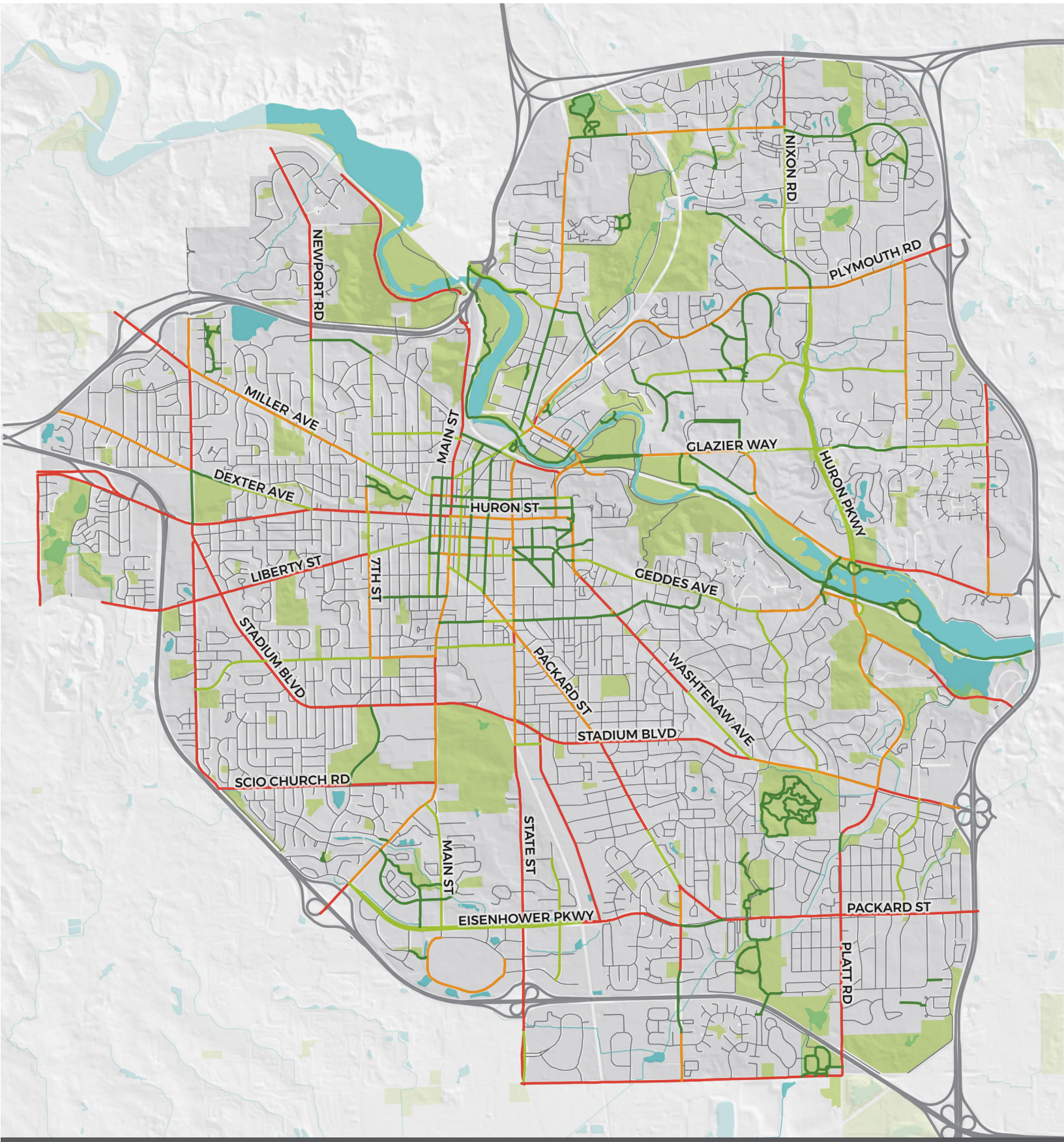
Growth in Ann Arbor's Bike Network[27] (2007-2018)



Types of Bike Facilities

- Sharrows
- Bike Lanes
- Shared Use Paths

Level of Traffic Stress (LTS) for People Biking



Streets with no data are primarily low-stress residential streets.

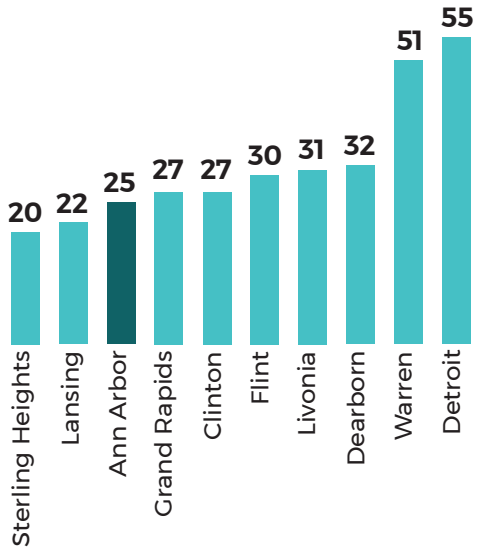
Safety

From 2009 to 2018, 23 people were killed in traffic crashes in Ann Arbor and 276 people suffered life altering injuries; Ann Arbor's goal is to reduce this number to zero.[30] Over the past 10 years, Ann Arbor has made significant investments to create a safe transportation system for everyone: installing roundabouts at intersections with significant crash histories, filling gaps in the sidewalk network, improving pedestrian crossings, and upgrading traffic signal technology. These investments have yielded positive results; Ann Arbor has one of the lowest rates of serious injuries and fatalities among cities in Michigan and some of the highest rates of walking and biking in the entire country. However, there is more work to be done to ensure Ann Arbor's streets are safe for all users.

In analyzing crash data and police reports from the last five years, patterns emerge that will allow the city to target investments to combat behaviors causing crashes, protect the most vulnerable users, and redesign streets and intersections where severe crashes are occurring.

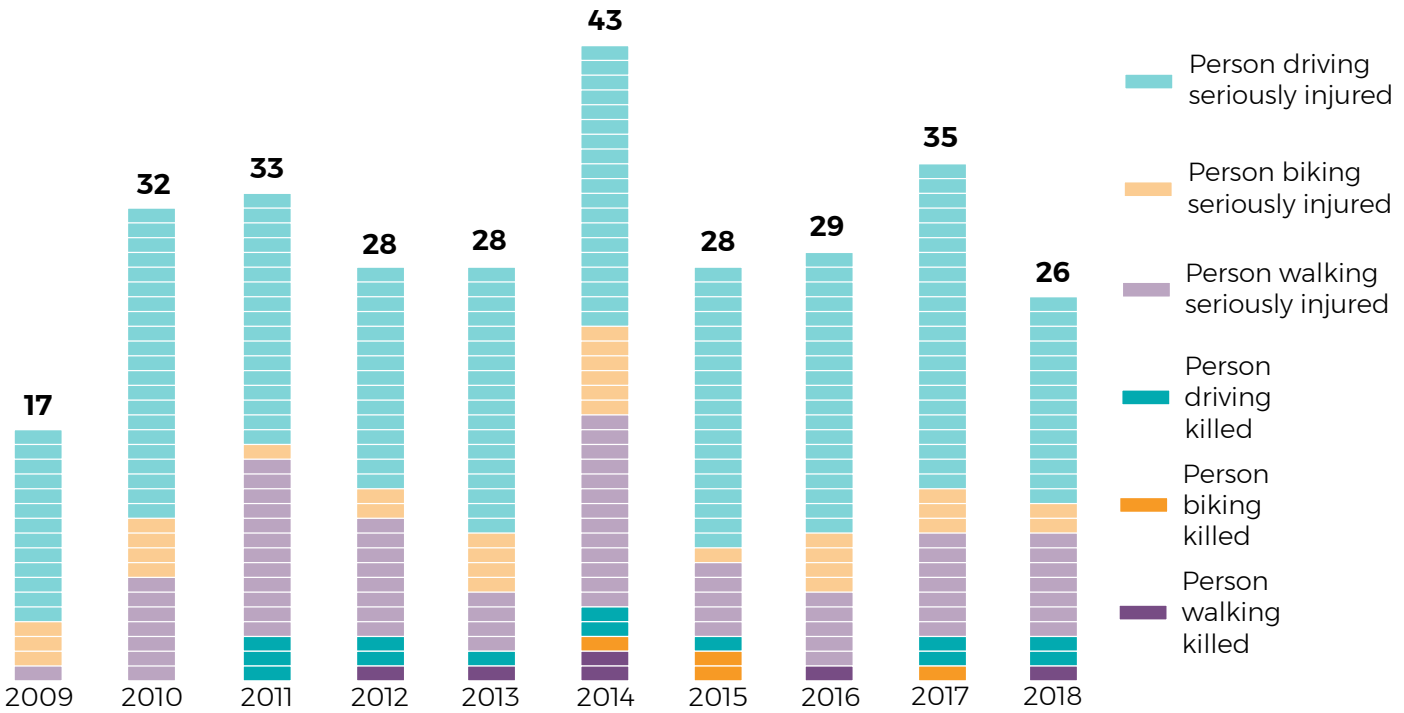
Crash Rates for 10 Largest Municipalities in Michigan[31]

(2009-2018 fatalities and serious injuries/100,000 people)



People Killed or Seriously Injured in Traffic Crashes in Ann Arbor[32]

(excludes highways/ interstates)

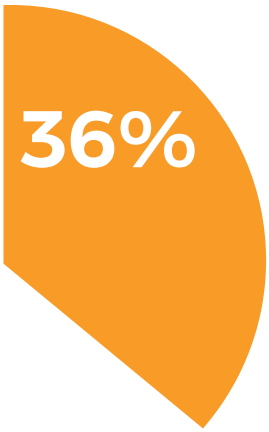


People walking and biking in Ann Arbor are disproportionately affected by traffic crashes (2014-2018 crash data, excludes highways/interstates).

Mode of Transportation to Work

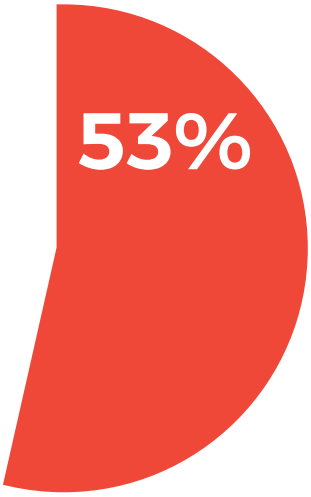
20% of Ann Arbor residents walk or bike to work.

Serious Injuries from Traffic Crashes



36% of people seriously injured in traffic crashes in Ann Arbor are walking or biking.

Fatalities from Traffic Crashes



53% of people killed in traffic crashes in Ann Arbor are walking or biking.

Speed is a major determinant of both the likelihood and severity of traffic crashes.[33]

hit by a car driving at...

20 MPH

9.5 out of 10 pedestrians survive.

30 MPH

5 out of 10 pedestrians survive.

40 MPH

1 out of 10 pedestrians survive.

Safety Focus Areas

Historic crash patterns point to specific locations in need of attention and can also reveal general designs or characteristics of streets that lend to less safe conditions. Identification of focus corridors and intersections was based on the total number of crashes, the number of fatalities and injuries, and the number of crashes involving people biking and walking. Across the city, 77% of all the fatalities and serious injuries over the last five years occurred on 30 corridors. Additionally, 12% of all fatalities and serious injuries occurred at 17 intersections.

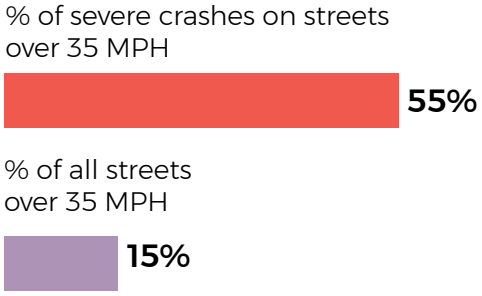
In addition to focus locations, dangerous driving behaviors account for a large share of severe traffic crashes in Ann Arbor. People walking and biking and children and older adults are particularly vulnerable users who suffer disproportionately from traffic crashes.

Dangerous Driving Behaviors[34]

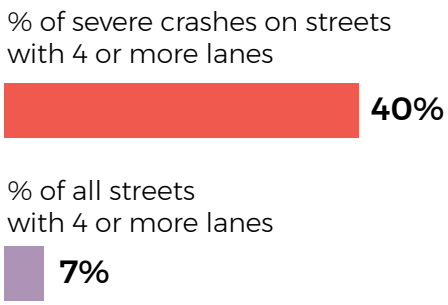
70% of all crashes that resulted in a fatality or serious injury involved one or more of the following dangerous behaviors:

- **Failure to yield**
- **Impaired driving**
- **Speeding**
- **Disregarded traffic signs/signals**
- **Reckless/careless driving**

Severe Crashes on Streets over 35 MPH



Severe Crashes on Streets with 4 or More Lanes

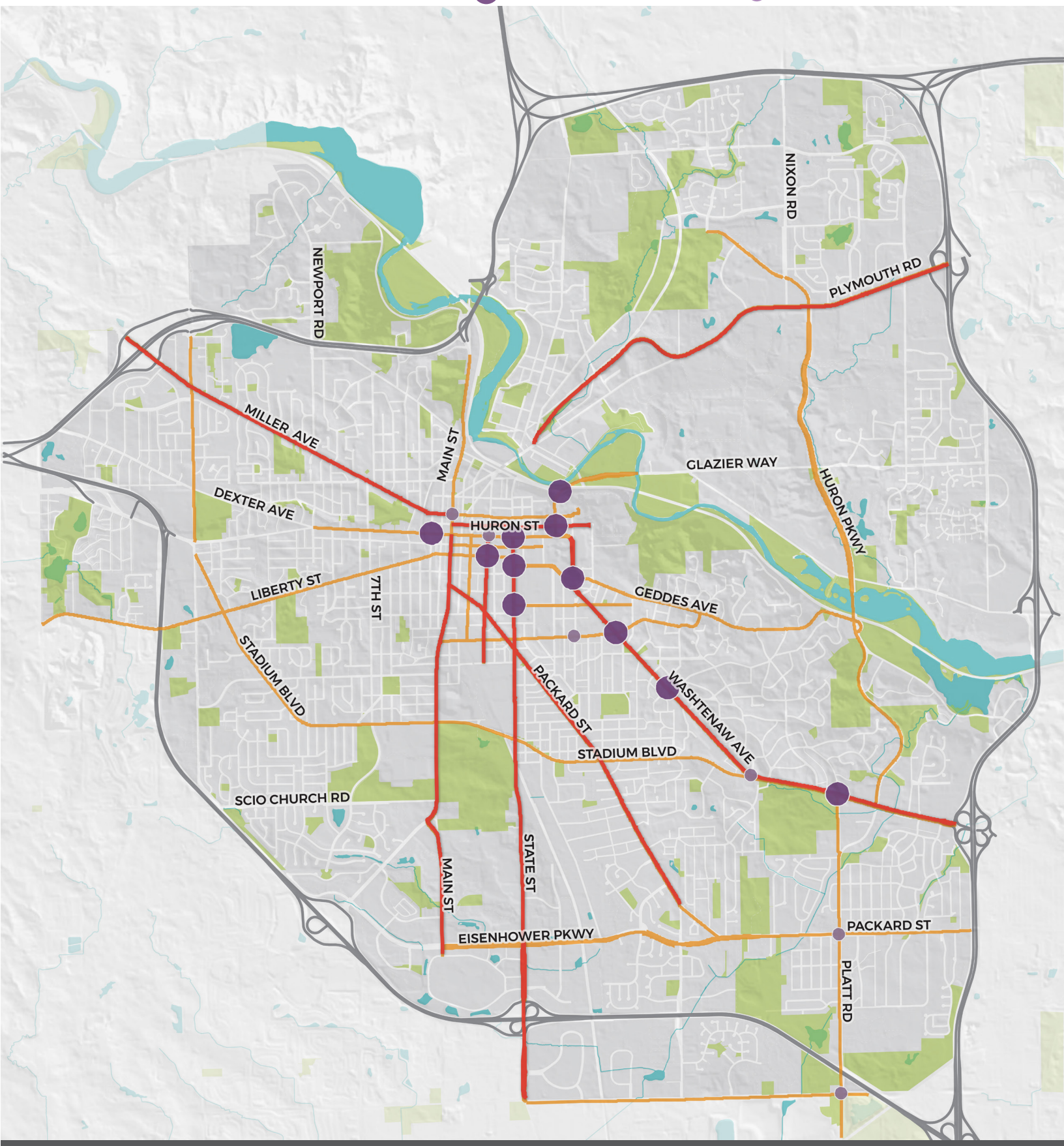


Safety Focus Areas

Focus Intersections		% of all intersection crashes	% of all fatalities and serious injuries at intersections
Tier 1	11 intersections	10%	12%
Tier 2	6 intersections	8%	11%
All	17 intersections	18%	23%

Focus Corridors		% of all crashes	% of all fatalities and serious injuries
Tier 1	7 corridors	34%	37%
Tier 2	23 corridors	40%	40%
All	30 corridors	74%	77%

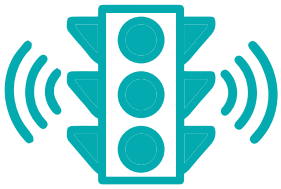
Focus Areas


Tier 1 Focus Corridors
Tier 2 Focus Corridors
Tier 1 Focus Intersections
Tier 2 Focus Intersections
NEWPORT RD
NIXON RD
PLYMOUTH RD
MILLER AVE
MAIN ST
GLAZIER WAY
HURON PKWY
DEXTER AVE
HURON ST
LIBERTY ST
7TH ST
GEDDES AVE
STADIUM BLVD
PACKARD ST
WASHTENAW AVE
STADIUM BLVD
SCIO CHURCH RD
MAIN ST
STATE ST
EISENHOWER PKWY
PACKARD ST
PLATT RD
0.5
1
2
Miles

Efficiency of Streets

To keep people and goods flowing around Ann Arbor, efficiency improvements are needed to move more people in the same amount of space. Single occupancy vehicles (cars carrying just one person) are the least space-efficient means for moving people around a city; increasing the share of people using transit, walking, and biking can increase a street's capacity to move people but may require re-prioritizing how street space is allocated. On many streets around downtown the majority of people using the street are walking, biking, and using transit. On other streets throughout the city, people using transit and active transportation make up a substantial share of street users, despite the majority of space being devoted to private vehicles.

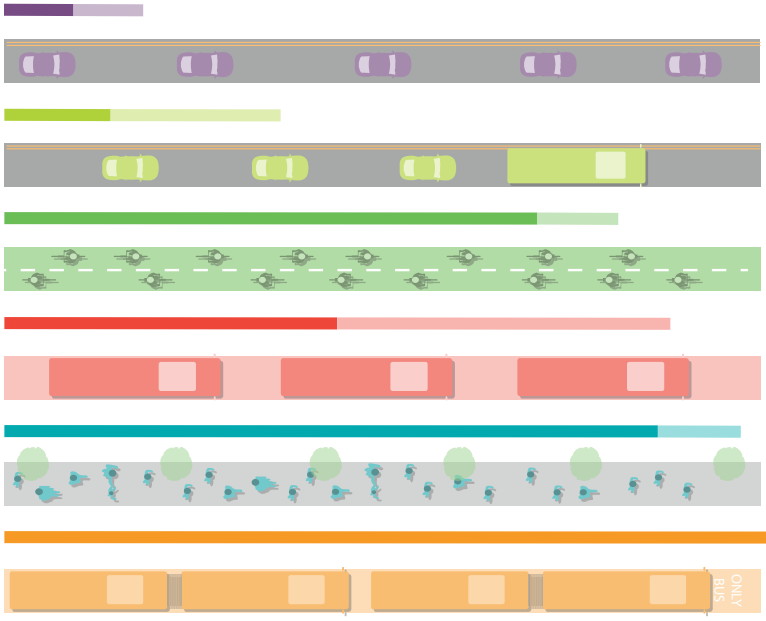
In addition to giving more room to space-efficient means of transportation, upgrading traffic signal technology, as Ann Arbor has been doing, can also improve a street's efficiency. After upgrading the traffic signals along Ellsworth Road in 2015, average travel times on weekdays decreased 12% and reliability improved.[35] Ann Arbor has also constructed roundabouts, which improve safety and the flow of traffic, across the city.



Since 2004, the city has been upgrading traffic signals to a new technology (known as SCOOT) that adjusts signal timing in real-time based on the flow of traffic to minimize delay. SCOOT signals are currently installed on portions of Washtenaw, Plymouth, Ellsworth, State, Stadium, and Packard.

Maximum Capacity of Different Modes of Transportation[36]

(for a 10-foot lane width — or equivalent — with normal operating conditions)



Private Vehicles
(600 - 1,600 people/hour)

Mixed Traffic with Buses
(1,000 - 2,800 people/hour)

Two-way Protected Bikeway
(6,500 - 7,500 people/hour)

Dedicated Transit Lane
(4,000 - 8,000 people/hour)

Sidewalk
(8,000 - 9,000 people/hour)

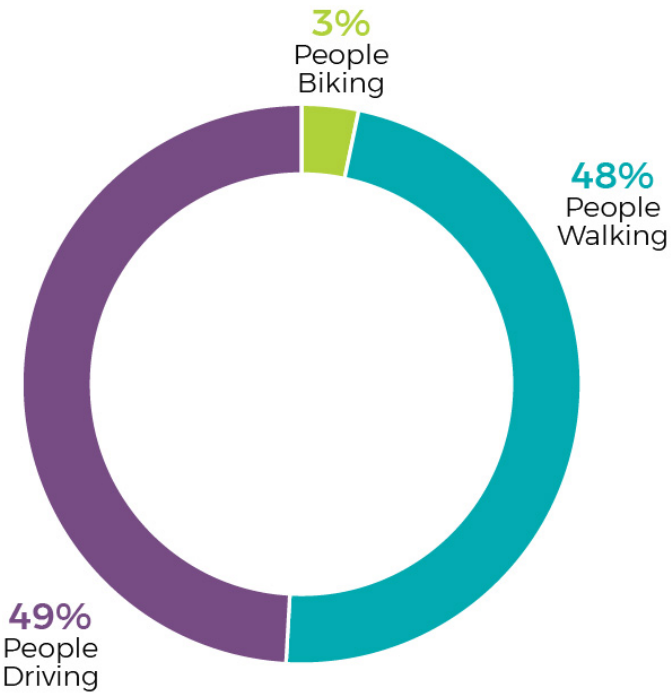
Bus or Rail Transitway
(10,000 - 25,000 people/hour)

Source: NACTO Global Street Design Guide

Breakdown of Users on Streets Around Ann Arbor[37]

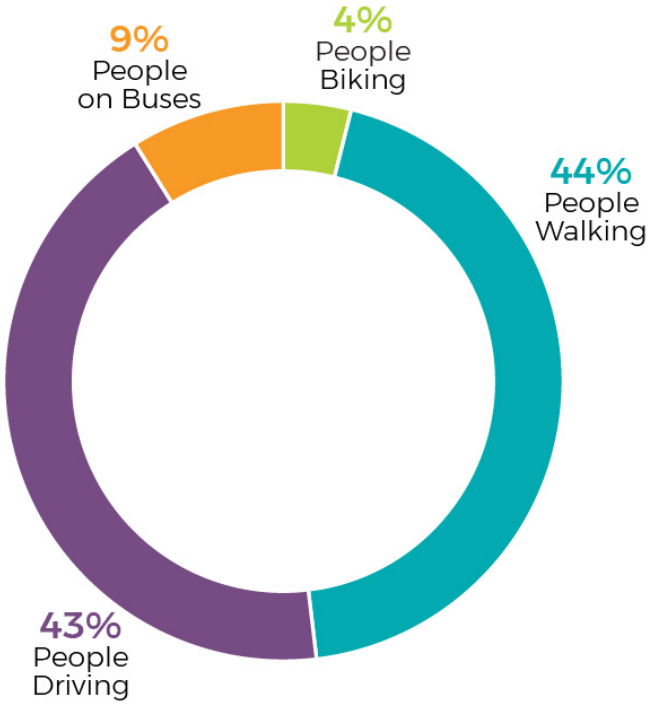
W. Liberty St.

(between State St. and 5th Ave.)



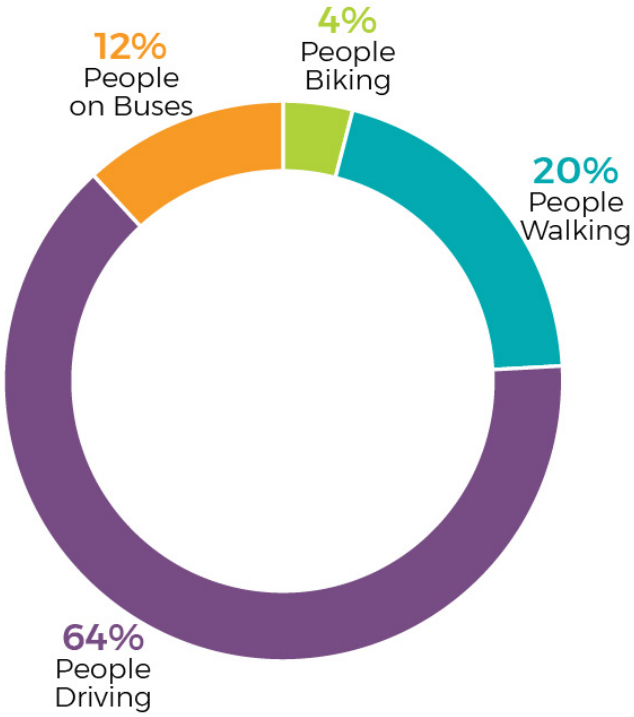
S. State St.

(between E. Huron St. and N. University Ave..)



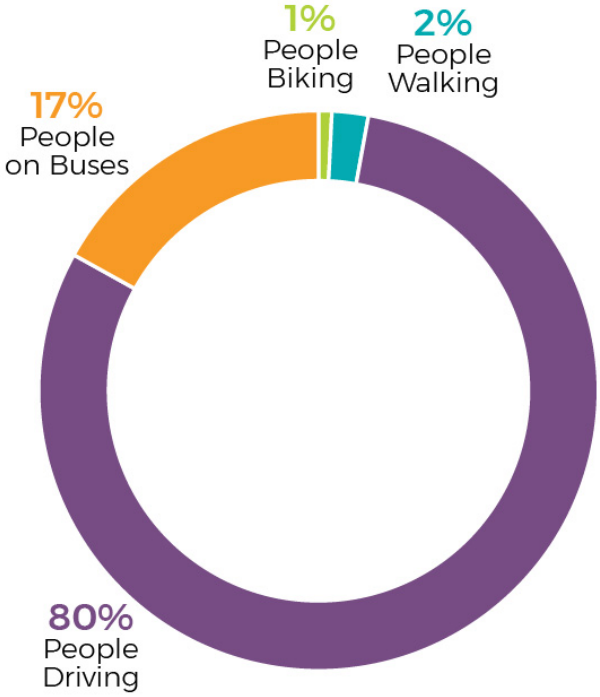
Packard St.

(between Hill St. and Arch St..)



Washtenaw Ave.

(between Hill St. and S. University Ave.)



Access to Jobs

Providing people with reliable, efficient options to get to work is one of the most important roles of Ann Arbor's transportation system. Today, people who drive in Ann Arbor have superior access to jobs compared to those who use other modes of transportation. The average resident can reach over 99% of the jobs in the city within a 20-minute drive, while the average person using transit can only reach 27% of all jobs in 20 minutes. Considering that more than one out of every ten households in Ann Arbor does not have access to a vehicle, the disparity in access to jobs presents a pressing community issue.

The number of jobs residents can access via walking, biking, and transit also varies by neighborhood. Neighborhoods closer to downtown, those with a higher concentration of jobs and housing units, tend to have better access to jobs via non-driving means. Similarly, individuals' confidence using different modes of transportation impacts their ability to access jobs: people comfortable biking on any street can access nearly three times as many jobs as people who only feel comfortable biking on low-stress streets. The number of jobs accessible by transit fluctuates across the day based on schedules and wait times. For those who live outside of Ann Arbor but work in the city, there are relatively few options for getting to work besides driving.

Multimodal Access to Jobs

Neighborhoods with the most jobs within 20 minutes via walking, biking, and transit

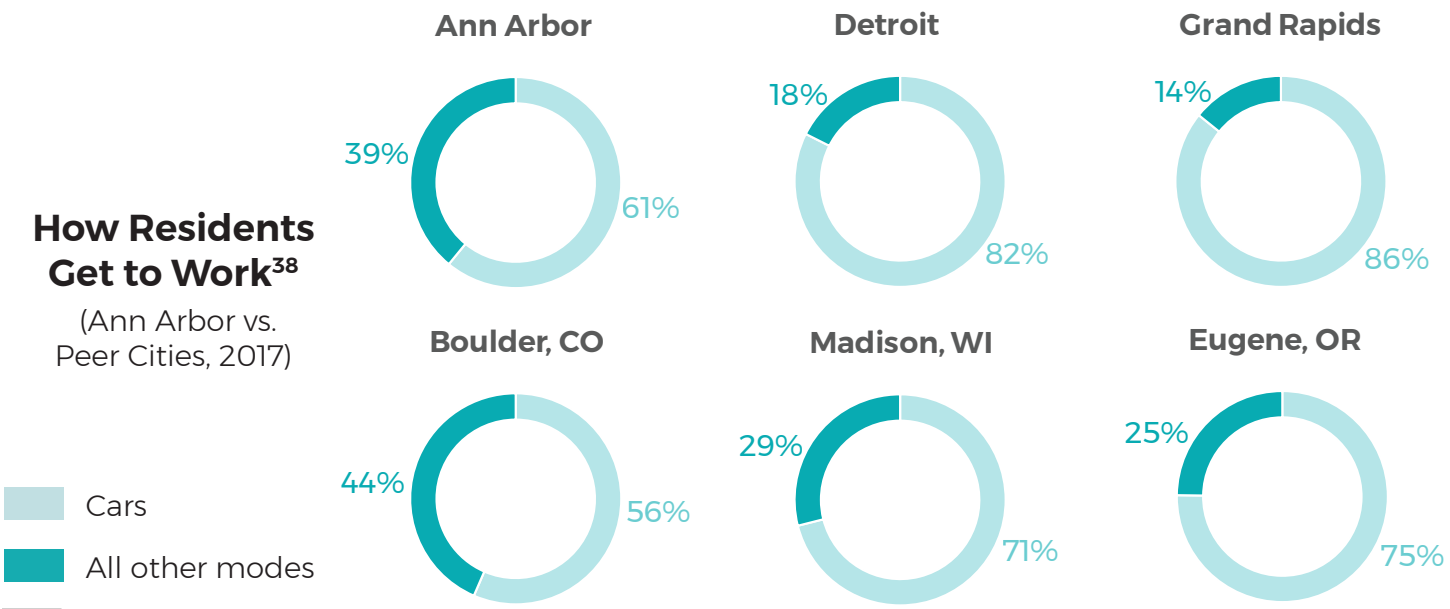
Downtown
South University
South Central
Old West Side
West Park/Miller
Old Fourth Ward

Neighborhoods with the fewest jobs within 20 minutes via walking, biking, and transit

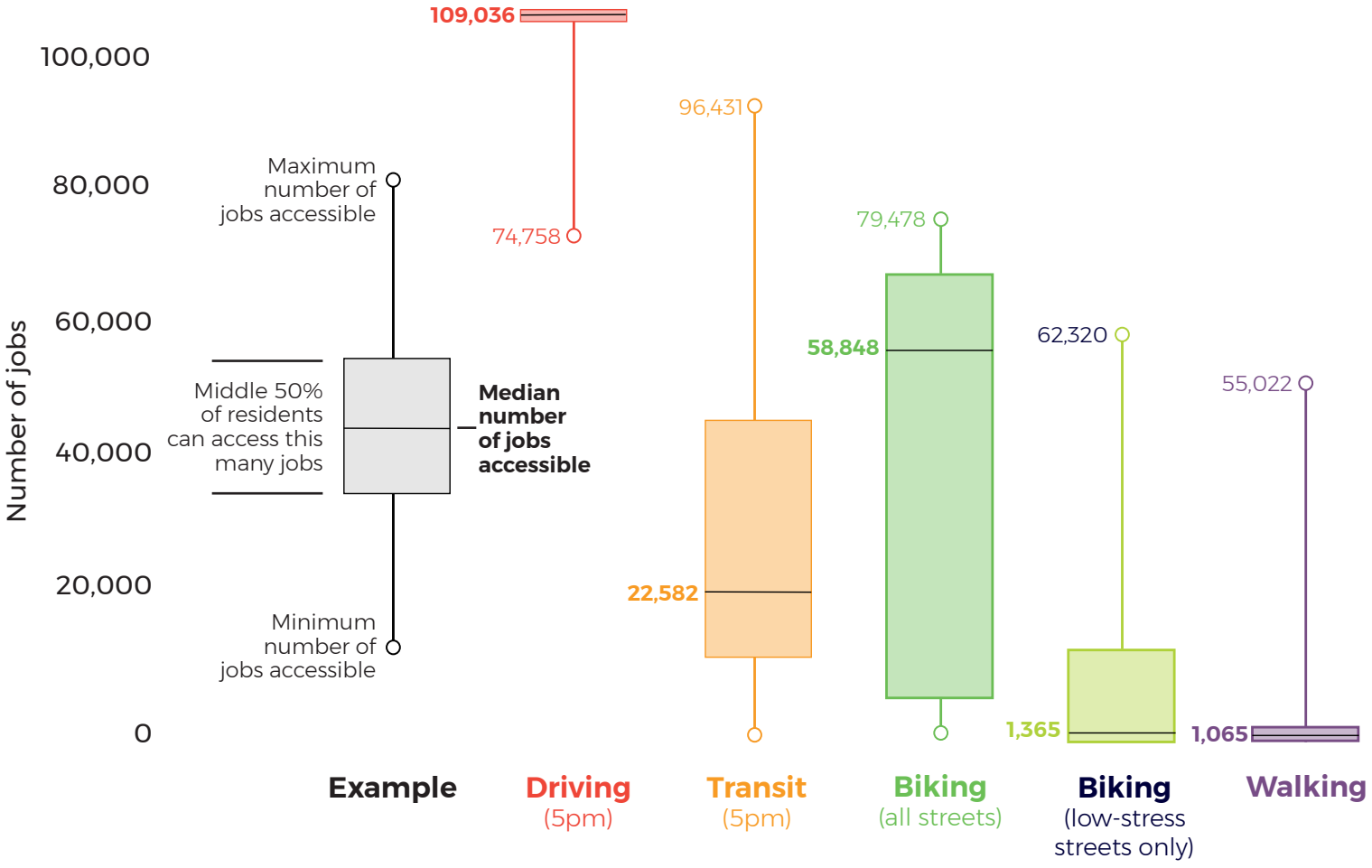
Northbury/Chapel Hill
Scarlett/Mitchell
Earhart/Concordia
Orchard Hills/Maplewood
Bryant
Research Park/Pheasant Run

How Residents Get to Work[38]

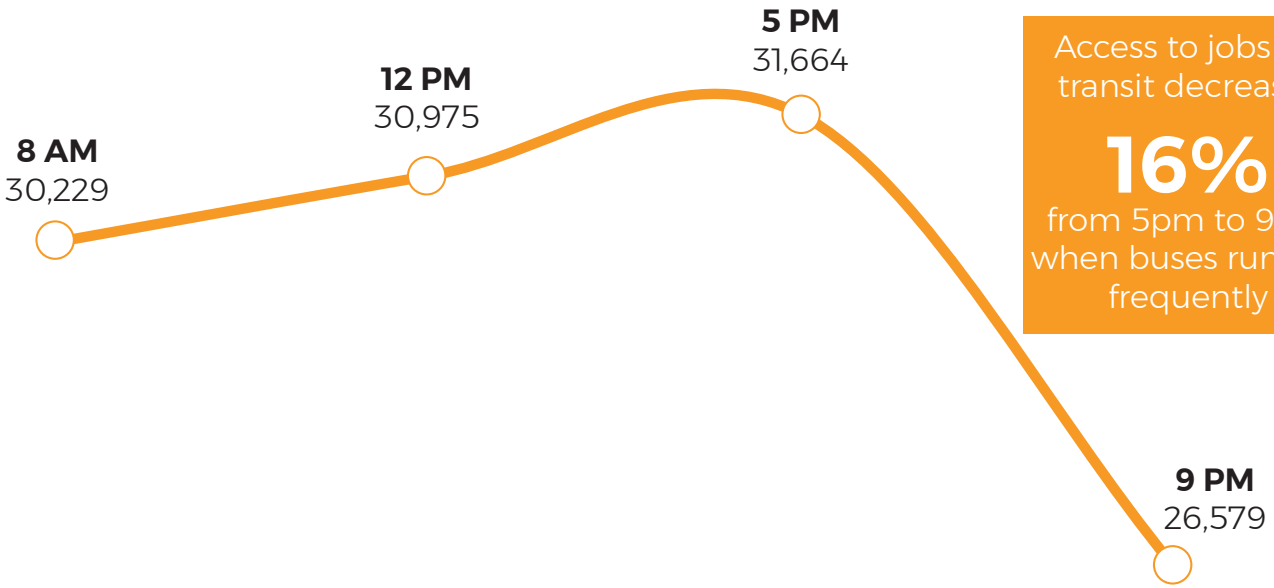
(Ann Arbor vs. Peer Cities, 2017)



Jobs Accessible in 20 Minutes Using Different Modes



Average Number of Jobs Accessible in 20 Minutes Using Transit



Access to jobs via transit decreases

16%

from 5pm to 9pm when buses run less frequently

Transportation & the Environment

Known as “Tree Town”, Ann Arbor has a history of valuing environmental conservation, sustainability, and of recognizing the serious threats that climate change will pose to the local environment. Adoptions of the 2012 Climate Action Plan and 2013 Sustainability Framework demonstrate Ann Arbor’s commitment to environmental sustainability. The Framework included a transportation system goal of creating transportation options that foster safe, comfortable, and efficient ways for people walking, bicycling, and using public transit to travel throughout the city and region. In addition to more direct environmental benefits, street trees contribute to a more comfortable walking and bicycling environment.

Although the city has reduced community-wide greenhouse gas emissions by 12% within the last two decades, the proportion of transportation emissions remains unchanged at nearly a fifth of all emissions.[39] Ann Arbor has already transitioned to using biofuels in city fleets and electric and hybrid service trucks.

However, rapid advances in vehicle technology will offer greater opportunity to reduce greenhouse gas emissions by incentivizing privately-owned electric or low-emission vehicles and expanding their use among city fleets and those of partner agencies. These types of strategies will be critical to enable the city to reach the Climate Action Plan’s goal of a 25% reduction by 2025 and a 90% reduction by 2050.

Citywide % Emissions by Vehicle Type[40]

13% trucks

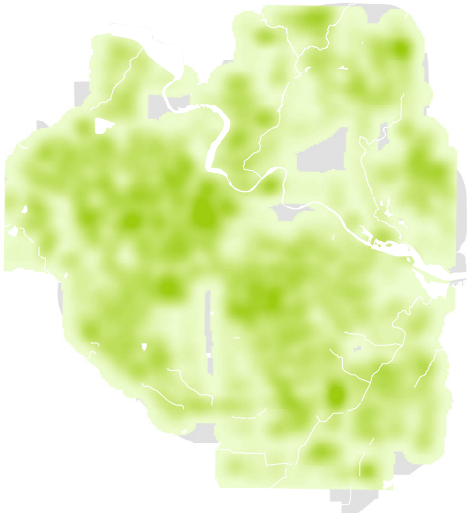
2% buses

84% passenger vehicles

<1% motorcycles

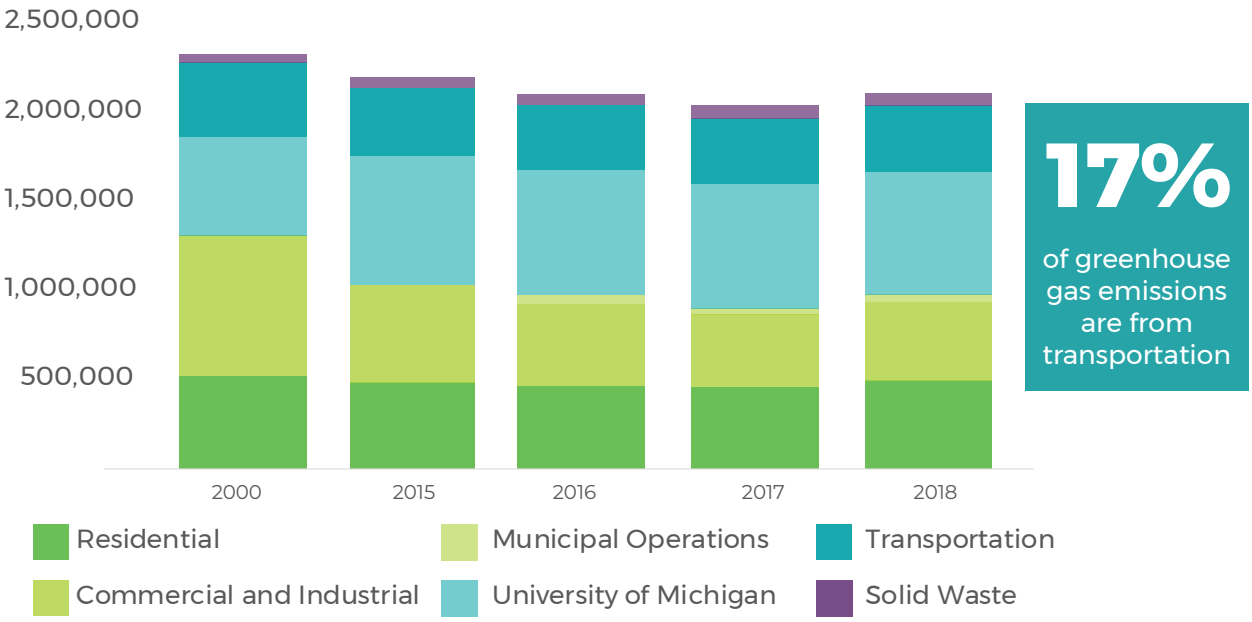
Street Tree Density

Low Density — High Density



Greenhouse Gas Emissions Over the Years, Citywide[41]

Million Metric tons of carbon dioxide equivalent (MTCO2e)

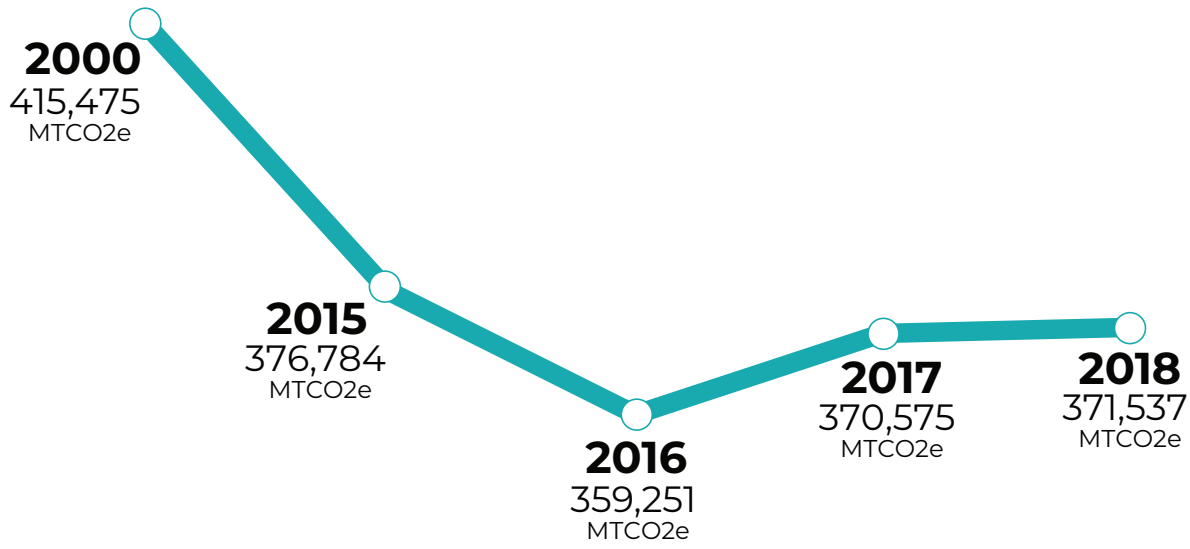


17%

of greenhouse gas emissions are from transportation

Transportation Greenhouse Gases Emissions Over the Years, Citywide[42]

Million Metric tons of carbon dioxide equivalent (MTCO2e)



Transportation Equity & Health

How people get around impacts their health and well-being by influencing their physical activity, air quality, safety, and access to opportunities, goods, and services. Although the City of Ann Arbor's transportation system is becoming more sustainable and less reliant on cars, it nonetheless continues to impact the health of residents.

Despite having a population with a low risk of health problems attributed to inactive lifestyles, such as obesity, diabetes, and high blood pressure, Ann Arbor also has a low walkability score as measured by the City Health Dashboard. While current health metrics are positive, achieving good walkability could further improve those and create additional benefits, such as making transportation more affordable for lower income populations.

Populations that are typically more reliant on walking, bicycling, and taking public transit were mapped to reveal concentrations of greater need for multimodal transportation options. This analysis can help target specific types of investments to address the greatest needs in mobility.

Health Indicators[44]

(City Health Dashboard)

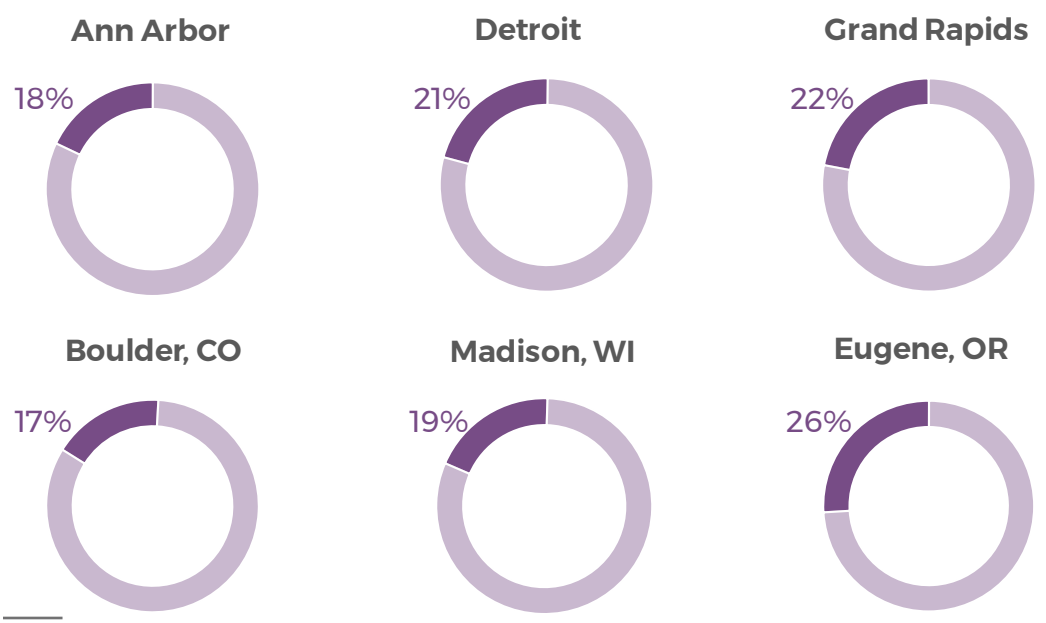
23.4%
obesity citywide

15.7%
physical inactivity citywide

68.3%
limited access to healthy foods citywide

Transportation Costs as % of Income[43]

(H+T Affordability Index)



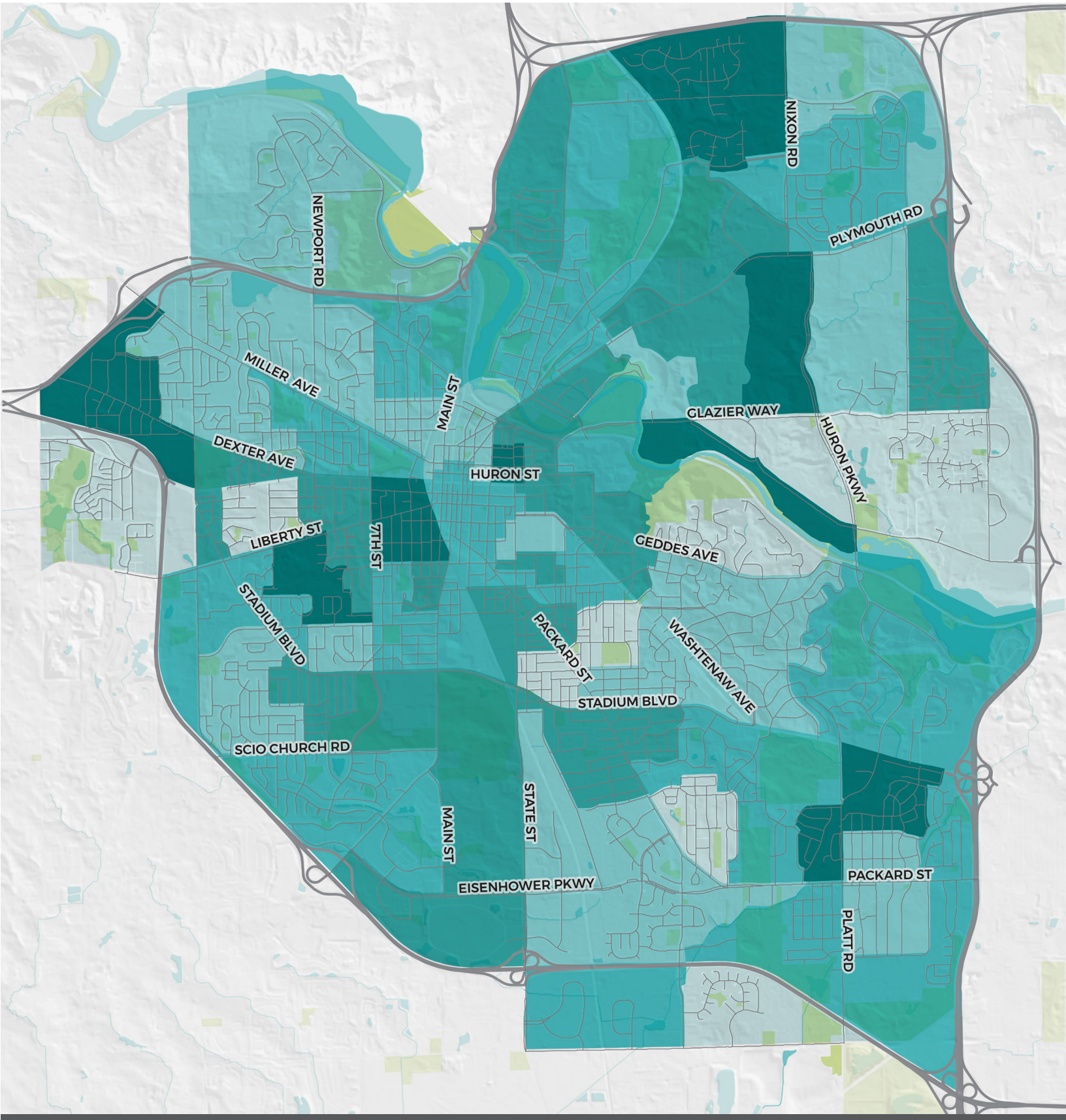
$11,135
citywide average annual transportation costs in Ann Arbor

The Housing and Transportation Affordability Index is lower in Ann Arbor than many comparable cities, however, a higher median income than the regional and national median income impacts this metric.

Transportation Equity Needs

(U.S. Census Bereau; American Community Survey, 2016)

Lower Need — Higher Need



0.5 1 2 Miles

New Mobility

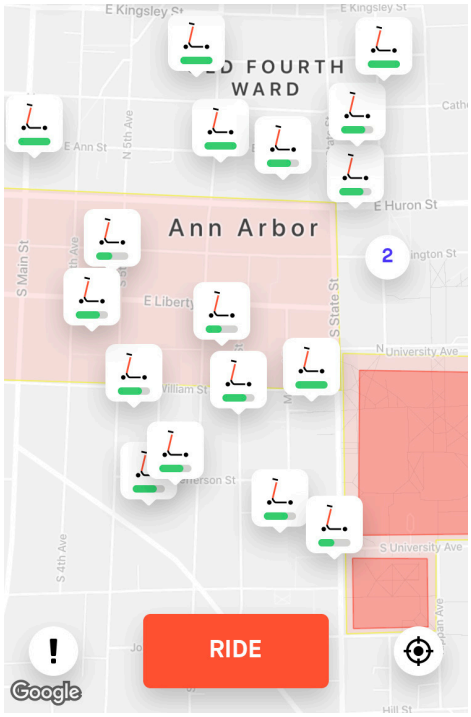
Transportation technologies, services, and business models continue to rapidly evolve and reshape how people move around urban areas. Given the infancy of these new services and technologies, many of the impacts, both good and bad, are still being determined.

Rideshare operators Uber and Lyft began operating in Ann Arbor in 2014 and have become increasingly popular options for getting around the city. According to a user survey by TheRide, in 2015, 75% of respondents had not used either Uber or Lyft in the last 30 days; by 2017, the share of respondents who hadn't used Uber or Lyft shrank to 56% and 15% of people reported using the services more than four times in the last 30 days. While ridesharing services offer users the convenience of on-demand mobility and may enable people to reduce their reliance on private cars, there is significant evidence that these services divert riders away from public transportation and increase congestion. In Ann Arbor, 18% of people said they substituted Uber or Lyft for a trip they would have previously made with TheRide.[45]

Since the fall of 2018, shared electric scooters have been available for rent around Ann Arbor. Shared scooters offer the potential to expand the utility of our existing transit and active transportation networks and replace automobile use for some trips.[46, 47] They also present a number of challenges, including user and public safety, accessible and appropriate use of the right-of-way, equity considerations, and requirements upon the City to manage negative impacts.

In addition to these new services, advances in technology are poised to change vehicles themselves. The University of Michigan has helped make Ann Arbor a leading center of research on connected and autonomous vehicles. The Mcity facility provides a controlled but realistic environment for testing and refining connected and autonomous vehicle technology. The city and the University are working together to understand the benefits these new technologies offer and how they can be used to improve safety and mobility in Ann Arbor.

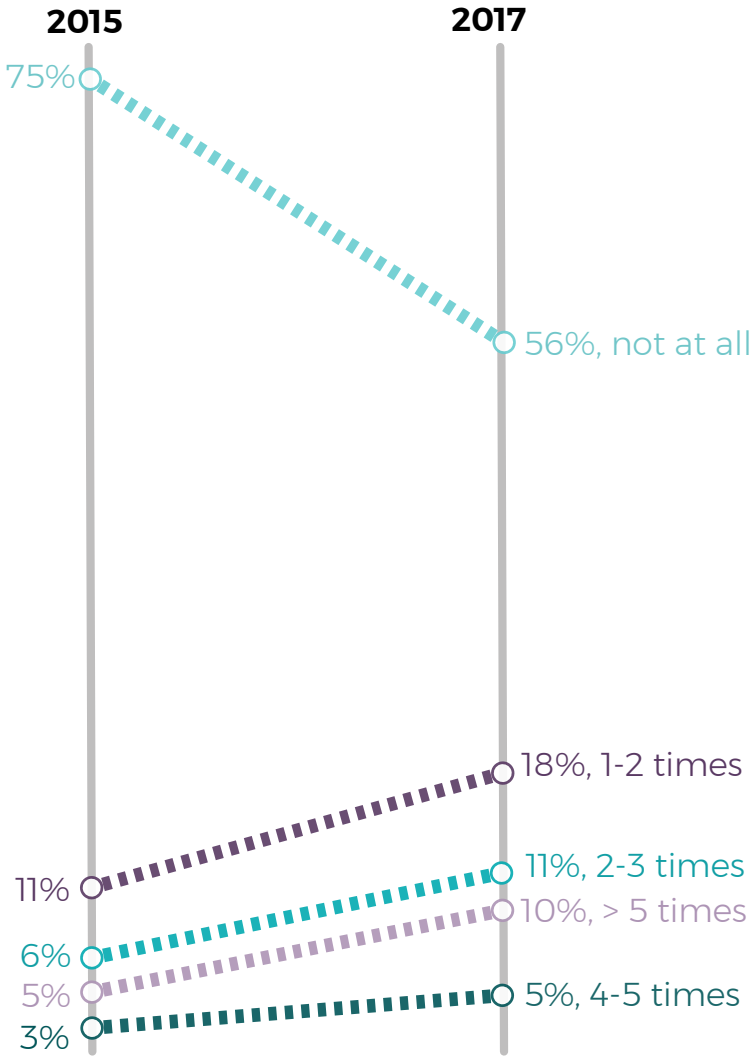
Spin Scooters



View of Spin scooters available in downtown.

How many times did you use Uber or Lyft in the last 30 days? [48]

(The Ride's 2017 User Survey, n=3,096)



44%

Used Uber or Lyft at least once in the last 30 days

18%

Would have used The Ride for that trip before Uber/Lyft

↑58%

vehicle miles/trip

Private trips with Uber or Lyft generate 58% more miles of total driving, accounting for the miles driven waiting for a passenger and driving to pick up a passenger, compared to if the user drove themselves from Point A to Point B. [49]

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