

# Appendix



# Appendix

## Appendix 1 - FHWA Figures

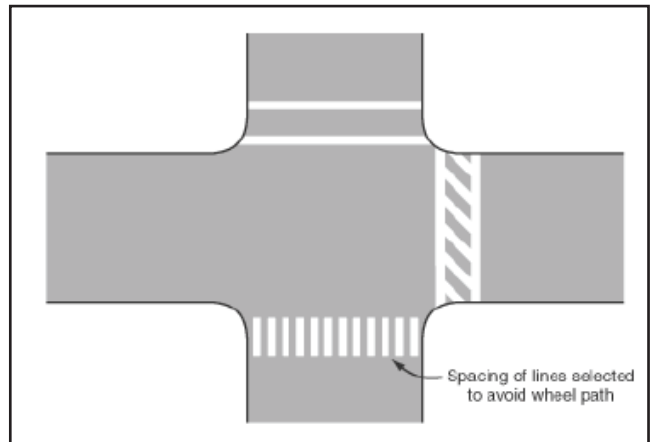
FHWA Spectacular Seven to improve safety:

1. Crosswalk visibility enhancements
2. Raised crosswalks
3. Pedestrian refuge islands
4. Rectangular rapid flashing beacons
5. Pedestrian hybrid beacons
6. Road diets
7. Leading pedestrian intervals

### Crosswalk visibility enhancements



**Image 29:** Example of a high visibility crosswalk.  
Source: Federal Highway Administration



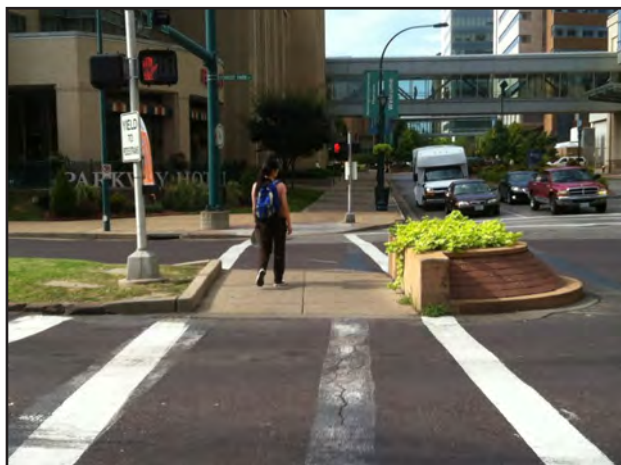
**Image 30:** Example of a crosswalk markings.  
Source: Federal Highway Administration

### Raised crosswalks



**Image 31:** Example of a raised crosswalk.  
Source: Federal Highway Administration

### Pedestrian refuge island



**Image 32:** Example of a pedestrian refuge island.  
Source: Federal Highway Administration

### Rectangular rapid flashing beacons



**Image 33:** Example of a rectangular rapid flashing beacon.  
Source: Federal Highway Administration

### Pedestrian hybrid beacons

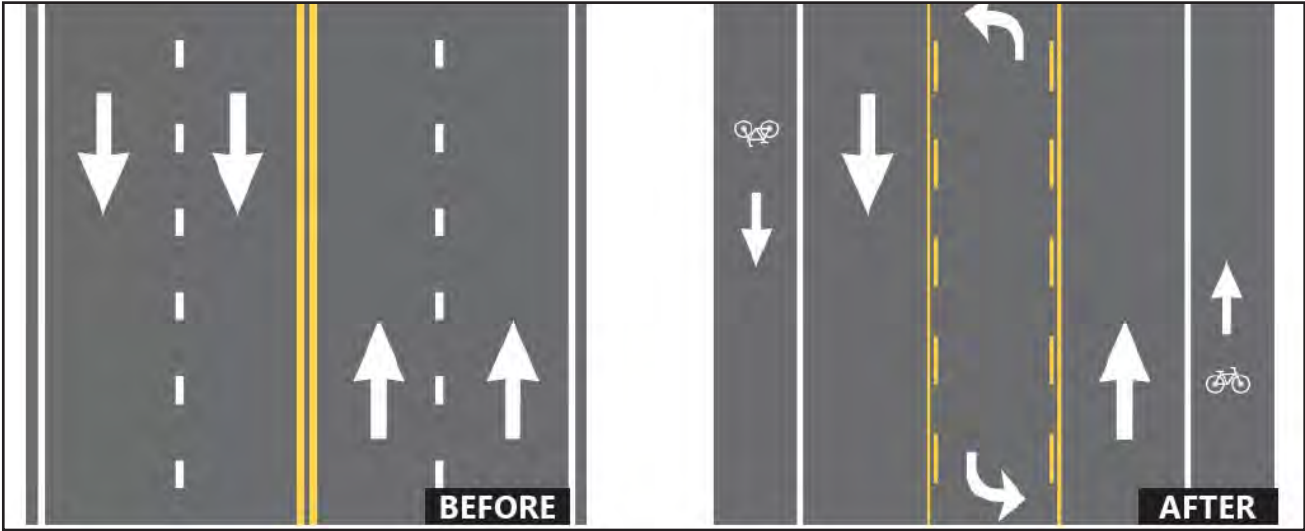


**Image 34:** Example of a pedestrian hybrid beacon.  
Source: Federal Highway Administration



**Image 35:** Example of a pedestrian hybrid beacon on a stop light arm mast.  
Source: Federal Highway Administration

### Road diets

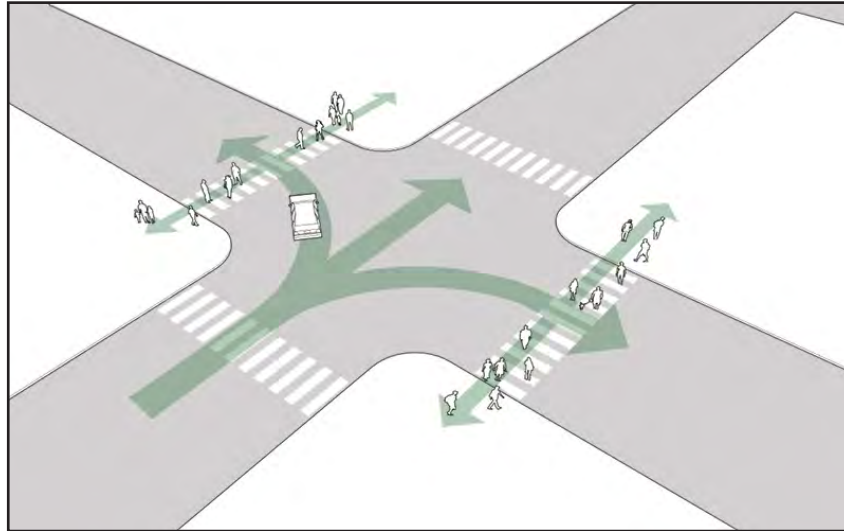


**Image 36:** Example of a road diet.  
Source: Federal Highway Administration



**Image 37:** A local example of a road diet in Cedar Rapids on Bowling Street SW  
Source: Google Maps

### Leading pedestrian intervals



**Image 38:** *Leading pedestrian intervals give pedestrians a head start so they can begin to cross the street before vehicles traveling in the same direction get a green light.*

*Source: Federal Highway Administration*



**Image 39:** *Example of a leading pedestrian interval.*

*Source: Federal Highway Administration*

# Appendix 2 - Surveys

## Student and Parent Survey Totals

Student and Parent Survey Totals		
Population	School	# of Survey Records
Student	Oakridge	481
Parent	Oakridge	59
Student	Hazel Point	402
Parent	Hazel Point	56
Student	Boulder Peak	286
Parent	Boulder Peak	31
Parent	Echo Hill	90
Survey Totals		
Total surveys		1405
Total student surveys		1169

## Student Survey Results - Questions

How did you get to school this morning?			
Transport Mode	Oak Ridge	Hazel Point	Boulder Peak
Car	194	136	111
Bus	259	243	155
Bike	4	3	3
Walking	13	5	3
Carpool	3	12	7
Other	6	2	5

How will you leave school this afternoon?			
Transport Mode	Oak Ridge	Hazel Point	Boulder Peak
Car	202	92	64
Bus	210	269	183
Bike	7	3	2
Walking	32	23	20
Carpool	18	9	7
Other	6	5	6

How many days in a typical week do you walk to or from school?			
# of Days	Oak Ridge	Hazel Point	Boulder Peak
One	246	168	*
Two	3	3	*
Three	11	7	*
Four	4	0	*
Five	19	10	*

How many days in a typical week do you bike to or from school?			
# of Days	Oak Ridge	Hazel Point	Boulder Peak
One	263	173	186
Two	3	2	2
Three	4	7	6
Four	4	2	1
Five	5	5	1

Do you have a bike?			
Answer	Oak Ridge	Hazel Point	Boulder Peak
Yes	427	371	253
No	51	26	27

Do you have a bike helmet?			
Answer	Oak Ridge	Hazel Point	Boulder Peak
Yes	344	326	221
No	133	72	59

Do you have a pair of walking shoes that are in good condition?			
Answer	Oak Ridge	Hazel Point	Boulder Peak
Yes	456	386	270
No	19	14	10

About how far do you live from school?			
Distance	Oak Ridge	Hazel Point	Boulder Peak
Half a mile	44	34	34
Mile	63	47	72
Within a quarter mile	40	23	15
More than a mile	326	0	0

How comfortable are you walking or cycling through a roundabout?			
Comfortability	Oak Ridge	Hazel Point	Boulder Peak
Very uncomfortable	37	33	25
Uncomfortable	39	32	26
Neutral	186	108	95
Comfortable	94	97	76
Very comfortable	94	95	52

Do you think walking or biking to school is fun?			
Answer	Oak Ridge	Hazel Point	Boulder Peak
Yes	223	220	175
No	230	144	96

How healthy do you think walking or biking is to and from school?			
Opinion	Oak Ridge	Hazel Point	Boulder Peak
Very unhealthy	12	4	4
Unhealthy	5	5	5
Neutral	114	72	52
Healthy	218	186	134
Very healthy	107	106	81

What is your favorite way to get to school?			
Transport Mode	Oak Ridge	Hazel Point	Boulder Peak
Walk	21	17	14
Bike	23	29	29
Car	242	154	104
Bus	145	174	105
Carpool	32	19	25
Other	17	8	7

## Student Survey Results - Open Ended Questions

Nearly 1,200 students 5th through 8th Grades responded to the SRTS Student Survey. Instead of listing every single response to the three open-ended questions students were asked, a text write up is provided to help summarize comments.

The three open-ended questions asked of students were:

If you did not walk or bike to school today, why?

Do you have any concerns about walking to or from school?

What would encourage you to walk or bike to school?

### ***If you did not bike to school today, why?***

Many students mentioned riding the bus or their parent taking them to school as why they did not walk or bike. This along with living too far away to walk or bike were two of the most common responses. The time it took to get to school was a factor for students: several commented about how long it would take to get to school given its distance from their house and they would have to get up earlier since it would take longer to walk or bike.

A couple students mentioned carrying heavy things like instruments. Students also noted that there were few sidewalks available and busy streets to walk on. Weather was also a factor: several students mentioned it being too cold to walk or bike. Students noted that they could be dropped off or picked up more easily because parents worked nearby or at their school another sibling or friend needed dropping off nearby school. Students did mention safety as a concern. Some students noted it was own or their parents' concerns about safety in general, and others were more specific about their safety concerns. Some students mentioned the route being unsafe or encountering unsafe people on the trip to or from school.

### ***Do you have any concerns about walking to or from school?***

The most common answer was along the lines of "no": "N/A", "No", "NA", "No.", "nope", "nah", etc. made up

69% of responses from Oak Ridge, 72% at Boulder Peak, and 68% at Hazel Point. Some variation of the word “kidnapped,” including misspellings and abbreviations like “kidnapt”, was used in 17 surveys at Hazel Point, 10 surveys at Boulder Peak, and 11 surveys at Oak Ridge. The word “live” was in the top 10 most common words used in all three of the open-ended questions at all three schools.

**What would encourage you to walk or bike to school?**

The most common response at all three of the schools, words along the lines of “No,” “Nothing”, and “I don’t know” were the most common answer. 70 students at Hazel Point, 13 at Boulder Peak, and 64 students at Oak Ridge used the word “closer” in their response to the question. 12 students at Oak Ridge and 3 students at Boulder Peak stated money would be a motivator to walk or bike to school: one student said they would walk or bike to school for “10 buckeroos”. “Friend” was also a common answer.

**Parent Survey Results - Questions**

How did your child get to school this morning?				
Transport Mode	Oak Ridge	Hazel Point	Boulder Peak	Echo Hill
Car	20	25	11	39
Bus	36	21	14	21
Bike	0	0	0	0
Walking	1	5	0	18
Carpool	2	4	0	9
Other	0	0	0	2

How did your child leave school this afternoon?				
Transport Mode	Oak Ridge	Hazel Point	Boulder Peak	Echo Hill
Car	23	15	9	39
Bus	31	28	16	20
Bike	1	0	0	0
Walking	2	10	0	18
Carpool	2	3	0	7
Other	0	0	0	5

About how many days in a typical week does your child walk to or from school?				
Number of Days	Oak Ridge	Hazel Point	Boulder Peak	Echo Hill
One	13	12	8	21
Two	0	2	1	1
Three	1	2	0	7
Four	0	1	0	3
Five	2	9	0	14

About how many days in a typical week does your child bike to or from school?				
Number of Days	Oak Ridge	Hazel Point	Boulder Peak	Echo Hill
One	12	15	9	32
Two	3	1	0	2
Three	0	1	0	1
Four	0	0	0	1
Five	1	3	0	1

Does your child have a bike?				
	Oak Ridge	Hazel Point	Boulder Peak	Echo Hill
Yes	54	49	21	87
No	4	6	3	2

Does your child have a bike helmet?				
	Oak Ridge	Hazel Point	Boulder Peak	Echo Hill
Yes	49	49	21	87
No	9	6	3	2

Does your child have a pair of walking shoes that are in good condition?				
	Oak Ridge	Hazel Point	Boulder Peak	Echo Hill
Yes	58	55	24	89
No	0	0	0	0

About how far does your child have to travel to or from school?				
Distance	Oak Ridge	Hazel Point	Boulder Peak	Echo Hill
Half a mile	3	5	0	21
Mile	3	6	7	10
Within a quarter mile	3	0	0	0
More than a mile	44	0	0	0

How comfortable are you walking or cycling through a roundabout?				
	Oak Ridge	Hazel Point	Boulder Peak	Echo Hill
Very uncomfortable	10	14	6	23
Uncomfortable	16	13	7	20
Neutral	13	10	6	27
Comfortable	7	13	3	14
Very comfortable	4	2	1	5

How healthy do you think walking or biking is to and from school?				
	Oak Ridge	Hazel Point	Boulder Peak	Echo Hill
Very unhealthy	0	3	2	1
Unhealthy	0	2	0	0
Neutral	4	7	5	8
Healthy	22	23	10	35
Very Healthy	26	18	6	45



Do you think walking or biking to and from school is fun?				
	Oak Ridge	Hazel Point	Boulder Peak	Echo Hill
Yes	36	38	13	80
No	14	15	9	8

Ranking: What is your priority for your child walking and cycling to school?				
	Oak Ridge	Hazel Point	Boulder Peak	Echo Hill
Safety	1.73	1.88	1.79	1.86
Convenience	1.27	1.12	1.21	1.14

Which of the following affects your decision to allow, or not allow, your child to walk or bike to school?				
	Oak Ridge	Hazel Point	Boulder Peak	Echo Hill
Other	0	0	0	2
Convenience of driving	5	3	6	3
Friends or siblings to walk or bike to school with	3	5	3	21
Fear of violence or crime	12	7	9	19
Adults to walk or bike with to school	*	8	3	27
My child already regularly walks and/ or bikes to and from school	2	9	0	16
Lack of safety guards	8	16	7	31
Speed of traffic along route	31	31	15	34
Amount of traffic along route	31	33	17	43
Weather or climate	31	33	15	46
Safety of intersections and crossings	23	35	12	49
Lack of sidewalks and pathways	31	37	5	47
Distance	51	41	20	46

### Parent Survey Results - Open Ended Questions

#### *If your child did not walk or bike to and from school today, why not?*

Survey Question: <i>If your child did not walk or bike to and from school today, why not?</i>	School
We live too far for her to.	Boulder Peak
We live too far away and I take my child to school and pick him up.	Boulder Peak
We live to far from the school, and they take the bus	Boulder Peak
We live more than 2 miles out so we can either use bus transportation or drop off with car, we have chosen to drop off with car to ensure our child's safety.	Boulder Peak
We live 3.1 miles from the school and I do not feel comfortable sending my child to school via walking or biking as there are not complete sidewalks all the way from our home to the school.	Boulder Peak
We drive to and from school. He is a special needs kiddo.	Boulder Peak
We drive our child.	Boulder Peak
Walking or biking distance entails traveling across business highway 151 by HY Vee in Marion.	Boulder Peak
Too far, isn't awake enough to get moving that early	Boulder Peak
Too far	Boulder Peak
Too cold this morning! Both of my children walk/ride bikes when the weather is nice. Too far to walk in the cold!	Boulder Peak
they are a car rider	Boulder Peak
The distance we live from the school is too far to walk (approximately 8 miles).	Boulder Peak
The bus stops at our house. The school is about 3miles away and on the other side of 7th which is too busy for children to cross. There isn't sidewalk the whole way.	Boulder Peak
Student is bused	Boulder Peak
Spouse drive him to school.	Boulder Peak

Survey Question: <i>If your child did not walk or bike to and from school today, why not?</i>	School
She would have to cross Hwy 13 to get to school via walking or biking and I don't think that is a safe idea.	Boulder Peak
she was a car rider	Boulder Peak
Safety: busy road to cross no one to walk with distance in cold/hot temps. medical condition makes physical activity harder than average child this age Can ride bus but chose not to due to other student behaviors that impact my child (this happens at school, so would assumingly be worse on a bus)	Boulder Peak
rides bus	Boulder Peak
My child is provided transportation and rides the bus.	Boulder Peak
It would take him 45 min to 1 hour to walk and I'm not letting my 11 year old walk or bike that far to school with all the busy roads he'd have to cross.	Boulder Peak
I choose the drive my children to and from school every day. They never walk or bike to school, but "0 times" wasn't an option above.	Boulder Peak
He is a car rider	Boulder Peak
He is a bus rider, but walks to the bus stop.	Boulder Peak
Distance.	Boulder Peak
Child rides the bus	Boulder Peak
Bus	Boulder Peak
Because we live south of 29th Ave. My son busses and I feel that if safety is number 1 priority, this will continue.	Boulder Peak
Bus	Oak Ridge
Too far away	Oak Ridge
Would have to cross busy roads like C Ave.	Oak Ridge
Weathers bad, trail is full of bullies, trail doesn't get cleaned in a timely manner, they had sports after and are tired... I'm actually fairly upset they took away buying and we now wait in lines at 3 different schools for 20 minutes a line... nearly 2 hours a day when conditions are not favorable.	Oak Ridge
We open enroll. It is 8.5 miles in heavy and fast moving traffic.	Oak Ridge
We live very close to school. I am able to pick them up and drop them off if it is extremely cold or very rainy.	Oak Ridge
We live too far away.	Oak Ridge
We live too far away and no sidewalks on back roads	Oak Ridge
We live to far away from school to walk or bike	Oak Ridge
We live close to four miles away from Oak Ridge and it is not practical to walk or bike, considering the time it would take and the traffic/lack of bike lines/sidewalks between our home and the school.	Oak Ridge
We live 4 miles away.	Oak Ridge
We live 3 miles away from the school. Even for the few homes that are close to the school, there are no direct sidewalks leading to the school. You do not have a "zero" option for the number of days walked/biked up above - this is going to lead to really inaccurate results. I left it blank but others may just pick one at random.	Oak Ridge
We live 10+ miles away from the school.	Oak Ridge
Unsafe. No sidewalks and busy traffic .	Oak Ridge
Too far, no sidewalks for bike	Oak Ridge
Too far away to walk or bike.	Oak Ridge
Too far and unable to get on bus as they are full	Oak Ridge
Too far and busy roads	Oak Ridge
Too far	Oak Ridge
There is not a safe route to Oak Ridge for the 3.5 mile ride from our house.	Oak Ridge
she rides the bus	Oak Ridge
Safety of crossing Alburnett Road in addition to super heavy backpacks	Oak Ridge
Route not safe - too much traffic, busy, too far away, weather, too much to carry with them, backpack heavy and instrument	Oak Ridge
Rides with parent or rides bus.	Oak Ridge
Rides the bus	Oak Ridge

<b>Survey Question: If your child did not walk or bike to and from school today, why not?</b>	<b>School</b>
Rides school bus	Oak Ridge
My child goes to school by bus aa it's far away from my residence.	Oak Ridge
My child can not stand the bus. She has asked us to take her.	Oak Ridge
More than a mile and no sidewalks	Oak Ridge
It's too far	Oak Ridge
It's over 1.5 miles away and the path to school on Alburnett south of the school is not safe for walkers or bikers.	Oak Ridge
Its more than 2 miles.	Oak Ridge
It is too far to walk/bike and be there at 7 am	Oak Ridge
It is too far - and it is not safe to travel by bike or foot on the road that we take to school.	Oak Ridge
I feel walking and biking it's too far and the roads are too busy.	Oak Ridge
Her Mother is deployed with the Air Force. Our student is open enrolled because of an available before and after school care where our student feels safe and well cared for with someone she is comfortable talking to.	Oak Ridge
He takes the bus and get picked up by parents from track practice after school. We live too far to walk or bike- as well as there not being safe routes to and from school- Alburnett Rd, etc.	Oak Ridge
He rides the bus	Oak Ridge
Don't feel safe letting my child walk or bike	Oak Ridge
Distance and traffic	Oak Ridge
Because the weather is terrible and the bus routes in our neighborhood were cancelled. We lare so close yet so far away, IA weather is not in favor of a 2 mile walk/bike ride, it's costing me work time and stress, my while life in this area we have had buying then this year there is an excuse. I wish you yourself had these problems just to see how difficult it has become. we live by all three schools, oak ridge, echo hill, and hazelpointe. But are in neighborhood by the new Ymca. Hopefully this can be changed next year. I don't think the transportation is high on the priority list, but maybe someone out there is fighting for our kids safety and health. The bullying is another terrible issue and schools aren't out there .onitoring these routes for safety. We personally know of several very bad physical and theft situations that were not handled. How about supervision on the trails. If we can't have that many drivers we can have volunteer spotters. It's getting out of hand and ignored	Oak Ridge
Weather	Hazel Point
rode the bus	Hazel Point
Will leave far from school.	Hazel Point
Weather. She would bike almost all of the time if there was a better bike path between Lowe Park & Oak Ridge/Hazel Point.	Hazel Point
Weather.	Hazel Point
We open enroll from Central City	Hazel Point
We love too far from school.	Hazel Point
We live too far away. My child does, however, walk to and from Hazel Point to Oak Ridge frequently 3+ times/week.	Hazel Point
We live more than a mile away from the school, so we drive him to school in the morning and he rides the school bus home after school.	Hazel Point
We live about four miles away and the primary roads to get from our house to the school do not have side walks for her to walk or bike safely, and the speed limits exceed 45 mph, so we don't feel it is safe for her to walk or bike by herself on these roads.	Hazel Point
We live a distance away from school. Needs to take the bus.	Hazel Point
We are over a mile and it is too cold, wet, rainy most of the year to be out on the trails with a heavy bag to get to school. Bags have lunch, computers, and books in them daily, so no way to reduce the load.	Hazel Point
Too far. They ride the bus	Hazel Point
Too far, not a safe route to bike or walk.	Hazel Point
Too far, no safe route with no sidewalks and too much traffic.	Hazel Point
too far away and not a safe walking pattern, no sidewalks	Hazel Point
Too far and not a good path for him to travel.	Hazel Point
Too far & no sidewalks to use	Hazel Point

<b>Survey Question: <i>If your child did not walk or bike to and from school today, why not?</i></b>	<b>School</b>
Too far	Hazel Point
Too dangerous. Very far (would likely take him 25 min) no sidewalks and heavy traffic. No way I would let him.	Hazel Point
Too cold and rainy. When the weather is better she and a neighbor can walk.	Hazel Point
To cold and windy	Hazel Point
They rode the bus.	Hazel Point
There are no safe routs on C Avenue, Alburnett Rd, or Echo Hill road for my child to bike the 3.6 miles from our home to Hazel Point Elementary	Hazel Point
The school is not in walking distance and I don't want my kids to ride a bike to school just not safe	Hazel Point
The route is too far and through Lowe park which is way too cold in the winter	Hazel Point
Riding school bus	Hazel Point
Not a very good route and no bike trails or walking trails traveling north on Alburnett road.	Hazel Point
My child walks to the bus stop and rides the bus. We live too far away for him to walk PLUS even if he wanted to the roads to and from the school don't all have sidewalks.	Hazel Point
My child rides the bus.	Hazel Point
My child did not walk today (or ever) because the path is not safe. The route required to walk to school requires walking a dimly lit nature trail, through a busy school parking lot. In total, it's a 25 minute walk. The walk is an unreasonable expectation, especially when temperatures drop below freezing or on a rainy day like today. To expect an 8 year old to make this walk is as unreasonable as it is negligent. When bussing was pulled from our neighborhood, I looked at this as a total shortcoming from the Linn Mar District. Start investing in our students.	Hazel Point
It's too cold.	Hazel Point
It is too far to walk and there are no sidewalks from Alburnett Rd all the way to Echo Hill Rd	Hazel Point
he rides the bus	Hazel Point
Cross walk at Oak Park Trail/Circle and Alburnett Rd is not safe.	Hazel Point
Because they are car riders because of our location. Also this survey is not going to be accurate. Because my child will never walk to or from school. So the question where we had to choose one answer my answer was not an option.	Hazel Point
Because school is 4 miles away and roads are not safe for kids to walk on their own.	Hazel Point
Because I feel like they shouldnt have to walk 1.1 miles to school. That's more then 20min and for a Kindergartener that's too far. For our oldest child he would be all sweaty walking to school in the mornings and in the winter time walking that far in the cold is a bit much.	Hazel Point
A bit far for biking. Alburnett rd is also very unsafe to bike or walk along. It is missing a lot of sidewalks, has barely any shoulder, and no bike lane. Many times cars go faster than the speed limit and can be quite impatient.	Hazel Point
The path they would have to walk on does not have houses all around it. I don't feel comfortable having my elementary children walk on a path that is closed off by trees and isn't around homes.	Echo Hill
When the weather is very bad I find alternate car ride from friend.	Echo Hill
Weather conditions. Once warmer we walk in the morning and afternoon.	Echo Hill
Weather conditions	Echo Hill
Weather - during nicer weather seasons my children walk much more frequently.	Echo Hill
Weather	Echo Hill
We usually walk unless its cold/windy/raining, etc.	Echo Hill
We live two miles from school.	Echo Hill
We live too far. There are not sidewalks that connect from our neighborhood all the way to school.	Echo Hill
We live too far from the school.	Echo Hill
We live too far away. Our babysitter lives on the other side of Lowe park, but we don't feel it is safe for him to walk through the park on his own.	Echo Hill
We live too far away.	Echo Hill
We live close enough to walk or bike, but we are on the other side of Alburnette and there is not a sidewalk that allows them to safely cross without an adult. (north on Alburnette to Echo Hill) or they would have to back track to Oak Park circle.	Echo Hill
We drive when it's cold or rainy and walk when it's nice outside.	Echo Hill
Way too far, busy roads	Echo Hill

<b>Survey Question: <i>If your child did not walk or bike to and from school today, why not?</i></b>	<b>School</b>
way too far and they would have to go on areas with no sidewalks and heavy traffic. Not even a remote possibility.	Echo Hill
Walk unless weather (rain/snow/cold).	Echo Hill
Too young at this point but will in future	Echo Hill
Too far. No sidewalks.	Echo Hill
Too far. No sidewalks	Echo Hill
Too far, no safe path	Echo Hill
Too far to go around the block and walk through the neighborhood by Oak Ridge to get to the walking path.	Echo Hill
Too far in cold weather, no bus availability to our neighborhood	Echo Hill
too far - too dangerous	Echo Hill
Too far	Echo Hill
Too cold yet.	Echo Hill
They took the bus	Echo Hill
They have never walked or biked because there is no sidewalk on the west side of Alburnett Rd. and while the school speed limit is 25 mph, drivers are going way too fast for me to feel comfortable with them crossing Alburnett Rd., especially without any sidewalk. I also worry about the lack of a person serving as a cross guard.	Echo Hill
They go to daycare before and after school. I also would not feel it is safe for them to walk or bike without an adult.	Echo Hill
There are not sufficient sidewalks for my child to cross. We are on Prairie Trl and don't feel safe crossing at Alburnett Rd without a crossing guard	Echo Hill
There are no walkways or bike paths from our home that would be safe to travel. Our children would have to travel on East Robins and Alburnett roads which has no shoulder and has some of the busiest intersections in this part of town.	Echo Hill
The weather	Echo Hill
The temperature <45, and it was not dry.	Echo Hill
The route for us to walk/bike is too far and unsafe. We will not be walkers or bikers due to distance from school.	Echo Hill
The district took away our busing for our neighborhood. Our house is too far away for our third grader and kindergartener to walk/bike.	Echo Hill
takes more than 15 minutes to walk to school and its easier for me to drive her there with her brother that is in preschool at Echo Hill.	Echo Hill
She is too young to walk to school by herself.	Echo Hill
She is too young to walk alone. There is no good way for her to walk to school and cross Alburnett Road from our neighborhood. Also the traffic flies by the line of cars on Echo Hill Rd right in front of the school so that too feels unsafe, even with a cross guard there.	Echo Hill
She goes to before and after school care.	Echo Hill
Rides the bus	Echo Hill
Our kids attend before and after school care, and are driven to school each day because we do not live within waking or biking distance.	Echo Hill
our children walk to school when the weather is nice. Please keep the crossing guard on Alburnett and Oak Park.	Echo Hill
Not a safe route.	Echo Hill
No safe sidewalks to use... forcing the kids to use an unsupervised trail thru the park to walk/ride to school is unacceptable.	Echo Hill
No safe route with sidewalks or bike paths.	Echo Hill
My kids are dropped off Am and walk PM on cold/rainy days and on warm days they bike 1 mile to and from school.	Echo Hill
My husband drives my child and the neighbors to Oak Park circle. On nice days, they can then walk on the trail to school. If it's raining/snowing/freezing temps/etc...he drives them and waits in line to drop off. The neighbor then picks up the children from school.	Echo Hill
Most of the time, it's weather related. A couple of times it might be due to a late start to the morning.	Echo Hill

Survey Question: <i>If your child did not walk or bike to and from school today, why not?</i>	School
It's too far.	Echo Hill
It is too far ; oak ridge to echo ridge estates; there is no direct route and it would take at least 20-30 minutes for my child to get to and from school, which is unacceptable in my opinion. There should definitely be a bus for the kids in this neighborhood to get to oak ridge. Now with a roundabout going in there is additional wait time since traffic won't be required to stop there, and there is no crossing guard to make traffic stop, and the light doesn't work at the crosswalk—my child informed me that it hasn't been working for some time.	Echo Hill
It is too cold. We have transportation through LM busing, but once it's warm my children will be asking to walk home	Echo Hill
Inclement weather; we try to carpool with neighbors in the mornings.	Echo Hill
Inclement weather; we carpool in the mornings with neighbors.	Echo Hill
I had an errand to run after taking him to school so we drove.	Echo Hill
I do not feel comfortable having my first grader walk over a mile through Lowe Park alone.	Echo Hill
He is a car rider. The route has high traffic and I'm not comfortable sending him alone.	Echo Hill
Have to be driven since no Bus anymore. Not sending my 5 year old to walk from our home by the Y to Echo Hill.	Echo Hill
Don't feel safe to have kids walk.	Echo Hill
Distance safety time	Echo Hill
Distance and busy route to get there.	Echo Hill
Despite us living less than a mile from the closest school, our assigned school is the 3rd closest and is 3.5 miles away with no continuous sidewalk or bike path.	Echo Hill
Daycare	Echo Hill
Currently in a before and after school program at a daycare that provides bussing. When she is older, we hope that she can safely ride her bike through Lowe Park to get to/from school.	Echo Hill
Cold weather and it would be a ~30 minute walk	Echo Hill
Cold / inclement weather	Echo Hill
Child needs to be dropped off before 7am so they attended before and after school care.	Echo Hill
Bus rider	Echo Hill
Because we live in Bedford heights and have no way for them to cross Alburnette Rd. There are no connecting sidewalks for our kids to walk or bike to school without crossing a busy unsupervised road.	Echo Hill
At this moment, they are too young but we hope that they can as they get a bit older. Replacing a bus route to our neighborhood would also be helpful! It'd be nice for them to walk/bike on nice days and have the bus option on bad weather days.	Echo Hill
1.) Weather conditions. Most school days in Iowa aren't suitable for walking. 2.) He is 6 and it is too far.	Echo Hill

## ***Do you have any concerns about your child walking to or from school?***

<b>Survey Question: <i>If your child did not walk or bike to and from school today, why not?</i></b>	<b>School</b>
We live too far for her to.	Boulder Peak
We live too far away and I take my child to school and pick him up.	Boulder Peak
We live to far from the school, and they take the bus	Boulder Peak
We live more than 2 miles out so we can either use bus transportation or drop off with car, we have chosen to drop off with car to ensure our child's safety.	Boulder Peak
We live 3.1 miles from the school and I do not feel comfortable sending my child to school via walking or biking as there are not complete sidewalks all the way from our home to the school.	Boulder Peak
We drive to and from school. He is a special needs kiddo.	Boulder Peak
We drive our child.	Boulder Peak
Walking or biking distance entails traveling across business highway 151 by HY Vee in Marion.	Boulder Peak
Too far, isn't awake enough to get moving that early	Boulder Peak
Too far	Boulder Peak
Too cold this morning! Both of my children walk/ride bikes when the weather is nice. Too far to walk in the cold!	Boulder Peak
they are a car rider	Boulder Peak
The distance we live from the school is too far to walk (approximately 8 miles).	Boulder Peak
The bus stops at our house. The school is about 3miles away and on the other side of 7th which is too busy for children to cross. There isn't sidewalk the whole way.	Boulder Peak
Student is bused	Boulder Peak
Spouse drive him to school.	Boulder Peak
She would have to cross Hwy 13 to get to school via walking or biking and I don't think that is a safe idea.	Boulder Peak
she was a car rider	Boulder Peak
Safety: busy road to cross no one to walk with distance in cold/hot temps. medical condition makes physical activity harder than average child this age Can ride bus but chose not to due to other student behaviors that impact my child (this happens at school, so would assumingly be worse on a bus)	Boulder Peak
rides bus	Boulder Peak
My child is provided transportation and rides the bus.	Boulder Peak
It would take him 45 min to 1 hour to walk and I'm not letting my 11 year old walk or bike that far to school with all the busy roads he'd have to cross.	Boulder Peak
I choose the drive my children to and from school every day. They never walk or bike to school, but "0 times" wasn't an option above.	Boulder Peak
He is a car rider	Boulder Peak
He is a bus rider, but walks to the bus stop.	Boulder Peak
Distance.	Boulder Peak
Child rides the bus	Boulder Peak
Bus	Boulder Peak
Because we live south of 29th Ave. My son busses and I feel that if safety is number 1 priority, this will continue.	Boulder Peak
Bus	Oak Ridge
Too far away	Oak Ridge
Would have to cross busy roads like C Ave.	Oak Ridge
Weathers bad, trail is full of bullies, trail doesn't get cleaned in a timely manner, they had sports after and are tired... I'm actually fairly upset they took away buying and we now wait in lines at 3 different schools for 20 minutes a line... nearly 2 hours a day when conditions are not favorable.	Oak Ridge
We open enroll. It is 8.5 miles in heavy and fast moving traffic.	Oak Ridge
We live very close to school. I am able to pick them up and drop them off if it is extremely cold or very rainy.	Oak Ridge
We live too far away.	Oak Ridge
We live too far away and no sidewalks on back roads	Oak Ridge

Survey Question: <i>If your child did not walk or bike to and from school today, why not?</i>	School
We live close to four miles away from Oak Ridge and it is not practical to walk or bike, considering the time it would take and the traffic/lack of bike lines/sidewalks between our home and the school.	Oak Ridge
We live 4 miles away.	Oak Ridge
We live 3 miles away from the school. Even for the few homes that are close to the school, there are no direct sidewalks leading to the school. You do not have a "zero" option for the number of days walked/biked up above - this is going to lead to really inaccurate results. I left it blank but others may just pick one at random.	Oak Ridge
We live 10+ miles away from the school.	Oak Ridge
Unsafe. No sidewalks and busy traffic .	Oak Ridge
Too far, no sidewalks for bike	Oak Ridge
Too far away to walk or bike.	Oak Ridge
Too far and unable to get on bus as they are full	Oak Ridge
Too far and busy roads	Oak Ridge
Too far	Oak Ridge
There is not a safe route to Oak Ridge for the 3.5 mile ride from our house.	Oak Ridge
she rides the bus	Oak Ridge
Safety of crossing Alburnett Road in addition to super heavy backpacks	Oak Ridge
Route not safe - too much traffic, busy, too far away, weather, too much to carry with them, backpack heavy and instrument	Oak Ridge
Rides with parent or rides bus.	Oak Ridge
Rides the bus	Oak Ridge
Rides school bus	Oak Ridge
My child goes to school by bus aa it's far away from my residence.	Oak Ridge
My child can not stand the bus. She has asked us to take her.	Oak Ridge
More than a mile and no sidewalks	Oak Ridge
It's too far	Oak Ridge
It's over 1.5 miles away and the path to school on Alburnett south of the school is not safe for walkers or bikers.	Oak Ridge
Its more than 2 miles.	Oak Ridge
It is too far to walk/bike and be there at 7 am	Oak Ridge
It is too far - and it is not safe to travel by bike or foot on the road that we take to school.	Oak Ridge
I feel walking and biking it's too far and the roads are too busy.	Oak Ridge
Her Mother is deployed with the Air Force. Our student is open enrolled because of an available before and after school care where our student feels safe and well cared for with someone she is comfortable talking to.	Oak Ridge
He takes the bus and get picked up by parents from track practice after school. We live too far to walk or bike- as well as there not being safe routes to and from school- Alburnett Rd, etc.	Oak Ridge
He rides the bus	Oak Ridge
Don't feel safe letting my child walk or bike	Oak Ridge
Distance and traffic	Oak Ridge
Because the weather is terrible and the bus routes in our neighborhood were cancelled. We lare so close yet so far away, IA weather is not in favor of a 2 mile walk/bike ride, it's costing me work time and stress, my while life in this area we have had buying then this year there is an excuse. I wish you yourself had these problems just to see how difficult it has become. we live by all three schools, oak ridge, echo hill, and hazelpointe. But are in neighborhood by the new Ymca. Hopefully this can be changed next year. I don't think the transportation is high on the priority list, but maybe someone out there is fighting for our kids safety and health. The bullying is another terrible issue and schools aren't out there .onitoring these routes for safety. We personally know of several very bad physical and theft situations that were not handled. How about supervision on the trails. If we can't have that many drivers we can have volunteer spotters. It's getting out of hand and ignored	Oak Ridge
Weather	Hazel Point
rode the bus	Hazel Point
Will leave for from school	Hazel Point



<b>Survey Question: If your child did not walk or bike to and from school today, why not?</b>	<b>School</b>
Weather. She would bike almost all of the time if there was a better bike path between Lowe Park & Oak Ridge/Hazel Point.	Hazel Point
Weather.	Hazel Point
We open enroll from Central City	Hazel Point
We love too far from school.	Hazel Point
We live too far away. My child does, however, walk to and from Hazel Point to Oak Ridge frequently 3+ times/week.	Hazel Point
We live more than a mile away from the school, so we drive him to school in the morning and he rides the school bus home after school.	Hazel Point
We live about four miles away and the primary roads to get from our house to the school do not have side walks for her to walk or bike safely, and the speed limits exceed 45 mph, so we don't feel it is safe for her to walk or bike by herself on these roads.	Hazel Point
We live a distance away from school. Needs to take the bus.	Hazel Point
We are over a mile and it is too cold, wet, rainy most of the year to be out on the trails with a heavy bag to get to school. Bags have lunch, computers, and books in them daily, so no way to reduce the load.	Hazel Point
Too far. They ride the bus	Hazel Point
Too far, not a safe route to bike or walk.	Hazel Point
Too far, no safe route with no sidewalks and too much traffic.	Hazel Point
too far away and not a safe walking pattern, no sidewalks	Hazel Point
Too far and not a good path for him to travel.	Hazel Point
Too far & no sidewalks to use	Hazel Point
Too far	Hazel Point
Too dangerous. Very far (would likely take him 25 min) no sidewalks and heavy traffic. No way I would let him.	Hazel Point
Too cold and rainy. When the weather is better she and a neighbor can walk.	Hazel Point
To cold and windy	Hazel Point
They rode the bus.	Hazel Point
There are no safe routs on C Avenue, Alburnett Rd, or Echo Hill road for my child to bike the 3.6 miles from our home to Hazel Point Elementary	Hazel Point
The school is not in walking distance and I don't want my kids to ride a bike to school just not safe	Hazel Point
The route is too far and through Lowe park which is way too cold in the winter	Hazel Point
Riding school bus	Hazel Point
Not a very good route and no bike trails or walking trails traveling north on Alburnett road.	Hazel Point
My child walks to the bus stop and rides the bus. We live too far away for him to walk PLUS even if he wanted to the roads to and from the school don't all have sidewalks.	Hazel Point
My child rides the bus.	Hazel Point
My child did not walk today (or ever) because the path is not safe. The route required to walk to school requires walking a dimly lit nature trail, through a busy school parking lot. In total, it's a 25 minute walk. The walk is an unreasonable expectation, especially when temperatures drop below freezing or on a rainy day like today. To expect an 8 year old to make this walk is as unreasonable as it is negligent. When bussing was pulled from our neighborhood, I looked at this as a total shortcoming from the Linn Mar District. Start investing in our students.	Hazel Point
It's too cold.	Hazel Point
It is too far to walk and there are no sidewalks from Alburnett Rd all the way to Echo Hill Rd	Hazel Point
he rides the bus	Hazel Point
Cross walk at Oak Park Trail/Circle and Alburnett Rd is not safe.	Hazel Point
Because they are car riders because of our location. Also this survey is not going to be accurate. Because my child will never walk to or from school. So the question where we had to choose one answer my answer was not an option.	Hazel Point
Because school is 4 miles away and roads are not safe for kids to walk on their own.	Hazel Point
Because I feel like they shouldnt have to walk 1.1 miles to school. That's more then 20min and for a Kindergartener that's too far. For our oldest child he would be all sweaty walking to school in the mornings and in the winter time walking that far in the cold is a bit much.	Hazel Point

Survey Question: <i>If your child did not walk or bike to and from school today, why not?</i>	School
A bit far for biking. Alburnett rd is also very unsafe to bike or walk along. It is missing a lot of sidewalks, has barely any shoulder, and no bike lane. Many times cars go faster than the speed limit and can be quite impatient.	Hazel Point
The path they would have to walk on does not have houses all around it. I don't feel comfortable having my elementary children walk on a path that is closed off by trees and isn't around homes.	Echo Hill
When the weather is very bad I find alternate car ride from friend.	Echo Hill
Weather conditions. Once warmer we walk in the morning and afternoon.	Echo Hill
Weather conditions	Echo Hill
Weather - during nicer weather seasons my children walk much more frequently.	Echo Hill
Weather	Echo Hill
We usually walk unless its cold/windy/raining, etc.	Echo Hill
We live two miles from school.	Echo Hill
We live too far. There are not sidewalks that connect from our neighborhood all the way to school.	Echo Hill
We live too far from the school.	Echo Hill
We live too far away. Our babysitter lives on the other side of Lowe park, but we don't feel it is safe for him to walk through the park on his own.	Echo Hill
We live too far away.	Echo Hill
We live close enough to walk or bike, but we are on the other side of Alburnette and there is not a sidewalk that allows them to safely cross without an adult. (north on Alburnette to Echo Hill) or they would have to back track to Oak Park circle.	Echo Hill
We drive when it's cold or rainy and walk when it's nice outside.	Echo Hill
Way too far, busy roads	Echo Hill
way too far and they would have to go on areas with no sidewalks and heavy traffic. Not even a remote possibility.	Echo Hill
Walk unless weather (rain/snow/cold).	Echo Hill
Too young at this point but will in future	Echo Hill
Too far. No sidewalks.	Echo Hill
Too far. No sidewalks	Echo Hill
Too far, no safe path	Echo Hill
Too far to go around the block and walk through the neighborhood by Oak Ridge to get to the walking path.	Echo Hill
Too far in cold weather, no bus availability to our neighborhood	Echo Hill
too far - too dangerous	Echo Hill
Too far	Echo Hill
Too cold yet.	Echo Hill
They took the bus	Echo Hill
They have never walked or biked because there is no sidewalk on the west side of Alburnett Rd. and while the school speed limit is 25 mph, drivers are going way too fast for me to feel comfortable with them crossing Alburnett Rd., especially without any sidewalk. I also worry about the lack of a person serving as a cross guard.	Echo Hill
They go to daycare before and after school. I also would not feel it is safe for them to walk or bike without an adult.	Echo Hill
There are not sufficient sidewalks for my child to cross. We are on Prairie Trl and don't feel safe crossing at Alburnett Rd without a crossing guard	Echo Hill
There are no walkways or bike paths from our home that would be safe to travel. Our children would have to travel on East Robins and Alburnett roads which has no shoulder and has some of the busiest intersections in this part of town.	Echo Hill
The weather	Echo Hill
The temperature <45, and it was not dry.	Echo Hill
The route for us to walk/bike is too far and unsafe. We will not be walkers or bikers due to distance from school.	Echo Hill
The district took away our busing for our neighborhood. Our house is too far away for our third grader and kindergartener to walk/bike.	Echo Hill

<b>Survey Question: If your child did not walk or bike to and from school today, why not?</b>	<b>School</b>
preschool at Echo Hill.	Echo Hill
She is too young to walk to school by herself.	Echo Hill
She is too young to walk alone. There is no good way for her to walk to school and cross Alburnett Road from our neighborhood. Also the traffic flies by the line of cars on Echo Hill Rd right in front of the school so that too feels unsafe, even with a cross guard there.	Echo Hill
She goes to before and after school care.	Echo Hill
Rides the bus	Echo Hill
Our kids attend before and after school care, and are driven to school each day because we do not live within walking or biking distance.	Echo Hill
our children walk to school when the weather is nice. Please keep the crossing guard on Alburnett and Oak Park.	Echo Hill
Not a safe route.	Echo Hill
No safe sidewalks to use... forcing the kids to use an unsupervised trail thru the park to walk/ride to school is unacceptable.	Echo Hill
No safe route with sidewalks or bike paths.	Echo Hill
My kids are dropped off Am and walk PM on cold/rainy days and on warm days they bike 1 mile to and from school.	Echo Hill
My husband drives my child and the neighbors to Oak Park circle. On nice days, they can then walk on the trail to school. If it's raining/snowing/freezing temps/etc...he drives them and waits in line to drop off. The neighbor then picks up the children from school.	Echo Hill
Most of the time, it's weather related. A couple of times it might be due to a late start to the morning.	Echo Hill
It's too far.	Echo Hill
It is too far ; oak ridge to echo ridge estates; there is no direct route and it would take at least 20-30 minutes for my child to get to and from school, which is unacceptable in my opinion. There should definitely be a bus for the kids in this neighborhood to get to oak ridge. Now with a roundabout going in there is additional wait time since traffic won't be required to stop there, and there is no crossing guard to make traffic stop, and the light doesn't work at the crosswalk—my child informed me that it hasn't been working for some time.	Echo Hill
It is too cold. We have transportation through LM busing, but once it's warm my children will be asking to walk home	Echo Hill
Inclement weather; we try to carpool with neighbors in the mornings.	Echo Hill
Inclement weather; we carpool in the mornings with neighbors.	Echo Hill
I had an errand to run after taking him to school so we drove.	Echo Hill
I do not feel comfortable having my first grader walk over a mile through Lowe Park alone.	Echo Hill
He is a car rider. The route has high traffic and I'm not comfortable sending him alone.	Echo Hill
Have to be driven since no Bus anymore. Not sending my 5 year old to walk from our home by the Y to Echo Hill.	Echo Hill
Don't feel safe to have kids walk.	Echo Hill
Distance safety time	Echo Hill
Distance and busy route to get there.	Echo Hill
Despite us living less than a mile from the closest school, our assigned school is the 3rd closest and is 3.5 miles away with no continuous sidewalk or bike path.	Echo Hill
Daycare	Echo Hill
Currently in a before and after school program at a daycare that provides bussing. When she is older, we hope that she can safely ride her bike through Lowe Park to get to/from school.	Echo Hill
Cold weather and it would be a ~30 minute walk	Echo Hill
Cold / inclement weather	Echo Hill
Child needs to be dropped off before 7am so they attended before and after school care.	Echo Hill
Bus rider	Echo Hill
Because we live in Bedford heights and have no way for them to cross Alburnette Rd. There are no connecting sidewalks for our kids to walk or bike to school without crossing a busy unsupervised road.	Echo Hill

<b>Survey Question: <i>If your child did not walk or bike to and from school today, why not?</i></b>	<b>School</b>
At this moment, they are too young but we hope that they can as they get a bit older. Replacing a bus route to our neighborhood would also be helpful! It'd be nice for them to walk/bike on nice days and have the bus option on bad weather days.	Echo Hill
1.) Weather conditions. Most school days in Iowa aren't suitable for walking. 2.) He is 6 and it is too far.	Echo Hill

## *Do you have any concerns about your child walking to or from school?*

Survey Question: <i>What would encourage your child to walk or bike to and from school?</i>	School
nothing	Oak Ridge
No	Oak Ridge
Living closer	Oak Ridge
Yes	Oak Ridge
We would have to move closer to school.	Oak Ridge
We used to walk when they were in elementary school.	Oak Ridge
Side walks	Oak Ridge
Separate bike/pedestrian paths not a part of the road	Oak Ridge
Nothing due to safety/distance issues	Oak Ridge
Nothing at this time	Oak Ridge
No too far	Oak Ridge
N/a	Oak Ridge
Living closer?	Oak Ridge
Living closer to the school	Oak Ridge
It would be nice to have a crossing guard at Oak Park Circle neighborhood to help kids get across Alburnett Rd safely.	Oak Ridge
If we lived closer, we have always had a bus, now this year they stopped, but there no shortage on people or money its displaced elsewhere	Oak Ridge
If we lived closer she would be all about it. But since we don't it's not even an option.	Oak Ridge
If the school is nearby my residence and the locality is safe for a child to ride alone to school.	Oak Ridge
I would encourage biking, but they're are no sidewalks	Oak Ridge
Having friends to walk with	Oak Ridge
Fully connected sidewalks & bike lanes from Marion to Echo Hill Rd on Alburnett Rd/Central Ave. Crosswalks at Boyson Rd & Alburnett.	Oak Ridge
Friends	Oak Ridge
Crossing guard available	Oak Ridge
Cross guards and no round abouts.	Oak Ridge
Bike trail along Echo Hill and Alburnett Crosswalk at intersection or school entrance	Oak Ridge
Bike	Oak Ridge
Besides the distance, if I felt it could be safely done I would encourage it.	Oak Ridge
A bike path or safe route - streets are too busy to use and cross safely no matter what age you are.	Oak Ridge
1. Living closer. 2. Sidewalks with walk lights.	Oak Ridge
No	Boulder Peak
Sidewalks on North 10th St.	Boulder Peak
She will not even try to ride a bike.	Boulder Peak
see previous comments	Boulder Peak
on certain days I cannot get them	Boulder Peak
Nothing. It is safer to go by car, and my child is an avid runner and soccer player. He gets a lot of exercise during the week.	Boulder Peak
Nothing. I would not allow it.	Boulder Peak
Nothing.	Boulder Peak
Nothing	Boulder Peak
No roundabout and police crossing guards on 29th Ave IF this unsafe action were to be taken.	Boulder Peak
Living closer to the school, not needing to worry about heavy traffic, not needing to carry backpacks/instrument cases/etc, and having a large group of peers to be with	Boulder Peak
If we were closer to the school and didn't have to cross busy streets to get there	Boulder Peak
If we lived closer I would like to know that she can safely get across 29th avenue by the roundabout and know that she could get from 29th ave to the school safely with so much traffic and no adult supervision.	Boulder Peak
If they were closer to the school.	Boulder Peak
I would encourage biking if there was a crosswalk at 29th and 44th. I don't trust that intersection.	Boulder Peak
having a phone for safety	Boulder Peak

Survey Question: <i>What would encourage your child to walk or bike to and from school?</i>	School
Being closer to school.	Boulder Peak
A closer school	Boulder Peak
Yes	Hazel Point
Nothing	Hazel Point
No	Hazel Point
Warm weather. Adults around to ensure their safety.	Hazel Point
they walk due to my work schedule and our close proximity to the school. Having a crossing guard is helpful and allows me to feel they are able to safely get to and from school each day considering the amount of traffic on Echo Hill Rd.	Hazel Point
Standard (red, yellow, green) traffic signal lights at the pedestrian crossing of Alburnett Rd at Oak Park Cir that require traffic to stop (alternately, a crossing guard to stop traffic).	Hazel Point
Sidewalks and cross walks	Hazel Point
School needs to be closer and there needs to be sidewalks and/or bike lanes.	Hazel Point
Safer crosswalks	Hazel Point
Safe options and other students traveling along the same path that she knows.	Hazel Point
nothing, too far.	Hazel Point
Nothing they don't have any choice but to walk or ride their bikes because of working parents	Hazel Point
No, we live too far away. Plus, the lack of sidewalks is VERY concerning.	Hazel Point
No, 4.6 miles is too far to walk or bike everyday	Hazel Point
No backpack to have to carry.	Hazel Point
Na	Hazel Point
N/A	Hazel Point
Maybe bike when she is in Middle School (Oak Ridge) IF there was a safe - low traffic, we'll lit path.	Hazel Point
Living closer or in a warmer environment.	Hazel Point
It's unreasonable to ask an 8 year old to ride their bike by themselves to Echo Hill on the route provided.	Hazel Point
Increasing safe crossing across Alburnett Rd.	Hazel Point
Improved safety conditions Full stop light intersection at Alburnette and Echo Hill with a pedestrian crosswalk	Hazel Point
Sidewalks along Echo Hill Rd and Alburnette Rd Crossing guards for Alburnette Rd	Hazel Point
If we moved closer to the school, that is about it, even then in the cold months he would be asking me to take him.	Hazel Point
If we lived closer to school	Hazel Point
If we lived closer and didn't have to cross Alburnett.	Hazel Point
If we leave close to the school	Hazel Point
If a guardian/adult was able to be with them.	Hazel Point
I would never have her walk or bike all the way to school	Hazel Point
He doesn't have a choice.	Hazel Point
Hazel Point is too far, but they did at Bowman Woods all the time.	Hazel Point
Having a biking trail.	Hazel Point
closer location and sidewalk/bike path	Hazel Point
Bike lanes and sidewalks on C Ave, Alburnett road, and Echo Hill Road.	Hazel Point
Better paths	Hazel Point
Appropriate road conditions	Hazel Point
A wide path-like sidewalk on Alburnett from Boyson to Echo Hill Rd.	Hazel Point
A safe route with good sidewalks	Hazel Point
A crossing guard to be present at Alburnett Road for Hazel Point and Oak Ridge kids.	Hazel Point
A safer path.	Echo Hill
Yes, as long as a crossing guard is there.	Echo Hill
Yes	Echo Hill
Weather	Echo Hill
We already walk 95% of the time - right now it is always with a parent.	Echo Hill
We already do most days	Echo Hill
We added a 250W electric motor to her bike. And she earns extra minutes on the iPad when she chooses bike vs getting a ride.	Echo Hill

<b>Survey Question: <i>What would encourage your child to walk or bike to and from school?</i></b>	<b>School</b>
Warmer weather and cross guard.	Echo Hill
Waiting for him to get older/wiser/more experience to be allowed to walk/bike that distance without an adult.	Echo Hill
Waiting for him to get a bit older before he's allowed to bike that distance alone.	Echo Hill
Sidewalks, a crossing guard, flashing lights that would alert cars if children are crossing the street, more police presence and even ticketing those who are driving faster than the school speed limit	Echo Hill
Sidewalks and safety	Echo Hill
Sidewalks along Echo hill Rd and Alburnett Rd Full stoplight intersection at Echo hill Rd and Alburnett Rd fully stopping traffic Nice weather :)	Echo Hill
Sidewalk along Alburnett Rd to Echo Hill Rd	Echo Hill
She already does and loves it.	Echo Hill
Safety, time, an adult that is able to walk them.	Echo Hill
Safe route	Echo Hill
Safe paths	Echo Hill
Once they are 10 or so. Depending if the walk ways and paths we're monitored.	Echo Hill
Once he is older we would consider it. Also, bike safety being taught in school would be an incentive	Echo Hill
Older adults helping to walk her to and from school. Would be great to rotate adults walking on days I'd be a part of that for sure. Bridges over both alburnett road and echo hill road. A system for me to know she made it safely to school.	Echo Hill
Nothing	Echo Hill
None	Echo Hill
No - live too far away. Alburnett road is not a safe option	Echo Hill
no	Echo Hill
Nicer weather.	Echo Hill
Nicer weather amd closer	Echo Hill
Needs to be a little older. Safe areas to walk and ride a bicycle	Echo Hill
N/A	Echo Hill
More safety measures, a sidewalk the entire way friends to go with	Echo Hill
Living in closer proximity to school	Echo Hill
Living closer to their school	Echo Hill
Living closer to school.	Echo Hill
Living closer or having a solid group of students to walk together.	Echo Hill
It is too far to walk, and since my student has to bring his bag and computer and sports bag it is a lot to take on a bike.	Echo Hill
If we lived closer and there were adults helping keep them on track to walk to school via the paths.	Echo Hill
If there were a walking group that would walk together through the park together.	Echo Hill
If there was sidewalk and a cross guard. (By sidewalk, I mean at the end of Adare Pass, the sidewalk ends so the kids would have to walk on the road along Alburnette and then cross Echo Hill road without a crossing guard to get to the side of Echo Hill Road with a sidewalk.	Echo Hill
If there was a large group of children who could walk together, if there were an adult escort, if the weather was decent.	Echo Hill
If there was a better path through lowe park and the OR parking lot. And his age..	Echo Hill
If other children from our neighborhood walked/biked and were accompanied by an adult.	Echo Hill
If it was possible and closer to our house.	Echo Hill
I would not have my child walk or bike to and from school based on us living close to 3 miles away from school	Echo Hill
I only allow it when the weather is nice and I'm able to go with her.	Echo Hill
Having an adult crossing guard present along Alburnett Road/Cedar Springs Dr before and after for Echo Hill and intermediate students.	Echo Hill
Groups to walk or bike with	Echo Hill
Groups of kids going together	Echo Hill
Friends to walk with.	Echo Hill
Extension of sidewalk on south side of Echo Hill Rd.	Echo Hill

Survey Question: <i>What would encourage your child to walk or bike to and from school?</i>	School
Extension of sidewalk on south side of Echo Hill Rd.	Echo Hill
Easy access and a safe route.	Echo Hill
Crossing guard, or even better, an underpass/overpass for kids over Alburnett Rd. North Liberty has this and it has provided safe transport for many Iowa City School District kids.	Echo Hill
Crossing guard and sidewalks for them to get from our neighborhood to school	Echo Hill
Closer school	Echo Hill
Better weather	Echo Hill
Better trail just for walking and/or for bike to travel on.	Echo Hill
An attendant in parking lot of Oak Ridge. Have an agreement with the city or the district to have the path maintained in the winter. Also have lighting on the path. A path that does not require my children to have to cut through the Oak Ridge parking lot.	Echo Hill
A Skywalk and monitored trail.	Echo Hill
A sidewalk the entire way.	Echo Hill
A safe route.	Echo Hill
A safe route is all it would take to encourage them because they love riding bikes	Echo Hill
A safe path and simply when it's age appropriate.	Echo Hill
A dedicated walking path preferably shielded from animals and weather as appropriate designated only for school walkers and an adult supervisor.	Echo Hill
A crossing guard at echo hill and alburnett roads in the morning and afternoon. For elementary and intermediate schools and oak ridge school.	Echo Hill



## Do you have any concerns about your child walking to or from school?

Survey Question: <i>If a sidewalk was available along Alburnett Road, would your child use it? Why or why not?</i>	School
Yes	Oak Ridge
No	Oak Ridge
Yes. He will bike.	Oak Ridge
Yes, my child loves to bike ride and used to bike to school all the time while in elementary school. Drivers on Alburnett rd tend to drive too fast and are quite impatient. A sidewalk would be preferable as it separates kids from the road (which has no shoulder at all). Both bike lanes and sidewalks would be great but I'd put the priority on wide sidewalks.	Oak Ridge
Yes my child would.	Oak Ridge
Yes if we let her but still too far away for me to feel comfortable with that.	Oak Ridge
Too far. We are past alburnett road	Oak Ridge
The bus is still the safest, most convenient method of traveling to school from our neighborhood 3.5 miles from school. There is not a sidewalk or safe route for the length of the ride to Oak Ridge even with a sidewalk on Alburnett Road.	Oak Ridge
That's not the safest route, too much traffic and too fast, id rather have monitors on the trails to the neighborhoods, if weather isn't a problem then neither should that request. Once the staff complains about how cold or sick they are then maybe you will get it	Oak Ridge
Still too far to walk	Oak Ridge
Still missing sidewalks along other roads	Oak Ridge
Probably not. We live too far, but a sidewalk on Alburnett Rd sounds like a good idea.	Oak Ridge
Probably not to go to school. It is too far in harsh weather too early in the morning to make sense.	Oak Ridge
Possibly if he rode his bike	Oak Ridge
Open enrollment	Oak Ridge
No. Still too far from our home. I think it would be a good thing for houses closer to the school though. They would also need safety measures at the roundabout and there is no way I would let my child near the intersection of Robins Road and Alburnett, especially given all the high school age drivers in the area.	Oak Ridge
No. Because we love too far from alburnett road.	Oak Ridge
No. We live in Robins	Oak Ridge
No. Too far	Oak Ridge
no, would not change her opinion	Oak Ridge
No, we live too far away	Oak Ridge
No, too far	Oak Ridge
no, to far to walk home	Oak Ridge
No, still too far away from our house	Oak Ridge
No too far and too much traffic lots of young drivers on the road/high school drivers in the area.	Oak Ridge
No because the intersection of Alburnett and E Robins Rd is so busy. There is no stop light. It is difficult for cars and buses to turn north at this intersection. It was be even worse if there were people crossing the street too.	Oak Ridge
My child would use the side walk if available as long as there is proper crossing at the 4 way intersection and no round about. Unless a tunnel was installed underneath to cross.	Oak Ridge
Maybe. We would still have to cross other super busy roads to get to this path.	Oak Ridge
Maybe. Don't want the sidewalk to be too close to the road. There is sooo much traffic on Alburnette Road and the speed limit is rarely followed.	Oak Ridge
It would still be pretty far away. Probably not practical. There is still a ton of traffic, on Alburnett/Robins Rd. where my child's path would be. Lots of high school drivers, etc. and it does not seem very doable.	Oak Ridge
It would definitely make the school a lot more accessible to him.	Oak Ridge
If we lived closer, possibly.	Oak Ridge
Distance	Oak Ridge
Bullies, trail isn't maintained or monitored, weather is poor	Oak Ridge

## ***Do you have any concerns about your child walking to or from school?***

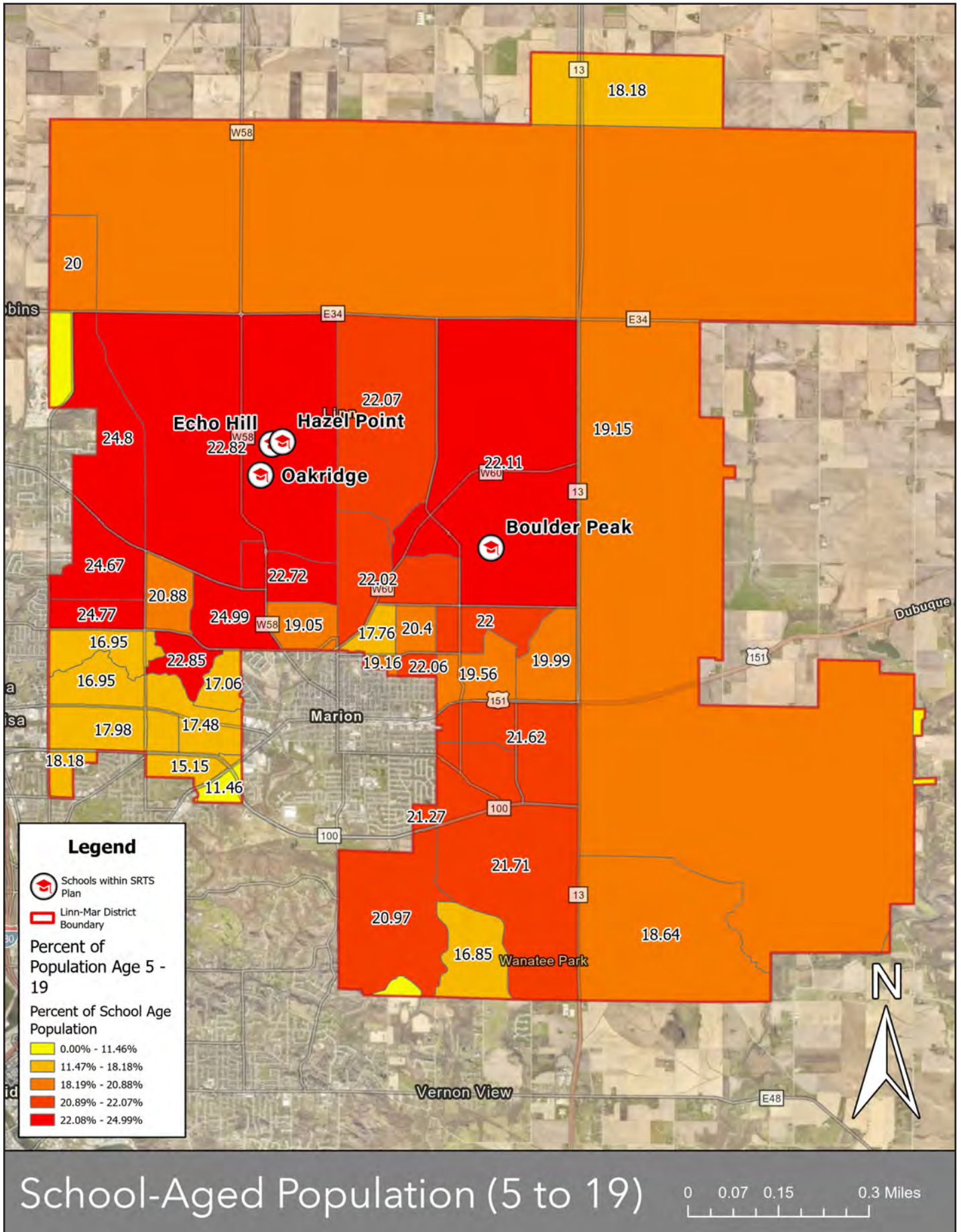
<b>Survey Question: Please provide any additional comments here</b>	<b>School</b>
Won't help, I've said enough, you still won't fix it. Transportation and bullying are your problems that are ignored.	Oak Ridge
You don't care about what happens 50ft from the school as long as it's not inside	Oak Ridge
while our child does not walk or bike to school, i still think a sidewalk along Alburnett road and a way to get around the roundabout on Tower Terrace would be helpful in general.	Oak Ridge
We live off Newcastle.	Oak Ridge
None	Oak Ridge
My student does not live close enough for me to be comfortable with her biking or walking to school.	Oak Ridge
Most questions don't apply to my daughter. She is open enrolled and we live outside the district.	Oak Ridge
I will be putting in a complaint about the bus system	Oak Ridge
Alburnette road would make their walk longer . We do need a sidewalk on it. And it would need maintained.	Oak Ridge
We do not have sidewalks that connect to our house. Our neighborhood has to cut through yards to get to the nearest sidewalk, or walk on a busy street. We find it is easiest and most comfortable to drive our children/carpool.	Boulder Peak
Walking or biking to school is simply not feasible for the distance we are from school.	Boulder Peak
My child has to walk across a city park to get to his bus stop. Last year he didn't have a cell phone. As parents that made us nervous from a safety perspective. Next year we will have even more children on our street who will utilize the bus (to Boulder Peak). Our neighborhood believes transportation bus routes in our area need to be re-examined more carefully to bring a bus stop closer to our street. We aren't even sure if the transportation dept. is aware that our street is no longer a dead end and feeds out to a main road leading directly to BP. As my child enters 7th grade in fall 2022 we won't be bused to Excelsior. Would love to have our child ride a bike to school but unfortunately there is no longer a crossing guard at the intersection of Tower T. Road & 10th street - it's just too dangerous there for students to cross on bike /foot - especially with many high school drivers moving through there at high speeds & not paying attention to the roads due to cell phone distractions	Boulder Peak
I'm too afraid of child abduction to allow my child to walk to school.	Boulder Peak
I'm not sure why the school is so interested in our personal family choice of transportation. This survey seems a bit odd and intrusive.	Boulder Peak
I did not answer the questions regarding on average how often does your child walk/bike to school... because they take the bus	Boulder Peak
I am WAY more concerned with the recently passed board policy on gender equity than I will ever be on walking or biking to school. All students deserve to be safe at school, not just a vocal minority. We are considering homeschooling.	Boulder Peak
Because my child lives over a mile from school, I prefer that she continue to bus.	Boulder Peak
Again, the roundabout and 29th Avenue in general are unsafe. This should not even be in discussion for a walking route	Boulder Peak
We need bussing back in our neighborhood. This is a safety concern. The logjam of traffic idling along Echo Hill Road mornings and afternoons also creates a major environmental concern. For safety and environmental reasons, bussing needs to be added for neighborhood including Williams, Kinderhook, Battle Creek, Bent Creek, and Saddleback. Anything less would be letting down the community.	Hazel Point
We live off Newcastle 2 miles- 40+mins walking	Hazel Point
unless you are in one of the surrounding neighborhoods, I just don't see this as something that parents are going to buy into. I know it is likely a goal but we live in Iowa. It is cold for a good part of the school year. Parents don't even want their kids out at the bus stop for more than a few min so they will pull their car up and let the kids sit in a warm car until the bus comes. You are not going to get traction on this unless you are targeting the homes right around the school.	Hazel Point
This survey makes me feel like you are trying to get rid of all bussing and want all the kids to walk to school which is absolutely crazy. Schools should be providing transportation to all kids.	Hazel Point
Thanks for taking the time to think through how children get to and from school safely and efficiently!	Hazel Point

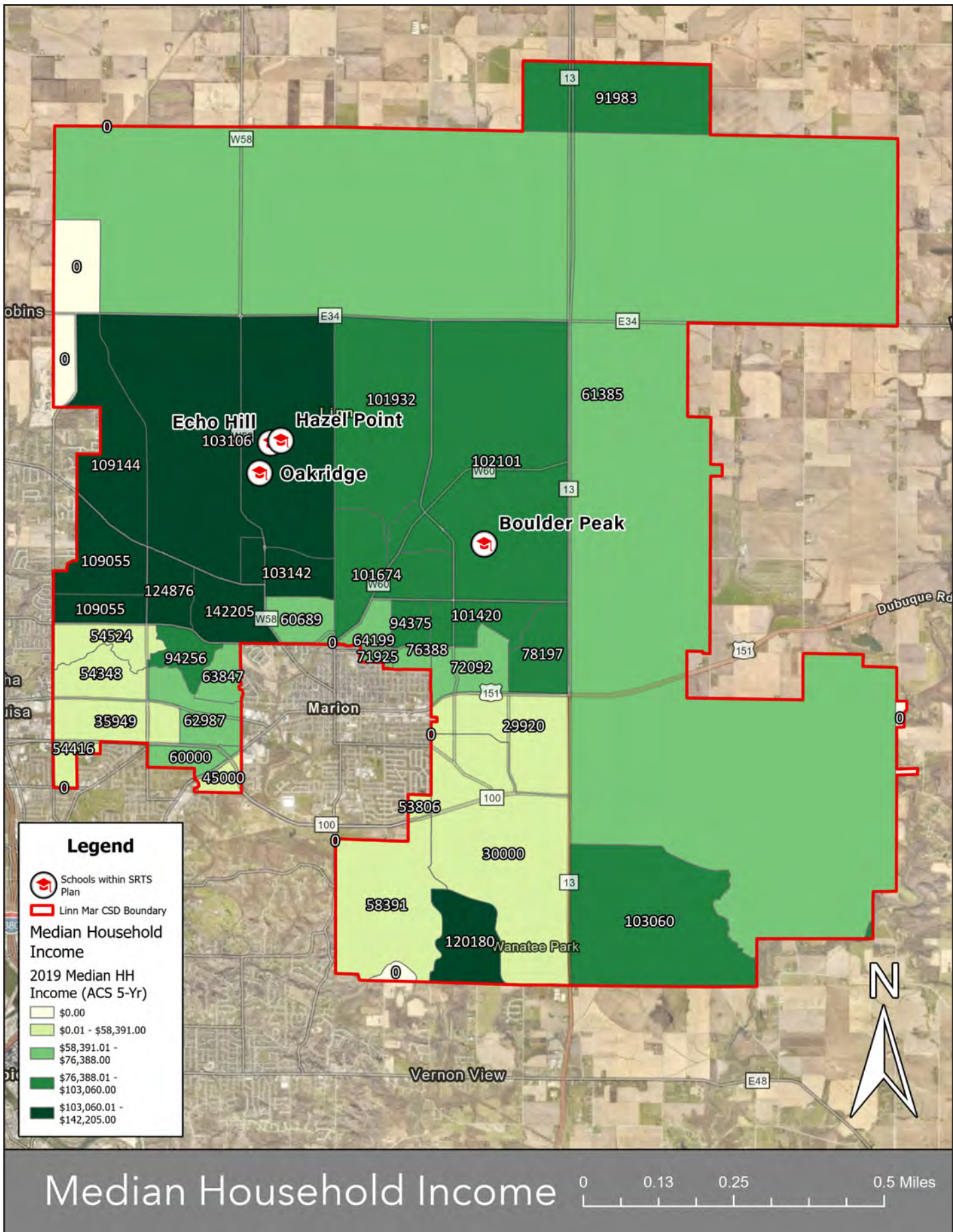
Survey Question: <i>Please provide any additional comments here</i>	School
Thank you for doing this survey and I hope at the end we enjoy positive results for the best of our kids.	Hazel Point
Over a mile away and no bus. Path is not covered. Frigid/unsafe in winter	Hazel Point
Need more trails to schools from Alburnett Road south to East Robbins road	Hazel Point
NA	Hazel Point
Lowe park is a barrier to walking to school especially in the winter.	Hazel Point
How about questions about bussing. Bullying on the bus?	Hazel Point
Do not put a ROUND ABOUT on Echo and Alburnett. It needs to be a 4 way stop.	Hazel Point
We would prefer busses to be added for those neighborhoods who it was taken away from in the last years. Busses would be better for those over 0.5 miles away	Echo Hill
Very dissatisfied with the availability of busing in this school district. Hard to believe we can't get enough school bus drivers. There is no crossing guard at echo hill and alburnett road, soon to be a roundabout which doesn't require traffic to stop at all. Oak ridge is too far to walk to, there is no direct route and takes almost 20-30 minutes to walk to. I also know buses go by our neighborhood that are not full and could very well have enough room and time to get kids from this neighborhood.	Echo Hill
Two 1st graders both bike to and from 1 mile when it's nice outside. Bike through the middle school parking lot.	Echo Hill
There should be some adult supervision for crossing alburnett road and echo hill road, especially if they are planning for a round a bout, which definitely does not require drivers to stop at all. Also my child has informed me that the crossing light doesn't work there either. I also think the buses that pass our neighborhood everyday could have the time and space on the bus to pick up the kids in our neighborhood to avoid that dangerous crossing.	Echo Hill
The crosswalk to get on the sidewalk to travel Echo Hill Rd is on the opposite side of the building that the walkers are released from. Inconvenient for those that don't live in the development directly adjacent to it. It adds to our trip — welcomed during beautiful weather; but makes us take the car when cold, raining or super windy. Not a life shattering inconvenience, but providing feedback as requested.	Echo Hill
Thanks for keeping this a priority.	Echo Hill
Thank you.	Echo Hill
Thank you for the opportunity to take this survey.	Echo Hill
Safety is my main priority	Echo Hill
Please fund safer walking paths to Echo Hill Elementary.	Echo Hill
PLEASE bring the bus back to Country Club Estates. The fact the neighborhood had a bus was part of the reason we moved to the house we did.	Echo Hill
Love the idea of enhancing kids ability to walk or ride their bike to school, something needs to be done about the traffic and walkways available.	Echo Hill
It was very upsetting to our neighborhood when they stopped busing the kids and expect them to walk or bike to school. There is no path that is safe for my children and their friends to use to get to school. No direct path. It would be nice if the district and city would work together to create a direct path. I think our neighborhood is too far for elementary students to walk or bike to school.	Echo Hill
I'd love for my child to be able to walk to school, but I dont see it ever happening	Echo Hill
I still think it is appalling that children can not be bused from a neighborhood 3/4 a mile away crossing a very busy road. Every single bus drives by thia neighborhood on the way to school. Zero point zero percent reason they can't stop and pick up kids. Makes a world of difference when it's raining or 10 degrees out. I especially love in the winter when the kids get home crying because they're so cold.	Echo Hill
I have two children 1st grade female and 4th grade male	Echo Hill
Gender of the child should play no part in this survey and the options even presented about and elementary student is sad.	Echo Hill
Anyone under 10 should have transportation available regardless of location. It is a serious burden on parents to try to transport especially when working. Also the amount of crime and child related crime is way to high to allow kids to walk without supervision. I hear near daily about bullies and even adults on the pathways that are threatening or acting suspicious.	Echo Hill
Alburnett Road needs sidewalks. Too much traffic and no safety at intersections.	Echo Hill

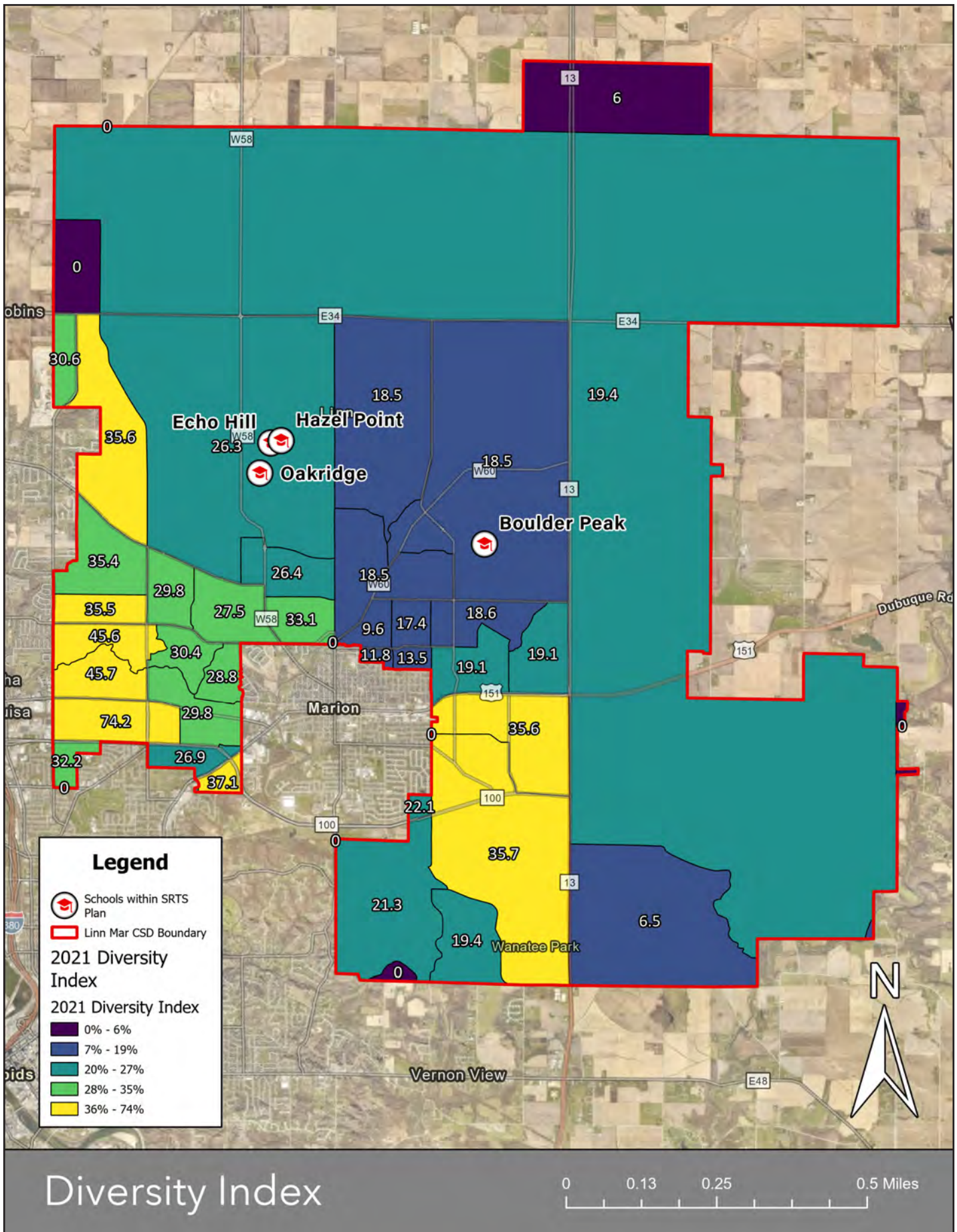
## Kindergarten through 4th Grade Classroom Tallies

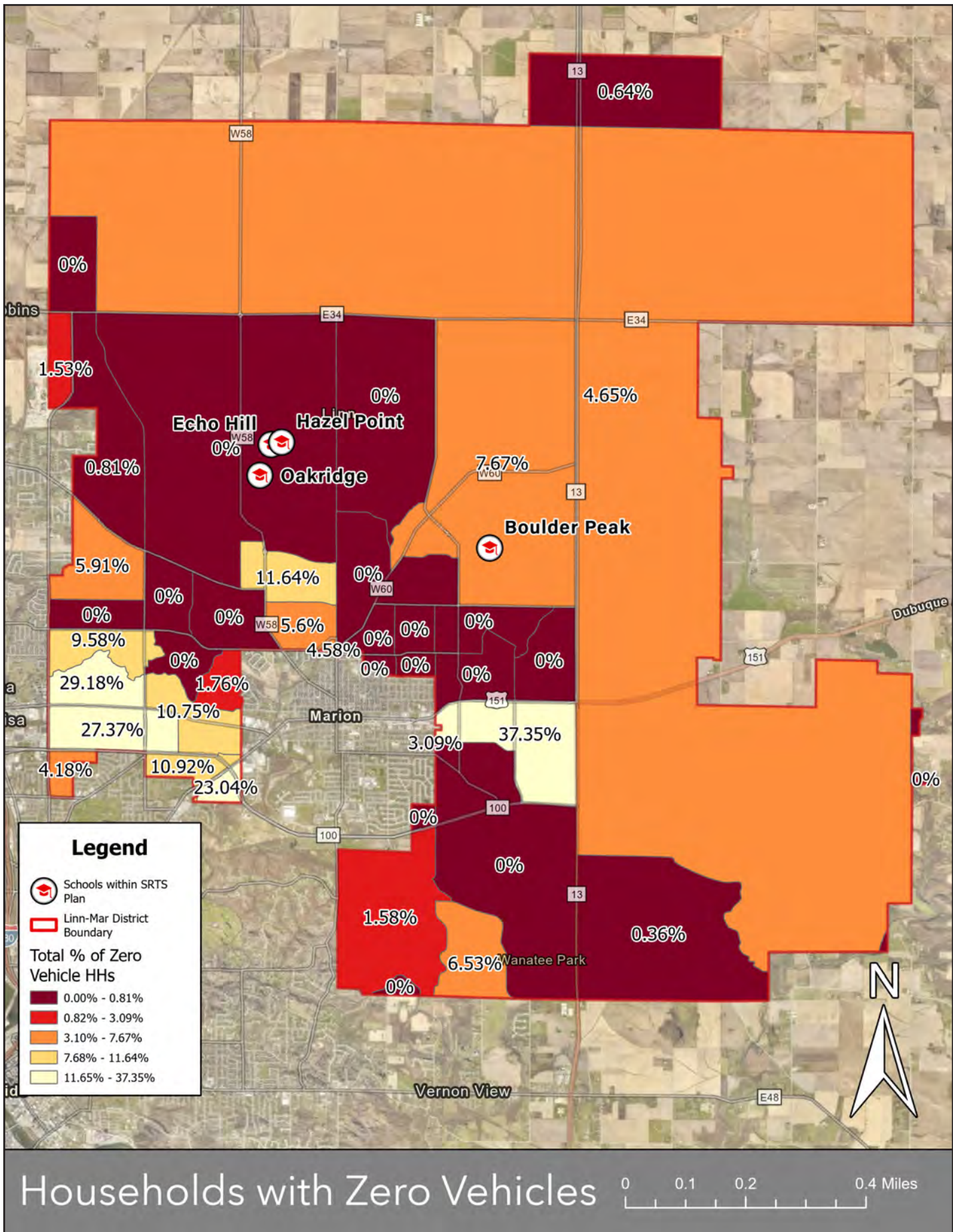
What is today's date +B10+B2:Q11	What day of the week is it?	What is the temperature outside?	What is the weather like today?	Whose classroom is this?	What grade is this classroom?	How many students enrolled in classroom?	Difference Enrolled Vs Actual	How many students are in class today?	How many students walked today?	How many students rode a bicycle today?	How many students rode the bus today?	How many students rode in their family's/guardian's vehicle?	Ask how many students rode in a carpool?	How many students got to school a different way than above?	Any disruptions to counts or unusual travel conditions that would affect tally?
Mar 30, 2022. 8:14 am	Wednesday	43 degrees	rained earlier and is not cloudy	Heather Agnew	Kindergarten	23	-2	21	0	0	7	14	0	0	NA
Mar 31, 2022. 8:35 am	Wednesday	48	cloudy	Mrs. Forsyth	Kindergarten	23	0	23	0	0	6	17	0	0	NA
Mar 30, 2022. 8:35 am	Wednesday	44	rained earlier but it's cloudy now	Jelinek	Kindergarten	25	0	25	0	0	11	12	0	2 - go to hand in hand daycare at school in the morning	no
Mar 30, 2022. 8:40 am	Wednesday	45	rainy	Mrs. Lam	4	26	-1	25	3	0	14	7	0	NA	
Mar 30, 2022. 10:45 am	Wednesday	50°F	Cloudy, spotty rain	Mr. Kreher	4th	26	-1	25	5	0	2	17	1	0	Many 4th graders participated in a before school club today, meaning they needed to ride in their family's car instead of taking the bus.
Mar 30, 2022. 12:48 pm	Wednesday	45	rainy/cloudy	Mrs. Oxley	1st	21	1	20	0	0	8	11	1	N/A	N/A
Mar 30, 2022. 8:00 am	Wednesday	45 degrees	Rainy	Mrs. Adams	Fourth	25	0	25	5	0	12	8	1	None	no
Mar 31, 2022. 8:55 am	Thursday	33 degrees, feels like 23	snowy	Polniak	First Grade	21	0	21	0	0	9	11	0	1 student rode a daycare van	although there was a special event this morning, all children came to school in their typical fashion. There was nothing that disrupted the norm.
April 4, 2022. 9:00 am	Monday	20 degrees	cold and windy	Diane Irvine	2nd grade	24	-2	22	0	0	8	14	2	0	None

# Appendix 3 - Maps

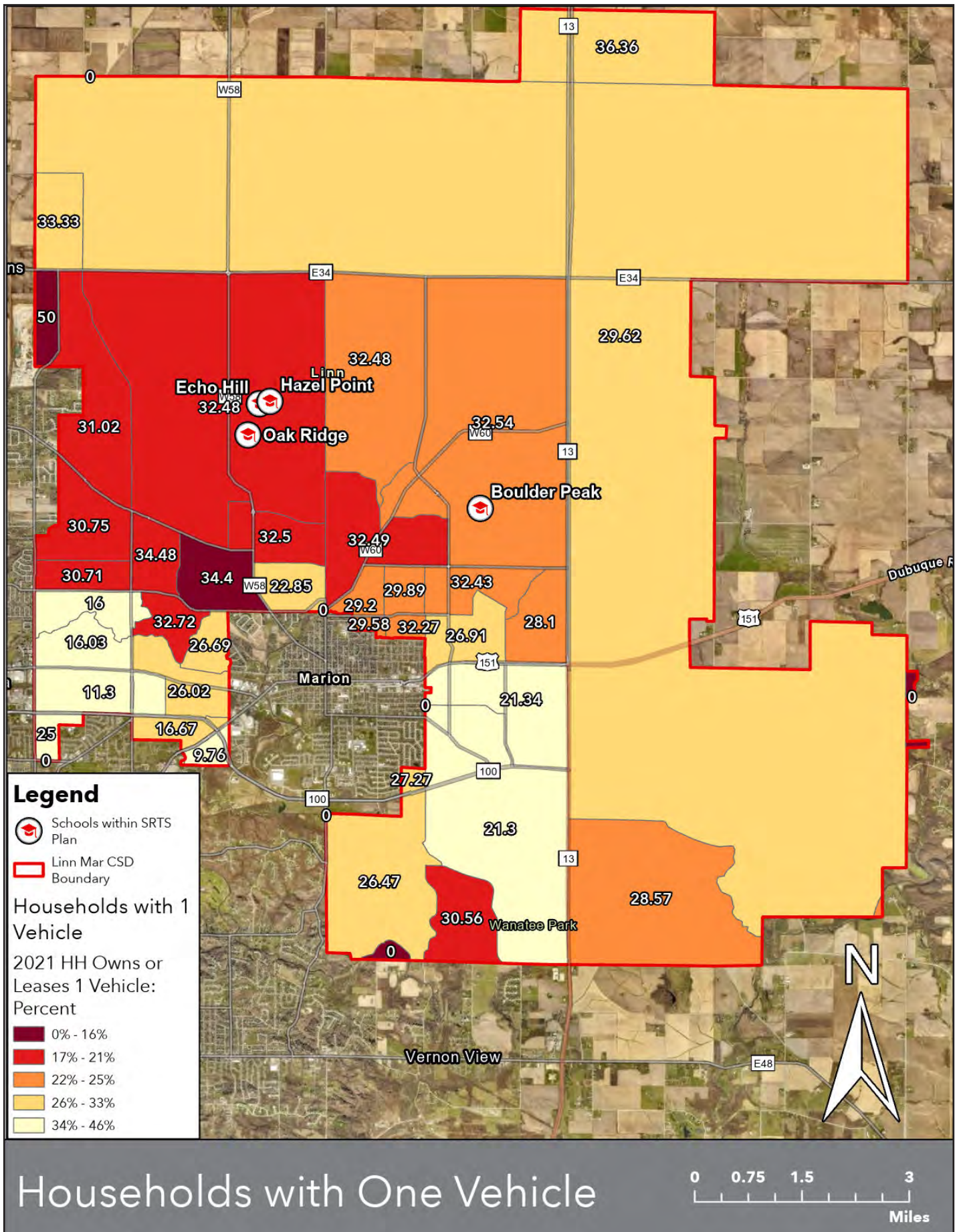


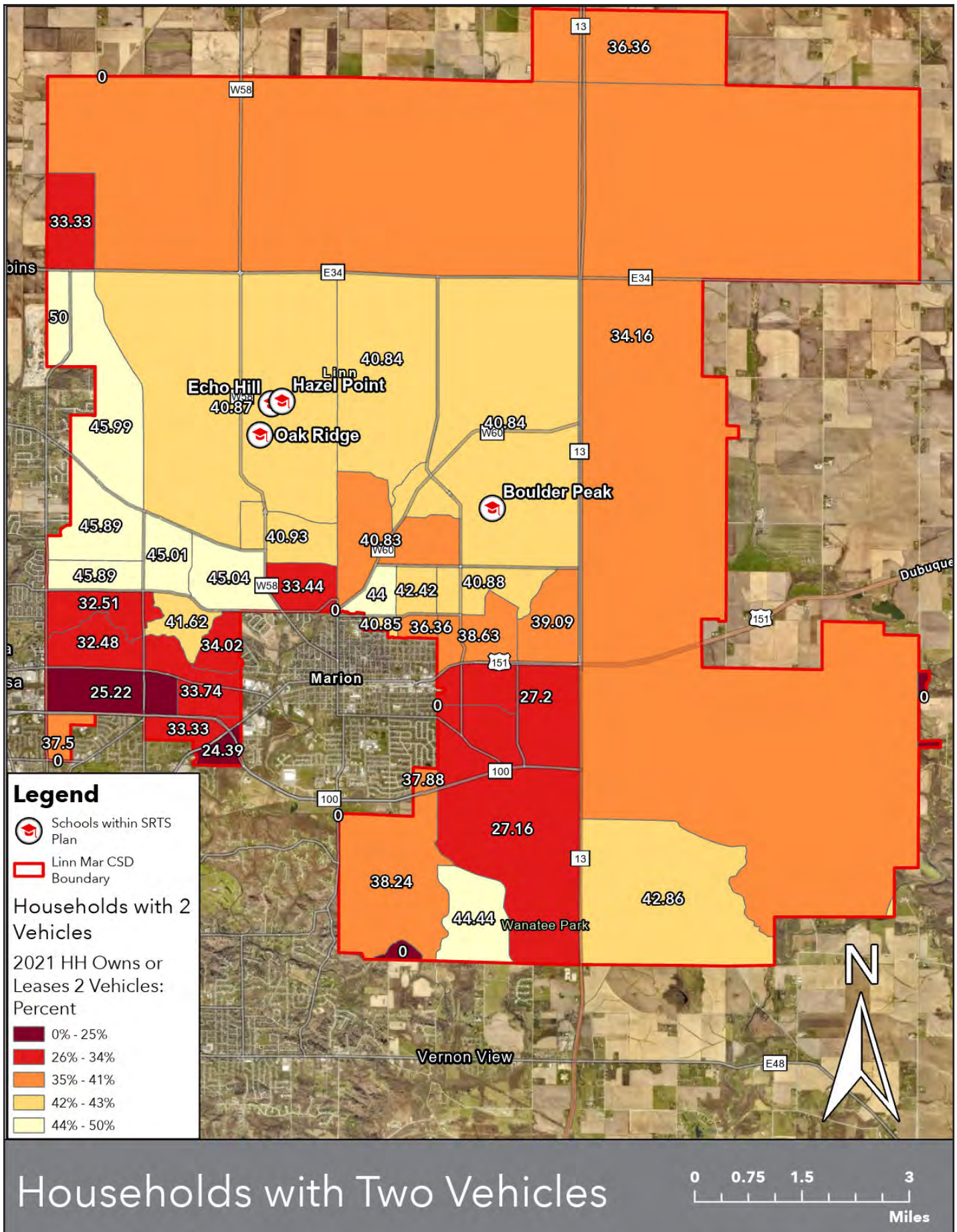


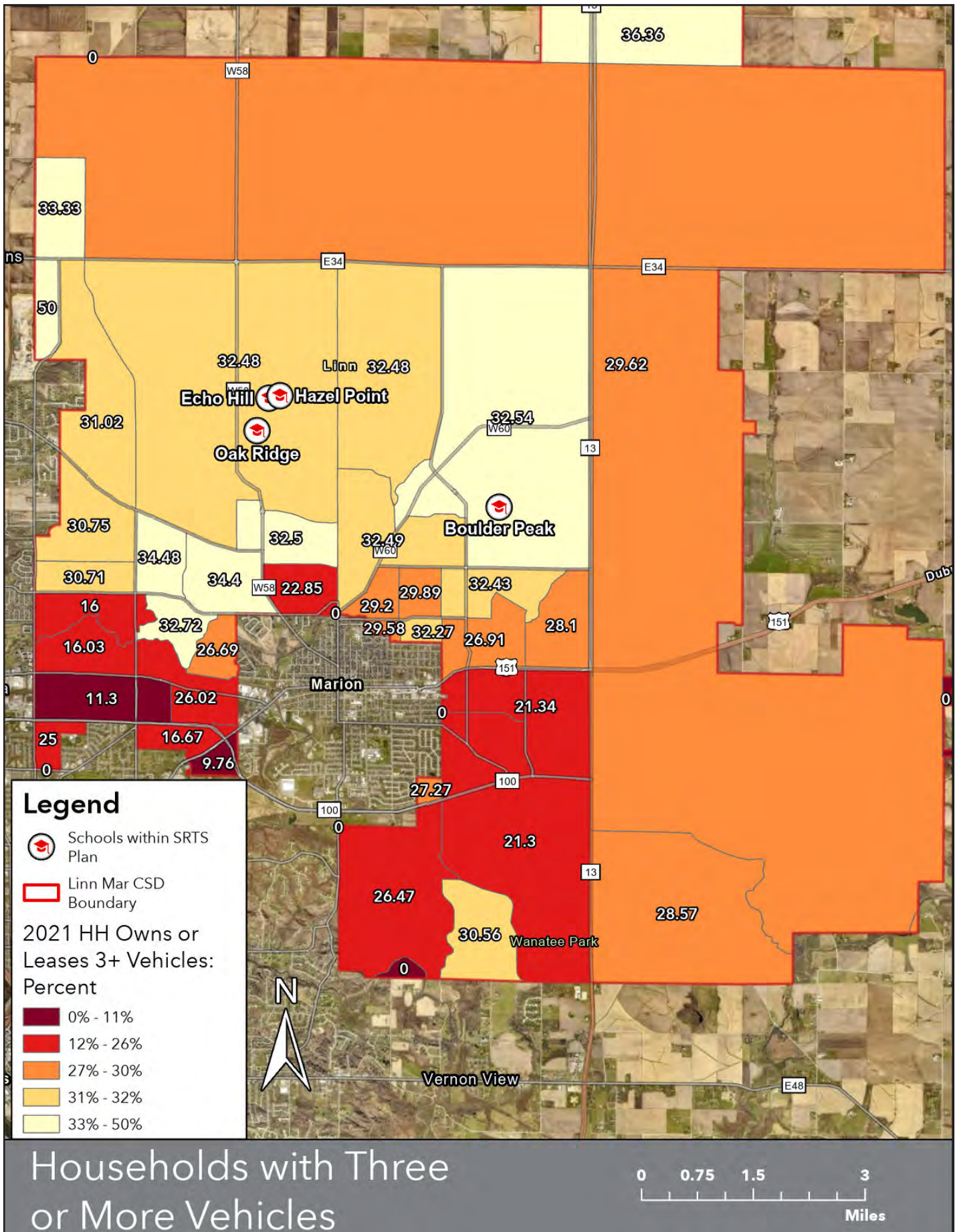


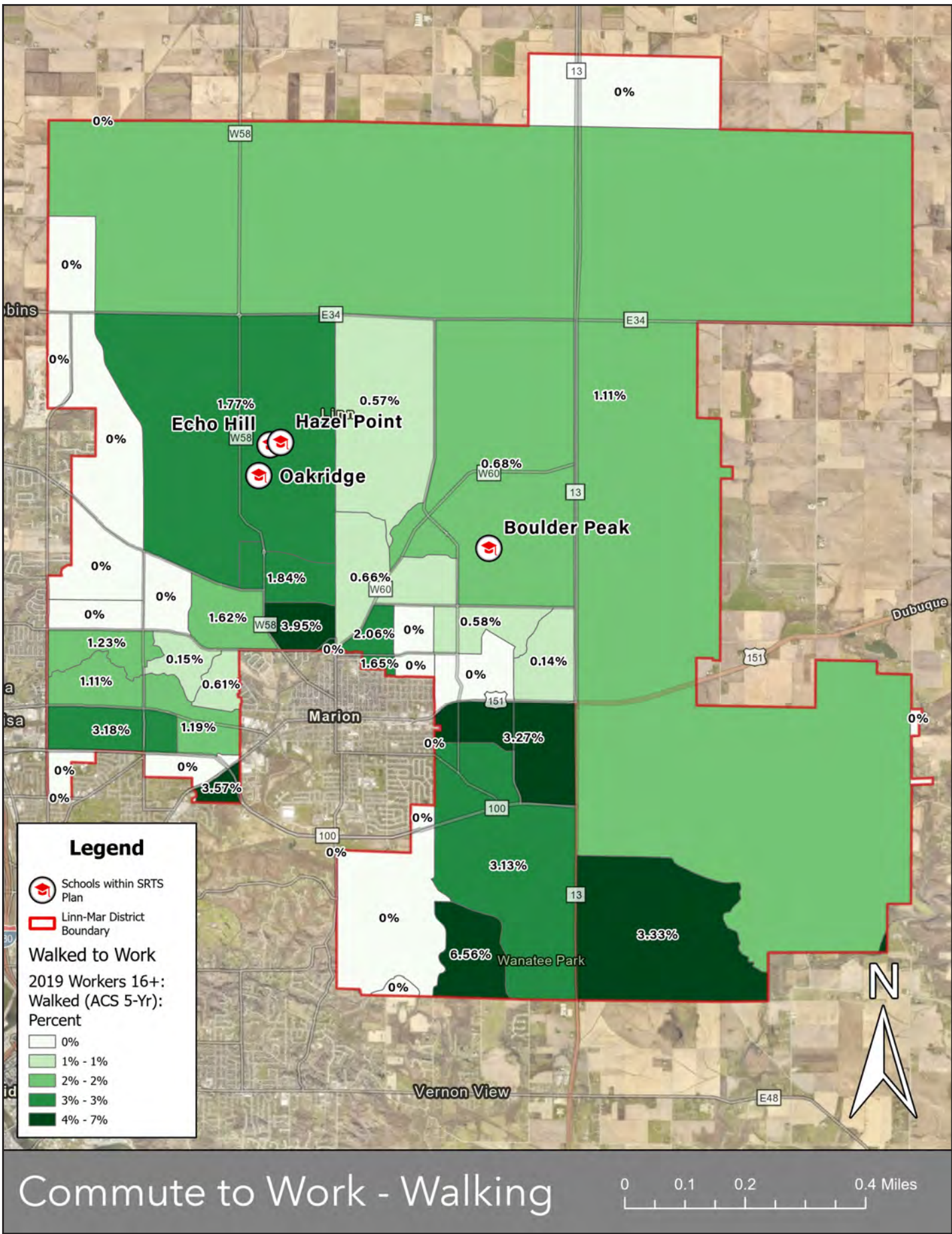




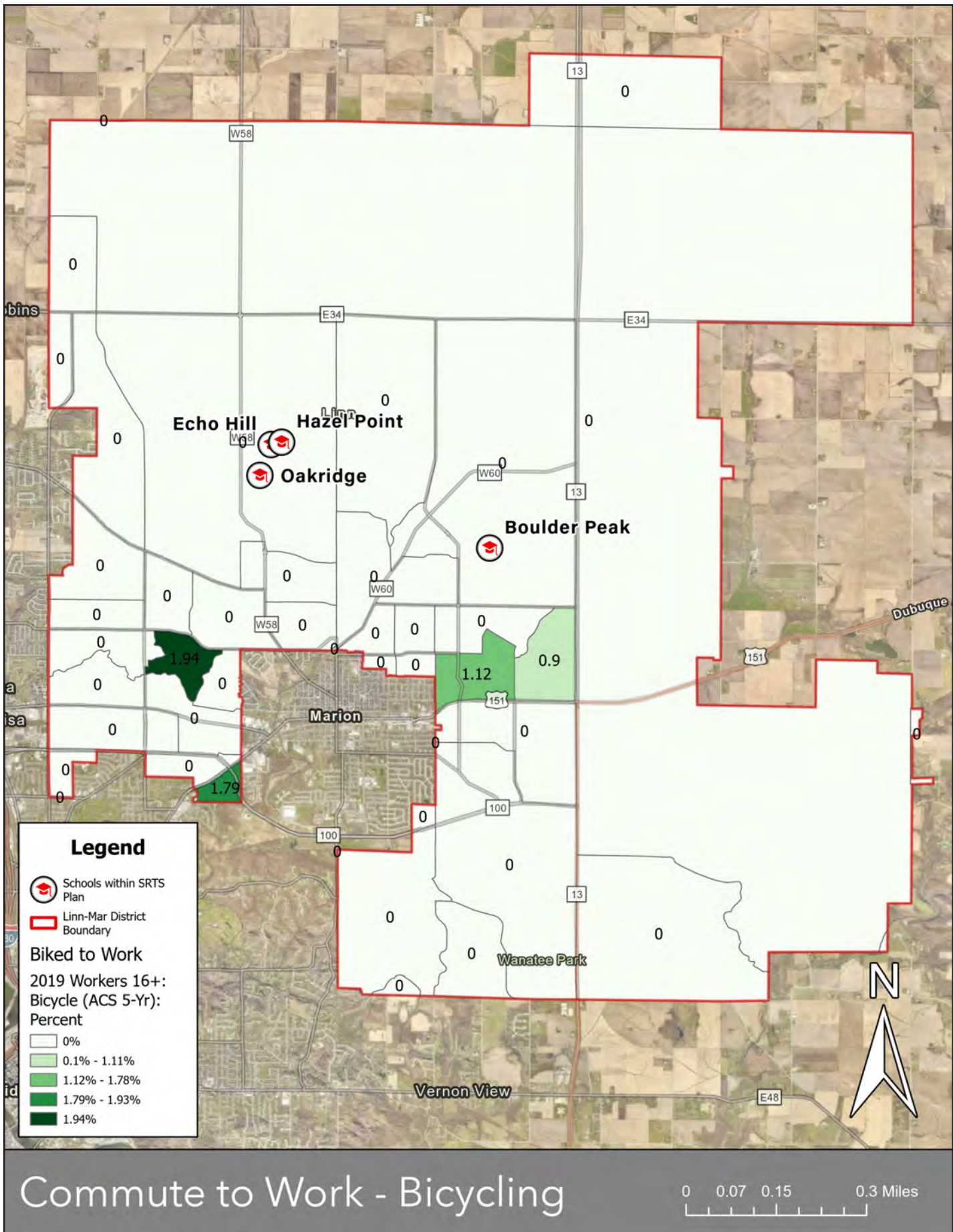


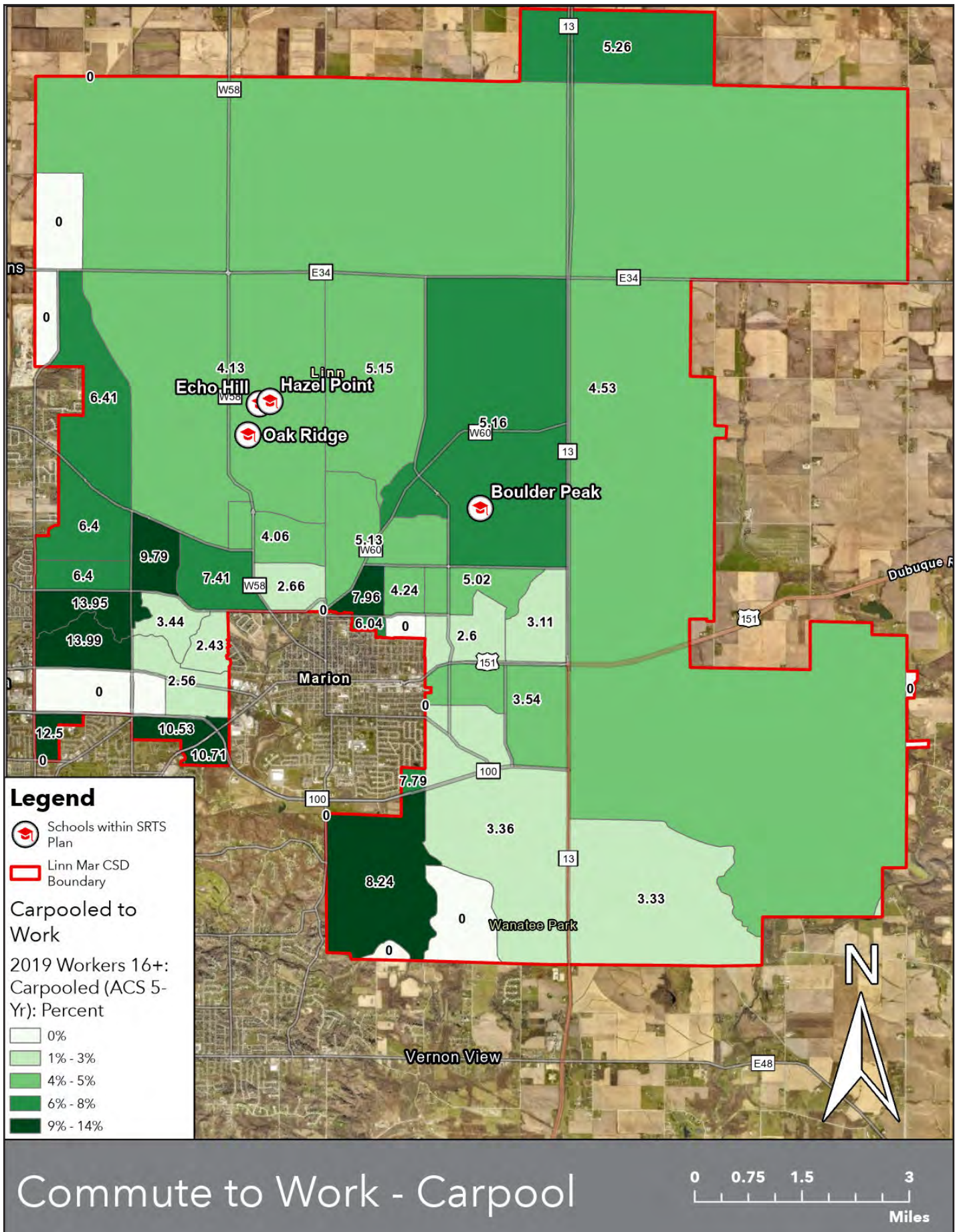


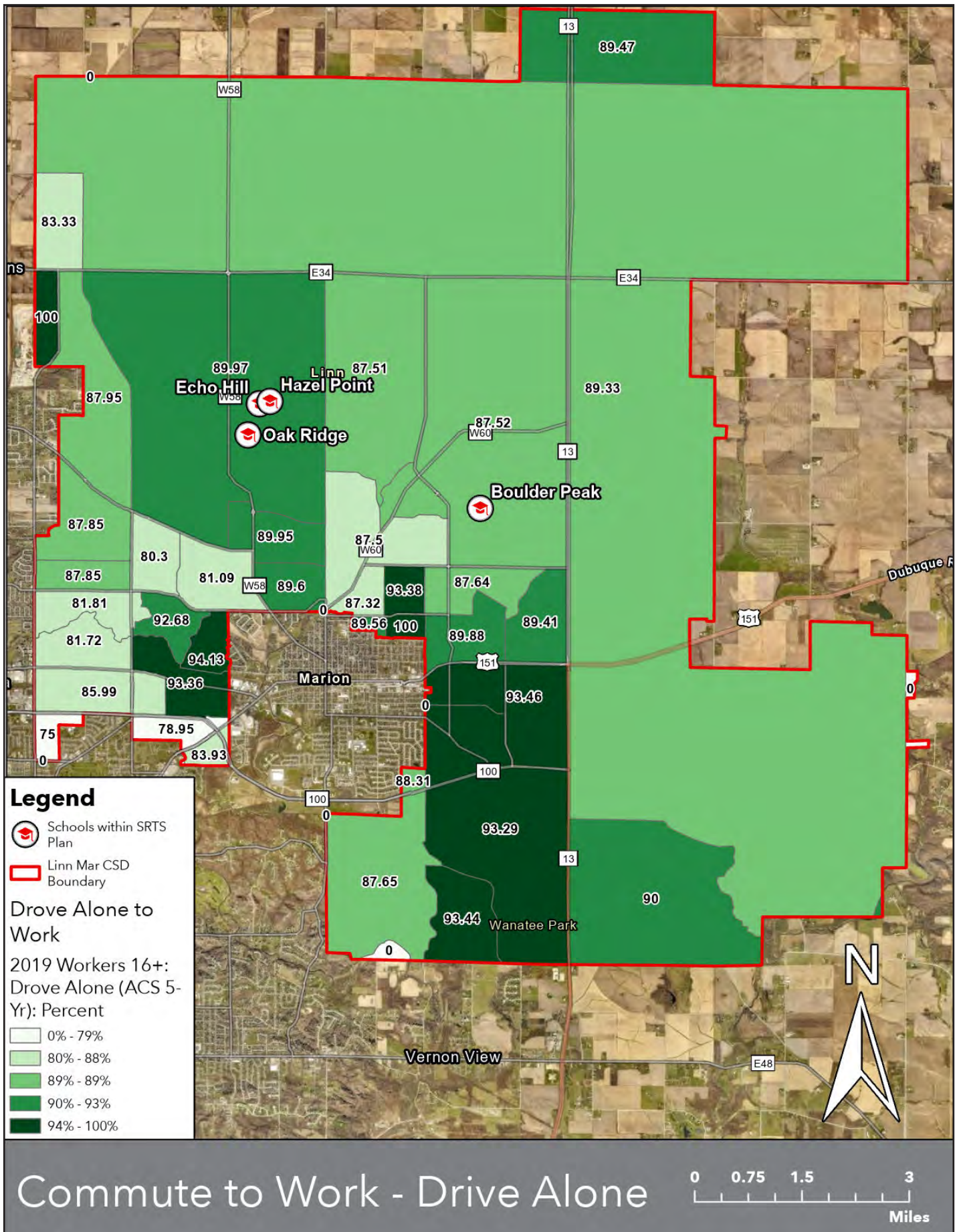


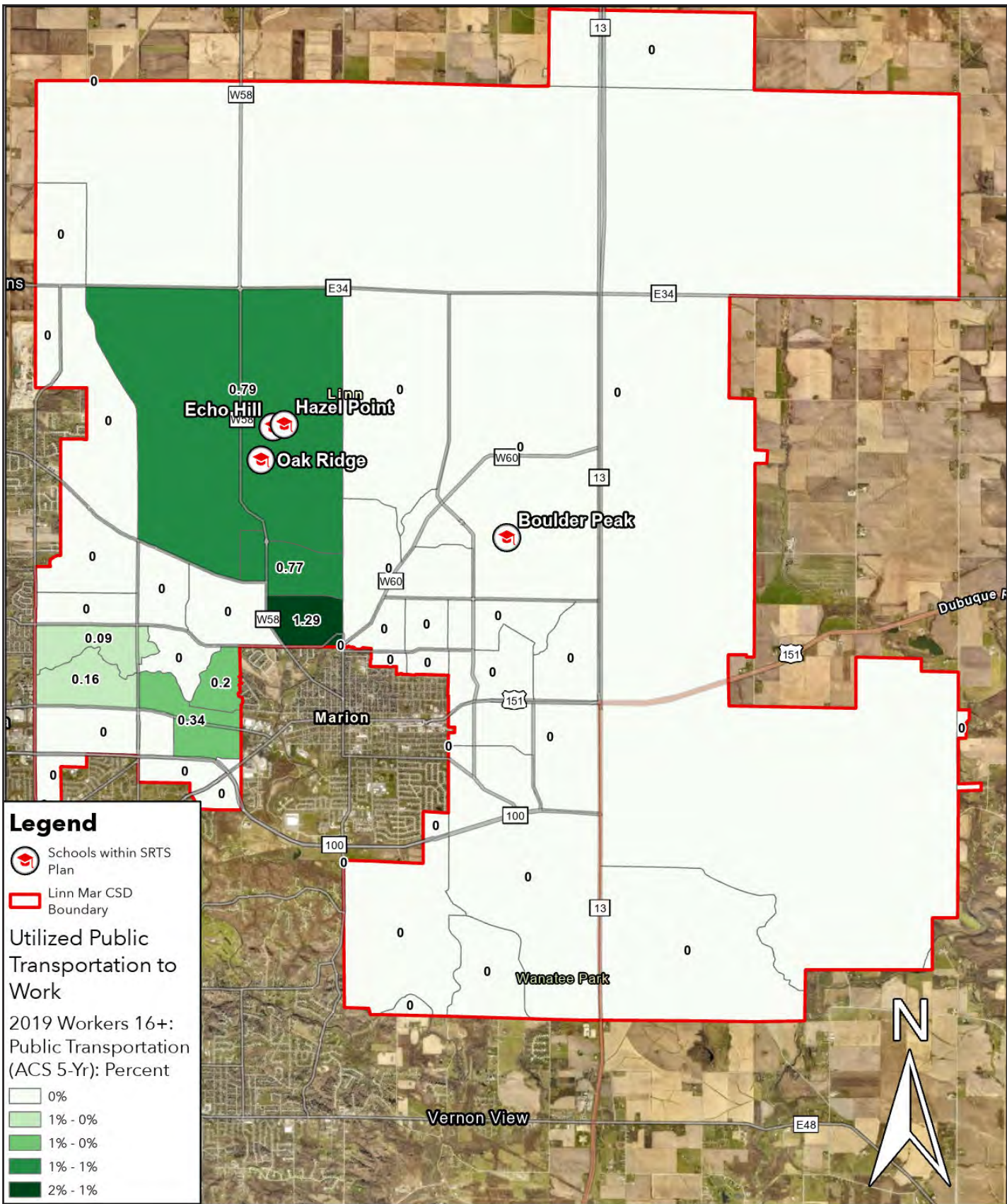


# Commute to Work - Walking





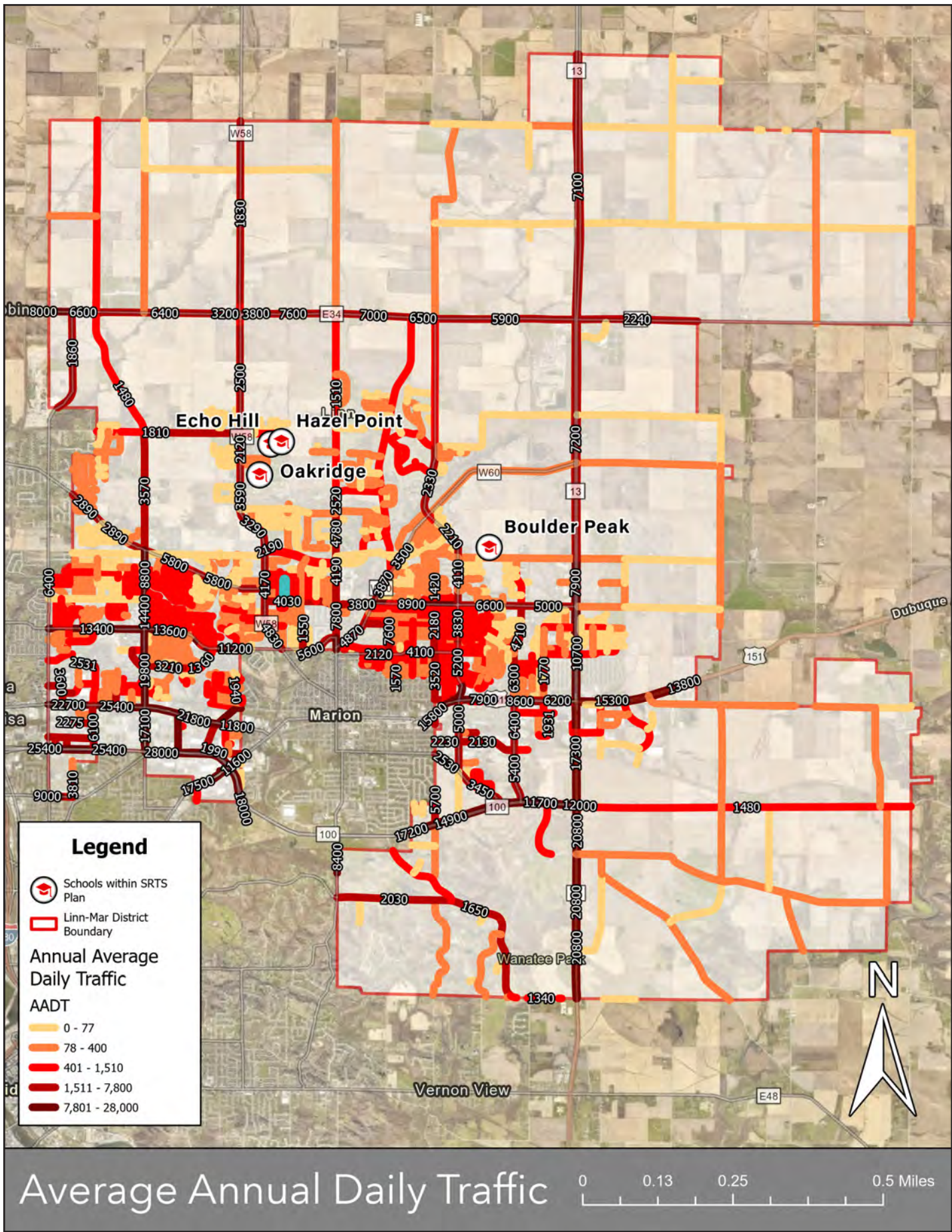


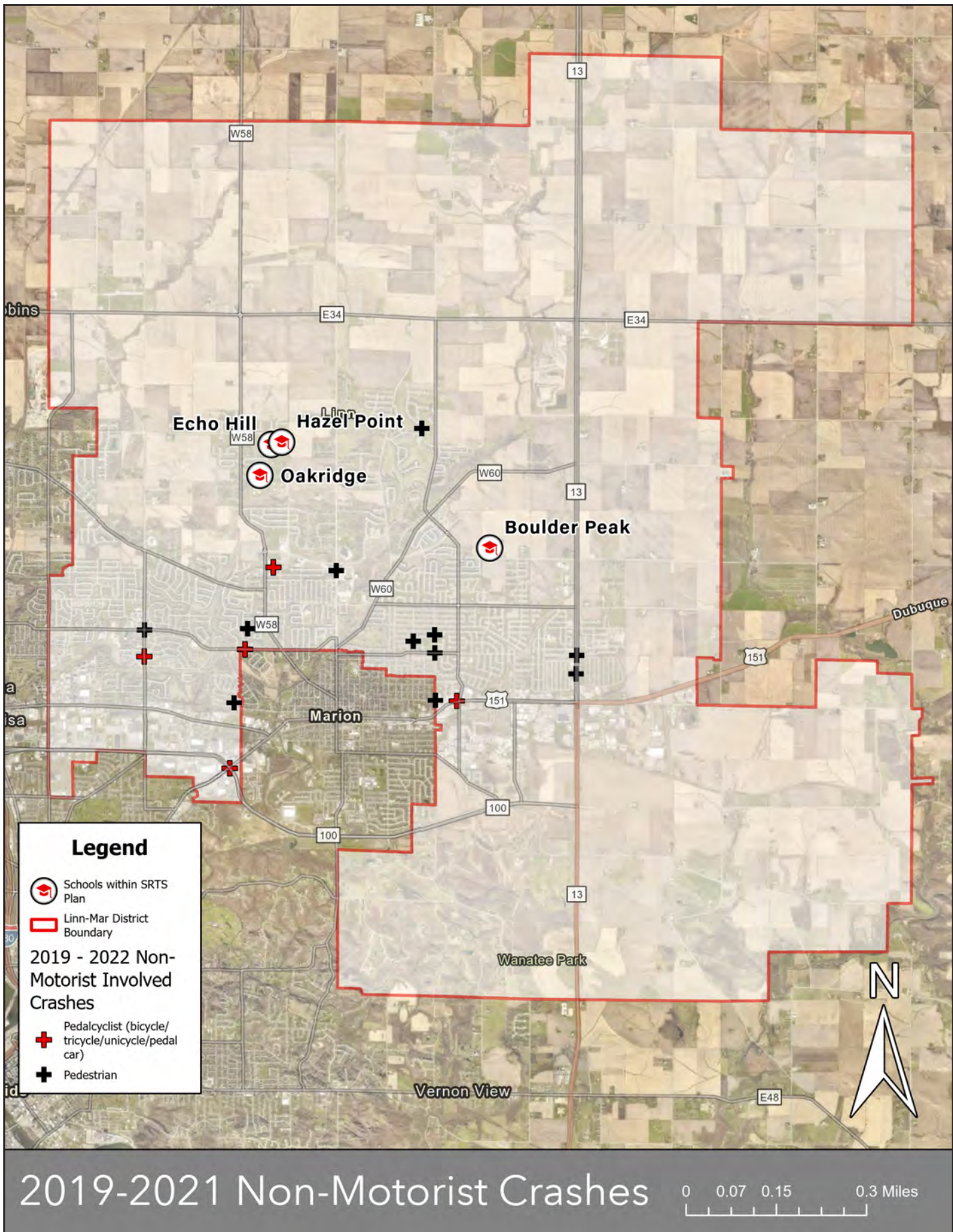


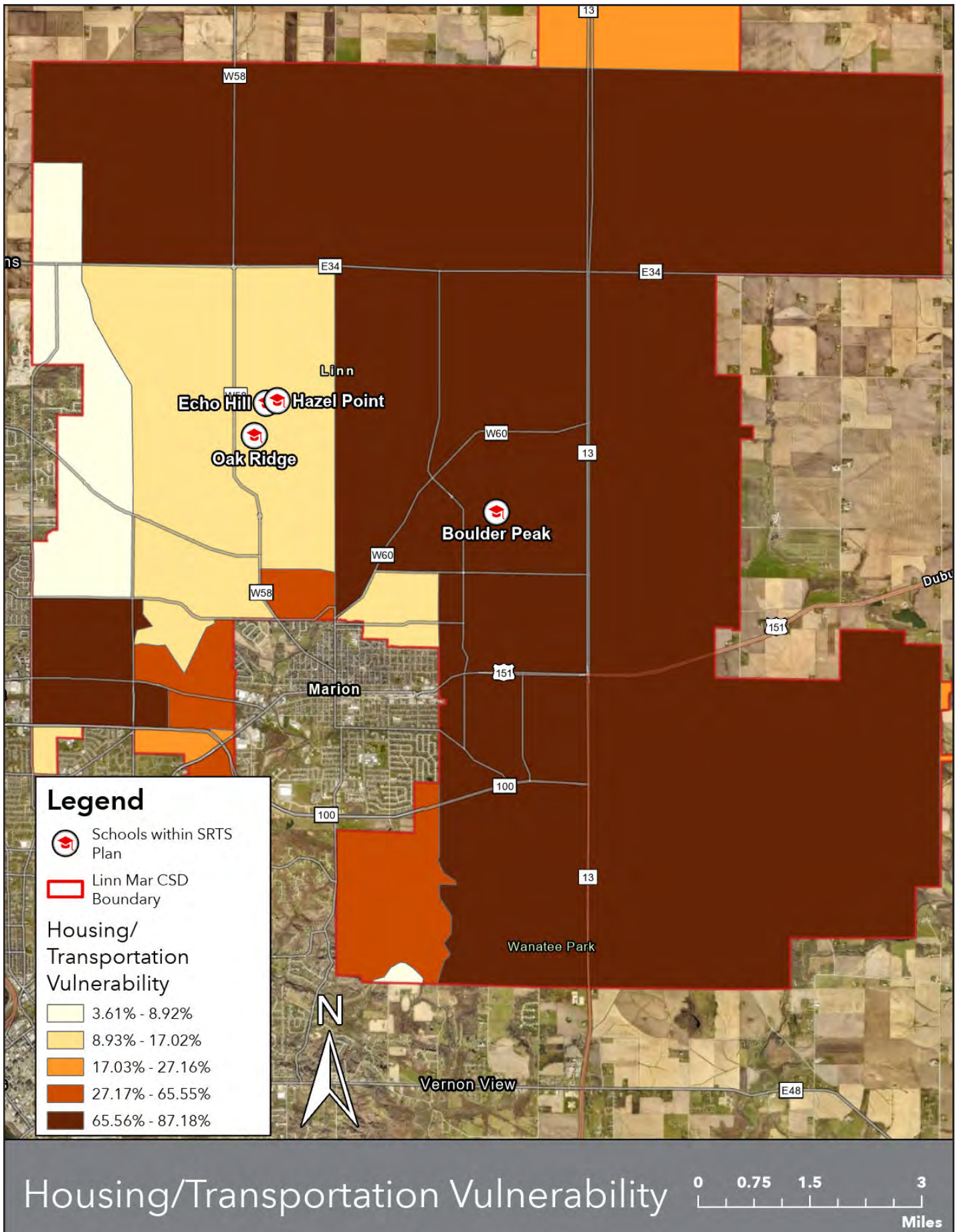
# Commute to Work - Public Transit

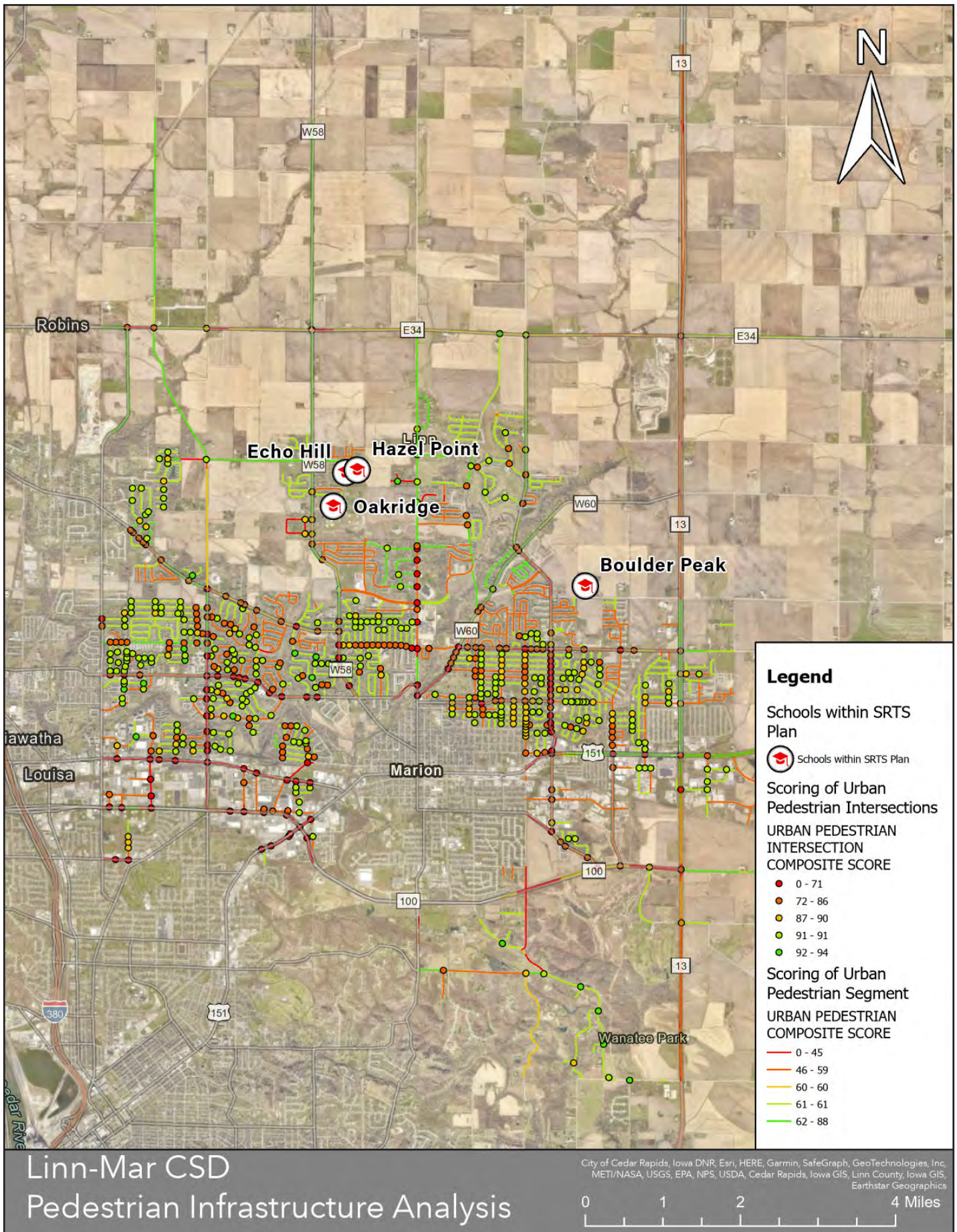


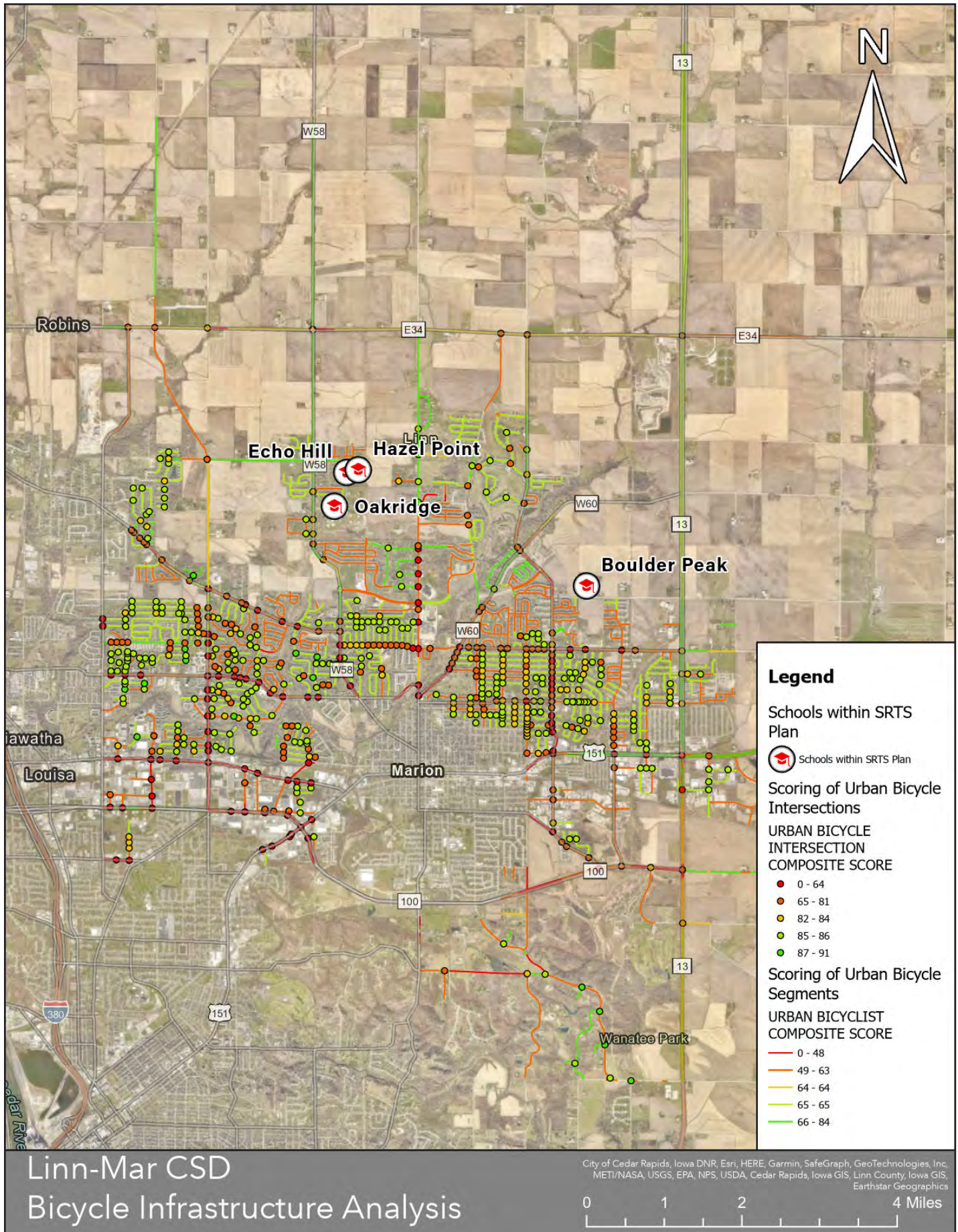


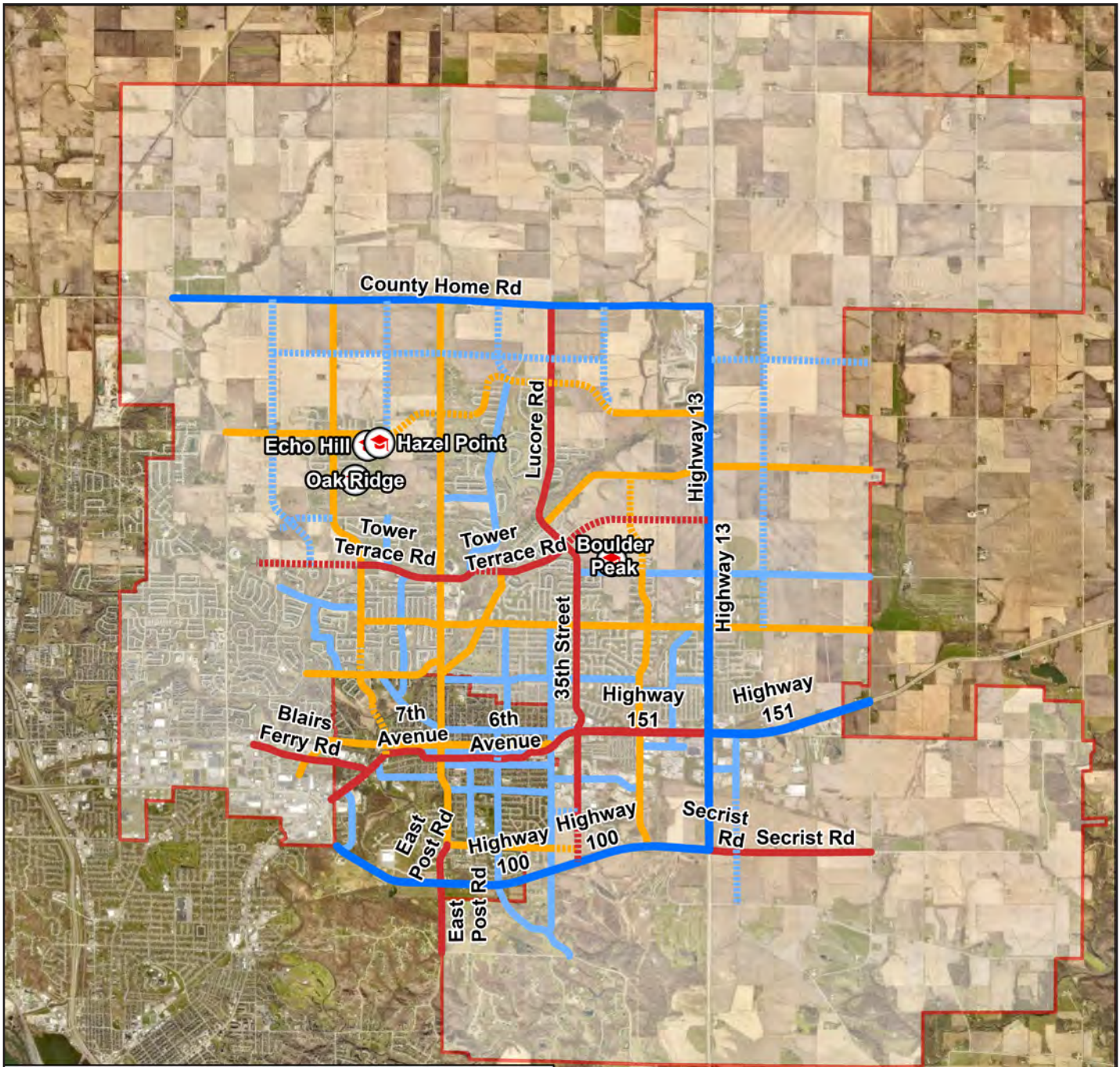












**Legend**

- Schools within SRTS Plan
- Linn Mar CSD Boundary
- Collector
- Minor Arterial
- Major Arterial
- Expressway
- Proposed Collector
- Proposed Minor Arterial
- Proposed Major Arterial

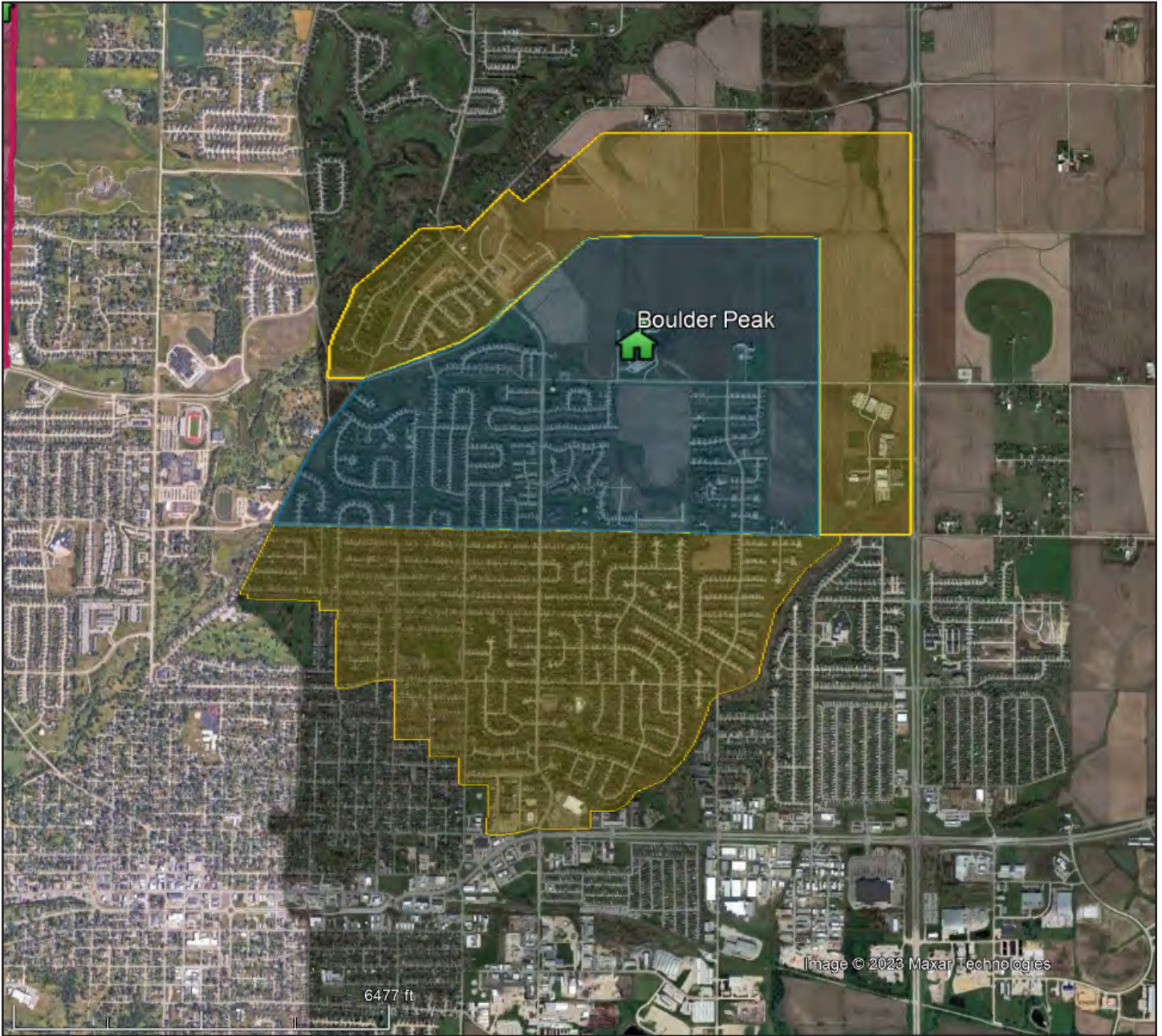
**Major Streets**

- Collector
- Minor Arterial
- Major Arterial

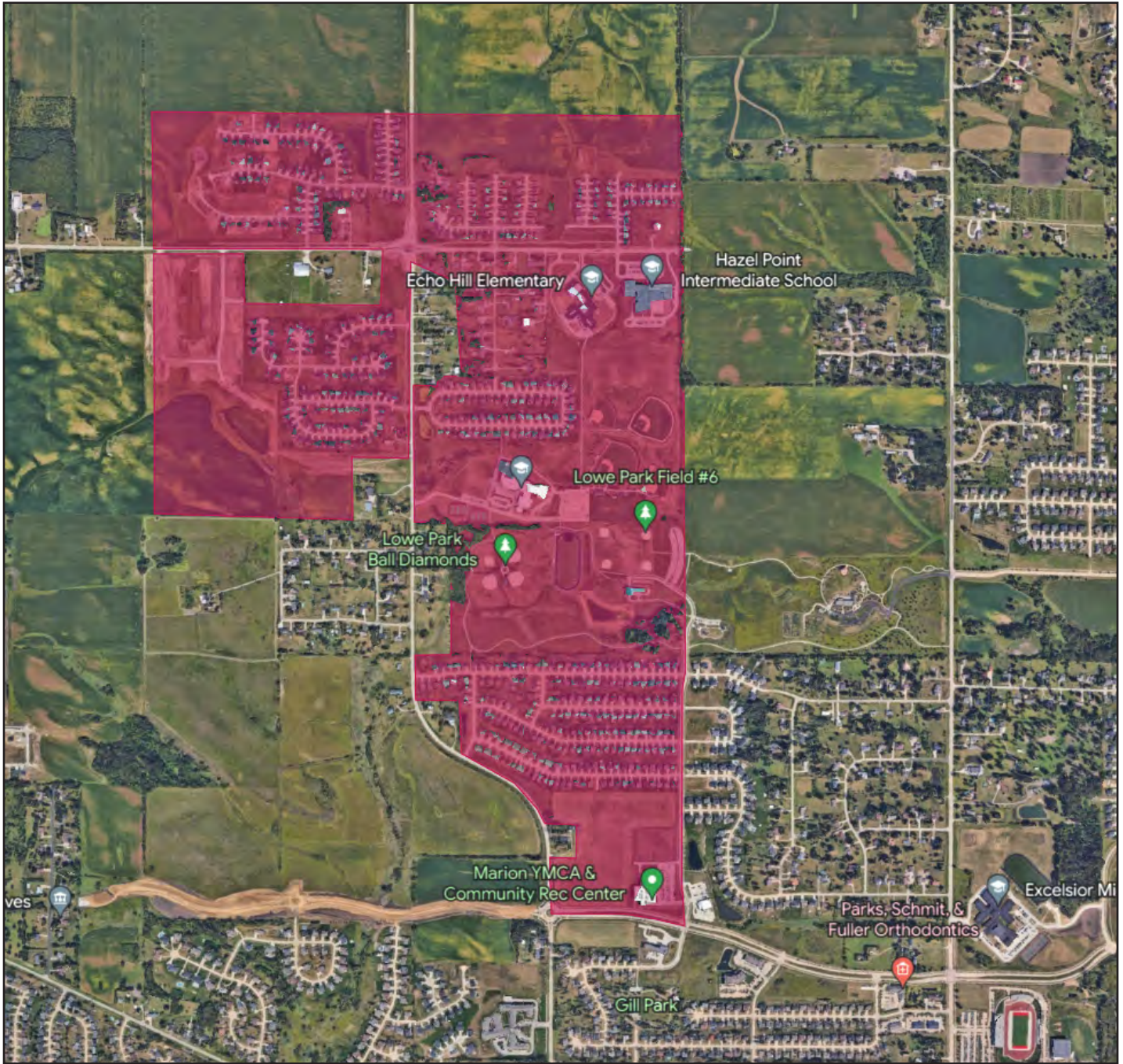


**Future Roadways**

0 0.75 1.5 3  
Miles

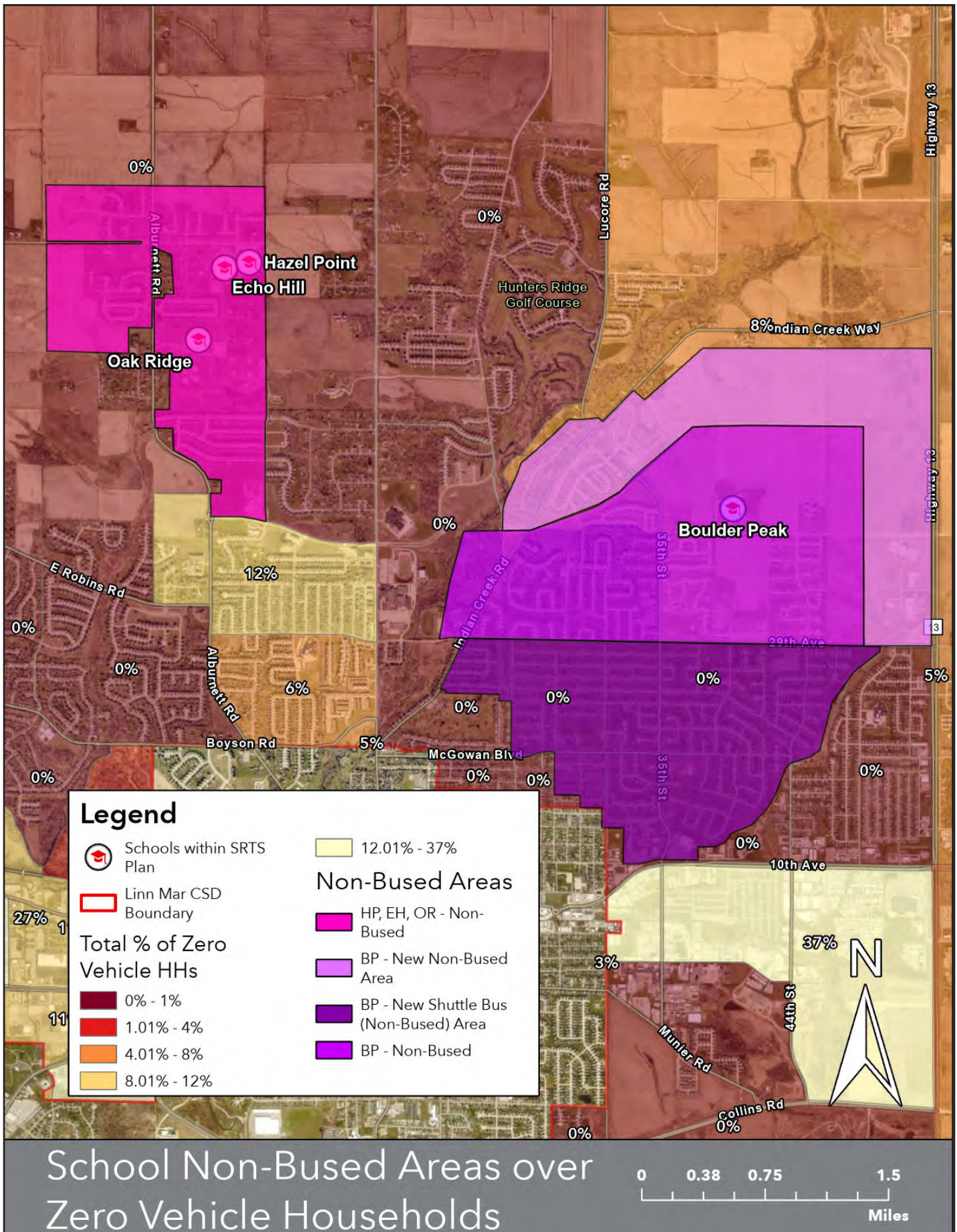


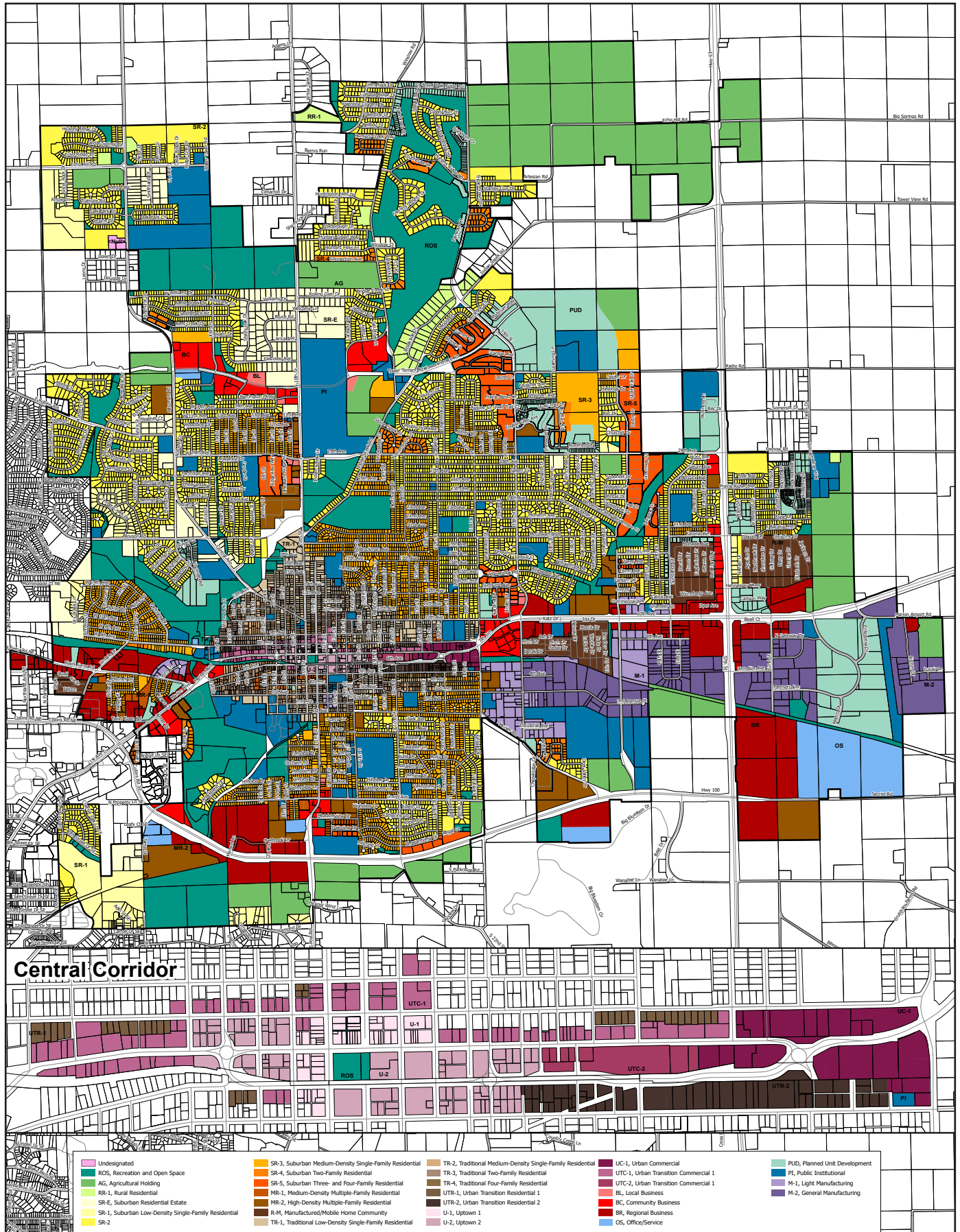
Boulder Peak Intermediate School's Non-based Area



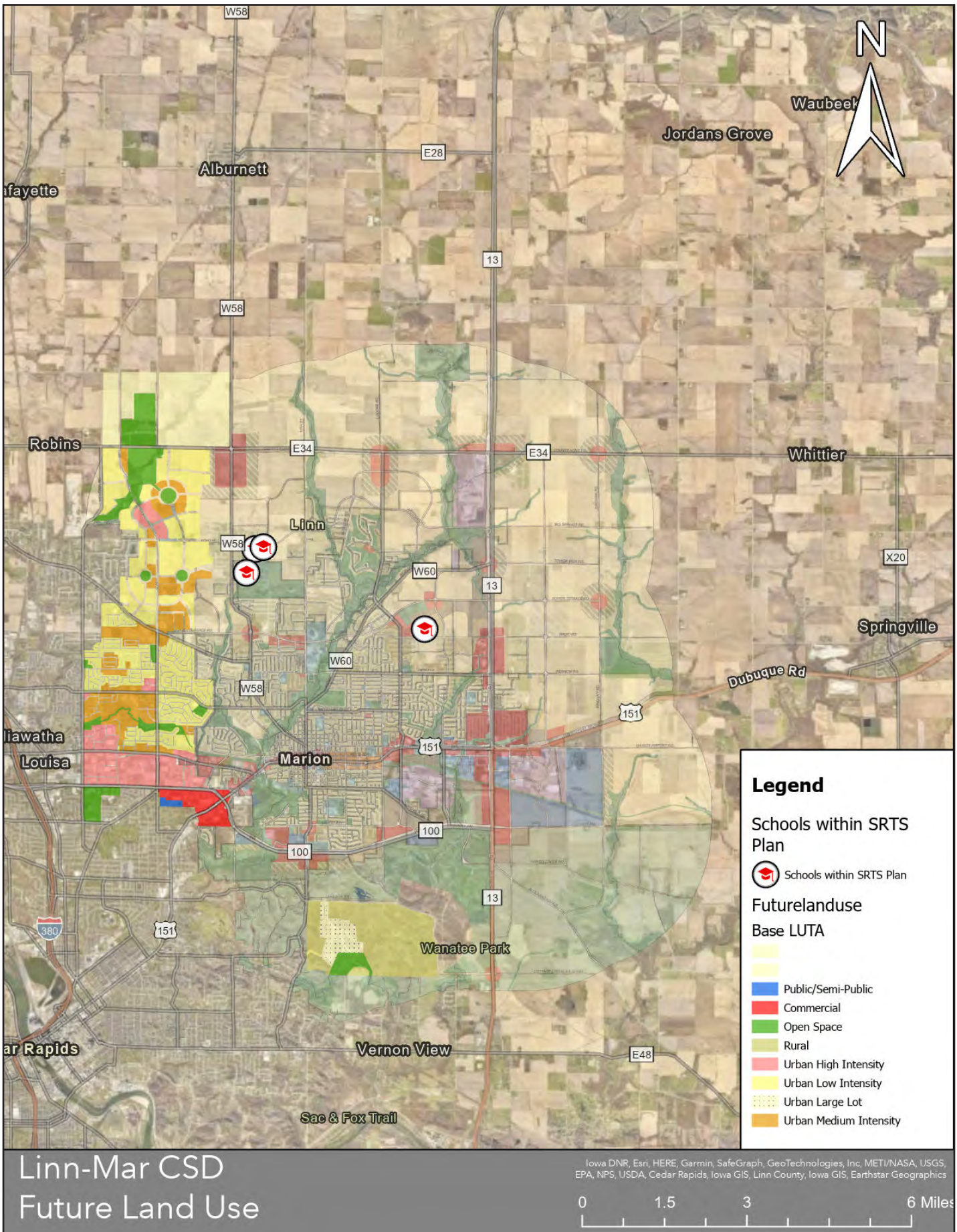
Echo Hill, Hazel Point, and Oak Ridge Schools' Non-used Area

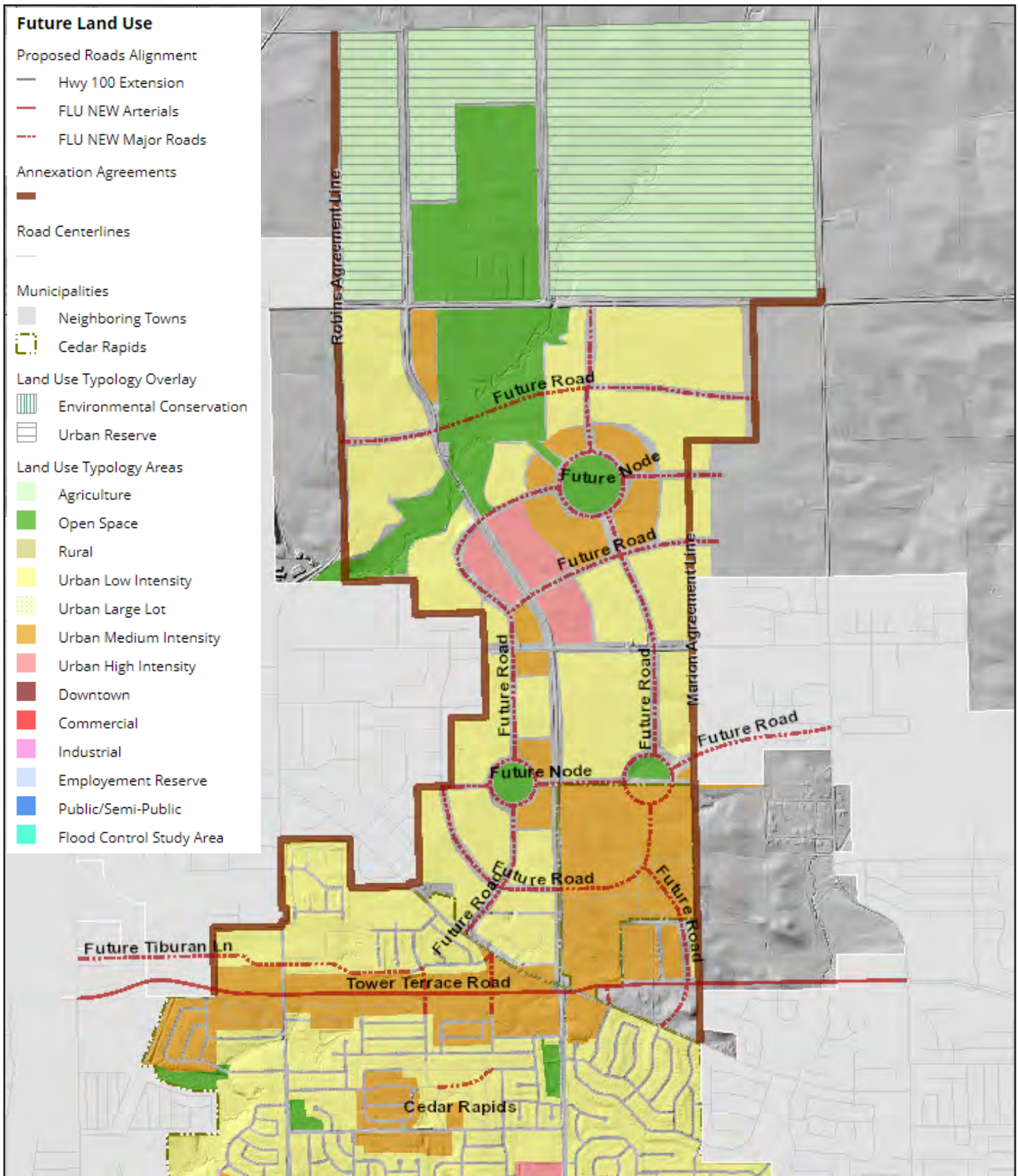






City of Marion's Zoning Map





City of Cedar Rapids Future Land Use Map

# Appendix 4 - Social Vulnerability Index



## Place and Health

[Place and Health Home](#)

### CDC SVI Documentation 2020

View print only PDF of [CDC/ATSDR SVI 2020 Documentation](#) [PDF – 671 KB]

CDC/ATSDR SVI 2020 Documentation – 8/5/2022

#### *Introduction*

##### *What is Social Vulnerability?*

Every community must prepare for and respond to hazardous events, whether a natural disaster like a tornado or a disease outbreak, or an anthropogenic event such as a harmful chemical spill. The degree to which a community exhibits certain social conditions, including high poverty, low percentage of vehicle access, or crowded households, may affect that community's ability to prevent human suffering and financial loss in the event of disaster. These factors describe a community's social vulnerability.

##### *What is CDC/ATSDR Social Vulnerability Index?*

ATSDR's Geospatial Research, Analysis, & Services Program (GRASP) created the Centers for Disease Control and Prevention and Agency for Toxic Substances and Disease Registry Social Vulnerability Index (CDC/ATSDR SVI or simply SVI, hereafter) to help public health officials and emergency response planners identify and map the communities that will most likely need support before, during, and after a hazardous event.

SVI indicates the relative vulnerability of every U.S. Census tract. Census tracts are subdivisions of counties for which the Census collects statistical data. SVI ranks the tracts on 16 social factors, including unemployment, racial and ethnic minority status, and disability, and further groups them into four related themes. Thus, each tract receives a ranking for each Census variable and for each of the four themes as well as an overall ranking.

In addition to tract-level rankings, SVI 2010, 2014, 2016, 2018, and 2020 also have corresponding rankings at the county level.

Notes below that describe "tract" methods also refer to county methods.

##### *How can SVI help communities be better prepared for hazardous events?*

SVI provides specific socially and spatially relevant information to help public health officials and local planners better prepare communities to respond to emergency events such as severe weather, floods, disease outbreaks, or chemical exposure.

##### *SVI can be used to:*

- Assess community need during emergency preparedness planning
- Estimate the type and amount of needed supplies such as food, water, medicine, and bedding.
- Decide how many emergency personnel are required to assist people.
- Identify areas in need of emergency shelters.
- Create a plan to evacuate people, accounting for those who have special needs, such as those without vehicles, the elderly, or people who do not speak English well.
- Identify communities that will need continued support to recover following an emergency or natural disaster.

- For SVI 2000 and 2010, keep the data in geodatabase format when downloading from [https://www.atsdr.cdc.gov/placeandhealth/svi/data\\_documentation\\_download.html](https://www.atsdr.cdc.gov/placeandhealth/svi/data_documentation_download.html). Converting to shapefile changes the field names.
- ACS field names changed between SVI 2018 and 2020. Name changes are noted in the Data Dictionary below.
- For US-wide or multi-state mapping and analysis, use the US database, in which all tracts are ranked against one another. For individual state mapping and analysis, use the state-specific database, in which tracts are ranked only against other tracts in the specified state.
- Starting with SVI 2014, we've added a stand-alone, state-specific Commonwealth of Puerto Rico database. Puerto Rico is not included in the US-wide ranking.
- Starting with SVI 2014, we've added a database of [Tribal Census Tracts](https://www.census.gov/newsroom/blogs/random-samplings/2012/07/decoding-state-county-census-tracts-versus-tribal-census-tracts.html) ( <https://www.census.gov/newsroom/blogs/random-samplings/2012/07/decoding-state-county-census-tracts-versus-tribal-census-tracts.html> ). Tribal tracts are defined independently of, and in addition to, standard county-based tracts. The tribal tract database contains only estimates, percentages, and their respective margins of error (MOEs), along with the adjunct variables described in the data dictionary below. Because of geographic separation and cultural diversity, tribal tracts are not ranked against each other nor against standard census tracts.
- Tracts with zero estimates for total population (N = 645 for the U.S.) were removed during the ranking process. These tracts were added back to the SVI databases after ranking. The TOTPOP field value is 0, but the percentile ranking fields (RPL\_THEME1, RPL\_THEME2, RPL\_THEME3, RPL\_THEME4, and RPL\_THEMES) were set to -999.
- For tracts with > 0 TOTPOP, a value of -999 in any field either means the value was unavailable from the original census data or we could not calculate a derived value because of unavailable census data.
- Any cells with a -999 were not used for further calculations. For example, total flags do not include fields with a -999 value.
- Whenever available, we use Census-calculated MOEs. If Census MOEs are unavailable, for instance when aggregating variables within a table, we use approximation formulas provided by the Census in Appendix A (pages A-14 through A-17) of *A Compass for Understanding and Using American Community Survey Data* here: <https://www.census.gov/content/dam/Census/library/publications/2008/acs/ACSGeneralHandbook.pdf>

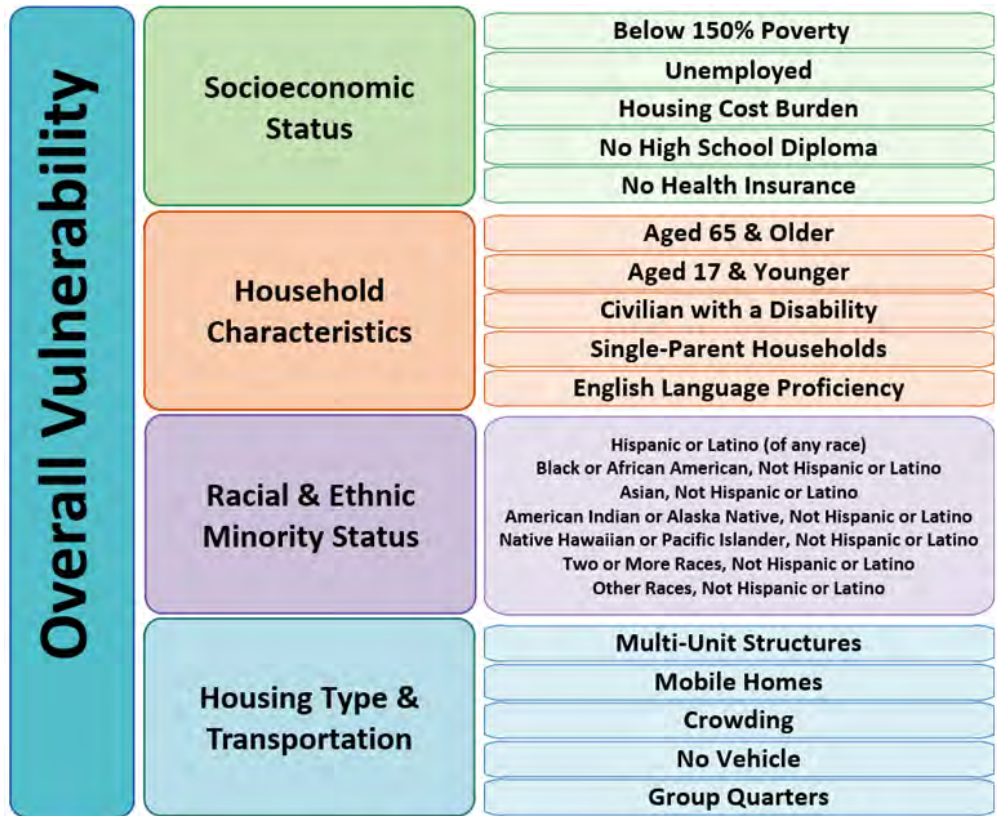
If more precise MOEs are required, see Census methods and data regarding Variance Replicate Tables here:

<https://www.census.gov/programs-surveys/acs/data/variance-tables.html>. For selected ACS 5-year Detailed Tables, "Users can calculate margins of error for aggregated data by using the variance replicates. Unlike available approximation formulas, this method results in an exact margin of error by using the covariance term."

- FIPS codes are generally defined as text to preserve leading zeros (0s). While working with csv files, leading 0s are required to properly join or merge tables. ArcGIS maintains leading 0s in the FIPS code fields of csv files. To preserve leading 0s and create an Excel file in Excel for Office 365, follow these steps:
  - Open a blank worksheet in Excel.
  - Click Data in the menu bar and choose the icon From Text/CSV
  - Navigate to the csv file and choose to Import
  - In the dialog box that opens, choose to Transform Data
  - In the Power Query Editor dialog box, for each of the FIPS columns (ST, STCNTY, FIPS for tracts and ST, FIPS for counties), right click the column name and choose to Change Type to Text.
  - As prompted in the Change Column Type dialog box, choose to Replace current. Click Close and Load.
  - Save As an Excel xlsx file.
- See the **Methods** section below for further details.
- Questions? Please visit the [SVI website](#) for additional information or email the SVI Coordinator at [svi\\_coordinator@cdc.gov](mailto:svi_coordinator@cdc.gov).

## Methods

American Community Survey (ACS), 2016-2020 (5-year) data for the following estimates:



Text version of overall vulnerability image:

- Socioeconomic Status
  - Below 150% Poverty
  - Unemployed
  - Housing Cost Burden
  - No High School Diploma
  - No Health Insurance
- Household Characteristics
  - Aged 65 & Older
  - Aged 17 & Younger
  - Civilian with a Disability
  - Single-Parent Households
  - English Language Proficiency
- Racial & Ethnic Minority Status
  - Hispanic or Latino (of any race); Black and African American, Not Hispanic or Latino; American Indian and Alaska Native, Not Hispanic or Latino; Asian, Not Hispanic or Latino; Native Hawaiian and Other Pacific Islander, Not Hispanic or Latino; Two or More Races, Not Hispanic or Latino; Other Races, Not Hispanic or Latino
- Housing Type & Transportation
  - Multi-Unit Structures
  - Mobile Homes
  - Crowding
  - No Vehicle
  - Group Quarters

For SVI 2020, adjunct variables were included:

- An estimate of daytime population derived from LandScan 2020 estimates
- 2016-2020 ACS estimates for households without a computer with a broadband Internet subscription
- 2016-2020 ACS estimates for Hispanic/Latino persons, Not Hispanic or Latino Black/African American persons, Not Hispanic or Latino Asian persons, Not Hispanic or Latino American Indian and Alaska Native persons, Not Hispanic or Latino Native Hawaiian and Other Pacific Islander persons, Not Hispanic or Latino persons of two or more races, and Not Hispanic or Latino persons of some other race

These adjunct variables are excluded from SVI rankings. We include these variables as adjunct variables because they can be helpful to explain more about the local areas in certain circumstances, and we want to make them easily accessible.

Raw data estimates and percentages for each variable, for each tract, are included in the database. In addition, the margins of error (MOEs) for each estimate, at the Census Bureau standard of 90%, are also included. Confidence intervals can be calculated by subtracting the MOE from the estimate (lower limit) and adding the MOE to the estimate (upper limit). Because of relatively small sample sizes, some of the MOEs are high. It is important to identify the amount of error acceptable in any analysis.

### *Rankings*

We ranked Census tracts within each state and the District of Columbia, to enable mapping and analysis of relative vulnerability in individual states. We also ranked tracts for the entire United States against one another, for mapping and analysis of relative vulnerability in multiple states, or across the U.S. as a whole. Tract rankings are based on percentiles. Percentile ranking values range from 0 to 1, with higher values indicating greater vulnerability.

For each tract, we generated its percentile rank among all tracts for 1) the 16 individual variables, 2) the four themes, and 3) its overall position.

Theme rankings: For each of the four themes, we summed the percentiles for the variables comprising each theme. We ordered the summed percentiles for each theme to determine theme-specific percentile rankings.

**The four summary theme ranking variables, detailed in the Data Dictionary below, are:**


- **Socioeconomic Status – RPL\_THEME1**
- **Household Characteristics – RPL\_THEME2**
- **Racial & Ethnic Minority Status – RPL\_THEME3**
- **Housing Type & Transportation – RPL\_THEME4**

Overall tract rankings: We summed the sums for each theme, ordered the tracts, and then calculated overall percentile rankings. Please note taking the sum of the sums for each theme is the same as summing individual variable rankings. **The overall summary ranking variable is RPL\_THEMES.**

### *Flags*

Tracts in the top 10%, i.e., at the 90<sup>th</sup> percentile of values, are given a flag value of 1 to indicate high vulnerability. Tracts below the 90<sup>th</sup> percentile are given a flag value of 0.

For a theme, the flag value is the number of flags for variables comprising the theme. We calculated the overall flag value for each tract as the number of all variable flags.

For a detailed description of SVI variable selection rationale and methods, see [A Social Vulnerability Index for Disaster Management](https://www.atsdr.cdc.gov/placeandhealth/svi/img/pdf/Flanagan_2011_SVIforDisasterManagement-508.pdf)  ([https://www.atsdr.cdc.gov/placeandhealth/svi/img/pdf/Flanagan\\_2011\\_SVIforDisasterManagement-508.pdf](https://www.atsdr.cdc.gov/placeandhealth/svi/img/pdf/Flanagan_2011_SVIforDisasterManagement-508.pdf)).

### *Caveat for SVI State Databases*

The order of overall SVI rankings and SVI theme rankings of census tracts and counties may differ between the U.S. and state SVI databases. A detailed explanation follows.



Overall and theme rankings are based on cumulative values that are relative to the number of census tracts or counties being compared. Thus, differences between the order of overall and theme rankings in the U.S. database and that of state databases may arise from the accumulation of differences in summing the percentile ranks for the individual SVI variables.

For example, using the 2018 Georgia SVI database, Fulton County has an overall SVI score of 0.2658 with a ranking of 117 out of 159 Georgia counties. However, using the 2018 U.S. SVI database, Fulton County has an overall SVI score of 0.5268, giving Fulton County a ranking of 125 out of the 159 Georgia counties. The ranking differences between the two databases are due to differences in summed percentile ranks caused, in turn, by differences in the number of counties being compared in the U.S. database versus Georgia database.

In short, because Georgia (or any state) has far fewer census tracts and counties than does the nation, differences in one or more variable percentages from one census tract or county to another are more pronounced at the state level than at the national level. Such differences, when summed across all variables, will in some cases result in a rank order change between the two databases.

If there are any questions, please contact the SVI Coordinator at [svi\\_coordinator@cdc.gov](mailto:svi_coordinator@cdc.gov).

### ***SVI 2020 Updates***

As our understanding of social vulnerability evolves over time, SVI must evolve as well. Beginning with SVI 2020, we made modifications to SVI theme names, individual SVI indicators, and adjunct data. We modified the name of Theme 2 from Household Composition & Disability to Household Characteristics, and we modified the name of Theme 3 from Minority Status & Language to Racial & Ethnic Minority Status. Within Theme 1 Socioeconomic Status, we modified the Below Poverty variable from the 100% federal poverty level to the 150% federal poverty level, considering the federal poverty line thresholds established for several federal health coverage policies.<sup>1</sup> Similarly, we included a No Health Insurance variable in Theme 1 Socioeconomic Status as a lack of health insurance coverage is increasingly considered a marker of lower socioeconomic status and a barrier to healthcare access.<sup>2</sup> Also, within Theme 1 Socioeconomic Status, we exchanged the Per Capita Income variable for Housing Cost Burden, which are households that spend 30% or more of annual income on housing costs. Recent studies have emphasized the importance of examining housing cost burden as opposed to per capita income as a better indicator of insufficient disposable income among households.<sup>3,4</sup> Further, we moved the English Language Proficiency variable from Theme 3 Racial & Ethnic Minority Status to Theme 2 Household Characteristics because the ACS variables are based on language spoken at home and are better suited in the Household Characteristics theme. Additionally, although people in racial and ethnic minority groups are overall more likely to have limited English language proficiency than non-Hispanic whites, most (90.9%) are English language proficient.<sup>5</sup> Thus, we moved the English Language Proficiency out of the Minority theme because it may have adversely affected the vulnerability ranking of communities in high minority areas of the country. Lastly, we included new adjunct variables: households without a computer with a broadband Internet subscription, and breakdowns of racial and ethnic minority populations. The coronavirus disease 2019 pandemic has underscored the importance of broadband Internet access as a social determinant of health, justifying the inclusion of data on the lack of broadband Internet access as an adjunct variable.<sup>6</sup> While we aggregate all racial and ethnic minority persons in Theme 3 Racial & Ethnic Minority Status, we recognize that SVI users may be interested in its component populations. A thorough literature review and internal validation were conducted to finalize the construction of SVI 2020.

1. <https://www.healthcare.gov/glossary/federal-poverty-level-fpl/> 

2. McMaughan DJ, Oloruntoba O, Smith ML. Socioeconomic status and access to healthcare: Interrelated drivers for healthy aging. *Front Public Health*. 2020;8:231. doi:10.3389/fpubh.2020.00231

3. Hernández D, Swope CB. Housing as a platform for health and equity: Evidence and future directions. *Am J Public Health*. 2019;109(10):1363-1366. doi:10.2105/AJPH.2019.305210

4. Swope CB, Hernández D. Housing as a determinant of health equity: A conceptual model. *Soc Sci Med*. 2019;243:112571. doi:10.1016/j.socscimed.2019.112571

5. U.S. Census Bureau; American Community Survey (ACS), Five-Year Public Use Microdata Sample (PUMS), 2016-2020; accessed via MDAT; ; (27 July 2022).

6. Benda NC, Veinot TC, Sieck CJ, Ancker JS. Broadband Internet Access Is a Social Determinant of Health! *Am J Public Health*. 2020;110(8):1123-1125. doi:10.2105/AJPH.2020.305784

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2020 VARIABLE NAME	2020 DESCRIPTION	THEME	CENSUS or SVI TABLE(S)	FIELD NAME CHANGED SINCE 2018?	2020 TABLE FIELD CALCULATION	CALCULATION DESCRIPTION	NOTES	2 F C if
ST	State-level FIPS code		SVI	No	FIPS	In Excel, from Tract-level FIPS code, LEFT (FIPS, 2)		
STATE	State name		S0601	No	NAME	In Excel, use DATA Text to Columns to extract state name		
ST_ABBR	State abbreviation		N/A	No	N/A	Joined from Esri state boundary shapefile		
STCNTY	County-level FIPS code		SVI	No	FIPS	In Excel, from Tract-level FIPS code, LEFT (FIPS, 5)	In the county-level SVI database, the 5-digit STCNTY field is the FIPS field, used for joins.	
COUNTY	County name		S0601	No	NAME	In Excel, use DATA  Text to Columns to extract county name		
FIPS	Tract-level FIPS code		S0601	No	GEO_ID	In Excel, RIGHT (GEO.id, 11)		
LOCATION	Text description of tract, county, state		S0601	No	NAME			
AREA_SQMI	Tract area in square miles		Census Cartographic Boundary File - U.S. Tracts 2020 500K	No	ALAND * 3.86102e-7	Conversion from square meters to square miles		
E_TOTPOP	Population estimate, 2016-2020 ACS		S0601	No	S0601_C01_001E			

More information on the methodology used can be found online at [https://www.atsdr.cdc.gov/placeandhealth/svi/documentation/pdf/SVI2020Documentation\\_08.05.22.pdf](https://www.atsdr.cdc.gov/placeandhealth/svi/documentation/pdf/SVI2020Documentation_08.05.22.pdf)



*Appendix 5 - Iowa DOT Bicycle and Pedestrian Infrastructure Analysis*

Statewide Bicycle and Pedestrian Systemic Safety Analysis 2020

SYSTEMS PLANNING BUREAU



## Introduction

NHTSA reports that “In the United States, the number of traffic crashes involving a bicyclist or pedestrian has been increasing since 2009.” Similar to national trends, Iowa has also seen an increasing number of crashes involving bicyclist and pedestrians. Particularly concerning is that bicyclists and pedestrians are overrepresented in fatal and serious injury crashes when considering their mode share. Although biking and walking only comprise 3.8 percent of the state’s commuting mode share (US Census Bureau), these forms of travel are represented in just over seven percent of the fatal and serious injury crashes. One reason for this over representation is that pedestrians and cyclists are often more vulnerable to the effects of speed and lack physical protection. This is especially true for pedestrians, where vehicle speed at impact directly increases the likelihood and risk of severe injuries.

In order to effectively address this over representation, an analysis to identify the risk associated with particular road segment and intersection features on Iowa’s roadway network was developed. In contrast to traditional safety analysis, which focuses on identifying locations of high crash frequency, this analysis focuses on roadway or intersection features that are associated with higher risk of crashes involving a pedestrian or bicyclist. The main reason for this is the underlying assumption that crashes involving pedestrians and bicyclist are infrequent and broadly spread across the network. Therefore, high concentrations of these crashes are very rare, and relying solely on a traditional safety analysis framework would be ineffective. The systemic analysis approach that is described in further detail below allows agencies to focus on crash risk rather than crash history to identify and prioritize sites for improvements. This, in conjunction with a traditional safety analysis, supports a comprehensive safety framework that addresses both the risk associated with particular features along with the crash history.

## Purpose

The purpose of this analysis is to gain a better understanding of the crash risk of particular roadway and intersection features for pedestrians and bicyclists in Iowa. This understanding will provide decision makers with a data-driven approach for identifying roadways and intersections with the greatest risk of crashes for pedestrians and bicyclists. The intent is that the results of this analysis will lead to more efficient use of the limited resources to make improvements that have the greatest chance of minimizing risk and the frequency of these crashes.

The development of a statewide analysis addressing bicyclist and pedestrian crashes was identified in several state long-range planning documents including the Iowa in Motion 2045 State Transportation Plan, Iowa Bicycle and Pedestrian Long-Range Plan, and 2019-2023 Iowa Strategic Highway Safety Plan. These strategies either directly addressed the development of this analysis or

indirectly identified a need for such an analysis to systematically identify locations. Below is a brief description of the related strategies identified in these plans.

- Iowa in Motion 2045 State Transportation Plan
  - “Evaluate key safety challenges pertaining to bicycling and walking and develop crash reduction strategies.”
- Iowa Bicycle and Pedestrian Long-Range Plan
  - “Identify the primary urban and rural crash types occurring in Iowa and develop strategies for reducing crashes.”
  - “Develop methodology for bicycle and pedestrian safety audits of high crash corridors and intersections to identify adequate countermeasures.”
- 2019-2023 Iowa Strategic Highway Safety Plan
  - “Conduct enforcement campaigns related to bicycle and pedestrian awareness at targeted intersections.”

## Challenges

There are several challenges with analyzing bicyclist and pedestrian crashes that makes a traditional safety analysis approach difficult. Below are some examples of the challenges faced when analyzing bicyclist and pedestrian crash data.

- Frequency of Crashes
  - Unlike vehicle crashes, bicyclist and pedestrian crashes occur much less often. In performing a traditional safety analysis, the frequency of crashes is typically used to identify hot spots and statistically significant trends. Consequently, when traditional approaches are applied to bicyclist and pedestrian crashes, it often results in misleading conclusions or identifies locations with variable safety performance.
- Exposure data
  - Exposure data for vehicle traffic is common and is typically expressed in terms of Vehicle Miles Traveled (VMT) or Average Annual Daily Traffic (AADT). Pedestrian and bicyclist travel is counted less often and typically only for certain projects or locations. Currently, Iowa does not have either statewide count data or estimated counts for either pedestrians or bicyclists.
- Underreporting
  - Traditionally, crashes involving pedestrians and bicyclists have been underreported. This underreporting occurs for a number of different reasons. In Iowa, for a crash to be officially reported it requires injury or property damage exceeding \$1,500. This threshold means that in crashes involving a vehicle and a non-motorist, an injury must have

occurred, typically to the non-motorist, or damage to the vehicle or bicycle would need to exceed the \$1,500 threshold. It is likely that many crashes occur between a non-motorist and a vehicle that don't meet these thresholds. These reporting thresholds also point to another issue related to underreporting, which is that a vehicle needs to have been involved. There are circumstances in which a pedestrian or cyclists may crash, and a vehicle is not present or is present and unknowingly involved and thus continues on its way. Additionally, there could be circumstances in which a non-motorist crashes with another (likely bicyclist to bicyclist or bicyclist to pedestrian), and there is no formal mechanism in Iowa for those incidents to be reported.

## Approach/Methodology

The underlying approach to this analysis is a systemic one in which locations are identified based on a high risk of crashes as opposed to a traditional analysis which typically focuses on a high frequency or rate of crashes. The fundamental reason for choosing to use a systemic approach rest with the challenges stated above. The systemic approach is best when crash occurrences are few and when exposure of the mode is limited or unknown at specific locations. In Iowa, over a ten-year period there were just over 8,500 crashes involving a pedestrian or bicyclist. With relatively few crashes or exposure data available to use in a traditional analysis, the systemic approach provides an ideal approach for our department and other agencies to identify areas of greatest risk.

## General Systemic Analysis Approach

The systemic safety approach “involves widely implemented improvements based on high-risk roadway features correlated with specific severe crash types. The approach provides a more comprehensive method for safety planning and implementation that supplements and complements traditional site analysis.” The systemic approach gives agencies another tool to address safety by allowing them to consider the risk of a site instead of its crash history. The general attributes of a systemic safety analysis include:

- Identifying focus crash types and risk factors
  - Agencies need to identify a crash type to focus on, based on either statewide data or on an area identified in prior planning activities such as the State Strategic Highway Safety Plan (SHSP). Often the crashes associated with a focused crash types are randomly distributed across a network with few locations experiencing a cluster of crashes.
- Defining risk factors
  - After identifying a focus crash type, agencies associate those crashes with roadway or intersection characteristics. This association helps identify roadway characteristics that are correlated with a higher

frequency or rate of that crash type. These characteristics, also known as risk factors, can be used to identify and prioritize similar locations where no crash history currently exists.

- Screening and prioritizing the network
  - Risk factors (or roadway characteristics) are typically scored and weighted by agencies. This process of prioritizing characteristics allows agencies to take that information in combination and find areas within their roadway network that have higher concentrations of risk factors.

The resulting analysis will identify roadways and intersections that have the greatest risk, regardless of existing crash history at those locations. Agencies can in turn use this to help select appropriate countermeasures and prioritize projects.

### Data Used

- Crash Data
  - Ten years of crash data from 2009-2018 was used in this analysis. Only non-motorist crashes involving pedestrians, skaters, those using a personal conveyance, wheelchair occupants, bicyclists, and bicycle passengers were included in the analysis. Data as accessed July 8<sup>th</sup>, 2019.
- Roadway data and Jurisdictional data
  - Roadway data was extracted from the Road Asset Management System (RAMS). The analysis included all paved roads within the state. Attributes included in the dynamic segmentation included number of lanes, average annual daily traffic (AADT), route name, shoulder width, shoulder type, shoulder rumble, speed limit, parking type, and median type. Jurisdictional data was also spatially joined to all the segments in the analysis including city, county, Regional Planning Agency (RPA), and Metropolitan Planning Organization (MPO). Roadways with minimum speed limits were eliminated from this analysis because pedestrian and bicyclist are prohibited from using facilities with minimum speed limits. The most recent access of this data was from September 20<sup>th</sup>, 2019.
- Intersection Data
  - All paved intersections within the state were analyzed by utilizing the department's intersection database. The intersections not included in this analysis were intersections on unpaved roads and intersections with more unpaved legs than paved. Additionally, intersections on minimum speed facilities were also excluded however, intersections at interchange ramp termini were retained. The intersection database was developed by Iowa State University's Institute for Transportation (InTrans) from 2013 to 2017 using roadway data, aerial imagery, and Google Streetview images. The version of the database used in this analysis was last updated on April 2017.

## Analysis Methodology

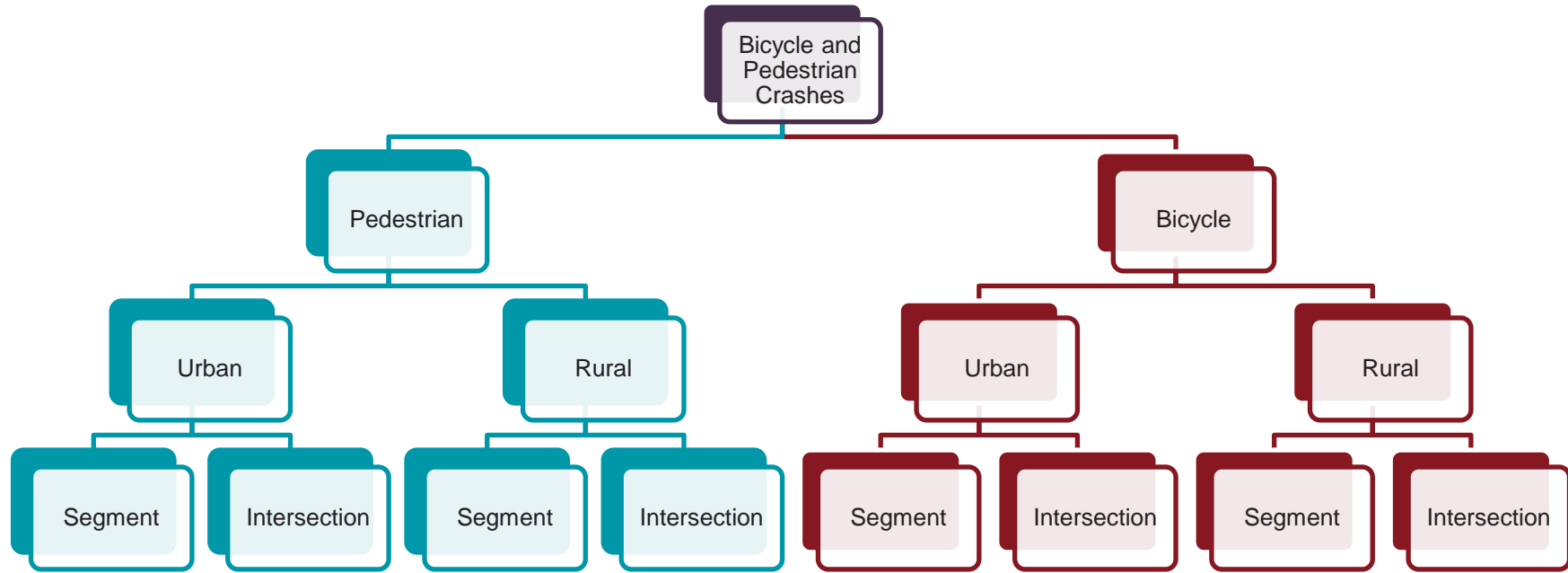
### Categorization of Crash Data

Each bicyclist or pedestrian crash within the analysis was assigned to one of eight categories that binned them according to crash type, urban or rural, and segment or intersection (see Figure 1). The initial split of the data was between pedestrians and bicyclists. For this analysis, we defined pedestrian crashes as those coded as involving pedestrians, skaters, people on personal conveyance, or individuals in wheelchairs. Bicyclists in this analysis were defined from the crash data as including pedalcyclists (bicycle/tricycle/unicycle/pedal car) and pedalcycle passengers.

The next binning of this data was the designation of crashes as urban or rural. There are many ways in which rurality is defined. For example, the Census Bureau defines metropolitan as urbanized areas of 50,000 or more population and urban clusters of at least 2,500 and less than 50,000 populations. The Census Bureau uses the term “urban area” to refer to both urbanized areas and urban clusters collectively. Similarly, FHWA defines “Urbanized Area” as 50,000 population or more, “Small Urban Areas” (from Clusters) between 5,000-49,999, and “Urban Areas” as 5,000+ in population. In order to mirror prior analysis in the State Bicycle and Pedestrian Long-Range Plan, we defined pedestrian or bicyclists crashes in incorporated areas as urban and all crashes outside of these areas as rural.

The final way in which crashes were binned for this analysis was by either segment or intersection. The same methodology for spatially selecting intersection and segment crashes in American Association of State Highway Transportation Officials (AASHTO’s) Highway Safety Manual (HSM) was adopted for this analysis. The HSM methodology for defining intersection crashes has two criteria that need to be satisfied. First, crashes must be within 250 feet of the intersection. Second, the crashes must be identified as intersection crashes in the crash report form. If these two thresholds are satisfied, then the crash was defined as an intersection crash. All other crashes were defined as segment crashes.





**Figure 1: Category bins for systemic safety analysis.**

### Normalization, Weighting, and Composite Score Methodology

One objective of this analysis was to develop a composite score for every segment and intersection within Iowa. This composite score would represent the associated risk for a pedestrian or bicyclist at that location based on the combination of physical roadway or intersection characteristics (here after called attribute elements). The following is a description of the process by which the crash, roadway, and intersection data was analyzed to develop a composite score for each segment and intersection. The process of normalizing and weighting the data mirrors the approach used in Iowa’s Infrastructure Condition Evaluation (ICE) tool.

After crashes were binned to one of the eight possible categories (described in the prior section), they were then further associated with the attribute of the segment or intersection they were spatially linked with. Figures 2 3 list the attributes for the segments and intersections, respectively. For segments, eight attributes were analyzed in urban areas and seven attributes were analyzed in rural areas. For intersections, seven attributes were included in the analysis.

#### Segment Attributes

- AADT
- Median Type
- Number of Lanes
- Parking Type (only urban)
- Shoulder Type
- Shoulder Rumble
- Shoulder Width
- Speed Limit

**Figure 2: Segment attributes used in this analysis.**

#### Intersection Attributes

- AADT
- Intersection Angle
- Intersection Type
- Number of Lanes
- Number of Legs
- Speed Limit
- Traffic Control

**Figure 3: Intersection attributes used in this analysis.**

Each attribute was represented by continuous values (such as AADT) or categorical values (such as shoulder type). For attributes that had continuous values, categories were defined in order to associate the crash data. For example, for the AADT continuous values were binned into four categories including: 0-700, 701-1,500, 1,501-3,000, and more than 3,000. For the attributes that represented continuous values, an effort was made to ensure that the bins or categories either mirrored or were similar to binning done in prior analyses, or were logical relative to its overall category. For example, the way that AADT was binned for this analysis was similar to how AADT was binned for the development of the State Bicycle and Pedestrian Map. For categorical values such as shoulder type, categories already existed, meaning all that needed to be done was to associate the crashes to the existing attribute values.

**Rates**

Crash rates were calculated after bins were assigned and crash data was associated with all the various attributes. These rates were based on either a per-mile or per-intersection calculation to emphasize the exposure of each attribute relative to its associated number of crashes within each bin. These rates are important to the analysis because they identify the relative risk associated with each attribute value. An example of this is presented in Figure 4 looking at AADT for Rural Bicycle Segments. In this example, the most crashes were associated with roadway segments with 3,000 or more AADT, these segments also had the highest calculated rate (0.16 bicycle crashes per mile). In contrast, the bin of 700-1,500 AADT had the second highest frequency of crashes but only the third highest rate. This demonstrates that within this analysis although frequency of crashes is considered, the rate of crashes is the key component used in identifying higher risk locations. Rates were calculated for every attribute in each category bin. Therefore, the rates calculated for rural bicycle segment AADT would be completely different than the rates calculated for urban bicycle segment AADT.

**Normalization**

To develop a composite score that effectively identified the segments and intersections with the greatest associated risk, it was important to develop a common numeric scale from 1-10 to analyze the rates described in the prior section. In order to do this, the range of rates for each attribute were analyzed by identifying the minimum and maximum rate. Again, using the example in Figure 4, the minimum rate calculated was 0.004 and the maximum

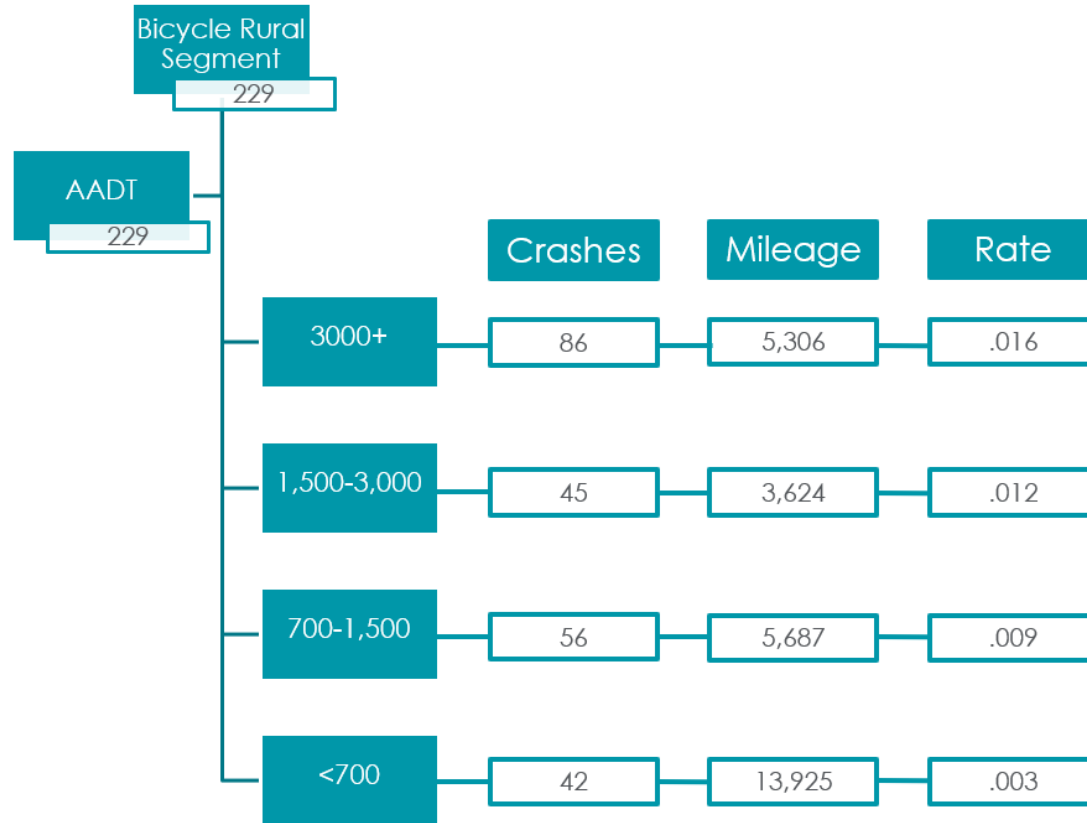


Figure 4: Example of rate calculation for bicycle rural segment AADT.

value was 0.027. The range between these two values

was 0.023. Applying this to a 1-10 numeric scale means that an interval of 0.0023 was used between the minimum rate to the maximum rate to determine the numeric scaling. The numeric scaling for this example is presented in Table 1. Again, a unique numeric normalized scaling was created for every attribute within each category bin. The normalized scales for each attribute are presented in Appendix 2.

### Weighting

The primary reason for developing a weighting factor was to compare values across category bins. By including a weighting factor, a maximum composite score of 100 could be established for each of the eight categories. A secondary reason for building in a weighting factor was to ensure that in future iterations of this analysis, singular attributes could be emphasized over others, if desired. The value for each weight was simply calculated by dividing 100 (ultimately the maximum composite score desired) by the number of attributes in each category bin. This value was further divided by 10 because each attribute value had normalized scaling from 1-10. For example, in the bicycle rural segment category, seven attributes were analyzed. Since there were seven attributes and the desired composite score is 100, we divided 100 by seven to get 14.28. Since all attribute values were normalized to a common scale from 1-10, we further divide the 14.28 weight by 10 to reflect this scaling which ultimately makes the weight 1.428.

Rural Segment Bicyclists AADT Normalized Scale		
Min Rate	Max Rate	Normalized Score
0.015	0.016	1
0.014	0.015	2
0.012	0.014	3
0.011	0.012	4
0.010	0.011	5
0.008	0.010	6
0.007	0.008	7
0.006	0.007	8
0.004	0.006	9
0.003	0.004	10

**Table 1: Rural segment bicyclist AADT normalized scale.**

Since there were seven attributes and the desired composite score is 100, we divided 100 by seven to get 14.28. Since all attribute values were normalized to a common scale from 1-10, we further divide the

More information on the methodology used can be found online at <https://iowadot.gov/iowainmotion/files/Statewide-Bike-and-Pedestrian-Safety-Analysis.pdf>