BICYCLE ACTION PLAN
APPENDICES A - E

CITY OF GRAND RAPIDS

City of Grand Rapids
http://grandrapidsmi.gov/BicycleActionPlan

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TAKE THE SURVEY - Grand Rapids Bicycle Action Plan

Mobile GR & Parking Services
CITY OF GRAND RAPIDS

Thanks for helping us build the future of biking in GR. We'll use your responses to fuel the Bicycle Action Plan. For more info about the plan, visit www.grandrapidsmi.gov/bicycleactionplan.

1. Do you know how to ride a bicycle?

- ◯ Yes
- ◯ No
- ◯ Yes, but not very well

2. When was the last time you rode a bicycle (for any purpose)?

- ◯ In the last week
- ◯ In the last month
- ◯ In the last 6 months
- ◯ 6-12 months ago
- ◯ More than 1 year ago
- ◯ More than 5 years ago
- ◯ Never

3. Would you like to ride a bicycle more than you do now?

- ◯ Yes
- ◯ No
- ◯ Neutral
- ◯ N/A

4. Why do you ride a bicycle or want to ride a bicycle more?

- ☐ Fun
- ☐ Fitness
- ☐ Happiness
- ☐ Increased energy
- ☐ Saves Money
- ☐ Other (please specify)
- ☐ Good for the Environment
- ☐ Convenience
- ☐ Safety
- ☐ Freedom

5. In the past week, how did you get around? (Choose all that apply.)

- [ ] Drove my own car
- [ ] Drove someone I know's car
- [ ] Got a ride from someone I know
- [ ] Taxi
- [ ] Uber or Lyft
- [ ] Public transit (The Rapid)
- [ ] Walking
- [ ] Bicycling
- [ ] Motorcycle or moped

6. When you hear "bicycling in Grand Rapids", what is one word that comes to your mind?

7. Mark any of following **equipment concerns** you have related to riding a bicycle.

- [ ] I don't have a bicycle
- [ ] I don't have gear like a lock, helmet, lights, etc.
- [ ] Something could go wrong with the bicycle
- [ ] The bicycle could be stolen
- [ ] It's expensive to buy a bicycle or gear
- [ ] No place to store my bicycle at home
- [ ] No place to lock a bike where I want to go
- [ ] It's too difficult to carry what I need
- [ ] I don't know where to get a bicycle fixed
- [ ] It’s expensive to repair a bicycle

8. Mark any of following **riding concerns** you have related to riding a bicycle.

- [ ] Finding or navigating my way
- [ ] Traffic drives too close to me
- [ ] Places I want to go are too far to ride
- [ ] Riding with my kids is difficult
- [ ] Possibly being hit by a motor vehicle
- [ ] Drivers go faster than speed limits
- [ ] Streets are in bad condition like potholes
- [ ] Streets need sweeping or plowing
- [ ] Poor weather

9. Mark any of following **personal concerns** you have related to riding a bicycle.

- [ ] I wouldn't be presentable for my destination
- [ ] Others would think less of me if they saw me
- [ ] Unwanted or negative attention from law enforcement
- [ ] Not physically fit enough
- [ ] My age
- [ ] I might be harassed or a victim of crime
- [ ] I have a physical disability

10. Can you access a bike facility within a few blocks from where you live? Bicycle facilities are dedicated spaces for bicycles like trails, bicycle lanes, or marked shared lanes (sharrows).

- ( ) Yes
- ( ) No
- ( ) Not sure

11. Tell us anything else you think is important to include in the Bicycle Action Plan.

12. What is your Zip Code?

13. What year were you born?

14. Gender?

- ◯ Male
- ◯ Female
- ◯ Other
- ◯ Prefer not to say

15. Race/Ethnicity

- ☐ African American / Black
- ☐ American Indian or Alaska Native
- ☐ Asian
- ☐ Native Hawaiian or Other Pacific Islander
- ☐ Latino/Hispanic
- ☐ White / Caucasian
- ☐ Other (please specify)

16. What is your household's yearly income?

- Less than $15,000
- $15,000 - $24,999
- $25,000 - $34,999
- $35,000 - $49,999
- $50,000 - $59,999
- $60,000 - $74,999
- $75,000 - $99,999
- More than $100,000

BFC: Bicycle Friendly Community Fall 2017 (Updated)

Your Application has been received, the information below is read only

APPLICATION INTRO

Community Name: (please omit state and "city of" "town of" etc.)

Grand Rapids

Has the community applied to the Bicycle Friendly Community program before?

- (●) Yes
- ( ) No

Web and Social Media Presence

If awarded, the following links will appear on your BFA Award Profile on the League's Connect Locally Map.

Community Website: www.grcity.us

(if applicable)

Community's Twitter URL: https://twitter.com/CityGrandRapids

(if applicable)

Community's Facebook URL: https://www.facebook.com/CityofGrandRapids

(if applicable)

Primary Application Contact

Applicant Name

Kristin Bennett

Job Title

Transportation Planning/Programs Manager

Department

Mobility and Parking

Employer

City of Grand Rapids

Street Address (No PO Box, please)

50 Ottawa Avenue, NW

City

Grand Rapids

State

Michigan

Zip

49503

Phone #

616-456-3753

Email Address

krbennett@grcity.us

Additional Community Contacts

Did you work with any advocacy organizations on this application?

- (●) Yes
- ( ) No

First Name

Amy

Last Name

Duggan

Organization

Greater Grand Rapids Bicycle Coalition

Title

Vice Chair

Email

[redacted]

Do you have another contact to enter?

- (•) Yes
- ( ) No

First Name

Jon

Last Name

Re

Organization

Greater Grand Rapids Bicycle Coalition

Title

Secretary

Email

[redacted]

I have another contact to enter

- (•) Yes
- ( ) No

First Name

Nate

Last Name

Phelps

Organization

West Michigan Mountain Bike Association

Title

Board Member

Email

[redacted]

I have another contact to enter

- (•) Yes
- ( ) No

First Name

Tom

Last Name

Tilma

Organization

Greater Grand Rapids Bicycle Coalition

Title

Member

Email

[redacted]

I have another contact to enter

- ( ) Yes

List the names, email address and affiliation of all other individuals that are working with you on this application.
Please use the fields provided when you answer yes to "Did you work with any advocacy organizations on this application?" instead of this field.

This field is provided in case you have additional contacts or began the application before the defined fields were added.

Are there bicycle, active transportation, or transportation equity advocacy groups in your community not already identified?

- (•) Yes
- ( ) No

Name of Primary Contact

John Morrison

Organization

West Michigan Trails & Greenways Coalition

Email

director@wmtrails.org

I have another organization to enter

○ Yes

List all bicycle, active transportation, and transportation equity advocacy groups in your community, if any. Provide the name and email of the primary contact for each group.
Please use the fields provided when you answer yes to "Are there bicycle, active transportation, or transportation equity advocacy groups in your community not already identified?" instead of this field.

This field is provided in case you have additional contacts or began the application before the defined fields were added.

Greater Grand Rapids Bicycle Coalition – www.bikegr.org
info@bikegr.org

West Michigan Mountain Bike Alliance – www.wmmba.org
Kevin Allen, President – wmmbapresident@gmail.com

West Michigan Trails & Greenways – www.wmtrails.org
John Morrison, Director – director@wmtrails.org

COMMUNITY PROFILE

Please note: The application will refer to your type of jurisdiction as 'community' throughout the application, which should not include any bicycle amenities, services and other resources outside your boundaries.

A1. Name of Community: Grand Rapids

(Please omit "City of", "Town of", etc.)

A2. County/ Borough/Parish: Kent

A3. State: Michigan

A4. Link to map of community boundaries:

(e.g. Google Maps)

http://grandrapids.maps.arcgis.com/apps/SimpleViewer/index.html?appid=87495ef6b84c4caeb6d0a06eb

A5. If your community spans multiple jurisdictions or does not align with the name of your community given in Question A1, please specify your census geography(ies) here.

This should be blank for most communities

Please pick the fewest geographies that accurately capture your community boundaries. If you are not sure of the best geographies, please refer to the Reference Maps available through the Census Bureau's American Factfinder website.

We'll use this to collect commuter and demographic data to accompany your application.

A6. Type of Jurisdiction

Town/City/Municipality

A7. Size of community

(in sq. mi. of land area)

45

A8. Total Population:

196445

A9. Population Density:

(Person per sq. mi. of land area)

4339

A10. Which of the following best describe your community? Check all that apply.

- [x] Urbanized area
- [ ] Urban core surrounded by low density suburban areas
- [ ] Low density suburban

A11. What is the street network density?

(centerline miles of road per sq. mi. of land area)

10.1-15.0

A12. Mayor or top elected official

(For internal use only.)

Name

Rosalynn Bliss

Title

Mayor

Street Address

300 Monroe Avenue, NW

City

Grand Rapids

State

Michigan

Zip

49503

Phone

616-456-3168

Email

mayor@grcity.us

ENGINEERING - Policies and Design Standards

B1. Does your community currently have any of the following policies in place?

Local Complete Streets or bicycle routine accommodation resolution

B1a. What year was the resolution passed?

2011

B1b. Please provide a link to the resolution.

http://ow.ly/95B730euCiu

Open Link in New Window

B1c. Since the passing of the resolution, what percentage of the implemented road projects (where bicycle facilities were considered) have included bicycle facilities?

26-50%

B2. Does your community have bicycle facility selection criteria that increases separation and protection of bicyclists based of levels of motor vehicle speed and volume?

No

B3. Does your community currently have any of the following policies in place that promote shorter distances between homes and destinations? Check all that apply.

- [x] Mixed-use zoning or incentives
- [x] Planned Unit Development zoning
- [x] Transit Oriented Development ordinance or program
- [x] Form-based/design-based codes
- [x] Connectivity policy or standards
- [ ] None of the above

B4. Does your community currently have any of the following street design policies in place that promote a more comfortable cycling environment? Check all that apply.

- [x] Design manual that meets current AASHTO standards
- [x] Design manual that meets current NACTO standards
- [x] Streetscape design guidelines
- [ ] None of the above

B5. Does your community currently have any of the following additional policies in place? Check all that apply.

- [ ] Policy to preserve abandoned rail corridors for multi-use trails
- [ ] Policy to utilize utility corridors for multi-use trails
- [ ] Accommodation of bicyclists through construction sites in the public right-of-way
- [x] Maximum car parking standards
- [x] No minimum car parking standards
- [x] Paid public parking
- [x] Shared-parking allowances
- [ ] Congestion charges
- [ ] None of the above

B6. How do engineers and planners learn how to accommodate bicyclists according to the most current AASHTO or NACTO standards? Check all that apply.

- [x] FHWA/National Highway Institute Training Course

- [x] Portland State University Initiative for Bicycle and Pedestrian Innovation Training Course
- [x] Staff participate in bicycle-specific conferences/trainings/educational tours
- [x] Webinars
- [x] Internal peer training
- [x] Training by outside consultant/advocate
- [ ] Require project consultants to have bike/ped qualifications
- [ ] None of the above

End-of-Trip Facilities

B7. What policies or programs increase the amount of end-of-trip facilities for bicyclists? Check all that apply.

- [x] Bike parking ordinance for existing buildings specifying amount and location
- [x] Bike parking ordinance for all new developments specifying amount and location
- [ ] Ordinance requiring showers and lockers in existing non-residential buildings
- [ ] Ordinance requiring showers and lockers in new non-residential buildings
- [ ] Building accessibility ordinance (Bicycles are allowed to be parked inside non-residential buildings)
- [x] Public uncovered bike racks
- [x] Public covered bike racks
- [x] Bike valet parking available at community events
- [x] Ordinance that allows on-street bike parking/bicycle corrals
- [x] Ordinance that allows bike parking to substitute for car parking
- [x] Requirement for new developments to meet LEED-Neighborhood Development silver standards or higher
- [ ] Developers are eligible for density bonuses for providing end-of-trip facilities
- [ ] Subsidy program for private bike parking installation
- [x] Public or private program that provides grants for bike racks or free bike racks upon request
- [ ] None of the above

B8. What, if any, end-of-trip facilities are available to the general public in your community? Check all that apply.

- [x] Publicly accessible bicycle repair stations
- [x] Publicly accessible air pumps
- [ ] Bicycle Station or Hub that provides lockers and/or showers for commuters
- [ ] None of the above

B9. Do your standards for bicycle parking: Check all that apply.

- [x] Conform with APBP guidelines?
- [ ] Address the need for parking spaces for cargo bicycles?
- [ ] Address the need for facilities to recharge electric assist bicycles?
- [ ] No standards

B10. What percentage of public and private bike racks conform with APBP guidelines?

Review APBP's Bike Parking Guidelines here.

51-75%

B11. Is there a program (e.g. publicly funded, public-private partnership, or development regulation) that provides or increases bike parking at any of the following locations? Check all that apply.

- [ ] Public & private schools (K-12)

- [ ] Day care, child care centers and preschools
- [ ] Higher Education Institutions
- [x] Libraries
- [ ] Hospitals and medical centers
- [x] Parks & recreation centers
- [x] Other government-owned buildings and facilities
- [ ] Event venues (e.g. convention center, movie complex)
- [ ] Hotels & restaurants
- [ ] Office buildings
- [ ] Retail stores (excluding grocery stores)
- [ ] Grocery stores
- [ ] Multi-family housing (excluding subsidized or public housing, if any)
- [ ] Subsidized or public housing
- [ ] None of the above

Bicycle Access to Public Transportation

B12. Does your community have a rail transit or bus system?

- (•) Yes
- ( ) No

B12a. Are bikes allowed inside transit vehicles, including buses? Check all that apply.

- [ ] Yes, at all times
- [ ] Only if the external bike rack is full
- [ ] At driver's discretion/If space permits
- [ ] Only outside of rush hour service
- [ ] Folding bikes are allowed in folded position
- [ ] Special bike hooks are provided inside
- [ ] Bikes can be checked in (like luggage)
- [x] None of the above

B12b. What percentage of buses are equipped with bike racks?

100%

B12c. What percentage of transit stops are equipped with secure and convenient bike parking?

10% or less

B12d. Has your community made specific bicycle infrastructure investments around major transit stops to improve accessibility?

- (•) Yes
- ( ) No

Please describe any bicycle infrastructure investments around major transit stops that have improved accessibility.

The Rapid has installed bicycle parking racks at Rapid Central Transit Station as well as at all Silver Line Bus Rapid Transit stations. It also has installed bike racks at various stops throughout the system. City staff in the Mobility/Parking Department are currently working with Rapid staff on implementing $1 million worth of improvements to transit stops both downtown (with $500,000 of Downtown Development Authority financial support) and outside downtown (with $500,000 of funding from the Rapid and City). Bicycle parking may be included at some of the improved stops; all stops are currently being inventoried and ranked/assessed for improvements now.

B12e. How are residents and visitors encouraged to combine cycling and public transportation? Check all that apply.

- [ ] Cyclists can practice mounting their bike on a bus bike rack at community events
- [ ] Brochure describing bike rack use/how to store bikes inside a transit vehicle
- [x] Video describing bike rack use/how to store bikes inside a transit vehicle
- [ ] Information on bike racks/storage provided on transit schedules
- [ ] Stickers on the outside of buses with bike racks that say bicycles are welcome
- [ ] None of the above

Off-Street Bicycle Facilities

B13. Are there any off-street facilities within your community's boundaries that can be legally used by bicyclists?

- (•) Yes
- ( ) No

B13a. How many miles of the following off-street accommodations that can be legally used by bicyclists are within your community's boundaries?

Answer all that apply. (in miles)

Paved shared use paths (≥10 feet)

7.1

Paved shared use paths (≥ 8 and <10 feet)

9.4

Unpaved shared use paths (≥10 feet)

0

Unpaved shared use paths (≥ 8 and <10 feet)

0

Singletrack

16.5

B13b. Which of the following features are provided for bicyclists and pedestrians at off-street path crossings of roads with posted speed limits above 25 mph? Check all that apply.

- [x] Bike/pedestrian overpasses/underpasses
- [ ] Raised path crossings
- [ ] Refuge islands
- [x] Path crossing with high visibility markings/signs/ HAWK signals/ Rapid Flashing Beacons
- [ ] Curb extensions
- [ ] Signalized crossings
- [ ] None of the above
- [ ] N/A – no crossings of roads with posted speed limits above 25 mph

B13c. What measures have been taken to improve the safety and convenience of bicyclists on off-street paths? Check all that apply.

- [x] "Cut-throughs" that improve network connectivity for bicyclists (e.g. connecting dead-ends or cul-de-sacs)
- [ ] Off-street way-finding signage with easily visible distance and/or riding time information for bicyclists while riding
- [ ] Parallel but separated paths for bicyclists and pedestrians
- [ ] Signage or markings to designate right-of-way on shared-use paths
- [ ] Education/awareness campaign about shared-use path etiquette
- [x] None of the above

B13d. What maintenance practices ensure the off-street bicycle facilities remain usable and safe?

Sweeping

Quarterly or more frequently

Vegetation maintenance

Quarterly or more frequently

Snow and ice clearance

Same time as roadways

Surface repair

Within one week of complaint

On-Street Bicycle Facilities

B14. What is the centerline mileage of your total road network (including federal, state, county and private roads)?

613

B15. How many miles of road network fall within the following posted speed limits?

(in centerline miles)

≤25mph

504

>25mph and ≤35mph

86

>35mph

23

B16. Does your community have on-street bicycle facilities?

- (●) Yes
- ( ) No

B16a. Are there any on-street bicycle facilities on roads with posted speeds of ≤ 25mph?

- (●) Yes
- ( ) No

B16a1. On streets with posted speeds of ≤ 25mph, how many miles of each of the following bicycle facilities are there that meet or exceed current AASHTO or NACTO standards?

Answer in centerline miles. Write “0” if facility is not present in community.

Bike boulevards

0

Shared lane markings (not counted under Bicycle Boulevards)

8.1

Wide paved shoulders (ridable surface ≥4 feet, and minimum clear path of ≥4 feet between rumble strips)

1.7

Bike lanes (incl. standard, contra-flow, left-side) (ridable surface ≥4 feet)

21.3

Buffered bike lanes

0

Protected bike lanes (one-way or two-way)

0

Raised cycle tracks (one-way or two-way)

0

B16b. Are there any on-street bicycle facilities on roads with posted speeds of >25mph and ≤35mph?

- (●) Yes
- ( ) No

b16b1. On streets with posted speeds of > 25mph and ≤ 35mph, how many miles of each of the following bicycle facilities are there that meet or exceed current AASHTO or NACTO standards?

Answer in centerline miles. Write “0” if facility is not present in community.

Shared lane markings

3.3

Wide paved shoulders (ridable surface ≥4 feet, and minimum clear path of ≥4 feet between rumble strips)

1.8

Bike lanes (incl. standard, contra-flow, left-side) (ridable surface ≥4 feet)

32.3

Buffered bike lanes

1

Protected bike lanes (one-way or two-way)

1.2

Raised cycle tracks (one-way or two-way)

0

B16c. Are there any on-street bicycle facilities on roads with posted speeds of >35mph?

- (•) Yes
- ( ) No

B16c1. On streets with posted speeds of > 35mph, how many miles of each of the following bicycle facilities are there that meet or exceed current AASHTO or NACTO standards?

Answer in centerline miles. Write “0” if facility is not present in community.

Wide paved shoulders (ridable surface ≥4 feet, and minimum clear path of ≥4 feet between rumble strips)

5.9

Bike lanes (incl. standard, contra-flow, left-side) (ridable surface ≥4 feet)

3.5

Buffered bike lanes

0

Protected bike lanes (one-way or two-way)

0

Raised cycle tracks (one-way or two-way)

0

B16d. What maintenance practices ensure that any on-street bicycle facilities (including shoulders) remain usable and safe?

Sweeping

Same time as other travel lanes

Snow and ice clearance

Same time as other travel lanes

Pothole maintenance/ surface repair

Within one week of complaint

B17. Within the last five years, has your community ever removed a bicycle facility without an improved replacement?

- (●) Yes
- ( ) No

If yes, please explain.

Staff was pressured to remove a bicycle lane on a section of a two-lane arterial street on the west side of Grand Rapids adjacent to a church. The church leadership was upset by the loss of on-street parking in front of the church, although there is sufficient off-street parking for the church. The former elected Commissioner for this part of the city lobbied to have the bike lanes removed despite staff's efforts to look for alternatives. Staff intends to reinstall these lanes in the near future.

Other Bicycle Accommodations

B18. How has your community calmed traffic? Check all that apply.

- [ ] Speed limits 20 mph or less on residential streets
- [x] Used lower design speeds when designing for new roadways
- [x] Physically altered the road layout or appearance
- [ ] Converted one-way streets to two-way traffic
- [x] Road diets
- [x] Lane diets
- [ ] Speed feedback signs/cameras
- [ ] Car-free/Car-restricted zones
- [ ] Shared Space/Home Zone/Living Street/Woonerf
- [ ] None of the above

B19. In what other ways has your community improved riding conditions and amenities for on-street bicyclists? Check all that apply.

- [x] Roundabouts that accommodate bicycles
- [ ] Colored bike lanes outside of conflict zones
- [x] Removal of on-street car parking
- [x] Advisory bike lanes
- [ ] Bicycle left turn lanes
- [x] Shared bicycle/bus lanes
- [ ] Reverse angle parking
- [ ] On-street way-finding signage with distance and/or time information
- [ ] Signed bike routes

- [x] Bicycle-friendly storm sewer grates
- [ ] None of the above

B20. Are there any signalized intersections in your community?

- (•) Yes
- ( ) No

B20a. Which of the following accommodations are available at signalized intersections to improve conditions for bicyclists?

- [x] Video or microwave detection for demand-activated signals
- [ ] Demand activated signals with loop detector (and marking)
- [ ] Push-buttons that are accessible from the road
- [x] Timed signals
- [ ] Signals timed for bicycle speeds
- [ ] Bicycle Signal Heads
- [ ] Advanced Stop Line or Bike Box
- [ ] Protected intersection
- [x] Colored bike lanes in conflict areas
- [ ] Intersection crossing markings for bicycles
- [x] Refuge islands
- [x] Right corner islands (“pork chops”)
- [ ] None of the above

Bike Sharing

Exclude any private bike sharing systems that are limited to employees of a certain business or students of a certain university.

B21. Does your community currently have a community-wide bike sharing program that is open to the general public?

- ( ) Yes
- ( ) No
- (•) Launching in next 12 months

B21j. Expected launch date:

4/1/2019

B21k. Please provide a link to your bike sharing program website.

mobilegr.grcity.us

Open Link in New Window

B21l. What type of system will your bike sharing program be?

- [x] Automated kiosk-style bike share system
- [x] GPS-enabled bike share system
- [ ] Short-term bike rentals
- [ ] Long-term bike rentals
- [ ] Bike library (free rentals)
- [ ] Unregulated program (i.e. Yellow Bike)

B21m. How many bikes will be in the system?

TBD

B21n. How many stations will be in the system?

TBD

B21o. Will there be options for transporting children as passengers?

No

B21p. What specific efforts, if any, are being planned to make the bike sharing program accessible to low-income populations your community? Check all that apply.

- ☐ Cash or non-credit card dependent payment system
- ☐ Subsidized bike share memberships
- ☑ Community outreach
- ☐ Walkable station spacing in low-income communities
- ☐ None of the above

Other Bicycle-Related Amenities

B22. Which of the following bicycling amenities are available within your community boundaries? Check all that apply

- ☐ BMX track
- ☐ Velodrome
- ☐ Indoor cyclist training facility
- ☑ Cyclocross course
- ☑ Mountain bike park
- ☑ Pump tracks
- ☑ Bicycle-accessible skate park
- ☑ Snow/Fat tire bike trails
- ☐ Signed loop route(s) around the community
- ☐ None of the above

B23. Which of the following safety amenities are available in your community? Check all that apply

- ☐ Emergency call boxes/phones along trails
- ☑ Street lighting on most arterials
- ☑ Street lighting on most non-arterials
- ☐ Lighting of most shared-use paths
- ☐ None of the above

Engineering Bonus Points

B24. Describe any other policies, amenities, infrastructure improvements or maintenance programs that your community provides or requires that create a comfortable and attractive bicycling environment for bicyclists of all ages and abilities.

Use this space to expand on answers checked above, or to describe additional facilities or physical amenities provided that have not yet been covered.

The Rapid (the regional transit service in Grand Rapids) does have a Bicycles on The Rapid section on its website (https://www.ridetherapid.org/howtoride/bicycles-on-the-rapid). Additionally, the Rapid provides a brochure outlining how to use the bus bike racks and a video posted on You Tube to show people how to use

the racks (https://www.youtube.com/watch?v=bru32qAb4xE&t=2s). The Rapid's External Relations Department highlights how public transit complements bicycling when it works with employer and student groups.

The recently approved Vital Streets Plan provides a new network plan that priorities sound maintenance of the City's street network (asset management), Complete Streets (safety, access) and green infrastructure investments. It lays out both street types (residential, neighborhood business, crosstown connectors, urban center, etc.) and also modal overlays for the network (e.g., transit emphasis street, community or commuter bicycle emphasis, vehicle/truck emphasis, pedestrian emphasis). Visit http://ow.ly/zgF130euyIm for a 2-page overview of Vital Streets. There is an accompanying Design Guide (soon to be published - final edits currently underway) that guide street investments and design approaches for Grand Rapids. Staffs from across the City used the Vital Streets Plan and Design Guide along with the City's comprehensive plans and neighborhood plans to help develop new roadway designs and target investments.

The City has a growing relationship with Western Michigan University's Transportation for Livable Communities federal research center. To date, the City has worked with WMU's TLC center on pedestrian safety and crossing treatments research as well as pedestrian safety enforcement strategies and training for the Grand Rapid Police Department. The research relationship is expanding to bicycle infrastructure now, including research on intersection bicycle boxes and possibly bicycle signals. This has been a mutually beneficial relationship, one that City staff would like to continue to foster for more bicycle and pedestrian improvements and research.

NOTE: the City of Grand Rapids has just started its bike share feasibility study and business plan project in partnership with its Downtown Development Authority. A web site for the project has not yet "gone live" but will be accessible in the short term via the City's Mobile GR Department's web site. Likewise, we do not have a known number of stations or bikes since we are still in the feasibility and planning stage, so the information included above are just placeholders since the application requires a response.

Prev **Next**

EDUCATION - Youth Bicycle Education

C1. Do any public or private elementary schools offer regular bicycle education to students?

- (●) Yes
- ( ) No
- ( ) N/A - No elementary schools

C1a. What percentage of your public and private elementary schools offer bicycle education?

Private schools with fewer than 25 students do not need to be counted for this percentage.

1-25%

C1b. What type of bicycle education is offered?

Bicycle safety presentation with no on-bike component

C1c. Are bicycles provided to students by the school district, police, non-profit or other entity to allow every student the opportunity to participate in on-bike instruction?

No, bicycles are not provided

C2. Do any public or private middle schools offer regular bicycle education to students?

- ( ) Yes
- (●) No
- ( ) N/A - No middle schools

You answered No

Offering bicycle education to students is extremely important to receiving a Bicycle Friendly Community award. If your community does not currently offer bicycle education opportunities to at least some students other portions of your application will need to be exceptional in order to receive an award. In order to receive higher award levels it is expected that bicycle education is available to some students at all education levels.

C3. Do any public or private high schools offer regular bicycle education to students?

- ( ) Yes
- (●) No
- ( ) N/A - No high schools

You answered No

Offering bicycle education to students is extremely important to receiving a Bicycle Friendly Community award. If your community does not currently offer bicycle education opportunities to at least some students other portions of your application will need to be exceptional in order to receive an award. In order to receive higher award levels it is expected that bicycle education is available to some students at all education levels.

C4. Outside of schools, how are children and youth taught safe cycling skills? Check all that apply.

- [x] Learn to ride classes
- [x] Bike clinics or rodeos
- [ ] ABCs of Family Biking, family bike show-and-tell, or similar program focused on families with toddlers and young children
- [x] Youth bike clubs
- [ ] Scouts bicycle training
- [x] Youth development road or cross racing teams
- [x] Youth development mountain bike racing teams
- [x] Helmet fit seminars

- [ ] Safety town area
- [x] Trail riding classes
- [ ] Summer camps
- [x] Bicycle-related after school programming
- [x] Bicycle safety is taught as part of driver education curriculum
- [ ] None of the above

Adult Bicycle Education

C5. Are bicycle safety or riding skills-related classes or hands-on instruction offered to adults in your community?

Yes

C5a. What type of classes are available for adults? Check all that apply.

- [x] Classes that include on-bike instruction
- [x] Classroom-based classes
- [x] Information sessions/workshops

C5b. What topics are covered in these classes? Check all that apply.

- [x] Introduction to bicycling/Learn to ride/Bike handling basics
- [x] Safe riding skills/habits
- [x] Bicycle maintenance
- [x] Sharing the road, trail, or path with vehicles or pedestrians
- [x] Bike commuting basics

C5c. Who teaches these classes? Check all that apply.

- [x] League Cycling Instructor
- [x] Local bike shop employee
- [x] Local bicycle advocate
- [ ] Local law enforcement officer

C5d. On average, how often are these classes offered?

Monthly or more frequently

C5e. Are bicycles provided to adults by the community, police, non-profit or other entity to allow every resident to participate in on-bike instruction?

- (●) Yes
- ( ) No

C6. Which of the following communications methods are used to share bicycle information with adults in your community? Check all that apply.

- [x] Community-wide public education campaign
- [ ] Community-wide Bicycle Ambassador program
- [ ] Educational group rides
- [x] Videos on community website/TV channel/social media
- [x] Bike-specific website or social media accounts for community
- [ ] Neighborhood listserves
- [ ] Community newsletter (print or digital)
- [x] Community maps (print or digital)
- [x] Handouts or brochures

- [ ] Welcome packet for new residents
- [ ] Permanent signage, displays, or information kiosks
- [x] Table or booth at community events
- [ ] None of the above

C7. Which of the following information is shared using the methods checked above? Check all that apply.

- [x] Introduction to bicycling/Learn to ride/Bike handling basics
- [x] Safe riding skills/habits
- [x] Bicycle maintenance
- [x] Sharing the road, trail, or path with vehicles or pedestrians
- [x] Commuting tips and resources
- [x] Traffic laws/ rules of the road
- [ ] Bicycle purchase and fitting guidance
- [ ] Equipment, gear, and accessories
- [x] Theft prevention
- [ ] Riding in inclement weather
- [ ] Family biking
- [ ] None of the above

C8. Do any of the above educational classes, resources, or programs for adults specifically target any of the following traditionally-underrepresented groups? Check all that apply.

- [x] Women
- [x] People of Color
- [ ] Seniors
- [x] Non-English speakers
- [ ] Low-income populations
- [x] University students
- [x] LGBT+ community
- [x] ADA community
- [ ] Homeless community
- [ ] None of the above

Motorist Education

C9. In what ways have motorists in your community been educated on sharing the road safely with bicyclists of all ages and abilities? Check all that apply.

- [x] Public service announcements
- [x] Community-wide public education campaign
- [x] Share the Road educational videos on community website/TV channel/social media
- [x] Dedicated Share the Road website or social media sites
- [ ] Neighborhood listserves
- [ ] Community newsletter/magazine article/blog
- [ ] Community maps (print or digital)
- [ ] Information in new resident packet
- [ ] Information for students and parents from the school system
- [x] Utility bill insert
- [x] Flyer/handout
- [x] Info sessions/lunch seminars
- [x] Billboards
- [x] Share the Road, Bicycles May Use Full Lane, or other bicycle-related traffic signs

- [ ] Responsibilities towards bicyclists while sharing the road included in driver's education and testing
- [ ] None of the above

C10. Which of the following groups of professional drivers receive training that includes information on sharing the road with bicyclists? Check all that apply.

- [x] Local government staff
- [ ] Taxi drivers
- [ ] Transit operators
- [ ] School bus operators
- [ ] Delivery/Commercial drivers
- [ ] Emergency vehicle drivers
- [ ] None of the above

Bicycle Safety Education Resources

C11. How many League Cycling Instructors are active (have taught a class in the last year) in your community?

Learn more about the **League Cycling Instructor** (LCI) program, or search for LCIs in your community.

11

C12. Are any of the following educational materials published by the League of American Bicyclists provided to community residents and/or businesses?

Learn more about the League's **Smart Cycling materials** and **videos**.

- [x] Smart Cycling Quick Guide
- [x] Smart Cycling Student Manual
- [x] Smart Cycling Education videos
- [ ] None of the above

Education Bonus Points

C13. Describe any other education efforts in your community that promote safe cycling.
Use this space to expand on answers checked above, or to describe additional educational programs or services that have not yet been covered.

The City of Grand Rapids received a sizeable federal Transportation Enhancements program grant ($632,000) to develop and implement a bicycle safety analysis and education effort. The City had a fatal bicycle crash rate that was almost three times higher and a reported crash rate that was double than the statewide averages. The project kicked off with a detailed review of its bicycle crashes (10 years of reported crashes) as well as a scientifically valid community survey to gauge understanding of bicycle-related traffic laws and responsibilities. The survey indicated a lot of confusion about rules and responsibilities on the part of both people driving as well as people riding bicycles. The Driving Change education program (www.grdrivingchange.org) campaign was developed based on the crash data analysis and survey outcomes to best target the top crash types and most misunderstood issues (with bilingual English/Spanish materials and messages). The goal of this campaign is to reduce bicycle crashes by helping the people of Grand Rapids understand how to operate in and around the new infrastructure the City is installing as well as the “rules of the road” that foster respect between motorists and bicycles and make us all safer. Additional community surveying conducted after several education and media pushes in 2015 and 2016 indicated a significant improvement understanding the rules and regulations on the part of both motorists and bicyclists. Likewise, reported crashes between motorists and bicyclists declined around 80% between 2015 and 2016. The Michigan Department of Transportation (MDOT) provided some additional federal Transportation Alternatives Program (TAP) grant funding to continue the campaign in 2017, including more robust messages about sidewalk riding issues and more Safe Cycling Instruction classes provided by LCI instructors with the Greater Grand Rapids Bicycle

Coalition.

One new Driving Change initiative in 2017 is a partnership with all the driver's education schools, which are providing Driving Change bicycle/motorist safety education to all students that go through their programs (regular driver's training, senior driving skills classes, professional driver training). City staff are now looking for additional community partners to extend and expand Driving Change into 2018 and beyond. http://woodtv.com/2017/05/23/driving-change-in-grand-rapids/

Approximately 12 new people in Grand Rapids have been trained League Certified Instructors; and the GGRBC has rolled out a comprehensive bicycle education program, including: offering TS101 once per month from May to Sept, offering TS101 at a local university, teaching bicycle-oriented 'lunch and learn' session at local employers and universities, offering family-oriented bike safety classes through local library branches and support for the local Major Taylor Bicycle Club at one public elementary school.

The city was first in the state of Michigan to pass a 5-foot safe passing law. City staff provided testimony at the State Legislature on a possible statewide 5-foor safe passing law this year. Additionally, City staff has provided information and advice to several cities and counties in Michigan interested in developing and passing their own 5-foot safe passing laws.

City staff has had some early conversations with Grand Rapids Public School staff about meeting to discuss common interests in Safe Routes to School walking and bicycling programs. There are some limited school-led efforts but there is interest in more comprehensive efforts. The City would also recommend involving other community-based bicycling organizations like the GGRBC, bicycle retailers and the non-profit cooperatives for example.

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ENCOURAGEMENT - Encouragement Policies, Programs and Partnerships

D1. Which of the following community-wide bicycle encouragement programs or policies exist in your community? Check all that apply.

- ☐ Trip reduction ordinance or incentive program
- ☑ Guaranteed Ride Home program
- ☐ Local business incentive program that rewards customers arriving by bicycle
- ☐ Local recognition program for businesses that are bicycle-friendly for their employees and/or customers
- ☐ Locally-designated Bicycle Friendly Business District
- ☐ None of the above

D1a. Please provide links for any programs checked above:

https://www.wmrideshare.org/guaranteed-ride

D2. What other groups actively promote bicycling in the community? Check all that apply.

- ☐ Chamber of Commerce
- ☑ Downtown Business Association/Business District
- ☑ Tourism Board
- ☐ Other civic associations (e.g. Rotary, Lion's Club, etc.)
- ☐ None of the above

D3. Does your community actively promote the League of American Bicyclists' Bicycle Friendly Business (BFB) or Bicycle Friendly University (BFU) programs in your community?

- ○ Yes
- ◉ No

Route-Finding Support

D4. What up-to-date mapping and route-finding information is available for your community? Check all that apply.

- ☐ Web-based route finding service
- ☑ Smart phone app
- ☑ Printed/digital bicycle network map
- ☑ Printed/digital mountain bike trails map
- ☑ Printed/digital greenways and trails map
- ☐ Printed/digital Safe Routes to Schools map(s)
- ☐ None of the above

Bicycle Culture and Promotion

D5. How is National Bike Month/your own dedicated Bike Month promoted in your community? Check all that apply.

Learn about National Bike Month and see the League's National Bike Month Guide for ideas to improve your community's Bike Month efforts.

- ☐ Official Proclamation
- ☑ Community-wide Bike to Work Day/Week
- ☐ Bike to School Day/Week
- ☐ Bike to Church Day or similar
- ☑ Community Rides
- ☐ Mayor-led/Council-led Ride
- ☐ Public Service Announcements

- [x] Videos promoting bicycling on community website/TV channel
- [x] Publish a guide or calendar of Bike Month Events
- [x] Bike Month Website
- [x] Commuter Challenge
- [ ] Challenges aimed at students biking to school
- [x] Non-commuting related (i.e. errand-running) biking challenges and programs
- [x] National Bike Challenge/Global Bike Challenge
- [x] Bike Commuter energizer stations/breakfasts
- [ ] Car-free days
- [ ] CycloFemme Ride
- [ ] Kidical Mass Ride
- [ ] Open Streets/Ciclovia/Sunday Parkways
- [ ] Mentoring program for new riders
- [x] Bike valet parking at events
- [ ] Bicycle-themed festival/parade/show
- [ ] Public education campaign relating to cycling (e.g. with a focus on public health or environmental benefits)
- [ ] Trail construction or maintenance day
- [ ] None of the above

D6. How is bicycling promoted in your community outside of Bike Month? Check all that apply.

- [x] Community and charity rides
- [ ] Mayor-led/Council-led rides
- [x] Videos on bicycling on community website/TV channel
- [x] Public Service Announcements
- [x] Trail construction or maintenance day
- [ ] Kidical Mass Ride
- [ ] Open Streets/Ciclovia/Sunday Parkways
- [ ] Commuter Challenge
- [ ] Non-commuting related (i.e. errand-running) challenges and programs
- [ ] Challenges aimed at students biking to school
- [x] National Bike Challenge/Global Bike Challenge
- [ ] Business program that provides discounts for customers arriving by bicycle
- [x] Triathlons and bicycle races
- [ ] Bike commuter events
- [ ] Car-free days
- [ ] Publish a guide or calendar of community bicycle events
- [x] Mentoring program for new riders
- [x] Bike valet parking at events
- [ ] International Bike to School Day in October
- [ ] Winter Bike to Work/School Day(s)
- [ ] Bicycle-themed festivals/parades/shows
- [x] Public education campaign related to cycling (e.g. with a focus on public health or environmental benefits)
- [ ] Community celebration/ride each time a bicycle project is completed
- [ ] None of the above

D7. Are any bicycle events specifically marketed to any of the following traditionally underrepresented groups? Check all that apply.

- [x] Women
- [x] People of Color
- [ ] Seniors

- [ ] Families with toddlers and young children
- [ ] Non-English speakers
- [ ] Low-income populations
- [ ] LGBT+ community
- [x] ADA community
- [ ] Homeless community
- [ ] None of the above
- [ ] N/A - No bicycle events

D8. How does the municipality sponsor or actively support bicycle events in the community? Check all that apply.

- [ ] Organize event(s)
- [x] Fund event(s)
- [x] Contribute in-kind funding (i.e. police presence, closing roads, etc.)
- [x] Assist in promoting event(s)
- [ ] None of the above
- [ ] N/A - No bicycle events

D9. Are any of the following cycling clubs/groups active in your community? Check all that apply.

- [x] Recreational bike clubs
- [x] Mountain bike clubs
- [x] Cyclocross clubs
- [x] Friends of the Trail groups
- [ ] National Mountain Bike Patrol
- [x] Racing clubs or teams
- [ ] Kidical Mass, Family Bike Party, or other family-oriented groups
- [ ] Senior ride groups
- [x] Women-only ride groups
- [ ] LGBT+ ride groups
- [x] People of Color ride groups
- [x] Bike polo/La Crosse clubs
- [x] Slow ride group
- [ ] None of the above

D10. Does your community have any of the following youth programs centered on encouraging bicycling for children and youth? Check all that apply.

- [ ] Safe Routes to School program
- [ ] Trips for Kids chapter
- [x] Earn a Bike program
- [ ] Create a Commuter program
- [ ] None of the above

Access to Bicycle Equipment and Repair Services

D11. What is the ratio of for-profit specialty bicycle retailers (shops dedicated primarily to selling bikes and bike-related equipment) to population within your community's boundaries?

1 shop for every 30,001-50,000 residents

D12. Is there at least one bike co-op or non-profit community bike shop within the community's boundaries?

- (●) Yes
- ( ) No

D12a. Do(es) the co-op/non-profit community bike shop(s) receive any of the following support from the local government? Check all that apply.

- [ ] Grants
- [ ] Free or subsidized property/space for a duration of at least 5 years
- [x] Contracts for services, e.g. bicycle skills or maintenance education, event support, etc.
- [x] Free bicycle safety accessories for distribution, e.g. helmets or lights
- [x] Provision of abandoned or impounded bicycles for resale
- [x] Free PSA or advertising space
- [ ] None of the above

Encouragement Bonus Points

D13. Describe any other events, programs or policies your community has to encourage bicycling.

Use this space to expand on answers checked above, or to describe additional encouragement efforts that have not yet been covered.

She Rides (Her Own Way) – locally based campaign created by Johannah Jelks to build self-esteem and bring health awareness to women through biking - https://www.facebook.com/SheRidesHerOwnWay

Grand Rapid Vintage Bicycle Club - https://www.facebook.com/grvintage

Founders Brewing cycling team - http://foundersracing.com/
Bissell cycling team - https://www.facebook.com/BissellABGiant/

Numerous shop-based teams – road, mountain and cyclocross

Grand Rapids Bike Polo – http://grbikepolo.blogspot.com/

MSU Grand Fondo ride (every June) – four different community rides (12 miles to 80 miles in length) to raise money to fight skin cancer http://www.msugranfondo.com/site/TR/Events/General?pg=entry&fr_id=1070

Pedal GR community group rides (ongoing) - http://www.pedalgr.com/

Wednesday night group rides (ongoing) - https://www.facebook.com/groups/33525503544/

Annual Ride of Silence to honor bicyclists who have been injured or killed - https://www.facebook.com/pg/rideofsilencegr/about/?ref=page_internal

Beer City Bike Fest (August 2017) – a bike-themed carnival and music festival hosted by local bicycle cooperative Spoke Folks and VanderMill Hard Cider - http://tinyurl.com/y86tlg4b
In addition to The Spoke Folks (http://thespokefolks.org) and Boston Square Community Bikes (http://bostonsquare.org) bicycle cooperatives, another organization – Freedom in Motion (http://freedominmotion.org) provides “affordable alternative transportation by redistributing reclaimed, remade bicycles in order to redeem lives, relationships and communities”. They provided 1,000 bicycles to people in need in 2016 alone.

One local city resident, David Bosch, repairs used bicycles on his own and provides them to organizations that give bicycles to refugees and ex-offenders for work readiness

Bike repair stands and pumps have been installed at several locations in downtown, funded by the Downtown Development Authority and some private businesses. The City, in partnership with the Greater Grand Rapids Bicycle Coalition, just submitted a People for Bikes grant request to fund at least 10 more repair stands with pumps to be located around the city in “bike shop deserts” at fire station, library and park sites. The City’s Mobility and Parking Department is also looking to install bicycle repair stands inside the enclosed foyers of

downtown parking garages (protected from weather, well-lit and monitored by security cameras and 24/7 security staff). Additionally, staff is working on upgrading its existing fleet of rentable bicycle lockers and adding bicycle parking cages or covered bicycle parking in every city-owned parking garage in 2017 and 2018.

The Greater Grand Rapids Bicycle Coalition provides bicycle lunch-and learns at local companies during the annual Active Commute Week every June.

The City of Grand Rapids sponsored an Active Commute Week (http://acwgr.org) team internally for its employees this year with more than 40 employees participating in the City's first organized effort. Several city unions provided funding to sponsor prizes for participating City staff. Mobility department staff plans to expand this effort in 2018 and will also be leading a workshop in early Spring 2018 for downtown employers to learn how to organize their own Active Commute Week team to participate.

The City's Mobility/Parking department is developing Transportation Solutions materials and workshops (a broad-based TDM program) that incorporates bicycling into the messaging and materials. Staff is developing and presenting new topical workshops every other month - all of which incorporate bicycling. The new TDM programming is still being developed (new program and budget this year) but will incorporate bicycling as a valuable travel option. The City is partnering with the Grand Rapids Chamber of Commerce, Downtown Development Authority, West Michigan Rideshare and The Rapid (transit) on messaging and materials. Workshops to date include Parking Cash Out programs, using remote parking and transit services, ridesharing, and general transit services. The September workshop will be focused on educating about bike share and getting input for that project, and the workshop proposed for next March/April is how to organize your own Active Commute Week team for your work place/organization. The impetus behind these TDM efforts is to get private employers to begin offering a broader range of options and support for their employees like parking cash out, free or subsidized transit passes (and possibly future bike share passes), bicycle parking, and connecting employees' transportation needs with health/wellness and sustainability goals/initiatives. For example, the City of Grand Rapids as an employer now offers parking cash out to employees that receive paid parking benefits. Most work sites have secure and sometimes covered bicycle parking; staff is working on improving remaining work sites. Staff is also seeking reduced price transit passes through The Rapid and pre-tax payments through payroll. We also significantly expanded our participation in Active Commute Week this year, including offering several lunch-and-learns to staff in June plus prizes paid for by the various City unions for employees that participated in the Active Commute Challenge.

The Greater Grand Rapids Bicycle Coalition has worked to provide a community bicycle map for the past 5 years including the most recent edition released on June 2017. Given growing challenges they have been having with map development, the City has offered to take the lead in a partnership with GGRBC on future community bicycle and trails maps. They plan to start working together in 2018 on a completely new map with a new approach to what is mapped and how .

The Mayor's office under Mayor George Heartwell (previous mayor) used to participate in an annual Mayor's Bike to Work Day ride every year during Active Commute Week. City staff and the Greater GR Bicycle Coalition are hopeful that Mayor Bliss, who has been very supportive of bicycling both while she was a Commissioner and now as mayor, will be able to participate in Mayor's BTWD ride in 2018 (and beyond). She was not available during Active Commute Week in 2017 due to schedule conflicts.

The Greater GR Bicycle Coalition owns bike parking valet racks that it provides at area events with the support of volunteers. The City's Mobility/Parking Department has been in recent discussions with GGRBC to partner with them to expand the available valet bike rack fleet, support volunteer staffing needs, and possibly incorporate bicycle parking requirements into City event sponsorships and/or City event permitting.

Mary Free Bed Rehabilitation Hospital supports adaptive cycling programs with various adaptive bicycles available, adaptive cycling clinics, and sports camps that include adaptive cycling. Mary Free Bed is also a Bicycle Friendly Business (http://www.maryfreebed.com/mary-free-bed-recognized-as-a-bicycle-friendly-business/).

ENFORCEMENT & SAFETY Public Outreach

E1. How does your police department interact with the local cycling community? Check all that apply.

- ☐ A police officer is an active member of or regularly attends meetings of the bicycle advisory committee
- ☑ Identified law-enforcement point person to interact with bicyclists
- ☐ Identified law-enforcement point person to Safe Routes to Schools program
- ☑ Police department assists with bicycle events/rides
- ☐ Police department hosts bicycle events/rides
- ☑ Officers provide bike safety education
- ☑ Officers distribute bike safety/theft deterrent information
- ☑ Police officers report potential hazards to traffic engineers and planners to identify sites in need of safety improvements for bicyclists
- ☐ None of the above

E2. What percentage of patrol officers are regularly on bikes?

1- 20%

E3. What other public or private bicycle safety programs are in place? Check all that apply.

- ☑ Helmet giveaways
- ☑ Light giveaways
- ☐ Volunteer trail watch programs/patrols
- ☐ None of the above

Bicycle-Related Training for Law Enforcement Personnel

E4. What kind of bicycle-related training is offered to police officers? Check all that apply.

- ☐ Basic academy training
- ☑ International Police Mountain Bike Association training
- ☐ Law Enforcement Bicycle Association training
- ☐ National Highway Traffic Safety Administration Law Enforcement Training
- ☐ Smart Cycling course
- ☑ Completion of League Cycling Instructor certification by one or more officers
- ☑ Presentation/Training by League Cycling Instructor or local bicycle advocate
- ☐ Institute for Police Training and Development bicycle training
- ☐ Training on racial profiling awareness in multimodal transportation enforcement
- ☐ Training on bicycle crash types, numbers and locations
- ☐ None of the above

Bicycle-Related Laws

E5. Are there any local ordinances or state laws that protect bicyclists in your community? Check all that apply.

- ☑ Specific penalties for failing to yield to a cyclist when turning
- ☑ It is illegal to park or drive in a bike lane (intersections excepted)
- ☑ Penalties for motor vehicle users that 'door' bicyclists
- ☐ Ban on cell phone use while driving
- ☑ Ban on texting while driving
- ☐ Vulnerable road user law
- ☑ Safe passing distance law
- ☑ It is illegal to harass a cyclist
- ☐ Photo enforcement for red lights and/or speed

- [ ] None of the above

E6. Do any local ordinances in your community place restrictions on bicyclists? Check all that apply.

- [ ] Local law requires bicyclists to use side paths regardless of their usability
- [ ] Local law requires bicyclists to use bike lanes when provided
- [ ] Local law requires that bicyclists are required to ride as far to the right of the road as practicable without exceptions
- [ ] Local law restricts usage of electric-assist bicycles
- [ ] Mandatory bike registration
- [ ] Mandatory helmet use for all ages
- [ ] Restrictions on sidewalk riding outside of the Central Business District
- [x] Restrictions on sidewalk riding inside the Central Business District
- [ ] Dismount zones/regulations on shared-use paths
- [ ] Local or school policies restrict youths from riding to school
- [ ] Bicycles are banned from one or more road that is open to vehicles
- [ ] None of the above

Bicycle-Related Enforcement Practices and Programs

E7. Which of the following bicycle-related enforcement practices exist in the community? Check all that apply.

- [x] Data-driven enforcement of traffic violations most likely to lead to crashes, injuries, and fatalities
- [x] Positive enforcement ticketing
- [ ] Ticket diversion program for bicyclists
- [ ] Ticket diversion program for motorists with educational content specifically related to interacting and sharing the road with bicyclists
- [ ] None of the above

E8. How does your community use traffic citation data? Check all that apply.

- [ ] Raw data is published and made available to the public on a regular basis
- [x] Analysis and reports are published and made available to the public on a regular basis
- [ ] Data is only available to the public by FOIA request
- [ ] Analysis and reports are developed but not shared/ are only used internally
- [x] Data/reports are shared with transportation agencies to improve infrastructure
- [ ] Data is not collected
- [ ] Unknown

Bicycle Safety Policies and Programs

E9. Is there a specific plan, policy or program to further increase bicycle safety in your community?

- ○ Vision Zero policy/Policy to eliminate traffic fatalities within a specific time frame not to exceed 20 years
- ○ Towards Zero Deaths program or similar data-driven, interdisciplinary approach that targets areas for improvement and employs proven countermeasures, integrating application of education, enforcement, engineering, and emergency medical and trauma services
- ○ Traffic safety plan
- ◉ None of the above

Crash and Fatality Reporting

E10. Do police officers report bicyclist crash data?

- (●) Yes
- ( ) No

E10a. On average over the past five calendar years, how many bicyclists have been in a crash involving a motor vehicle annually?

88

E11. On average over the past five calendar years, how many bicyclists have died due to a crash involving a motor vehicle annually?

1

Enforcement & Safety Bonus Points

E12. Describe any other enforcement or safety programs/policies relating to bicycling.
Use this space to expand on answers checked above, or to describe additional enforcement or safety programs or policies that have not yet been covered.

City staff is currently developing a Vision Zero proposal and resolution to address traffic safety issues and fatalities, including bicycle safety for City management and Commission consideration. Vision Zero was a key recommendation of the City's new Vital Streets Plan.

As part of the bicycle crash analysis work done at the beginning of the Driving Change education project (who is crashing, when, where, why and how), City staff thoroughly reviewed the City's existing code for any updates needed in terms of bicycling. In addition to the 5' safe passing rule that was approved in 2015, the City Commission also approved the following changes to the City Code: motorists cannot open a vehicle door in a manner that obstructs people on bicycles (to minimize and, if need be, penalize "dooring"); front and rear lights are required; the bicycle registration requirement was eliminated; bicyclists are "granted all of the rights" that motor vehicles have on the road and they are also required to "conform to all of the rules" of the road; and the definition of a bicycle was expanded to include bicycles with an "assistive motor of less than 750 watts."

The Grand Rapids Griffins hockey team has been a long standing sponsor of its annual "Put a Lid on It" campaign, which provides helmets to youth and teens in Grand Rapids. http://griffinshockey.com/community/putalidonit/.

A similar program - Lids for Kids (http://lidsforkidsmi.org/grand-rapids/) - has been providing bicycle helmets for children and teens in the City of Grand Rapids at a community safety event every summer since 2014. Lids for Kids' partners include the Grand Rapids Fire Department, GR Public Schools, Mary Free Bed Rehab Hospital, Fox News 17, Sinas Dramis Law Firm, Hope Network, and the Brain Injury Association of Michigan.

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EVALUATION & PLANNING - Staffing and Committees

F1. Is there a bike program manager or primary point of contact for bicycling issues at your local government?

- ○ There is a full-time, paid bike program manager whose primary role is helping the community become bicycle-friendly and encouraging ridership.
- ○ Promoting bicycling is a part of someone's official job description but they have other responsibilities as well.
- ◉ Helping the community become bicycle-friendly and encouraging ridership is a responsibility shared among multiple staff.
- ○ Promoting bicycling is not a part of anyone's official job description, but at least one staff member has permission to help the community become bicycle-friendly during working hours.
- ○ A citizen volunteer is appointed by the government to help the community become bicycle-friendly.
- ○ Currently, no one is focused on encouraging ridership or helping the community become more bicycle-friendly.

F2. Is there a Safe Routes to School Coordinator?

- ○ There is a full-time, paid Safe Routes to School Coordinator.
- ○ Promoting Safe Routes to School educational programs and infrastructure improvements is a part of someone's official job description but they have other responsibilities as well.
- ◉ Promoting Safe Routes to School educational programs and infrastructure improvements is a responsibility shared among multiple staff.
- ○ Promoting Safe Routes to School educational programs and infrastructure improvements is not a part of anyone's official job description, but at least one staff member has permission to help the business become bicycle-friendly during working hours.
- ○ A citizen volunteer is appointed by the government to promote Safe Routes to School educational programs and infrastructure improvements.
- ○ Currently, no one is focused on Safe Routes to School educational programs and infrastructure improvements.

F3. How many government employees (including the Bicycle Program Manager and the Safe Routes to Schools Coordinator), expressed in full-time equivalents (FTE), work on bicycle issues in your community?

NOTE: A person that spends 1/10 of their time on bicycle issues would be counted as 0.1 FTE.

2.5

F4. Does your local government provide any of the following professional development opportunities for employees who have bicycle-related responsibilities? Check all that apply.

- ☑ League Cycling Instructor (LCI) certification
- ☑ Association of Pedestrian and Bicycle Professionals (APBP) membership
- ☑ Other professional memberships/accreditations related to bicycles
- ☑ Attend bicycle-related webinars/trainings
- ☑ Attend bicycle-related conferences
- ☑ Present at bicycle-related webinars, trainings, or conferences
- ☐ None of the above

F5. Does your community have an officially-recognized Bicycle Advisory Committee?

No

You answered No

Bicycle Advisory Committees can be incredibly helpful when a community wants to improve conditions for bicyclists. A Bicycle Advisory Committee, or functionally equivalent committee dedicated to convening stakeholders in non-motorized transportation, can be an essential source of knowledge about community issues and concerns. If you

community does not currently have a Bicycle Advisory Committee or functionally equivalent group we strongly recommend considering the creation of such a group to provide user and stakeholder input into community plans.

F6. Does your local government have an internal equity, diversity, and inclusion (EDI) initiative, committee, or position?

Yes

F6a. Provide the name and email address of the primary contact.

Patti Caudill, Diversity and Inclusion Manager – pcaudill@grcity.us

F6b. Please describe how, if at all, the EDI initiative, committee, or position supports equitable bike planning or outreach in the community.

The City's EDI division is not directly involved in planning efforts; it is mainly focused on general access to government as well as equity issues surrounding purchasing/procurement/bidding.

The City does have a dedicated Community Engagement staff housed in the Planning Department but that provides services and support to Planning, Engineering, Safety and Mobility projects and staffs. The Community Engagement Division supports equitable bike planning and outreach in the community through a variety of methods when bike infrastructure is proposed on a street. CE sends out mailers, hosts public design meetings, maintains project webpages, and creates online surveys to get resident feedback on proposed changes. The CE Division is committed to equitable planning and sends out mailers in both English and Spanish to areas of our City with large Hispanic populations. Additionally, CE providers interpretation at public meetings, by default, in Spanish-speaking areas. For those outside of these areas that may need interpretation services to understand a mailer or attend a meeting, CE includes a line on all mailers in Spanish that instructs residents to call 311 if they need the letter translated or interpretation at the meeting. 311 has many Spanish-speaking agents that are able to assist residents with these requests. CE also assists with public outreach for long-range planning efforts that often include a bicycle component and works to make sure these efforts are equitable as well. For example, during the engagement for GR Forward, our Downtown and river corridor master plan, CE partnered with organizations to provide dinner, and, in some cases, child care at meetings, to remove barriers for resident participation.

During the Vital Streets Plan process, significant attention was paid to addressing equity issues when making transportation investments in the community. One of the resulting products of the Vital Streets Plan is excellent data and GIS mapping related to equity concerns in the community - income, race, ethnicity, age and persons with disabilities - which is being used within additional community planning efforts including the forthcoming Bicycle Transportation Action Plan that staff is working to complete over the next 4 - 6 months.

Planning, Funding, and Implementation

F7. Does your community have a comprehensive bicycle master plan or similar section in another document?

Plan is currently under development

F7f. Is there a planned budget for implementation of the plan?

No

F7g. How are community planning staff reaching out to minority, non-English speaking, and/or low-income communities to ensure that they are included in the decision-making process?

A substantial amount of public outreach has been conducted for both the GR Forward (downtown) plan (Mobility chapter) and also the Vital Streets Transportation Master Plan, which included specific events and efforts to connect with underrepresented communities (minorities, non-English speaking, seniors, modest income). As staff works to finish the Bicycle Transportation Action Plan this fall/winter, they are tag teaming

public engagement efforts with the bike share feasibility plan project, which includes focus groups with specific underrepresented communities.

F8. What other local agencies have a bicycle master plan or similar section in another transportation demand management document? Check all that apply.

- ☐ Transit agency
- ☐ School district
- ☑ Higher education institution(s)
- ☐ Hospital or medical center(s)
- ☑ Parks & Recreation
- ☑ Metropolitan Planning Organization
- ☐ Regional Planning Commission
- ☐ County/Borough/Parish
- ☐ None of the above

F9. Is community-wide bicycle planning integrated with planning for any of the following: Check all that apply.

- ☐ Transit stops
- ☐ Public & private schools (K-12)
- ☐ Higher education institutions
- ☐ Hospitals and medical centers
- ☑ Parks & recreation centers
- ☐ Subsidized or public housing
- ☐ None of the above

F10. What percentage of the community's total annual transportation budget – on average over the last five fiscal years – was invested in bicycle projects?

3%

F11. Is bicycle-related funding specifically allocated to underrepresented areas of your community? (e.g. low-income neighborhoods, etc.)

- ○ Yes
- ◉ No

Evaluating Ridership

F12. How does your community collect information on bicycle usage? Check all that apply.

- ☑ Automated/electronic bicycle counters
- ☐ Regular statistically-valid community bicycle surveys
- ☐ Travel diaries
- ☑ Regular manual counts of bicyclists on trails
- ☑ Regular manual counts of bicyclists on the road
- ☐ Regular counts of parked bicycles at transit stations (if applicable)
- ☐ Regular counts of parked bicycles at schools
- ☐ Regular counts of parked bicycles at other destinations (downtown business district, etc.)
- ☑ Manual counts that include demographic data collection (e.g. gender, race, age, etc.)
- ☐ Manual counts that specifically target traditionally underrepresented neighborhoods
- ☐ None of the above

F12a. Based on your own data collection, what percentage of all utilitarian trips are made by bicycle?

unknown

F12b. Based on your own data collection, what percentage of residents use a bicycle recreationally?

unknown

F12c. Based on your own data collection, what percentage of all bicycle trips are made by women?

25%

F12d. Based on your own data collection, what percentage of children (K-12) regularly bike to school (outside of Bike to School days)?

unknown

F12e. Based on your own data collection, what percentage of children regularly commute to preschool/daycare by bike? (e.g. in a bicycle child seat or bike trailer)

unknown

F13. Does your community establish target goals for bicycle use? (e.g. a certain level of bicycle mode share)

- (●) Yes
- ( ) No

F13a. Please list or describe your goals.

5% of mode share by 2035

Evaluating the Bicycle Network

F14. Does your community routinely conduct pre/post bicycle mode share evaluations of bicycle-related road projects?

- ( ) Yes
- (●) No

F15. Which of the following mechanisms are in place for bicyclists to identify problem areas or hazards to traffic engineers, planners, and police? Check all that apply.

- [ ] Online reporting system (e.g. SeeClickFix)
- [x] Mobile app
- [x] Hotline
- [ ] Regular meetings
- [x] Contact staff directly via call/voicemail/fax/email/text/social media
- [ ] None of the above

F16. How has your community conducted a network analysis to evaluate current conditions for bicyclists and identify significant infrastructure barriers to bicycling? Check all that apply.

- [x] GIS-based network analysis
- [ ] Level of Traffic Stress analysis
- [ ] Bicycle Level of Service for roads

- [ ] Bicycle Level of Service for intersections
- [ ] Multi-modal Level of Service
- [ ] None of the above

Evaluation & Planning Bonus Points

F17. Besides the Bicycle Friendly Community program, what other national programs does your community participate in to improve for bicycling? Check all that apply.

- [ ] U.S. DOT Mayor's Challenge for Safer People and Safer Streets
- [ ] National League of Cities/Let's Move! Cities, Towns and Counties
- [ ] LEED® for Neighborhood Development
- [ ] NACTO Cities for Cycling
- [x] None of the above

F18. Describe any other efforts by your community to evaluate and/or plan for bicycle ridership and/or networks.

Use this space to expand on answers checked above, or to describe any additional evaluation & planning efforts that have not yet been covered.

The City has started to partner with the Downtown Development Authority on automated counting efforts. At present, the DDA has 6 automated counters primarily focused on collecting pedestrian data. The DDA has also recently purchased 7 more automated counters and has asked City staff (Mobility and Traffic Safety) to input on locations. We are also likely partnering on the purchase of at least 2 bike lane tube counters in advance of the installation of the proposed first protected bike lanes (on N. Division Avenue between Leonard and Monroe Center). There are existing painted lanes here that are proposed for upgrading. The desire is to then use this equipment for additional data collection on bicycle lanes.

City staff coordinates with DDA staff on project development within the downtown area as the DDA targets specific funds toward bicycle improvements. Currently, staffs are working together on more bicycle parking, a proposed protected bike lanes corridor, and several trail/street crossing improvements for the River Trail along the Grand River. The City and the DDA are also co-funding the bike share feasibility study/business plan and River Trail Desogn Guidelines projects (underway).

The City's bicycle plan is under development now and will include project cost estimates and recommended budget numbers for not only riding facilities construction but also capital and routine maintenance plus capital and O&M costs for bicycling support facilities (parking, public repair stands, etc.) and encouragement, education, and enforcement programs and activities. However, at this stage in the plan development those budget figures have not been identified as of yet.

In regard to the current budget spent on bicycling, staff had some challenges tallying a full amount annually because so many of the improvements made for bicycling are tied into other projects, not segregated as separate expenses or project budgets. The amount spent each year on bicycling improvements varies depending on the list of roadway projects scheduled for reconstruction or resurfacing through which many facilities are added or improved and also if grant dollars are received. For example, in 2015 the City completed the Seward Avenue bikeway - new bicycle lanes, trail, covered bicycling parking and a repair stand/pump - with a federal TE grant. In 2018, the City will be constructing 1 mile of new paved shoulders on Covell Road with $70,000 from the federal TAP program plus an additional $180,000 in local funds. The City is currently spending $70,000 (plus $30,000 from the Downtown Development Authority) to conduct a thorough bike share feasibility study with public outreach and business plan development. There are annual expenditures to maintain existing bicycle pavement markings and signage, which staff is working on determining the actual costs through improving the City's asset management system but we don't have a segregated total yet. But City dollars are being allocated annually as well as efforts to leverage federal and state grants and partnerships with adjacent communities, etc. are being sought and utilized where possible, so the percentage we provided above in response to Question F10 is a conservative estimate of the average spent annually.

FINAL OVERVIEW

G1. What are the top three reasons your community has made bicycling a priority? Click up to three.

- [x] Improved quality of life
- [ ] Improving public health
- [ ] Community connectivity
- [x] Provide affordable transportation options
- [ ] Reduce car-parking demands
- [ ] Climate change/environmental stewardship concerns
- [ ] Decrease traffic congestion
- [ ] Increase tourism
- [ ] Increase property values
- [ ] Cooperation with adjacent communities
- [ ] Public Demand
- [ ] Economic development
- [ ] Support Smart Growth or other growth management goals
- [x] Traffic and bicycle/pedestrian safety
- [ ] Meet local or state requirements
- [ ] None of the above

G2. Briefly describe the most positive outcome of your community's support for bicycling.

Staff conducted some surveying of internal City staff as well as external partners and representatives in the local bicycling community to respond to this question. Several themes emerged, especially that bicycling is more and more popular in Grand Rapids with noticeably more bicycle activity and interest throughout the city. "It's exciting to see the growing number of people commuting to work, the increase in people bicycling for recreation and exercise. It's truly noticeable and impressive."

Another common theme was the fairly quick growth in the bicycling network in the City - initially with the development of some early trails but then the creation of 80+ miles of bicycle lanes in 7 years. The City made a strong commitment with the passage of its Complete Streets resolution in 2011 to seek out as many opportunities to improve bicycling as possible. The City continues to expand on this commitment by hiring more highly qualified staff, integrating bicycling in community plans and working on not only more facility improvements but also safety, end-of-trip facilities, and better information resources.

Respondents also were relieved to see the marked decline in bicycle/car collisions and an anecdotal feeling of reduced tensions out on the road.

G3. Describe any improvements that have occurred for cycling in your community since your last application.

(Write N/A if this is your first time applying.)

There have been many improvements in Grand Rapids since the community submitted its last BFC application in 2013:

A civil engineer was permanently reassigned in 2013 to the Traffic Safety department to implement dozens of miles of new bicycle lanes (Piotr Lewak, PE). Piotr became an LCI instructor and has been instrumental in developing and implementing the City's successful Driving Change education crash analysis and public education campaign project.

The City recently hired Kristin Bennett, AICP, as its first Transportation Planning/Programs Manager to work collaboratively among the Traffic Safety, Roadway Engineering, Planning and new Mobility departments. Kristin is a nationally recognized veteran in bicycle planning, design and project implementation and was the 2012 APBP Public Sector Professional of the Year. She is currently leading the work on bike share feasibility, the City's first bicycle plan, and coordinating closely with other staff on roadway designs for capital and street maintenance projects.

The City completed an innovative transportation networks master plan - Vital Streets Plan (http://www.grcity.us/engineering-department/Construction-Updates/Documents%20for%20Revamped%20Site/Vital%20Streets%20Plan/Vital%20Streets%20Plan%20December.pdf) - in December 2016. A detailed Design Guide, which includes innovative bicycle design elements throughout, is nearing completion and will guide staff, consultants and developers with multi-modal street design.

The City completed an analysis of 10 years worth of reported crash data, which unfortunately indicated our crashes were double the statewide average and our fatalities were three times higher. At the time of our last BFC application, the City had been awarded a $600,000 TAP grant to tackle bicycle safety education in the community. These funds have been expended on the innovative and effective Driving Change campaign (http://GRDrivingChange.org).

The City's Parks Department completed a new Master Plan in 2017, which reflects that nearly 70% of the surveyed public wants more bicycling and walking trail in Grand Rapids, better connectivity among trails and between trails and parks, and opportunities for mountain biking and community bicycle rentals.

More bicycle parking has been added - chiefly through racks been added during street reconstruction projects or business improvement districts purchasing racks for their specific districts. The Downtown Development Authority piloted several in-street bike parking corrals, which the City's Mobility/Parking department is now overseeing.

The DDA and a couple private businesses have also invested in 5 bicycle repair stands/pumps in and near downtown.

Additional improvements to the City's bicycle parking code requirements were made in Fall 2016 with a larger City Code upgrade.

G4. What could be done differently in order to make bicycling safer, more enjoyable and/or more convenient in your community?

Staff conducted some surveying of internal City staff as well as external partners and representatives in the local bicycling community to respond to this question. Several consistent themes emerged including the need to focus on developing low stress corridors (protected bike lanes and bike boulevards) throughout the community to densify the network and attract more "interested but concerned" riders; addressing bicycle access/safety at intersections; filling key gaps in the existing bicycle lane network; and adding more bicycle parking throughout the City. Respondents also want the community to support continued outreach and education through the Driving Change education campaign, which has been well received so far and has been effective at improving motorist and bicyclist understanding of rules and responsibilities and helping to reduce crashes.

G5. What specific bicycle-related improvements are planned in the next 12 months that directly affect your community?

The City's bike share feasibility study and business plan development project (partnership with the Downtown Development Authority) is now underway with the first project Steering Committee meeting scheduled for August 28. The project is expected to be completed later this fall with Commission action on the project recommendations in late December 2017.

City staff is working internally to complete the City's first Bicycle Transportation Plan, targeting the end of 2017 or early 2018 for Commission action.

The Downtown Development Authority in partnership with the City will be issuing an RFP to design a trail connection between the Belknap neighborhood and the Monroe North neighborhood, which are separated by significant topography. This project will investigate how to address this barrier.

New bicycle lanes will be added to the Newberry Street NW (0.15 miles) as part of a street reconstruction project.

A 1-mile paved shoulder construction project (Covell Road) is currently under design for construction in 2018 ($70,000 TAP grant plus $180,000 local funds).

Staff is developing concept plans for the City's first bike boulevard on the near west side. Likewise, the City is partnership with the Downtown Development Authority to develop a pilot for the first protected bicycle lanes on N. Division Avenue between Leonard and Monroe Center (1.5 miles). The Division Avenue corridor would connect to the planned new bicycle lanes on Newberry Street, the Belknap-Monroe North neighborhoods trail connection that will be in preliminary design next year, and also proposed east-west protected bikeways on Lyon and/or Fountain.

The City and Downtown Development Authority will be developing a manual to guide the construction of the proposed trail on the banks of the Grand River through downtown

(http://downtowngr.org/announcements/2017/08/measures-approved-080917-by-gr-dda-1). The manual will include design guidelines that inform trail building in a way that establishes an overall character and identity for the trail, provides unique themes and amenities at different points along the trail and ensures improvements along the river edges are integrated with and support restoration of the whitewater rapids in the Grand River. The project will also deliver schematic designs and construction cost estimates for 6 of the 27 riverfront opportunity sites identified in the GR Forward investment strategy to guide the next generation of growth in Downtown.

Planning staff is working with the new Transportation Planning Manager to develop even more refined bicycle parking code requirements to present to the City's Planning Commission and full City Commission for their action in 2018.

The West Michigan Mountain Biking Association will be applying for an IMBA Ride Center designation after the completion of the budgeted $200,000 remodel of the GR Bike Park.

Grand Rapids will serve as local host for a statewide bicycle safety summit in partnership with Michigan Office of Highway Safety Planning and MSU Bikes. GRBC members and City staff are participating on the event development committee.

The three West Michigan MPOs (Grand Rapids area and two adjacent lakeshore MPOs) are working with the Michigan DOT, West Michigan Trails & Greenways Coalition, the City of Grand Rapids, and Kent and Ottawa Counties on developing a regional plan and approach to systemwide trail signage for consistent safety and wayfinding. MDOT is working to identify TAP dollars to support this project.

The City has a growing partnership with Western Michigan University's federal transportation research center and will be studying intersection bicycle boxes at several intersections.

City and Downtown Development Authority staffs are now collaborating on automated bicycle and pedestrian traffic counting. Currently, the DDA has 6 auto counters around downtown and has just purchased an additional 7 counters. They will be purchasing two bicycle tube counter kits as well to collect before and after data on various projects, including the proposed N. Division protected bicycle lanes project.

City Mobility/Parking staff is updating its current bicycle locker program and is developing several bicycle parking cages in City-owned parking garages to expand higher security, covered long term bike parking options in the Downtown area. Staff will also be working to streamline getting bicycle parking into neighborhood business areas more quickly and equitably, and we anticipate making some additional improvements to the bicycle parking code requirements as well with the assistance of Planning Department staff.

The City recently applied for a People for Bikes grant to install at least 10 public bike repair stands with pumps in "bike shop deserts" around the community. If awarded the grant, Mobility/Parking Department staff in concert with Parks and Fire Department staffs, will implement some or all of the project hopefully by Active Commute Week in June 2018. Mobility staff are also hoping to install several repair stands/pumps in the covered foyers of several City parking garages where people can handle emergency repairs and quick maintenance needs in covered, well lit and secure (camera monitored 24/7/365) areas.

The Greater GR Bicycle Coalition plans to expand its LCI-instructed class offerings, including reaching out to workforce development, refugee and homeless service organizations. GGRBC also plans to expand Active Commute Week activities for June 2018, and City staff is slated to host a workshop a few month before ACW to train companies how to sponsor their own ACW activities and commuter challenge teams.

G6. We often get requests for example BFC applications from aspiring communities. Are you willing to share your application?

- (●) Yes
- ( ) No

G7. How did you hear about the Bicycle Friendly Community program?

The City of Grand Rapids is a current Bicycle Friendly Community.

Supplementary Materials

Optional: If you would like to share any supplemental materials to support your application, please upload your files here.

By submitting photos here, you are granting the League of American Bicyclists the right to use your images to promote bicycling.

File 1 Bicycle Ordinance Changes - Aug2015.pdf

Bicycle Ordinance Changes Proposed and Approved in August 2015

File 2 Vital Streets Plan FINAL (Dec2016).pdf

Name or Description of File

City's Vital Streets Plan - Adopted December 2016 (http://grcity.us/Pages/City-Commission-adopts-Grand-Rapids-Vital-Streets-Plan.aspx)

File 3 Downtown_BikeMap_LR_2013_DGRI.pdf

Name or Description of File Downtown Focused Bicycle Map

File 4 Jefferson Street Advisory Bike Lanes 02.jpg

Description of File: Jefferson Street Advisory Bicycle Lanes adj to porous pavement parking lanes (Ward 3)

Description of File State Street Bike Lanes with Cement Bike Lanes, Brick Street.jpg

Description of File Monroe CycleTrack Opening Video.MOV

Description of File Opening Event for the Monroe Avenue Cycletrack - VIDEO

Description of File Community Bike Event - Lenear, Bliss, Heartwell.jpg

Mayor's Bike to Work Week Ride - Mayor Heartwell, Commissioners Bliss and Lenear, community members

Description of File Spoke Folks Mobile Repairing GRPD Police Bike at Event.jpg

The Spoke Folks bicycle cooperative doing bike repair at the Mayor's Bike to Work Week Ride

Description of File Active Commute Week Poster (2016)

GGRBC Bike Parking Valet (JDuggan).jpg

Description of File

Event Bike Parking Valet Service Provided by Greater Grand Rapids Bicycle Coalition

GRAND RAPIDS, MI

BICYCLE FRIENDLY COMMUNITY
Fall 2017
BRONZE
THE LEAGUE OF AMERICAN BICYCLISTS

TOTAL POPULATION
196,445

TOTAL AREA *(sq. miles)*
45

POPULATION DENSITY
4,339

OF LOCAL BICYCLE FRIENDLY BUSINESSES 8

OF LOCAL BICYCLE FRIENDLY UNIVERSITIES 1

10 BUILDING BLOCKS OF A BICYCLE FRIENDLY COMMUNITY

	Average Silver	*Grand Rapids*
High Speed Roads with Bike Facilities	40%	41%
Total Bicycle Network Mileage to Total Road Network Mileage	47%	18%
Bicycle Education in Schools	GOOD	NEEDS IMPROVEMENT
Share of Transportation Budget Spent on Bicycling	11%	3%
Bike Month and Bike to Work Events	GOOD	GOOD
Active Bicycle Advocacy Group	YES	YES
Active Bicycle Advisory Committee	MEETS EVERY TWO MONTHS	NONE
Bicycle–Friendly Laws & Ordinances	SOME	VERY GOOD
Bike Plan is Current and is Being Implemented	YES	UNDER DEVELOPMENT
Bike Program Staff to Population	1 PER 91K	1 PER 79K

CATEGORY SCORES

ENGINEERING *Bicycle network and connectivity*	4.0 /10
EDUCATION *Motorist awareness and bicycling skills*	3.5 /10
ENCOURAGEMENT *Mainstreaming bicycling culture*	4.2 /10
ENFORCEMENT *Promoting safety and protecting bicyclists' rights*	4.7 /10
EVALUATION & PLANNING *Setting targets and having a plan*	3.1 /10

KEY OUTCOMES

	Average Silver	*Grand Rapids*
RIDERSHIP *Percentage of Commuters who bike*	2.6%	0.9%
SAFETY MEASURES **CRASHES** *Crashes per 10k bicycle commuters*	549	1,134
SAFETY MEASURES **FATALITIES** *Fatalities per 10k bicycle commuters*	7.3	12.9

KEY STEPS TO SILVER

» Bicycle-safety education should be a routine part of education, for students of all ages, and schools and the surrounding neighborhoods should be particularly safe and convenient for biking and walking. Work with local bicycle groups and interested parents to expand and improve your in-school bicycle education program.

» Improve Bike Month activities by creating a Bike to School Day event. Bike to School Day events can include competitions related to bicycle use, outreach to parents, and coordination between the schools and the city to create safer routes to schools.

» Your application indicated that your community is currently developing a bicycle master plan. This is a great step to improving conditions for bicycling and institutionalizing processes for continual improvement. Your Bicycle Master Plan should take advantage of best practices that are applicable to a community of your size, including the use of separated bike lanes, targeted education programming, and demonstration projects to help the community understand possible bicycle facilities.

Outline: Grand Rapids Bicycle Education Project Crash Analysis

To: Piotr Lewak, PE – Traffic Safety, MDOT

From: Cynthia Hoyle, Mathew Berkow, Kristen Maddox, Alta Planning + Design

Date: December 3, 2014

Re: Potential bicycle education programs for Task 2E review

This memo presents the results of an analysis on bicycle involved crashes in the Grand Rapids region. It uses the most recent ten years for which data are available (2004-2013) to identify trends and answer questions regarding the 'who, what, where, when, why and how' of bicycle crashes. The memo presents a series of figures under each of the category headers. The final report will contain maps illustrating crash trends. The team will append the report upon the maps' completion.

Grand Rapids has one of the worst bicycle-related crash rates in Michigan. Table 1, below, compares the Greater Grand Rapids area data to state averages:

Table 1. Grand Rapids Area Crashes Compared with Michigan Averages

	Grand Region (2008-2012)	City of Grand Rapids (2008-2012)	Michigan Average (2008-2012)
Bike Crashes as Percent of Total Crashes	0.9%	1.2%	0.7%
Percent of Bike Crashes that are Fatal	4.2%	8.2%	2.8%
Percent of Bike Crashes with Incapacitating Injuries	4.0%	1.9%	3.5%

Statistics contained in this report originated from police reports filed through the Michigan Traffic Crash Facts database. Crashes within the study area reflect the national phenomenon of under-reported bicycle crashes. Although the report reflects the most accurate and most up-to-date information available, the dataset can only contain crashes that are reported to the police. The level of underreporting within the study area is

unknown. Studies in other communities reveal that as many as 90% of crashes with injuries on private roadways are unreported.[1]

The results of this analysis will be used to inform the development of messaging campaigns designed to improve bicycle safety. These campaigns will be responsive addressing the trends in bicycle crashes identified in this memo. Key findings are provided below, followed by the detailed analysis.

Key Findings

Below are key findings from the crash analysis that may inform the safety messaging campaign that will be developed as part of this project.

What

- Bicyclists are 7 times more likely than drivers to be injured in a bike-vehicle crash (99% vs 14%).
- Over 96% of crashes involve passenger cars/station wagons, pickups and vans/motorhomes.

Who

- Youth (10-19) and young adults (20-24) are over-represented as bicyclists in crashes, as compared to their share of the general population. Males are over-represented, representing 80% of crashes.
- Driver age patterns are reflective of the general population. Males are slightly over-represented, representing 53.5% of crashes

When

- Crash data indicates a small morning peak period around 7 am and a much longer evening peak period from approximately 3-7 pm. School age children (0-17) make up a relatively larger portion of bicycle crashes occurring during the afternoon peak period, beginning when school lets out in the afternoon.
- Crashes are more common during the warmer summer months, likely reflecting higher ridership during these months.
- Crashes are more common during the week, perhaps indicative of more weekday riding. Roads also carry higher weekday traffic volumes, particularly during peak periods, when many crashes occur.
- 80% of crashes take place during daylight hours. The share of crashes occurring under dark, dusk, or dawn conditions is higher during the winter months when days are shorter.

Where

- Arterial roads (high crash corridors and intersections)
    - Nearly 60% of crashes took place on an arterial roadway (or at an intersection that included an arterial roadway), though arterials represent only 17% of the roadway miles in the region.
    - Approximately half of bicycle crashes on arterial streets take place at traffic signals.
    - Crashes appear to be concentrated on a number of high crash corridors.

[1] The level of underreporting on public roadways and off-road paths is unknown.

- Intersections and turning vehicles
    - Over 60% of bicycle crashes occur within an intersection or are intersection related. Nearly all crashes at intersections took place at or near a signalized or stop controlled intersection.
    - At traffic signals, over 40% of crashes involved a right turning vehicle, approximately 15% involved a left turning vehicle, and 28% involved a vehicle going straight.
    - At stop signs, nearly half of crashes involved a vehicle going straight, followed by left turning and then right turning vehicles.
- Stop signs on local roads
    - Local streets represent over 60% of the roadway miles in the region, but only 26% of crashes.
    - More than half of crashes on local streets took place at stop signs.
- Driveways
    - 17% of bicycle crashes are driveway related.

How

- Right and left turning movements are prominent vehicle actions
    - Twice as many crashes involved right turning vehicles (25% of all crashes) as compared to left turning vehicles (12% of all crashes). Over 35% of crashes involved vehicles traveling straight.
- Very few crashes involve turning bicyclists.
    - The majority of crashes involve the bicyclist going straight, followed by crossing at an intersection (there appears to be overlap in these two categories, as both actions can be found in intersection crash records).

Why

- The bike failed to yield in 20% of reported crashes and disregarded the traffic control in 6.5% of crashes. Approximately 60% of crashes have a recorded hazardous bicycle action of 'none' or 'other'.
- The vehicle failed to yield in nearly 30% of bicycle crashes. The vehicle hazardous action was recorded as 'none' in just over 50% of crashes.

What

Annual trends

Table 2, below, illustrates the number of bicycle involved crashes over the previous 10 years from which data are available (2004-2013).

- Grand Rapids has experience approximately 95 reported bicycle crashes per year, followed by Wyoming at nearly 30 per year and Kentwood at approximately 15 per year.
- Over the 10 year period, there were 958 crashes in Grand Rapids and 648 crashes in the other cities in the region.

Given the small sample size of crashes in the smaller cities, the analysis in the following sections sometimes presents trends as two figures, one for Grand Rapids and the other for All Other Cities in the region.

Table 2 – Summary of Bike Crashes in the Grand Rapids Region (2004-2103)

YEAR	Grand Rapids	Wyoming	Kentwood	East Grand Rapids	Grandville	Plainfield Township	Walker	Grand Rapids Township	Alpine Township	All Other Cities Total
2004	116	38	12	3	3	5	3	2	1	67
2005	91	25	11	5	2	6	4	2	-	55
2006	92	24	16	4	1	2	5	-	2	54
2007	88	26	19	6	5	6	3	1	-	66
2008	99	37	13	9	8	6	5	3	1	82
2009	112	21	10	5	7	4	4	3	-	54
2010	89	31	15	7	2	-	5	1	1	62
2011	96	35	13	8	8	3	5	-	-	72
2012	93	18	27	8	6	7	7	2	1	76
2013	85	27	17	4	6	3	5	1	1	64
10 Year Total	**961**	**282**	**152**	**59**	**48**	**42**	**46**	**15**	**7**	**652**
Ave. crashes per year	**96**	**28**	**15**	**6**	**5**	**5**	**5**	**2**	**1**	**65**
Population (2010 Census)	188,040	72,125	48,707	10,694	15,378	30,195	23,537	16,661	13,336	
Annual crashes /10k population	5.1	3.9	3.1	5.5	3.1	1.5	2.0	1.1	0.9	

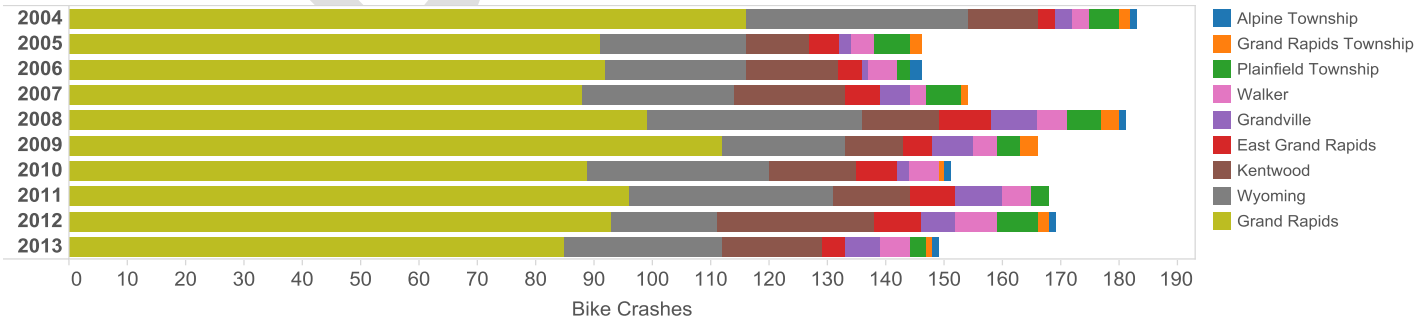


Figure 1 – Number of Bike Crashes by City (2004-2013)

Ridership Information: Statewide and Local Data

Understanding the number of bicyclists in a given place helps give meaning to crash statistics. The information helps interpret the relative risk of bicycle crashes. Previous efforts have attempted to understand Grand Rapids' level of bicycle ridership.[2] There is significantly less information available for surrounding communities. Census data for "means to work" for the City of Grand Rapids from 2006-2013 shows an average 0.9% mode share for bicycling.[3] The total number of riders counted during annual bicycle counts within Grand Rapids has increased by 60% from 2011 to 2013. Additionally, 56% of adult respondents to the 2013 MDOT Household Survey on Bicycling reported having ridden a bicycle within the past year. Continuing to collect ridership estimates over time across the city and region will add more certainty to available exposure and risk data.

Injury Severity

Michigan's bicyclist fatality rate is 13th highest in the nation, just one rank shy from placing in the top 25% of states with the highest rate of bicycling deaths per 10,000 bicycling commuters.[4] In Michigan in 2013, 37.8% of bicyclists involved in crashes experienced non-incapacitating injuries. A bit more than one in ten sustained incapacitating injuries (11.1%) and 1.8% were killed. Almost half (49.3%) had possible injuries.[5]

Figure 2 identifies the injury severity of the study area bicyclist involved in the crash, while Figure 33 identifies the injury severity of the study area driver. Not surprisingly, bicyclists are much more likely to sustain an injury.

- Only 14% of all bicyclists walked away with no injury, as compared to 99% of drivers[6].
- Over the 10 years, bicycle crashes resulted in 11 reported bicycle fatalities and 0 driver fatalities.
- No information is available about bicyclists' helmet use at the time of the crash.

[2] Greater Grand Rapids Bicycle Coalition, Bicycle Traffic Counts and Cyclist Surveys, 2011-2014; Community and Economic Benefits of Bicycling in Michigan, MDOT, 2014; US Bureau of the Census, American Community Survey

[3] http://www.census.gov/acs/www/

[4] Alliance for Biking & Walking, 2014 Benchmarking Report, pg. 79.

[5] http://publications.michigantrafficcrashfacts.org/2013/2013Bicycles.pdf

[6] These figures exclude crash records where this field was labeled 'uncoded and errors'

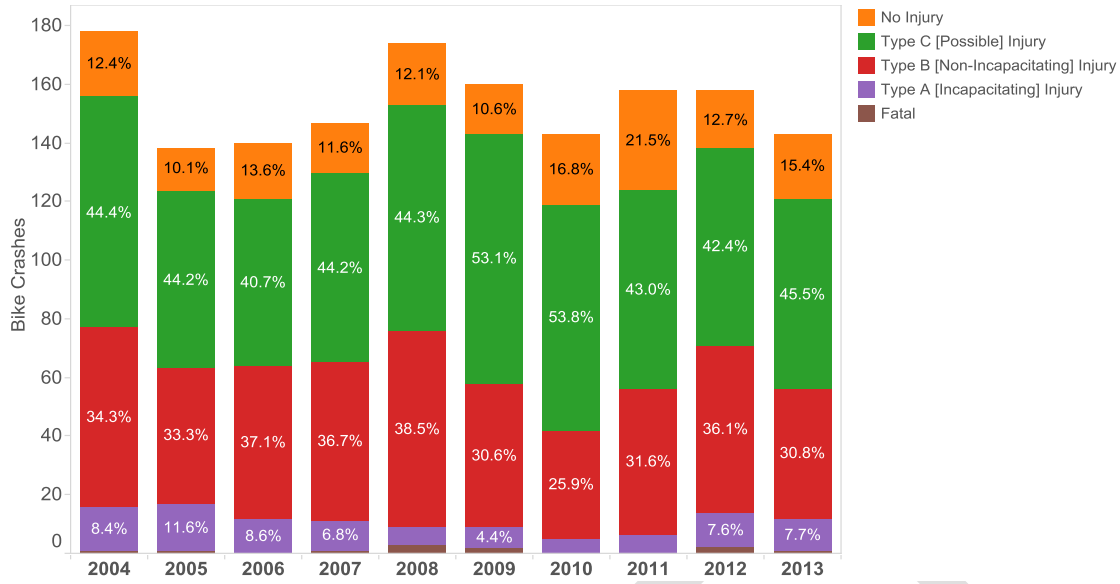


Figure 2 – Severity of Injury to Bicyclist[7]

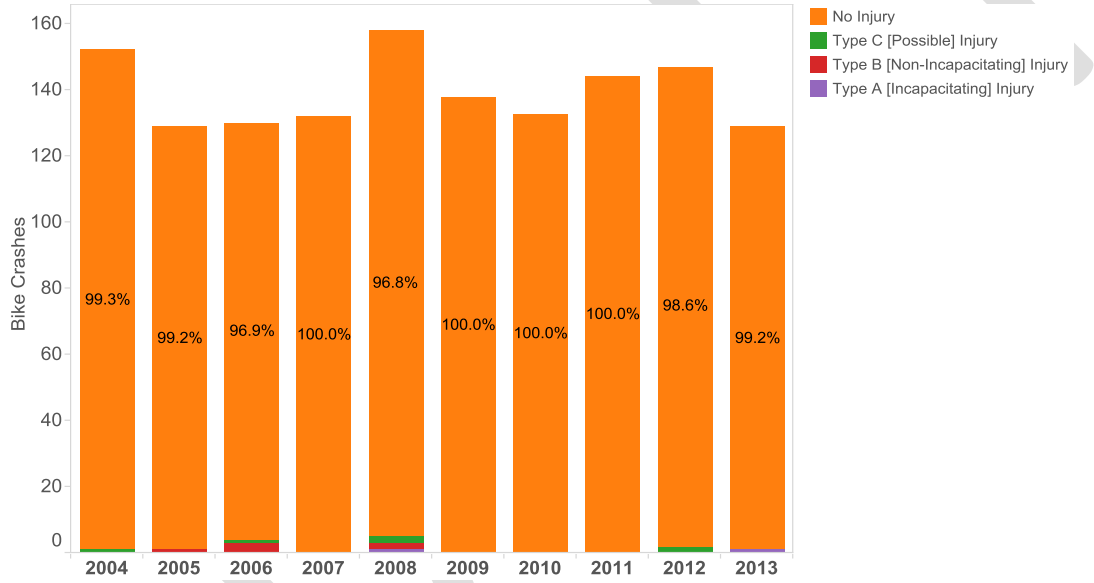


Figure 3 – Severity of Injury to Driver

[7] To enhance readability, fatal crashes are not labeled on the graph. Fatal crash percentages are as follows: 0.5% in 2004; 08.% in 2005; 0.0% in 2006; 0.7% in 2007; 0.7 in 2008; 1.3% in 2009; 0.0% in 2010; 0.0% in 2011; 1.2% in 2012; 0.6% in 2013.

Motor vehicle type

Passenger vehicles make up approximately 80% of the vehicles involved in crashes with bicycles, followed by pickup trucks at 8-10% and vans/motorhomes at approximately 7.5%. Trends are similar in Grand Rapids and the Other Cities. Note that in Figure 4 below, the word 'cycle' refers to a motorcycle rather than a bicycle.

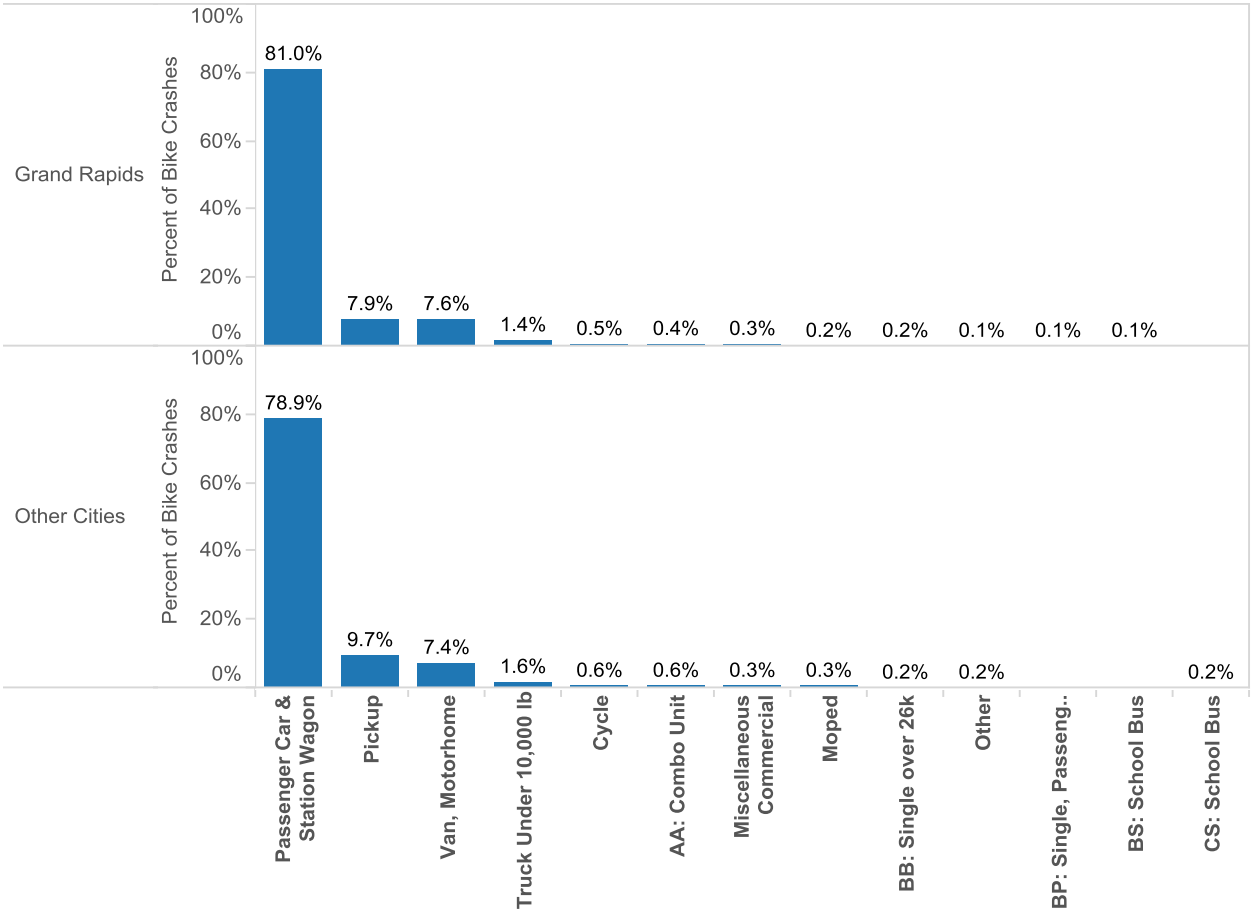


Figure 4 – Type of Vehicle Involved in Crashes with Bicycles

Who

Bicyclists Age and Gender

Youth are prominent in the bicycle crash data. Over 50% of bicycle crashes involve people 24 years old or younger. Figure 5 illustrates the age distribution of bicyclists involved in crashes with the age distribution of the overall population of the region. **People in the 10-24 age range are over-represented in the crash data as compared to their relative share of the overall population.**

In 2013, 16-24 year olds made up 4% of people who rode a bicycle at least once within the past year. Grand Rapids area crash data shows that this age group was involved in 33% of the bicycle related crashes within the study area.[8] Children within these communities age 16 and younger represent over 20% of the total number of bicycle crashes within the ten year time period. National data shows that children under 16 represented 39% of all bicycle trips between 2009 and 2011, whereas they represented 11% of bicyclist fatalities within the same period.

National trends point to disproportionately high rates of older adults involved in transportation collisions. Adults age 65 and older took 7% of bicycle trips from 2009-2011, yet 12% of the fatal injuries occurred in people 65 and older.[9] Grand Rapids data did not find a disproportionately high share of senior citizens involved in bicycle crashes.

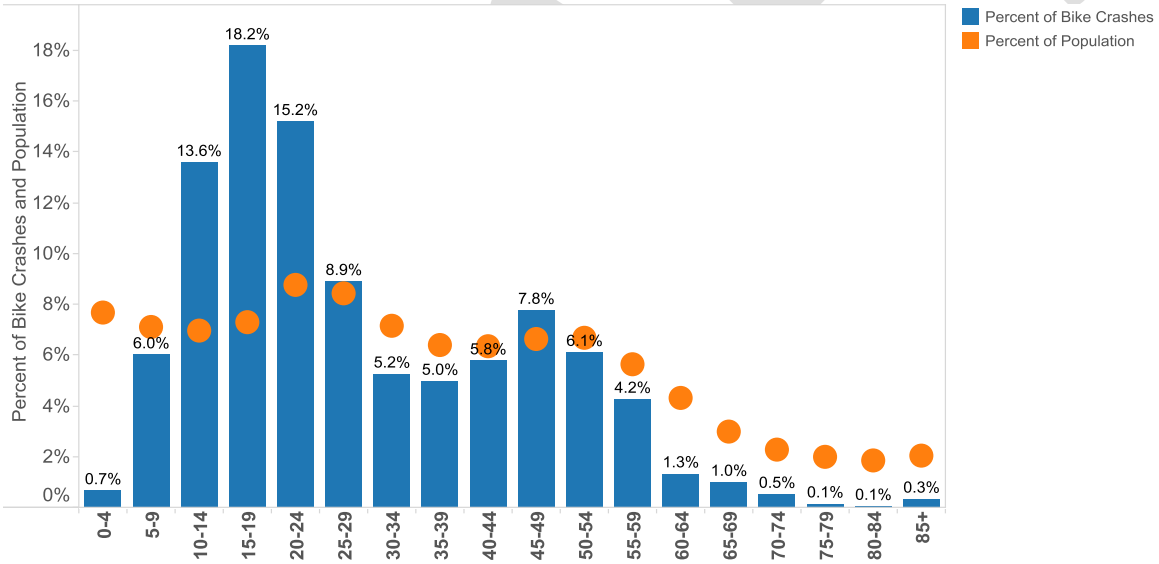


Figure 5 – Age of Bicyclists as Compared to Share of the General Population

Age patterns as well as gender breakdown of bicyclists involved in crashes are similar between Grand Rapids and the Other Cities. **Male bicyclists are over-represented in the data, representing 80% of crashes**. Surprisingly, the male prominence in crashes holds true even among youth involved in crashes.

[8] MDOT, Grand Rapids Case Study—Community and Economic Benefits of Bicycling, pg. 16. Note: One must remember the crash data represents data collection over ten years, versus one year of data for bicycle ridership.
[9] Ibid, pg. 78. Please note that this statistic only measures bicycle commuting trips.

Also noteworthy, the gender split continues on a statewide level: male bicyclists were involved in crashes 80% of the state's 2013 crashes.[10]

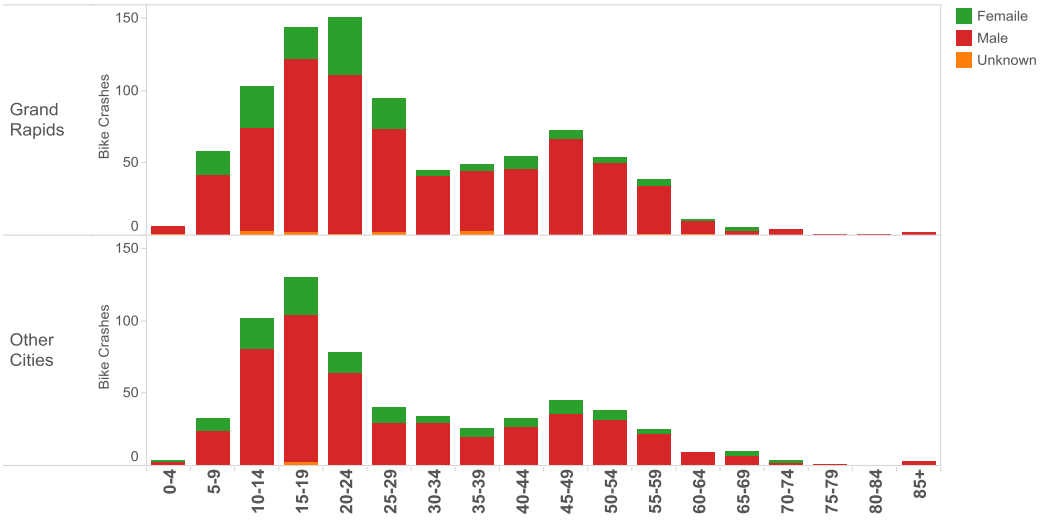


Figure 6 – Age and Gender of Bicyclists

Drivers Age and Gender

The age distribution of drivers involved in bicycle crashes matches the age distribution of the overall driving age population. Young drivers in the 15-19 range are appear underrepresented in crashes, though this is likely due to the break points of the Census data with includes 15 year olds, who are not of driving age.

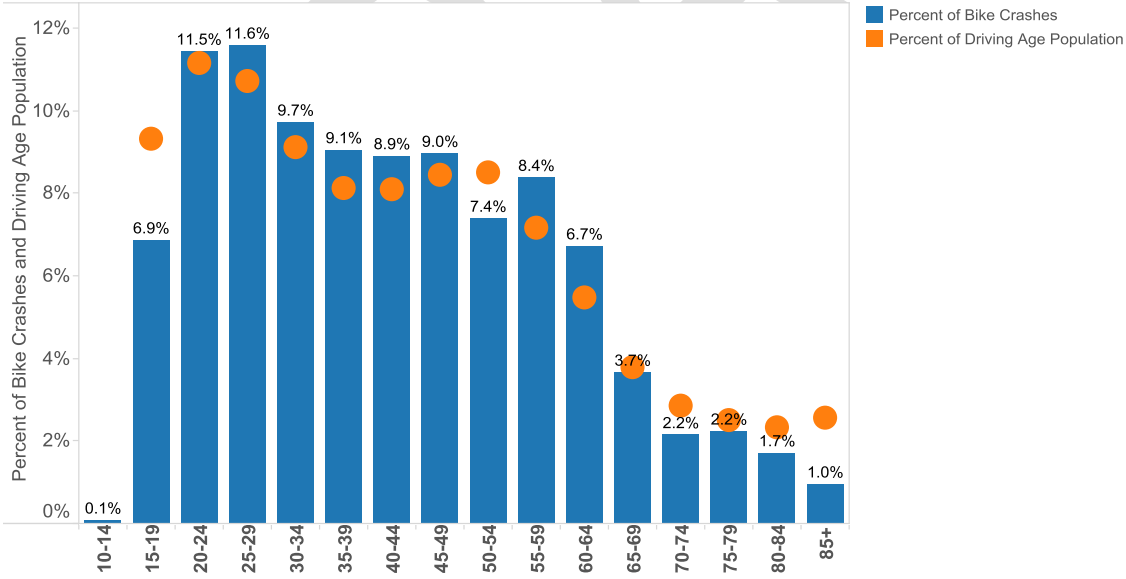


Figure 7 - Age of Drivers as Compared to the Population of the Driving Age Population

[10] This figure does not include the 37 crashes that were not assigned a gender. Males were involved in 1494 crashes, females 371.

Males are slightly over-represented as drivers, representing 53.5% of crashes. Patterns in driver age are similar between Grand Rapids and the Other Cities.

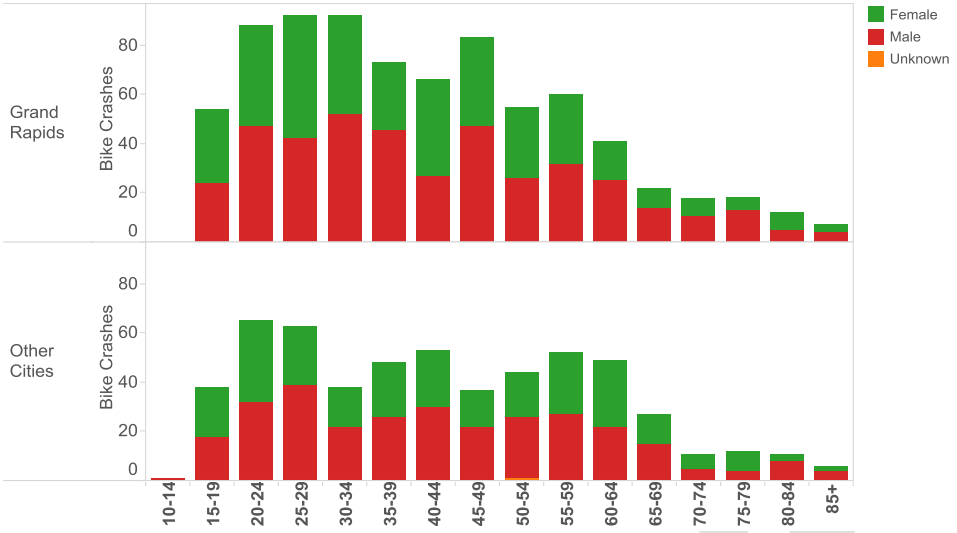


Figure 8 – Age and Gender of Drivers

When

Time of Day

Crash trends by time of day are similar in Grand Rapids and the Other Cities, with a smaller morning peak period around 7 am and a much longer evening peak period from approximately 3-7 pm (Figure 9).

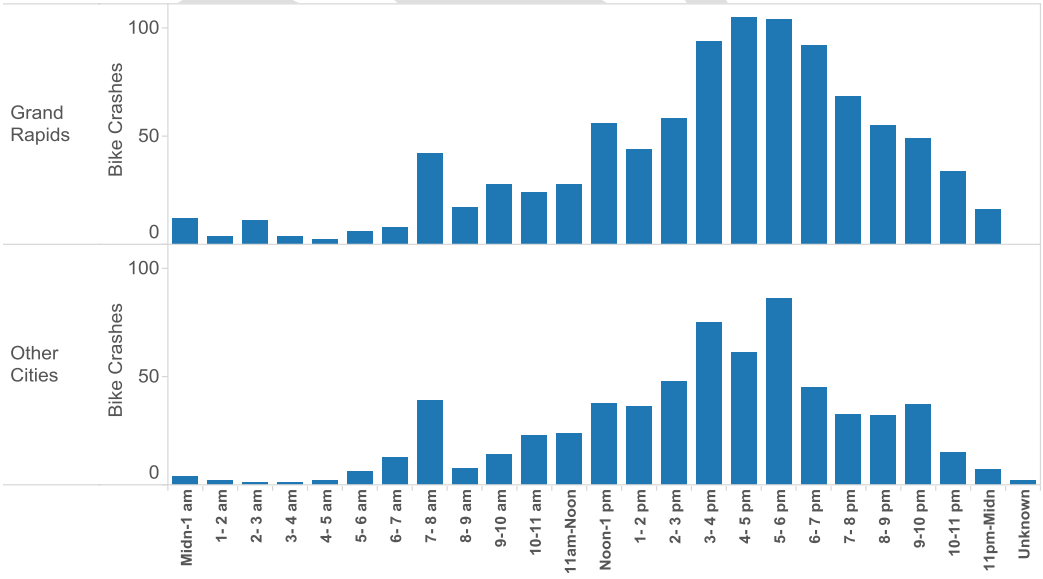


Figure 9 – Time of Day

School age children make up a relatively larger portion of the bicycle crashes occurring during the afternoon peak period, beginning when school lets out in the afternoon (Figure 10).

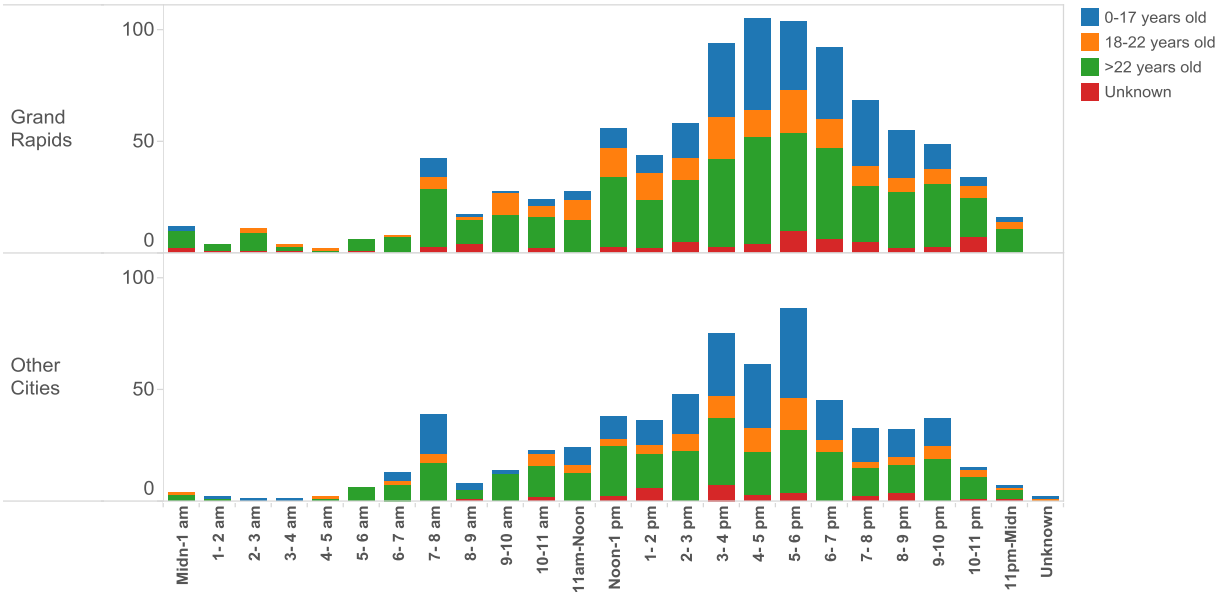


Figure 10 – Time of Day, by Age of Bicyclist

Month of Year

Crashes by month of year likely reflect general bike ridership patterns, with the highest share of crashes found in the summer months of June, July and August and relatively fewer crashes in the colder, winter months.

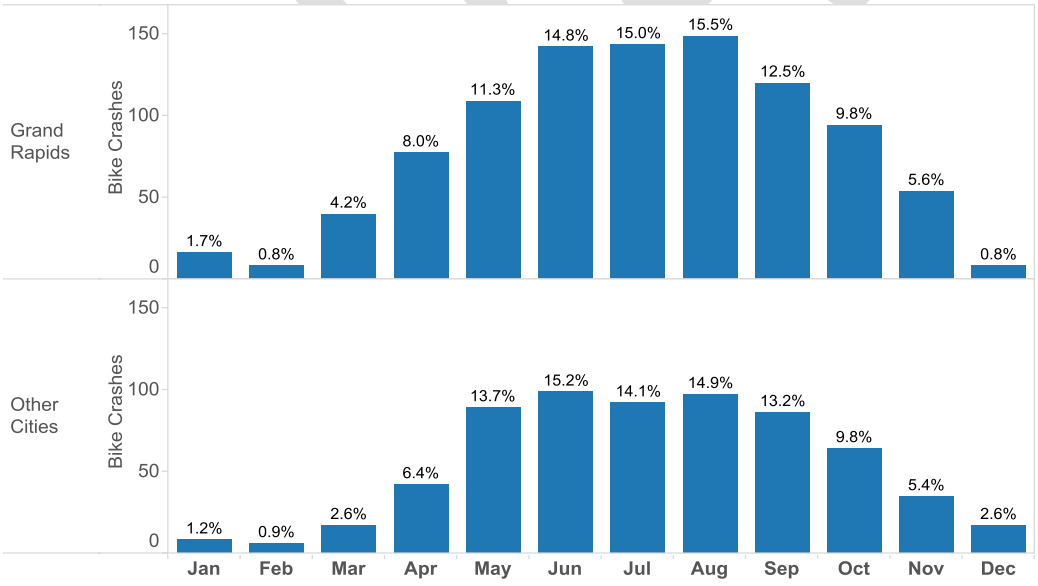


Figure 11 – Bike Crashes by Month of Year

Day of Week

The crash data indicates that crashes are more likely to occur during the week, perhaps indicative of general ridership patterns in the region. Weekdays are also when the roads are carrying higher volumes of motor vehicles, particularly during the peak periods when many bike crashes take place.

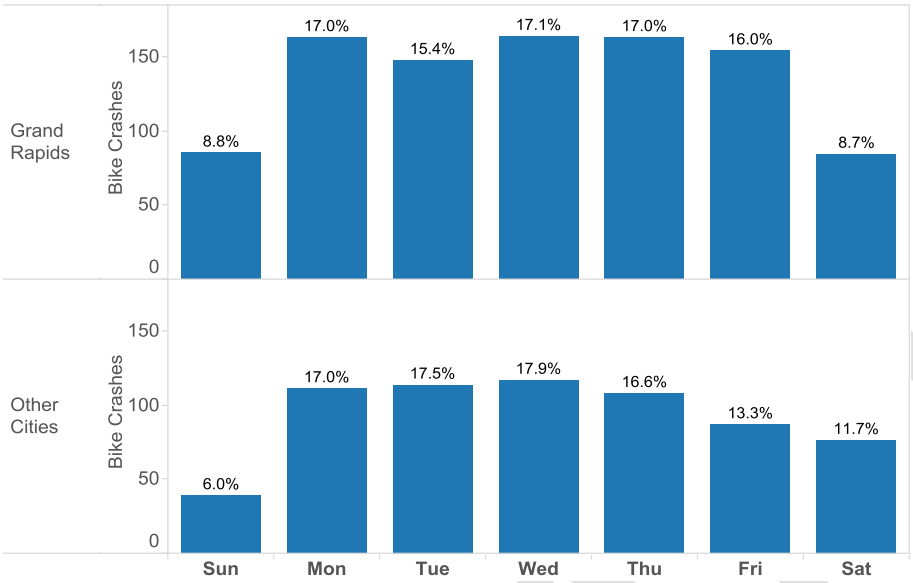


Figure 12 – Bike Crashes by Day of Week

Daylight

Nearly 80% of crashes occur in the daylight hours, likely reflective of the fact that ridership is highest in the summer months when days are longer. Approximately 20% of crashes take place in dark, dusk or dawn conditions. According the data, may crashes occur in locations where street lights are present, which likely reflects the fact that a large number of crashes take place on major roadways and at signalized intersections.

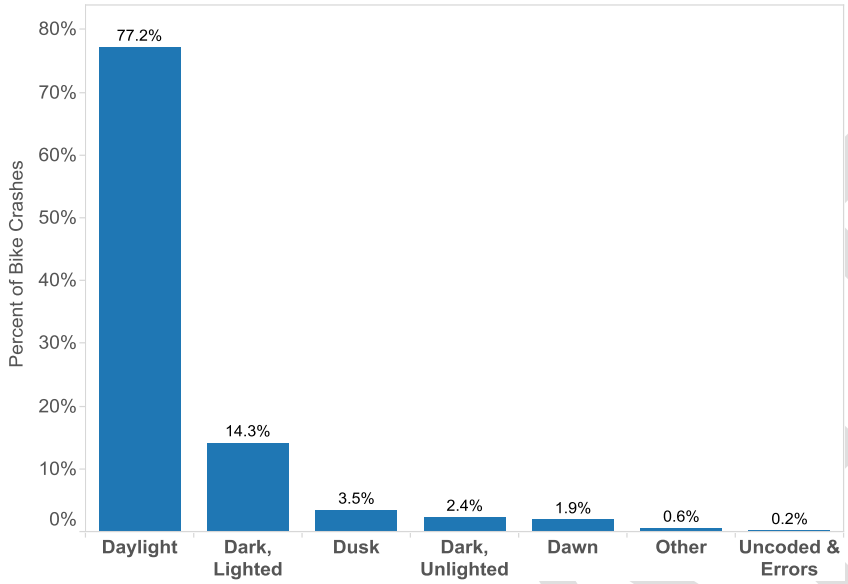


Figure 13 – Crashes by Presence of Daylight

Figure 14 below indicates that crashes are more likely to occur under dark, dusk or dawn conditions during the winter months when days are shorter. These months may be good times to remind bicyclists to be visible.

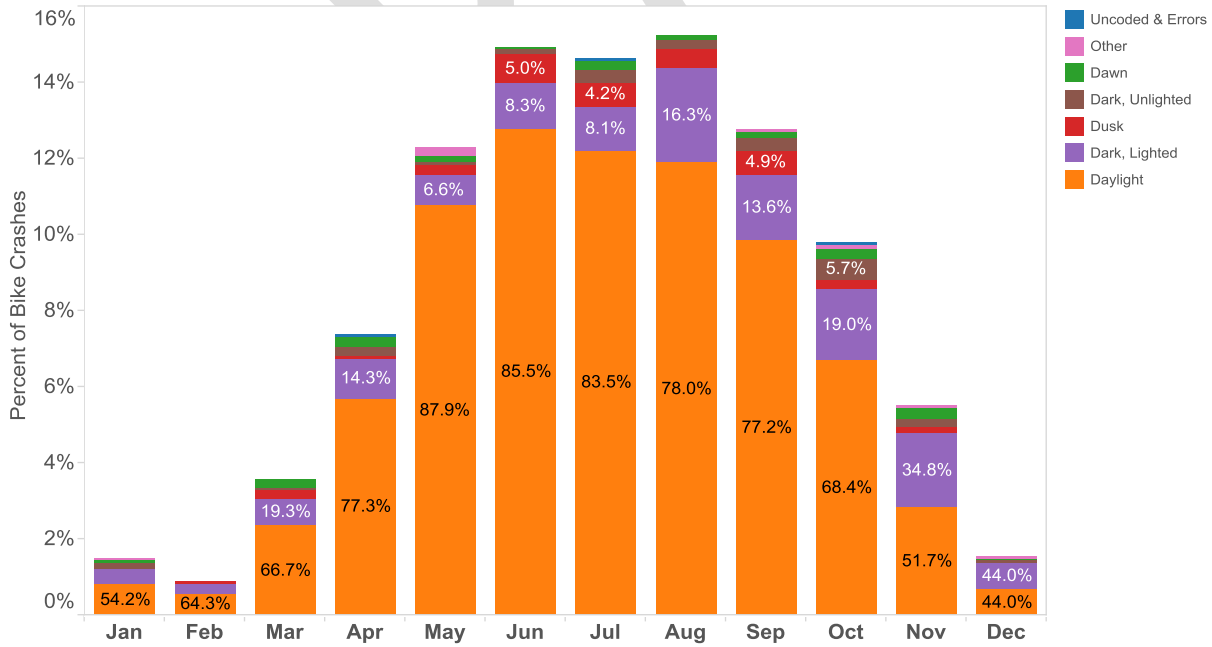


Figure 14 – Daylight by Month

Where

Roadway Functional Class

Of the 29 fatal crashes in 2013 involving bicyclists across Michigan, 27 occurred on Michigan roadways. Figure 15 identifies the number of crashes on different types of roadways within the study area. It includes both segment and intersection crashes[11].

Table 3 compares the share of crashes on each roadway type with amount of roadway miles for each classification (centerline miles rather than lane miles).

- **Nearly 60% of crashes took place on an arterial roadway (or at an intersection that included an arterial roadway), though arterials represent only 17% of the roadway miles in the region.**
- 26% of crashes took place on local streets (or at the intersection of two local streets), which represent over 60% of roadway miles in the region.

Arterials are commonly over-represented in the study area-specific crash data, since arterials are streets that carry relatively higher volumes of traffic and tend to contain destinations people of all modes wish to access. Given the higher risk to bicyclists traveling on arterial streets, high crash arterial corridors (identified in Table 4 later in the memo) may be optimal locations for bicycle safety messaging campaigns aimed at all roadway users.

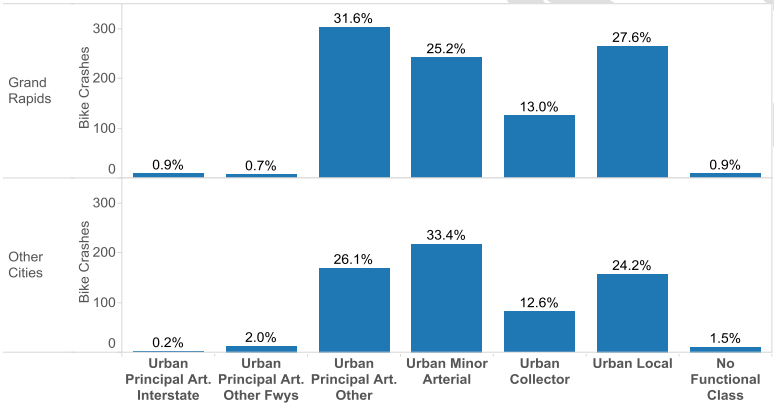


Figure 15 – Roadway Functional Class

Table 3 – Crashes by Functional Class as Compared to Roadway Miles

Functional Class	Percent of Crashes	Roadway Miles	Percent of Roadway Miles
Interstate/Freeway	1.8%	279	7.4%
Arterial	57.9%	638	17.1%
Collector	12.8%	533	14.2%
Local	26.2%	2,294	61.3%

[11] When a crash takes place at the intersection of two streets, the functional class of the higher order street recorded in the Functional Class field in the data.

No functional Class[12]	1.2%		
Total	100%	3,744	100%

Type of Area

Intersections appear to be the most dangerous places for bicyclists. Overall, the average throughout the study area—Grand Rapids combined with the other cities—is nearly 62% of bicycle crashes occur within an intersection or are intersection related. Nearly 17% occur on a straight roadway, while another **17% are driveway related**. Approximately 2% occur at entrance/exit ramps.

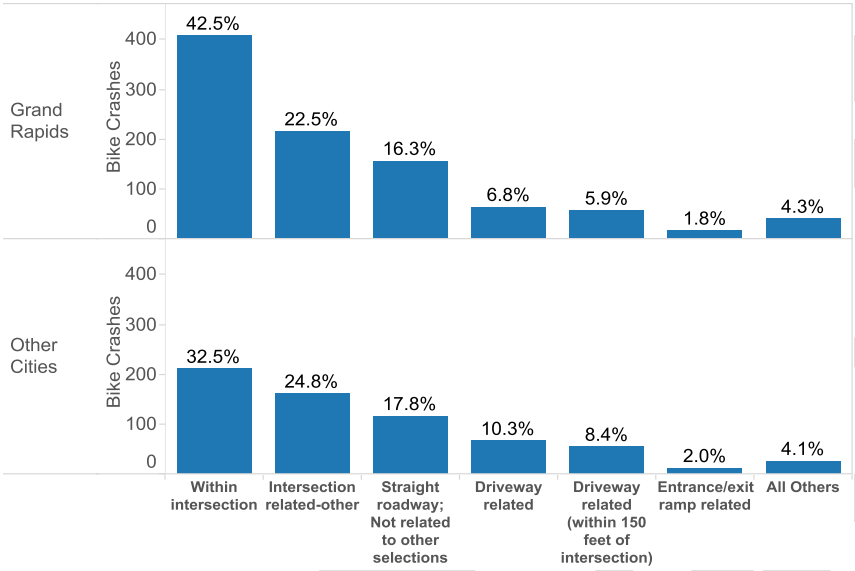


Figure 16 – Area Type

Area by Traffic Control

Figure 17 combines the two intersection and two driveway classifications to provide a streamlined view of crash locations by type of traffic control present. **Nearly all of the 60% of crashes occurring at intersections take place at or near a signalized intersection or stop controlled intersection.** As expected, there is typically no traffic control present for crashes occurring on a straight roadway or for driveway related crashes.

[12] 654 miles of roadway classified as 'unknown' in the roadway file and are not included in the mileage calculation.

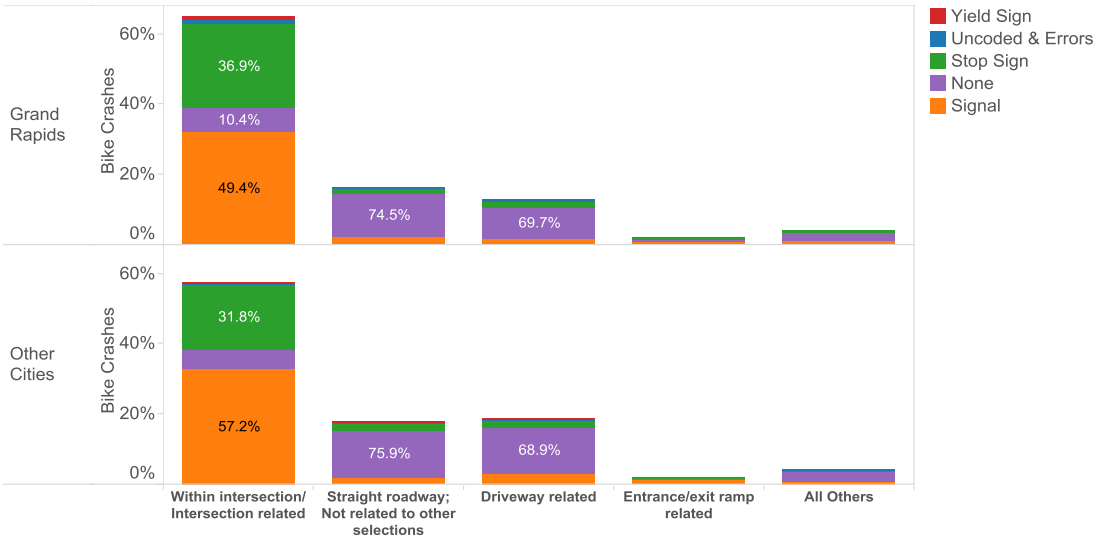


Figure 17 – Area Type by Traffic Control

Functional Class by Traffic Control

Approximately half of bicycle crashes on arterial streets take place at traffic signals. On collector streets, 45% of crashes take place at traffic signals. **More than half of crashes on local streets take place at stop signs.**

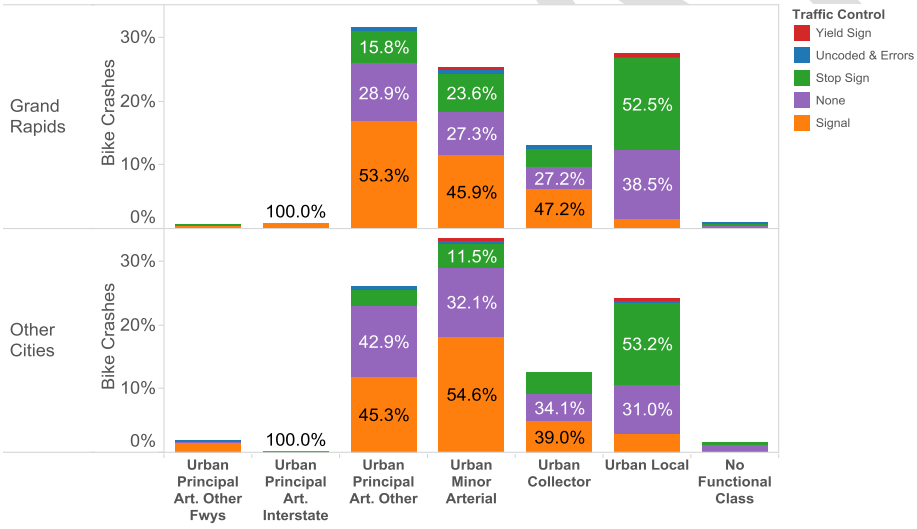


Figure 18 – Functional Class by Traffic Control

Traffic Control by Vehicle Preceding Action

Over 40% of crashes at traffic signals involved a right turning vehicle and approximately 15% involved a left turning vehicle and 28% involved a vehicle going straight.

Nearly half of crashes at stop signs involved a vehicle going straight, followed by left turning and then right turning vehicles.

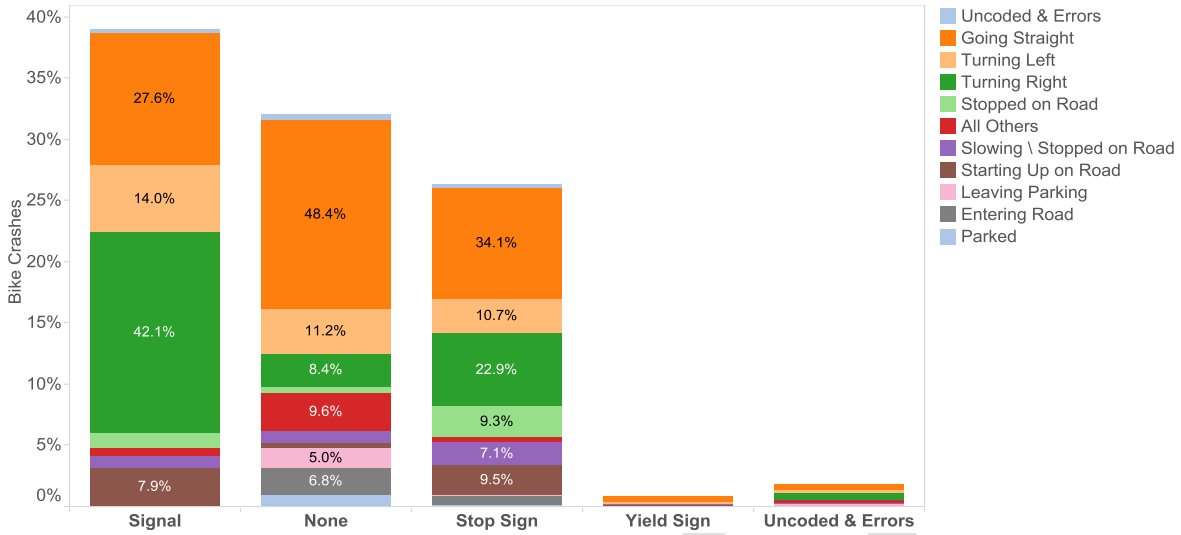


Figure 19 – Traffic Control by Vehicle Preceding Action

High Crash Streets

The streets with the most bicycle crashes over the ten year study period are identified in Table 4. It includes both segment and intersection crashes.[13] As expected, most of the highest crash streets are located in Grand Rapids, the largest city in the region. Streets with more than ten crashes are also located in Wyoming, Kentwood and East Grand Rapids. Overall, **the 20 streets in this table account for nearly 40% of the bicycle crashes in the region**.

Table 4 – Streets with the Most Crashes in the Grand Rapids Region

Street	Grand Rapids	Wyoming	Walker	Kentwood	Grandville	East Grand Rapids	Plainfield Township	Grand Rapids Township	Alpine Township	Total
Division	50	18		8	1					77
Fulton	51							1		52
Leonard	49		3							52
44th	6	18		14	6					44
28th	13	23		2	3					41
Kalamazoo	21			12						33
Burton	28	1		3						32
Eastern	21			9						30
36th	1	26			2					29
Lake	16					12				28
Wealthy	19					8				27
Clyde Park	5	20								25
Hall	17					7				24
Michigan	22									22
Plainfield	14						7			21
Lafayette	20									20
Alpine	9		8						2	19
Cherry	19									19
Fuller	19									19
L. Michigan	16		3							19
Top 20 Subtotal	416	106	14	48	12	27	7	1	2	633
All Others	545	176	32	105	36	32	35	14	5	980
Total	**961**	**282**	**46**	**153**	**48**	**59**	**42**	**15**	**7**	**1,613**
% Crashes on top 20 streets	**43%**	**38%**	**30%**	**31%**	**25%**	**46%**	**17%**	**7%**	**29%**	**39%**

[13] When a crash takes place at the intersection of two streets, the name of the street with the higher functional class is recorded in in the data.

How

Bicyclist Preceding Actions

The **majority of crashes involve the bicyclists going straight, followed by crossing at an intersection**. As indicated in the following section, there appears to be some overlap in these two categories, as both of these actions can be found in intersection crash records. **A smaller number of crashes involve the bicyclist entering the road or crossing mid-block**. Very few crashes involve turning bicyclists.

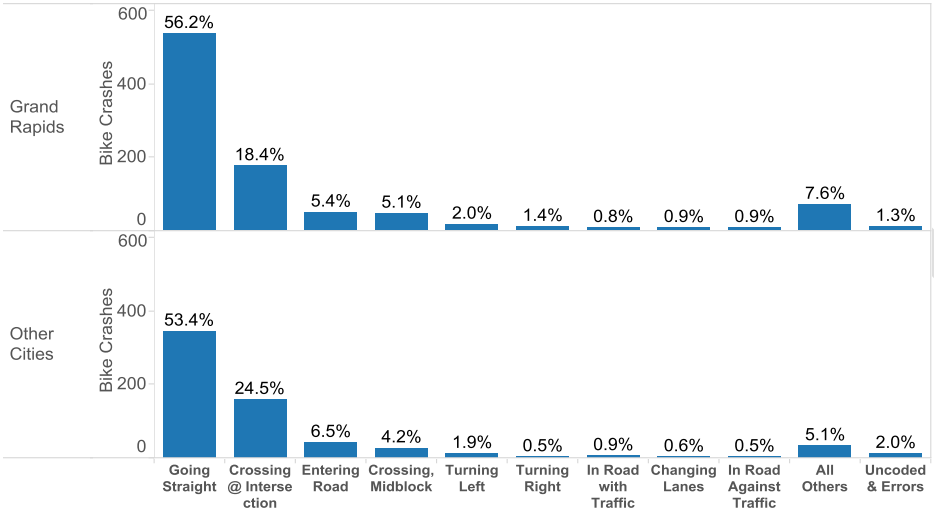


Figure 20 – Bicyclist Previous Action

The study area data suggests that a crash that involved a bicyclist traveling straight through an intersection could have been coded as either of these top two categories from Figure 20 above. Figure 21 below provides greater detail on how the bicycle action varies by location. More than ½ of crashes in which a bicyclist was going straight occurred within an intersection or were intersection related. On a statewide scale, 51.9% of bicyclists killed in Michigan in 2013 were riding straight ahead prior to the crash.[14] It is unclear how many crashes involve a bicyclist hit by an opening car door. Future access to this information would assist in developing crash countermeasures.

Sidewalk riding rates are largely unknown. Five crashes (0.5%) are coded as "not in road". There are 21 coded "other" and eight marked 'unknown". Crashes in which the rider was entering the roadway (49 events) may also have involved sidewalk riding, however the actual number is not known.

[14] http://publications.michigantrafficcrashfacts.org/2013/2013Bicycles.pdf

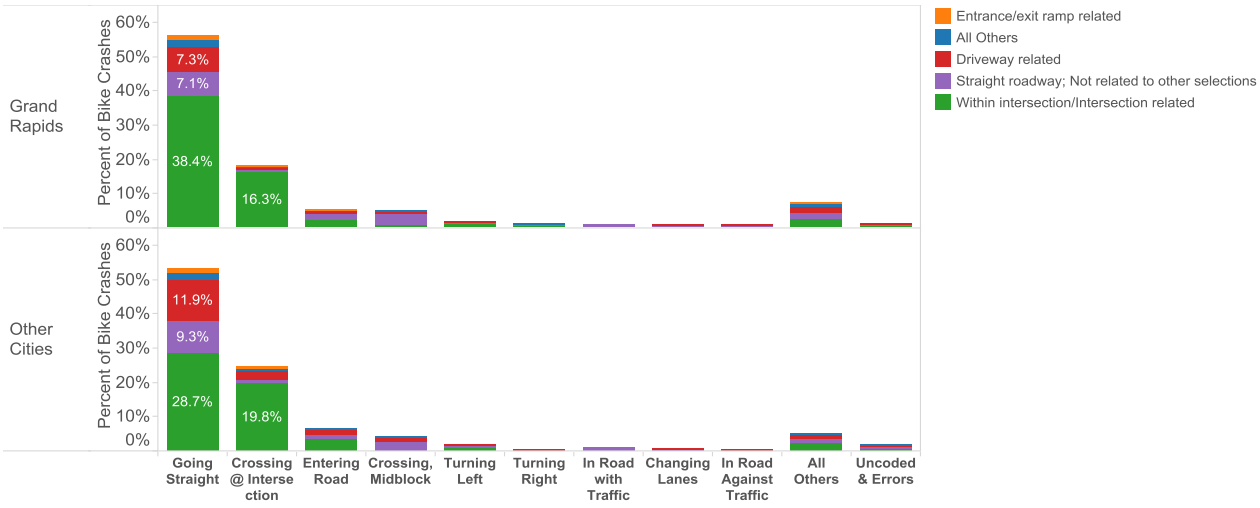


Figure 21 – Bicyclist Previous Action by Area

Driver Preceding Actions

For drivers involved in bicycle crashes, going straight is also the most common action, though less common than for bicyclists. Right and left turning movements are prominent vehicle actions. **Twice as many crashes involve right turning vehicles as compared to left turning vehicles.**

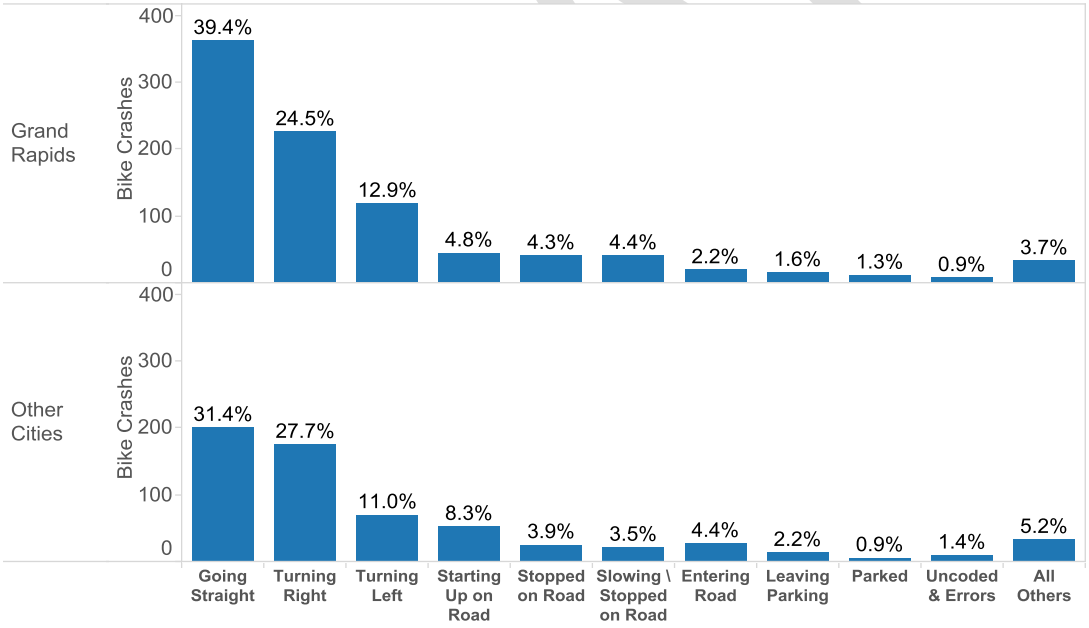


Figure 22 – Driver Preceding Action

Figure 23 illustrates that as expected, the majority of crashes involving right and left turning vehicles take place within intersections or are intersection related. Crashes involving vehicles traveling straight most often occur at intersections (since intersections are the most common crash location), followed by along straight

roadways, and driveways. It is unclear how "dooring" crashes are coded within the study area communities. Without knowledge about these crashes' coding, it is unsure how many occur within the study area.

Figure 23 – Driver Preceding Action by Area

Combined Bicycle and Vehicle Previous Actions

Trends in the combined actions of vehicles and bicycles are similar between Grand Rapids and the Other Cities. There are a variety of bicycle actions when the vehicle was going straight (more than 35% of crashes). **Crashes with right turning vehicles accounts for more than 25% of crashes** and typically involves a bicycle traveling straight or crossing at an intersection (these two codes can describe the same movement). **Crashes with left turning vehicles account for another 12% of crashes.**

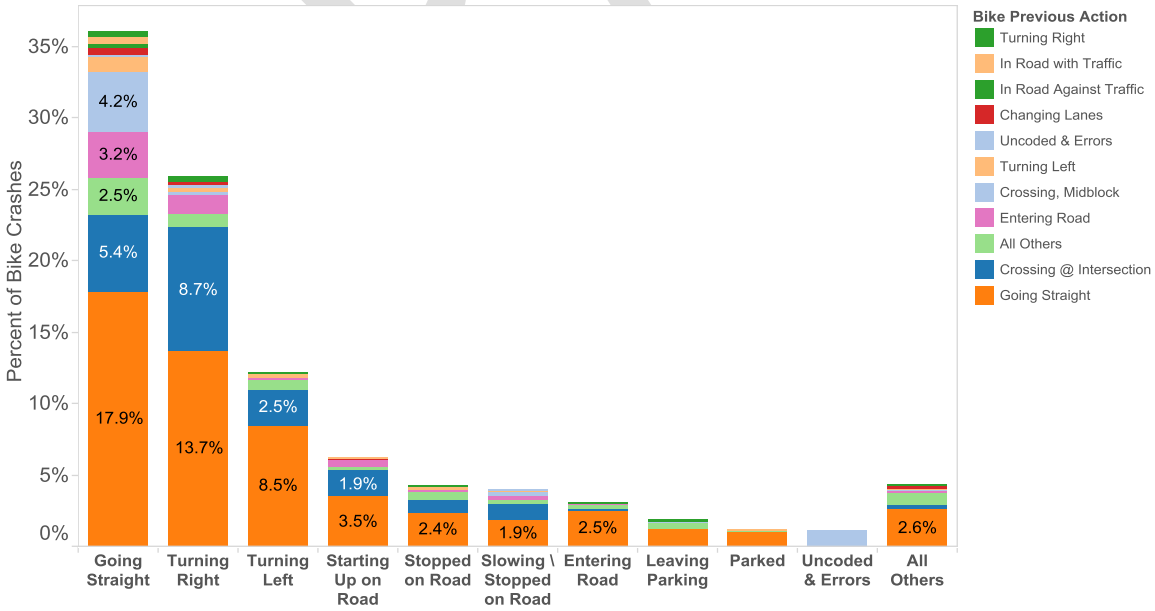


Figure 24 – Vehicle Previous Action and Bicycle Previous Action

Why

Bike Hazardous Action

The bike failed to yield in 20% of reported crashes. The bike disregarded the traffic control in 6.5% of crashes. While approximately 60% of crashes in Grand Rapids and the Other Cities have a recorded hazardous bicycle action of none or other, the Other Cities were more likely to code the action as 'none'. Twenty seven percent (27%) of bicyclists involved in fatal crashes had been drinking.

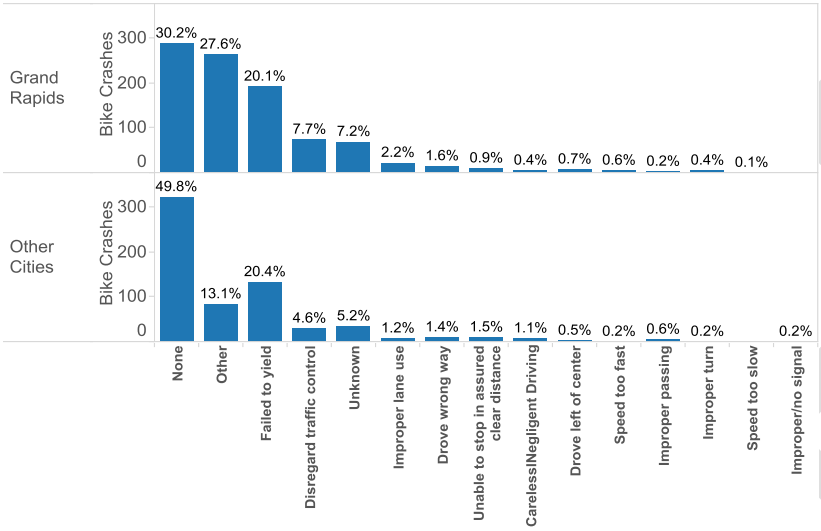


Figure 25 – Bike Hazardous Action

Vehicle Hazardous Action

The vehicle failed to yield in nearly 30% of bicycle crashes (25% of Grand Rapids and 35% of the Other Cities). The vehicle hazardous action was recorded as none in just over 50% of crashes. No other hazardous action category accounted for more than 2% of crashes. Twenty seven percent (27%) of drivers involved in fatal bicycle crashes had been drinking.

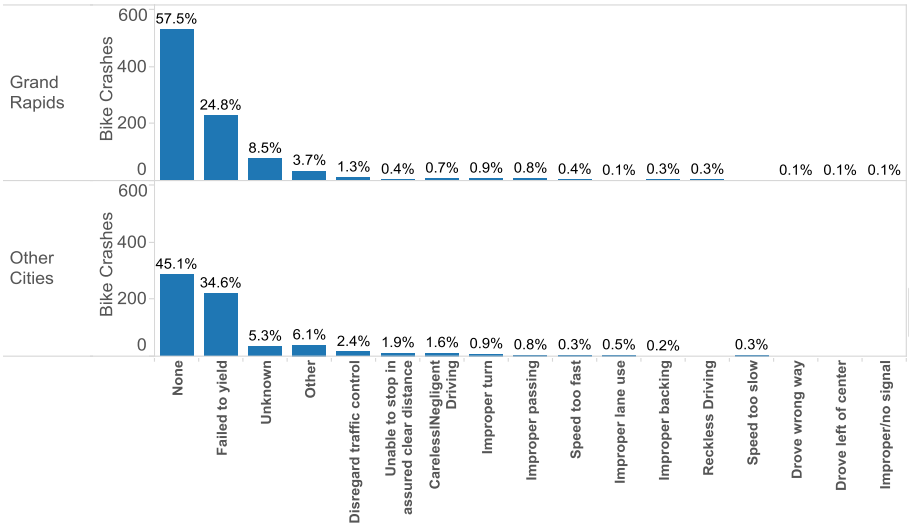
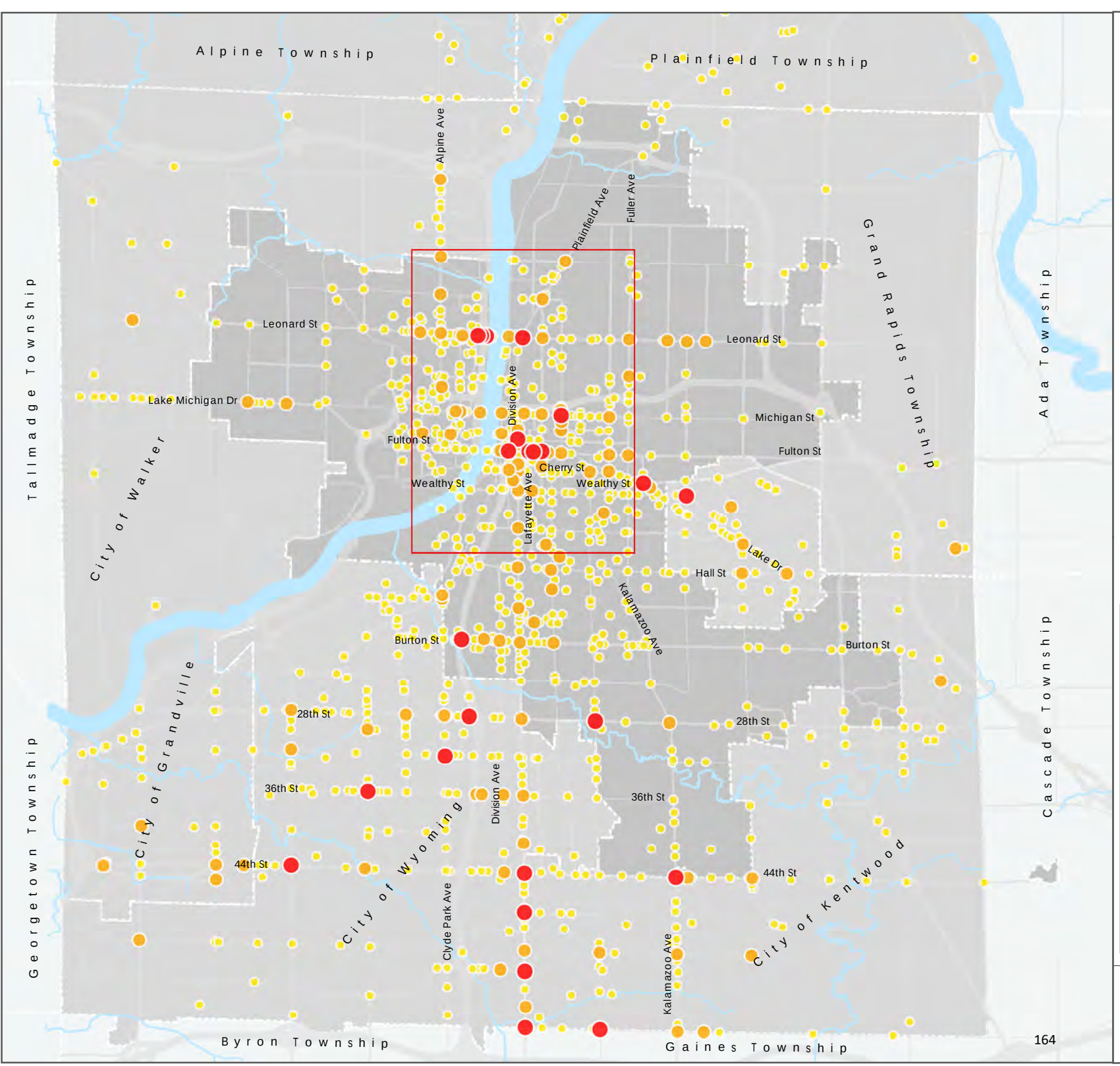


Figure 26 – Vehicle Hazardous Action

The following pages contain maps to illustrate the frequency and severity of crashes within the study area.



City of Grand Rapids Bicycle Crashes According to Frequency: 2004 - 2013

Grand Rapids Bicycle Safety Education Project

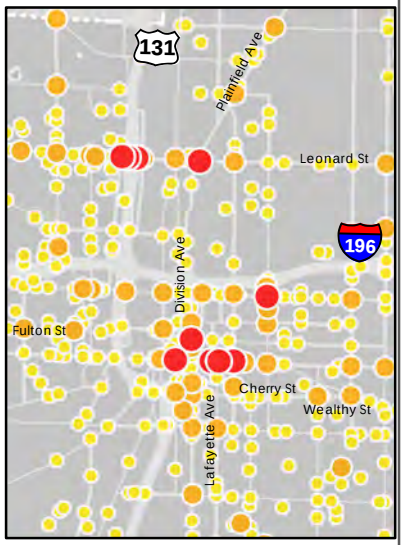
Crash Frequency

- 1 - 2 crashes
- 3 - 5 crashes
- 6 - 12 crashes

Neighboring Jurisdictions

City of Grand Rapids

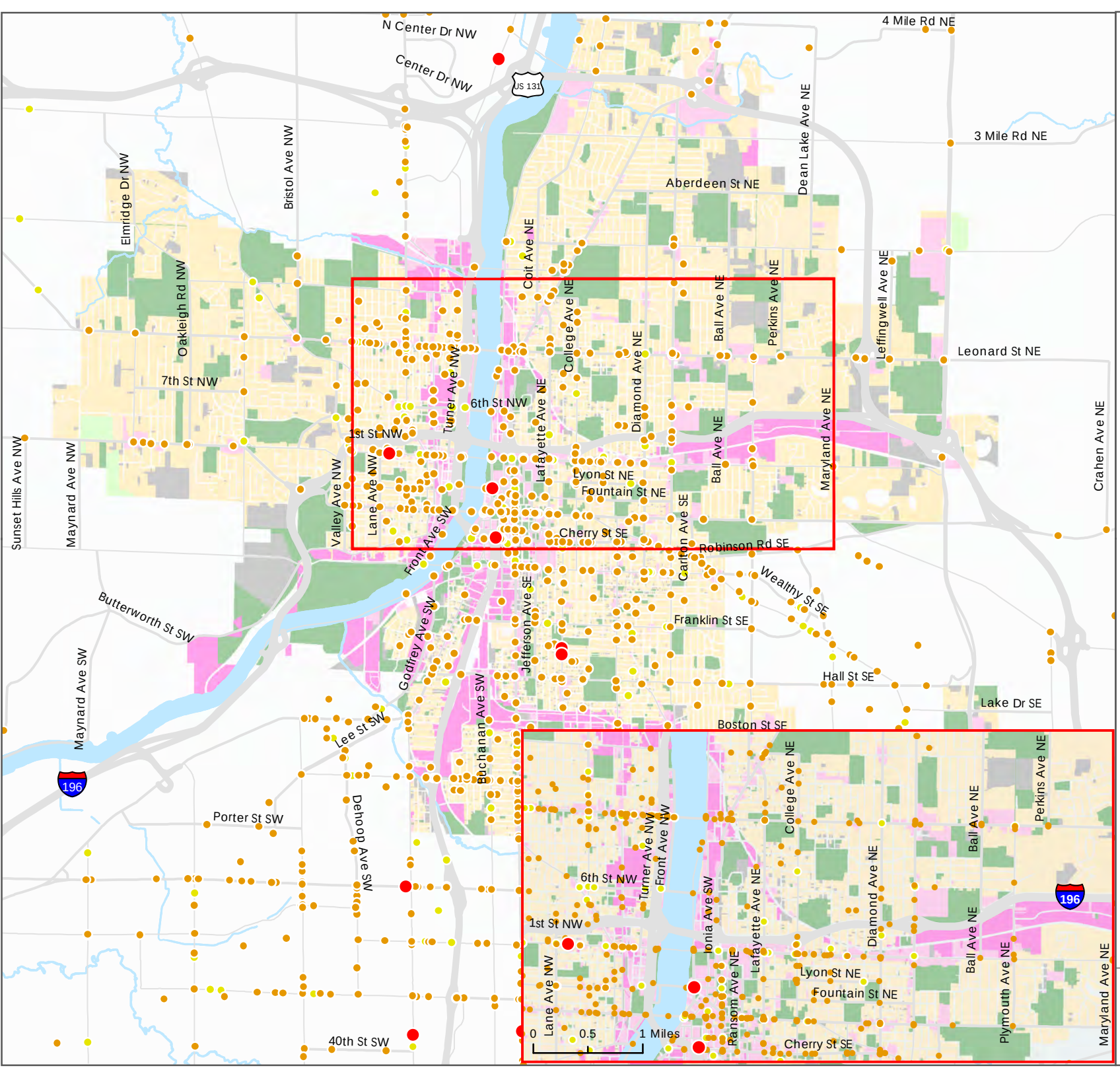
Outside of Study Area



0 0.5 1 Miles

Data obtained from MDOT, City of Grand Rapids, GVMC
Map created October 2014

alta PLANNING + DESIGN



City of Grand Rapids Bicycle Crashes According to Land Use: 2004 - 2013

Grand Rapids Bicycle Safety Education Project

Bicycle Crashes
- Crash resulting in fatal injury
- Crash resulting in injury
- Crash without reported injuries

Land Use Type - City of Grand Rapids
- Agricultural
- Commercial, Offices, Medical Facilities, Parking Lots
- Industrial
- Vacant Lot
- Residential
- Parks

Rivers or Streams
- River or Stream

Data obtained from MDOT, City of Grand Rapids, GVMC
Map created October 2014

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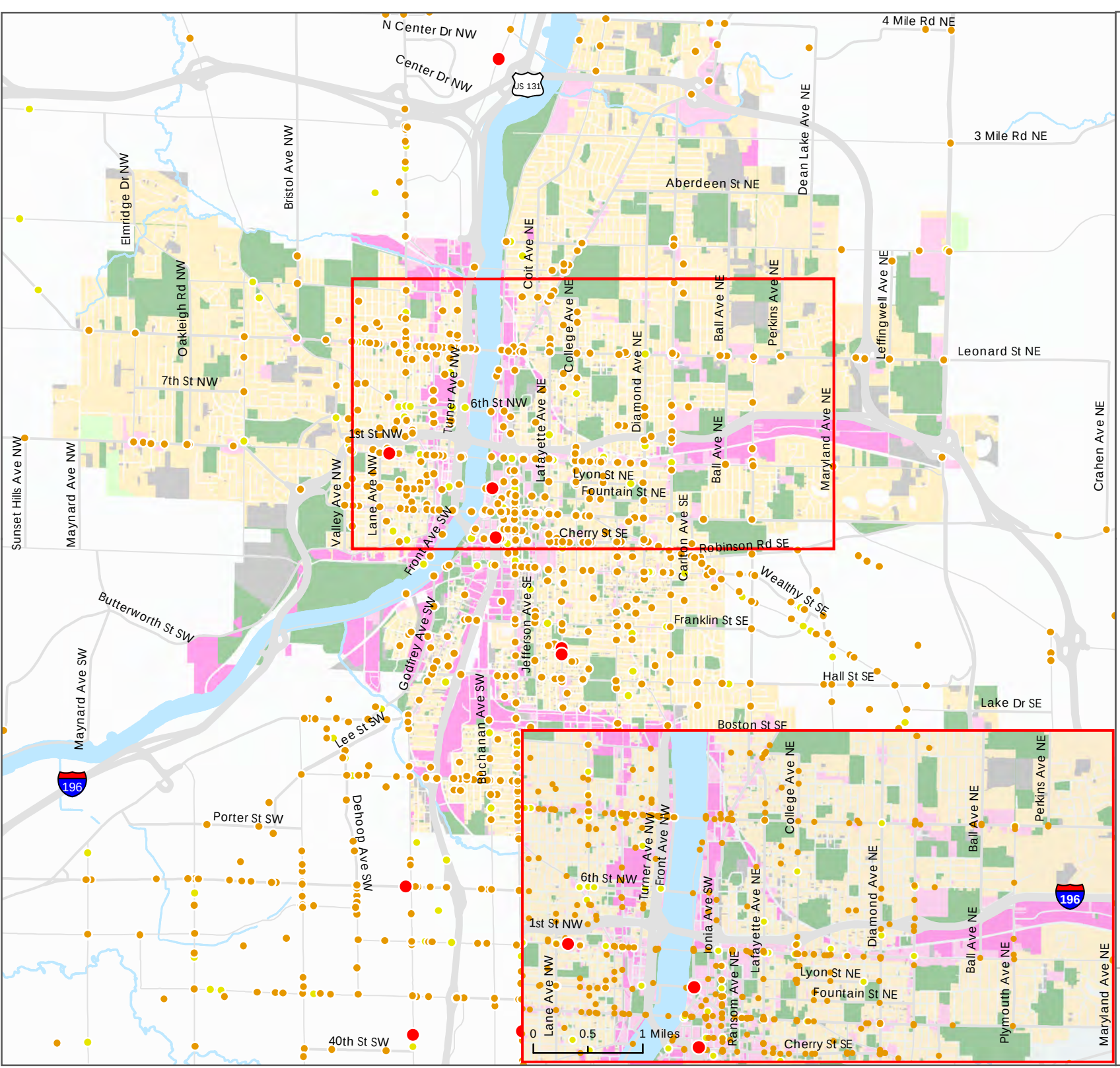

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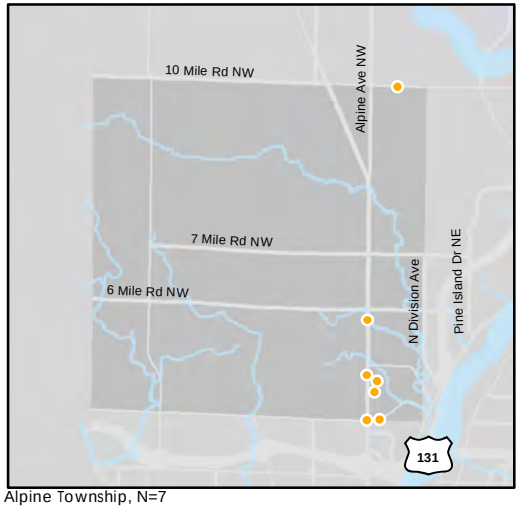
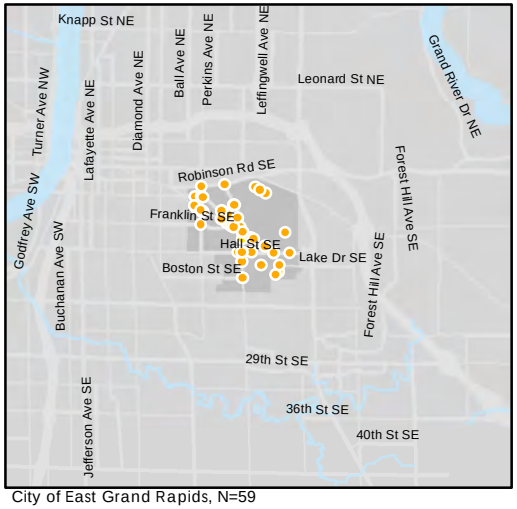
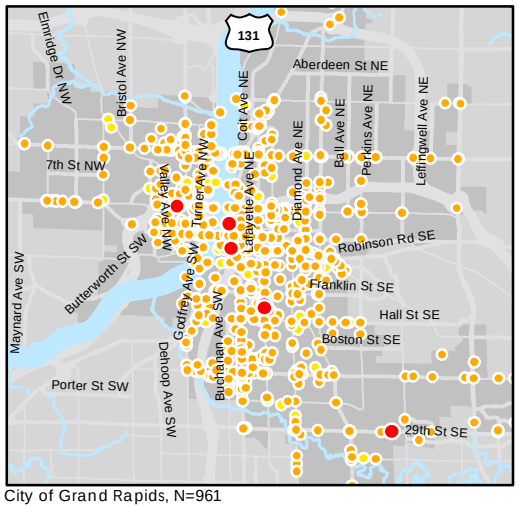


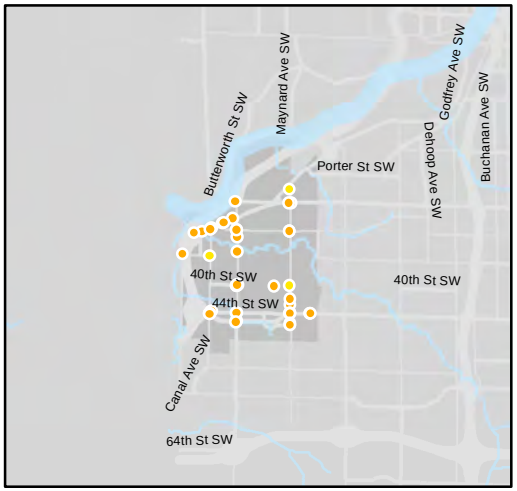
Alpine Township, N=7
Annual crashes per 10k population = 0.9



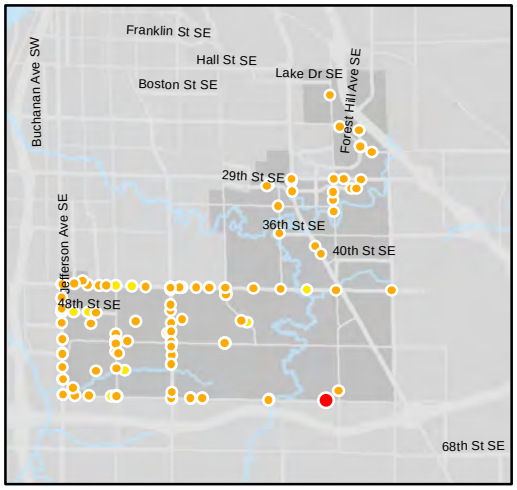
City of East Grand Rapids, N=59
Annual crashes per 10k population= 5.5



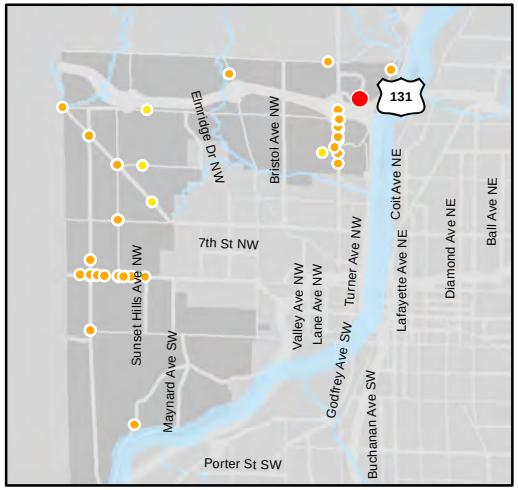
City of Grand Rapids, N=961
Annual crashes per 10k population= 5.1



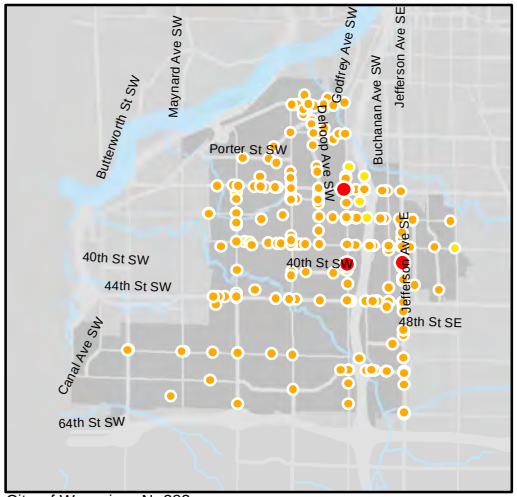
City of Grandville, N=48
Annual crashes per 10k population= 3.1



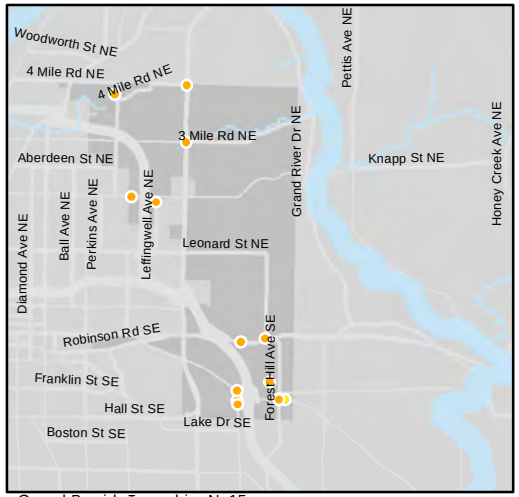
City of Kentwood, N=153
Annual crashes per 10k population= 3.1



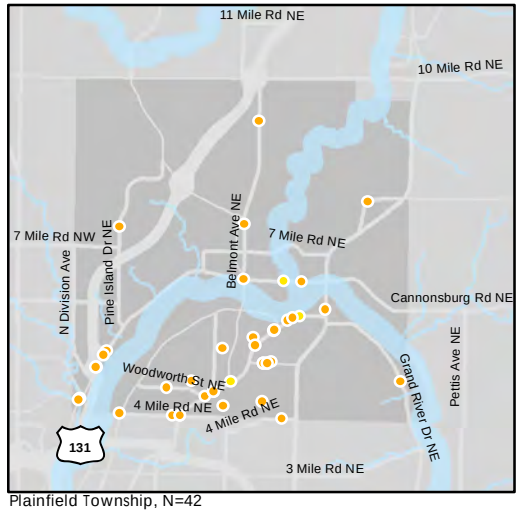
City of Walker, N=46
Annual crashes per 10k population= 2.0



City of Wyoming, N=282
Annual crashes per 10k population= 3.9



Grand Rapids Township, N=15
Annual crashes per 10k population= 1.1



Plainfield Township, N=42
Annual crashes per 10k population= 1.5

Bicycle Crash Severity in the Greater Grand Rapids Area: 2004 - 2013

Grand Rapids Bicycle Safety Education Project

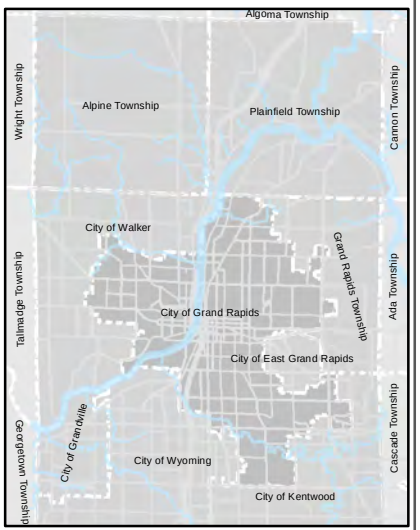
Bicycle Crashes

- Crash resulting in fatal injury
- Crash resulting in injury
- Crash without reported injury

Street Typologies

- US or State Roadway
- Collector or Arterial
- River or stream

Total crashes in the Greater Grand Rapids area from 2004-2013= 1613



0 0.5 1 2 Miles

Data obtained from MDOT, City of Grand Rapids, GVMC
Map created October 2014

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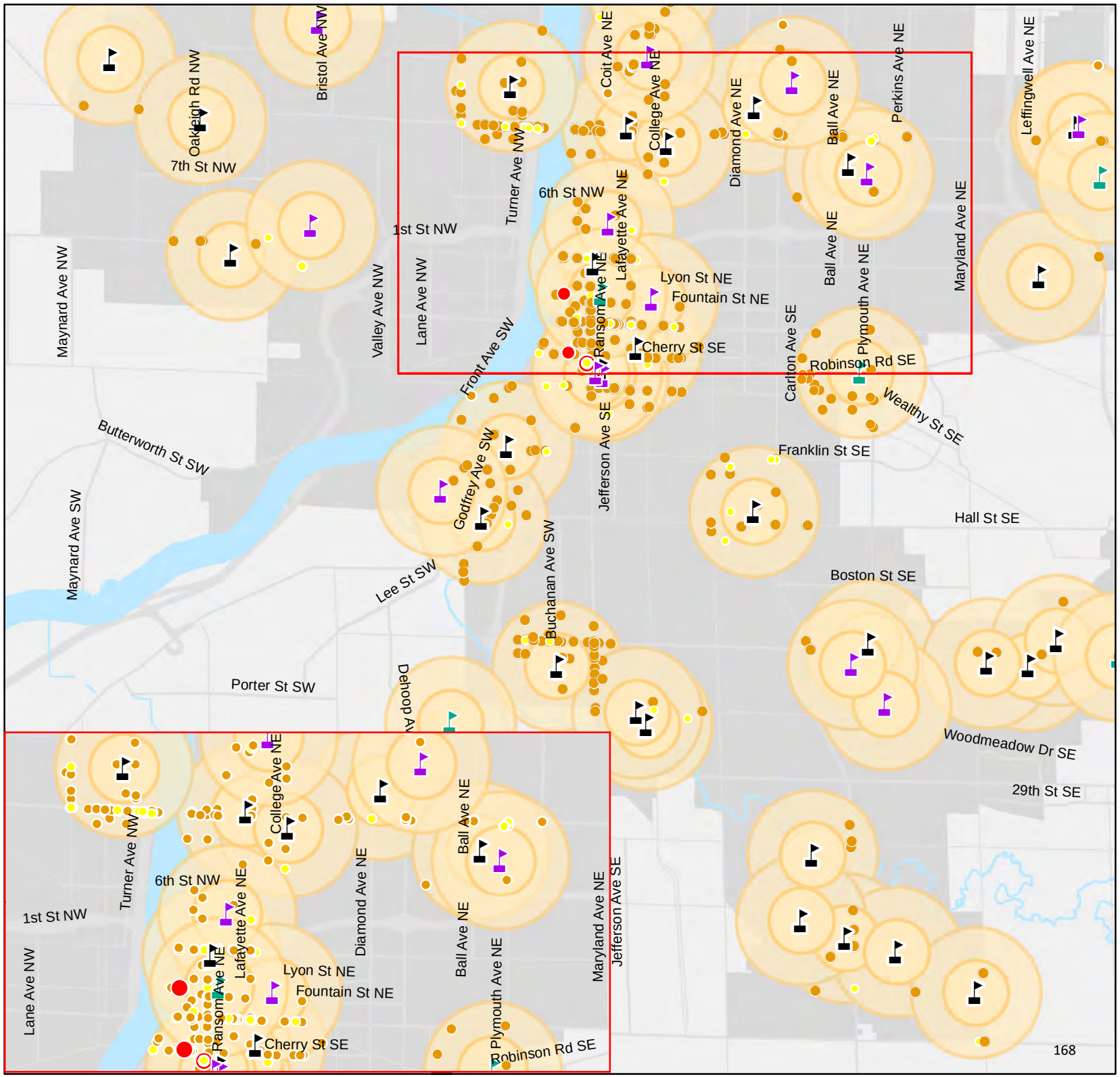


Severity of Bicycle Crashes within 1/4 Mile and 1/2 Mile of Grand Rapids Schools

Grand Rapids Bicycle Safety Education Project

Bicycle Crashes

- Crash resulting in fatal injury
- Crash resulting in injury
- Crash without reported injuries
- Elementary and Middle Schools
- High Schools
- Colleges and Universities
- 1/4 and 1/2 mile school buffer

Street Typologies

- US or State Roadway
- Collector or Arterial

Rivers or Streams

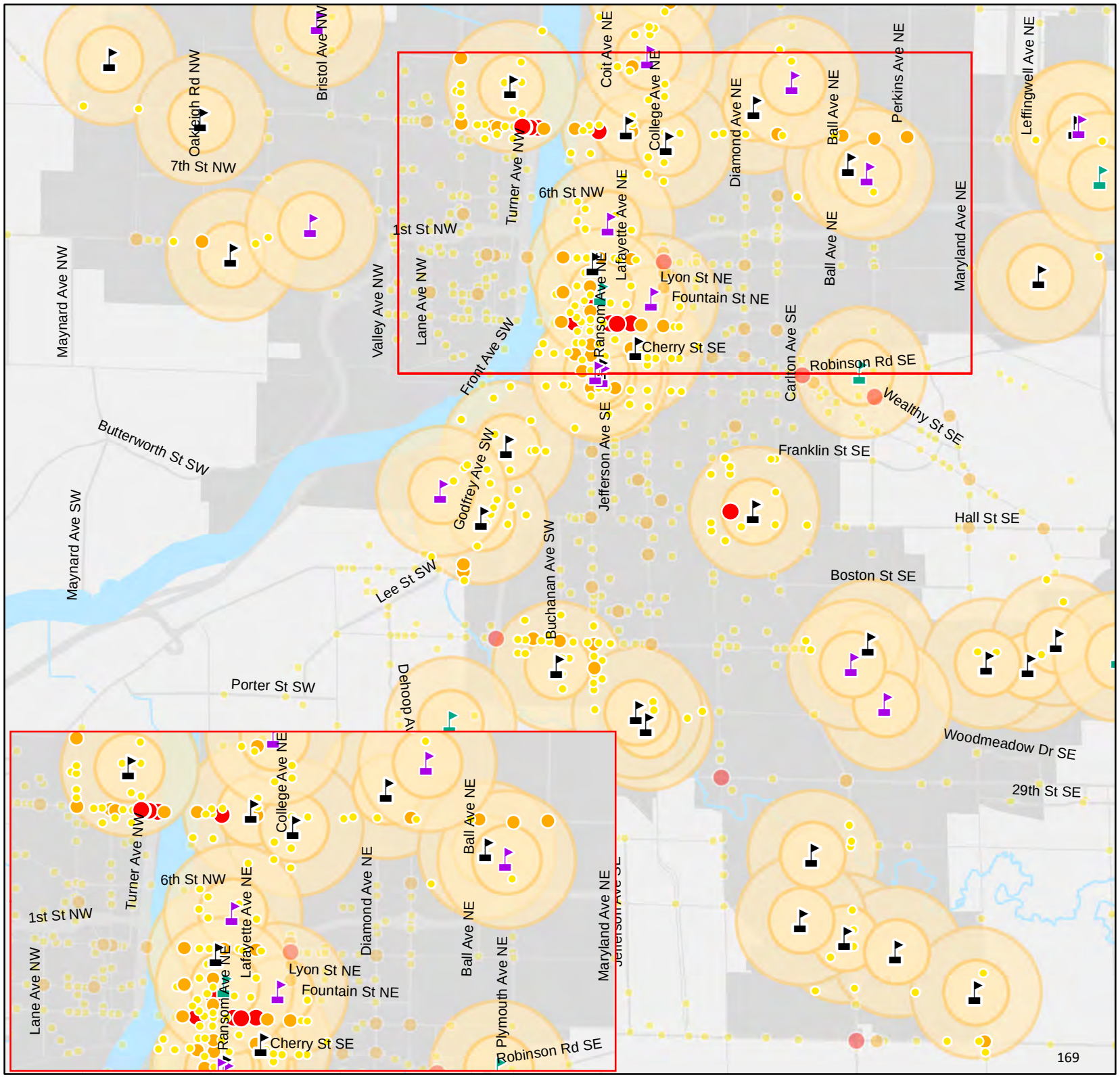
- River or stream

The number of all crashes within the City of Grand Rapids from 2004-2013 totaled 961 crash events.

0 0.25 0.5 Miles

Data obtained from MDOT, City of Grand Rapids, GVMC
Map created October 2014

alta PLANNING + DESIGN



Frequency of Bicycle Crashes within 1/4 Mile and 1/2 Mile of Grand Rapids Schools

Grand Rapids Bicycle Safety Education Project

Bicycle Crashes

- 1 - 2 crashes
- 3 - 5 crashes
- 6 - 11 crashes
- Elementary and Middle Schools
- High Schools
- Colleges and Universities
- 1/4 and 1/2 mile school buffer

Street Typologies

- US or State Roadway
- Collector or Arterial

Rivers or Streams

- River or stream

The number of all crashes within the City of Grand Rapids from 2004-2013 totaled 961 crash events.

0 0.25 0.5 Miles

Data obtained from MDOT, City of Grand Rapids, GVMC
Map created October 2014

alta PLANNING + DESIGN

CITY OF GRAND RAPIDS BICYCLE SAFETY EDUCATION PROJECT

STUDY PHASE REPORT

Alta Planning + Design
Grand Rapids, MI
2015

CONTENTS

ACKNOWLEDGEMENTS

City of Grand Rapids

Michigan Department of Transportation

Project Executive Steering Committee

Project Steering Committee
Consultant Team:
- Alta Planning + Design
- Cairn Guidance
- Greater Grand Rapids Bicycle Coalition
- Güd Marketing
- Wondergem Consulting

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I. INTRODUCTION

PROJECT OVERVIEW

The ultimate long-term goal for the Bicycle Safety Education Project is to reduce the total number of bicycle crashes, fatalities, and severity of injuries. The project's benefits will be multi-faceted. By broadening all citizens' knowledge of the rules of the road, it is desired that more cooperative and lawful behavior between cyclists and motorists will result. As more people ride comfortably in traffic and feel safe, the number of bicyclists that commute on a regular basis will increase and they will become more accepted as viable road users.

The Bicycle Safety Education Project is meant to create a foundation for a long-term safety program that will continue beyond the three-year duration of the project.

The Project is funded through a Federal grant and a local match. The grant's three major goals are summarized in the callout box below.

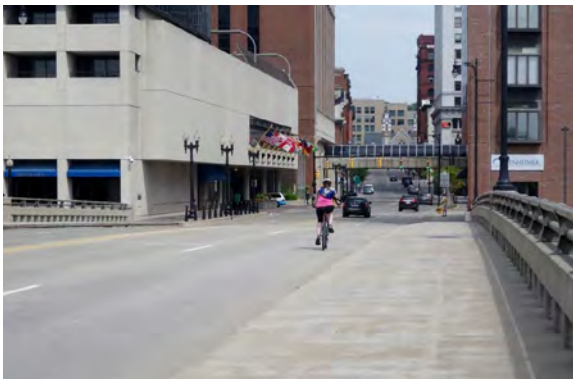
Project Structure

The Project is divided into four phases:

Project Phase	*Description*
Study Phase	*The project team researched bicycle-car crash data from Grand Rapids and the surrounding area to look for contributing crash factors and patterns. The team reviewed bicycle safety education programs (both media campaigns and on-bike/in-person educational offerings) from other communities. The project team also surveyed Grand Rapids residents and held focus groups. The team explored partnership opportunities from within the Grand Rapids area and worked to refine the project's study area. The team compared and contrasted bicycle ordinances from within the Grand Rapids communities.*

Major Project Goals

1. Provide education and training on the operation of a bicycle in traffic.
2. Increase the knowledge of the responsibilities of bicyclists and motorists.
3. Promote a "share the road" culture.



The Study Phase consisted of a variety of analyses to understand Grand Rapid's existing culture of transportation.

Project Phase	*Description*
Development Phase	*The second phase will develop a media and communication campaign for bicycle users and motorists based on the findings from Phase One.*
Implementation Phase	*The Project Team will perform the targeted educational activities developed during Phase Two.*
Evaluation Phase	*The fourth and final phase will evaluate the project's effectiveness in achieving desired outcomes.*

REPORT PURPOSE

This report summarizes the work performed during the Project's Study Phase (Phase One). The report is meant to inspire surrounding communities and communities throughout Michigan and the United States.

The Project's Steering Committee assisted the Project by reviewing reports, identifying important partners, and routinely meeting to discuss the Project's progress.

SUMMARY OF FINDINGS

Overview

The following recommendations are a synthesis of the project's definition of groups, locations, and situations at-risk for bicycle-car crash involvement. The Appendix further details the analysis undertaken to arrive at these recommendations.

Curricula Recommendations

Main Curricula

The team recommends the use of curricula from the League of American Bicyclists (LAB), a national advocacy group. LAB materials scored highly in an objective bicycle curricula review. See Chapter II for more details.

Local Customization

The project recommendations are to customize LAB curricula to address local concerns and characteristics. Law enforcement, the project's Steering Committee, and the public at-large contributed input regarding local concerns that should be discussed in the resulting educational materials.

For instance, law enforcement officers voiced concern about clarifying bicyclists' and drivers' responsibilities surrounding: riding two abreast, bicyclists' responsibility to obey traffic control devices, drivers' responsibility to obey traffic control devices.

Officers also cited specific intersections where they feel miscommunication, conflict, unlawful conduct, or crashes frequently occur.

Media Campaign Recommendations

The Development Phase will inlcude creation of a public media campaign to reach target audience groups with messaging through an array of media vehicles.

Target Audience

Research highlighted the need for far-reaching educational messaging directed to both bicyclists and motorists in great Grand Rapids.

- People who ride a bike:

  The Study Phase analysis found a discrepancy between area demographics and crash victim demographics.

  Campaign materials will target young adults, especially those under 24. Males made up 80% of the bicyclists involved in crashes.

- People who drive:

  The Study Phase found that the demographics of drivers involved in crashes matched the study area demographics.

  Campaign materials will target all drivers.

  In addition to broad community messaging, highly targeted messages will be developed and deployed to young men. Males ages 13 through 24 are at significantly higher risk of being involved in a bicycle crash between the hours of 3 and 7 pm.

Objectives

- Promote a "share the road" culture in Grand Rapids
- Building respect between bicyclists and motorists
- Reduce bicycle crashes and fatalities

Potential Media Locations

Refer to page 60 for a list of high crash corridors. These places, as well as intersections identified in the public and law enforcement officer surveys, are prime candidates for high visibility, targeted media placements (i.e., printed posters).

II. BEST PRACTICE REVIEW: BICYCLE EDUCATION CURRICULA

OVERVIEW

The consultant team reviewed five leading bicycle safety education curricula, using a **custom methodology called the Bicycle Curriculum Assessment Tool (BiCAT)**.

Based on the best practice review results, the project team presents the recommendation shown in the callout box below.

Recommendation:

The team recommends the City of Grand Rapids use the existing League of American Bicyclists (LAB) educational materials, with modifications to customize the curriculum to fit local concerns.

Bicycle education can include the entire community- from residents who bike everyday, to casual riders, to law enforcement officers.

League of American Bicyclists (LAB) Curriculum Strengths

LAB materials will provide quality education for the greater Grand Rapids area:

- LAB materials scored highly with regards to the BiCAT review.
- League Cycling instructors (LCI) should be recruited to teach bicycle education classes.
- LCI course leaders are covered by the League's liability insurance when teaching courses.
- LAB course materials updated in 2015 resulted in improvements in the "Acceptability" BiCAT domain. The updated graphics contained within the updated LAB materials represent a racially/ethnically diverse program audience.
- LCIs have access to all LAB educational materials including presentations, videos, handbooks, and forms including test forms.

Areas to Improve Existing LAB Curriculum

The team recommends the following improvements to the LAB curriculum:

- **Existing participant assessment measures:** Self-evaluations and instructor-led evaluations should offer meaningful feedback throughout the course. Although current programs offer evaluator exercises, the Study Phase found that these tools are in need of updating. The team also found a need for improved assessment tools.
- **Program evaluation:** The team recommends that efforts to improve existing program evaluation methods be pursued using the LAB website for online registration and doing pre and post evaluation of students to evaluate class effectiveness.

CURRICULA ANALYSIS METHOD

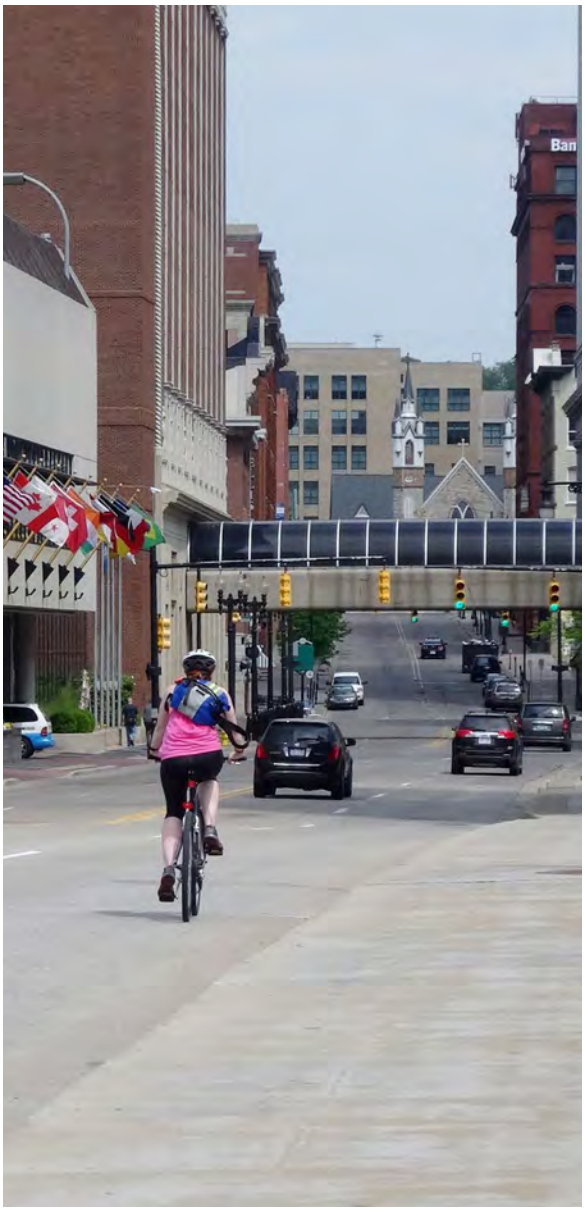
The Bicycle Curriculum Analysis Tool (BiCAT) was created in 2014 to review and compare adult bicycle safety education curricula.

Materials Evaluated Using BiCAT Method

The BiCAT method helps compare bicycle education resources. The team reviewed five curricula using the BiCAT evaluation tool. Table 1 shows the resources selected for review. With the exception of BikeSafetyQuiz.com, developed by the League of Illinois Bicyclists (LIB), all materials originated from national-level agencies and organizations in the US, UK, and Canada. A national organization called the American Bicycling Education Association produces a course series called Cycling Savvy. Although the review team attempted to obtain access, no sample course materials were available for purposes of the BiCAT review.

Table 1. Materials Reviewed Using BiCAT

Curriculum Name	*Organization*
Bikeability Delivery Guide	*Bikeability (UK Department for Transport)*
CAN-Bike Toolkit	*Cycling Canada*
BikeSafetyQuiz.com	*League of Illinois Bicyclists (LIB)*
League Cycling Instructor Handbook, Various course materials (i.e.- Smart Cycling, Group Riding), Performance scoring templates	*League of American Bicyclists (LAB)*
Walk and Bike Safely: Teacher's Guide	*National Highway Traffic Safety Administration (NHTSA)*



Skills training will help teach people who currently ride bicycles as well as people who would like to learn more.

BiCAT Scoring

The BiCAT tool consists of the sections outlined in Table 2, below. For a detailed description of the Preliminary Curriculum Considerations section metrics, refer to the callout box on the facing page.

Table 2. BiCAT Scoring Sections

Scoring Section Name	*Scoring Metrics Used*	*Scoring Method*
Preliminary Curriculum Considerations (see Table 3 for a detailed description)	• *Accuracy* • *Acceptability* • *Feasibility* • *Affordability* • *Curriculum Design* • *Learning Objectives* • *Facilitator Guidance* • *Instructional Strategies and Materials* • *Teaching Skills* • *Participant Assessment*	• *Reviewers answer a series of questions with "yes" or "no" responses.* • *Reviewers score a given curriculum based on the percentage of "yes" answers.*
Concepts ("By the end of the program, participants will understand/know/explain...")	*These items tested whether participants would have exposure to a variety of concepts such as lane placement, common crash factors, an understanding of bicycle laws, etc.*	• *Reviewers use a list of pre-identified concepts to note which are discussed within a given curriculum.*
Skills ("By the end of the program, participants will have an opportunity to demonstrate...")	*These items tested whether participants had the chance to demonstrate certain on-bike skills during the curriculum's educational modules.*	• *Reviewers use a list of pre-identified skills to note which are discussed within a given curriculum.*

Curriculum Consideration Metrics

Accuracy Analysis:
A measure of the curriculum's use of appropriate terminology, safety data, and other facts.

Acceptability Analysis:
A measure of how appropriate the materials are for the intended target audience according to community norms and cultural experiences as well as how appropriate the content is for adult learners.

Feasibility Analysis:
A measure of whether courses can be implemented within the given amount of time.

Affordability Analysis:
A measurement of initial material costs, implementation costs, and additional costs required to sustain the program.

Curriculum Design:
A measure of the courses' logical progression through a series of skills and safety behaviors.

Learning Objectives:
A measure of learning objectives' clarity and measurability as well as consistency with safety education.

Facilitator Guidance:
A measure of how well the curriculum prepares instructors for facilitating the course.

Instructional Strategies and Materials:
A measure of whether the content is interactive and culturally and developmentally appropriate for participants.

Teaching Skills:
A measure of the guidance available to instructors for leading the course sequence.

Participant Assessment:
A measure of tests, performance events, and other means for participants to check their own skills as well as assessment materials for instructors to measure students' progress.

Major Findings

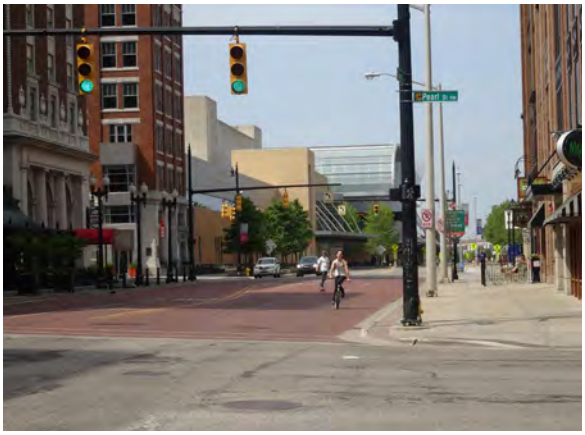
Reviewers developed the following general conclusions based on the existing materials:

- **Evaluation process:** Some curricula do not involve large evaluation components. These curricula's decentralized registration processes mean the effectiveness of bicycle education courses are often difficult to evaluate.
- **Available resources:** Due to competing needs, bicycle education courses often operate using small budgets. Lack of resources can inhibit education programs' growth.
- **Skill development and knowledge development:** Curricula should balance concepts learned in the classroom with hands-on skills demonstrated on-bike. The reviewed curricula obtained varied scores with regards to learning objectives' clarity and measurability. The same is true for how well the curricula assess student learning and progress.
- **Vocabulary acquisition:** The NHTSA *Walk & Bike Safely* curriculum engages a different target audience than other curricula. The NHTSA materials focus on engaging newly arrived immigrants, who are English language learners. Therefore, the materials' focus on vocabulary acquisition to ensure that course participants receive a foundational understanding in traffic terminology. The choice is important from a functional and a safety perspective. The course's decision to use the term "collision" or "crash" instead of "accident" helps reinforce the lessons. There is a section for instructors, which describes reasons for selecting specific terms.
- **Curriculum organization and work flow:** The reviewed curricula logically progress through a series of in-classroom and on-bike assignments to teach and reinforce bicycle safety skills. Clearly dividing a curriculum into "observed demonstrations", "reasoning" (making the case for a lesson's importance), "delivery guidance" for instructors, and "participant demonstrations", all help to reinforce student skills. The Bikeability Delivery Guide is organized as such.
- **Instructor materials:** The reviewed curricula prepare educators for teaching the course by producing guides specifically for the instructors' use.

Curriculum Consideration Scores

Reviewers scored each section according to a series of relevant "yes" or "no" questions. Final score percentages relate to the number of "yes" responses. A higher percentage, representing a greater number of affirmative responses, indicates a greater accomplishment of that section's goals.

The curriculum approach to be pursued should take the following findings into account. For instance, the resulting project curriculum should seek to improve areas in which other curricula traditionally score poorly.



The BiCAT process reviewed curricula to investigate whether they teach a variety of concepts, including the potential risks involved with wrong-way riding.

Major findings include:

- All reviewed curricula score highly in the Curriculum Design section (100%). This means existing curricula reinforce previously learned safety behaviors as the learner continues throughout the respective curriculum.
- All reviewed curricula score highly in the Facilitator Guidance section (83%). This means existing curricula are able to adequately prepare course instructors for their roles.
- Curricula score far lower in the Learning Objectives section (58%). This means curricula do not always contain measurable and/or clearly written learning objectives. The Learning Objective scores across all curricula also had the highest amount of variance between scores; while the League of American Bicyclists materials ranked highly in the Learning Objectives category with 92%, BikeSafetyQuiz.com received 0%.
- Curricula received a low score in the Participant Assessment (56%) section. This means the curricula do not use rubrics or scoring guides to assess students' performance. There are not often materials for students to check their own performance. Curricula scores vary with regards to the Participant Assessment section. While the NHTSA materials received a score of 22%, BicycleSafetyQuiz.com received a 100% rating. LAB and Bikeability also received low scores of 44% and 56%, respectively.
- Curricula affordability was difficult to assess with the materials provided. Curricula did not provide clear indications of the courses' price structure. This information is provided through other means, such as program websites or by direct contact with the organization.

Table 3. Average Section Score across Curricula

	Accuracy Analysis	*Acceptability Analysis*	*Curriculum Design*	*Learning Objectives*	*Facilitator Guidance*	*Instructional Strategies and Materials*	*Teaching Skills*	*Participant Assessment*
Average Score	*100%*	*85%*	*100%*	*58%*	*83%*	*67%*	*82%*	*56%*

Curricula Skills Content

The BiCAT asks reviewers to assess curricula for in-classroom or on-bike explanation of certain topics related to safety skill and knowledge acquisition.

Table 4 and the following bullet points summarize findings from the curricula skills analysis:

Table 4. Summary of Skill Content Findings

Skills Content Found Across Many Curricula	*Skills Content Found Across Few Curricula*
• *Proper bicycle fit* • *Proper helmet fit* • *Common crash reasons between motorists and bicyclists*	• *Helmet Laws*

- The reviewed curricula focused on similar sets of safety skills. The NHTSA curriculum, *Walk & Bike Safely* deviates the most in terms of skills taught to course participants.
- All curricula discusses helmet and bicycle fit as well as common crash factors between motorists and vehicles. Only one curriculum discussed area helmet laws. The topic may have scored low ratings due to the absence of helmet legislation within the curricula's respective locations.
- All curricula presented information about common crash types, such as "right hook" or "left cross" situations. Curricula presented strategies to keep cyclists safe, such as riding away from the "door zone", an area to the left of parked cars, where passengers or drivers may open doors into the path of people passing on bicycles.
- The NHTSA *Walk & Bike Safely* curriculum focused on a select number of safety topics, as opposed to educating participants about a wider range of skills.
- Due to incomplete access to resources, reviewers did not score the CAN-Bike curriculum according to skill content.

Curricula Skills Demonstration

Reviewers assessed whether skills originally discussed conceptually (i.e.- in a classroom setting), were demonstrated through on-bike drills or other exercises that allowed participants to practice these concepts.

Table 5, below, summarizes the reviewed curricula's scoring in relation to opportunities for students to demonstrate key skills.

Table 5. Summary of Skill Demonstration Findings

Skills Demonstration Found Across Many Curricula	*Skills Demonstration Found Across Few Curricula*
• *Checking a bicycle before riding (i.e.- an "ABC" Quick Check)* • *Proper helmet fit* • *Proper bicycle fit* • *How and where to properly place safety equipment (i.e.- front and rear lights, other reflectors, etc)* • *Obeying traffic signals and stop signs*	• *Route selection for safety* • *Demonstrate how to securely lock a bicycle*

The following points represent a summary of findings related to the skills demonstration analysis:

- Most curricula contained on-bike skill demonstration modules. The NHTSA *Walk & Bike Safely* curriculum included practice tips for students outside of class sessions. The BicycleSafetyQuiz.com curriculum does not contain on-bike skills practice sessions, although the lessons are designed with the idea that students will use the concepts when they ride a bike or drive a car.
- Skill demonstration findings are similar to those discussed within the University of British Columbia & Simon Fraser University study. The Canadian study found a lack of bicycle safety curricula that discuss and practice how to safely plan bicycle trip routes.

The project's kick-off study tour involved new bicycle amenities and infrastructure. Educational programming will help residents feel more comfortable bicycling in the city.

III. PRIMARY RESEARCH FINDINGS

RESEARCH OBJECTIVES

The Study Phase began with secondary research, including an evaluation of Grand Rapids crash data, an exploration of existing research, and a review of bicycle safety education programs. The secondary data was used to evaluate crash patterns and factors unique to Grand Rapids, identify audience priorities, prioritize project objectives and learn from existing programs and communications across the country. The information learned through secondary research provided input into the next part of the Study Phase – primary research.

Because a successful campaign will need to reach multiple target audiences – all motorists and all bicyclists – primary research was designed to gain a strong representative sample of both groups. An online survey available to all residents of the Greater Grand Rapids area followed by an in-person focus group session composed of both motorists and bicyclists were completed.

The purpose of primary research was to:

1. Understand the attitudes and behaviors of both motorists and bicyclists
2. Define current beliefs
3. Uncover message preferences
4. Gain direction for messaging success
5. Determine unique audience needs and opportunities for targeted messaging

Key findings for each goal are discussed in the executive summary.

EXECUTIVE SUMMARY

1. Understand the attitudes and behaviors of both motorists and bicyclists

- **General confusion about the new bicycle "activities" in Grand Rapids.** Nearly everyone recognizes the changing infrastructure (decals on the streets, signage, bike lanes, etc.), but most – particularly motorists – are not quite sure what it means to them and how it should affect their own behavior. Many believe that the new infrastructure, intended to make Grand Rapids "bicycle friendly," provides a great opportunity to build awareness of the rules of the road.
- **Both audiences believe that "bikes and cars can do better together."** National coverage of this issue illustrated a deep anger and significant divide among motorists and bicyclists. While there are certainly examples of extreme situations in Grand Rapids (verbal/physical abuse), all indications point to a community that believes it is realistic to "help bikes and cars do better together." Both motorists and bicyclists believe that Grand Rapids can come together to be more harmonious.
- **Everybody is a "driver."** Survey feedback and focus group discussions delved deeply into the specific attitudes, behaviors (and faults) of each audience, the fact that everybody is a "driver" emerged as a key insight that united both audiences during the focus group. Motorists rallied around the idea that bicyclists are "drivers" in a different type of vehicle and bicyclists took away that they needed to "act like a vehicle." The idea of a "driver" encouraged bicyclists to follow the same rules as motorists and for motorists to treat bicyclists as they would any driver, allowing them the right to share the road.

- **Regardless of fault, cyclists appreciate their vulnerability and acknowledge that it is ultimately up to them to provide for their own safety.** Cyclists are well aware that an encounter with a vehicle will cause greater harm to them than to the motorist even if the driver is at fault for the crash. Cyclists tend to assume varying levels of responsibility for their own behavior, depending on their personal experience and feeling of safety on the road.

2. Define current beliefs

- **Prevalent belief that "others" are the problem.** It is no surprise that the blame for crash incidence is assigned to "other people." Individuals who ride bicycles cited motorists' bad driving behavior as the factor most likely to contribute to crash incidence, while drivers who do not bike cited bicyclists' bad riding behavior as most likely to contribute. It is important to note that both audiences believe that the poor actions of a few fuel the lack of respect between cyclists and motorists. Many individuals believe that visible enforcement of the rules – for example, ticketing cyclists who run red lights, and motorists who pass too closely – could improve the situation.
- **"Motorists need to know that bicyclists have the same right to the roads as bicyclists."** A striking number of motorists are unaware that cyclists are not only allowed on the road but are supposed to ride on the road. Knowledge of rules (checking bike lanes before making right turns, bikes riding with traffic, etc.)and common courtesies (leaving the legally required three feet when passing a cyclist, etc.) is also severely lacking in a large group of motorists.
- **"Bicyclists need to understand, and follow, the rules."** There is universal agreement that bicyclists should ride in a consistent and predictable way but that many do not. Motorists are frustrated by unexpected behavior (cyclists not stopping at lights or stop signs, not pausing at driveways). Bicyclists are frustrated because they know that the actions of a few fuel a general lack of respect.

3. Uncover message preferences

- **Messages that are inclusive of both motorists and bicyclists rose to the top.** Of the twelve ads that were tested, not one was a clear-cut winner for all types of motorists or cyclists. However, the message "Same Road. Same Rules." did rise to the top for many, as it seemed to achieve multiple objectives – to educate motorists about bicyclists' right to use the "same road" (i.e., share) and to educate bicycle riders about their need to operate by the "same rules" (i.e., stop at red). This message was generally better received because neither audience felt blamed or singled out to make all of the behavior changes necessary to reduce crashes.
- **Messages that focus on specific behaviors were also effective in demonstrating the rules and the responsibilities.** People who ride bicycles rallied around messaging that directed motorists to give space while passing, which is one of the biggest issues to cyclists. Motorists responded well to messaging reminding cyclists to stop at red lights, which is one of motorists' biggest concerns. This type of messaging was appealing for its simplicity, clarity and directness in addressing specific behaviors.

- **"Share the road" was not enough.** Motorists generally disregarded direct "share the road" messaging. Many felt they already do "share" but that this is not the problem they are seeing on the roads – that the problem is a result of individual/specific behavior. They also felt the "share" message alienates drivers, assigning misplaced blame. Furthermore, when asked to identify messaging that would change their own personal driving/riding habits, "share the road" messages are at the bottom of the list.

4. Gain direction for messaging success

Effective communications campaigns capture the attention of the target audience, are easy to understand and remember and do not require further explanation. There must be a laser-like focus on campaign objectives and a deep understanding of the audience. Takeaways from research suggest that campaign messaging should:

- Provide a platform for awareness of bicycle safety that allows for individualized messaging and education directed to specific audiences
- Promote awareness and benefits of a bicycle friendly community
- Educate the public about the rules, rights and responsibilities of each audience
- Be inclusive of both motorists and bicyclists – focusing on things that bring them together
- Be simple and clear

5. Determine unique audience needs and opportunities for targeted messaging

The target audience of the public communications campaign will be broad, speaking to both motorists and bicyclists of all ages, genders, attitudes, behaviors, etc. However, there are distinct opportunities to target high-risk riders as well as those who influence them (parents, peers, law enforcement, trusted advisers). There are also opportunities to target individuals based on their riding frequency and experience. Key inputs from primary and secondary research that will inform the development of targeted media and messaging for these unique audience segments and geographic locations are highlighted below.

- **Young male cyclists**, as evidenced by Grand Rapids crash data, are an audience at high risk of crash, injury and fatality. Young men are significantly less likely to obey traffic signals and stops, ride with traffic, or signal turns than older riders and even female riders of their age. Research also shows that young males demonstrate perceptions of "invincibility" and are highly susceptible to peer pressure, causing them to not follow the rules (particularly in helmet usage). Importantly, we also know that enforcement can play a strong role in encouraging compliance with rules/laws among young males, as this audience is often more motivated by personal consequences rather than by personal safety.

- **Spanish-speaking audiences** mirrored English-speaking respondents in many ways: in types of encounters with motorists and cyclists, in distance traveled, and in roadways used. They also shared similar attitudes, behaviors and general response to messaging. However, this audience did show a greater preference for messaging encouraging respect and sharing.
- **Occasional riders and veteran riders** vary in their awareness of and adherence to road laws and ordinances. Messages targeting specific behavior can improve both areas. Messages to occasional riders should build awareness of the importance of wearing a helmet, riding on roads, riding with traffic, signaling turns. Veteran riders must be convinced of the need to obey traffic signals and signs in all circumstances.
- **Law enforcement is a critical audience for this effort.** Communication with law enforcement can build awareness of the importance of the laws, can help officers understand/appreciate new ordinances, and can help improve data collection on crash reports for better tracking of the issue over time. Law enforcement should be an advocate for education about the laws and about safety (especially with key audiences) and for uniform enforcement of the laws for both motorists and bicyclists (as appropriate). This audience is an important partner for the distribution of materials and messages in the community.
- **Geographic locations.** High-crash corridors should be an important area of focus in all phases of the project. Frequent riders point to concerns about safety outside that of the motorist/cyclist dynamic – roads that are in bad condition, roads that are not clean/maintained, confusion in signage, issues with lights/stop signs, routing concerns during construction, etc. Communications can play a role in addressing some of these issues and may take the form of signage recommendations, public relations, and grassroots activity in certain areas if the budget allows.

In depth information regarding focus group methodology and results can be found in the Appendix.


CoPilot

APPENDIX

The long-term goal for the Grand Rapids Bicycle Safety Education Project is to reduce both the total number of bicycle crashes and fatalities and the severity of injuries.

APPENDIX A: MEDIA CAMPAIGN COMMUNITY SURVEY FINDINGS, FOCUS GROUP METHODOLOGY, AND RESULTS

METHODOLOGY

An online survey was used to gather information from residents of the Greater Grand Rapids area. Links were deployed via Bicycle Safety Education Steering Committee members, social media, and traditional media coverage to reach the greatest possible number of community members. Respondents could complete the survey in English or Spanish.

- Survey was fielded April 14–May 6, 2015
- 2,247 responses
    - –Overall respondent profile provides a representative sample of ages, genders and number of children.
    - –Survey respondents were significantly more educated than is typical of Kent County. Seventy-eight percent of respondents had a college or graduate degree, compared to only 32 percent of the county's population achieving that level of educational attainment.
    - –Respondents also skewed toward higher income brackets. Only 13 percent of respondents indicated incomes below $35,000; within the Kent County population as a whole, approximately 33 percent have incomes below that amount.
    - –Only 39 respondents chose to take the survey in Spanish.

Survey respondents were sorted into two distinct groups when taking the survey based on their answer to the following question:

How often do you typically ride a bicycle in the spring, summer or fall?

1. Cyclists – anyone who indicated they typically ride a bicycle on a daily, weekly or monthly basis.
2. Motorists – anyone who indicated they typically ride a bicycle quarterly, annually or never.

Cyclists constituted 80 percent of all responses, with motorists accounting for the remaining 20 percent. In addition to the broader questions that were answered by both groups, cyclists and motorists were each given a unique set of questions about their behavior and interactions with the other group of respondents. Throughout this report, data will be reported in reference to the four self-reported cycling frequencies: daily cyclists, weekly cyclists, monthly cyclists and motorists.

KEY FINDINGS

- A small number of respondents (39) completed the Spanish-language survey. Given the small sample size, that data was evaluated for directional guidance rather than as representative of the Greater Grand Rapids Spanish-speaking community.

  –Spanish-speaking respondents were demographically quite different from the others – younger, more likely to have children at home, less likely to have completed college and reporting lower income than the overall survey respondent profile.

  –Spanish-speaking respondents showed a marked preference for messaging encouraging respect and sharing but did not otherwise differ significantly from English-speaking respondents.

  –Overall, Spanish-speaking responses did not vary significantly from English-speaking respondents. As a group they reported rates of rule-following, negative encounters with motorists or cyclists, distances traveled and roadways used similar to those of the 2,000+ English respondents.

- Demographically and in terms of behavior there is significant variance according to the frequency of cycling.

  –Daily riders are men who ride on all roadways and in all seasons. Daily riders are more likely and in many cases significantly more likely than less frequent riders to always wear a helmet, signal turns, and ride with traffic. But they are also significantly less likely to obey traffic signals and signs.

  –Weekly riders are men and women riding mostly on neighborhood streets and trails for fitness and health reasons. Weekly riders frequently, if not always, wear a helmet, obey traffic signals and signs, signal turns, and ride with traffic.

  –Monthly riders are women with children still at home, riding short distances on neighborhood streets or on sidewalks. Monthly riders are least likely to wear a helmet, signal turns, or ride with traffic. Monthly riders tend to align with motorists in beliefs about cause of accidents and about responsibilities being a cyclist's duty.

- Crash data identified young men as most likely to be involved as the cyclist in a bicycle/motor vehicle crash. Responses by both men and women age 18–29 show significant differences in cycling behavior compared to older riders as well as difference in message/ad preference compared to older audiences.

  –Young men are significantly less likely to obey traffic signals and stops than are older riders or female riders their own age.

  –Young adult riders, both males and females, are significantly less likely to observe safety measures like wearing a helmet, riding with traffic or signaling turns.

- There were limited differences among people living in the city, suburbs and rural areas of the Greater Grand Rapids area. Messaging and ads were appealing across locations, leaving the differences limited to behavior.

  –City dwellers tend to make shorter cycling trips and use a bicycle as transport around town or to work, and they ride city streets most often.

  –Suburban and rural riders are more likely to bike for a family activity and slightly more likely to obey all rules than are their city counterparts.

- Men and women have a few significant differences when it comes to cycling behavior, problems on the road and message preferences.

  –Men are much more likely to ride more often and to ride greater distances than women.

  –Women are more likely than men to always wear a helmet and to obey traffic signals and signs.

  –Data would indicate that motorists treat men and women cyclists differently on the road; for example, choosing to follow female cyclists rather than passing too closely to them, which is a motorist behavior reported much more frequently by male riders.

- Most cyclists frequently or sometimes feel safe while riding. There is no significant difference in the feeling of safety indicated by different ages, genders, residence location or cycling frequency.

  –Cyclists who indicated they never wear a helmet were significantly more likely to indicate they always or frequently feel safe while riding, than reported by all other cyclists, including those who always follow all safety rules.

- None of the tested messages or ads were chosen as a clear-cut, top message for all types of cyclists or for motorists.

  –Messages and ads that spoke to both cyclists and motorists were generally better received because neither audience felt blamed or singled out as being required to make all of the changes necessary to reduce crashes. However, most respondents – whether cyclists or motorists – felt their behavior and the behavior of the group they identified with was not the problem, so the messages and ads were interpreted as speaking only to the other audience.

- Certain messages appealed to respondents, or respondents liked them, but that does not mean the messages are likely to change behavior of the respondents. In fact, several messages were selected as being good for reducing bicycle/motor vehicle crashes, but respondents nevertheless said they would not personally change their riding or driving habit as a result of seeing the message.

  –Both cyclists and motorists identified "Share the Road" as a message they believed would reduce the number of bicycle/motor vehicle crashes; however, when asked which message would change their driving or riding habits, the "Share the Road" message fell to the bottom of the list.

  –Motorists' top response was to say that none of the messages would get them to change their driving behavior, indicating an uphill battle with drivers to encourage any behavior change among them.

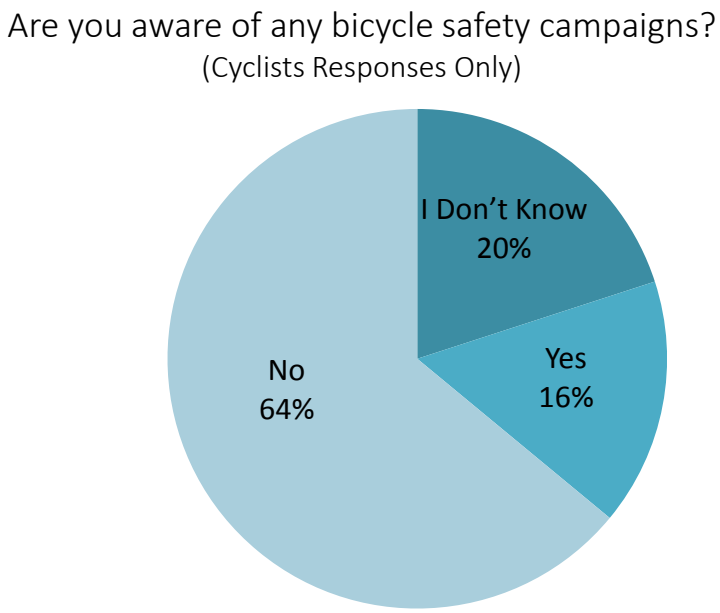
AWARENESS: BICYCLE CAMPAIGNS

The majority of cyclists and motorists are unaware of any ongoing bicycle safety campaigns.

- Only 12 percent of motorists and 16 percent of cyclists were familiar with a bicycle safety campaign.
- Cyclists who were familiar identified Greater Grand Rapids Bicycle Coalition, Spoke Folks, Share the Road, People for Bikes, miscellaneous free helmet events, Safe Streets, 3FT campaigns and this project from the City.
- "Share the Road" and this City project were identified most often by motorists who were aware of a bicycle safety campaign.

Additionally, 22 percent of cyclists identified themselves as a member of a cycling advocacy group. Rapid Wheelmen, West Michigan Mountain Biking Association, International Mountain Bicycling Association and a variety of cycling/triathlon teams were the top groups listed by respondents.

Figure 1.

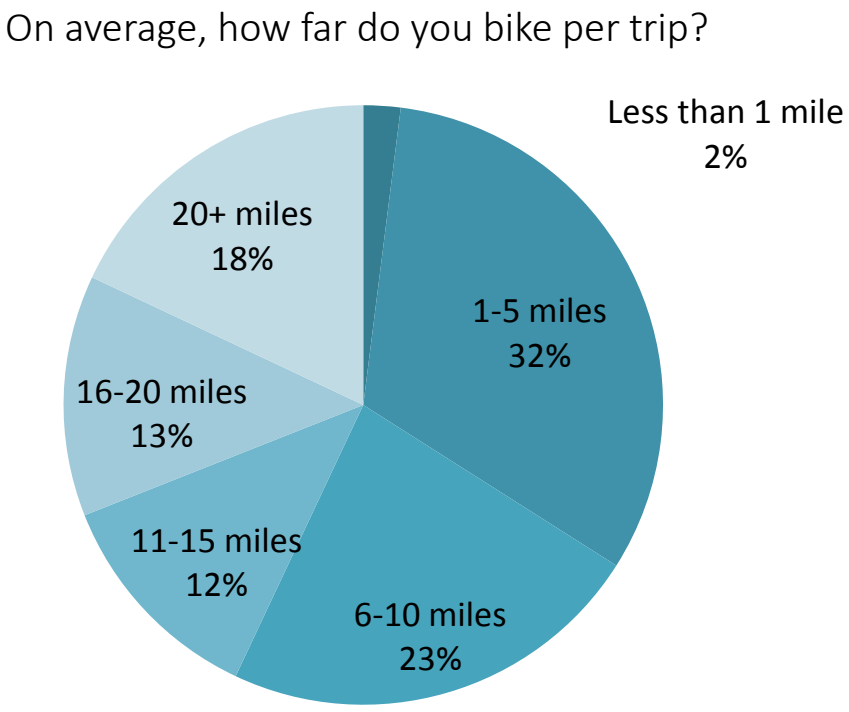


CYCLISTS: TYPE OF RIDING

Cycling respondents averaged a wide range of distances per trip. Typically, daily riders tended to report the longest trips, while those riding monthly did not ride as far.

- Suburbanites tended to ride significantly farther than city dwellers.
- Riders aged 21–29 tend to travel short distances, while riders 30+ years old were more diverse in their riding distances.
- Women also tend to ride significantly shorter distances than men.

Figure 2.

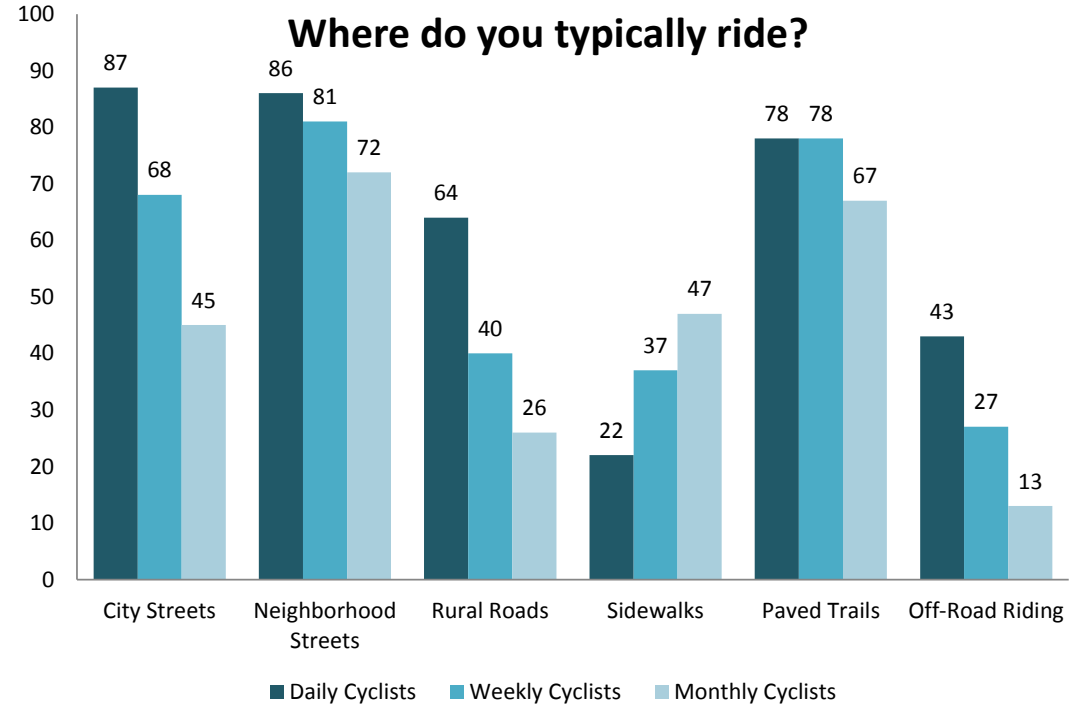


CYCLISTS: TYPE OF RIDING

Daily and weekly riders were more likely than monthly riders to ride on all types of roads and paths, except for sidewalks. Daily cyclists were almost twice as likely as monthly riders to ride on city streets, and more than twice as likely to ride on rural roads and to do off-road riding.

- Men were significantly more likely than women to ride on city streets and rural roads.
- Riders in their 20s were most likely to say they typically ride on sidewalks.
- Not surprisingly, city dwellers were most likely to ride on city streets, and rural residents most likely to ride on rural roads.

Figure 3.



Health and fitness dominate the reasons that respondents ride, followed by fun. Daily riders are most likely to use their bike to commute to work or to get around town, but enjoyment and fitness motivate the decision to ride, rather than economics.

Figure 4.

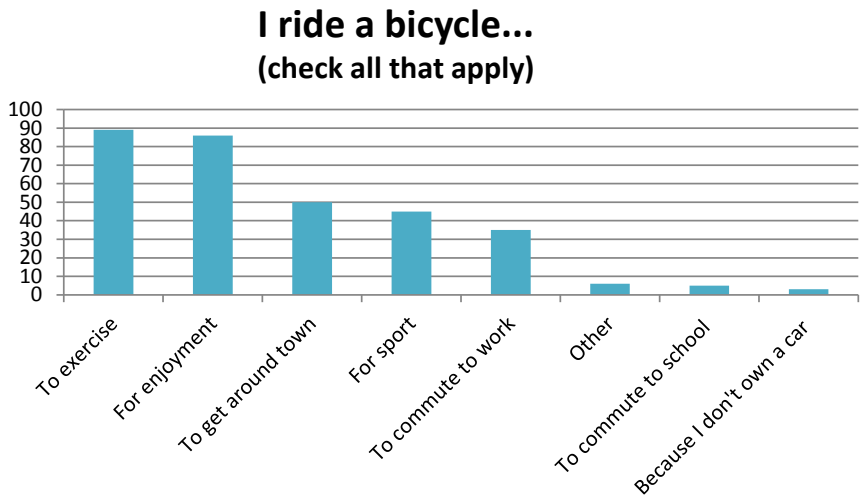
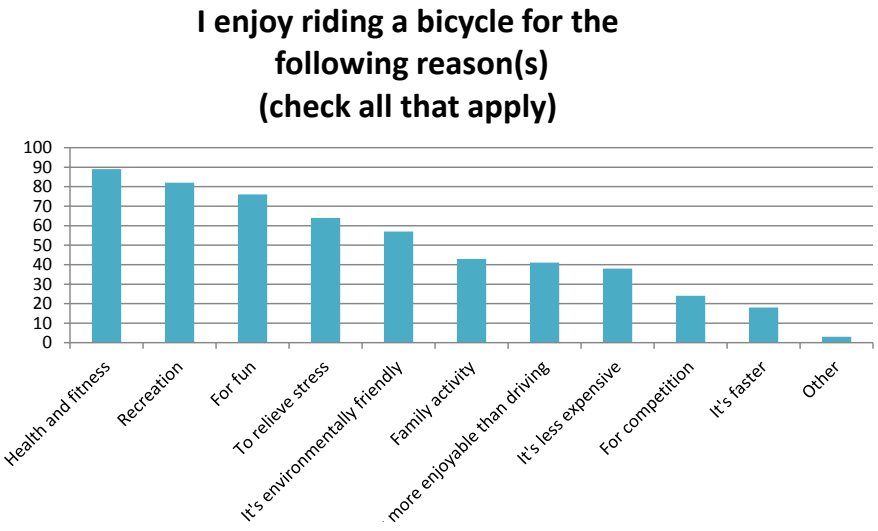


Figure 5.



CYCLISTS: RULE ADHERENCE

Respondents who indicated they rode a bike on a monthly basis were significantly more likely to say they did not always ride with traffic or wear a helmet while riding than were respondents who ride more frequently. A reason for both behaviors could be the type of riding monthly riders are engaging in – short distances on sidewalks, paved trails and neighborhood streets.

- More than half – 56 percent – of monthly riders said they did not always wear a helmet, and 25 percent of thaT group never wear a helmet.
- All cyclists – daily, weekly and monthly riders – aged 21–29 were significantly less likely to always ride with traffic and to wear a helmet than were respondents aged 30+.
- Among monthly riders, women were significantly more likely than men to always wear a helmet.
- Men who ride monthly were significantly more likely to ride with traffic than women who ride monthly.

Figure 6.

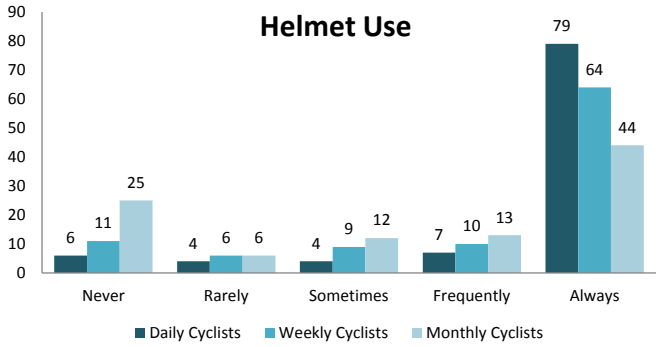
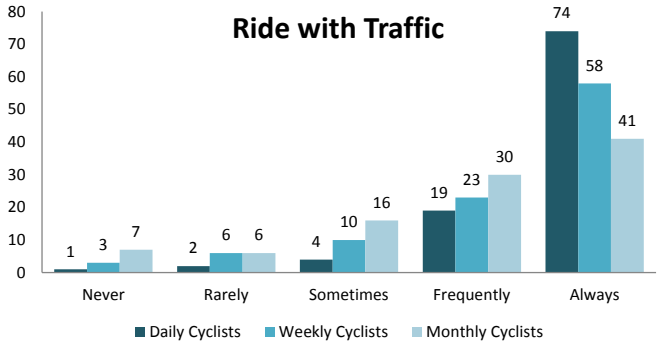


Figure 7.



CYCLISTS: RULE ADHERENCE

Those who ride more frequently are more likely to signal their turns but less likely to obey traffic signals and stops. They also were most likely to dress in bright clothing while riding.

- Daily riders are most likely to ride on city streets but least likely to obey traffic signals and stop signs.
- Riders in their 20s are less likely than older riders to signal turns and obey traffic signals. This is true for daily, weekly and monthly riders in their 20s compared to older riders.
- Women are significantly more likely than men to always obey traffic signals and stop signs.
- The percentage of respondents who always wear bright clothing while riding corresponds to age – those in their 60s are most likely, while those in their 20s are least likely.

Figure 8.

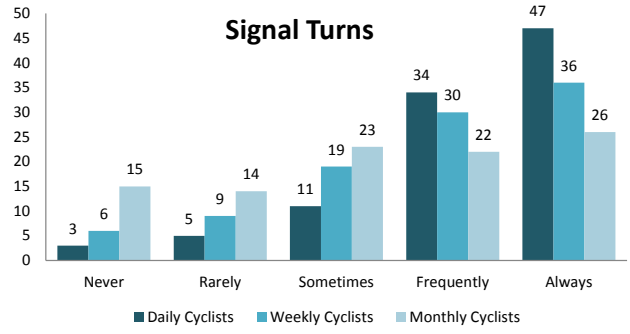


Figure 9.

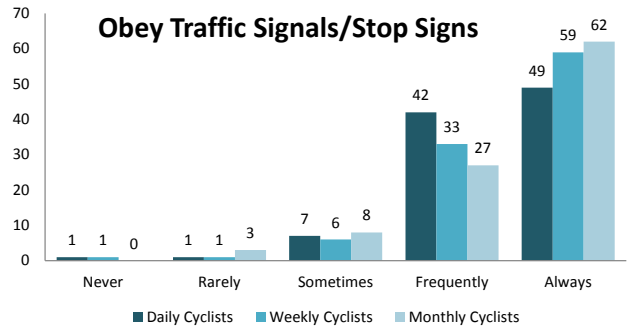
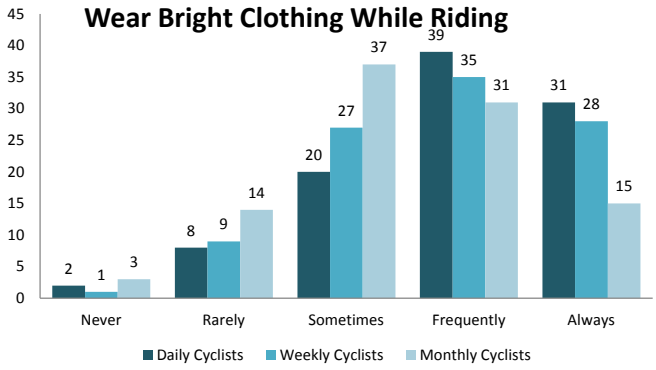


Figure 10.

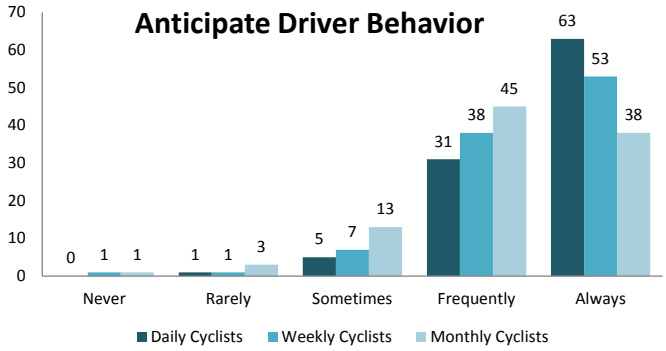


CYCLISTS: EXPERIENCE ON THE ROAD

Frequent riders are more likely to anticipate driver behavior and to wear bright clothing while they ride.

- Men are significantly more likely to say they anticipate driver behavior while they ride than women.

Figure 11.



Daily cyclists are most likely to say they see drivers engaging in dangerous behavior, while monthly cyclists are most likely to say they see other bicyclists breaking traffic rules. These differences are likely due to the frequency of these two groups' rides and the fact that monthly cyclists spend significantly more time driving than riding.

- The youngest and oldest cyclists – those in their 20s and those 60+ – were significantly more likely to say they always see drivers engaged in dangerous behavior.
- Men and women are equally likely to report that bicyclists and drivers break rules or engage in dangerous behavior.

Figure 12.

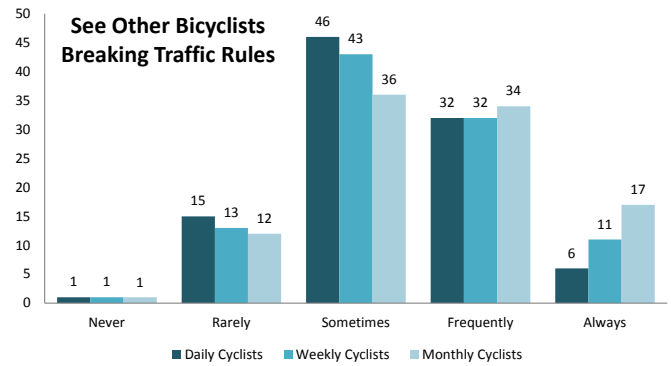
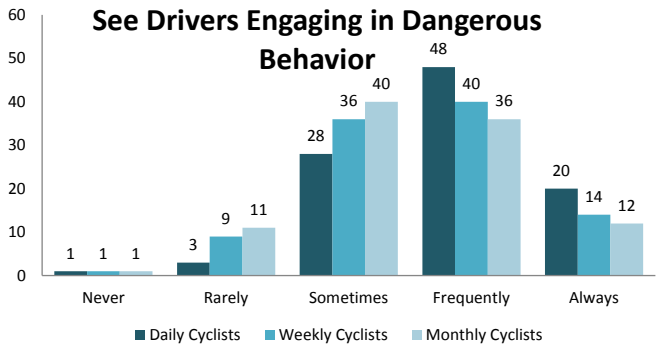


Figure 13.

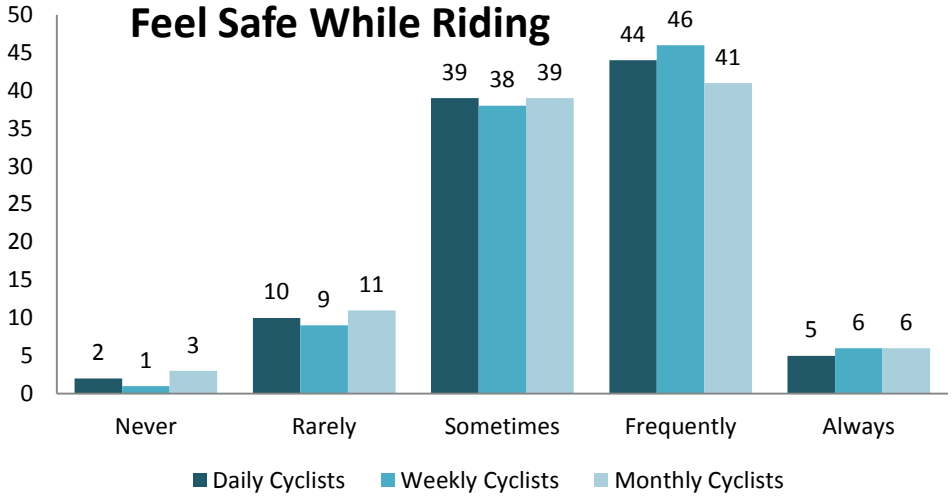


CYCLISTS: SAFETY

Somewhat surprisingly, there is very little difference between daily, weekly and monthly cyclists in terms of how often they feel safe while riding a bike.

- Only a very small percentage of riders always or never feel safe while riding; most feel safe frequently or sometimes.
- There are no significant differences in the feeling of safety by gender, age or city/suburban/rural or by cycling frequency despite some significant difference in riding behavior and rule-following by different segments.
- Cyclists who indicated they never wear a helmet were significantly more likely to indicate they always or frequently feel safe while riding, than reported by all other cyclists, including those who always follow all safety rules.

Figure 14.

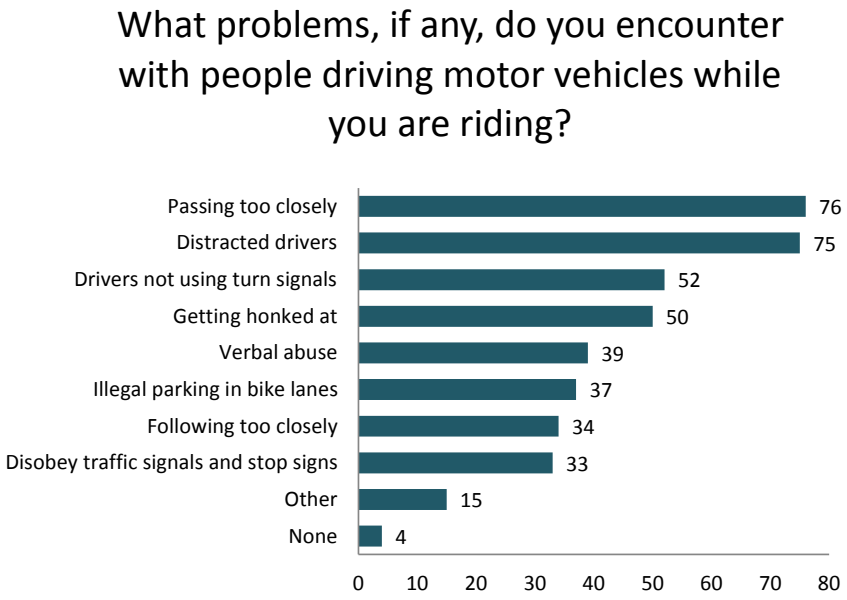


CYCLISTS: MOTORIST ENCOUNTERS

Perhaps unsurprisingly, daily and weekly riders are significantly more likely to report encountering problems while riding than are monthly riders. Similarly, daily riders are significantly more likely to report these problems than are weekly riders.

- Distracted drivers, illegal parking and following too closely are all significantly more likely to impact those living in the city and suburbs than those in rural areas. All the other problems are reported almost evenly across those locations.
- Women riders were significantly less likely than men to report encountering verbal abuse and to have drivers pass too closely.
- Additionally, women were significantly more likely than men to report drivers following too closely.

Figure 15.

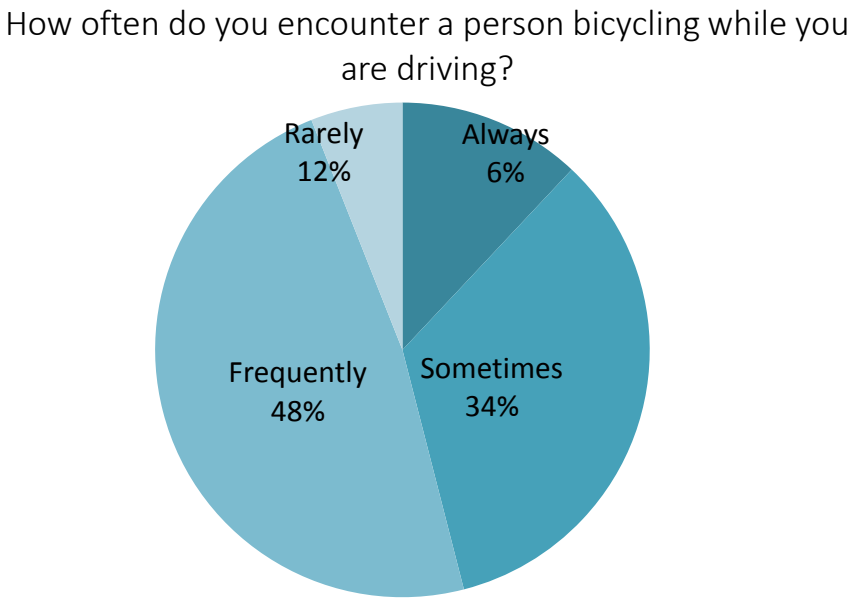


MOTORISTS: CYCLIST ENCOUNTERS

Grand Rapids motorists encounter cyclists on a regular basis. More than half of respondents – 54 percent – say they encounter a bicyclist always or frequently while driving. None of the respondents said they never encounter a cyclist while driving.

- Women are more likely to say they frequently encounter bicyclists, while men were more likely to say they rarely encounter them while driving.
- Motorists over the age of 50 were more likely to say they encountered cyclists while they were driving thanwere other age groups.

Figure 16.

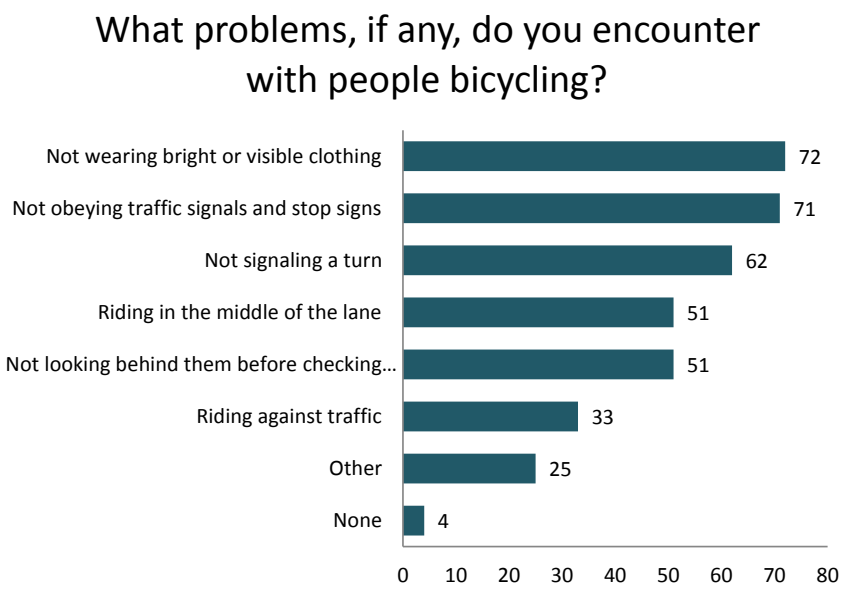


MOTORISTS: CYCLIST ENCOUNTERS

Among possible problems they may encounter with bicyclists, motorists are most likely to indicate cyclists not wearing bright or visible clothing or not obeying traffic signals and stop signs.

- Drivers living in the city are significantly more likely to encounter cyclists riding against traffic than are those living in the suburbs or rural areas.
- Women are significantly more likely to say they encounter cyclists not wearing bright clothing, while men are significantly more likely than women to say they encounter riders not obeying traffic signals and stop signs and riding against traffic.

Figure 17.



MESSAGE TESTING

The second half of the survey presented respondents with a variety of messages – both written and visual – to gauge clarity, believability, interest, appeal and likelihood to change behavior. Understanding which messages are likely to prompt behavior change, rather than just determining which ones are popular, is key to building a messaging campaign that achieves the goals of reduced bicycle/motor vehicle crashes and fatalities and builds mutual respect among road users.

MINDSET

Understanding how different people view the root of the problem is key to explaining why different audiences favor different message approaches. Frequent cyclists believe that motorists' behavior or lack of knowledge is most likely to contribute to a bicycle/motor vehicle crash. Motorists believe the opposite; that poor behavior and lack of knowledge of the rules among cyclists is most likely to contribute to a crash.

Table 6.

Please rank the following as most likely to least likely to contribute to bicycle/motor vehicle crashes

Rank	Daily Cyclists	Weekly Cyclists	Monthly Cyclists	Motorists
1	Motorist demonstrating bad driving behavior	Motorist demonstrating bad driving behavior	Motorist not aware of bicyclist rights	Bicyclists breaking the rules, demonstrating bad riding behavior
2	Motorist not aware of bicyclist rights	Motorist not aware of bicyclist rights	Bicyclists breaking the rules, demonstrating bad riding behavior	Bicyclist knowledge of proper riding rules
3	Lack of mutual respect for one another	Bicyclists breaking the rules, demonstrating bad riding behavior	Motorist demonstrating bad driving behavior	Motorist not aware of bicyclist rights
4	Bicyclists breaking the rules, demonstrating bad riding behavior	Lack of mutual respect for one another	Lack of mutual respect for one another	Lack of mutual respect for one another
5	Bicyclist knowledge of proper riding rules	Bicyclist knowledge of proper riding rules	Bicyclist knowledge of proper riding rules	Motorist demonstrating bad driving behavior

Note: responses are color-coded for comparison of rankings.

MESSAGING

Both cyclists and motorists were asked to rank a set of written messages from most likely to least likely to reduce bicycle/motor vehicle crashes. Respondents then were asked which message from the previous list was most likely to get them to change their riding or driving behavior. There were a few very significant differences between messages that respondents viewed as most likely to reduce crashes and those that would change their own behavior.

- "Share the road" ranked in the top three for both motorists and cyclists in reducing crashes but came in last and second to last in messages that would motivate change in current respondent behavior.
- Cyclists did not think the message of "80% of cyclists are killed by their own behavior" would reduce crashes, likely because cyclists tend to view crashes as resulting from driver poor behavior, but it was the top message in motivating change in respondents' behavior even if they did not believe the figure to be accurate. It is important to note that this statistic was fabricated to investigate cyclists' attitudes.
- Somewhat similarly, motorists ranked "Respect everyone's journey" last in reducing crashes but third in motivating respondents to change their driving behavior. Respondents like the reminder to be respectful and the inclusiveness of "everyone," which many viewed as including other drivers as well as cyclists/pedestrian interactions.
- The top response for motorists was "None" – that no message was going to change their behavior – while "None" was ranked fourth for behavior change for cyclists. Answers imply that it will be more difficult to change behavior of drivers than of cyclists.
- One message did rank well for both groups on both questions: "Drive or ride. Same rights. Same rules."

Table 7.

Cyclists	
Which message is most likely (1) to least likely (8) to reduce bicycle/motor vehicle crashes?	***Which statement is most likely to get you to change your riding behavior?***
1. Drive or ride. Same rights. Same rules. 2. Share the road 3. Expect the unexpected 4. Watch out for specific driver behavior (i.e. turning and opening doors) 5. Respect everyone's journey 6. Specific tips for bicycle safety (i.e. ride with traffic not against it, use lights at night) 7. We are enforcing bicycle laws to keep our streets safe 8. 80% of cyclists are killed by their own behavior*	1. 80% of cyclists are killed by their own behavior* 2. Drive or ride. Same rights. Same rules. 3. Expect the unexpected 4. None 5. Respect everyone's journey 6. Watch out for specific driver behavior (i.e. turning and opening doors) 7. Specific tips for bicycle safety (i.e. ride with traffic not against it, use lights at night) 8. Share the road 9. We are enforcing bicycle laws to keep our streets safe
Motorists	
Which message is most likely (1) to least likely (9) to reduce bicycle/motor vehicle crashes?	***Which statement is most likely to get you to change your driving behavior?***
1. Specific tips for bicycle safety (i.e. ride with traffic not against it, use lights at night) 2. Drive or ride. Same rights. Same rules. 3. Share the road 4. Look out for cyclists 5. Bike lanes will reduce bicycle crashes and fatalities 6. Stay wider of the rider 7. Respect everyone's journey 8. Cars and bicycles have equal rights to the road 9. Don't kill a cyclist, bicyclists are vulnerable	1. None 2. Drive or ride. Same rights. Same rules. 3. Respect everyone's journey 4. Specific tips for bicycle safety (i.e. ride with traffic not against it, use lights at night) 5. Bike lanes will reduce bicycle crashes and fatalities 6. Look out for cyclists 7. Cars and bicycles have equal rights to the road 8. Don't kill a cyclist, bicyclists are vulnerable 9. Stay wider of the rider 10. Share the road

*Specifically refers to children 14 years old and younger. About 50 percent of adult cyclists are found to be at fault for a crash involving a motor vehicle. The higher statistic was included to test reaction and preferences of cyclists

CREATIVE TESTING

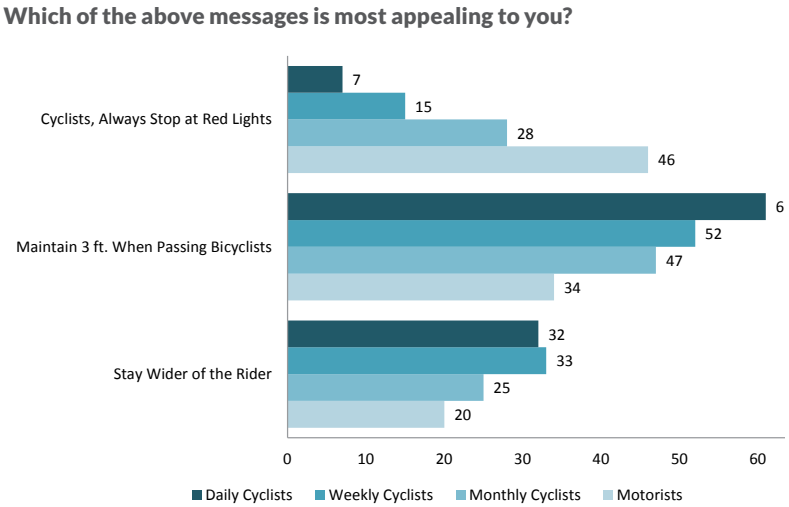
- Messages from around the United States and from other countries were used to test responses to existing types of ads.
- Messages were categorized into three thematic areas observed through best practice research – Instructional, Mutual
- Respect and Humanizing messages.

INSTRUCTIONAL CREATIVE

Three instructional ads were tested – two focusing on distance that motorists should give cyclists while passing them on the roadway and a third image instructing cyclists to stopping at red lights.

- Cyclists overwhelmingly selected the messages about drivers staying farther away while passing: 86 percent of cyclists chose either "Stay wider of the rider." or "Maintain 3FT When Passing Bicyclists."
- Motorists favored the "Cyclists. Always Stop at Red Lights." message most often; 46 percent of those respondents selected it as most appealing.
- Motorists under the age of 30 favored the "Maintain 3FT" message over the "Red Lights" message; this was the only age group of motorists to do so.

Figure 18.

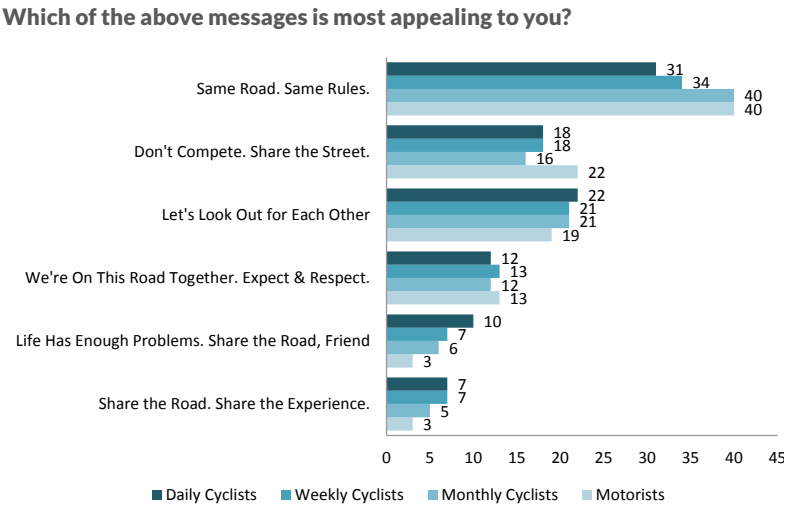


MUTUAL RESPECT CREATIVE

Six mutual respect ads, with a variety of approaches, were tested. The direct "Share the Road" messages were not appealing to respondents, with the exception of "Don't Compete. Share the Street." The latter was more roundly supported because it included pedestrians and rhymed.

- The message "Same Road. Same Rules." was the most appealing to all respondents regardless of cycling frequency, age, gender or location of residence.
- Respondents favored the "Same Road. Same Rules." message largely because they felt it speaks to both motorists and cyclists – reminding cyclists to follow the rules and motorists that cyclists are allowed on the road.
- Women were significantly more likely than men to find "Don't Compete. Share the Street." appealing.
- "Don't Compete. Share the Street." was significantly more appealing to those 50+ years of age than to respondents younger than 50. "Life Has Enough Problems" had the opposite effect, appealing more to respondents 20–49 years old than to respondents over 50 years old.

Figure 19.

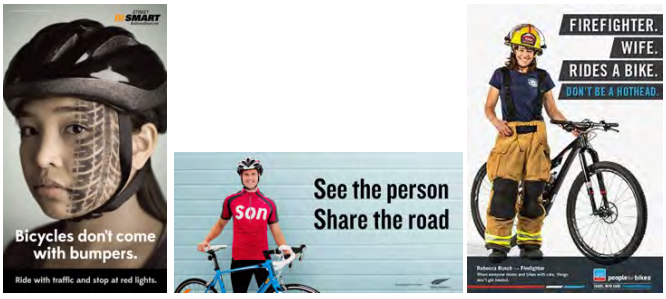


HUMANIZING CREATIVE

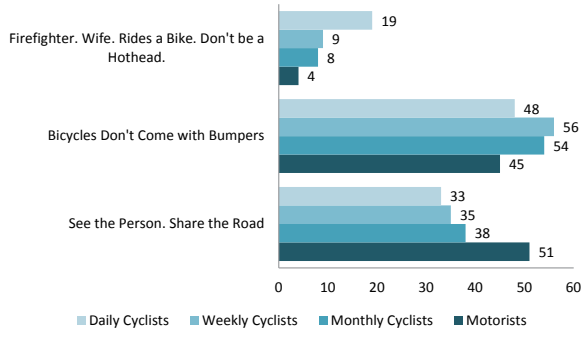
Three humanizing messages were presented – ads intended to emphasize that cyclists are people, perhaps people that you know, in order to combat the animosity that appears between cyclists and motorists. Two of the three ads split respondents, while the third option came in a very distant third place.

- A majority of weekly and monthly cyclists found "Bicycles don't come with bumpers." most appealing. None of the ads gathered a majority of daily cyclists, but this one did lead, with 48 percent of daily cycling respondents finding it most appealing.
- A slim majority of motorists responded best to "See the Person. Share the Road."
- Motorists were more apt to find the "Bicycles don't come with bumpers." message overly dramatic and often felt that they were being blamed for all accidents.
- Women preferred the "Bicycles don't come with bumpers." message more than men did – 56 percent to 47 percent.
- Preferences among respondents over the age of 50 differed significantly from those of younger respondents. Forty-eight percent of the older group found the "See the Person. Share the Road." message most appealing, while only 32 percent of those under 50 did.
- Respondents in their 20s were significantly more likely than all older age groups to find "Bicycles don't come with bumpers." most appealing, with 63 percent doing so.

Figure 20.



Which of the above messages is most appealing to you?



OVERALL CREATIVE

Last, we asked respondents to review all of the ads they had viewed and select which one was most appealing overall. Two messages rose to the top for all groups: "Same Road. Same Rules." and "Bicycles don't come with bumpers." Additionally, two of the instructional messages ranked in the top three. Cyclists preferred the "Maintain 3FT When Passing Bicyclists" message, and motorists preferred "Cyclists. Always Stop At Red Lights." Motorists prefer the message telling cyclists what action to take, while cyclists like the message telling motorists what action to take. Both groups say that the behavior addressed in their chosen ad – cyclists not stopping at red lights; motorists passing too closely – is one of the biggest problems they encounter as motorists or cyclists, respectively.

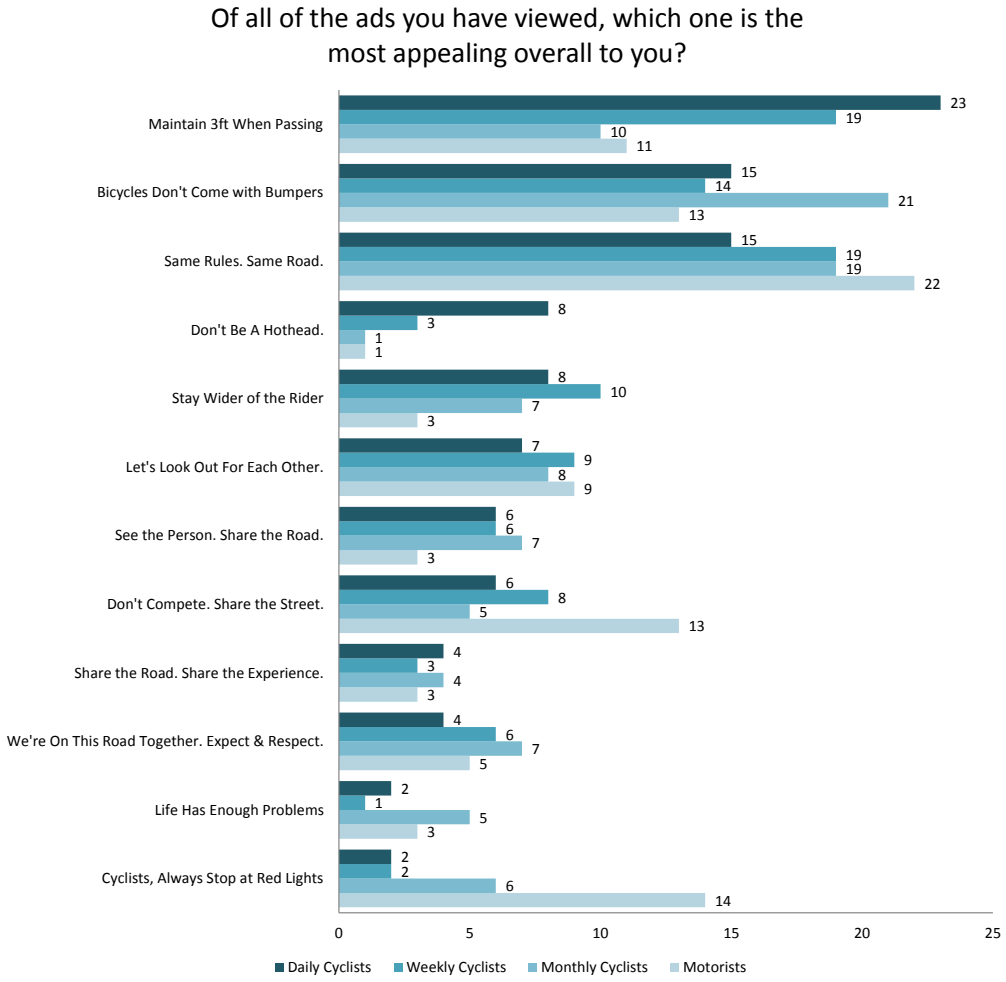
Table 8.

	Daily Cyclists	*Weekly Cyclists*	*Monthly Cyclists*	*Motorists*
1	*Maintain 3FT When Passing Bicyclists*	*Maintain 3FT When Passing Bicyclists*	*Bicycles don't come with bumpers.*	*Same Road. Same Rules.*
2	*Bicycles don't come with bumpers.*	*Same Road. Same Rules.*	*Same Road. Same Rules.*	*Cyclists. Always Stop At Red Lights.*
3	*Same Road. Same Rules.*	*Bicycles don't come with bumpers.*	*Maintain 3FT When Passing Bicyclists*	*Bicycles don't come with bumpers.*

Note: responses are color-coded for comparison of rankings.

A complete finding of overall ad preference by cycling frequency appears below. A few outliers, which did not fall in the top three ads, are readily visible; motorists' preference for "Don't Compete. Share the Street." and daily cyclists' preference for "Don't Be a Hothead." are clearly seen.

Figure 21.



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APPENDIX B: MEDIA CAMPAIGN SCAN

OVERVIEW

The safety education media campaign scan identified and audited existing bicycle safety awareness and education campaigns. Examples were gathered from the US and abroad to inform message and media recommendations.

DATABASE DEVELOPMENT

The team developed a database of existing campaigns, populated by conducting the broadest possible scan of traffic safety campaign types and campaign goals. The callout box below identifies pieces of information collected gathered per campaign:

Information Sought Per Campaign Example:

- Name
- Lead/Partners
- Description
- Primary Campaign Message
- Tone of Message
- Materials/Samples (saved as a URL or an image)
- Delivery Method (i.e.- TV placement, poster)
- Campaign Timing (order of segment, time of year)
- Language (i.e.- dual/multilingual)
- Target Crash Factor
- Target Audience (age, race, gender)
- Evidence of Effectiveness
- Link

MAIN FINDINGS

The campaign scan's main findings are divided into three broad sections according to:

- **Audience**
- **Objective**
- **Tone**

Each of these sections communicates different implications for the next phase of the Bicycle Safety Education Project. The callout box on the facing page identifies ways in which the project team has used campaign scan findings to make choices about the project's development.

Analyzing existing media campaigns, such as this example from the City of Sydney and creative agency Frost, helped identify campaign tropes common to multiple examples.*

Campaign Scan Findings & Project Implications:

Audience

Campaign Scan Examples	*Project Implications*
• *People who bike* • *People who drive* • *Both cyclists and motorists* • *"Community at-large"*	*The Steering Committee decided to focus on a target audience of people who bike and people who drive.*

Objective

Campaign Scan Examples	*Project Implications*
• *Awareness of pedestrians'/bicyclists' vulnerability* • *Enforcement* • *Yield to people crossing the street* • *Practice safe bicycling*	*The project focuses on three main objectives:* *1) Provide education and training on the operation of a bicycle in traffic;* *2) Increase the knowledge of the responsibilities of bicyclists and motorists;* *3) Promote a "share the road" culture.*

Tone

Campaign Scan Examples	*Project Implications*
• *Humor* • *Empathy* • *Fear-based/Shocking*	• *The online and in-person focus groups were designed to test the target audiences' reactions to specific tones.* • *The Steering Committee decided not to pursue creative pieces that employ a 'shocking' tone.*

Campaign Scan Database by the Numbers:

61 Media campaigns contained within the final database

100 Media pieces reviewed (i.e.- posters, TV public service announcements, radio placements)

13 Campaign metrics reviewed per media piece

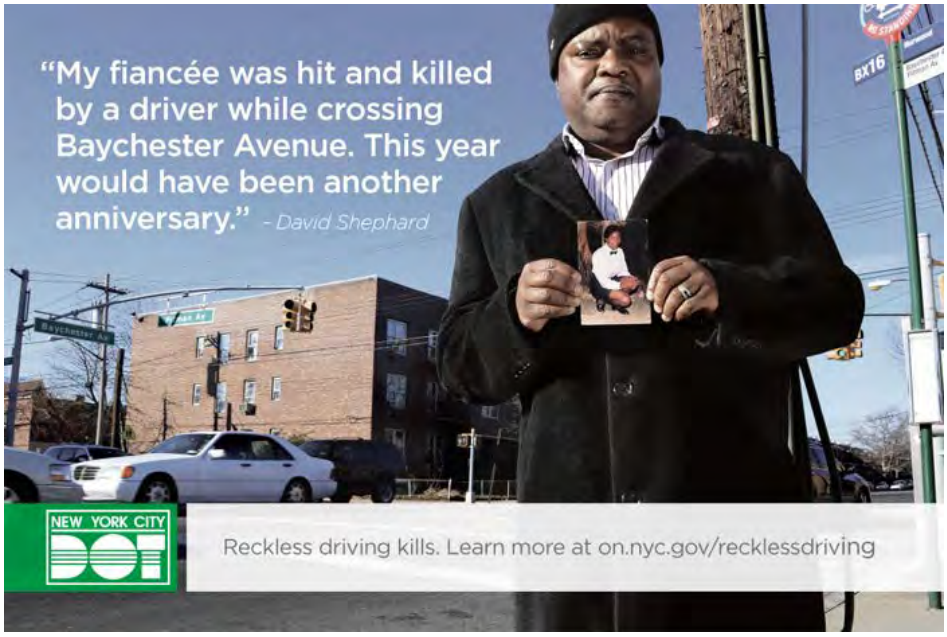
Sample Media Campaigns Photo Inventory

The following sample media pieces illustrate a variety of target audiences, objectives, and tones found throughout the overall campaign scan review.

Target Audience Examples

Media Pieces Targeting People Who Bike

Media Pieces Targeting People Who Drive

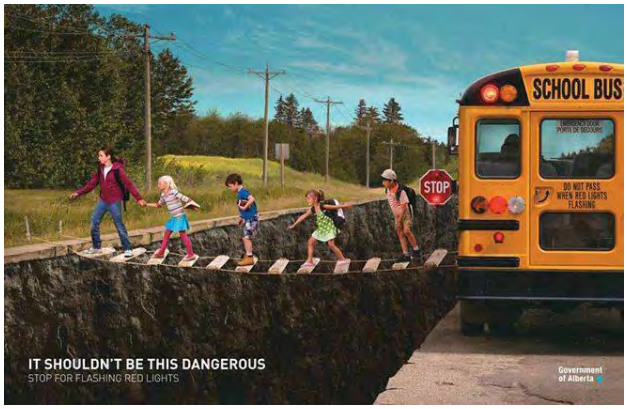


Media Pieces Targeting People Who Bike and People Who Drive

Media Pieces Targeting the Entire Community

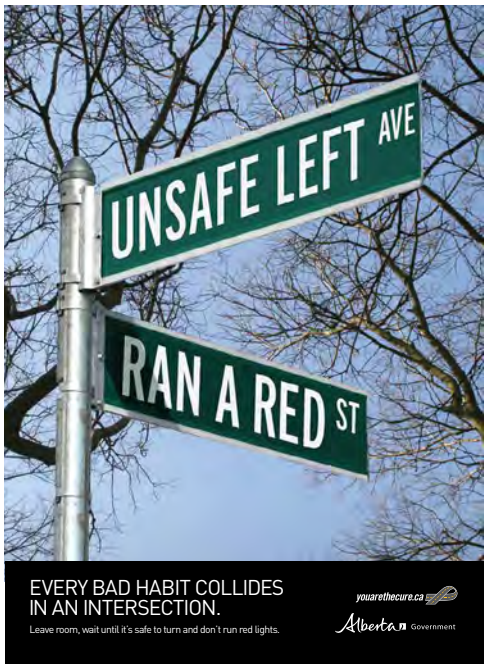
Examples of Campaign Objectives

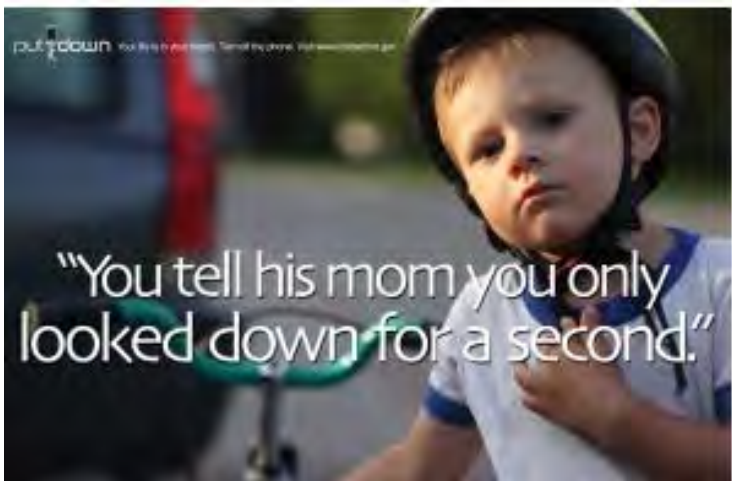
Yield to People Crossing the Street



Practice Safe Bicycling

Practice Safe Driving



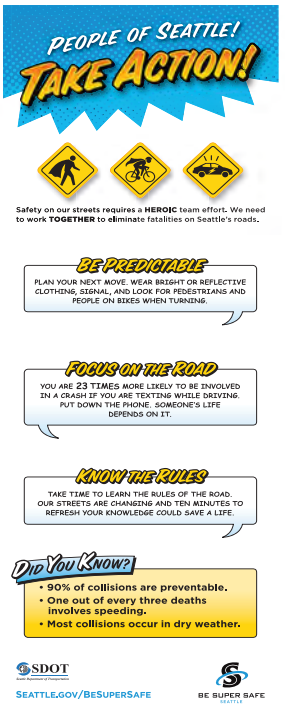


Enforcement

Campaign Tone Examples

Empathy

Educational/Authoritative

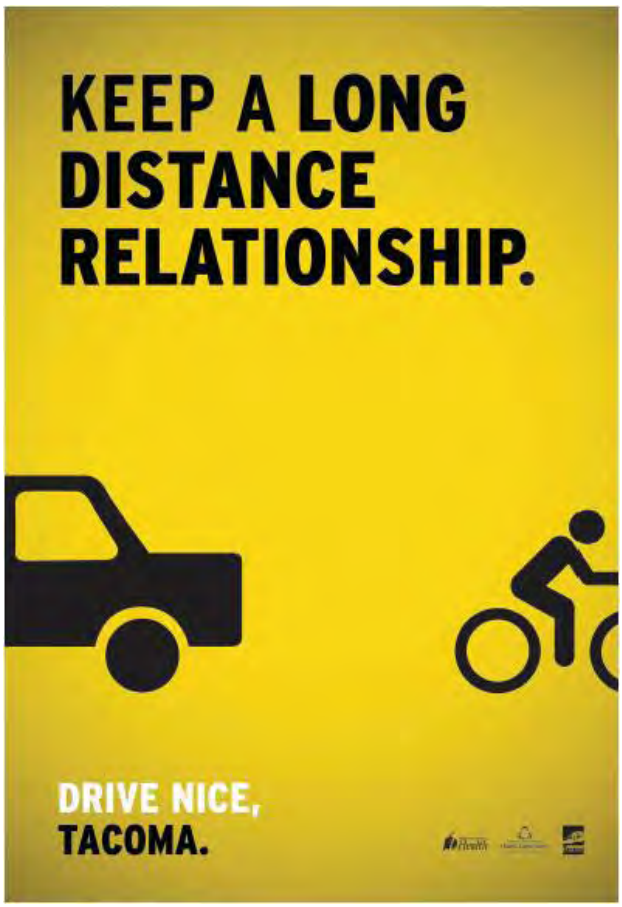


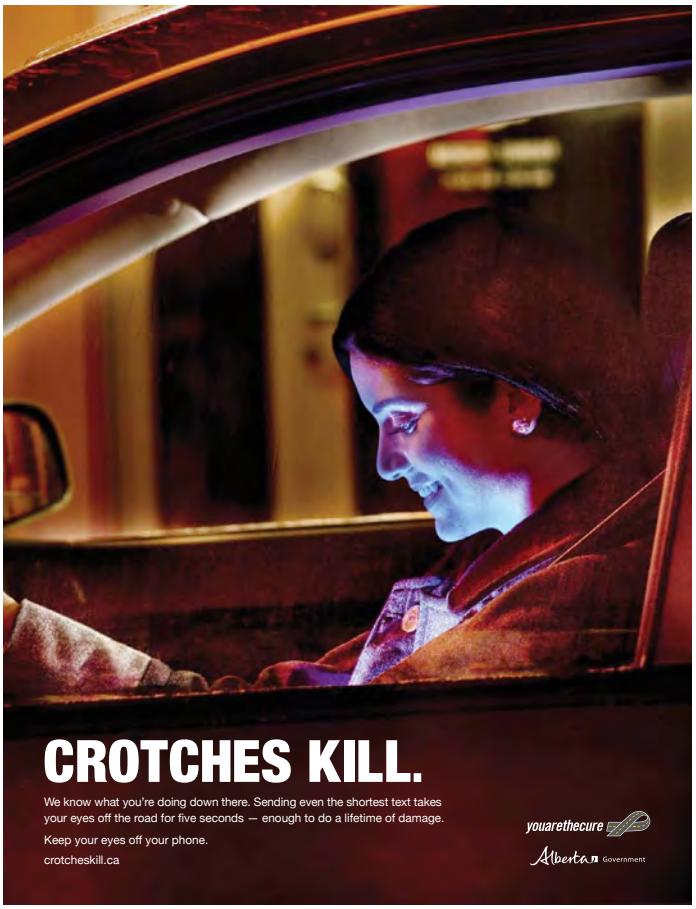
Fear-based/Empathy

At 35mph you are twice as likely to kill someone as you are at 30mph.

Shock/Fear-based

Humor


KEEP A LONG DISTANCE RELATIONSHIP.
DRIVE NICE, TACOMA.


CROTCHES KILL.
We know what you're doing down there. Sending even the shortest text takes your eyes off the road for five seconds — enough to do a lifetime of damage.
Keep your eyes off your phone.
crotcheskill.ca
youarethecure
Alberta Government

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APPENDIX C: CRASH ANALYSIS REPORT

OVERVIEW

This memo presents the results of an analysis on bicycle involved crashes in the Grand Rapids region. It uses the most recent ten years for which data are available (2004-2013) to identify trends and answer questions regarding the 'who, what, where, when, why and how' of bicycle crashes. The memo presents a series of figures under each of the category headers. The final report will contain maps illustrating crash trends. The team will append the report upon the maps' completion.

Grand Rapids has one of the worst bicycle-related crash rates in Michigan. Table 9, below, compares the Greater Grand Rapids area data to state averages:

Statistics contained in this report originated from police reports filed through the Michigan Traffic Crash Facts database. Crashes within the study area reflect the national phenomenon of under-reported bicycle crashes. Although the report reflects the most accurate and most up-to-date information available, the dataset can only contain crashes that are reported to the police. The level of underreporting within the study area is unknown. Studies in other communities reveal that as many as 90% of crashes with injuries on private roadways are unreported.

Table 9. Grand Rapids Area Crashes Compared with Michigan Averages

	Grand Region (2008-2012)	*City of Grand Rapids (2008-2012)*	*Michigan Average (2008-2012)*
Bike crashes as percent of total crashes	*0.9%*	*1.2%*	*0.7%*
Percent of bike crashes that are fatal	*4.2%*	*8.2%*	*2.8%*
Percent of bike crashes with incapacitating injuries	*4.0%*	*1.9%*	*3.5%*

The results of this analysis will inform the development of messaging campaigns designed to improve bicycle safety. These campaigns will be responsive addressing the trends in bicycle crashes identified in this memo. Key findings are provided in the following section. The findings will help inform the safety messaging developed during subsequent phases.

KEY FINDINGS

What

- Bicyclists are 7 times more likely than drivers to be injured in a bike-vehicle crash (99% vs. 14%).
- Over 96% of crashes involve passenger cars/station wagons, pickups and vans/motorhomes.

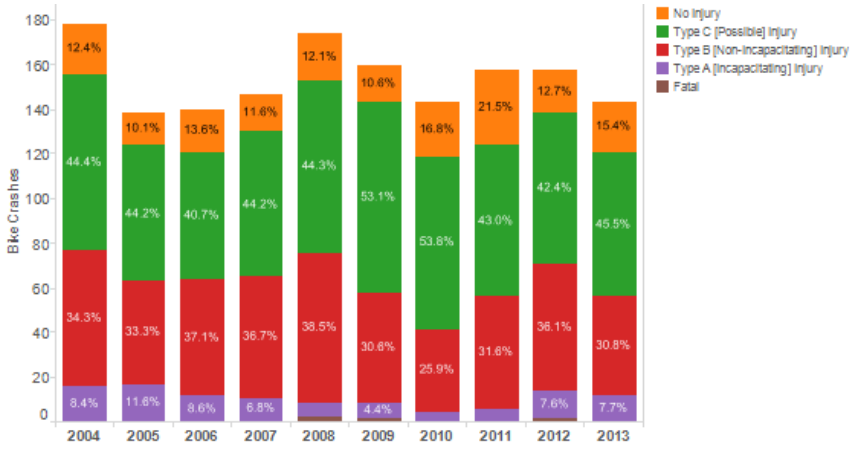


Figure 22. Severity of injury to bicyclist

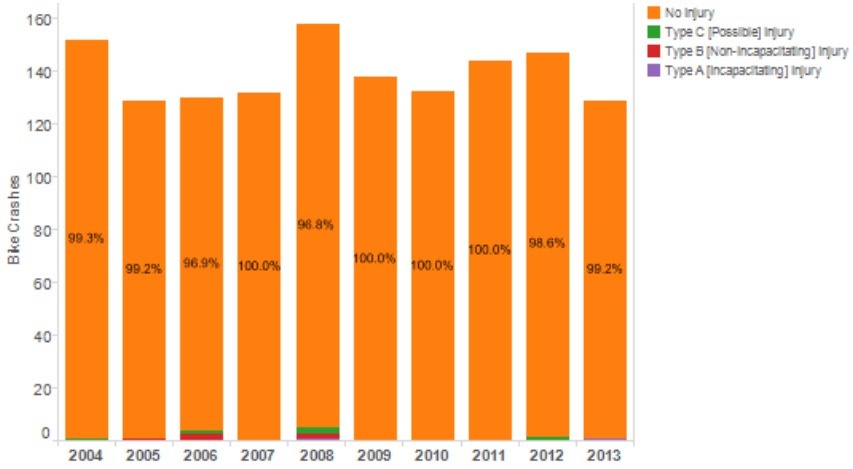


Figure 23. Severity of injury to driver

Who

- Youth (10-19) and young adults (20-24) are over-represented as bicyclists in crashes, as compared to their share of the general population. Males are over-represented, representing 80% of crashes.
- Driver age patterns are reflective of the general population. Males are slightly over-represented, representing 53.5% of crashes

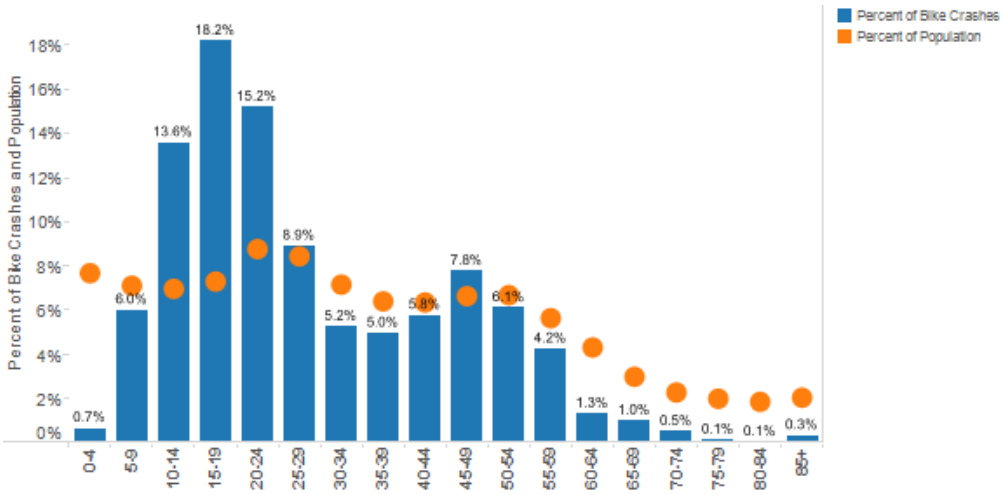


Figure 24. Age of bicyclists as compared to the total population

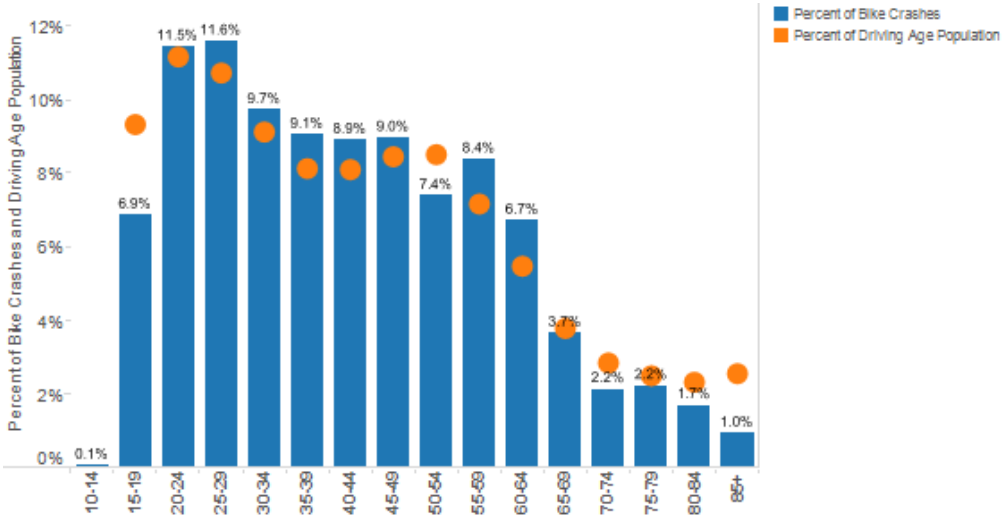


Figure 25. Age of drivers as compared to the total population

When

- Crash data indicates a small morning peak period around 7 am and a much longer evening peak period from approximately 3 to 7 pm. School age children (0-17) make up a relatively larger portion of bicycle crashes occurring during the afternoon peak period, beginning when school lets out in the afternoon.
- Crashes are more common during the warmer summer months, likely reflecting higher ridership during these months.
- Crashes are more common during the week, perhaps indicative of more weekday riding. Roads also carry higher weekday traffic volumes, particularly during peak periods, when many crashes occur.
- 80% of crashes take place during daylight hours. The share of crashes occurring under dark, dusk, or dawn conditions is higher during the winter months when days are shorter.

Where

- Crashes appear to be concentrated on a number of high crash corridors.
- The top twenty streets with the most crashes represent 40% of all crashes recorded throughout the study area (Table 9).

Table 9. Top Twenty High Crash Corridors

Street	Grand Rapids	Wyoming	Walker	Kentwood	Grandville	East Grand Rapids	Plainfield Township	Grand Rapids Township	Alpine Township	Total
Division	50	18		8	1					77
Fulton	51							1		52
Leonard	49		3							52
44th	6	18		14	6					44
28th	13	23		2	3					41
Kalamazoo	21			12						33
Burton	28	1		3						32
Eastern	21			9						30
36th	1	26			2					29
Lake	16					12				28
Wealthy	19					8				27
Clyde Park	5	20								25
Hall	17					7				24
Michigan	22									22
Plainfield	14						7			21
Lafayette	20									20
Alpine	9		8						2	19
Cherry	19									19
Fuller	19									19
L. Michigan	16		3							19
Top 20 Subtotal	**416**	**106**	**14**	**48**	**12**	**27**	**7**	**1**	**2**	**633**
All Others	**545**	**176**	**32**	**105**	**36**	**32**	**35**	**14**	**5**	**980**
Total	**961**	**282**	**46**	**153**	**48**	**59**	**42**	**15**	**7**	**1,613**
% Crashes on top 20 streets	**43%**	**38%**	**30%**	**31%**	**25%**	**46%**	**17%**	**7%**	**29%**	**39%**

Arterial streets:

- Nearly 60% of crashes took place on an arterial roadway (or at an intersection that included an arterial roadway), though arterials represent only 17% of the roadway miles in the region.
- Approximately half of bicycle crashes on arterial streets take place at traffic signals.
- Local streets represent over 60% of the roadway miles in the region, but only 26% of crashes.

Table 10. Functional Class and Crashes

Functional Class	*Percent of Crashes*	*Roadway Miles*	*Percent of Roadway Miles*
Interstate/ Freeway	*1.8%*	*279*	*7.4%*
Arterial	*57.9%*	*638*	*17.1%*
Collector	*12.8%*	*533*	*14.2%*
Local	*26.2%*	*2,294*	*61.3%*
*No Functional Class **	*1.2%*		
Total	*100%*	*3,744*	*100%*

Intersections and traffic signals:

- Over 60% of bicycle crashes occur within an intersection or are intersection related. Nearly all crashes at intersections took place at or near a signalized or stop controlled intersection.
- At traffic signals, over 40% of crashes involved a right turning vehicle, approximately 15% involved a left turning vehicle, and 28% involved a vehicle going straight.
- More than half of crashes on local streets took place at stop signs.
- At stop signs, nearly half of crashes involved a vehicle going straight, followed by left turning and then right turning vehicles.

Driveways:

- 17% of bicycle crashes are driveway related.

**654 miles of roadway classified as 'unknown' in the roadway file and are not included in the mileage calculation.*

Figure 26. Bicycle Crashes According to Frequency: 2004-2013

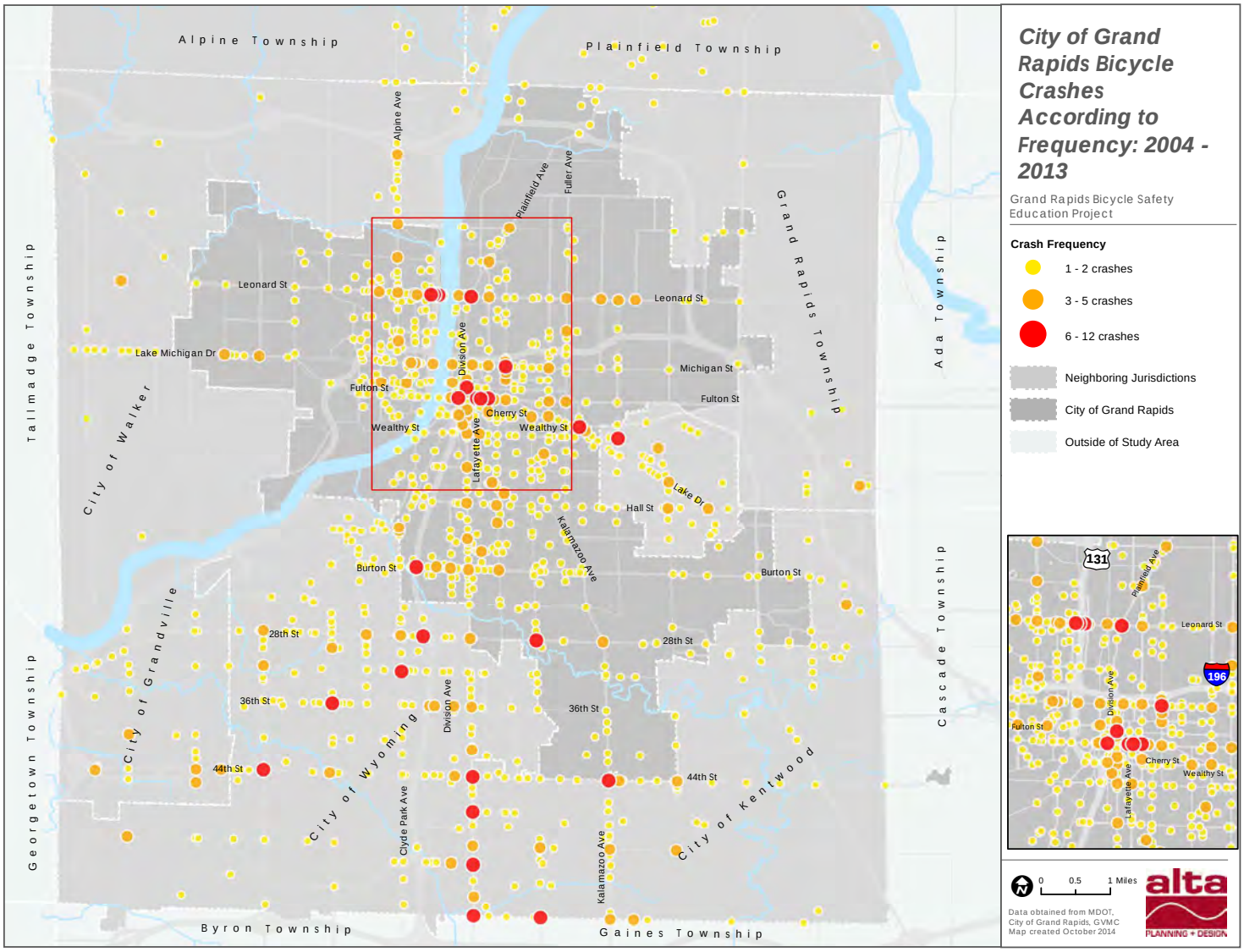
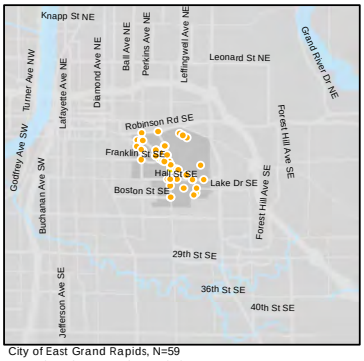
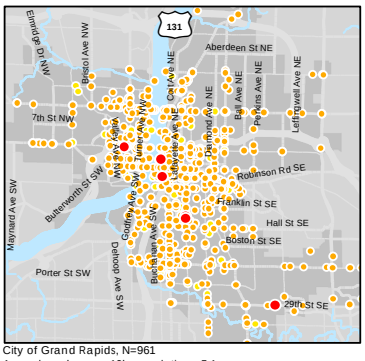


Figure 27. Bicycle Crash Severity in the Greater Grand Rapids Area: 2004-2013

Alpine Township, N=7
Annual crashes per 10k population = 0.9

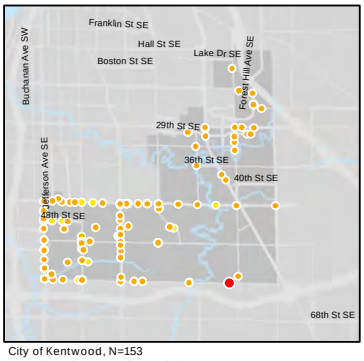


City of East Grand Rapids, N=59
Annual crashes per 10k population= 5.5



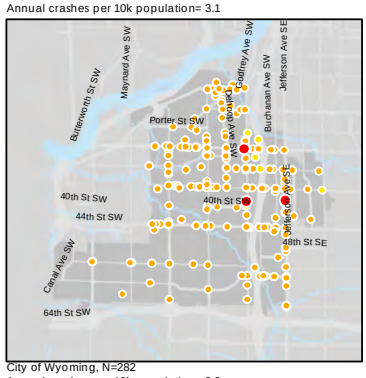
City of Grand Rapids, N=961
Annual crashes per 10k population= 5.1

City of Grandville, N=48
Annual crashes per 10k population= 3.1

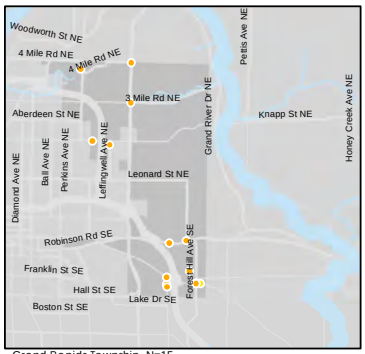


City of Kentwood, N=153
Annual crashes per 10k population= 3.1

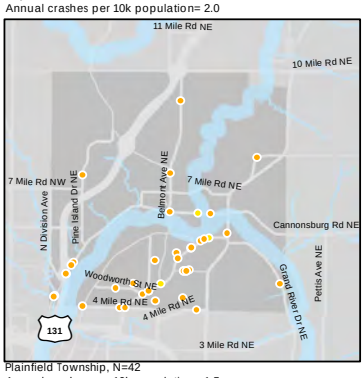
City of Walker, N=46
Annual crashes per 10k population= 2.0



City of Wyoming, N=282
Annual crashes per 10k population= 3.9



Grand Rapids Township, N=15
Annual crashes per 10k population= 1.1



Plainfield Township, N=42
Annual crashes per 10k population= 1.5

Bicycle Crash Severity in the Greater Grand Rapids Area: 2004 - 2013

Grand Rapids Bicycle Safety Education Project

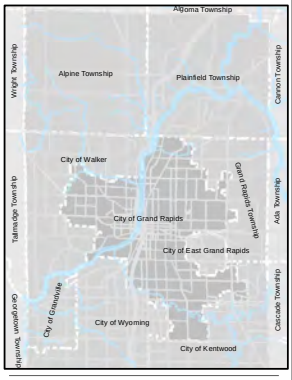
Bicycle Crashes

- Crash resulting in fatal injury
- Crash resulting in injury
- Crash without reported injury

Street Typologies

- US or State Roadway
- Collector or Arterial
- River or stream

Total crashes in the Greater Grand Rapids area from 2004-2013= 1613



0 0.5 1 2 Miles

Data obtained from MDOT, City of Grand Rapids, GVMC
Map created October 2014

alta PLANNING + DESIGN

Figure 28. Frequency of Bicycle Crashes within 1/4 Mile and 1/2 Mile of Grand Rapids Schools

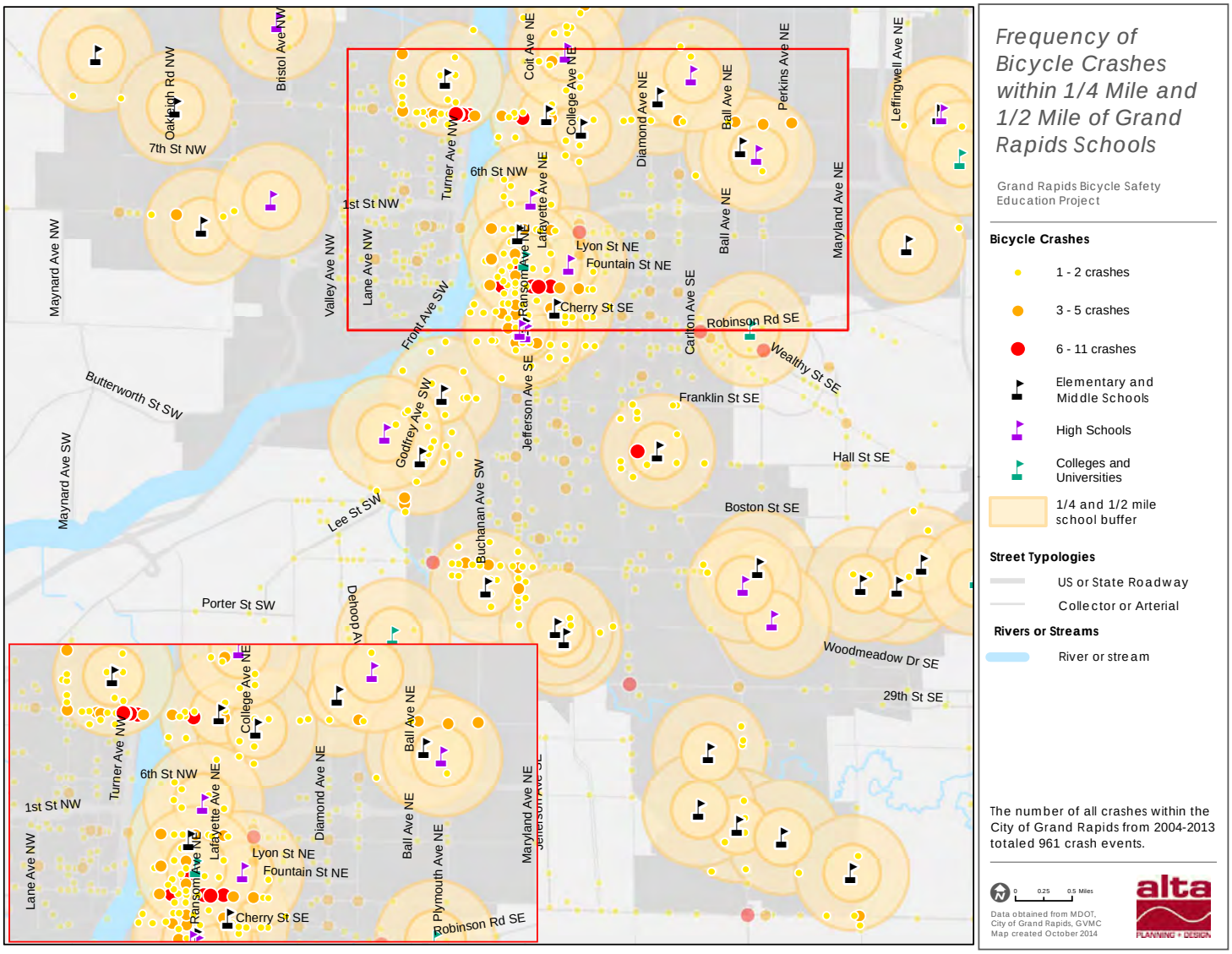
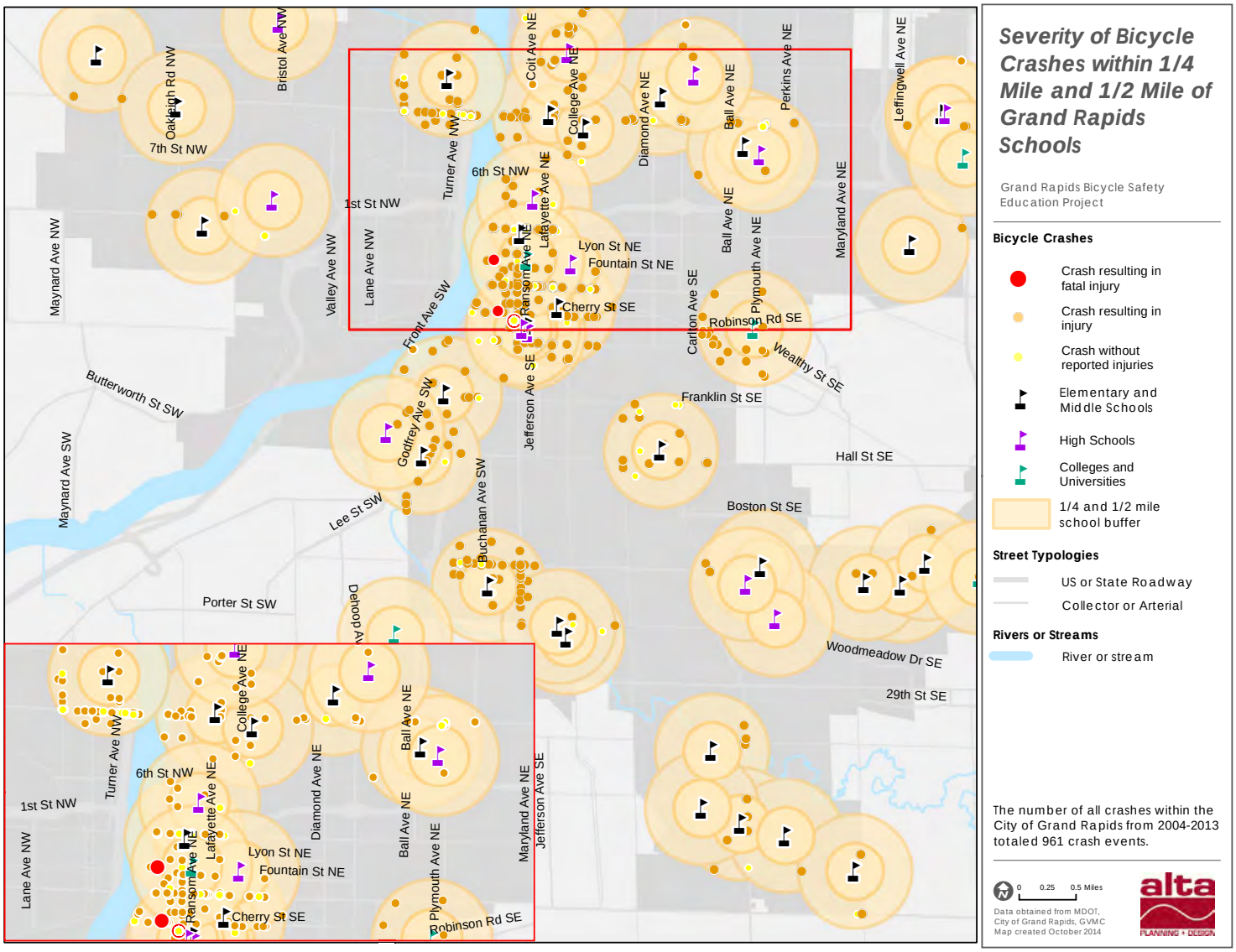


Figure 29. Severity of Bicycle Crashes within 1/4 Mile and 1/2 Mile of Grand Rapids Schools



How

- Right and left turning movements are prominent vehicle actions
- Twice as many crashes involved right turning vehicles (25% of all crashes) as compared to left turning vehicles (12% of all crashes). Over 35% of crashes involved vehicles traveling straight.
- The majority of crashes involve the bicyclist going straight, followed by crossing at an intersection (there appears to be overlap in these two categories, as both actions can be found in intersection crash records). Very few crashes involve turning bicyclists.

Figure 30. Driver Preceding Action

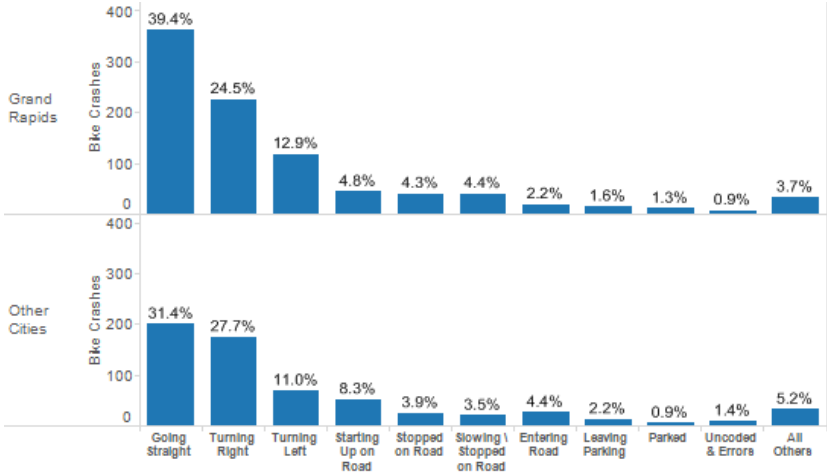
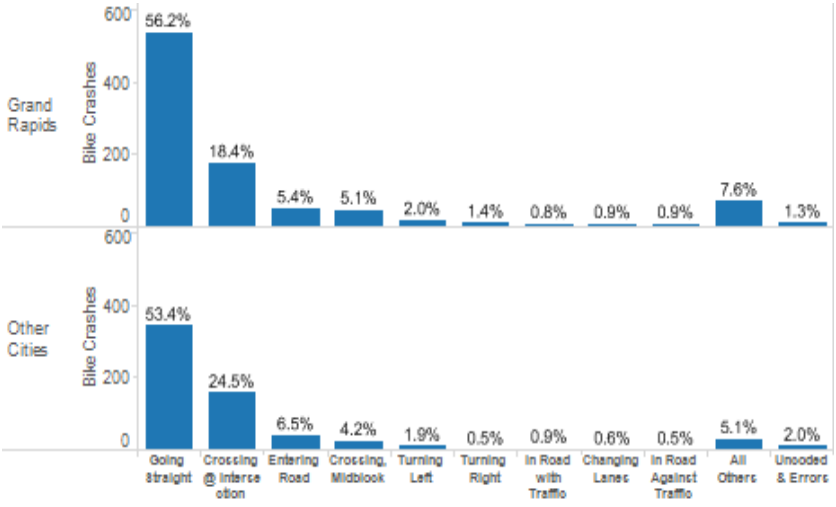


Figure 31. Bicyclist Preceding Action



Why

- The bike failed to yield in 20% of reported crashes and disregarded the traffic control in 6.5% of crashes. Approximately 60% of crashes have a recorded hazardous bicycle action of 'none' or 'other'.
- The vehicle failed to yield in nearly 30% of bicycle crashes. The vehicle hazardous action was recorded as 'none' in just over 50% of crashes.

Figure 32. Bike Hazardous Action

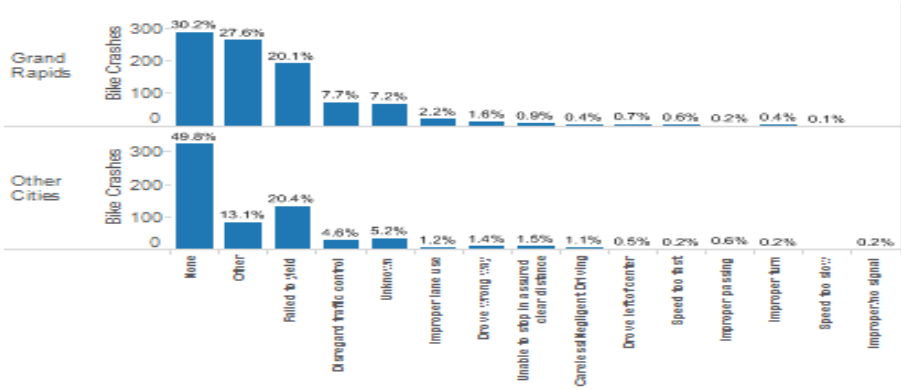
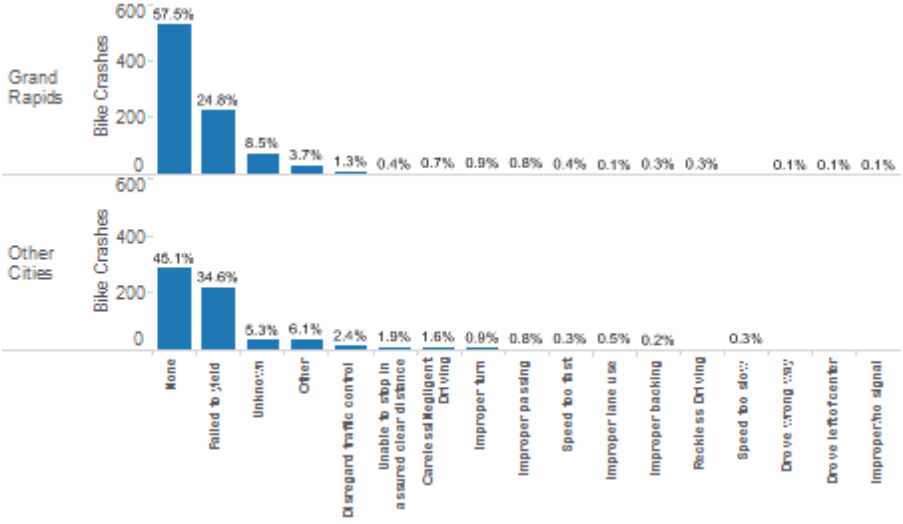


Figure 33. Vehicle Hazardous Action



RIDERSHIP INFORMATION: STATEWIDE AND LOCAL DATA

Understanding the number of bicyclists in a given place helps give meaning to crash statistics. The information helps interpret the relative risk of bicycle crashes. Previous efforts have attempted to understand Grand Rapids' level of bicycle ridership. There is significantly less information available for surrounding communities. Census data for "means to work" for the City of Grand Rapids from 2006-2013 shows an average 0.9% mode share for bicycling. The total number of riders counted during annual bicycle counts within Grand Rapids has increased by 60% from 2011 to 2013. Additionally, 56% of adult respondents to the 2013 MDOT Household Survey on Bicycling reported having ridden a bicycle within the past year. Continuing to collect ridership estimates over time across the city and region will add more certainty to available exposure and risk data.

Ridership across Michigan increases every year (Source: https://mackinacbridgerun.files.wordpress.com/2012/06/michigander-blog-post-pic.jpg).

LAW ENFORCEMENT OFFICER SURVEY DATA

Surveying law enforcement officers and conducting an online focus group helped fill in data missing from the crash study. This qualitative data helped understand law enforcement officers' opinions of area traffic safety awareness. Surveying the public helped test media campaign materials and gauge public understanding of traffic safety issues.

Officers were surveyed between February 26 and April 7, 2015, and represented all four service areas within Grand Rapids. Thirty-eight law enforcement officers responded. Seven officers in the study area's surrounding communities also contributed opinions. The majority of surveyed officers do not ride bicycles when on-duty or during their free time.

The majority of officers did not feel that their service area was more affected by poor bicyclist-motorist interaction than other areas of Grand Rapids.

Officers outside of Grand Rapids believed that their respective service areas were more affected by these problems than other service areas (Figure 34).

The figures on the following page (Figure 35, Figure 36) describe differences in offenses for which motorists and bicyclists are cited. Disregard of traffic signs and signals represents the most common infraction for both motorists and bicyclists. Speeding, nationally recognized as a major killer of people biking and walking, is the second-most commonly cited infraction against people driving. Lack of proper safety equipment (i.e.-lights at night) and failure to yield are the second-most prevalent bicyclist infractions.

Figure 34.

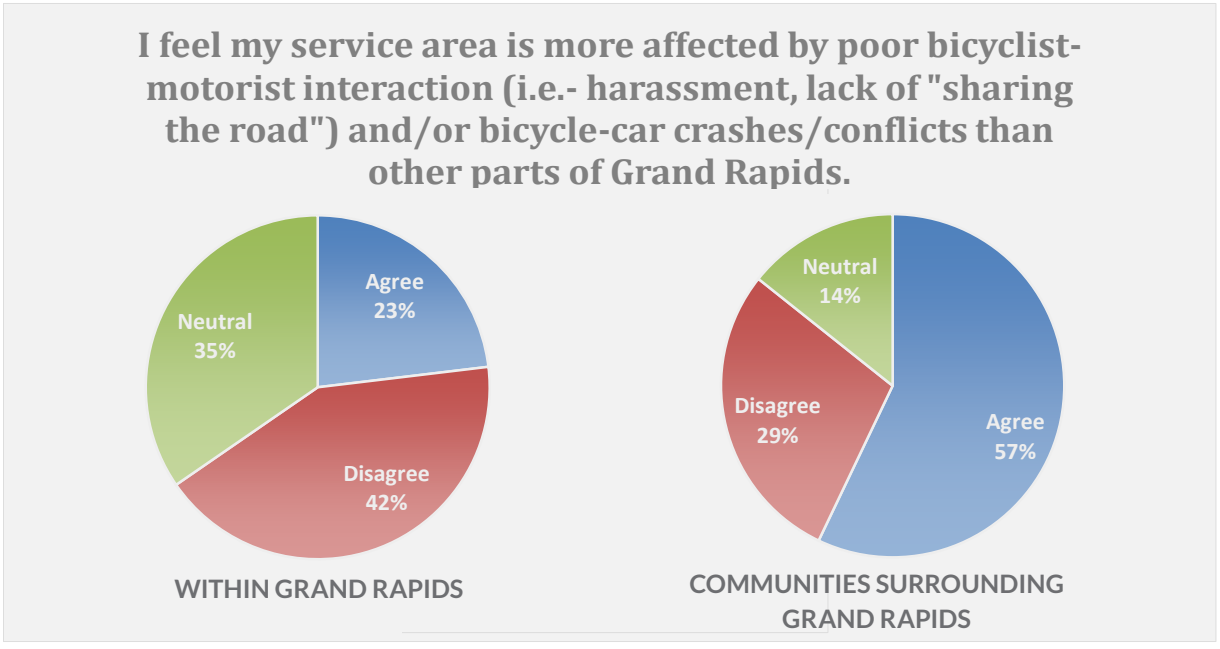
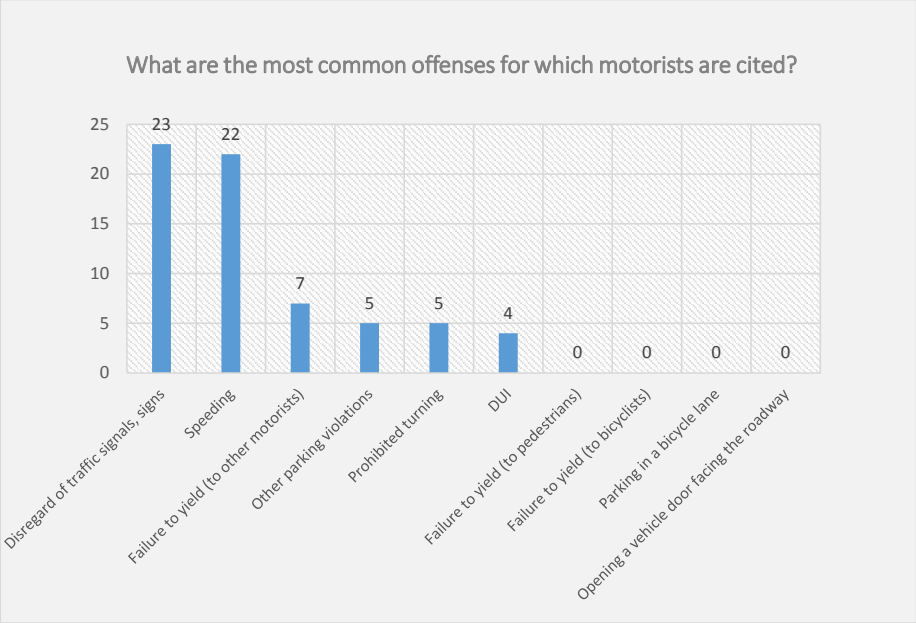


Figure 35.



From the Crash Data:

- *The* **bike failed to yield in 20%** *of reported crashes and disregarded the traffic control in 6.5% of crashes. Approximately 60% of crashes have a recorded hazardous bicycle action of 'none' or 'other'.*
- *The* **vehicle failed to yield in nearly 30%** *of bicycle crashes. The vehicle hazardous action was recorded as 'none' in just over 50% of crashes.*

Figure 36.

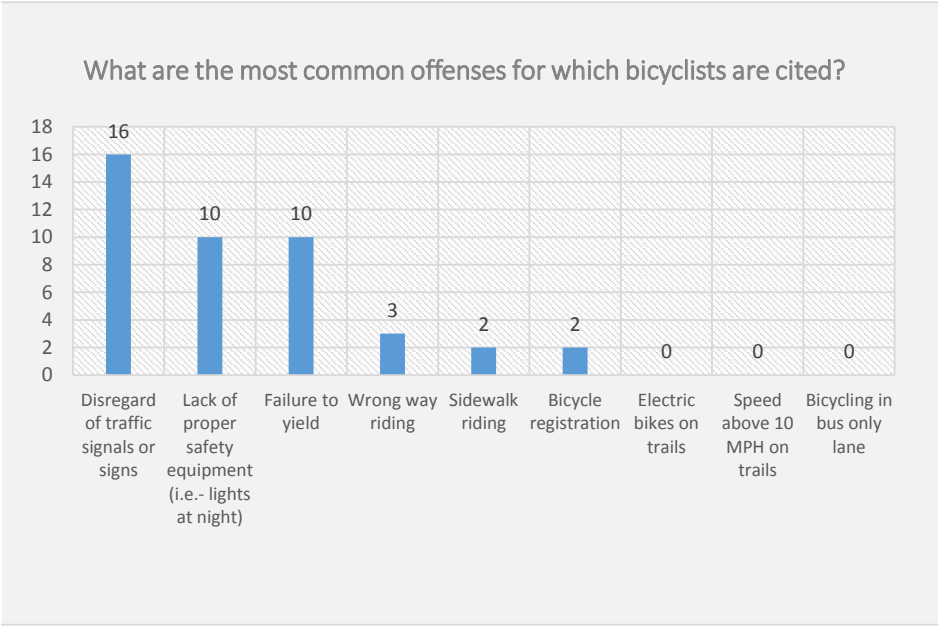
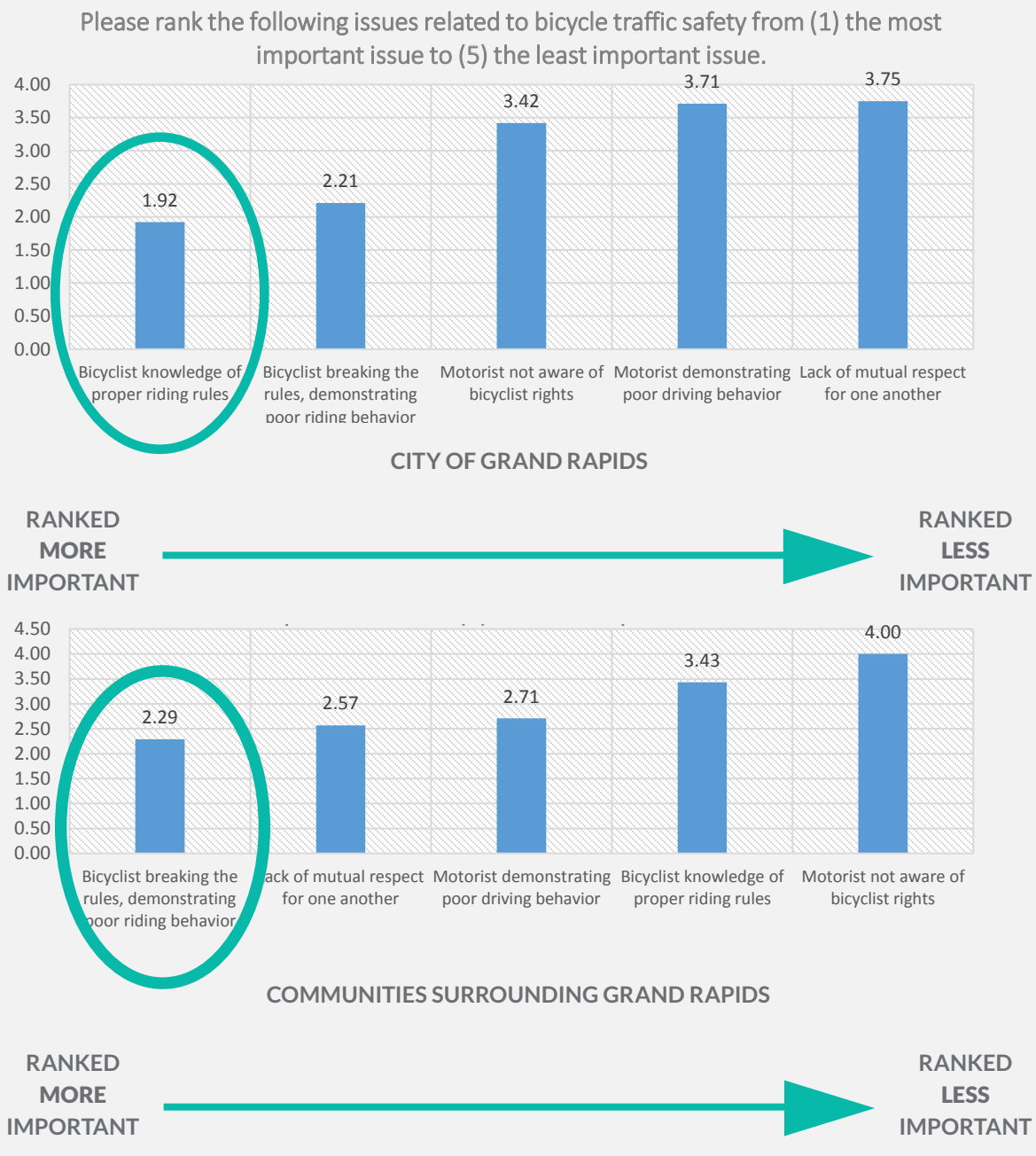


Figure 37.


Please rank the following issues related to bicycle traffic safety from (1) the most important issue to (5) the least important issue.
4.00
3.50
3.00
2.50
2.00
1.50
1.00
0.50
0.00
1.92
2.21
3.42
3.71
3.75
Bicyclist knowledge of proper riding rules
Bicyclist breaking the rules, demonstrating poor riding behavior
Motorist not aware of bicyclist rights
Motorist demonstrating poor driving behavior
Lack of mutual respect for one another
CITY OF GRAND RAPIDS
RANKED MORE IMPORTANT
RANKED LESS IMPORTANT
4.50
4.00
3.50
3.00
2.50
2.00
1.50
1.00
0.50
0.00
2.29
2.57
2.71
3.43
4.00
Bicyclist breaking the rules, demonstrating poor riding behavior
ack of mutual respect for one another
Motorist demonstrating poor driving behavior
Bicyclist knowledge of proper riding rules
Motorist not aware of bicyclist rights
COMMUNITIES SURROUNDING GRAND RAPIDS
RANKED MORE IMPORTANT
RANKED LESS IMPORTANT

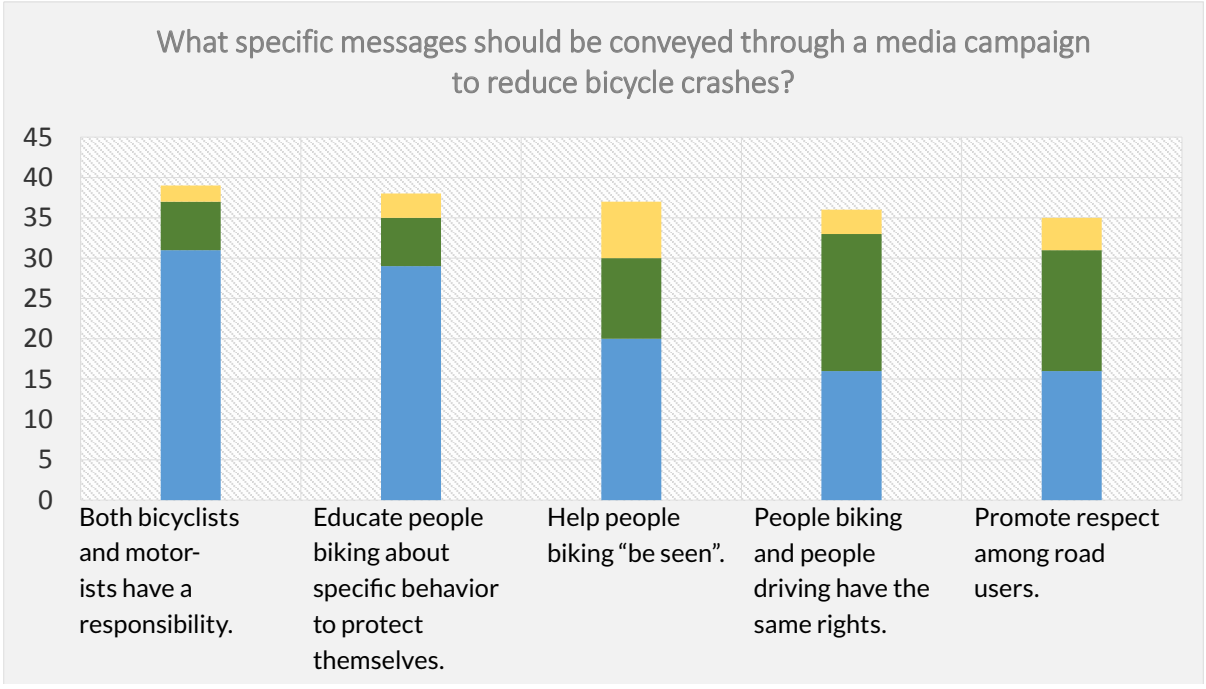
When asked about issues related to traffic safety, both surveys demonstrated an onus placed upon people riding bicycles. In the Greater Grand Rapids communities' "lack of mutual respect" was cited as the second-most important category (Figure 37).

Messaging

The law enforcement officers' top five answers to the survey question, "What specific messages should be conveyed through a media campaign to reduce bicycle crashes?" are displayed below (Figure 38). The message that officers ranked "very important" most often was, "Both bicyclists and motorists have a responsibility" followed by, "Educate people biking about specific behavior to protect themselves".

Law enforcement officers expressed concern about a lack of bicycle riders' visibility and a need for messaging concerning legal/safe riding behavior. When asked to comment on an important message for motorists, officers commented about a need for motorists to pay extra attention for people bicycling and to give them space when passing. Officers' diverse opinions and perceptions concerning bicycle-specific infrastructure may mirror the general public's opinions and perceptions. While some officers support separated infrastructure for people driving and biking, others do not see the value in their construction.

Figure 38.



Note: "Not at all" was also listed as an answer choice. No respondents chose this response as an answer for the top five responses.

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APPENDIX D: COUNTERMEASURE IDENTIFICATION

OVERVIEW

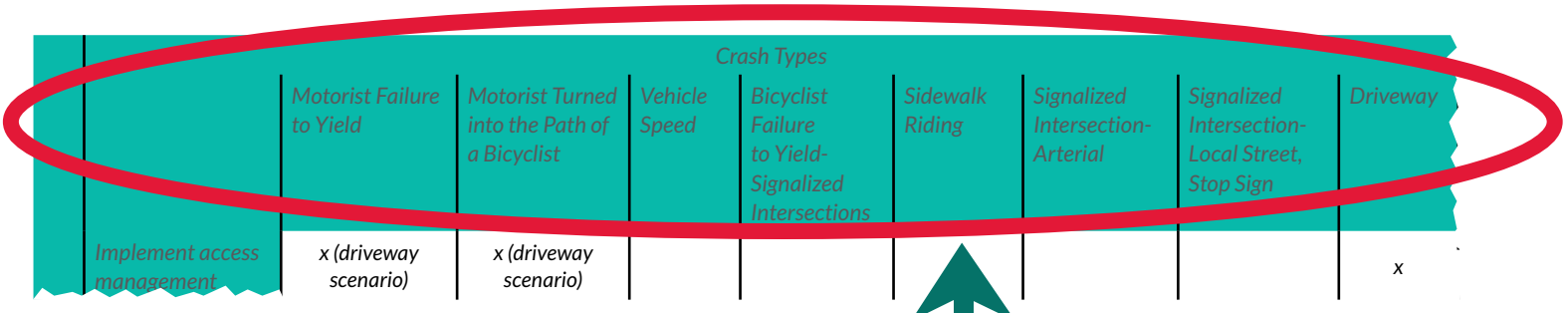
The crash analysis report informed an understanding of common Grand Rapids area crash factors. Identifying key infrastructure and non-infrastructure countermeasures helps to create a list of resources that communities can apply to particular high-crash areas.

As with any intersection or corridor analysis, more detailed engineering analysis is needed to select and design physical countermeasures for a specific location. Nonetheless, this chapter will guide communities to design guidance for specific countermeasures featured within national and local design resources.

Non-infrastructure countermeasures are analyzed after the discussion of physical infrastructure.

Using This Chapter- Crash Types:

Crash data analysis for the Greater Grand Rapids area identified the most common behaviors involved in roadway crashes for people who ride bicycles. These crash types are represented below.

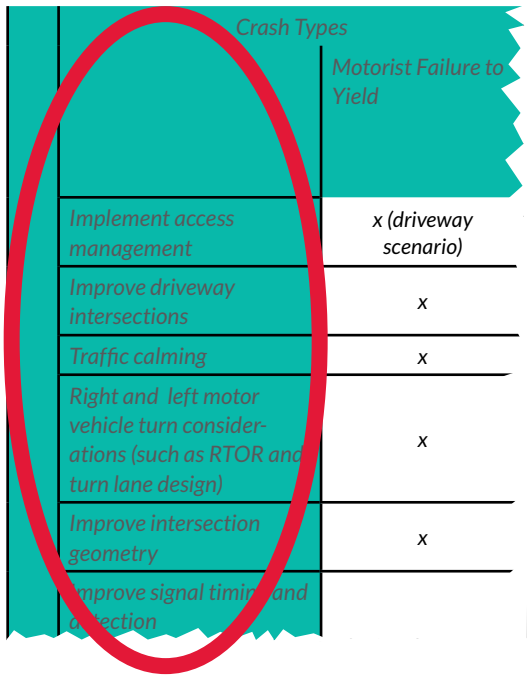


Crash types as identified through the Crash Report.

'Vehicle speed' and 'Dooring type crashes' are added based on the national prevalence of these crash types.

Using This Chapter- Countermeasures

Recommended physical infrastructure countermeasures were drawn from the Federal Highways Administration's *Crash Modification Factor Clearinghouse* as well as other research study recommendations. The recommended countermeasures are listed by crash types.



	Crash Types: Motorist Failure to Yield
Implement access management	x (driveway scenario)
Improve driveway intersections	x
Traffic calming	x
Right and left motor vehicle turn considerations (such as RTOR and turn lane design)	x
Improve intersection geometry	x
mprove signal timi and ection	

Suggested countermeasures originated from the Federal Highway Administration (FHWA) *Bicycle Countermeasure Selection System (BIKESAFE)* and the FHWA *Crash Modification Factors Clearinghouse.*

Table 11. Countermeasure Identification: Addressing Common Crash Factors

Countermeasures	Crash Types								
	Motorist Failure to Yield	Motorist Turned into the Path of a Bicyclist	Vehicle Speed	Bicyclist Failure to Yield-Signalized Intersections	Sidewalk Riding	Signalized Intersection-Arterial	Signalized Intersection-Local Street, Stop Sign	Driveway	"Dooring" Type Crash
Implement access management	x (driveway scenario)	x (driveway scenario)						x	
Improve driveway intersections	x	x (driveway scenarios)						x	
Traffic calming	x		x	x	x		x		
Right and left motor vehicle turn considerations (such as RTOR and turn lane design)	x	x		x		x	x	x	
Improve intersection geometry	x	x		x		x	x	x	
Improve signal timing and detection		x		x		x			
Improve visibility at intersection		x		x	x	x	x	x	
Pedestrian countdown/ signal		x				x			
Bicycle boulevard (AKA neighborhood greenway)	x		x	x	x		x		
Shared roadway	x		x	x	x		x		
Bicycle lane	x			x	x		x	x	x (or wider car parking lane)
Separated bicycle lane (buffer- or barrier-protected bike lane, AKA cycle track)		x	x	x	x	x (with appropriate intersection treatments)		x (with appropriate intersection treatments)	x
Sidepath/shared-use path	x	x		x	x			x	x
Through bike lanes/intersection markings	x	x		x	x	x		x	
Bicycle detection				x	x	x			
Bike box	x	x		x		x			
Left-turn queue box		x		x		x			
Dedicated bike signals, leading bicycle intervals, "green wave"				x		x			
Shoulder bicycle lane		x			x				

Table 12. Countermeasure Identification: Design Guidance

	Crash Types							
		AASHTO Guide for the Development of Bicycle Facilities, 4th Edition (2012)	Best Design Practices for Walking and Bicycling in Michigan	BIKESAFE Crash Type Matrix	"How to Create a Bicycle Safety Action Plan: On-read Bicycle Facilities", PBIC Webinar. 10/16/14	NACTO Urban Bikeway Design Guide, 2nd Ed.	NCHRP Report 500, Vol. 18: A Guide for Reducing Collisions Involving Bicycles	MMUTCD
	Implement access management	"Other crashes at driveways" (p. 3-2),	N/A	N/A	N/A	N/A	Limiting number of driveways; providing for right-in, right-out only movements; locating signals to favor through movements; restricting turns at certain intersections; ; using non- traversable medians for left- and U-turn management (pg. V-79)	N/A
	Improve driveway intersections	Mentioned with regards to various types of bicycle lane designs	"Left side bike lane" (pg. 46)	Intersection markings	N/A	Intersection crossing markings (pg. 55-60), cycle track (pg. 388-39)	Tighter turn radii at driveways; at- grade walkways to show bike/ped right-of-way; debris removal to avoid obscured visibility; bicycle- specific pavement markings (pg. V-76)	Section 9B.03- STOP and YIELD signs (R1-1, R1-2)
	Traffic calming	"Bicycles and traffic calming" (pg. 4-51 - 4-53); "Retrofitting bicycle facilities without roadway widening" (note: this section discusses lane reallocation, AKA 'road diets' (pg. 4- 29 - 4-33)	"Bulb outs" (pg. 17), "Road diet" (pg. 36)	Speed tables/ humps/ cushions; mini traffic circles; chicanes; visual narrowing	Mini traffic circles (slide 53)	Speed management in bike boulevard design (pg. 167-177); volume management in bike boulevard design (pg. 177-185)	Objective C- Reduce motor vehicle speeds (V-73 - V-75)	Chapter 4E: Pedestrian control features; Chapter 4F: Pedestrian hybrid beacons, Chapter 5H: Traffic control for school areas, Part 7: Traffic control for school areas

	Crash Types							
		AASHTO Guide for the Development of Bicycle Facilities, 4th Edition (2012)	Best Design Practices for Walking and Bicycling in Michigan	BIKESAFE Crash Type Matrix	"How to Create a Bicycle Safety Action Plan: On-read Bicycle Facilities", PBIC Webinar. 10/16/14	NACTO Urban Bikeway Design Guide, 2nd Ed.	NCHRP Report 500, Vol. 18: A Guide for Reducing Collisions Involving Bicycles	MMUTCD
	Right and left motor vehicle turn consider-ations (such as RTOR and turn lane design)	"Right turn considerations" (note: although relevant, this section does not discuss RTOR) (pg.4- 23 - 4-25); "Left turn consider-ations" (pg. 4-26 -4-27); turns and freeway interchanges (pg. 4-57)	"Prohibited left turns (Michigan Left)" (pg. 13); "Prohibited right turns on red" (pg. 14)	Turning restrictions	"Right hook countermea-sure" (slides 56-59)	Turning radii: (http://nacto.org/us dg/inter-section- design-elements/ corner- radii/); other sections mention restricting RTOR when installing cycle track and other separated facilities	"Exhibit V-21- Strategy attributes for improving pave-ment markings at intersections" (pg. V-32)	Section 2B.54 No turn on red signs (R10-11 Series, R10- 17a, and R10-30)
	Improve intersection geometry	N/A	"Combined bike/turn lane" (pg. 23)	N/A	N/A	Combined bike/ turn lane (pg. 79)	Reduce crossing distance; realign intersection approaches to reduce or eliminate intersection skew; modify geometry to facilitate bicycle movement at interchange on-ramps and off- ramps; provide refuge islands and raised medians (pg. V-34)	N/A
	Improve signal timing and detection	"Traffic signals" (pg. 4-43); "Detection for bicyclists at traffic signals (pg. 4- 47)	"Pedestrian countdown signal" (pg. 8); "Leading pedes-trian interval" (pg. 9)	Bicycle signal heads; install/ optimize timing	Signal timing practices (slide 62)	bicycle signal head (pg. 93-99); bicycle detection (pg. 99-105)	"Strategy A2: Improve signal timing and detection" (pg. V-9)	Chapter 4B: Traffic control signals- general; Chapter 4C: Traffic control signal needs studies; Chapter 4D: Traffic control signal features; Chapter 9D: Signals (Part 9- Traffic control for bicycle facilities)

	Crash Types							
		AASHTO Guide for the Development of Bicycle Facilities, 4th Edition (2012)	Best Design Practices for Walking and Bicycling in Michigan	BIKESAFE Crash Type Matrix	"How to Create a Bicycle Safety Action Plan: On-read Bicycle Facilities", PBIC Webinar. 10/16/14	NACTO Urban Bikeway Design Guide, 2nd Ed.	NCHRP Report 500, Vol. 18: A Guide for Reducing Collisions Involving Bicycles	MMUTCD
	Improve visibility at intersection	"Bicycle lanes at intersections" (pg. 4-22)	See: "Signalized intersection improvements" table (pg. 5)	Intersection marking; sight distance improvements; roundabouts; turning restrictions; sight distance improvements	See discussion on bike boxes (slide 62)	Intersections Chapter discusses a variety of tools for increased visibility and predictability: (pg. 47-90)	"Objective A"- Reduce bicycle crashes at intersections (pg. V-7)	Section 9B.05- BEGIN RIGHT TURN LANE YIELD TO BIKES sign (R4-4); Section 9B.16- Intersection warning signs (W2 Series); Section 9B.18- Bicycle warning and combined bicycle/pedestrian signs (W11-1 and W11-15)
	Pedestrian countdown/ signal	N/A	"Pedestrian countdown signal" (pg. 8)	N/A	N/A	N/A	N/A	See column entitled, "Improve signal timing and detection"
	Bicycle boulevard (AKA neighborhood greenway)	Bicycle boulevard treatments to lower speeds and divert through motor traffic (p. 4-33),	The reference contains a number of applications suitable for use within neighborhood greenways such as bulb-outs or marked crosswalks	The BIKESAFE Matrix devotes a column to traffic calming measures.	"Bike boulevards" (slide 54)	Bicycle Boulevard Chapter (pg. 145-214)	"Exhibit V-11 Strategy attributes for improving signage" (pg. V-19); "Objective C- Reduce motor vehicle speeds" (V-73 - V-75)	N/A
	Shared roadway	"Shared lanes" (pg. 4-1); "Shared lanes on major roadways (wide curb/outside lane)" (pg. 4-3); "Signs for shared roadways" (pg. 4-3); "Marked shared lanes" (pg. 4-4)	"Shared lane markings" (pg. 42)	Reduce lane number; lighting improvements; reduce lane width; reduce lane number; reduce lane width; median/ crossing island	"Wrong way riding countermeasures" (see: shared lane markings) (slide 34)	Shared lane markings (pg. 133-139)	"Shared lane marking' (pg. V-52)	Section 9B.06- Bicycle may use full lane sign (R4-11)
	Bicycle lane	Multiple categories: (pg. 4-11 - 4-27); three sections on retrofitting facilities (pg. 4-28 - 4-32)	"Bike lane" (pg. 41); "Colored bike lane" (pg. 43); "Contra-flow bike lane" (pg. 45); 'Left side bike lane" (pg. 46)	The BIKESAFE Matrix devotes a column to on-road bike facilities.	"Contra-flow bike lanes" (slide 36); "Sidewalk riding countermeasures" (slide 39); "Struck from behind countermeasures" (slide 44)	Bike lanes (pg. 1-26)	"Bicycle lane striping" (pg. V-50 - V-51)	Section 9B.04- Bike lane signs and plaques (R3-17, R3- 17a, R3-17bP); Section 9C.04- Markings for bicycle lanes

	Crash Types							
		AASHTO Guide for the Development of Bicycle Facilities, 4th Edition (2012)	Best Design Practices for Walking and Bicycling in Michigan	BIKESAFE Crash Type Matrix	"How to Create a Bicycle Safety Action Plan: On-read Bicycle Facilities", PBIC Webinar. 10/16/14	NACTO Urban Bikeway Design Guide, 2nd Ed.	NCHRP Report 500, Vol. 18: A Guide for Reducing Collisions Involving Bicycles	MMUTCD
	Separated bicycle lane (buffer- or barrier-protected bike lane, AKA cycle track)	N/A	"Buffered bike lane" (pg. 43); "Cycle track" (pg. 47)	Separated facilities are included under the BIKESAFE matrix entitled, "On-road bike facilities"	"Buffered bike lanes" (slide 42); "Struck from behind counter-measures" (slide 44)	Cycle tracks (pg. 27- 46); buff-ered bike lanes (pg. 9-14)	N/A	N/A
	Sidepath/shared-use path	Chapter 5: Design of shared-use paths	N/A	Path intersec-tion treatments	Struck from behind counter-measures (slide 44)	N/A	Various guid-ance in Section V: Description of strategies	Section 9B.12- Shared-use path restriction sign (R9- 7); Section 9C.03- Marking patterns and colors on shared-use paths; Section 9C.07- Shared lane marking
	Through bike lanes/inter-section markings	Numerous references. See: pg. 4-22, 5-11, 5-30, 5-33	C rossing mark-ings- pg. 20	Pavement marking improvements	"Right hook countermea-sure"; and "Right & left hook counter-measures" (slide 57-58)	Intersection crossing markings (pg. 55-60); cycle track intersec-tion approach (85-90)	"Strategy A4: Improve pave-ment markings at intersections" (pg. V- 20)	N/A
	Bicycle detection	"Detection for bicycles at traffic signals" (pg. 4-7)	"Bicycle signal detection" (pg. 19)	N/A	N/A	Signal detection and actuation (pg. 99-104)	"Strategy A2: Improve signal timing and detection" (pg. V-9 - V- 15)	Section 9B.13- Bicycle signal actuation sign (R10- 27); Section 9C.05- Bicycle detection symbol
	Bike box	N/A	"Bike box" (pg. 21)	N/A	"Bike box" (slide 62)	Bike boxes (pg. 49- 54)	N/A	N/A
	Left-turn queue box	N/A	Two-stage bike left turn (pg. 22)	N/A	N/A	Two-stage turn queue boxes (pg. 61- 66)	N/A	N/A
	Dedicated bike signals, leading bicycle intervals, "green wave"	N/A	"Bicycle signals" (pg. 24), "Midblock signal" (pg. 32)	Bicycle signal heads	N/A	Signalization principles: http://nacto.org/us dg/inter-section- design-elements/ traffic- signals/ signalization-principles/	N/A	N/A
	Shoulder bicycle lane	Paved shoulders (p. 4-4); paved shoulders (p. 4-7); rumble strips (p. 4- 9)	"Sidewalks and paved shoul-ders" (pg. 36)	Paved shoulders	"Struck from behind counter-measures" (slide 44)	N/A	Bicycle-tolerable shoulder rumble strips (pg. V-70)	Chapter 3J Rumble strip markings

References:

AASHTO Guide for the Development of Bicycle Facilities, 4th Edition (2012)

https://bookstore.transportation.org/item_details.aspx?ID=1943

Best Design Practices for Walking and Bicycling in Michigan

http://www.michigan.gov/documents/mdot/MDOT_Research_Report_RC1572_Part6_387521_7.pdf

BIKESAFE Countermeasure Selection Matrix

http://www.pedbikesafe.org/BIKESAFE/matrix_crash.cfm

"How to Create a Bicycle Safety Action Plan: On-road Bicycle Facilities

http://www.pedbikeinfo.org/pdf/Webinar_PBIC_LC_101614_BSAP.pdf

MMUTCD

http://mdotcf.state.mi.us/public/tands/plans.cfm

NACTO Urban Bikeway Design Guide, 2nd Ed.

http://nacto.org/cities-for-cycling/design-guide/

NCHRP Report 500, Vol. 18: A Guide for Reducing Collisions Involving Bicycles

http://onlinepubs.trb.org/onlinepubs/nchrp/nchrp_rpt_500v18.pdf

NON-INFRASTRUCTURE COUNTERMEASURES

This section focuses on infrastructure countermeasures. Nonetheless, non-infrastructure countermeasures (i.e.- education, encouragement, enforcement) also help prevent bicycle-car crashes.

For additional information, please refer to the other sections included in this report.

Examples of Non-Infrastructure Countermeasures

Non-infrastructure countermeasures can help address the following crash types:

Table 13. Non-infrastructure Countermeasures

Crash Type	Non-Infrastructure Countermeasures
Motorist failure to yield	• Law enforcement "sting" (i.e.- crosswalk, safe passing) • Media campaign (i.e.- elements placed in the public way, radio ad, etc) • Education within drivers' education, professional driver training, diversion. courses, etc. • Mailings sent to licensed motorists, included within utility bills, etc
Motorist turned into the path of a bicyclist	• See: "Motorist failure to yield"
Vehicle speed	• Law enforcement stings and similar enforcement measures (i.e.- speed feedback sign campaign)
Bicyclist failure to yield – Signalized intersection	• Media campaign near signalized intersections
Sidewalk riding	• Youth bicycle safety education courses • Adult bicycle safety education courses • Signage/other media within areas prohibiting sidewalk riding
Signalized intersection – Arterial	• Bicycle safety education courses can teach how to safely bicycle through these locations
Signalized intersection – Local street, stop sign	• Bicycle safety education courses can teach how to safely bicycle through these locations
Driveway	• Education within drivers' education, professional driver training, diversion courses, etc.
"Dooring"	• Stickers placed on doors within taxis and other vehicles (i.e.- "LOOK for bicyclists before opening") • Mailings sent to licensed motorists, included within utility bills, etc

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APPENDIX E: BICYCLE CODE OF ORDINANCES REVIEW

OVERVIEW

The study team reviewed bicycle ordinances for each of the nine municipalities included within the greater Grand Rapids area. Reviewing transportation-related ordinances benefits the study area by auditing the bicycle friendliness of each jurisdiction's rules governing bicycle travel.

Benefits of reviewing existing policy include the following:

- Policy plays a large role in keeping vulnerable road users safe.
- Standardized policy across a region is more user-friendly for bicyclists and law enforcement.
- Standardized policy also allows for more streamlined education and enforcement efforts.

Ideally, the bicycle friendly policy items proposed in this document would be passed across the State of Michigan. Statewide legislation offers even more standardization between jurisdictions. Statewide jurisdiction mandates the passing of bicycle-supporting policies across the state's entire roadway network, in all jurisdictions. Implementing high quality policies on a smaller, regional scale helps set benchmarks that can later cover an entire state.

PROCESS

The study team obtained municipal codes online in October 2014. The team has also received regular updates from the client and local advocates concerning recent changes to legislation within the study area. Although they impact local-level policy decisions, state-level ordinances are excluded from this review. For this reason, the review does not discuss recent changes to statewide driver's education through the Nathan Bower Act (HB 5438).

The project's original technical memorandum regarding the Bicycle Ordinance Review provided the full text of the Nathan Bower Act, for the Steering Committee members' knowledge.[1]

The team reviewed relevant ordinances based on the criteria described in the callout box below. The team recommended revising or deleting existing policies that fall short in one or more of the above areas. The team also made recommendations for spreading existing beneficial legislation throughout the study area.

Criteria:

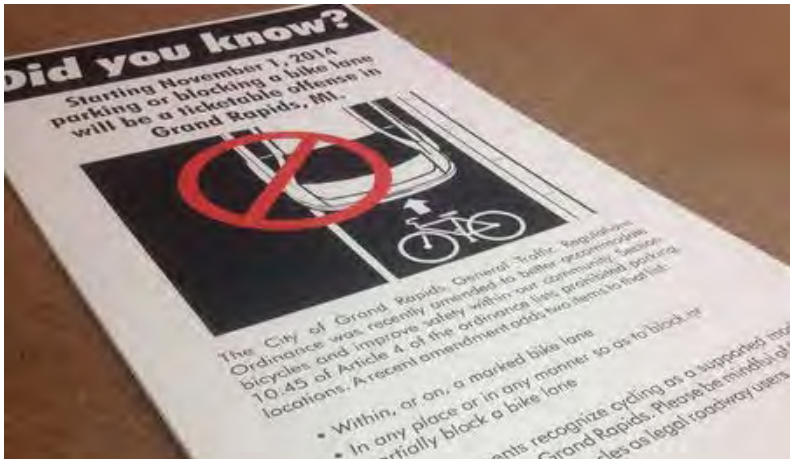
The team asked the following questions to rate each ordinance:

- Is the existing policy likely to produce increased risk or harm to bicyclists?
- Does the existing policy hamper efforts to promote bicycles?
- Does the policy increase one's effort to obtain or operate a bicycle without justified cause?
- Does the policy follow current engineering, planning, and design terminology?
- Does the policy endanger future innovation and policy language evolution?
- Is the policy especially arduous or time consuming for the agency to enforce?

[1] *HB 5438 amends Michigan driver education curriculum to include content related to bicycles and motorcycles. The Act states, "Classroom instruction shall include information concerning the laws pertaining to bicycles and motorcycles and shall emphasize awareness of their operation on the streets, roads, and highways of this state."*

Emerging Issues:

The project team and the Steering Committee also reviewed a number of emerging issues. These topics that are not discussed within study area municipal codes, but are likely to become more pertinent topics with increasing levels of bicycle friendliness.



The 2014 City of Grand Rapids ordinance against motor vehicle parking in bicycle lanes, although met with initial public skepticism from people who do not use bicycles for transportation, will help improve the condition of local bicycle facilities. This handout was created by the Spoke Folks and the City of Grand Rapids (Image credit: MLive.com).

Table 14. Bicycle-specific ordinances with suggested actions[2] according to study area jurisdiction

Topic	Existing Policy	Recommended Change(s)	Considerations for Policy Revision and Justification Thereof
E-assist or electric bicycles	*The City of Grand Rapids states that only non-electric bicycles be used on off-street trails. There is no mention of e-assist or e-bikes on other facilities.*	*Policies should specifically allow e-assist bicycles on all public and private roadways, including all classes of bikeways. The policy definition of "bicycle" should could also include e-assist bicycles . E-bike definitions should include a maximum speed.*	*E-assist and electric bicycles are increasing in popularity across the country. Policies should anticipate the potential for higher e-assist ridership rates.*
Regulations about number of bicyclists riding abreast	*Existing policy language specifies that bicyclists must ride single file. The majority of study municipalities do not have any formal policies on record.*	*Policies should recognize riders' right to travel two abreast, while also recognizing that there may be times they travel in a single file procession.*	*Riding two abreast allows riders to travel in a more compact line. This offers safety benefits as passing motorists do not have to spend as much time in the opposite travel lane. The policy language should not discourage riding single file, as there are circumstances when this is safer, such as on roadways with wider vehicular travel lanes where there is more space for passing cars.*
Parking in bicycle lane prohibited	*To-date, only one jurisdiction has passed legislation prohibiting motor vehicle parking in a bicycle lane.*	*Policies should prohibit motor vehicles from parking in a bicycle lane. The policy should reinforce the new law by citing specific fines for such behavior.*	*Prohibiting motor vehicle parking in a bicycle lane throughout Kent County and beyond will remove potential obstacles from cyclists' paths and reinforce the idea that bicyclists are entitled to the roadway.*
Mandatory passing guidelines for motor vehicles overtaking bicyclists	*No policies currently exist within the study area.*	*Study area municipalities should adopt policy mandating that motorists give bicyclists at least three feet of passing distance, measured from the end of the motorist's mirror. The policy would also mandate additional passing space by drivers of commercial vehicles, such as trucks.*	*To-date, 25 states have safe passing laws on record that require at least three feet of passing distance. Some communities have instituted their own requirements in the absence of state-level legislation. Other variances include a four foot passing distance requirement in Pennsylvania and other communities' mandates for commercial vehicles' additional passing clearance (e.g. six feet).*
Bicycle registration	*Of the communities reviewed for this study, a majority of municipal codes feature mandatory bicycle registration.*	*The team recommends that each community repeal their registration ordinance.*	*Mandatory bicycle registration is cumbersome and time consuming to enforce. Communities outside the study area have experienced police harassment, rider deterrence, lack of enforcement, and high administrative costs needed to cover the program.*
Bicycle dealer reports to police	*Buyers and sellers of secondhand bicycles must report such activities to the police.*	*This report recommends repealing the ordinance enforcing mandatory secondhand bicycle reports.*	*Reporting the buying and selling of secondhand bicycles requires time and effort to maintain without measurable benefits. Such activities may discourage a burgeoning bicycle culture by placing an obstacle to obtaining a bicycle. Additionally, undocumented persons may be fearful of reporting their personal information to the police.*
Bicycle speed regulation	*One community's code language sets a trail speed limit of 10 mph. Another leaves the allowing operating speed up to the individual rider so long as they do not "operate a bicycle at a speed than is reasonable and prudent under the conditions then existing."*	*Discontinue set speed limits for bicycles. The municipalities can set a more realistic expectation by adopting language similar to that already used by City of East Grand Rapids: "No person shall operate a bicycle at a speed greater than is reasonable and prudent under the conditions then existing."*	*Such ordinances are not realistically enforceable. Additionally, most cyclists do not have mounted GPS units, making speed monitoring difficult.*

[2] *No bicycle-related policies were found for Alpine Township, Grand Rapids Township, and Plainfield Township. The table does not show these jurisdictions. Roadway users are held responsible to state-level legislation in the absence of local area jurisdiction.*

Priority	City of East Grand Rapids	City of Grand Rapids	City of Grandville	City of Kentwood	City of Walker	City of Wyoming
Low	Add policy	Revise (Title X - §10.132)	Add policy	Add policy	Add policy	Add policy
Mid	Revise (Title X - §10.33)	Add policy	Add policy	Add policy	Add policy	Add policy
High	Add policy	No change. Legislation passed in 2014.	Add policy	Add policy	Add policy	Add policy
High	Add policy	Add policy	Add policy	Add policy	Add policy	Add policy
High	Delete (Title X- §10.42)	Delete (Title X- §10.141)	Delete (Ch. 25. Article IV. Division 2)	No change	No change	Delete (Article IV. Division 2. §78-131)
Mid	No change (Title X- §10.34)	Revise (Title	No change – consider adopting language similar to East Grand Rapids	No change - consider adopting language similar to East Grand Rapids	No change - consider adopting language similar to East Grand Rapids	No change - consider adopting language similar to East Grand Rapids

Topic	Existing Policy	Recommended Change(s)	Considerations for Policy Revision and Justification Thereof
Sidewalk riding prohibition	*Current policies prohibit sidewalk riding in central business districts and where marked with signage.*	*Sidewalk prohibitions should be kept to business districts. Families using the sidewalk in residential areas away from these areas, for instance, could arguably utilize sidewalks in a safe and respectful manner.*	*Education about the dangers of sidewalk riding, rather than enforcement is usually more effective. High rates of sidewalk riding suggest infrastructure conditions that are unwelcoming or deemed hazardous to riders.*
Stop required when entering roadway or crosswalk, or when crossing an intersection	*One jurisdiction's code of ordinances enforces this requirement.*	*Policy language should enforce yielding to bicyclists in all situations. Existing language from Grand Rapids can be spread throughout neighboring jurisdictions.*	*Enforcing motorists' responsibility to yield to bicyclists in all situations, including entering a roadway or traveling through an intersection helps protect non-motorized users from collisions. Policy language should also enforce motorists' responsibility to yield to bicyclists when the motorist is turning (discussed later in this table).*
Vacation of street, alley, public ground	*One community's codes discuss right-of-way (ROW) vacation. The City shall notify the public and other interested parties who may have interest in the land.*	*Consider adopting language that prioritizes using vacated land as bicycle and/or pedestrian space. The City of Grandville should add this language to its Code. Other cities should adopt such policy.*	*Right-of-Way vacation offers a unique opportunity to convert land to bicycle and pedestrian space. Alley or railroad vacation are two examples.*
Mandatory use of bicycle facilities	*Existing policy language mandates bicycle travel on paths, where provided, instead of traveling on the roadway.*	*The team suggests removing policy language that prohibits traveling on the roadway in cases where an off-street path exists. The team does not recommend instituting mandatory use laws.*	*Facilities with excessive debris or damage may necessitate riders using the roadway instead of adjacent sidepaths. Such behavior should not be penalized. Ideal language would explicitly state that bikes can legally choose to use either the sidepath or the roadway, thus protecting cyclists from mandatory use of facilities that do not meet their needs. Installing new bicycle infrastructure in communities with mandatory use laws often creates opposition from existing cyclists. This results in additional barriers to encouraging new bicyclists. Additionally, some communities across the country have installed bike lanes and sidepaths along one corridor. Existing policy would not allow bicyclists to use these facilities should they be built in the study area.*
Mandatory obedience to traffic control devices	*One study area community's code includes a mandate that bicyclists obey traffic signals, signs, and other devices.*	*All study area jurisdictions should consider adopting policy to mandate bicyclists' obedience to traffic signals, signs, and other devices.*	*The ordinance reminds bicyclists of their responsibilities as vehicles on the roadway and enforces signal compliance.*

Priority	*City of East Grand Rapids*	*City of Grand Rapids*	*City of Grandville*	*City of Kentwood*	*City of Walker*	*City of Wyoming*
Low (no policy change	*No change (Title X- §10.31)*	*No change (Title X- §10-132)*	*No change*	*No change*	*No change*	*No change*
High	*Add policy*	*No change (Title X- §10.18)*	*Add policy*	*Add policy*	*Add policy*	*Add policy*
Low	*Add policy*	*Add policy*	*Revise (Chapter 23. Article I- §23.1)*	*Add policy*	*Add policy*	*Add policy*
Mid	*Add policy*	*Add policy*	*Add policy*	*Delete (Chapter 66. Article 5.- §66-134)*	*Add policy*	*Add policy*
High	*Add policy*	*Add policy*	*Add policy*	*Add policy*	*Add policy*	*No change (Chapter 78. Article IV- §78-103)*

Topic	Existing Policy	Recommended Change(s)	Considerations for Policy Revision and Justification Thereof
Mandatory helmet usage for those under 18 years of age	One community mandates helmets for bicyclists under 18 years old.	The team recommends leaving the policy as-is. The team does not recommend an expansion of mandatory helmet laws throughout the other communities. If additional communities are interested in adopting helmet laws, they should apply to youth only. The City of East Grand Rapids should ensure that law enforcement officers do not use mandatory helmet laws as a scapegoat for disproportionate policing in communities of color and/or neighborhoods with lower socio-economic status.	Mandatory helmet laws often have the opposite effect of increasing safety. The policies discourage bicycle use. Helmets provide limited protection compared to other tactics, such as building protected facilities to separate vulnerable users from motorized traffic. Poorly fitted helmets offer even less protection. Education is recommended instead of enforcement. Helmet lawsThey require many resources for their enforcement, which agencies could use elsewhere. Although Hhelmet laws for minors can could remind parents about their role in encouraging their children's safe bicycling, safety role helmets play in children's ridingthe legislation can pavecreate additional points of conflict the way for disproportionate policing of children of color between law enforcement and minority communities (see column to the left for more information)
Disposal of abandoned bicycles	Impounded or unclaimed bicycles in one community are sold at public auction.	The communities should consider donating bicycle public auction funds to the respective community's bicycle infrastructure and non-infrastructure projects. Another option is to donate bikes to local organizations that rehab the bicycles and provide them to community members, schools, or other philanthropic organizations.	The current system of auctioning bicycles at public auction gives residents a chance to buy bicycles at a lower price than buying them new. This increases the public's access to bicycles. Donating the proceeds to the agency's bicycle program or public works budget could add a small amount of money back to bicycle-related projects.
Bicycles are allowed within bus only lanes	Several Kent County communities are adding bus rapid transit (BRT) lines within their cities. Grand Rapids prohibits bicycle travel in these lanes during peak hours. Wyoming, which has also added BRT, allows bicycles to use high occupancy vehicle lanes (HOVs), which are used by BRT vehicles.	The study team recommends allowing bicycles within HOV lanes throughout all hours of the day. Communities should revisit whether daily transit vehicle volumes are such that bicyclists are endangered by riding in these spaces during morning and evening peak travel times. Communities can revisit the legislation should they increase bus service to a frequency and/or speed that would endanger bicycles within the space. In this case, communities should also consider infrastructure—such as bollards, concrete barriers, or other devices—which demarcate the bus-only space.	Current buses traveling along BRT lines leave the station every 10 minutes within peak hour periods.
Opening vehicle doors	The existing ordinance states that no person shall open a car door facing the roadway because of interference with other vehicles using the roadway.	Although bicycles are legally classified as vehicles, and are thus included in this ordinance, language could be amended to more specifically discuss the threat to bicyclists. Jurisdictions should review existing fine structures and consider increasing fines for "dooring" type crashes and other behavior that endangers bicyclists.	Opening car doors in the paths of bicycles forces bicyclists to unexpectedly dodge the sudden obstacle and merge into the path of faster moving traffic. Dooring crashes can severely injury or kill cyclists as they are thrown from their bicycles and into traffic. In 2008, the City of Chicago reviewed municipal fine structures and language related to bicycle ordinances. Petty offenses result in $150 fines. Offenses resulting in a bicycle-car crash result in $500 fines . *

* http://www.activetrans.org/bicyclists-and-law/chicago-safety-ordinances

Priority	City of East Grand Rapids	City of Grand Rapids	City of Grandville	City of Kentwood	City of Walker	City of Wyoming
Low (no policy change recom-mended)	Title X. Chapter 105 – No change	No change	No change	No change	No change	No change
Low	No change	No change	No change	No change	No change	Revise (Chapter 78. Article IV.-§78-103)
Mid	Add policy	Revise. Existing policy says bikes prohibited during peak hours.	Add policy	Add policy	Add policy	No change (Chapter 78. Article IV.-§78-180)
High	Add policy	Revise. (Title IV. Article 6.-§10.111)	Add policy	Add policy	Add policy	Add policy

GRAND RAPIDS BIKE SHARE FEASIBILITY STUDY

DRAFT

TABLE OF CONTENTS

ACKNOWLEDGEMENTS

City of Grand Rapids

Josh Naramore, Mobile GR Director
Kristin Bennett, Transportation Planning/Programs Supervisor
Amanda Moore, Communication, Outreach, and Program Specialist

Bike Share Steering Committee

Laurel Joseph, Grand Valley Metro Council
Kyama Kitavi, City of Grand Rapids Economic Development
Josh Lunger, Chamber of Commerce
Trent McCurren, Founders Brewing
Yazeed Moore, William K. Kellog Foundation
Diana Sieger, Grand Rapids Community Foundation
Doug Small, Experience GR
Conrad Venema, The Rapid
Tim Kelly, Downtown Grand Rapids, Inc.
Stephanie Wong, Downtown Grand Rapids, Inc.
Kim Thomas, Priority Health and Greater Grand Rapids Bicycle Coalition
Cle Jackson, Blue Cross/Blue Shield
Julio Cano, Spectrum Health and Latino Community Coalition
Jon O'Connor, Ward 1 Commissioner
Ruth Kelly, Ward 2 Commissioner
Senita Lenear, Ward 3 Commissioner
Amy Snow-Buckner, Office of Mayor Rosalynn Bliss
John Baily, Huntington Bank
Sarah Chartier, Spectrum Health
Lisa Haynes, Grand Valley State University

The Hispanic Center of Western Michigan

Daniela Rojas-Cortes, Director of Communications and Development
Rafael Martinez, Facilitator/Translator
Alex Leger, Facilitator/Translator

LINC UP

Lyonel LaGrone, LINC UP Policy Liason

Project Team

Sam Schwartz
Transportation Consultants

Ninigret | Partners

CREATIVE CHANGE MISSION

EXECUTIVE SUMMARY

Grand Rapids is thriving and continuing to grow, with a vibrant downtown, and dense residential neighborhoods surrounding the downtown area. The City's size and connected street network make bicycling a viable and attractive form of transportation for many for commuting, running errands, or for recreation in many areas of the City.

The City is building on that foundation by developing a plan to guide future investments in bikeway infrastructure. With more than half of the City's residents living within a 20-minute bike ride of downtown, there is also a great potential for bicycling to grow in Grand Rapids. And as the bikeway network in Grand Rapids is built out with a more connected network of comfortable bicycle facilities, more people are expected to use bicycling as a way to get around the City.

With all the benefits that bicycling brings to individuals and cities, the City of Grand Rapids wants to encourage this trend and continue to expand the mobility options available to residents and visitors. Bike share has the opportunity to become an integral part of the City's overall transportation options.

The City embarked on this feasibility study to better understand the viability of bike share in Grand Rapids, the pros and cons of different types of systems, determine the parameters under which bike share could work, and the likely costs of a system.

Bike Share Background

Bike share is a point-to-point, on-demand transit system that has proven to be an effective and affordable transportation option in cities around the U.S. Robust bike share systems offer a wide array of benefits to cities and their residents, including financial, health, transportation, environmental, and economic development benefits.

Bike share can contribute to an increase in bicycling by reducing the barrier of entry to bicycling. With bike share, people can choose to take a trip by bike without having to purchase their own bike, or they can choose to travel by bicycle during a workday even if they have left their own bicycle at home. It has been shown to increase bicycling in cities by as much as 1 to 1.5%. In Grand Rapids, this could mean an additional 2,000 – 3,000 people bicycling on a daily basis.

Bike Share Feasibility in Grand Rapids

Through stakeholder and public engagement, the potential for a bike share system to succeed and be a positive influence on the transportation network in Grand Rapids quickly became the consensus. In order to judge the feasibility of different types of bike share systems, the goals for such a system had to be established. Grand Rapids' bike share system will:

1. **Be financially sustainable; minimizing the need to rely on the City's general fund.**
2. **Accessible for all residents, regardless of race, ethnicity, income, age, or ability.**
3. **Improve the reach and utility of public transportation.**
4. **Increase access and enhance mobility.**
5. **Foster "park once" behaviors.**
6. **Enable increased physical activity.**

To gauge the ability of a bike share system to succeed in Grand Rapids and what would make for a successful service, primary bike share system elements were evaluated against the six goals established by the steering committee:

- Organizational structure
- Service area
- System type

Through informed discussions with the steering committee backed by research and analysis in the context of Grand Rapids, decisions were made for each of these elements. A business plan outlining costs, expected revenues, and funding opportunities was developed to support the development of a bike share system that will meet Grand Rapids' goals.

Organizational structure

The organizational structure of a bike share system refers to how the system is owned and operated. In determining the optimal structure for a community's system, there are several factors to be considered: financial risk and liability, available funding sources, the operating responsibility, capital outlay of ownership, staff capacity, and the ability for the system to achieve the City's goals.

Five organizational structures were evaluated for a bike share system in Grand Rapids:

- Publicly owned and operated
- Publicly owned and privately operated

- Publicly owned and non profit operated
- Non profit owned and operated
- Privately owned and operated

The model of a publicly owned system, operated by a non profit entity was determined to be best able to meet the goals set out by the steering committee and be achievable, based on staff capacity of the City.

Service area

A bike share service area defines the boundaries of the system and is used to determine the number of stations and bikes needed to meet a desired density. The service area should be configured to include a strong ridership base to provide a foundation of usage and user revenue. For this study, a market analysis was undertaken to estimate potential ridership based on known characteristics of bike share customers in other cities. This was balanced with an equity analysis to indicate where populations that would most benefit from bike share reside, in order to meet the goal of establishing a system that serves all Grand Rapids residents. In addition to the density, a key consideration when determining the service area is that it should be contiguous service area and avoid "islands" of service. Through the market analysis and discussions with the steering committee, an initial service area of 4.5 square miles is proposed to build the foundation of the system. This core area encompasses downtown and surrounding neighborhoods and incapsulates 30,000 residents and 60,000 workers. Roughly 1/3 of the City's population lives within a ¼-mile of the initial service area.

An area of system expansion was also identified, as the neighborhoods the system should reach after establishing a solid foundation in terms of ridership, revenue, and funding. If the full expansion area is realized, the bike share service area will ultimately cover 13.3 square miles and serve close to 90,000 residents (or 42% of the population) and nearly 84,000 jobs. It would serve an area which encompasses where 54% of Grand Rapids' nonwhite population live, 64% of residents below the poverty line, and 56% of the population without access to a vehicle; all proportionately higher than the overall population that the area serves. This responds to the study's equity-related goals and would bring an affordable transportation option to those in greater need.

System Type

Traditional bike share systems are station-based systems, where all bikes are required to be docked in a station and stations are

placed throughout the service area at a sufficient density and size to provide an adequate level of service for the customers. As technology has evolved, the bike share industry was able to adapt bicycles to house the requisite technology within the bike itself, enabling companies to forgo stations and deploy “smart bikes” that lock to themselves. Thus, models have evolved to systems that incorporate some stations and hubs, known as hybrid models, and systems that are completely dockless. Each of these models has advantages and disadvantages, which are described in detail in the report.

To meet the goals for a system in Grand Rapids, the hybrid system was deemed to be the best fit. The hybrid model and the station-based model performed similarly across most of the goals, however, the lower capital costs of the hybrid model gave it an advantage over the station-based systems.

Business Plan and Recommendations

A business plan for a bike share system that fits the model described above was developed to help the City and its partners plan for the likely costs of the system, what can reasonably be expected in terms of revenue, and some potential sources of funding. Guidance for the pricing of the service was also provided, to balance the goals of a system that is sustainable and the need to serve all residents, including low-income residents. The business plan and recommendations set the City up to take the next steps toward making bike share in Grand Rapids a reality.

INTRODUCTION

INTRODUCTION

4.4% Grand Rapids' population growth from 2010 to 2016.

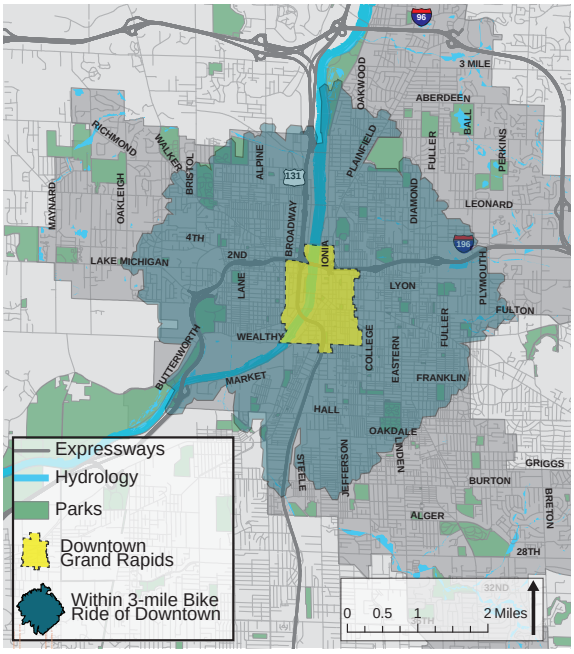
Grand Rapids' workforce grew **4.4%** in 2016, making it the fastest growing economy in the U.S.

Grand Rapids is thriving. The City's economy and population are both growing at the fastest rates in Michigan and among the fastest in the country. As the City grows, though, so too does the need for a multi-modal transportation system that gives residents more choices in how they get around. There is also a stark need to ensure that all the City's residents, especially Grand Rapids' African American and Hispanic populations, can access and share in the growing opportunities in Grand Rapids.

Bike share has proven to be an effective and affordable mobility option in cities around the U.S. and could deliver similar value in Grand Rapids while also providing a healthy, environmentally-friendly means of transportation. The idea for bike share in Grand Rapids was proposed in the GR Forward Plan (2016) and the community's Destination Asset Study. Community members have routinely raised bike share as an important issue for the City.

This study assesses the feasibility of implementing a bike share system in Grand Rapids, including options for how the system could be designed, operated, and financed, and strategies for ensuring as many of Grand Rapids' residents and visitors as possible can access and benefit from bike share. The process and findings were informed by substantial public outreach and the Bike Share Steering Committee, which consisted of elected officials, business leaders, and representatives from community organizations.

Figure 1. Bikeshed for Downtown



More than half of Grand Rapids' population lives within a 3-mile bike ride of Downtown.

Bicycling in Grand Rapids

The employment and residential characteristics of Grand Rapids make bicycling a convenient option as a means of commuting, running errands, or for recreation in many parts of the City. Downtown Grand Rapids has a high density of jobs- 36% of the City's jobs are located within the 1.5-mile Downtown; other key destinations, including the Grand Rapids Art Museum, Downtown Market, Van Andel Arena, DeVos Place, and others are located in downtown Grand Rapids as well. Additionally, many of the neighborhoods surrounding Downtown are densely populated; more than half of all the City's residents live within a 20-minute bicycle ride of Downtown.

Grand Rapids has a growing network of off-street bicycle trails winding along the Grand River, through City parks, and connecting to several regional trails. Grand Rapids' trails offer opportunities for recreation and low-stress routes for bicycling to work or other destinations. In speaking with community members across Grand Rapids, though, the most prominent concern about bike share, and bicycling in general, is safety. Grand Rapids' network of on-street bicycle facilities is growing, but there is a need to continue expanding the network and providing more facilities that separate people bicycling from vehicular traffic. The City's forthcoming bicycle plan will establish a vision and action plan for how to grow Grand Rapids' bicycle network. As the City's network of bicycle facilities continues to grow, especially lower stress facilities, more people will feel comfortable bicycling and see it as a viable means of transportation.

Grand Rapids has **99** miles of designated bicycle facilities.

Table 1. Bicycle Facilities in Grand Rapids

Shared Use Path	17 miles
Cycle Track	1 mile
Bicycle Lane	57 miles
Designated Sidewalk	1 mile
Bicycle Route	3 miles
Marked Shared Lane	11 miles
Wide Shoulder	9 miles

Bike share offers long-term, compounding safety benefits. Research shows that there is safety in numbers and that as the number of people bicycling increases the rate of crashes amongst people bicycling decreases. Bike share has the potential to further increase interest in bicycling in Grand Rapids, as it reduces the barriers to entry for potential bicyclists by eliminating the need to purchase a personal bicycle. Bike share can also elevate the profile of bicycling by increasing the presence of bicycles and people bicycling around town. Internationally, cities that previously had relatively low levels of bicycling have seen overall bicycling mode share increase as much as 1 to 1.5% after implementing a bike share system. In Grand Rapids, this could translate to 2,000 to 3,000 more people bicycling on a daily basis.

What is Bike share?

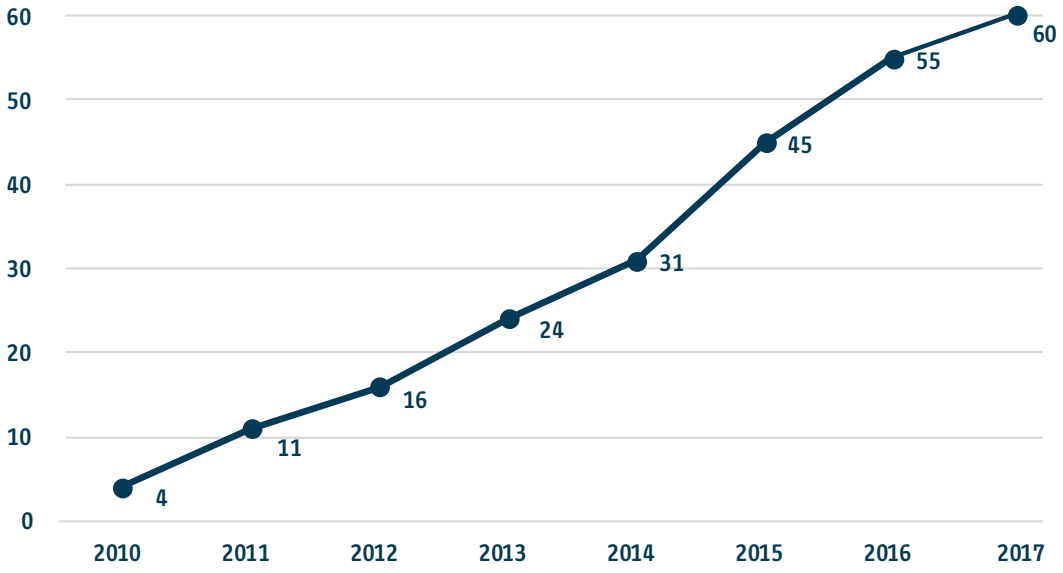
A bike share system is a point-to-point, on-demand transit system that connects people to local destinations and other forms of transportation. Bike share is ideal for short trips, like

running errands or first/last mile connections to transit, that are typically between a half mile and three miles. In urban settings, these short trips to the store, to school, to the park, and other local destinations constitute more than half of all trips. If some people choose to use bike share for these short trips rather than driving, it will help alleviate congestion. Bike share can also extend the reach of existing public transit by making it faster and easier to reach transit stops and possibly eliminating the need to make transfers.

Bike share is a relatively new form of transportation in the United States but has grown substantially in recent years. As of 2017, 60 cities in the U.S. have implemented a bike share system with at least ten stations and 100 bicycles (many more cities have smaller systems). Not only are cities adopting bike share, bike share is growing within these cities. Of the cities that have had a bike share system for over a year, 80% have expanded—on average more than doubling the number of bicycles and stations within the system.

In Michigan, Detroit's MoGo system launched in spring of 2017 with 43 stations and 430 bikes

Figure 2. Growth of Bike Share in the U.S.



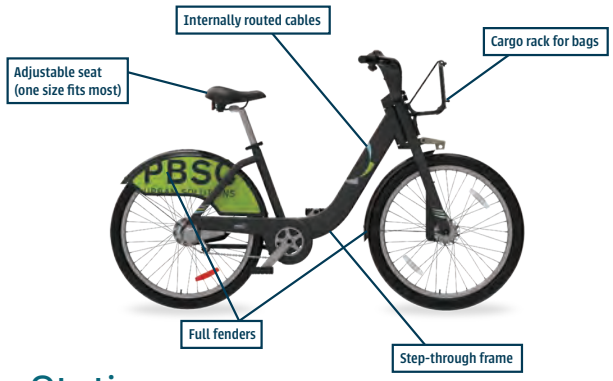
*** Systems with at least 10 stations and 100 bicycles.**
*Does not include dockless bike share systems

There are two major physical components of a bike share system: the bicycle and the station.

The Bicycle

Bike share bicycles differ from common personal bicycles in several key ways. Most importantly, bike share bicycles are designed to withstand significant use in an urban environment in all weather conditions—they tend to be heavier, have sturdy tires, and most major components are housed within the bicycle itself (rather than externally). Bike share bicycles are also designed to fit most users, offering a low step-through frame and adjustable seats with a wide range of heights.

Figure 3. Typical bike share bicycle



The Station

Until recently, all bike share systems included fixed stations with docks where users pay, check out, and return bicycles. Stations are highly visible and help to increase awareness of bike share, provide information to the public, and represent potentially valuable advertising space that can be sold to raise revenue. Bike share stations have evolved from fixed stations that required connections to the power grid and telecommunications to modular stations that can be rearranged or relocated, are solar-powered, and connect to wireless communications.

Figure 4. Typical bike share station

How Does Bike Share Work?

In order to use bike share, a user must register with the system either as a casual, one-time user or as a long-term member. Depending on the system, users can register at the station itself, online, through a smart phone app, or at designated physical locations. Once a user is registered, they can check out a bicycle from any station, ride anywhere within the system's boundaries for the allotted time, and then return the bicycle to any station with an open dock.

Different cities and systems offer a wide variety of membership and pricing structures. For occasional users, most bicycle share systems offer single-ride or day pass options. For those planning to use bicycle share more regularly, cities offer monthly or annual passes. Once a user purchases a pass of any kind, they can either take an unlimited number of trips under a certain time threshold (e.g., a day pass user can take an unlimited number of 30-minute trips within a 24-hour period) or ride for an allotted number of minutes (e.g., a monthly pass holder can use a bicycle share bicycle for 60 minutes per day). The allotted ride times and membership options vary from city to city.

Figure 5. How does bike share work?

Benefits of Bike Share

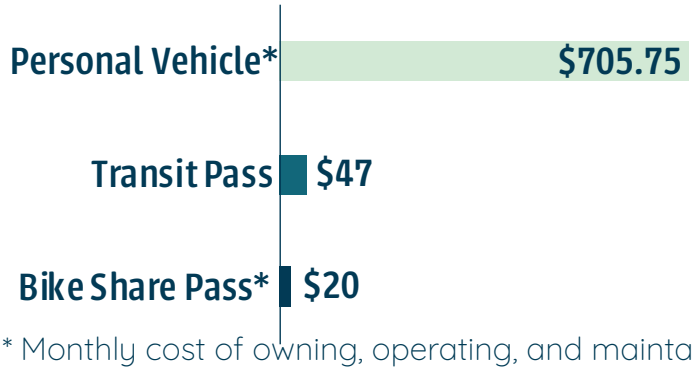
Bike share offers a wide array of benefits to cities and their residents, including financial, health, transportation, environmental, and economic development benefits.

Financial Benefits

After housing costs, transportation is the next largest expenditure for households. Compared to other modes of transportation, bike share represents an affordable transportation option for

all residents. A monthly bike share pass, which typically includes an unlimited number of trips under a designated time limit, can range from $9 - $35 in the United States, depending on the city. In comparison, a monthly transit pass for The Rapid costs $47 and the monthly costs of owning and operating a personal motor vehicle has been estimated at $705.75.

Figure 6. Monthly Transportation Costs



* Monthly cost of owning, operating, and maintaining personal vehicle from AAA. Monthly bike share pass for Grand Rapids, including unlimited 60-minute trips, recommended at $20 per month.

Health Benefits

9.2% of the population in Kent County, MI has diabetes.

27.5% of adults in Kenty County are clinically obese.

The health benefits of bicycling as an accessible, low-impact form of physical activity are well-established. By expanding access to bicycles, bike share can improve the physical health of its users'. Surveys of bike share users have indicate decreased stress levels and improved mental health. In Boston, MA, doctors can even write prescriptions for reduced price bike share memberships for patients who receive public assistance.

In Kent County (which includes the City of Grand Rapids), 9.2% of the population has diabetes and 27.5% of adults are clinically obese. Bringing bike share to Grand Rapids will offer residents a new option to increase physical activity and help address pressing health challenges in the City and surrounding county.

Transportation Benefits

Bike share represents a new choice within a city's transportation network and expands mobility for residents and visitors. Bike share is an excellent option for short trips in an urban environment and can even be faster than driving for some trips when considering congestion and the time required to park. When located near transit, bike share can make a city's existing public transportation more accessible, effectively expanding the service area of transit.

Environmental Benefits

By offering a new option for getting around a city, bike share can reduce the number of car trips individuals make and eliminate associated carbon emissions. Surveys of bike share users have found that 25% of trips in Portland, OR and 47% of trips in Denver, CO made with bike share replaced a car trip. In Denver, that translates to over 150,000 fewer car trips.

Economic Development Benefits

More than ever, cities around the U.S. are competing to attract workers, jobs, and tourists based on the amenities they offer. Bicycle share represents an important feature for visitors, current residents, or potential residents, many of whom want greater choice and flexibility getting around a city. In Grand Rapids, bike share would act as an additional draw for conventions and visitors during ArtPrize and other festivals.

Many individuals use bike share to run errands or for shopping and bike share can lead to increased activity for businesses near stations. Bike share can also contribute to a city's sense of place and help shape the image of a lively, active urban environment.

Innovations in Bike Share

While bike share systems have traditionally included stations or hubs as described above, the pace of innovation and change within the bike share industry has greatly accelerated over the last several years.

One major change has been the ability to relocate much of the technology for the system from the station onto the bicycle itself. These are known as "smart bicycles"and they have major implications in the design of the system and the user's experience.

"Hybrid" bike share systems use these smart bicycles and, therefore, have different types of stations. Hybrid bike share systems still offer traditional stations where a user can pay, register, and check out a bicycle. But they also include "hubs," which are customized bicycle racks specifically for bike share bicycles. A user can check out a bike share bicycle from a hub online, through a smart phone app, or using the integrated computer on the bicycle itself. A user can then return the bicycle to any station, hub, or, in some systems, lock it to any public bicycle rack.

"Dockless" bike share systems, which are expanding in the U.S., have no stations or docks. Dockless systems rely on a smart

phone application and an integrated locking mechanism on the bicycle. Users register, pay, unlock the bicycle, and complete their trip using the smart phone app. Dockless bicycles offer users the flexibility of parking the bicycle anywhere to end a trip, but this flexibility also represents a potential pitfall, as bicycles can clutter sidewalks and block the right-of-way.

Figure 7. Images of Station-based, hybrid, and dockless bike share systems around the U.S.

A traditional bike share station with payment kiosk in Washington, D.C.

A hub in Santa Monica, CA's hybrid bike share system.

A smart bicycle locked to a public bicycle rack.

Dockless bike share in Washington, D.C.

Major Decisions for Grand Rapids

Grand Rapids must decide whether it wants to proceed with a bike share system and, if so, what form that system should take. The major decision points discussed in this report include:

- Goals and objectives for bike share in Grand Rapids,
- Service area and system size,
- Whether to deploy a station-based, hybrid or dockless system,
- Ownership and operating model,
- Pricing structure,
- Funding sources and strategies for capital and operating expenses,
- Strategy to ensure equitable access to bike share, and
- Action plan for implementation.

PUBLIC OUTREACH

PUBLIC OUTREACH

37 outreach events were held in Fall 2017 as part of the Bike Share Feasibility Study, including seven focus groups conducted with LINC UP and the Hispanic Center of Western Michigan.

1. **September 19, 2017**
   LINC UP
   1167 Madison Ave. SE
2. **October 4, 2017**
   HCWM
   1204 Grandville Ave. SW
3. **October 5, 2017**
   HCWM
   1204 Grandville Ave. SW
4. **October 9, 2017**
   HCWM
   1204 Grandville Ave. SW
5. **October 12, 2017**
   LINC UP
   912 Alger St. SE
6. **October 17, 2017**
   LINC UP
   935 Baxter St. SE
7. **November 13, 2017**
   LINC UP
   1167 Madison Ave. SE

In conjunction with the feasibility study, Grand Rapids has conducted extensive community outreach to educate the public about bike share and better understand residents' opinions regarding if and how bike share could be implemented in Grand Rapids. The City's outreach revealed significant interest in bike share in communities across Grand Rapids and also helped identify residents' questions and concerns. City staff attended 19 official meetings across Grand Rapids during Fall 2017 as well as 11 additional pop-ups at community events.

In order to ensure the perspectives of a diverse group of Grand Rapids' residents were included in the feasibility study, seven focus groups were conducted in partnership with two community organizations: LINC UP (LINC) and the Hispanic Center of Western Michigan (HCWM). These focus groups were designed to gather input and ideas about the possible implementation of bike share in southeast and southwest Grand Rapids neighborhoods. All LINC UP focus groups were conducted in English. The three Hispanic Center focus groups were conducted in English and Spanish.

Information from the focus groups was captured in three ways:

- via Mentimeter online polling (participants engaged via their own smart phones),
- printed versions of the Mentimeter questions (participants responded on paper), and
- traditional flip charts (facilitators and note-takers recorded responses).

The focus groups yielded valuable insight into individuals' concerns and questions regarding bike share, which are detailed below.

General Comments

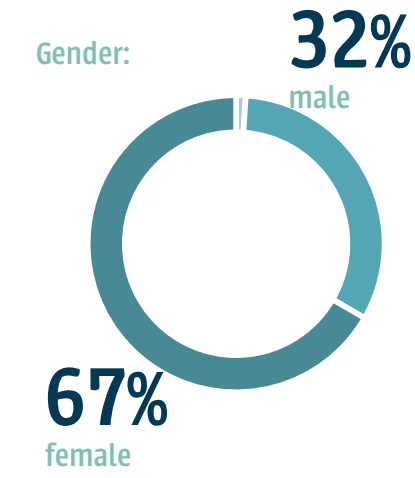
- Most residents expressed positive enthusiasm for bike share.
- Most residents associate biking with health, environmental, and financial benefits.
- Many residents see the cost of bike share as a portion of their overall transportation budget for vehicle, parking, bus, and ride sharing services.

Focus Group Stats

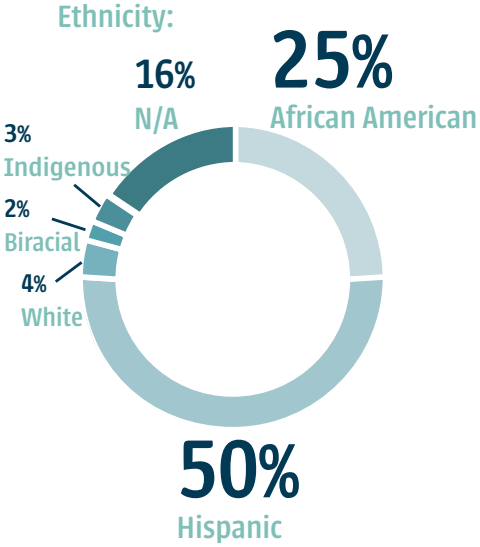
96 participants

13-66 ages

Gender:



Ethnicity:



- Some residents have never owned or ridden a bicycle but would like to learn.
- Some residents see bike share as a good option for people who do not have or cannot get a driver's license and/or car.
- Some residents feel greater bus frequency, especially on weekends, would be more valuable than bike share for families with children.
- In every focus group, residents expressed concern for personal liability while using bike share.

Personal Liability/Financial

- Will I be held responsible for damage/theft of the bicycle?
- Will the rules be clear? What can and can't you do with the bicycle?
- What will the cost be for residents?
- How will payments be managed?
- If a bicycle breaks down, who is responsible?
- What if you run out of money?

Safety

- Will I be safe riding?
- Will helmets be provided and/or required?
- Will there be safe, comfortable places to ride?
- Will drivers and bicyclists abide by traffic laws?
- Can you reduce speed limits to address traffic safety concerns?
- What about educating car drivers?

Learning Curve

- How will you teach people to use the bike share system?
- Will you provide instructions on rules of the road?
- Will you provide safety training for motorists?
- Will you offer a free trial so I can try bike share before buying an access pass?
- Can you come to community centers, schools, and parks to

provide in-person demonstrations of the bicycles?

- Who will educate bicycle riders and how?

Access and Utility

- Will this be located in Downtown only? Will this be in my neighborhood?
- Will the bicycles have baskets or racks for groceries and other cargo?
- Will the bicycles be able to accommodate children?
- Do these bicycles have a weight limit?
- Will instructions be in my language?
- Can I pay without a credit card or debit card?
- Where will stations first be implemented?
- Will this be more accessible to white residents than people of color?

GOALS

GOALS

Bike share systems offer a variety of mobility, economic, health, and social benefits to communities. Developing a set of goals helps to focus how these benefits should be prioritized to best meet the needs of the community and provides a means to guide the design and implementation strategy of Grand Rapids' bike share system. In addition, developing a set of goals facilitates discussion about the system with the public and stakeholders, and keeps decisions focused on the desired purpose and intent of the system.

A focused set of goals for the implementation of a bike share system in Grand Rapids were developed through a series of discussions amongst the Bike Share Steering Committee and taking into consideration residents' feedback during the public outreach.

Goals for bike share in Grand Rapids

1. Grand Rapids' bike share system will be financially sustainable and minimize the need to rely on the City's general fund for ongoing operational assistance.

2. Grand Rapids' bike share system will be accessible for all residents, regardless of race, ethnicity, income, age, or ability, in its pricing and payment structure, the location of stations, its educational and outreach efforts, and its partnerships with local organizations.

3.Grand Rapids' bike share system will improve the reach and utility of public transportation.

4. Grand Rapids' bike share system will increase access to key destinations throughout the City and enhance both residents' and visitors' experience getting around Grand Rapids.

5. Grand Rapids' bike share system will enhance the City's parking supply by fostering "park once" behaviors.

6. Grand Rapids' bike share system will enable increased physical activity to benefit public health.

BUSINESS PLAN

BUSINESS PLAN

Market Analysis

A market analysis was conducted for Grand Rapids to help determine recommended service areas for the bike share system and to identify areas of need with respect to social equity. Serving a strong ridership base is important to ensure a bike share system's financial sustainability, therefore system planning must take into account likely ridership generators. In most cities, bike share ridership skews toward higher-income and white populations instead of reflecting typical citywide demographics. While the reasons for this are complex, station location is one factor. Therefore, meeting Grand Rapid's goals to serve community members of all demographics and income levels requires including social equity factors in determining the system's recommended service areas. The issue of social equity and how to ensure Grand Rapids' bike share system is accessible for as many residents and visitors as possible is discussed in greater detail in the Equity Plan.

Demand and Equity Analysis: Heat Mapping

Heat mapping analyses were conducted to determine the areas of potential demand for bike share and also to determine areas where bike share service would help the City meet the goals of establishing an equitable system. The demand and equity analyses were conducted independently and then combined to determine the proposed service area.

The demand heat mapping analysis compiled both demographic and non-demographic factors identified as potential ridership factors in order to distinguish "hot spots," where a higher concentration of the factors are prevalent. The factors included in this analysis are commonly used and accurate predictors of bike share demand and are highly associated with actual bike share usage.

The 'Equity' analysis considered four factors that were identified as key factors for social equity – racial/ethnic diversity, poverty levels, households without access to a vehicle, and median household income. By mapping these factors, areas with equity concerns could be identified and prioritized in developing the recommended bike share service areas.

Demand Factors

- Population density
- Population density (ages 20 - 44)
- Employment density
- Destination density
- Business density
- Bicycle commute mode share
- Transit density
- Bicycle facilities
- Parks and open space

Equity Factors

- % of households below the poverty level
- % nonwhite population
- % of households with zero vehicles
- Median household income

FIGURE 8. DEMAND HEAT MAP

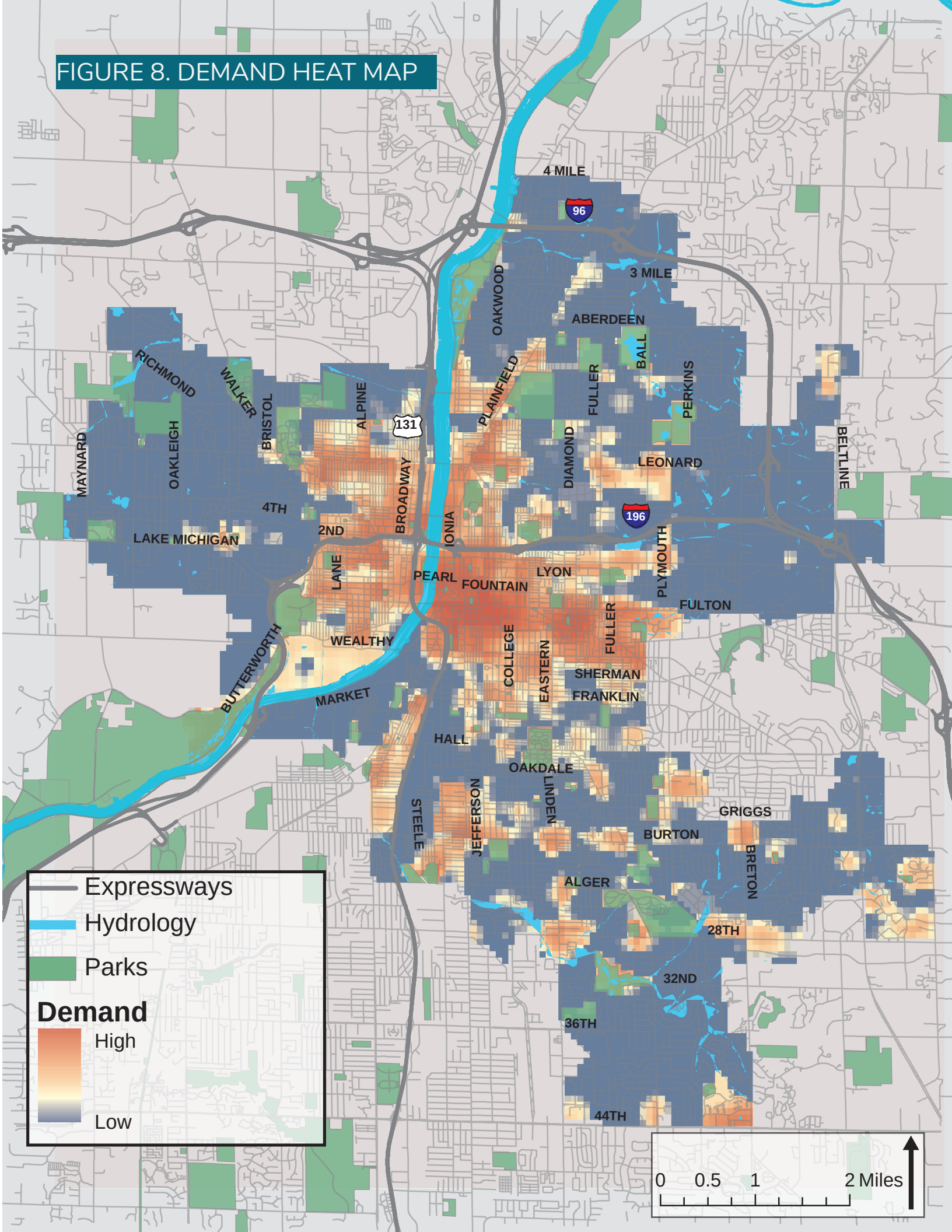
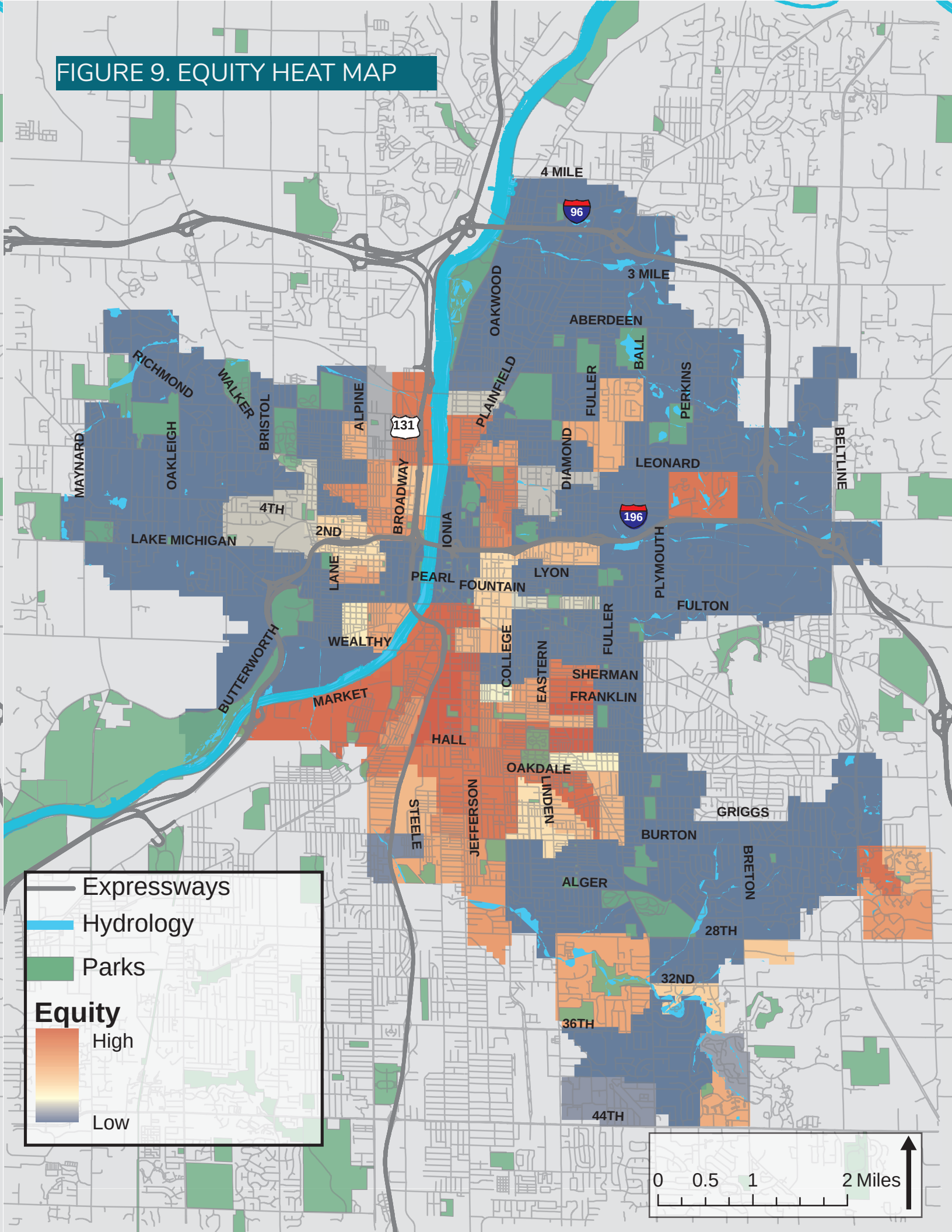


FIGURE 9. EQUITY HEAT MAP



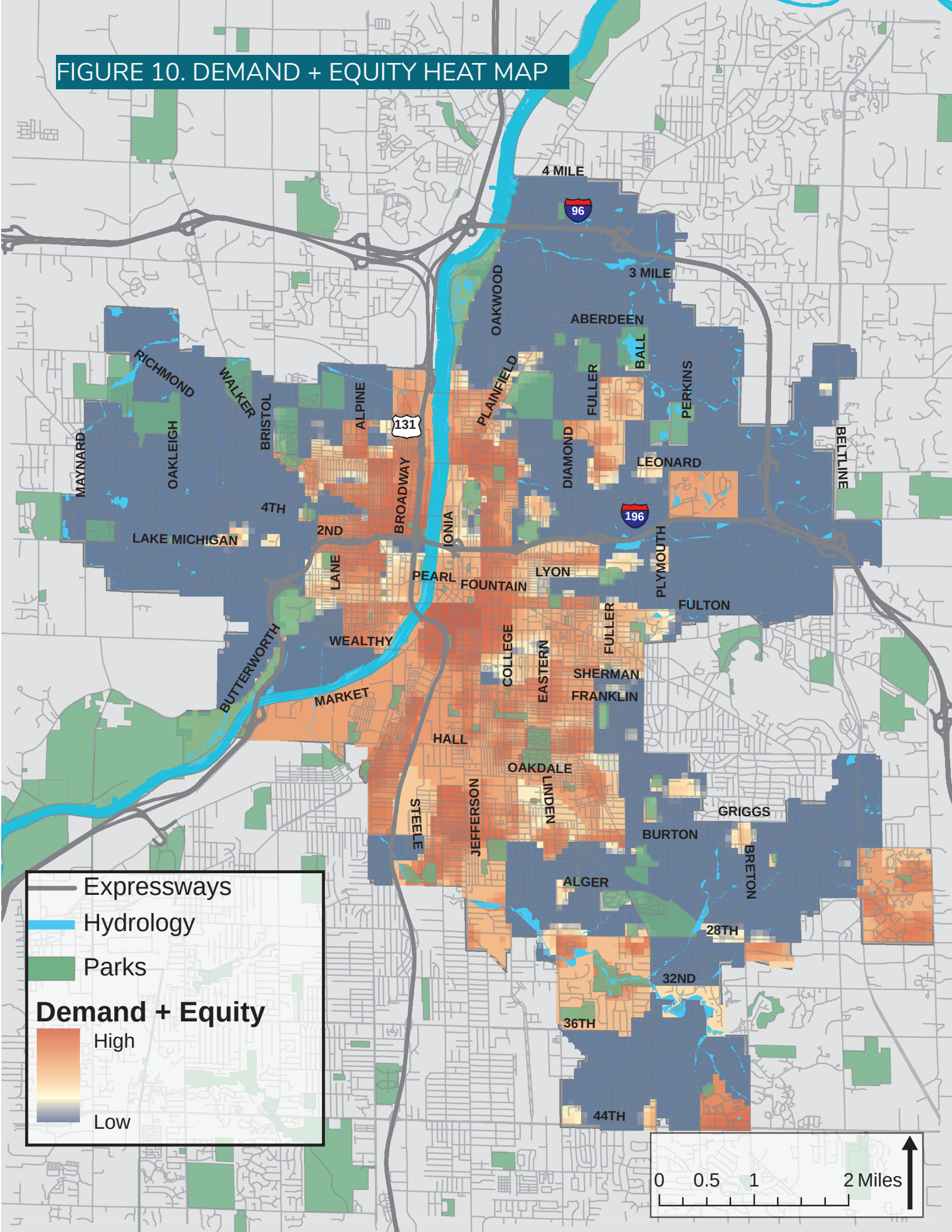
Certain factors are better predictors of bike share potential than others, and the importance of individual factors should align with Grand Rapids' project goals and objectives. Based on the goals and objectives described above in the Goals section, each factor was assigned a weight. The higher the weight value for a given factor, the greater the relative importance of the factor. Various combinations of the factors and weights were tested to determine the most appropriate model for Grand Rapids. Population and employment density, which have been shown to be two of the most important factors that determine ridership, were weighted twice as heavily as the other factors for determining potential ridership. The four factors for the equity heat map were weighted equally. The final weights for the Ridership Potential and Equity maps are shown in the table below.

Table 2. Demand and Equity Factor Weightings

	Metric	Weighting
Demand analysis	Population density	1
	Employment density	1
	Population density (ages 20-44)	0.5
	Destination density	0.5
	Transit density	0.5
	Bicycle Facilities	0.5
	Bicycle Commute Mode Share	0.5
	Business Density	0.5
Equity analysis	Percentage of households below poverty line	1
	Nonwhite population	1
	Median household income	1
	Percentage of all households with zero vehicles	1

Finally, the Demand and Equity heat maps were combined into a single map. This final output provides guidance on where bike share may achieve high levels of ridership as well as fulfill larger system access and social equity goals for the City. Conducting an equity analysis in addition to the demand analysis helps to ensure that potential for ridership is not the only consideration in planning Grand Rapids' bike share system and relates directly to the City's goals for bike share.

FIGURE 10. DEMAND + EQUITY HEAT MAP



Organizational Structure

Bike share organizational structures cover two categories:

- Ownership of the physical assets related to the system (bicycles, docks, stations) and
- Operation of the system.

Bike share operations cover a wide range of activities such as maintaining bicycles and stations, ensuring bicycles are appropriately distributed throughout the system (known as "rebalancing"), running a customer service call center for the system, and marketing the system.

Different organizational structures offer cities unique benefits but can also come with related challenges. When deciding on an ownership and operating model, cities must consider several factors such as:

- Financial risk and liability,
- Available funding sources,
- Operating responsibility,
- Capital ownership, and
- Staff capacity

Additionally, cities should consider how different organizational structures relate to and further the stated goals for the recommended bike share systems.

For Grand Rapids, five potential organizational structures were evaluated:

- Publicly owned and operated
- Publicly owned and privately operated
- Publicly owned and non-profit operated
- Non-profit owned and operated, and
- Privately owned and operated

The table below highlights some of the benefits and challenges associated with the five potential organization structures.

Table 3. Benefits and Challenges of Potential Organizational Structures

Organizational Structure	Benefits	Challenges
Publicly owned/ Publicly operated	• Highest level of public control/transparency • Any profits would return to City • Coordination between bike share and public transit • Ease of permitting equipment within right-of-way	• Public assumes financial risk and liability exposure • Requires more staff time • Staff may lack bike-share expertise
Publicly owned/ Privately operated	• Risk is shared (City assumes financial risk, operator liability exposure) • City maintains a degree of control while leveraging private expertise • Coordination with public transit and ease of permitting	• Requires detailed contract outlining roles, responsibilities and profit-sharing/re-investment • Potential grey area/ slowdowns with two organizations having a say
Publicly owned/ Non-proft operated	• Diverse set of funding options • Risk is shared (City takes on financial risk, operator liability exposure) • City maintains significant level of control and transparency over system	• Finding or creating a non-profit capable of operations/developing capacity amongst staff • May require significant staff time and funding from the City, especially at the onset
Non-profit owned/ Non-proft operated	• Profits are generally reinvested into the system • Provides diverse fundraising options • Staff solely dedicated to bike share	• Learning curve establishing new organization and learning bike share • Still requires time and funding from City
Privately owned/ Privately operated	• No, or little, risk to public • Brings bike share expertise • Focus on profitability may increase service and efficiency in high demand areas	• Operator controls system with limited opportunity for public input • Focus on profitability may limit focus on equity or other issues

After evaluating the potential organizational structures for Grand Rapids' bike share system, it was determined that a publicly owned, non-profit operated system best meets Grand Rapids' goals for bike share and matches the City's expected capacity and funding. This model was selected with the understanding that the City would likely play a large role in the launch and initial operational management of the bike share system as non-profit organizations develop capacity to operate the bike share system.

System Plan

System Type

While bike share systems in the U.S. have traditionally included docking stations where users register, pay for, check out, and return bicycles, innovations in bike share technology have lessened the need for systems to exclusively offer full-service bike share stations. "Smart" bicycle technology and users' increasing preference for smartphone applications have allowed cities to implement "hybrid" bike share systems, which have some traditional stations plus streamlined "hubs," or completely dockless systems, which have no stations or hubs at all.

While station-based systems have a proven track record of success in the U.S. and internationally, they also come with higher capital costs and may limit users' flexibility by requiring bicycles

to be checked out from and returned to stations. Users also face the possibility of reaching their destination and finding the station completely full, requiring them to ride to the next station with an available dock.

Hybrid bike share systems build off the traditional, station-based model for bike share but add in more flexibility for both the operator and the user. Hybrid systems use smart bike technology, which moves much of the user interface from the station kiosk onto the bike itself. Hybrid bike share systems still offer some full-service stations with payment kiosks but also include "hubs," which include docks for checking out and returning bikes but typically do not have a payment kiosk. Some hybrid systems also give users the ability to lock bicycles directly to public bicycle racks. Because of the different station options, hybrid systems' capital costs are typically 25% lower than station-based systems' capital costs.

Dockless bike share systems represent a drastic change from both traditional station-based bike share and hybrid systems. Dockless bike share systems have no stations, and users can park a bicycle anywhere when ending their trip. The dockless model offers the user much greater flexibility, but it is relatively unproven in the United States. Dockless bike share systems are typically operated and funded by private companies. However, cities must develop and manage a permitting process and regulations for dockless bike share to ensure operators meet the necessary requirements and that dockless bicycles do not block the right-of-way for other users.

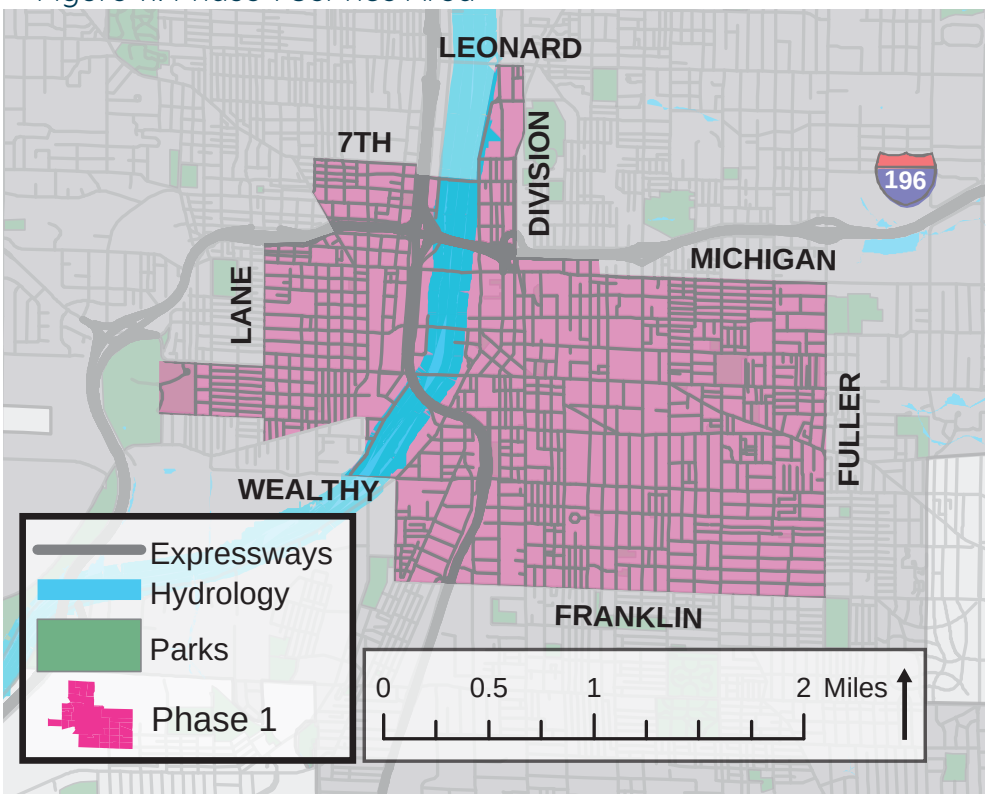
The three potential system types was evaluated based on how well it would address the goals established for Grand Rapids' bike share system. While the need for Grand Rapids to provide no initial funding for a dockless bike share system is attractive, the long-term viability of dockless bike share and its business model cs quite uncertain. Combined with its lower rankings on the goals of accessibility for all, connections with public transportation, and fostering "park once" behavior, a dockless system is recommended for Grand Rapids.

Both the hybrid and station-based models can achieve Grand Rapids' goals of system accessibility for as many residents and visitors as possible, enhancing public transportation and "park once" behaviors, increasing physical activity, and improving connections to key destinations across the City for residents and visitors. Considering the station-based and hybrid models perform similarly across the other goals, the lower capital costs associated with the hybrid model make it the recommended option for Grand Rapids.

Service Area and Phasing

Determining the recommended service area for bike share in Grand Rapids requires balancing a number of competing factors. First, evidence from cities across the U.S. and around the world proves that the density of stations is a major factor in the success of bike share. When stations are spaced closely together, bike share becomes a convenient, efficient transportation option.

Figure 11. Phase 1 Service Area



Likewise, ensuring the service area is as connected and contiguous as possible, and avoiding isolated "islands", is also a key factor in attracting significant ridership. At the same time, including as much of Grand Rapids as possible in a bike share system's service area is also important, so that as many residents and visitors can easily use the system as possible. It should be noted, though, that residents who live outside the service area can still benefit from bike share. For example, if a resident works or runs errands within the service area, bike share would still be a beneficial transportation option.

Ideally, a bike share system's service area would cover the entire City with dense station spacing throughout; however, the capital and operational costs of such a system exceed the likely available resources. Thus, the recommended service area for bike share in Grand Rapids was determined based on the results from

the market analysis (balancing areas that will have high demand for bike share with target equity areas), the ability to achieve sufficient density and contiguity, and system costs.

It s also recommended that a Grand Rapids bike share system should use a phased buildout, a common approach in cities around the U.S. A phased buildout offers numerous advantages, such as lower initial capital costs and the opportunity for the system operator to develop its organizational capacity. This plan outlines a Phase 1 service area and system parameters along with a vision of the potential expansion area for the bike share system.

Phase 1

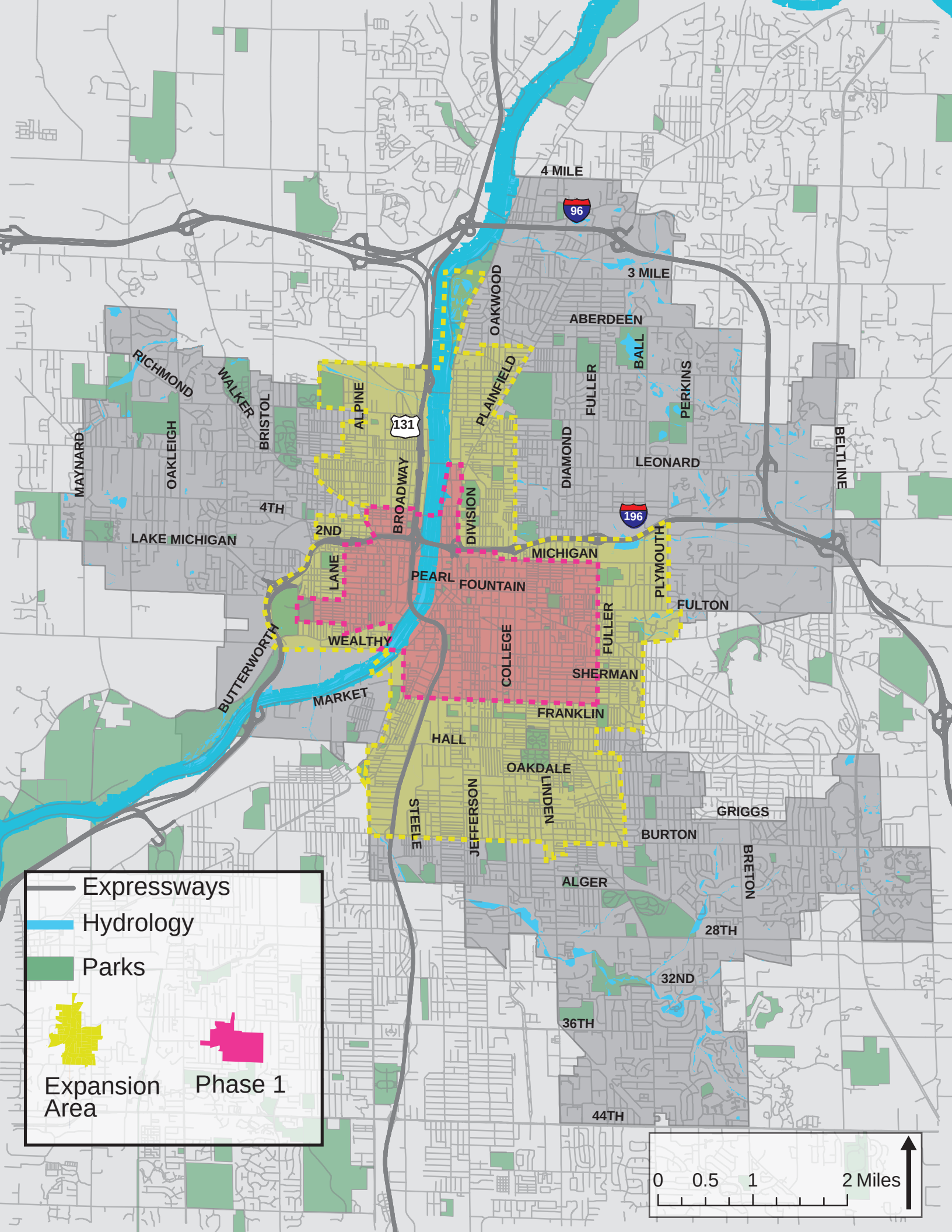
The initial service area recommended for Grand Rapids' bike share system encompasses 4.5 square miles in and around Downtown and nearby neighborhoods. It also provides access to a large segment of the population:

- Nearly 30,000 people live within the proposed Phase 1 service area and over 60,000 people work within its boundary
- One third of Grand Rapid's total population lives within a quarter mile of the Phase 1, service area.

The service area for Phase 1 includes the highest areas of potential demand for bike share based on the market analysis. It also includes a significant portion of the target equity areas that are directly contiguous to high demand areas. A quarter of the city's households without access to a vehicle are located in Phase 1 and the median household income is 22% lower than the City overall.

In designing a successful service area for bike share, it is important to include the highest demand areas and locate stations at a high density so that Grand Rapids' bike share can attract strong ridership from the start and build momentum for further expansion.

The proposed Phase 1 service areas should include an estimated 45 stations (assumes 15 full stations with payment kiosks and another 30 hubs) and 450 "smart" bicycles. The suggested number of stations will allow Grand Rapids to achieve a relatively high density of 10 stations per square mile. If the 45 stations and hubs are distributed evenly across the proposed Phase 1 service area, they would be spaced approximately 1,500 feet apart. Put another way, no matter where you are in the service area, a bike share station or hub is, at the most, an 8-minute walk away.


4 MILE
96
3 MILE
OAKWOOD
ABERDEEN
BALL
FULLER
PERKINS
PLAINFIELD
DIAMOND
LEONARD
BELTLINE
RICHMOND
WALKER
BRISTOL
ALPINE
131
MAYNARD
OAKLEIGH
BROADWAY
DIVISION
4TH
2ND
LAKE MICHIGAN
196
MICHIGAN
PLYMOUTH
LANE
PEARL
FOUNTAIN
FULTON
WEALTHY
COLLEGE
FULLER
SHERMAN
BUTTERWORTH
MARKET
FRANKLIN
HALL
OAKDALE
LINDEN
STEELE
JEFFERSON
GRIGGS
BURTON
BRETON
ALGER
28TH
32ND
36TH
44TH
Expressways
Hydrology
Parks
Expansion Area
Phase 1
0
0.5
1
2 Miles

Recommended Expansion Area

As the bike share system matures in Grand Rapids, it has the potential to expand and cover a much larger portion of the City. A proposed expansion area for bike share is based on the results of the market analysis. The expansion area would increase the system's overall service area to 13.3 square miles and includes:

- 88,761 people (42% of Grand Rapids' total population)
- 83,858 jobs
- The majority of the target equity areas identified in the market analysis
- More than half (54%) of Grand Rapids' nonwhite residents
- 64% of residents living below the poverty line
- 56% of households without access to a vehicle

Ideally, stations and hubs would be placed across the proposed expansion area at the same density as Phase 1 (10 stations per square mile); however, doing so would greatly increase both the capital and operational costs of the system. Additionally, certain areas included in the expansion service area do not require as high a density of stations as will be present in Downtown. For example, Riverside or John Ball Park do not need a plethora of stations spread throughout them; locating a few stations at key entry points will suffice.

If Grand Rapids' bike share system expands to cover the entire expansion area, it is recommended that the system include around 100 stations (35 full stations and 65 hubs) and 800 bicycles — a density of 7.5 stations per square mile. The ratio of bicycles/station is lower for the expansion area due to the fact that some of the stations in outlying areas will likely see lower levels of usage than those in Phase 1.

User Pricing

Bike share in Grand Rapids must be priced in a manner that is affordable for residents and visitors and is easy for users to understand. But it needs to be priced to also generate revenue for the system to cover a substantial portion of its operational costs.

To ensure the pricing options are clear, Grand Rapids should focus on two base pricing options:: single-ride — $3 for the first 60 minutes, $3 for every 30 minutes thereafter and monthly pass — $20 for unlimited trips up to 60 minutes.

In addition to the base price options, Grand Rapids should also offer discounted monthly passes to students and residents who

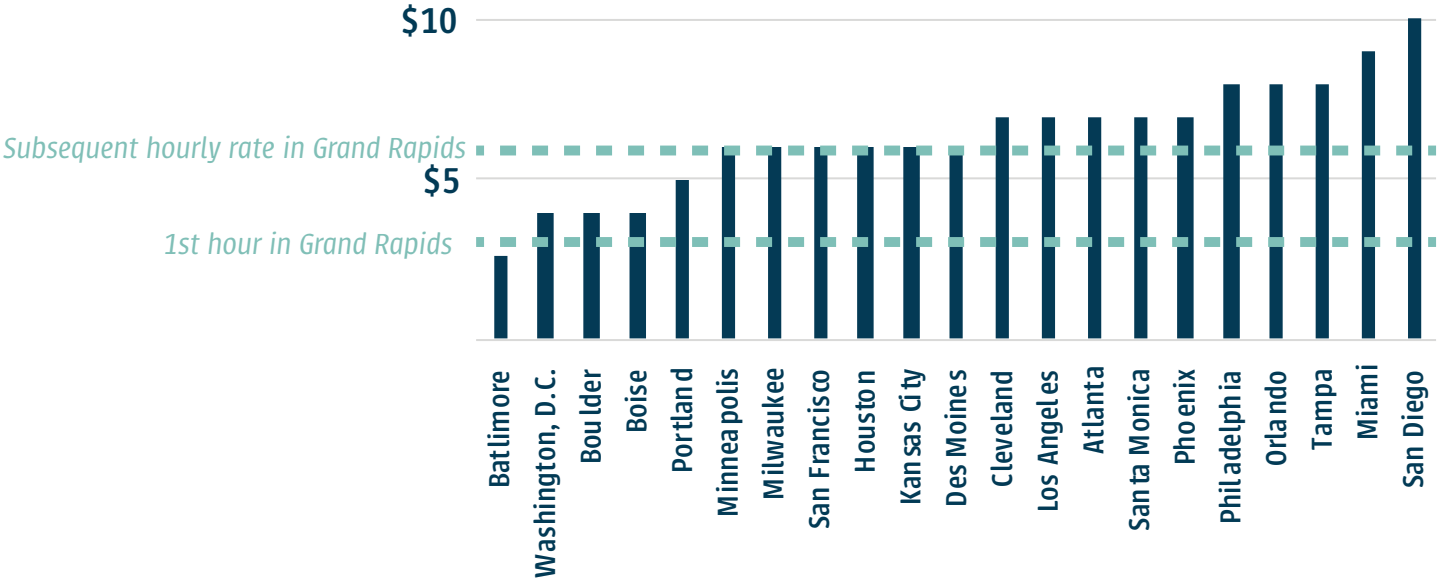
receive state benefits. Student passes would be $50 per semester (4 months) and discounted monthly passes would be $5 per month for residents with a 9-digit state benefits number.*

*Note: the exact prices of different pass options may change due to equipment purchase and/or operational considerations.

In order to make paying for and using bike share even easier, Grand Rapids should work to integrate payment for bike share with The Rapid. During focus groups and other public outreach events, many residents expressed an interest in using their transit pass to pay for and unlock bicycles. Offering a combined bike share/transit pass would be an attractive option to many residents and could increase usage.

Another pricing option that should be further evaluated is a reloadable balance, or pay as you go, option. Users who choose this option would pay a small fee (in the range of $2) to register with the system and then could add as much money as they choose to their account and reload their account when necessary. The single ride rates ($3 for the first 60 minutes, $3 for every 30 minutes thereafter) would apply to users choosing the reloadable balance option.

Figure 12. Proposed Hourly Pricing for Grand Rapids vs. Other Cities



Financials

A chief goal for a bike share system in Grand Rapids should be minimizing the need to rely on City funding to cover ongoing operating costs and becoming financially sustainable. In order to assess the potential performance of the system against this goal, a financial analysis was conducted to estimate the proposed system's costs and revenues. The financial analysis assumes Grand Rapids bike share system follows the recommendations laid out in the System Plan section, meaning the City implements a hybrid system with 45 stations and 450 bicycles initially and then growing to 100 stations and 800 bicycles in the future.

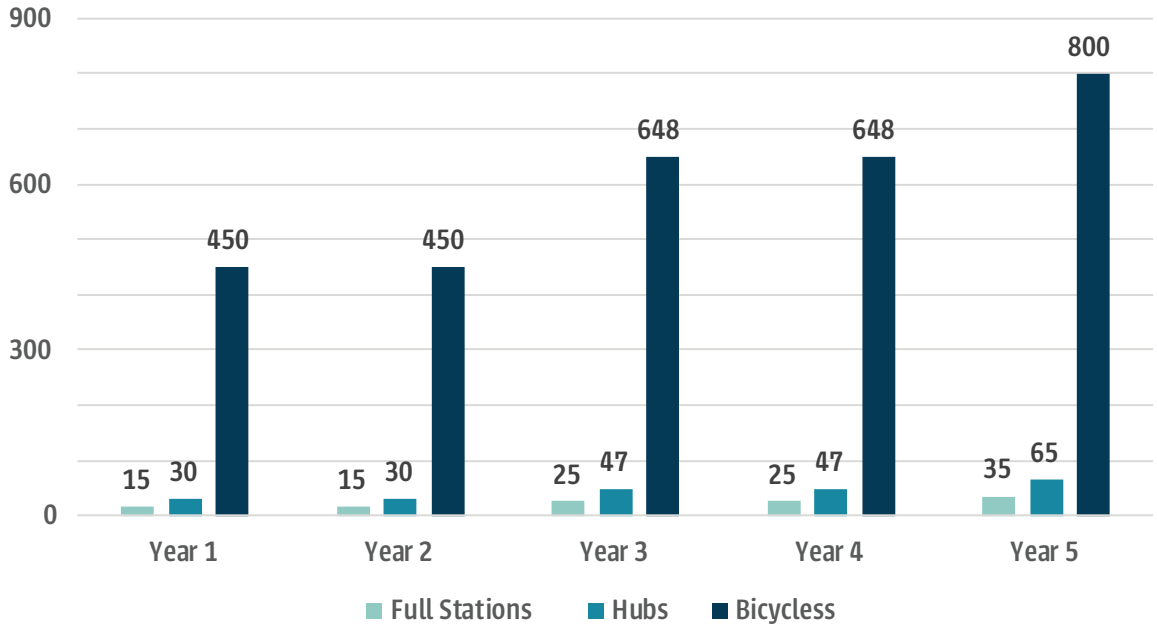
Establishing a bike share system in Grand Rapids creates costs in three categories:

1. Start-up costs for launching the system,
2. Capital costs to purchase bicycles and stations, and
3. Ongoing operating costs.

Start-up Costs

Grand Rapids' bike share system will need to cover several start-up costs to launch. These include establishing the non-profit organization to operate the system, pre-launch community outreach and marketing, website development, IT and communications setup, and others. These start-up costs are estimates at $300,000, based on data from similar size systems around the country.

Figure 13. Proposed Phasing for Grand Rapids Bike Share



Capital Costs

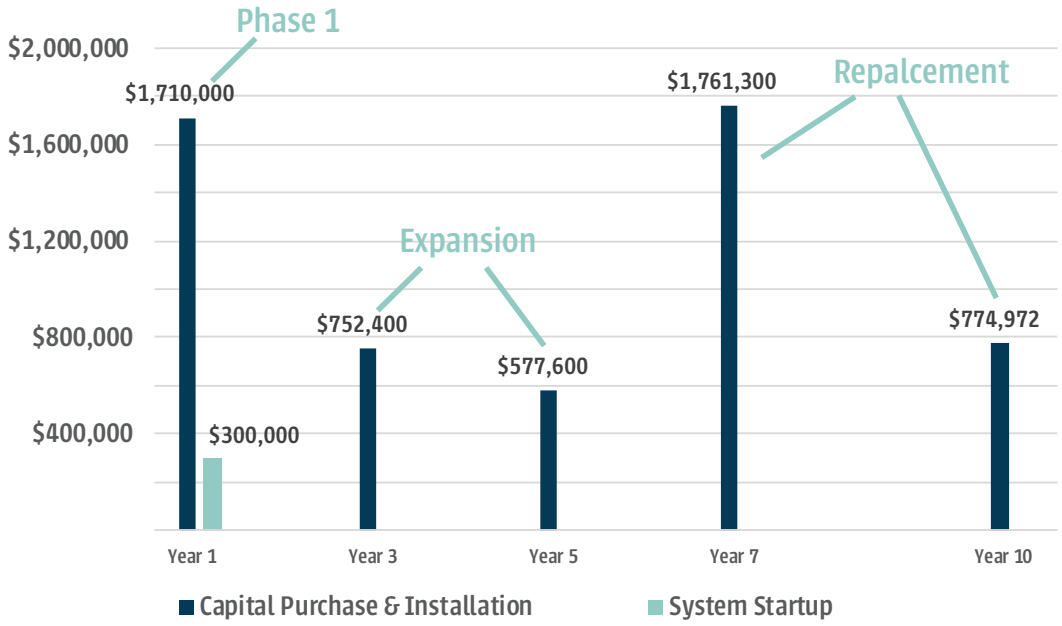
Capital costs include the purchase of bicycles, stations, and hubs for the system along with all of the necessary parts. For Grand Rapids' hybrid system, capital costs were estimated at $3,800 per bicycle (which includes the cost of the bike and the proportional costs of stations/hubs), based on recent bids submitted to cities in North America from bike share vendors.

Phase 1 is estimated to require $1.71 million in capital to purchase the needed equipment. The system plan outlined in this study does not envision a distinct second phase where bike share in Grand Rapids expands all at once. Rather it recommends that bike share should expand in an organic fashion. However, in order to conduct the financial analysis, it was assumed that Grand Rapids' bike share system would begin expanding in Year 3 and reach maturity in Year 5. The growth and development of the system could vary, though, based on usage, funding, or other factors.

Expanding from the initial 45 stations and 450 bicycles in Phase 1 to 100 stations and 800 bicycles by Year 5 would require an additional $1.33 million in capital. In total, Phase 1 plus the proposed bicycle expansion through Year 5 will require an estimated $3.04 million in capital over five years.

In addition to the capital for purchasing bicycles, stations and hubs, Grand Rapids will eventually need to replace the bicycles in its system (and, to a lesser extent, stations and hubs) as they age. Because bicycle share is fairly new in the U.S., few systems have undergone large-scale replacements of bicycles and stations. This analysis assumes that bicycles will have a useful life of six years (based on the experience of U.S. cities with more mature bike share systems). However, with good maintenance and upkeep, the useful life of bicycles may be longer. If all of Grand Rapids' bicycles are replaced after six years, it will require an additional $2.53 million in capital over the system's first 10 years. Replacement costs will not occur as a single lump some, though. Bikes will need to be replaced based on when they were purchased as well as their individual level of use.

Figure 14. Capital Costs Year 1-5



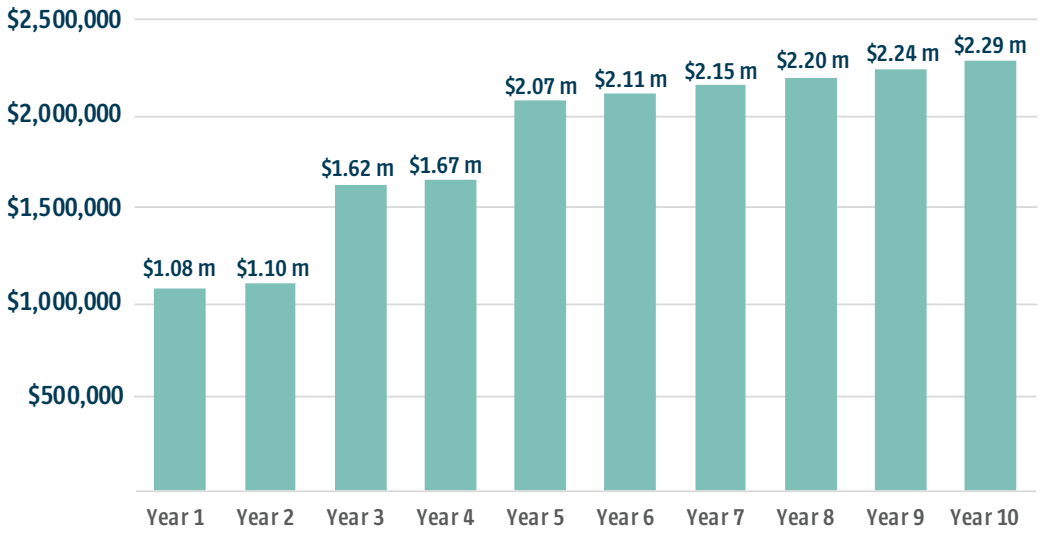
Operating Costs

Operating costs for bike share include:

- Money required to run and maintain Grand Rapids' bike share system, such as station and fleet maintenance and rebalancing
- Customer service
- Staffing
- Utilities for stations
- Storage space, and
- Other expenses typical of running a business.

For this analysis, the overall systems' operating costs were estimated at $2,400 bicycle/year plus an additional 5% for expenses. Operating costs are closely related to the size of the bike share system. A system with more bicycles covering a larger area will require more staff and vehicles to rebalance and maintain its bicycles and stations. As Grand Rapids' bike share system grows, its operating costs will also grow (see below estimates operating cost).

Figure 15. Operational Costs



System Revenue

User fees are a major source of revenue for all bike share systems and should, to the extent possible, cover a significant portion of a system's operating costs. In order to estimate the potential user fee revenue for bike share in Grand Rapids, it was first necessary to project the potential ridership for the system.

Data was gathered from cities across the U.S. with active bike share programs used to build a ridership projection model. The peer cities included:

- Boise, ID – Boise Green Bike
- Boston, MA – Hubway
- Chattanooga, TN – Bike Chattanooga
- Chicago, IL – Divvy
- Cincinnati, OH – Red Bike
- Washington, D.C. – Capital Bikeshare
- Denver, CO – B-cycle
- Detroit, MI – MoGo
- Milwaukee, WI – Bublr
- Minneapolis, MN – Nice Ride

The number of stations, population of the service area, and the number of jobs in the service area were analyzed from each system to build a multivariate regression model for predicting the

number of trips taken each month. Using the ridership projection model, a high and low estimate of potential ridership was calculated for the Phase 1 and the expansion area. The potential ridership ranges from a low of 5,000 trips/month to a high of 10,000 trips/month for the proposed Phase 1 service areas and from a low of 15,000 trips/month to a high of 35,000 trips/month for the Phase 1 and the expansion area.

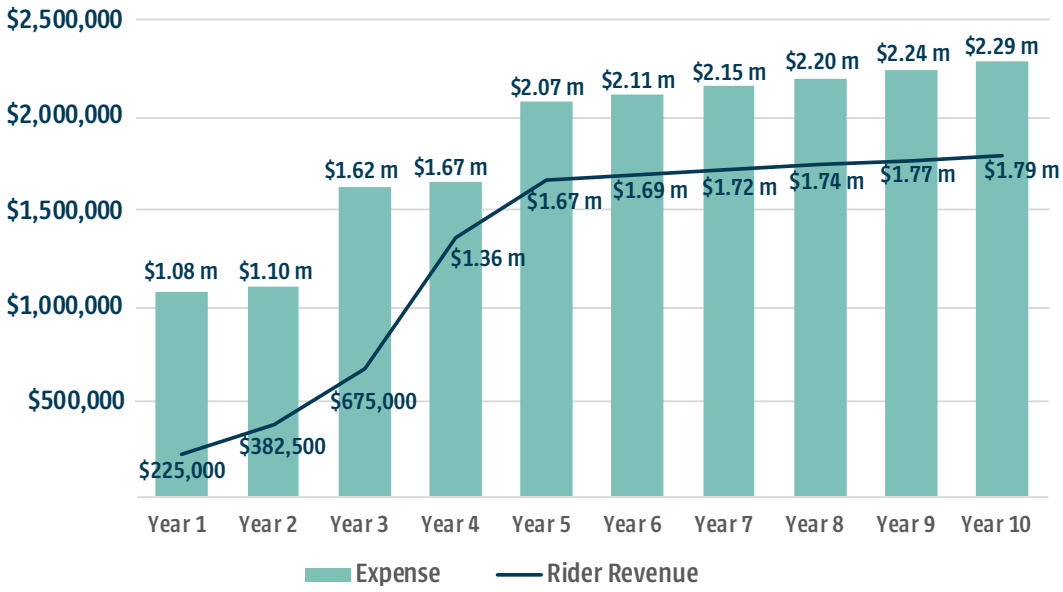
Figure 16. Ridership Projections

Ridership Estimate	Phase 1	Full Service Area
Low	5,000 trips/month	15,000 trips/month
High	10,000 trips/month	35,000 trips/month

Using the ridership projections and the pricing structure in the user pricing section of this report (single ride price of $3 for the first 60 minutes and $3 for every 30 minutes after and monthly pass price of $20), the potential revenue for Grand Rapids' bike share system was estimated. The revenue estimates assume there will be more single-ride users than monthly pass holders (57% to 43%), but that monthly pass holders will take the majority of trips across the system. These assumptions were based on the experiences of peer cities and adjusted to the context in Grand Rapids. Additionally, assuming a relatively large proportion of monthly pass holders is a more conservative way of estimating revenue, as single-ride users tend to be more profitable for the system.

To reflect the gradual process of residents and visitors learning about bike share and how to use the system, the low ridership estimates were used in Year 1 of the analysis, and their high ridership estimates were used for Year 2. The low estimate for the full expansion area was used in Year 3when the system is forecasted to go through an initial expansion of 72 stations and 648 bicycles. For Year 4 and year 5, the midpoint between the high and low estimates was used for rides exceeding 60 minutes (these were assumed to be 90 minutes and $6) and the high estimate was used for trips under one hour.

Figure 17. Estimated Revenue and Operational Expenses



In Year 1, it is estimated that Grand Rapids' bike share may generate $225,000 in user fee revenue. By Year 5, if the system grows to the full expansion area, the system could generate $1.67 million in revenue from user fees, which would cover 80% of the costs to operate the system.

Balance Sheet

If bike share in Grand Rapids grows as projected, the revenue from the system will cover the majority of its operating expenses by Year 4 of operation. In order to cover the full operating costs during the system's launch and into the future, Grand Rapids will need to secure additional sources of funding.

The amount of required additional revenue to support the system is in part dependent on whether depreciation is funded. According to the financial analysis, the largest funding gap occurs in Year 3 with a requirement of an additional $947,592 ($1.4 million if depreciation is included). This gap is due to the forecasted expansion of the system, and the conservative estimate that ridership may not grow at the same rate initially. Beginning in Year 5, the additional revenue required is anticipated to be less than $500,000 per year (excluding depreciation). Potential sources for additional revenue are discussed in the Sources of Funds section below.

Figure 18. Ten-Year Financial Estimates for Grand Rapids Bike Share

FULL SYSTEM	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Stations										
Full Stations	15	15	25	25	35	35	35	35	35	35
Hubs	30	30	47	47	65	65	65	65	65	65
Bikes	450	450	648	648	800	800	800	800	800	800
Capital Requirements										
Capital Purchase & Installation	$ 1,710,000		$ 752,400		$ 577,600		$ 1,761,300			$ 774,972
System Startup Cost	$ 300,000									
Total Capital Cost	***$ 2,010,000***	$ -	***$ 752,400***	$ -	***$ 577,600***	$ -	***$ 1,761,300***	$ -	$ -	***$ 774,972***
Rider Revenue										
Monthly User Pass Fees	$ 90,000	$ 180,000	$ 270,000	$ 450,000	$ 630,000					
Rides < 1 hr	$ 22,500	$ 45,000	$ 67,500	$ 191,250	$ 315,000					
Rides > 60 minutes (90 minutes)	$ 112,500	$ 157,500	$ 337,500	$ 720,000	$ 720,000					
Total Rider Revenue	***$ 225,000***	***$ 382,500***	***$ 675,000***	***$ 1,361,250***	***$ 1,665,000***	***$ 1,689,975***	***$ 1,715,325***	***$ 1,741,054***	***$ 1,767,170***	***$ 1,793,678***
Bike Share Operating Costs										
Base	$ 1,080,000	$ 1,101,600	$ 1,123,632	$ 1,146,105	$ 1,688,145					
Expansion Impact			$ 498,960	$ 508,939	$ 383,040					
Total	$ 1,080,000	$ 1,101,600	$ 1,622,592	$ 1,655,044	$ 2,071,185	$ 2,112,608	$ 2,154,861	$ 2,197,958	$ 2,241,917	$ 2,286,755
System Depreciation	$ 342,000	$ 342,000	$ 492,480	$ 492,480	$ 608,000	$ 266,000	$ 618,260	$ 467,780	$ 467,780	$ 352,260
Addtl Revenue Required	$ (855,000)	$ (719,100)	$ (947,592)	$ (293,794)	$ (406,185)	$ (422,633)	$ (439,536)	$ (456,903)	$ (474,747)	$ (493,077)
plus depreciation	$ (1,197,000)	$ (1,061,100)	$ (1,440,072)	$ (786,274)	$ (1,014,185)	$ (688,633)	$ (1,057,796)	$ (924,683)	$ (942,527)	$ (845,337)
Rider Revenue % operating cost	21%	35%	42%	82%	80%	80%	80%	79%	79%	78%

Potential Sources of Funds

Bike share systems can be funded in numerous ways. Most bike share systems in the U.S. rely on a mix of public and private funding, in addition to the revenue generated by user fees. However, a few systems have been funded entirely with private dollars while some rely completely on public grants (in addition to system revenue). Bike share systems must fund the capital expenses required to purchase bicycles, stations, hubs and other equipment as well as the operating expenses required to manage the system and ensure it runs efficiently.

Public Funding Sources

Federal Funding

Many bike share systems use federal grants for capital funding. Common sources of federal funding have included: Congestion Mitigation and Air Quality Improvement Program (CMAQ), Transportation Alternatives Program (TAP), TIGER grants (now BUILD grants), Community Development Block Grants (CDBG), and numerous programs administered by the Centers for Disease Control and Prevention (CDC), the Federal Transit Administration (FTA) and others.

State and Local Funding

In the U.S., bike share systems have relied on state funding to a lesser degree. Potential sources of funding at the state-level may include grants from health and economic development departments.

Local public funding has most commonly been used to provide the required match for grant programs mentioned above. In Grand Rapids, the Mobile GR Department has access to parking revenues that could be used to help fund bike share. Other potential sources of local funding in Grand Rapids include funds from business improvement districts and tax increment financing.

In addition to monetary contributions, many cities provide staff time, space, operating and/or materials to bike share.

Private Funding Sources

Sponsorships

Sponsorships and advertising revenues are typically the main sources for funding capital and especially operating costs for bike share systems across the U.S. Depending on the local context, some cities have obtained a single title sponsor while

others have several major sponsors or even many different sponsors also provide the funds to purchase and/or operate one, or several, stations. The amount of funding provided by sponsors and the length of the relationship can vary significantly from city to city. Regardless, a bike share system represents a valuable sponsorship asset as thousands of users will interact with the system, and many thousands more will pass by the stations and bicycles on a daily basis.

A title or presenting sponsor may provide all or a significant portion of the required funding for bike share. In exchange for major funding commitments, title sponsors typically are granted naming rights to the system and have their brand (e.g., logo and color scheme) integrated with the system's branding. Examples of title sponsors include New York's Citibike (Citigroup) and Portland's Biketown (Nike).

Figure 19. Title Sponsors for Other U.S. Bike Share Systems

Nike is the title sponsor for Portland's Biketown bike share system and Citigroup sponsors New York's Citibike.

Cities unable to secure a title sponsor, or that prefer a different option, may choose to secure several major sponsors for the system as a whole and/or look for companies or organizations to sponsor individual stations or a group of stations to cover capital costs, operating expenses, and/or both). Station-level sponsors may include companies that want to ensure their employees can commute via bike share, health care systems looking to support active living in the community, apartment complexes offering a benefit to residents, or hotels looking to provide a convenient mobility option to visitors. Grand Rapids should also identify non-profit and philanthropic partners who may be interested in sponsoring bike share equipment and/or operations in target equity areas or subsidizing bike share passes for individuals who receive state benefits.

Advertising

Bike share systems can offer numerous opportunities for advertising, including on the bicycles, at stations/hubs, or on the system's website and mobile app. In Grand Rapids, bike share stations and hubs will be located in the highest traffic locations in downtown and throughout the City in neighborhoods with diverse demographics. The opportunity to advertise with the bike share system would offer wide spread exposure. Advertising represents a significant source of funding for some cities, but current regulations in Grand Rapids may limit the viability of advertising as a major revenue source. If Grand Rapids is able to place advertisements at stations and hubs, this could generate in excess of $50,000 in additional revenue each year based on typical rates for advertising space onboard The Rapid. To ensure advertising at stations and hubs is a viable option for bike share in Grand Rapids, the City will need to revisit its current sign ordinance (see Article 15 of the City of Grand Rapids Zoning Ordinance).

In-Kind Support

In addition to monetary contributions, bike share systems can also benefit from local organizations offering in-kind support, which can lower operating costs for the system. This support may include free or discounted office or warehouse space, marketing or legal assistance, or any other number of materials, resources, and services.

EQUITY PLAN

EQUITY PLAN

Bike Share and Equity Issues

While bike share has proven to be a successful mode of transportation in cities across the U.S., it has not generally succeeded in drawing a diverse, representative base of users in many cities. Compared to the general population in cities with bike share systems, people of color, lower-income individuals, women, older adults and less-educated groups tend to be underrepresented among bike share users. The relatively low usage amongst these populations is especially troubling because of the value bike share could provide as an affordable shared use transportation option.

One reason for the disparity between bike share users' demographics and the demographics of the general population has been the station locations. In many cities, bike share stations have not been located in areas with higher concentrations of low-income individuals and people of color. If stations have been located in these areas, it has been at comparatively low densities, which hampers the utility of the system. Other barriers that have limited usage amongst disadvantaged populations include:

- A lack of safe spaces to bicylce in these communities,
- Credit card requirements,
- User fee pricing structures,
- A lack of information about how bike share works, and
- General concerns about how to ride a bike and transit equity.

Grand Rapids is committed to addressing the issue of equity in its bike share system from the beginning and has articulated a goal for its bike share system that prioritizes accessibility for everyone:

> **Grand Rapids' bike share system will be accessible for all residents, regardless of race, ethnicity, income, age, or ability, in its pricing and payment structure, the location of stations, its educational and outreach efforts, and its partnerships with local organizations.**

By focusing on equity from the beginning, Grand Rapids is positioned to design a system and corresponding communications and outreach plan that addresses many of the common barriers disadvantaged communities have sighted towards using bike share.

Recommendations and Strategies

To ensure that Grand Rapids' bike share system serves all of the City's residents, special attention should be devoted to the following topics, which directly address common barriers for disadvantaged communities and specific comments from focus groups in Grand Rapids.

Station Location

If bike share stations are not located in disadvantaged communities, it will be difficult for these populations to use the system. Likewise, research has shown that ridership increases exponentially as the density of stations increases. So, placing a handful of stations in targeted communities, while a start, likely will not maximize the potential ridership and benefit of bike share in disadvantaged communities. In planning its bike share system, Grand Rapids should locate stations in target equity areas and strive to place these stations at an equivalent density to the rest of the system. Additionally, Grand Rapids should also locate stations in equity areas near transit stops and other frequently used services, like grocery store, to provide value to these communities.

Payment Options and Structure

For lower-income residents, the price to use bike share can be a major impediment. Many cities offer discounted monthly passes to qualifying users. For example, Detroit's MoGo bike share offers anyone who receives state assistance (e.g., Food Assistance, Medicaid, etc.) the option to purchase a $5 annual pass, which entitles them to unlimited 30-minute rides for the year. Chicago's Divvy for Everyone program offers residents aged 16 and over with an annual household income at or below 300% of the Federal Poverty Level the opportunity to purchase a one-time $5 annual membership. Residents enrolling in the program are not required to have a credit card, receive unlimited 45-minute rides, and also receive a discounted membership if they renew for a second year. As discussed within the Business Plan, it is recommended that Grand Rapids offers a $5 monthly membership to residents who receive state benefits.

Additionally, single-ride or pay-as-you-go pass options represent an affordable way for users who are not ready to commit to a long-term membership to try bike share. Offering single-ride and discounted monthly passes may encourage usage among low-income residents in Grand Rapids. As discussed in the Business Plan, a single-ride pass should be one of Grand Rapids' core purchase options, and the City should explore the possibility of a pay-as-you-go option. Grand Rapids should also offer college

students a discounted membership option.

Aside from the price and bike share pass structure, offering users options for how to pay for bike share is also important (e.g., at stations, via smart phone app, with a transit pass, or with cash). Grand Rapids should offer an easy cash payment option for persons who are unbanked and users without access to a credit card. For example, residents could be allowed to pay in cash at drug strores, grocery stores, convenience stores or other locations and would receive a ride code or key to unlock a bicycle.

Additionally, many focus group participants expressed that being able to pay for bike share with their transit pass would make it easier and more likely for them to use the system. While integrating bike share payment with The Rapid requires additional research into the underlying smart card and payment technologies, the City should pursue this effort.

Outreach and Education

Grand Rapids' bike share system should use a unique approach to build awareness and excitement for bike share among disadvantaged communities. Communications and marketing in these areas should:

- Directly address the barriers these communities face bicycling and using bike share,
- Work to dispel common misconceptions around bike share,
- Emphasize the benefit of bicycling and of using bike share from an affordability and health standpoint, and
- Inform residents about discounted pass options and alternative payment options.

All communications and information related to bike share in Grand Rapids should be available in at least English and Spanish. The City and/or managing non-profit should be able to offer materials in other common languages spoken across the City. In addition to passive communications and marketing, it is important to utilize more personal sources of information in disadvantaged communities. Cities like Atlanta and Philadelphia have created bike share ambassador programs, which consist of local residents hired by a bike share operator or a related community based-organization to engage with residents in their neighborhoods. Grand Rapids should create a bike share ambassadors program to complement and enhance its outreach efforts in disadvantaged communities. Bike share ambassadors can host events that give residents opportunities to test-drive bike share bicycles, learn how the system works, and explore ways to

use bike share. Ambassadors should also actively engage with communities on social media to inform users about bike share, answer questions, and publicize events.

In addition to communicating with potential users, Grand Rapids' bike share will also need to develop relationships with businesses, faith-based organizations, non-profits, and community organization across Grand Rapids. These relationships will be especially important in disadvantaged communities as partner organizations can provide insight on how best to make inroads in the community, increase visibility of bike share, host events, and potentially sponsor stations or contribute to discounted memberships.

Bicycle Infrastructure

Having safe places to ride a bicycle is an essential factor in bike share usage. Building high-quality bicycle infrastructure along with siting bike share stations in disadvantaged communities will make bike share a more attractive option in Grand Rapids and contributes to larger equity and mobility efforts. As the City develops its plan for a bicycle network, the presence of bike share stations should be an important consideration in deciding where to locate new bicycle facilities and prioritizing projects.

Bicycles for Mobility-Impaired Individuals

Traditionally, bike share systems have only offered bicycles that can be used by those without substantial mobility impairments; however, if bike share systems are to be viewed as a form of public transit, they need to serve all potential users regardless of their ability.

While offering adaptive bicycles at stations or hubs may be difficult due to compatibility issues with docks, Grand Rapids should explore opportunities to offer adaptive bicycles at designated locations as part of the bike share system. Portland, Oregon has included an adaptive bicycle pilot project as part of its Biketown bike share system where users can rent several models of adaptive bicycles at private bicycle shops across the City.

Eight of the Kent District Library locations currently allow library card holders to check out a bicycle and this may be a potential venue for bike share to offer adaptive bicycles. Grand Rapids' bike share system should also identify relevant community partners who could help expand access to adaptive bicycles.

RECOMMENDATIONS

RECOMMENDATIONS

Feasibility Recommendation

Based on the findings of this feasibility study, it is clear that Grand Rapids can support a bike share system. The market analysis and business plan indicate that bike share in Grand Rapids will attract sufficient ridership and, with additional funding revenue beyonf user fees like sponsorships and advertising, can be operated in a financially sustainable manner. Perhaps most encouraging, though, is the strong support and excitement regarding bike share among community members and organizations. Grand Rapids' residents see great value in bringing bike share to the City and view it as positive tool for improving quality of life.

Action Plan

If Grand Rapids chooses to proceed with a bike share system, it should begin to execute the following steps to progress toward its successful launch. This action plan represents the major steps that must be taken to launch a bike share system but it should not be considered comprehensive.

Laying the foundation

- Establish the non-profit that will manage the bike share system and register as a non-profit with the State of Michigan and Internal Revenue Service.
- Designate key City staff who will work on the bike share launch and continue working with the non-profit on ongoing operations.
- Develop a memorandum of understanding between the non-profit and City detailing each party's responsibilities, profit sharing/reinvestment strategy, and communications procedures.
- Establish an interim board of directors for the non-profit.
- Hire an executive director for the non-profit.
- Develop and begin executing a marketing and outreach plan. These should be focused on building excitement for bike share, educating residents and potential partners on how to use bike share, and the benefits bike share will bring to Grand Rapids.
- Develop fundraising strategy and begin reaching out to potential sponsors and partners.

Planning for bike share

- Finalize the bike share system's name, logo, and branding.
- Identify and secure major sources of capital and operations funding.
- Determine locations for the initial stations and hubs.
- Delineate permitting and siting process for stations.
- Hire necessary support staff for the non-profit.
- Review peer cities' requests for proposals (RFPs) for bike share equipment and operations and develop Grand Rapids' RFP.
- Release RFPs for qualified equipment and operations vendors.
- Continue fundraising, marketing, and outreach efforts.
- Decide on key performance measures for the bike share system. These may include measures such as:
    - Trips per bicycle per day
    - Operating costs and revenue per trip
    - Operating costs and revenue per station
    - Single-ride vs. monthly pass holders (as % of total users, total trips, and revenue)
    - Average trip time and distance
    - Farebox recovery rate
    - Stations that are empty or full for more than one hour
    - Population and jobs within a 1/4 mile of a bike share station
    - Bike share stations within a 1/4 mile of a transit stop
    - Demographics of bike share users (through registration and user surveys)
    - Number of student passes and discounted passes

Pre-launch

- Review RFPs and select an equipment and operations vendor.
- Find warehouse space to store bicycles and space for maintenance shop.
- Continue fundraising efforts.
- Launch website for the system and allow monthly pass holders to pre-register.
- Ramp up marketing and outreach and host events with key partners to raise awareness of bike share.
- Acquire, assemble, and deploy equipment.

Launch!

Laying the foundation

- Establish the managing non-profit
- Hire an executive director and appoint an interim board of directors
- Detail the working relationship between the City and non-profit
- Create a marketing and outreach plan
- Develop a fundraising strategy

Planning for bike share

- Finalize name, logo, and branding
- Identify and secure major sources of capital and operating funding
- Determine locations for initial stations and hubs
- Develop RFP for equipment vendor and operator

Pre-launch

- Select equipment and operating vendors
- Launch website
- Ramp up marketing and outreach
- Acquire, assemble, and deploy equipment

Launch!

APPENDIX 1

Public and Stakeholder Engagement

Grand Rapids Bike Share Feasibility Study/Strategic Business Plan Project

http://mobilegr.grcity.us

Study Engagement/Outreach Goals

- Reach a broad range of citizens and stakeholders both Downtown and citywide
- Work with various community partners to utilize their relationships to better engage a diversity of citizens and stakeholders
- Provide easily understood and accessible communications
- Engage with individuals and stakeholders in a variety of formats – focus groups, open forums, community events, through neighborhood associations and business/corridor improvement districts, stakeholder interest groups, and online.

Formal Meetings and Approvals

August – September 2017

- ✓ Bike Share Project Steering Committee Meeting #1 – 8/28/2017
- ✓ Economic Development Project Team (project status report) – 9/12/2017
- ✓ Downtown Development Authority (DDA) Board (project status report) – 9/13/2017
- ✓ Mobile GR Commission (presentation / project status report) – 9/14/2017

October 2017

- ✓ Bike Share Project Steering Committee Meeting #2 – 10/9/2017
- ✓ Mobile GR Commission (presentation / project status report) – 10/12/2017

November 2017

- ✓ DGRI Board of Advisors (presentation / project status report) – 11/2/2017
- ✓ Mobile GR Commission (presentation / project status report) – 11/9/2017
- ✓ Bike Share Project Steering Committee Meeting #3 – 11/9/2017

December 2017

- Bike Share Project Steering Committee #4 – 12/21/2017

July – October 2018

- City Commission Sets Public Hearing for Bicycle Action Plan (includes Bike Share Feasibility Study documents) – July 10, 2018
- DDA Board (final report briefing / discussion) – July 11, 2018
- Mobile GR Commission (final report briefing / discussion) – July 12, 2018

- City Commission Public Hearing – August 14 or 28, 2018 (final date to be determined)
- DDA Board (action requested) – September 12, 2018
- Mobile GR Commission (action requested) – September 13, 2018
- City Commission Action (presentation / action on plan recommendations) – expected in September or October 2018 (specific date to be determined)

Open Houses

- ✓ 1st Ward at John Ball Park Zoo Ballroom – 10/10/2017
- ✓ 2nd Ward at Creston Plaza Community Center – 11/8/2017
- ✓ 3rd Ward at Seymour Christian Reformed Church – 10/19/2017
- ✓ Downtown Residents meeting at the DGRI office – 10/25/2017

Focus Groups

- ✓ 3 focus group meetings partnered with The Hispanic Center of Western Michigan (bilingual) – 10/4/2017, 10/5/2017, and 10/9/2017
- ✓ 4 focus group meetings partnered with Linc Up – 9/19/2017, 10/12/2017, and 10/17/2017 and 11/13/2017

Business/Corridors Improvement District (BID/CID) Meetings

- ✓ Uptown CID/BID – 10/4/2017
- ✓ West Side CID – 10/6/2017
- ✓ Michigan Street CID – 10/11/2017
- ✓ Neighborhood Business Alliance – 10/18/2017
- ✓ Downtown Businesses meeting – 10/27/2017
- ✓ Southtown CID – 11/15/2017
- ✓ North Quarter CID – 11//16/2017

Pop-Up Activities at Various Community Events

- ✓ Beer City Growler Cyclocross Race (at Wilcox Park) – 10/7/2017
- ✓ Kisscross Cyclocross Race (at Highland Park) – 10/8/17
- ✓ Founders 20th Anniversary Taproom – 10/14/2017
- ✓ Grilled Cheese Competition Midtown (at Fuller Park) – 10/14/2017
- ✓ GVSU Bus Stop under US131 – 10/18/17
- ✓ West Michigan Latino Health 5K Run (at Roosevelt Park) – 10/21/2017
- ✓ Eastern and Alger Pop-Up Market – 10/21/2017
- ✓ Age Friendly Communities Workshop – 10/23/2017
- ✓ East Hills Neighborhood Association Annual Meeting – 10/23/2017
- ✓ Creston Neighborhood Association Annual Meeting – 10/26/2017
- ✓ Greater Grand Rapids Bicycle Coalition Annual Meeting – 11/14/17

Other Outreach Activities

- ✓ Cultural Marketing Group – 9/14/2017
- ✓ Convention/Arena Authority – 10/6/2017
- ✓ Transportation Solutions Workshop – 10/10/2017 (at Start Garden)
- ✓ Monthly All Neighborhood Association meeting – 10/18/2017
- ✓ DGRI Mobility Alliance (GR Forward Goal 3) meetings – 10/23/2017 and 12/4/2017
- ✓ Internal City Design Team (multi-departmental design/project review) – 10/25/2017
- ✓ El Mejor Radio Interview (in Spanish) – 11/9/2017
- ✓ Project information/materials on department's web site (http://mobilegr.grcity.us)

Photo Credits

Michigan Municipal League
City of Grand Rapids
MLive
Capital Bikeshare
Breeze Bike Share (Santa Monica, CA)
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