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for people and goods.”



GRAND FORKS, ND PEDESTRIAN & BICYCLIST



CRASH DATA ANALYSIS FOR Y2016-2017-2018 (5-14 Years old) (K-9)



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1. Introduction

The safety of children is of paramount importance for the Grand Forks-East Grand Forks MPO and partner agencies. These stakeholders are engaged in the promotion and implementation of transportation safety activities to enhance pedestrian, bicyclist and driver's safety.

Traffic crashes are unfortunate. The impact of this observation is heightened when the crash regrettably involves children 5 to 14 years of age (K-9). Traffic crashes could potentially occur anywhere in the built environment, involve all modes of transportation; and encompass many actors, skills, factors and circumstances. As such, their interpretation and reporting is challenging.

The analysis presented here is based on the reported pedestrian and bicycle crashes information – involving children 5 to 14 years old (K-9) for 2016-17-2018 in Grand Forks as provided by North Dakota DOT. The crash database is compiled from a Motor Vehicle Crash Report filed by a Police Officer. The database includes –among others- information about vehicles involved, weather and road conditions, contributing factors, and roadway geometrics, traffic controls, time and day of week and geographic coordinates which provide the crash location.

This analysis did consider when the crashes occurred (day/year), a few environmental conditions (relation to intersection, vehicle movement, and crash location); pedestrian and bicyclist information (age, contributing factors); and injuries (severity). The analysis outlines the characteristics of the roadway, including roadways related to the proposed Bridge River Crossings and the type of the traffic controls –if any- on the corridors where the crash took place.

2. Background

Pedestrian and bicycle conflicts involving children are unique in their nature. Physical and mental attributes of young pedestrians and riders, indicate a certain propensity to displaying inattentiveness and carelessness in crossing streets. The analysis of crashes involving young pedestrians and bicyclist includes other major behavioral factors such as age related exchanges when young age children use crosswalks and interact with traffic signals. On the other hand, driver's familiarity with the area could result in reduced speeds in school zones, when crossing guards are visible, flashing beacons are activated or when police enforcement is evident.¹

According to North Dakota Century Code Title 39- Motor Vehicles § 39-08-09 statutes, any crash involving a person killed, anyone injured or a total property damage of \$1,000 or more, must be reported. In general, many pedestrian and bicycle related crashes go “*under-reported*” because most likely no party was injured, the amount of property damage was marginal, individual fled the scene (*hit and run*) or parties were not aware of the requirement to report the crash.²

A number of activities are regularly advanced by partner agencies and the Grand Forks-East Grand Forks MPO to enhance the safety of children, including those with disabilities, in their way to and from school and other community locations. These initiatives include:

¹ School Crossing Study Report (2000). Ulteig Engineers, Inc.

² Public works department Louisville metro October 3, 2013: Understanding Pedestrian Crashes in Louisville, KY 2006 – 2010

- Administration of Parent's Surveys (2016)
- Design, production and distribution of Safe Routes to School Maps (2019)
- School-Zone Safety Program
- Bicycle and Pedestrian Crash Analysis & visualization (2016-2018)

Parent's Surveys helps local Safe Routes to School programs to identify children's pedestrian and bicycle issues that need to be addressed in proximity to schools; or on critical corridors leading to school facilities. Information provided by parents might also serve to identify unexpected roadway and route conditions required to improve walking and biking to school and other community opportunities. Among others, the results help to appreciate pedestrian and bicycle safety, mobility, accessibility and connectivity objectives set out in the adopted 2045 Bicycle and Pedestrian Element. <https://theforksmpo.files.wordpress.com/2019/02/full-document.pdf>

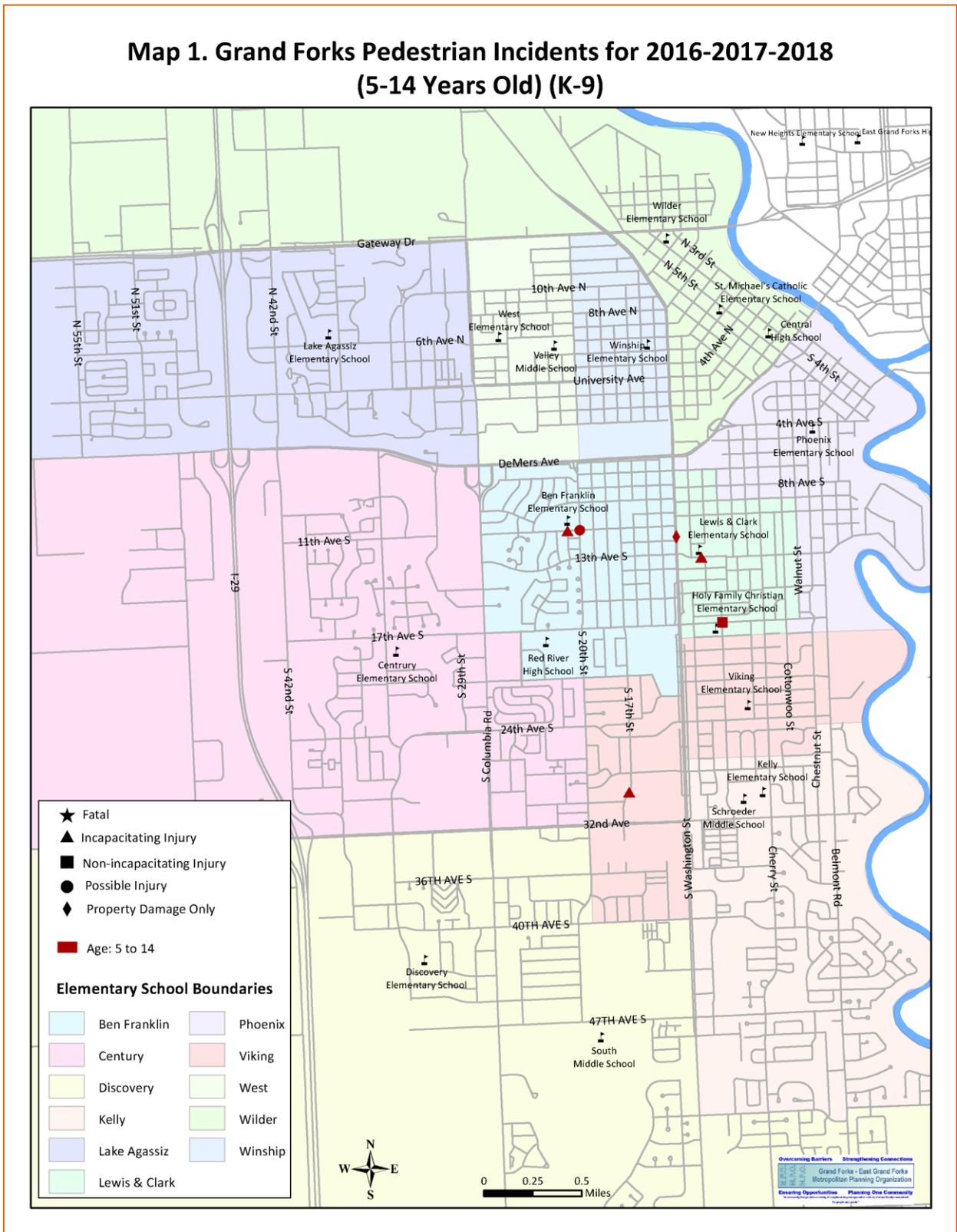
Safe Routes to School Maps make bicycling and walking to school a safer and more appealing transportation alternative; and encourage healthy and active lifestyle from an early age. Safe Routes to School Maps facilitate the planning, development, and implementation of projects and activities that will enhance safety, reduce traffic, and help to decrease fuel consumption, and air pollution in the vicinity of Elementary and Middle Schools (Grades K-9). Current Safe Routes to School Maps (2019) are available at: <https://theforksmpo.com/safe-routes-to-school-maps/>

The School Zone Safety Program endeavors to achieve a significant reduction in traffic fatalities and serious injuries on all public roads, including non-state-owned public roads. As part of the School-Zone Safety Program, supported by partner agencies and the Grand Forks-East Grand Forks MPO the City of Grand Forks installs a number of school-related signs around school zones. As parents continue driving their school-age children to and from school, the installation of School-Zone's signs provides important information to drivers to improve safety within the school zone. The signage under consideration will alert drivers about the high concentration of children in the school-zone.

Those initiatives are advanced by the Grand Forks-East Grand Forks MPO in partnership with local government and related agencies, to demonstrate due regard for the safety, health and welfare of the public. Results from the outlined initiatives serve to collect information about student travel patterns; strive to capture important information on parental attitudes on whether kid's walk or bike to and from school; and provide sound feedback on critical elements of the transportation infrastructure like signage, street intersection crossings, traffic volumes and speeds.

3. Pedestrian crashes (2016, 2017, and 2018)

**Map 1. Grand Forks Pedestrian Incidents for 2016-2017-2018
(5-14 Years Old) (K-9)**



3.1 Pedestrian crashes

According to the *American Community Survey*, the 2018 estimated population for Grand Forks was 56, 948. Children 5-9 years old accounted for 5.5% (3,132). Children 10 to 14 years old accounted for 6.1% (3,473). In total, children 5 to 14 years old account for 11.6% (6,605).

Pedestrian crashes are defined as those involving one moving vehicle striking a pedestrian. There were 31 pedestrian crashes in Grand Forks from 2016 to 2018. Although, children 5 to 14 years old accounted for 11.6% of the population; they are involved in 19.3% of pedestrian crashes. This cohort of the population appears to be over-represented in the sample. There were no reported fatal pedestrian crashes involving children 5 to 14 years old in Grand Forks in the same period.

Table 1. TOTAL PEDESTRIAN CRASHES INVOLVING PEOPLE AGED 5 TO 14 YEARS OLD (pre-K-9) 2016-2017-2018			
	AGED 5 TO 14 YEARS OLD/SEX	AGED 5 TO 14 YEARS OLD/SEX	AGED 5 TO 14 YEARS OLD/SEX
CRASH SEVERITY	2016	2017	2018
TOTAL	2	2	2
Fatal			
Incapacitating Injury		6-Male	
Non-Incapacitating Injury	10-Male 12-Male	11-Male	
Possible Injury			6-Male
Property Damage			13-Male

The data indicates that the illustrated pedestrian crashes took place approximately at or in proximity to:

11 th Avenue South at S 21 st St.	Controlled Intersection/Segment
S 20 th Street at 11 th Ave S	Controlled Intersection/Segment
13 th Avenue South between S 11 th & S 12 th Street	Mid-block Segment
17 th Avenue South at S 10 th Street	Controlled Intersection/Segment
S 17 th Street South between 28 th & 29 th Avenue South	Un-controlled Intersection/Segment
S Washington Street between 11 th & 12 th Avenue South	Un-controlled Intersection/Segment

The assessment of fatalities and serious injuries by state Departments of Transportation is a component of safety performance targets towards the elimination of crash related deaths and serious injuries. The Grand Forks-East Grand Forks MPO safety targets include the analysis of 5-year averages for motorized fatal and serious injuries crashes and 5-year averages for non-motorized fatalities and serious injuries. The purpose of these measures is to reach zero fatalities in public roads. In this regard, Crash Severity is an important factor in the analysis of motor vehicle, bicycle and pedestrian crashes.

Motor vehicle crashes are categorized according to the typology developed by the National Highway Transportation Safety Administration (NHTSA). When required, the “*narrative*” provided in the Police Report was considered to better understand the pedestrian, bicyclist, and driver movements that preceded a crash.

3.2 other Crash Related Factors

Table 2. OTHER CRASH RELATED FACTORS FOR PEDESTRIAN CRASHES INVOLVING PEOPLE AGED 5 TO 14 YEARS OLD, 2016-2017-2018					
	Injury Severity	Relation to Junction*	Contributing Factor	Vehicle Movement_2	Crash Day
2016	Incapacitating Injury	Intersection	Failed to Yield	Crossing at Intersection	Thursday
	Incapacitating Injury	Non-Junction	Not Clear	Crossing at Intersection	Sunday
2017	Non-Incapacitating Injury	Intersection	Not Clear	Not on Roadway	Saturday
	Incapacitating Injury	Intersection	Too fast for Conditions	Crossing at Intersection	Tuesday
2018	Possible Injury	Intersection	Other	Crossing at Intersection	wednesday
	Property Damage (PDO)	Non-Junction	Not Clear	Not on Roadway	Thursday

*Relation to Junction (See Motor Vehicle Crash Report, Overlay No. 1 Department of Transportation, Drivers License & Traffic Safety DOT 2356 (Rev. 1-99)

For instance, in the period 2016-2018 there were six crashes involving children 5 to 14 years old (K-9). These six incidents accounted for one incapacitating injury, three non-incapacitating injuries, one property damage, and one possible injury. A general review of additional factors such as alcohol and drugs indicates that neither motorist; nor pedestrians were impaired at time of the crashes. Time of day and day of week are considered as explanatory variables. Time of day information was available only for crashes which occurred in 2017 and 2018 involving 5-14 years old children. Accordingly, most pedestrian crashes occurred in weekdays. Most pedestrian crashes occurred in the afternoon during after school hours (4:49-6:40 pm). These pedestrian crashes occurred past school hour’s dismissal time. Grand Forks Public Schools offer Extended School Program (ESP) programs at various locations including Ben Franklin, Century, Lewis and Clark, Phoenix, Viking Elementary schools. Students stay at school until 5:30 p.m.

3.3 Contributing Factors

Contributing factors to the crash comprise pedestrian, bicyclist or driver's errors which may include missing or incomplete information as seen by roadway users. Pedestrian, bicyclist or driver errors could lead to contributing factors assessed in a crash event such as "*not clear,*" "*failure to yield*" or "*too fast for conditions.*" Errors may reduce response time for decisions and for appropriate actions. Unfortunately, the Contributing Factors information in pedestrian crashes was incomplete or not available for some cases.

According to the movement of the vehicle, the data reveals that most pedestrian crashes (4) took place *at an intersection.* Most crashes occurred when the pedestrian was *crossing an intersection* (4) and pedestrians were not on the road (2). The two pedestrians, not on the roadway, were on the sidewalk when the crashes occurred. Pedestrian safety tips recommend crossing the street at marked crosswalks or at intersections. Pedestrian, bicyclist and driver are encouraged to observe and obey all traffic-control signals.

Most pedestrian crashes occurred at Controlled Intersections. Among others, the "*traffic controls*" considered for addressing pedestrian, bicyclist, and driver safety at the intersection include the following:

- Traffic Signals: Traffic Lights, Stop Signs,
- Pedestrian Signals: Pedestrian Activated Signals, Crosswalks, School Flashing Beacon Xing
- Lane Signs: Marked Crossings, Pavement Markings, turn lanes

The presence or absence of those devices determines the nature of the intersection. For instance: Uncontrolled intersections have no signs or traffic lights. Controlled intersections have traffic lights, yield signs or stop signs to control traffic.

Crossing at intersections requires making eye contact with motorists. However, motorist or pedestrian inattention, and motorist not seeing or yielding to pedestrians are a growing concern.³ A number of human factors impacts both motorist and pedestrian behavior when crossing an intersection, including:

- Human vision may be reduced, impaired or inaccurate.
- Age is a critical factor in the ability of pedestrians and bicyclist when crossing an intersection. Age is a factor related to ability, experience, perceptions, judgement and reaction time. Age and experience have a significant effect on the ability of drivers, bicyclists, and pedestrians to use an intersection.

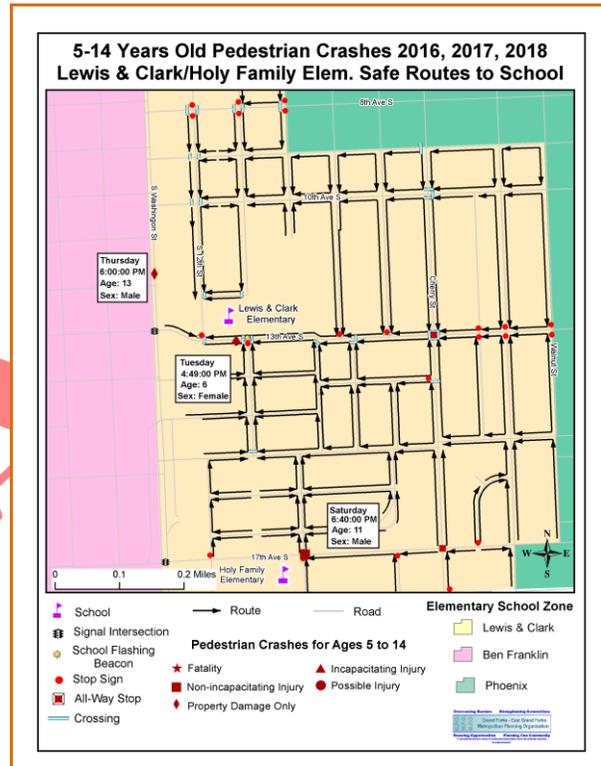
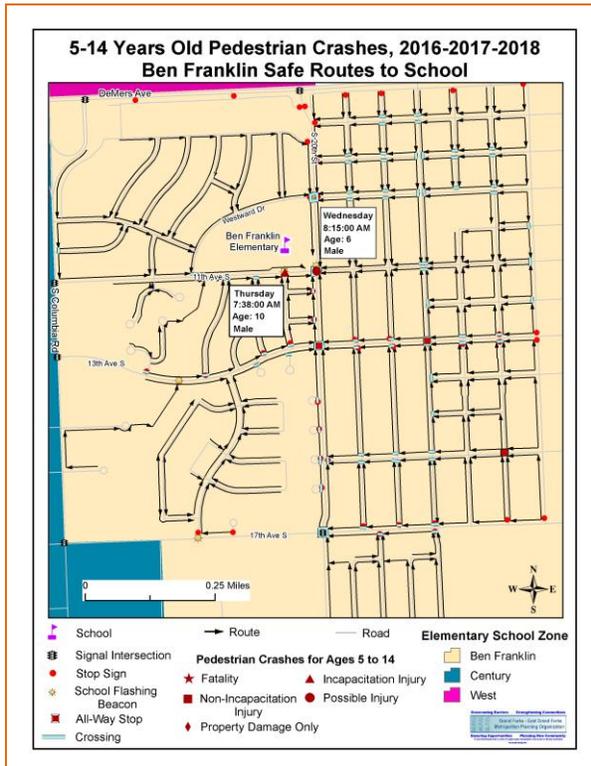
Pedestrian-Motor vehicle crashes are complex events; it is difficult to weight the contribution of each factor in a related crash. Although the information is not complete; in addition to factors previously outlined, the data suggest that:

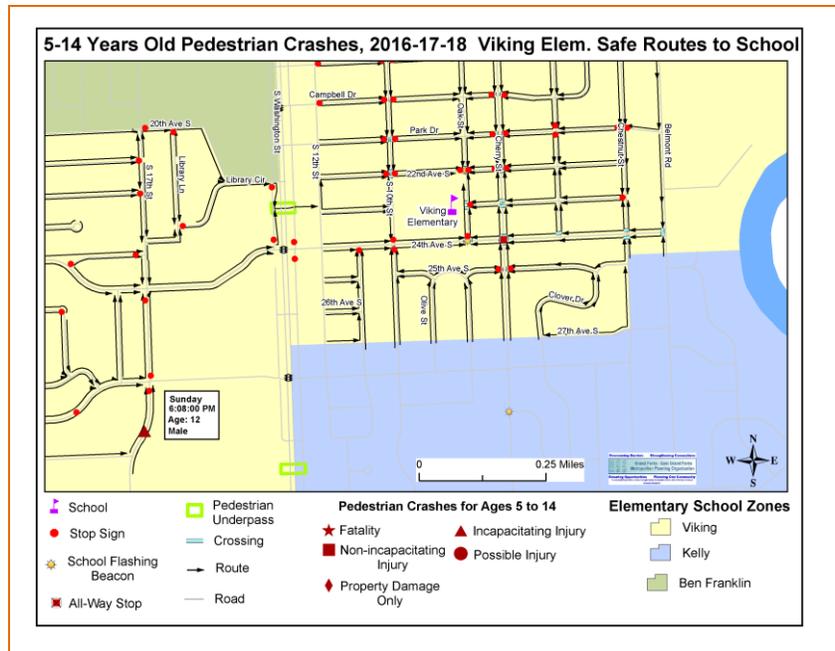
³ Understanding Pedestrian Crashes in Louisville, KY 2006 – 2010. FHWA (2013). Pedestrian Safety Focus: States & Cities
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- a) Most pedestrian crashes occurred at controlled intersections
- b) Most crashes occurred when pedestrian was crossing an intersection
- c) There were neither alcohol nor drugs involved or those conditions were not tested
- d) Although contributing factors for the crash are not clear, in a few cases, motorist appeared not seeing or yielding to pedestrian.

3.4 Proximity to Schools

Pedestrian crashes are illustrated below in relation to the Safe Route to School Map. The map shows the day, time, sex, age and locations where pedestrian crashes occurred and their proximity to schools (1/4 Mile/walking distance).





The Benjamin Franklin, the Lewis & Clark and the Viking Elementary Safe Routes to School Maps illustrate the following pedestrian related crashes

Ben Franklin (2)
S 20th Street at 11th Ave S.
Possible Injury/
11th Ave S at S 21st Street
Incapacitating Injury

Lewis & Clark (2)
13th Ave. S between S 11th & S 12 Streets.

S Washington St. between 11th & 12th Ave.
Property Damage/Possible Injury

Vikings Elementary (1)
S 17th Street between S 28th Ave & 30th Ave S
Incapacitating Injury

Holy Family Elementary (1)
17th Avenue South at S 10th Street
Non-incapacitating Injury

A previous intersection related study indicated that as part of the *School Traffic Safety Program (STSP)* signing, pavement marking and other traffic related site features in proximity to schools have been inventoried by the Grand Forks-East Grand Forks MPO, local governments and partnering agencies. The objective was to determine consistency with established federal, state and local standards for placement of signs and pavement markings.

As a result of the inventories, fading crosswalk markings, speed limit signs, and pedestrian ramps are regularly installed, built, repaired, or enhanced to improve roadway safety and to determine the placement of safe routes for school age children on their way to and from school.⁴

According to the crash reports, it appears that in 2017 one and in 2018 one pedestrian 5 to 14 years old (K-9) -were involved in crashes while not on the road. These crashes include: S 17th Street

⁴ School Crossing Study Report (2000). Ulteig Engineers, Inc.

South between 28th & 29th Avenue South; and S Washington Street between 11th & 12th Avenue South. The characteristics of the crashes in 2017 will be described in the next section.

The Grand Forks-East Grand Forks MPO, local governments and partnering agencies continue supporting the installation of traffic controls, in accordance to the Manual on Uniform Traffic Control Devices (*MUTCD*), and as fostered by the local School Zone Safety Program. The installation of traffic controls is a vital activity to address pedestrian and bicyclist safety, improve neighborhood movements and address traffic circulation concerns. The installation of school flashing beacons, controlled crossing, pavement markings and signage and all-way stops, enhances safety for all road users.

These activities also serve as constant reminders to roadway users of the need to treat designated traffic controls and their locations as areas requiring special care, focus, and a heightened degree of attentiveness.

3.5 Roadway’s Characteristics at Pedestrian Crash Locations

In addition to pedestrian factors (*demographics*), context (*date, time, road conditions*), and injuries (*type and severity*), road conditions could be an explanatory variable in certain crashes. The Roadway’s Characteristics at Pedestrian Crash Locations Table, provides a summary of the traffic controls existing at or in proximity to the intersection where the crash was reported.

Table 3. Roadway's Characteristics at Pedestrian Crash Locations, 2016-2018

Crash Street	Intersection or In-between Streets	AADT 2018	Roadway Classification	Posted Speed Mph	Road Lanes	Traffic Controls	Safe Route to School
11th Ave S	S 21st St	NA	Local	25	2	Marked School Xing	Ben Franklin
S 17th St	Between 28th Ave S & 30 Ave S	NA	Local	25	2	Mid-Block	South Middle
17th Ave S	S 10th St	4900	Minor Arterial	25	2	Beacon Xing	Viking
13th Ave S	Between S 11th St & S 12th St	5890	Collector	25	2	Crosswalks, Beacon Xing	Lewis & Clark
S 20th St	11th Ave S	3855	Collector	25	2	All-ways Stop	Ben Franklin
S Washington St	Between 11th Ave S & 12th Ave S	29285	Principal Arterial	30	4	N/A/Mid-Block	Lewis & Clark

As in other jurisdictions in the country, pedestrian crashes are a major traffic safety concern in Grand Forks. As indicated in the previous table in the Traffic Control column; in most cases, it appears that a traffic control device (*Among others, Beacon Crossing, Crosswalk and all-four ways stops*) was present at the location where the pedestrian crash was reported.

Ben Franklin Elementary is a K-5 facility, as such; all the students are younger than 14 years old. About 40% of the students live in proximity to school; yet, about 63% of students arrive to school by family car.

Although the school features prominent and visible traffic controls and school crossing guards; comments on the Parents & Guardian Survey indicate that “*Drivers are very distracted, rushed and dismissive to pedestrians, fellow drivers and rules of the road.*”

There were two pedestrian crashes in proximity to Ben Franklin. One pedestrian crash in 2016 took place while the pedestrian was crossing the intersection on 11th Ave S at S 21st Street. The driver *failed to yield*. Weather conditions were the contributing factor. The other pedestrian crash took place when the pedestrian was crossing the intersection on S 20th Street at 11th Ave S. *Too fast for conditions* were the contributing factors. According to responses from the Ben Franklin Parent’s & Guardian Survey, *I do not trust the traffic on S 20th Street.*

There were two pedestrian crashes in proximity to Lewis & Clark Elementary. First, one crash took place on S Washington Street between 11th & 12th Avenue South. This location is part of the South Washington Corridor. On this crash, the pedestrian was hit on the sidewalk by a vehicle exiting a business establishment. A *No Traffic Control* was reported. The other location is on 13th Ave S between S 11th Street & S12th Street. Conditions were “*slushy,*” in a dark cloudy, week day at 4:49 pm (after school hours).

Concerning the S Washington Corridor segment, pedestrian mobility at that location or in proximity to the school site has been reflected in comments received through previous public involvement activities. According to comments received through public involvement, pedestrian and bicycle connectivity observations, indicate that “*significant gaps in the network prevent direct west-east on 11th Ave. S.*”⁵ The crash report indicates the pedestrian was WB (West bound) when hit on the sidewalk by the motor vehicle exiting a commercial establishment. The crash involved a 13 years old male, on a Thursday at 6:00 pm (after school hours). Notice that S Washington St from 11th to 12th Avenue South segment is not part of the current Lewis & Clark Elementary Safe Route to School, 2019.

On a crash in proximity to Holy Family on 17th Avenue South at S10th Street, the pedestrian was hit by a vehicle at the crosswalk. 17th Avenue South is a busy residential roadway which attracts trips to Holy Family and to the commercial intersection of S Washington St. The crash occurred at 6:40 pm (after school hours), during a clear day in dry conditions. This crash involved an 11 years old child.

One crash took place on S 17th Street between 28th & 30th Avenue South. This is local road in a high density residential and environmental justice neighborhood. Contributing factors to explain these collisions includes “*failing to yield*” “*too fast for conditions*” and “*not clear.*” Notice that the segment on S 17th Street between 28th & 30th Avenue South is within the Viking Elementary Safe Route to School; however, the location is in proximity to South Middle School.

Most pedestrian crashes involving a 5-14 years old child occurred at a location in proximity to a school. Most pedestrian crash locations were identified as components of the Safe Routes to School (*walking distance or 1/4 Mile radius*). There were some pedestrian crashes at un-controlled locations.

⁵ Adopted Grand Forks-East Grand Forks 2045 Bicycle & Pedestrian Element (2019)

Traffic controls play a prominent role in achieving safer performance at intersections.⁶ However, engineering alone is not sufficient. As part of the school safety program, school pedestrian activated flashing beacons are being installed by the City of Grand Forks at various locations. The objective is to link the pedestrian activated flashing beacons in the school district into a unified network to respond to individual operating school needs.

It is expected that beacon operations will be coordinated with school related activities such as school dates, holidays, and conferences.

Thus, it is suggested that addressing human behavioral factors related to pedestrian and bicycle crashes, particularly in proximity to schools, requires a more coordinated effort involving school district, enforcement authorities, stakeholders and parents of young children.⁷ Human behaviors affecting all road users such as (*distraction, failing to yield, following too close*) and other contributor factors must be addressed to reduce both the number and severity of collisions. The following additional roadway characteristics are included in the analysis to assist in understanding other factors which may help to explain the crash event:

- **Average Annual Daily Traffic (AADT)**

In accordance with previous studies, pedestrian activity and traffic volume are the main determinants of pedestrian collision frequency at controlled intersections.⁸ In this report, most intersections were “*controlled*” meaning there was a traffic control device at the time the crash took place. However, most pedestrian crashes happened at two –lane, and low volume traffic roads.

- **Roadway Classification**

The Adopted Grand Forks-East Grand Forks 2045 Bicycle & Pedestrian Element (2019) indicates that “*higher classified roads account for a larger number of destinations; however, in many cases, bicycle and pedestrian access to those locations is severely restricted, if not barred, by the nature of the roadway hierarchy.*” Some common destinations in proximity to the locations where pedestrian crashes occurred included three elementary schools, and two busy commercial corridors. At these intersections, pedestrians could be confronted by “*Complex signal phasing or lack of traffic control at high-volume, high-speed and Multi-lane intersections.*”

- **Posted Speed**

Posted speeds are not necessarily the same as travel speeds. Although the relationship between speeds and safety is not very clear; speed impact mobility and safety on the corridor. Regularly, motorists tend to travel slightly over speed limits. Young pedestrians experience difficulties when

⁶ Publication No. FHWA-SA-13-027 (July 2013) Signalized Intersections: Informational Guide

⁷ Briefs Issue # 9 FHWA-SA-10-005 (2009) Pedestrian Safety at Intersections

⁸ Miranda-Moreno, Morency, El-Geneidy (2009). How does built environment influence pedestrian activity and pedestrian collisions at intersections?

crossing intersections and negotiating traffic controls. *Higher speeds mean that drivers have less time to identify and react to what is happening around them, and it takes longer for the vehicle to stop. It removes the driver's safety margin and turns near misses into crashes.*⁹

Posted speed in school zones is 15-20 mph. Most posted speeds are 25 Miles per hour on roadway. The City of Grand Forks has posted 25 mph limits on many residential streets to enhance neighborhood safety and promote traffic calming. The unposted speed limit on a residential street is 25 mph and this limit can be enforced without signs. However, since most crashes occurred in proximity to schools –where posted speed is 20 mph- or 15 mph when beacons are flashing, a reduction of speeds in school zones to 15 mph should be given consideration. *Drivers disregarding existing safety infrastructure, such as flashing lights, crosswalks, and reduced speed in school zones were safety issues raised by community members in proximity to Discovery Elementary and South Middle School.*¹⁰

- **Lanes**

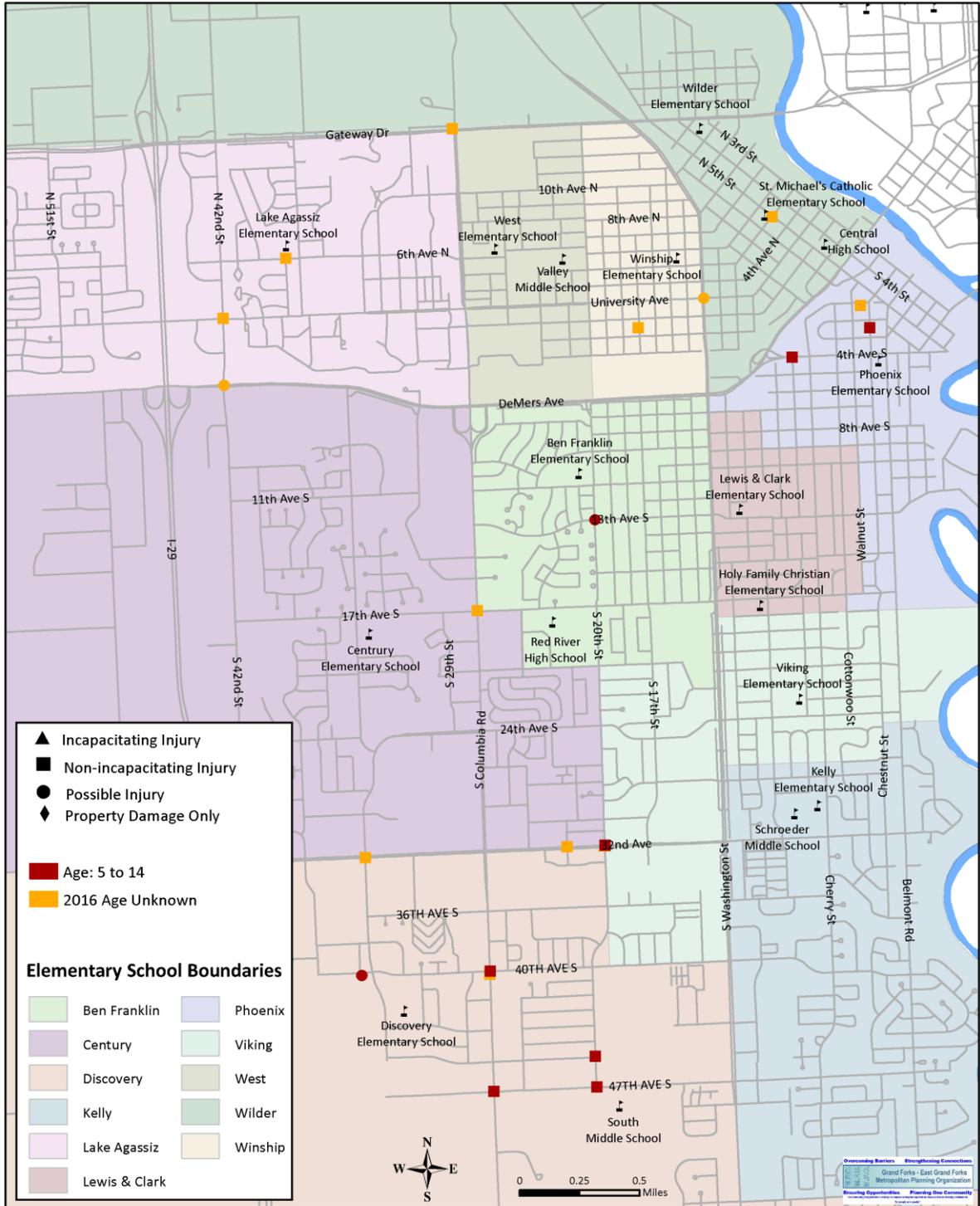
The number of lanes on a roadway acts as “barriers” for those striving to cross it. Safe Routes to Schools states that “*If children cannot cross multi-lane roads then they are, in essence, trapped in their neighborhoods, unable to walk or bicycle to school or to play and explore outside of their immediate neighborhood.*” However, although the time needed to cross a 2-lane road could be reduced; the traffic volumes on most of the roads present challenges to pedestrians and bicyclists 5 to 14 years old (K-9). In this analysis, one pedestrian related crash happened on a sidewalk abutting a 4-lane roadway; most pedestrian crashes occurred on 2-lanes roadways in proximity to schools.

⁹ The Royal Society for the Prevention of Accidents (2018). Road Safety Factsheet

¹⁰ CPS (2018) Pedestrian Crossing Study - South Columbia Road and 47th Avenue South

4. Bicyclist crashes (2016-2017-2018)

Map 2. Grand Forks Bicycle Crashes, 2016-2017-2018 (5-14 Years Old) (K-9)



4.1 Bicyclist crashes

Table 4. TOTAL BICYCLIST CRASHES INVOLVING PEOPLE AGED 5 TO 14-YEARS OLD (pre-K-9), 2016-2017-2018			
	AGED 5 TO 14 YEARS OLD/SEX	AGED 5 TO 14 YEARS OLD/SEX	AGED 5 TO 14 YEARS OLD/SEX
	2016* Age/Sex Not Available	2017	2018
TOTAL	14	4	5
Fatal			
Incapacitating Injury	1		
Non-Incapacitating Injury	11	6-Male 12-Male 8-Female	10-Male 12-Female 13-Male 12-Male 11-Male
Possible Injury	2	6-Male	
Property Damage			

*Neither Age nor Sex of person was available for 2016

According to the *American Community Survey*, the 2018 estimated population for Grand Forks was 56,948. Children 5-9 years old accounted for 5.5% (3,132). Children 10 to 14 years old accounted for 6.1% (3,473). In total, children 5 to 14 years old account for 11.6% (6,605) of the population in Grand Forks. There were not reported fatal crashes involving bicyclists in Grand Forks during 2016-2018. Although 2016 bicycle crashes are illustrated on the Bicyclist crashes, age and sex of the bicyclist involved in these crashes were not reported. As a result, staff was unable to sort out –if any- the population of children 5 to 14 years old (K-9) involved in any bicycle crash. Children 5 to 14 years old were involved in 30% of bicycle crashes in 2017 and in 62% of bicycle crashes in 2018.

Bicycle crashes involve collisions with a motor vehicle, single-bicycle crashes (i.e. a fall or obstacle collision), a roadway hazard or a solo. Although considered vehicles, a number of bicycle crashes also occur on driveways, sidewalks and bike paths.

The current analysis indicates that in total there were 35 bicycle related crashes from 2016 to 2018. There were 14 bicycle related crashes in 2016; 13 in 2017 and 8 in 2018. According to their severity, the 14 crashes in 2016 accounted for one incapacitating, 11 non-incapacitating and 2 possible injuries. Although 2016 bicycle crashes are illustrated on Map 2., the age and sex of the bicyclist involved in these crashes are unknown. As a result, staff was unable to sort out –if any– the population of children 5 to 14 years old (K-9) involved in any bicycle crash. Crashes are illustrated on Map 2.

4.2 other Bicycle Crash Related Factors

Table 5. OTHER CRASH RELATED FACTORS FOR BICYCLE CRASHES INVOLVING PEOPLE AGED 5 TO 14 YEARS OLD, 2016-2017-2018					
	Injury Severity	Relation to Junction	Contributing Factor	Vehicle Movement_2	Crash Day
2017	Possible Injury	Intersection	No Clear	Crossing at Intersection	Friday
	Non-incapacitating injury	Non-junction	No Clear	Crossing at Intersection	Thursday
	Non-incapacitating injury	Intersection	No Clear	Crossing at Intersection	Tuesday
	Non-incapacitating injury	Intersection	Failed to Yield	Not on Raodway	Wednesday
2018	Possible Injury	Intersection	No Clear	Not on Raodway	Tuesday
	Non-incapacitating injury	Intersection	No Clear	Crossing at Intersection	Wednesday
	Non-incapacitating injury	Intersection	No Clear	Crossing at Intersection	Monday
	Non-incapacitating injury	Intersection	No Clear	Crossing at Intersection	Friday
	Non-incapacitating injury	Intersection	No Clear	Crossing at Intersection	wednesday

In total, there were 13 bicycle related crashes in 2017 and 8 in 2018. According to their severity, these crashes involved two possible, and seven non-incapacitating injuries. 30% of children 5 to 14 years old were involved in bicycle related crashes in 2017 and 62% in 2018. These percentages suggest an over-representation of 5-to-14 years old in bicycle crashes. The fact that most crashes happened in proximity to schools, at a controlled intersection, and the contributing factor is *not clear* deserves further consideration.

4.3 Contributing Factors

Bicycles are considered vehicles in North Dakota. As a result, bicyclists have all the rights and duties applicable to the driver of any other vehicle. Furthermore, the parent of any child and the guardian of any ward may not authorize or knowingly permit any such child or ward to violate any of the provisions of this chapter (39-10.1) ¹¹ Sidewalk riding is permitted on residential streets. However, two bicyclist involved in crashes were not on the road way at the time of the crash.

¹¹ CHAPTER 39-10.1 North Dakota Century Code
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In comparison to pedestrians, bicyclist interactions with others roadway users are more complex as bicyclist are expected to be on the road and must interact with motor vehicles, bicyclist and pedestrians. Bicyclist also must follow directions of signs and signals, including stopping at all red lights and stop signs.¹²

Understandably, due to physical and mental abilities, these outlined considerations are not very well instilled in children's minds. In addition, the lack of driver's cooperation or the absence of user's skills to negotiate the number of traffic lanes, cross street traffic volumes, on street parking, and right turn lanes could potentially contribute to bicycle crashes.

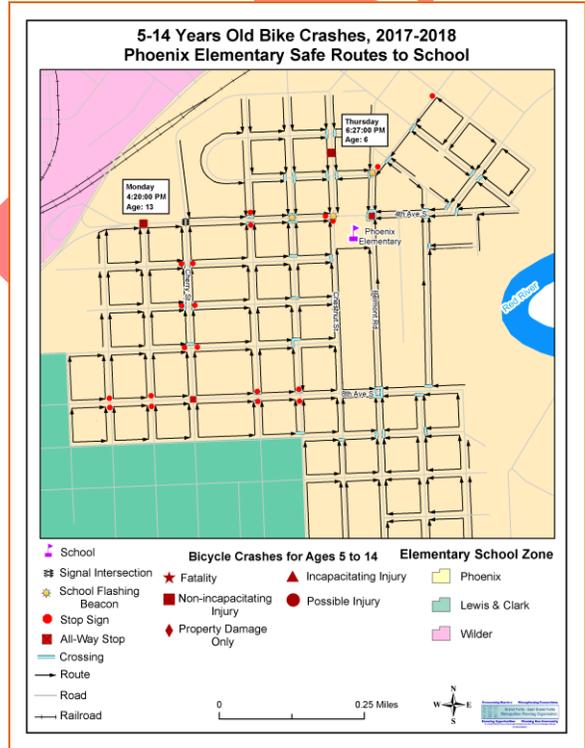
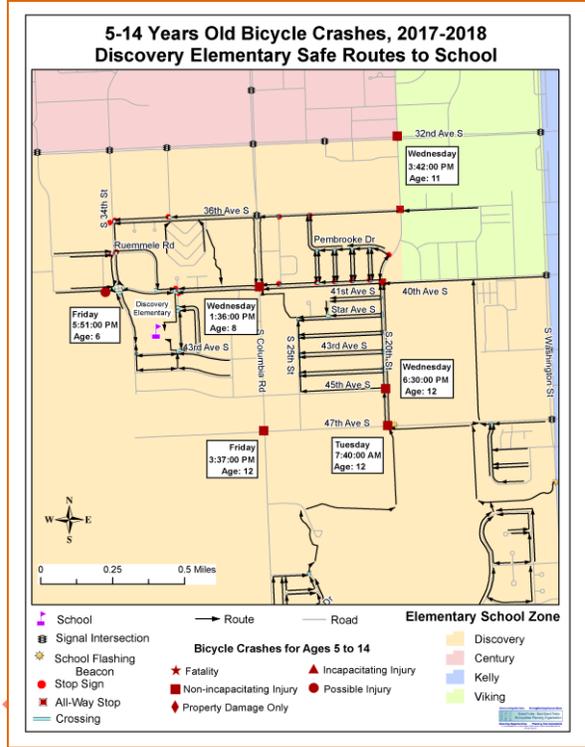
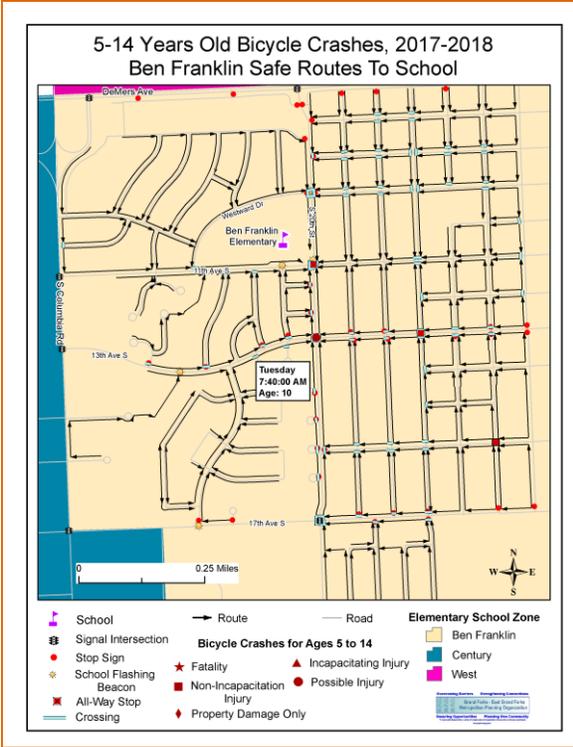
Bicyclist-motorist crashes are complex events; it is difficult to weight the contribution of each factor in a related crash. Although the information is not complete; in addition to factors previously outlined, the data suggest that:

- a) Most bicycle related crashes occurred when bicyclist was crossing the intersection
- b) There were neither alcohol nor drugs involved or these conditions were not tested
- c) Most bicycle related crashes occurred in daylight and dry conditions
- d) Most crashes occurred at Controlled Intersections
- e) Most crashes involved Middle School age-bicyclist (10-12 years old)
- f) Most bicycle crashes happened during weekdays, during afternoon hours (1:30-6:29 pm); and
- g) Although contributing factors for the crash are not clear, in a few cases, motorist appeared not seeing or yielding to bicyclist.

4.4 Proximity to Schools

Bicycle crashes are illustrated below in relation to the Safe Route to School Map. The map shows the day, time, age and locations where bicycle crashes occurred and their proximity to schools (*1/4 Mile/walking distance*).

¹² AAA Bike Basics. AAA Traffic Safety Advocacy
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Benjamin Franklin, Discovery Elementary, and Phoenix Safe Routes to School Maps illustrate the following bicycle related crashes:

Phoenix Elementary
3rd Avenue S at Chestnut Street
Non-incapacitating Injury

Ben Franklin Elementary
13th Avenue S at S 20th Street
Possible Injury

4th Ave S at Oak Street
Non-Incapacitating Injury

South Middle School*
S 20th Street at 45th Avenue S
Non-incapacitating Injury

Discovery Elementary School
40th Avenue S at S 35th Street
Possible Injury

S Columbia Road at 40th Ave S
Non-Incapacitating Injury

47th Ave S at S 20th Street *
Non-Incapacitating Injury

S Columbia Road at 47th Ave S^{13*}
Non-Incapacitating Injury

South Middle School* (*See: Discovery Elementary*)
S20th at 32nd Ave S
Non-Incapacitating Injury

For instance, the bicycle crash in proximity to Ben Franklin occurred at a *Controlled Intersection*. At the location on 13th Ave S at S 21st Street, there is a crosswalk and an all-ways stop. The crash resulted in a possible injury.

Ben Franklin Elementary is a K-5 facility, as such; all the students are younger than 14 years old. 88% of children living less than ¼ mile of the school asked for permission to walk or bike to/from school. According to responses to the Parent's Survey (2016), concerns expressed by those allowed to walk or bike to school include safety at intersections and crossways, sidewalks and pathways, and amount of traffic on the road.

Although the parents indicated that the school does a great job at monitoring the traffic and kids; some respondents argued that “*there is not adequate lighting/signals at our school's crosswalks. There needs to be better crackdown on those adults who don't follow the rules in school zones (speeding, flipping crossing guards off, cell phone use)*”.

¹³ (*)The bicycle crashes in proximity to South Middle School are illustrated in the Discovery Elementary Safe Routes to School Map, 2019. Section 4.5 provides more discussion on the Roadway's characteristics at the Bicycle Crash Locations.

4.5 Roadway's Characteristics at Bicycle Crash Location

Table 6. ROADWAY CHARACTERISTICS AT BICYCLE CRASH LOCATIONS, 2016-2018							
Crash Street	Signal Intersection or Inbetween Streets	AADT*, 2018	Roadway Classification	Posted Speed	Road Lanes	Traffic Controls	Safe Route to School
2016 Age & Gender Not Available							
32nd Ave S	S 34th St	21005	Principal Arterial	40	4	Signal Intersection, Crosswalks	South Middle
Gateway Dr	N Columbia Rd	19225	Principal Arterial	40	4	Signal Intersection	Valley Middle
N 17th St	1st Ave N and 2nd Ave N	0	Local	25	2	N/A	Winship
S 23rd St	32nd Ave S	560	Local	25	2	Crosswalks	South Middle
N 42nd St	University Ave	13775	Minor Arterial	30	2	Signal Intersection	Lake Agassiz
6th Ave N	State St	NA	Collector	25	2	Beacon Xings, Crosswalks	Lake Agassiz
S 20th St	32nd Ave S	7505	Collector	25	2	Signal Intersection, Crosswalks	South Middle
S Columbia Rd	17th Ave S	27455	Principal Arterial	35	4	Signal Intersection	Century
1st Ave S	Chestnut St & Walnut St	1955	Collector	25	2	N/A	Phoenix
S Columbia Rd	40th Ave S	8230	Principal Arterial	35	2	Signal Intersection, Crosswalks	South Middle
5th Ave N	N 5th St	910	Local	25	2	Beacon Xing, Signal Intersection, Crosswalks	Central HS
University Ave	N Washington St	5525	Minor Arterial	25	2	Signal Intersection, Crosswalks	Winship
N 42nd St	DeMers Ave	13775	Minor Arterial	40	4	Signal Intersection	Lake Agassiz
32nd Ave S	S 20th St	19700	Principal Arterial	40	4	Signal Intersection, Crosswalks	South Middle
2017 Includes Only Crashes Involving Bicyclist 5-14 Years Old							
40th Ave S	S 34th St	NA	Local	25	2	Roundabout	Discovery
Chestnut St	2nd Ave S & 3rd Ave S	NA	Local	25	2	N/A	Phoenix
47th Ave S	S 20th St	4160	Minor Arterial	25	2	Allways Stop, Beacon Xing, Crosswalk	Discovery
S Columbia Rd	40th Ave S	6770	Principal Arterial	40	2	Signal Intersection, Crosswalks	Discovery
2018 Includes Only Crashes Involving Bicyclist 5-14 Years Old							
13th Ave S	S 20th St	3385	Collector	25	2	All ways Stop	Ben Franklin
4th Avenue S	Oak St	7050	Minor Arterial	25	2	N/A	Phoenix
S 20th St	45th Ave S	1895	Collector	25	2	N/A	Discovery
S 20th St	32nd Ave S	7505	Collector	25	2	Signal Intersection, Crosswalks	South Middle
S Columbia Rd	47th Ave S	6770	Principal Arterial	40	2	Signal Intersection	Discovery

The Roadway's Characteristic at Bicycle Crash Location Table illustrates all the bicycle-related crashes occurred in 2016-2018. The crash analysis report indicated that in Grand Forks there were 24 bicycle related crashes in total from 2016 to 2018. Age and Sex was not provided for any of those involved in bicycle crashes for 2016. As a result, it was not possible to establish whether there was any person age 5 to 14 years old (K-9) involved in a bicycle crash. Highlighted in the table are the location for nine crashes involving children 5 to 14 years old (K-9) in years 2017-2018.

As indicated in Table 6. the Traffic Control column, in most cases, it appears that among others, a traffic control device (*Beacon Crossing, Crosswalk and All-Four Ways Stops*) was present at the location where the crash was reported. Most bicycle crash locations were identified as components of the Safe Routes to School. Three crash locations for 2017-2018 are outside the 1/4 mile radius distance from Discovery Elementary or South Middle School.

However, three bicycle crashes were reported at un-controlled intersections in 2017 & 2018. Two locations were in proximity to Phoenix Elementary. They are depicted in the Phoenix Safe Route to School Map, 2019. The school is bounded by high volume roads. Other concerns include the need for sidewalk improvements, speed enforcements and access management in the Southside Neighborhood. The other *No Traffic Control* crash location was at S 20th at 45th Ave S in proximity to South Middle and Discovery School.

Some bicycle crashes have been reported at intersections in proximity to Discovery Elementary and South Middle. As a result, safety concerns have been expressed by various stakeholders concerning pedestrian and bicycle safety in proximity to these facilities. A number of traffic, pedestrian and lane signs have been installed at the intersection of 40th Ave S at Columbia Road. Similarly, access ramps for the disabled have been installed around the neighborhood.

Still, stakeholders have requested through community meetings to the City of Grand Forks to add a pedestrian underpass at various locations in the neighborhood. The study sponsored by the City of Grand Forks outlined the land use, traffic, and taxation challenges preventing some of these requests from being implemented.¹⁴

Through community meetings and surveys, residents identified problems crossing at Columbia Road and 40th Ave S; pedestrian conflicts with vehicles making turns; excessive vehicular speed on long strait residential streets; inability to cross S 20th St at 40th Ave S; high traffic at the four-way stop in front of South Middle School at S 20th Street and 47th Ave S impending pedestrian crossing; and trouble crossing 40th Ave S and S 20th Street.¹⁵

School districts consider several variables when deciding where a school should be located. However, according to some researchers, the location of South Middle and Discovery Elementary facilities could be defined as "*school sprawl*."

¹⁴ CPS (2018) Pedestrian Crossing Study - South Columbia Road and 47th Avenue South

¹⁵ CPS (2018) Pedestrian Crossing Study - South Columbia Road and 47th Avenue South

These schools are located “on large campuses away from the residential areas they serve.”¹⁶ (Please see school boundaries in Map in section 4). These schools “eliminate neighborhood schools, create environments where few children can walk to school, increase pollution and congestion, and reduce community connections.” School siting also poses accessibility and mobility challenges for pedestrians, bicyclists and drivers. The lack of sidewalks, large lots, and number of collector roads curtails mobility of children and those afflicted by disabilities.

Discovery School is located in a Planned Unit Development (PUD) currently under construction. The subdivision includes housing, recreation, commercial centers. Projected school expansion and the construction of remaining streets and proposed bicycle and pedestrian facilities, will be realized years ahead as the development grows. As such, population growth and traffic volume increases are expected in the coming years. More discussion on the nature of this area is provided in this report in Section 5.1 School Crossing Guard Programs section.

As in other jurisdictions in the country, bicycle crashes are a major traffic safety concern in Grand Forks. Thus, roadway characteristics could also serve to understand contributing factors such as:

- Average Annual Daily Traffic (AADT)
- Roadway Classification
- Posted Speed
- Lanes and
- Existing –if any-traffic controls at the intersection or in proximity.
- **Average Annual Daily Traffic (AADT)**

Annual average daily traffic (AADT) is the average 24-hour traffic volume at a roadway location over an entire year. AADT is required for many transportation analyses AADT including required to calculate crash rates. AADT counts could be taken as a proxy for level of congestion on a particular road.

Studies on congestion level and accident rate indicate that the accident rate is defined as the ratio between the number of accidents and associated volumes. This implies that there is a linear positive correlation between the accident frequency and volumes.¹⁷

Although crashes have occurred in various locations; when dividing the number of crashes by the AADT volumes (# crashes/AADT), the results appears to indicate that bicycle crash rates (0.0001) look similar for most of the locations where crashes did occur.

¹⁶ Noreen C. McDonald (2010) School Siting, Journal of the American Planning Association, 76:2, 184-198, DOI: 10.1080/01944361003595991

¹⁷ The Relationship Between Congestion Levels And Accidents (2013) Maryland State Highway Administration Research Report

- **Roadway Classification**

According to the roadway classification, the location for all the bicycle crashes involving children 5 to 14 years old (K-9) in 2017-2018 includes:

- 2 crash on a Principal Arterial
- 3 crashes on Collectors
- 2 Minor Arterial
- 2 crashes on Local roads

Most of the crashes occurred on minor arterial roads. However, due to their traffic volumes, travel speeds and traffic controls, it appears collector roads present still some challenges for bicyclists.

- **Posted Speed**

In Grand Forks most posted speeds are 25 Miles per hour. Posted speed in school zones is 20 mph. The unposted speed limit on a residential street is 25 mph and this limit can be enforced without signs.

Given their posted speeds, most of the crashes occurred on principal arterials and collector roads. Principal Arterials have a posted 40 mph. Collector roads have a posted speed of 25 mph. Most collector roads are located on residential areas.

- **Lanes**

Most bicycle crashes occurred on two lane roads when the bicyclist was on the roadway, while crossing at the intersection, and dry conditions.

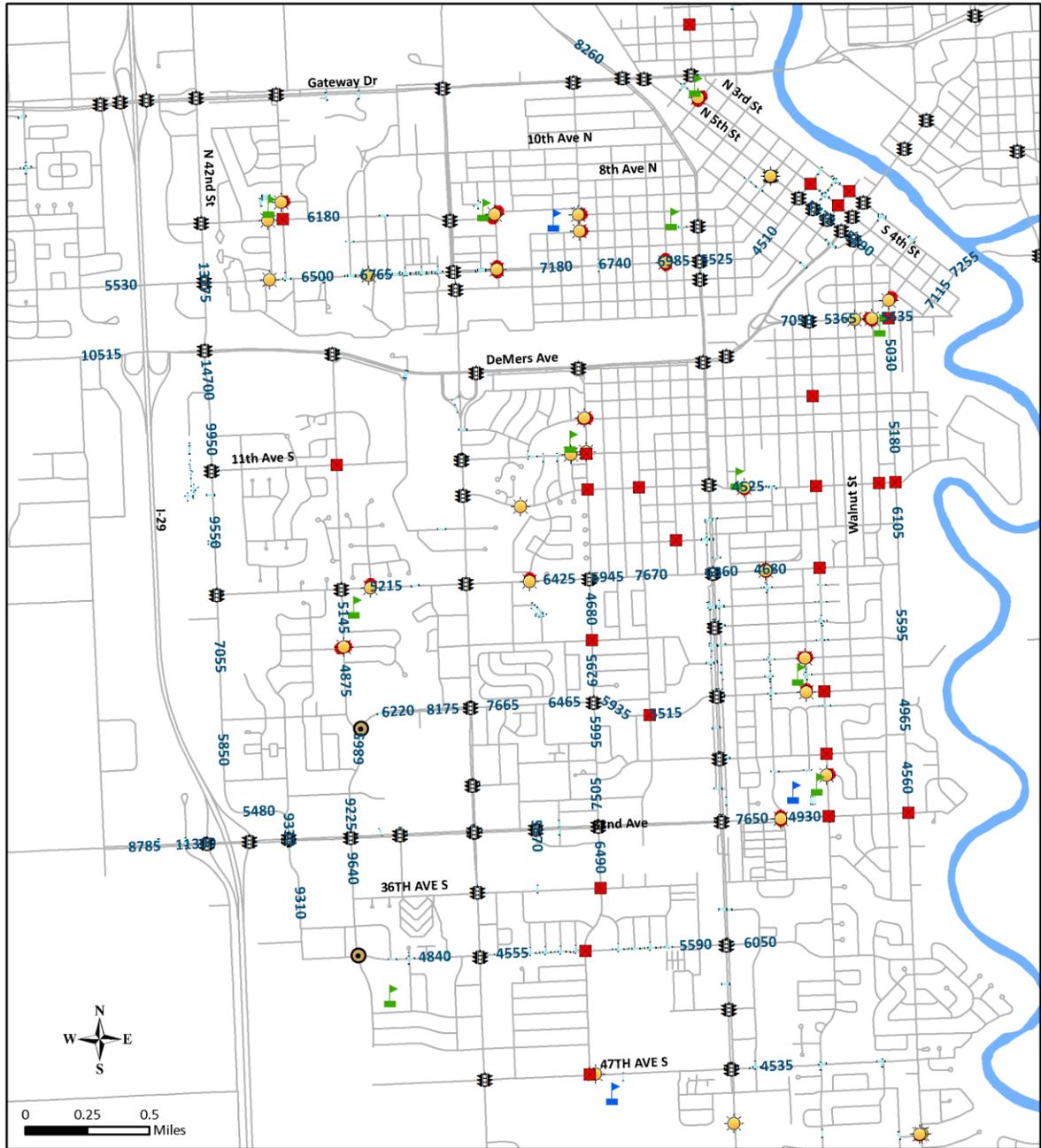
- **Existing -if any-traffic controls at the intersection or in proximity.**

Most bicycle crashes took place at locations where traffic controls were available. According to the crash report, the following locations were reported as *No Traffic Control* or without traffic control:

- Chestnut at 2nd Ave S & 3rd Ave S---Mid-block

5. Intersection Analysis

Map 3. 2018 Grand Forks AADT By Elementary & Middle Schools



XXXX 2018 AADT Greater than 4,500 & on a classified road less than a Primary Arterial



- Public Elementary School
- Public Middle School

- Crossings
- Stop Signs
- Flashing Beacon
- Roundabout
- All Way Stops
- Signal Intersection

The 2018 AADT with Grand Forks Elementary & Middle Schools Maps provide information on the Average Annual Daily Traffic along the main corridors in the City. The Annual average daily traffic (AADT) is the total volume of vehicle traffic on a highway or road for a year divided by 365 days. AADT is a useful and simple measurement of how busy a road is.

The map also illustrates the location and type of traffic controls located in proximity to local elementary and middle schools. Information about pedestrian and bicycle crashes in proximity to schools and involving a person 5 to 14 years old (K-9) was provided earlier in sections 3.2 and 4.2. Sections 3.5 and 4.5 provide information on the roadway characteristics. A number of comments about the characteristics of the intersections where either a pedestrian or a bicycle crash took place have been made through this report.

5.1 School Crossing Guard Programs



North Dakota Statute 15.1-19-11 regulates the establishment of School Safety Patrols at public or nonpublic school districts. However, the establishment and operation of School Crossing Guards programs is a local school effort, in part, supported by Fed-Ex, AAA, Safe Kids Grand Forks, and the Safe Routes to Schools program. The Safe Routes to Schools Program provides the program guidelines to bring together community stakeholders to create successful School Crossing Guard Programs. Safe Routes to Schools also provides training to adult crossing guards to assure their highest performance level.

The presence of School Crossing Guard Programs is seen as a *facilitator to active travel in the community*. Their absence is regarded as a barrier.¹⁸ Regrettably, as more roadway users engage in distracting behaviors, the urgency for establishing more crossing guards programs becomes paramount. Assisting children to cross streets safely, to learn appropriate street crossing behaviors, and to apply skills to identify, locate and understand traffic controls and safely crossing locations are all activities that parents and guardians could support through the establishment of permanent School Crossing Guard Programs until children are fully competent to successfully doing it by themselves. Whether as pedestrians or bicyclist, minor children rely heavily on the presence of adults in their way to and from their community destinations.

¹⁸ NJ DOT (2014) The Role of Crossing Guards and Child Pedestrian Safety in New Jersey
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Offering information to drivers on school zones and guiding children to the street, are activities that provide parents and guardians with a greater level of comfort. These activities increase street safety and contribute to crash reductions. Established adult school crossing guards, competently fulfill this role. *A guard plays another key function — a role model helping children develop the skills necessary to cross streets safely at all times.*¹⁹

The Nelson Kelly School Crossing Guard is the only program active at arrival and dismissal times. The presence of School Crossing Guards help to guide operation at school parking lots, manage conflicts with school buses and vehicles picking up & dropping students at school. Regularly, members of the School Crossing Guard Programs are located at marked crosswalk locations and other traffic sensitive areas in proximity to schools.

For instance, at the Ben Franklin Elementary both pedestrian crashes occurred at a School Crossing Guard location. According to guidance provided by the Manual of Uniform Traffic Control Devices (2009), *Adult crossing guards shall not direct traffic in the usual law enforcement regulatory sense.* It appears, vehicle drivers failed to properly follow the “rules of the road” as expected from the traffic controls existing at the intersections.

The role, benefits and importance of School Crossing Guard programs have been explained. However, lack of funding to cover expenditures and the lack of volunteer personnel to care for the crossings, hampers community efforts to enhance traffic safety conditions in proximity to schools.

Currently, there are not School Crossing Guard Programs at Winship (N 5th St), and West (N 6th St). Access to these locations is provided through minor, principal arterials and collector roadways. Fortunately, no pedestrian crashes occurred in proximity to any of these schools from 2016 to 2018.

The South Middle and the Discovery Elementary are “suburban” schools located near major multi-use paths and surrounded by collector and minor arterial roadways (47th Ave S. S34th St). Location for “suburban” schools involves more attention to general site requirements to accommodate address school bus operations, parent drop-off/pick-up zones, pedestrian and bicycle access, driveways, turn lanes, and traffic controls including, signing and marking, and parking.

As the number of children arriving at schools via family vehicle increases, arrival and dismissal activities pose serious traffic movement challenges in proximity to elementary schools. For instance, high traffic volumes, chaotic pick-ups and drop offs create stressful environments which affect student’s safety and learning outcomes. School Crossing Guards help to reduce the impact of several demographic and roadway risk factors related to children pedestrian safety.

Table 7. School Crossing Guard Programs, 2019

SCHOOL	LOCATION	School Safety Patrol		Hours Operations	
		Adult Volunteers	Students	Arrival	Dismissal
Ben Franklin	11th Ave S	Teachers/Volunteers			3:00 PM
	S 20th Street	Teachers/Volunteers			3:00 PM
	S 21st Street	Teachers/Volunteers			3:00 PM
Century	17th Ave S @ Baron Blvd	Paraprofessionals			3:00 PM
	17th Ave S @ S 34th Street	Paraprofessionals			3:00 PM
Discovery	Door # 1 Drive through lane (43rd Ave S)	Teachers/Student Volunteers	5th Grade	3:00 PM 3:10 PM	
	Door # 8 Drive through lane (S 32nd St)	Teachers/Student Volunteers	5th Grade	3:00 PM 3:10 PM	
	Kindergarden Crosswalk (East Parking Lot) (S 32nd St)	Teachers/Student Volunteers	5th Grade	3:00 PM 3:10 PM	
Nelson Kelly	32nd Ave S @ S 10th Street	Volunteers		7:45 AM 2:50 PM 8:25 AM 3:10 PM	
	Schroeder Drive @ Cherry	Volunteers		7:45 AM 2:50 PM 8:25 AM 3:10 PM	
	32nd Ave S	Volunteers		7:45 AM 2:50 PM 8:25 AM 3:10 PM	
Lake Agassiz	Standford @ 6th Ave N	NA	NA	NA	NA
	North Parking Lot	NA	NA	NA	NA
Lewis & Clark	13th Ave and 11th Street	NA	Student Patrols in Parking Lot		3:00 PM
Phoenix	Belmont & 4th Ave.	School Staff wearing safety vest & carrying stop signs			3:00 PM
	Chestnut & 4th Ave.				3:00 PM
	West entrance to school off of Belmont				3:00 PM
	East exit from drop-off lane to Chestnut				3:00 PM
Viking	Oak Street and 22nd Ave South	NA	NA	NA	NA
	23rd Ave South	NA	NA	NA	NA
South Middle School	South & North Parking Lot/ After school	Staff			3:00 PM
West		NA	NA	NA	NA
Wilder	N 4th Street and 11th Avenue North	NA	NA	NA	NA
Winship	NA	Unable to secure Crossing Guard Volunteers	NA	NA	NA
Valley Middle	5th Ave N @ N 20 St. South	Administration	NA	NA	NA

Table 7, School Crossing Guards Program, 2019 provides information on the composition, location and hours of operation of the School Crossing Guard Program in the Grand Forks School District, 2019.

The School Crossing Guard Program, 2019 table, indicates that Nelson Kelly is the only elementary school featuring a crossing guard program at arrival times. Crossing guards are located on 32nd Ave S at S 10th Street, Schroeder Drive at Cherry. The segment on 32nd Ave South from S Washington to Chestnut Street is located in a residential neighborhood. It provides access to the busy neighborhood Kelly Park and to Schroeder Middle. 32nd Avenue South provides inter-city connections. As it will be discussed in section 6., there were neither fatal pedestrian; nor, bicyclist crashes in proximity to Nelson Kelly.

32nd Ave S is designated as an on-road Bike Route east of S Washington. On this segment, 32nd is a busy minor arterial road which provides access to a number of established community facilities in the area. The presence of school crossing guards contributes to the success of active safe routes to schools. Thus, all schools should have a recognized school crossing program. Similarly, every effort should be made to establish school crossing guards at arrival and dismissal times in elementary schools in the Grand Forks District.

Based upon Principal's opinion, establishing Crossing Guards and Student's Patrol programs were regarded as "*Essential Priority*" community based programs Discovery Elementary would like to see implemented to improve on children's safety.²⁰ Although Discovery Elementary has a student volunteer and teacher School Crossing Guard Program which operates on premises; most bicycle crashes occurred outside the ¼ mile radius from school.

Local street network in proximity to schools should provide adequate vehicular and pedestrian access to all parcels; thus, presenting many opportunities for multi-modal conflicts. Past crashes involving pedestrians and bicyclist in proximity to Discovery Elementary; factors such as busy intersections, speedy and high volume traffic has forced the community to consider the construction of complementary roadway infrastructure to allow children safer access when walking or biking to and from school.²¹

Driving children to school by family vehicle poses many challenges to school administrators. It also curtails active transportation activities for children. According to the Parent's Surveys administered in (2016) by Safe Kids Grand Forks in cooperation with school staff, the typical mode of school arrival by the distance the child lives from school, points out that 52% of children living less than a ¼ mile arrived by family vehicle; 35% walked and 8% biked to school.

In general, the reasons responding parents indicated for not allowing their children to walk/bike to school include:

²⁰ Grand Forks-East Grand Forks MPO (2015) Discovery School Safe Routes to School Initiative.

²¹ CPS Engineering & Praxis Strategic Group (2018) Evaluation of Pedestrian & Bicycle Safety Improvement Strategies Within the Discovery Elementary and South Middle School Neighborhoods.

- Speed of traffic along route
- Amount of traffic along route
- Convenience of driving
- Safety of intersections & crossings
- Weather
- Distance.

Information received from Grand Forks School District and Safe Kids Grand Forks indicated that some School Crossing Guard Programs are staffed by para-professionals, others programs count on administrative staff and a few require student support, particularly to assist in the management of parking operations. However, there are not Crossing Guard Programs active during morning hours (arrival to school) at most Elementary Schools. This situation deserves more attention as in general traffic movements during morning hours in proximity to school heightens traffic related conflicts and decreases pedestrian and bicyclist safety.

Most pedestrian and bicycle crashes involving children 5 to 14 years of age (K-9) occurred in proximity to school locations within ¼ mile (*walking distance*). Still, every effort should be made to establish School Crossing Guard Programs in all schools. Also, to increase the safety of children –including those with disabilities- in their way to and from school enhancing hours of operation and offering required training for parents and community members will help in establishing permanent School Crossing Guard Programs. This community programs should be regarded as an important component of the School Safety Program.

6. Safe Kids Grand Forks Pedestrian & Bike Education Events

Safe Kids Grand Forks fosters a number of initiatives to increase the safety and the number of children walking or biking to school. The program’s objective is to raise awareness of the need to create safer routes for walking and bicycling and emphasize the importance of issues such as increasing physical activity among children, pedestrian safety, and concern for the environment.

Some of these initiatives include:

- Pedestrian Safety Community Education and Programs
- Pedestrian Safety Tips (Brochures)
- Back to School Safety Events
- School Specific Pedestrian Education (Upon request)
- Crossing Guard Training
- Walk to Win
- Pedestrian Safety and Teens
- Safe Routes to School Maps

These age related and school-based programs also serve to address parents’ concerns about traffic and other personal perceptions; the program offers opportunities to parents and children to adhere to socialization patterns and behavior changing actions that collectively and individually emphasize personal safety and security for all.

7. Street Corridors Leading to River Crossings

Four street corridors are related to the proposed river crossings. These corridors address local traffic access and mobility concerns. These corridors provide access to or are in proximity to the following schools: Schroeder, Nelson Kelly, Viking and Lewis & Clark Elementary Schools.

Corridor	Nelson Kelly	Schroeder	Lewis & Clark	Viking
17th Avenue S		◊	◊	
Elks Drive		◊		◊
32nd Avenue S	◊	◊		
47th Avenue S		◊		

The purpose of the River Crossings is to improve local traffic and connectivity. All proposed river crossings and their connections on each side are two lane roads. Actual corridors facilitating multi-modal movement east of Belmont are Elks Drive (24th Ave S), 32nd Ave S and 47th Ave. S. Neither pedestrian nor bicycle crashes were registered in the area. The river crossings appear to have a greater impact on Schroeder Middle than on the other elementary schools.

A closer look at the proposed river crossing corridors indicates that there were neither pedestrians; nor bicyclist fatal traffic crashes in proximity to Viking (24th Ave S), Kelly (32nd Ave S), Schroeder (32nd Ave S); and Lewis & Clark (17th Ave S) in years 2016-17-18. Severity for pedestrian and bicycle crashes is discussed in sections 3.2 and 4.2

8. Observations

Pedestrian Crashes

- A general review of additional factors such as alcohol and drugs indicate that neither motorist nor pedestrians were impaired at the time of the crashes
- Most pedestrian crashes took place *at an intersection*. Most crashes occurred when the pedestrian was *crossing an intersection*
- There were traffic controls (*stop signs, flashing beacon crossings*) at most pedestrian crash locations
- Most pedestrian crashes happened at two –lane, collector intersections
- Most crashes involved Middle School age-bicyclist (10-13 years old)

Bicyclists Crashes

- Most bicycle related crashes occurred when bicyclist was crossing the intersection
- In most cases, there were neither alcohol nor drugs involved with bicycle crashes
- Most bicycle related crashes occurred in daylight and dry conditions, during daylight time.
- There were traffic controls (*stop signs*) at most bicycle crash locations
- Most bicycle crashes happened during weekdays, after school hours and
- Most crashes involved Middle School age-bicyclist (10-12 years old)
- Most bicycle crashes happened at two –lane, local and low volume traffic roads.

Drivers Involved

- Although contributing factors for the crash are not clear, in a few cases, motorist appeared not seeing or not yielding to bicyclist.
- Most bicycle and pedestrian crashes involving children 5-14 years old occurred in proximity to school premises.
- Most pedestrian and bicycle crashes occurred prior to 8:30 am or after school time 3:30 pm.
- A closer look at the proposed river crossing corridors indicates that there were neither pedestrians; nor bicyclist fatal traffic crashes in proximity to Viking (24th Ave S), Kelly (32nd Ave S), Schroeder (32nd Ave S); and Lewis & Clark (17th Ave S) in years 2016-17-18.

9. Recommendation for Improved Pedestrian & Bicycle Safety

A number of intersections are still widely perceived and described by some parents as “*dangerous roads*” and/or as “*dangerous roadway conditions*” in proximity to schools.

Considering the nature, severity and contributing factors surrounding both pedestrian and bicycle crashes; parents are reminded to take a closer look at the effectiveness of various programs put in place by local stakeholders to improve safety, enhance comfort and increase active transportation opportunities to and from school and other locations in the community. Most agencies responsible for preserving the safety of children, in their way to school, including those with disabilities, have been implementing 6E’s initiatives to engineer, educate, encourage, enforce and evaluate the effectiveness of their programs. Equity has been addressed in terms of the locations where crashes occurred.

For instance, considering the 5 to 14 years old (K-9) involved in pedestrian and bicycle crashes, the data review does not appear to support any correlation between the type of crashes, seriousness and street location. The review does not provide evidence of a correlation between type of crashes, frequency and proximity to school. The analysis suggests that although pedestrian and bicycle crashes are preventable; yet they do happen. Considering the number of pedestrian and bicycle crashes and their location’ their likelihood of occurrence is almost similar in most roadways in the city.

Among others, the following recommendations are provided here to improve on the implementation of existing programs and, as much as possible, to lessen or to reduce parent’s perceptions relating to “*dangerous roads*” and/or as “*dangerous roadway conditions*” in proximity to schools:

1. Support the annual administration of Parent’s Surveys; continue designing and distributing Safe Routes to School Maps; continue the implementation of the School-Zone Highway Safety Program and support the establishment and operation of Adult School Crossing Guard programs in all schools in the Grand Forks District.
2. Conduct field safety audits including the examination of vehicle speeds, sight distance, markings, signage, street lighting at high volume corridors and intersections to understand their relationship with pedestrian and bicycle mobility and connectivity.
3. Make every effort to establish adult school crossing guard programs for all elementary schools. Assure programs offer arrival and dismissal crossing guards. Increase opportunities to succeed by involving community partners counting on the expertise of Safe Routes to Schools and Safe Kids Grand Forks.
4. Work together with parents and other community stakeholders to identify the locations to establish adult crossing guard programs, number of guards and hours of operations.

5. Support Safe Kids and other community stakeholders in promoting and advancing walking and biking to school programs to increase safety awareness while emphasizing navigation on arterial streets and on corridors perceived as high risks.
6. Increase pedestrian and driver education by updating and creating new printed educational materials highlighting dangerous behaviors including failure to yield, speeding, aggressive driving, distracted and inattention.

Although safety at intersections and crossings are factors perceived by parents preventing them from allowing their children to walk/bike to and from schools; parents are reminded to take a closer look at the impact and benefits resulting from various programs in place to improve safety, enhance comfort and increase active transportation opportunities to and from school and other locations in the community.

2016_2017_2018_bike_ped-crash_analysis_28_rv_4 Wednesday, August 28, 2019

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