Grayling Area Transportation Study

Existing Conditions

Introduction

The Grayling Area Transportation Study is a holistic view of the transportation conditions in the Grayling Area in order to identify areas in the transportation system that need upgrades and improvements. This study is an update to the previous study completed in 2008. The 2008 edition included recommendations for interstate interchange upgrades, roadway capacity improvements, and new access routes through the Study Area. Due to the changes in local transportation priorities, federal and state funding levels, and traveler needs, an update to the project is needed. There is now a greater emphasis placed on new technology, accommodating multi-modal transportation options, improving safety conditions, and addressing capacity deficiencies with efficient design solutions.

Through the Grayling Area Transportation Study, the issues related to the current and future demands of the transportation system will be addressed. Safety, efficiency, convenience, and economic well-being of the traveling public will be considered in all project recommendations. The purpose is to find mobility solutions that build on the previous planning and design work, are feasible to implement, and are right sized to the community.

The Project Study Area is located mostly in Crawford County with a small portion in Roscommon County. The Study Area is centered on the City of Grayling, but extends into the surrounding Townships including, Grayling Township, Frederic Township, Maple Forest Township, and Beaver Creek Township. In Roscommon County, Gerrish Township and Lyon Township are also partly in the Study Area at the south end.

The Study Area includes a number of large employers and activity centers, including Camp Grayling, MATES, and Grayling Hospital. Kirkland College and Downtown Grayling are also large activity generators.



Existing Conditions

Transportation systems are inherently affected by the surrounding population, employment, and land use. This section explores the historic, existing, and potential future demographic, land use, and transportation data for the Study Area. Data from the US Census Bureau, MDOT, NEMCOG, and the Study Area communities were collected, compiled, and analyzed for this section.

Demographics

Population and Employment

A review of the existing and past population and employment trends was completed to better understand the demands placed on the transportation network. Changes in population since the last Grayling Area Transportation Study were compiled and analyzed to determine the differences between the expected traffic levels and the actual levels.

Population changes over the last 18 years were studied to better understand how each community in the Study Area has changed. More importantly, the change in population from 2010 to 2018 (the most recent demographic data available) gives a sense of how the area has changed since the previous Transportation Study. In all cases, except for Frederic Township, the communities within the Study Area have decreased in population since 2010. Other than Lyon Township, the decreases are very minor, between 0.45% and 3.85%. Overall, the total change in the Study Area communities was just under -2.5%. Table 1 shows the change in population for the two counties and the individual communities within the Study Area.

Study Area Communities	<u>2000</u>	<u>2010</u>	<u>2018</u>	<u>Change</u> (2010 – 2018)
Crawford County	14,273	14,325	13,892	<u>-3.12%</u>
Grayling	1,952	1,917	1,846	-3.85%
Grayling Township	6,516	5,826	5,800	-0.45%
Frederic Township	1,431	1,344	1,375	2.25%
Maple Forest Township	498	652	647	-0.77%
Beaver Creek Township	1,495	1,730	1,709	-1.23%
Roscommon County	25,469	24,932	23,851	-4.53%
Gerrish Township	3,084	2,994	2,930	-2.18%
Lyon Township	1,351	1,370	1,150	-19.13%
Total	16,327	15,833	15,457	-2.43%

Table 1: Study Area Population

Since the majority of the Study Area is located in Crawford County, it is important to consider the overall population trend here as part of the Grayling Area Transportation Study. Between 2011 and 2020, the population in Crawford County has fluctuated between a high of around 14,325 people to a low of 13,820. Since 2017, the county has begun to add additional residents and is now back to 2015 levels. This loss in population since the Great Recession is common for most cities around Michigan and the State itself. Figure 1 shows the change in population in Crawford County from 2010 to 2019.

Figure 1: Crawford County Population (2010-2019)



Overall, the population trend in the Study Area has decreased since the previous Transportation Study. However, the population appears to be stabilizing, perhaps even reversing. It is too early however, with the data available, to determine how far the population will rebound in the Study Area. The increase in population in Crawford County over the past three years is relatively small (less than 80 people total).

Employment

Using data from the US Census Bureau, specifically the Longitudinal Employer Household Dynamics tool. This tool allows for users to see where job clusters are located in a specific area. This data includes all private jobs but does not include government employment which is why Camp Grayling, MATES, and the Grayling Army Airfield do not show up in this analysis.

Figure 2 and Figure 3 and below shows the location of private employment in the project Study Area. Overall, the majority of employment in Crawford County is located in the City of Grayling. Large employment areas include Grayling Hospital, Downtown Grayling, and the retail area along I-75 Business Loop on the south side of town. Some other large employment areas are along 4 Mile Road and include Kirkland College and a few heavy industry companies.

Figure 2: Grayling Area Total Employment

Figure 3: City of Grayling Total Employment



Since the previous Grayling Area Transportion Study, employment has changed in the Grayling Area. The most drastic change has been in the Healthcare and Social Assistance section with an increase of nearly 800 jobs between 2008 and 2018. This represents an increase of over 360%. The County has also seen increases in Accomodation and Food Service, Public Administration, and Construction jobs. Decreases in Manufacturing, Retail Trade, and Educational Services mirror the changes to jobs in region. Overall, employment in the County has grown by 28% since the previous Study and now has over 4,200 total jobs. Table 2: shows the employment totals in 2008, 2018, and the 10 year percent change.

Employment Sector	Total Jobs (2008)	Total Jobs (2018)	Percent Change
Health Care and Social Assistance	232	1,076	364%
Accommodation and Food Services	455	593	30%
Manufacturing	814	512	-37%
Public Administration	349	511	46%
Retail Trade	454	418	-8%
Construction	175	205	17%
Educational Services	264	191	-28%
All Other	548	699	22%
Total	3,291	4,205	28%

Table 2: Top Employment Sectors (2008 and 2018)

Journey to Work

Another important metric in determining the demands of the transportation system is the number of commuters present in a community. Using data from the US Census Bureau, an understanding of how residents in the Study Area communities travel to work was developed. These data are valuable in determine where residents are traveling from and how far they are traveling each day for work.

Table 3 below shows the breakdown of how residents in each Study Area community travel to work. As expected, and consistent with much of the State of Michigan, the majority of commuters in the Study Area drive alone to work. Beaver Creek Township, the City of Grayling and Frederic Township have the lowest proportion of commuters that drive alone to work. These communities also have higher percentages of carpoolers and transit users as well.

<u>Community</u>	1	Drove Alone		Carpool	Public Transit		
	Total	% of All Commuters	Total % of All Commuters		Total	% of All Commuters	
Grayling	476	84.5%	77	13.7%	10	1.8%	
Grayling Twp	1,946	87.1%	282	1.6%	5	0.2%	
Frederic Twp	326	85.8%	54	14.2%	0	0.0%	
Maple Forest Twp	247	92.9%	16	6.0%	3	1.1%	
Beaver Creek Twp	472	82.4%	97	16.9%	4	0.7%	
Gerrish Twp	878	96.4%	33	3.6%	0	0.0%	
Lyon Twp	314	86.5%	49	13.5%	0	0.0%	

Table 3: Study Area Commute Mode

Table 4 below shows the average travel time to work for commuters in each community within the Study Area. Consistent with the employment data shown above, the areas nearest to the City of Grayling have the shortest average commute. Over 70% of commuters in Grayling have a travel time to work of under 20 minutes. About 65% of residents who live in Grayling Township travel less than 20 minutes to work. The communities farther away from the core of the Study area tend to have longer commute times. However, the majority of residents in all of the communities in the Study Area have a commute of 30 minutes or less.

Table 4: Travel Time to Work

	Under 10 Minutes	10-20 Minutes	21-30 Minutes	30-45 Minutes	40-60 Minutes	60+ Minutes
Grayling	45%	26%	16%	10%	1%	3%
Grayling Twp	29%	38%	10%	14%	6%	5%
Frederic Twp	9%	26%	25%	23%	4%	13%
Maple Forest Twp	1%	29%	36%	19%	10%	6%
Beaver Creek Twp	17%	47%	15%	9%	3%	9%
Gerrish Twp	17%	27%	34%	11%	2%	9%
Lyon Twp	14%	25%	35%	14%	5%	8%

Land Use

Land use in the study area consists primarily of State-owned forest land and other natural land (non-forest, wetland, and agricultural) surrounding residential, industrial, and commercial land uses. Outside of normal employment commuting, most of the additional traffic in the Study Area comes from tourists looking to access these natural recreational amenities or for those traveling to other surrounding natural features. The center of the Study Area is home to the City of Grayling which contains the least amount of natural land of the communities. Much of Grayling is comprised of residential, commercial, institutional, and industrial property. Surrounding the City of Grayling are Camp Grayling and the associated military facilities - Grayling Army Air Field (AAF) and the Maneuver Area Training Equipment Site (MATES). Recently the AAF was expanded to allow for greater capacity. Additionally, Camp Grayling has seen increased activity and supplies many of the jobs and associated economic activity for the Grayling Area.

Much of the Study Area is characterized by a low-density development pattern typical of communities in Northern Michigan. Outside of the City of Grayling, residential areas are located near each other and away from more intense industrial or commercial land uses. Grayling Township is the largest community in the Study Area by population and has the most land utilized by residential land uses. Throughout all of the Study Area townships, residential areas are located near the major roadways, including M-93, M-72, Old 27 N, 4 Mile Rd, and Billman Rd.

The City of Grayling maintains a much more urban character than the surrounding townships. Residential areas are denser, and roadways are located closer together. Much of this is due to the original development of the City before the widespread use of automobiles in the late 1800s. Commercial areas and other activity centers needed to be walkable from area homes in order for commerce to happen. The historic street grid and downtown commercial area are still being used and provide a unique character to the region. Outside of the Downtown Core of Grayling is a more modern commercial district along I-75 BL. Commercial areas outside of the City of Grayling are more sporadic and are focused on servicing local needs.

Land use in the study area is largely dictated by the presence of large tracts of State and Federally owned forest land, including Hartwick Pines State Forest and the Mason Tract. These public lands take up much of the landscape and are attractive to residents and visitors alike. Since publicly owned lands are rarely sold for private development, it is likely that this land use pattern will remain for the foreseeable future. However, with the increased popularity of outdoor activities, the region may benefit from increased tourism.

Land use for the seven municipalities within the Study Area are shown in Figure 4 below.

Figure 4: Study Area Land Use



The Study Area also includes some major activity centers and traffic generators that contribute to the demand on the transportation system. As expected, many of these activity centers are located within the City of Grayling, however others are distributed around the Study Area. Below is a list of some of the major traffic generators in the region:

- Camp Grayling
- Grayling Army Air Field
- MATES
- Grayling Hospital
- Downtown Grayling
- Hanson Hills Recreation Area
- Kirtland Community College
- N Higgins Lake State Park
- Hartwick Pines State Forest
- Lake Margrethe
- AuSable River
 Campgrounds and
 Canoe Rentals
- I-75 BL Commercial District
- Grayling High School and Middle School

Figure 5 shows the location of major activity centers in the Study Area.

Figure 5: Study Area Activity Centers



Transportation

The existing transportation network in the Study Area is comprised of a variety of roadway types, bicycle paths, sidewalks, and on-demand public transit service. A system of federal, state, and local roads provide access to most of the Grayling Area and are used by a wide range of people.

Roadway Network

The roadway network in the Grayling Study Area consists of roads ranging from the interstate down to local, unpaved roads. The major roadway located in the Study Area is Interstate 75, which runs the length of the State and carries freight, commuters, and tourists to destinations farther north or down state. The following major roadways located in the Study Area are the backbone to the transportation system and carry the majority of the traffic through the region:

I-75: Consists generally of 4 lanes but expands to 5 lanes south of the City of Grayling. It runs the length of Michigan. The interstate passes directly through the Study Area and carries much of the tourist traffic to the area. The speed limit is 75 mph.

US-127: A 4 lane freeway that joins with I-75 south of the City of Grayling and continues south to Clare, Mt. Pleasant, and Lansing. The speed limit

is 75 mph.

M-72: This state trunkline runs east to west directly through Downtown Grayling and through much of Grayling Township. M-72 extends west to Traverse City and east to Mio. East and west of the Study Area, M-72 has 2 lanes and is posted with a 55 mph speed limit. Starting at the western boundary of the Study Area, M-72 consists of 4 lanes and has a 45mph speed limit. Within city limits, the speed limit drops first to 35 mph, then at the junction with I-75 BL (Cedar St / McClellan St) to 30 mph through the downtown. East of I-75, M-72 drops to 2 lanes and the speed limit resumes 55 mph.

M-93: A state trunkline route that links Camp Grayling on the west edge of the Study Area to Hartwick Pines State Park. This road runs north to south through the northern half of the Study Area and terminates at either end. M-93 starts at the entrance gate to Camp Grayling as a 2-lane road with a 55-mph posting, then turns and is colocated with M-72 into Grayling as a



4-lane road. At the junction with I-75BL ((Cedar St / McClellan St), it continues north co-located with I-75 BL (McClellan St) past the Grayling Army Air Field with 4 lanes posted 40 mph. Once outside the city limits the speed limit transitions to 55 mph. Starting at the intersection with Old 27 N, M-93 turns northeast, is a 2-lane road, crosses I-75 with a full access interchange, and terminates at Hartwick Pines State Park main gate.

I-75 Business Loop (BL): This is the Business Loop roadway that travels through Grayling and connects to I-75 north and south of the city. I-75 BL follows the alignment of the former US-27 and shares roadway with M-72 and M-93. It has a speed limit of 40 mph outside of the Downtown shopping district and 30 mph within Downtown. The interchange with I-75 south of town has only partial access, with an exit ramp from NB I-75 and an on-ramp to SB I-75. The interchange north of town is full access, with a diamond configuration.

County Road 612: A 2-lane County road with a 55-mph speed limit that travels east and west through the Study Area. The road crosses I-75 with a diamond configuration full access interchange and travels through central Frederic.

North Down River Rd: This is an east-west, 2-lane local road that starts at I-75 BL and continues east through the Study Area. N Down River Rd has a 55-mph speed limit outside of the City of Grayling. It has a half diamond interchange with I-75 and that provides partial access; a southbound exit ramp and northbound entrance ramp.

Four Mile Rd: An east-west, 2-lane road with a speed limit of 55 mph located between the City of Grayling and the split of I-75 and US-127. Four Mile Rd has a full interchange with I-75 and is a highly utilized route for military vehicles accessing Camp Grayling. The Kirtland College campus is located off of Four Mile Rd.

Military Rd: A north-south, 2-lane local road with a 55-mph speed limit that provides direct access from the south to Camp Grayling. Military vehicles exiting I-75 at Four Mile Rd use Military Rd to reach Camp Grayling.

Old 27 N: This road is a north-south local road that begins north of the Grayling Army Air Field at the split with M-93. Old 27 N travels through Frederic Township and through Downtown Frederic, eventually traveling to Downtown Gaylord to the North. The speed limit is 55 mph for most of the road except in front of Grayling High School, where it is 25 mph.

N Higgins Lake Dr: An east-west local road that begins at the US-127 interchange, near Military Rd, and continues east to Downtown Roscommon. N Higgins Lake Dr also crosses I-75 and with a full interchange, allowing motorists to easily travel to US-127 from I-75. It has a speed limit of 55 mph and is located at the southern end of the project Study Area.

Non-Motorized Network

Over the past 10 years, the State of Michigan has made great strides in adding non-motorized trails around the State. Walking and biking trails can now be found in most communities in Michigan and there are significant assets in Northern Michigan. The Iron Belle Trail, a statewide trail system extending from Detroit to the tip of the Upper Peninsula, travels directly through Grayling. The Grayling Area has an existing trail loop that connects Camp Grayling with Hartwick Pines State Forest through the City of Grayling. The portion of the existing trail that runs along McClellan Street is part of the Iron Belle Trail. Future planned portions of the Iron Belle Trail extend north and south along Old US 27. Additionally, a number of non-

paved trails, foot trails, and snowmobile trails also are available in the Study Area. These are primarily seasonal and recreational and do not heavily interact with the vehicle transportation system.

NEMCOG has also identified a number of non-motorized pathways and trails through the region as part of their 2009 Non-Motorized Transportation Plan. The on-road trails identified for the Graying Area Transportation Study Area are along County Road 612, N Down River Road, M-72, Military Road, Old US 27 (south of CR 612) and Grayling Road. Off-road trails are planned for Old US 27 (north of CR 612), Old US 27 (south of Grayling), and N Higgins Lake Road.

In addition to the trails and pathways that currently exist in the Study Area, sidewalks are also present in a few distinct areas. The City of Grayling has a comprehensive sidewalk system that connects the Downtown and other commercial areas with the neighborhoods. Each neighborhood in Grayling is also complete with sidewalks on both sides of the street. Sidewalks do not extend into the industrial areas in Grayling, however. Sidewalks in Downtown Frederic are available as well. The remainder of the Study Area is without consistent sidewalks mostly due to the dispersed nature of the development pattern.

Public Transportation

Two different public transportation service providers operate in the Grayling Area Transportation Study Area: the Crawford County Transportation Authority (CCTA) and the Roscommon County Transportation Authority (RCTA). CCTA is a demand response, dial-a-ride service where customers will call ahead to schedule a ride. Within the City of Grayling and immediate surrounding area, on-demand rides can be scheduled at any time. Reservations must be made at least two hours in advance. Service is available to all residents but with different pricing depending on the group.

CCTA operates four general routes that start in Grayling and travel out to the less populated areas of the County. These routes have specific schedules and leave Grayling at set times throughout the day. Service to these areas may take longer to serve due to the scheduled departure times from Grayling. The routes are as follows:

- M-72 West Past Lake Margrethe
- Frederic and Maple Forest Township Including Downtown Frederic and Hartwick Pines State Forest
- M-72 East Including Grayling Township and Lovells Township
- Beaver Creek and Roscommon Serves the area south of 4 Mile Road in the County.

The Roscommon County Transit Authority is also a dial-a-ride service offering transportation services to Roscommon County residents and visitors six days a week. Service is provided anywhere in the County and there are no set routes. However, prospective riders must schedule rides in advance. Base fares range depending on the type of rider and are between \$.75 and \$3. For an additional fee, service can take riders outside of the County. Since the Study Area only extends a few miles into Roscommon County, it is likely that there are few transit trips being generated.

Trucking Corridors

All of the State highways in the Study Area are designated trucking corridors and no seasonal load restrictions, but have varying size restrictions I-75, US-127, and M-72 allow trucks up to 8'6" wide. These roads are part of the National Truck Network. Other state highways and roadways in the Study Area, including I-75 Business Loop and M-93, are open for year-round truck service with the same restrictions. These roadways are special designated highways that have state designations for trucks.

There are other corridors in the Study Area that are nondesignated trucking routes, but trucks may still need to use them to reach their final destination. Roadways adjacent to areas with Industrial, Commercial, Agricultural, or Institutional land uses typically see a see higher volumes of trucks due the businesses that rely on large trucks for shipping, delivery, and transport of goods. Corridors that are not designated trucking routes but still see a higher-than-average volume of trucks include Four Mile Rd, S Military Rd, N Old 27, North Down River Rd, and Industrial St. Figure 6 shows the location of the National and State designated truck routes, as well as potential local truck routes that are not formally designated.

Figure 6: Designated and Undesignated Trucking Corridors



Crashes

Crashes are a major cause of incidental traffic congestion, in addition to injuries and deaths, property damage and costs associated with them. 2,900 crashes occurred on roads within Crawford County between 2010 and 2019. This data excludes all vehicle-animal crashes as these are a result of weather, time of day, or other seasonal conditions that cannot be addressed in this Study. The proximity to large areas of natural land around residential and commercial areas in the County also contributes to this.

Within the project Study Area, 2,135 crashes were reported throughout the entire Study Area. However, the highest concentrations of crashes occurred along the major roadways in the Study Area and within the City of Grayling. Major crash areas are located along the following roadways:

- I-75
- M-72
- M-93
- N Down River Road
- County Road 612
- I-75 BL
- N Higgins Lake Rd

Table 5: Crawford County Crash Types

		Study Area Crash Patterns										
	Sideswipe	Head-on	Head-on Left-turn	Angle	Rear-end	Single Vehicle	Overturn	Fixed Object	Other	Study Area 2010-2019 (All Crash Types)		
All	262	27	34	255	367	188	498	857	266	2 000		
Crashes	9.0%	0.9%	1.2%	8.8%	12.7%	6.5%	17.2%	29.6%	9.2%	2,900		
Fatal /	0/4	0/3	0/2	0/6	0/7	1/9	5/48	7/56	1/2	1.42		
A Injury	2.8%	2.1%	1.4%	4.2%	4.9%	7.0%	37.1%	39.2%	1.4%	145		

Of the 2,135 crashes in the Study Area that occurred between 2010 and 2019, the largest crash type is with a fixed object. Nearly 520 fixed object crashes occurred in the 9 years analyzed. These are crashes where a vehicle loses control and hits a tree, telephone pole, building, or other stationary object that is not another roadway user. The second most common crash type is overturn or roll-over crashes. Nearly 330 overturn crashes occurred. In analyzing crashes with other vehicles, the most common vehicle-to-vehicle crash is the Rear End (320 crashes), followed by Angle (230 crashes) and Sideswipe (206 crashes) crashes.

Of the 84 Fatal and Incapacitating Injuries caused by crashes, eight resulted in Fatalities. Four of the fatal crashes were located in Grayling Township, two in the City of Grayling, one in Beaver Creek Township, and one in Frederic Township. Three fatalities were Overturn crashes, three were crashes with a Fixed Object, one was categorized as a Miscellaneous Single Vehicle, and one was an angle crash. In most cases the reasoning for the crash and subsequent fatality was due to speeding, careless driving, or failing to stop at a traffic control device.

The annual crash distribution and severity in the study area can be seen in Table 6. The 2,135 crashes were relatively well distributed between 2010 and 2012 and between 2013 and 2019. A significant increase was

observed in 2013, however there has not been a trend of increasing (or decreasing) frequency since then. Type A injuries are defined as any injury that prevents the injured person from walking, driving, or normally continuing the activities which he or she was capable of performing prior to the crash, examples being severe lacerations or visibly broken limbs. Many times, this level of injury require the person to be transported by ambulance to a hospital or critical care unit. Type B injuries are any injuries that are evident at the scene of the crash but do not prevent the individual from operating normally, examples being a lump on the head or abrasions. Injuries at this level are occasionally transported by ambulance. Type C injuries are any that are claimed but not visible, examples being complaints of pain or nausea.

	T-+-1		Crash Type							
Year	Crashes	K-Fatal injury	A-Incapacitating Injury	B-Non-incapacitating Injury	C-Possible Injury					
2010	194	0	8	13	19					
2011	170	0	10	14	16					
2012	169	0	5	18	11					
2013	221	3	5	9	22					
2014	242	1	9	14	22					
2015	204	0	6	6	13					
2016	248	0	4	12	28					
2017	207	1	6	7	11					
2018	215	0	15	14	22					
2019	265	2	9	15	21					

Table 6: Annual Crash Distribution and Severity

As expected, the most crashes in the Study Area occur along the major freeways in area, Interstate 75 and US 27. Three segments of I-75 in the Study Area have seen over 160 crashes between 2010 and 2019. These segments are from County Road 612 to Hartwick Pines Rd, from N Down River Rd to Four Mile Rd, and from Four Mile Rd to N Higgins Lake Rd. The highest density of crashes occurs within the City of Grayling, specifically on M-72/Cedar St in Downtown Grayling. I-75 BL between Huron St and I-75 and M-72 between Cedar St and M-93 are other high density crash areas. Table 7 shows the top 10 roadway segments by crash rate (crashes per mile per year) in the Study Area. Figure 7 shows the crashes between 2010 and 2019 in the Study Area.

Table 7: Highest Crash Rai	e Roadway Segments	in Study Area
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Road	From	То	Crashes	Crash Rate (Crashes/Mile/Year)
M-72	Ionia St	McClellan St	86	26.06
M-72	Huron St	Ionia St	75	20.27
I-75 BL	I-75	M-72 E	60	6.25
McClellan	M-72	N Down River Rd	27	5.87
Huron St	M-72/I-75 BL	I-75	23	5.75
M-72	McClellan St	Ole Dam Rd	77	5.66
N Down River Rd	McClellan St	Michigan Ave	26	5.20
I-75	Study Area Bndry	Co Rd 612	62	4.92
I-75	Co Rd 612	Hartwick Pines Rd	206	4.08
I-75	N Down River Rd	4 Mile Rd	210	4.08

Figure 7: Grayling Area Transportation Study Area Crashes



Traffic Analysis

The Grayling Area Transportation Study is being completed during the 2020 and 2021 COVID-19 pandemic. As a result of the pandemic, traffic conditions throughout the State of Michigan are widely different than what they were in 2019, before the start of the pandemic. In order to limit the spread of the COVID-19 virus, many businesses are temporarily closed, employees are working from home, some schools are operating remotely, and, in general, people are staying home more often. All of these factors are leading to reduced traffic around the State and many roadways that were congested prior to 2020 are currently operating without much traffic.

Traffic counts in the project Study Area are outdated, however, and new counts at specific intersections are needed to determine which intersections and roadway segments may be in need of upgrades. In January 2021, new traffic counts were completed at most of the same intersections counted in the 2008 Transportation Study. These count locations are located in the areas with the greatest traffic and were vetted by the project Advisory Committee. Traffic count data at the following twenty-two (22) locations were collected as part of this study:

- 1. W County Rd 612 at I-75 on/off ramp
- 2. Hartwick Pines Rd at I-75 on/off ramp
- 3. N Old 27 at Hartwick Pines Rd
- 4. N Down River Rd at I-75 off ramp
- 5. McCellan St at N Down River Rd
- 6. McClellan St at Grayling Army Air Field entrance
- 7. Cedar St/M-93/McCellan St/Lake St Intersection
- 8. M-93 at Walker Dr
- 9. M-93 at Evergreen Dr
- 10. M-93 at W Pine Point Rd
- 11. M-93 at M-72

- 12. M-72 at S Blue Bear Trail
- 13. M-93 at S Military Rd
- 14. Cedar St at Michigan Ave
- 15. M-72 at State St
- 16. I-75 BL at Huron St
- 17. Huron St at Industrial St
- 18. W 4 Mile Rd at NB I-75 on/off ramp
- 19. W 4 Mile Rd at SB I-75 on/off ramp
- 20. W 4 Mile Rd at S Military Rd
- 21. N Higgins Lake Dr at US-127 SB on/off ramp
- 22. S Military Rd at N Higgins Lake Dr

Figure 8 shows the location of these intersections and roadway segments.

Figure 8: 2021 Intersection Traffic Count Locations



Traffic Analysis

In 2019, MDOT collected traffic data for the major roadways in the Study Area. This included state owned roadways, such as I-75, I-75 BL, US-27, M-72, and M-93, as well as larger County and Local roads such as Co Rd 612, Old 27, N Down River Rd, 4 Mile Rd, and Military Rd. The larger state-owned roads had AADTs of over 8,000 vehicles per day, with the largest volumes along I-75 between Four Mile Rd and the northern boundary of the Study Area. While they do not experience the highest traffic volumes in the Study Area, M-72 and I-75 BL through Downtown Grayling have high levels of traffic compared to the number of travel lanes.

Within the Study Area, nonfreeway traffic volumes tend to decrease the as the distance from the City of Grayling increases. M-72 however still carries a significant amount of traffic compared as this is a major route to Traverse City and other communities on the west side of Michigan.

Figure 9: 2019 MDOT Traffic Counts



Traffic Data Collection Results

Data from 22 intersections in the Grayling Area Transportation Study Area was collected in January 2021. Developing and applying a "COVID adjustment factor" was a critical aspect of the traffic data analysis. The COVID factor provides an estimate of what traffic conditions may have been in a normal year.

Impacts of COVID

COVID-19 has significantly altered the traffic conditions around the State of Michigan and around the country due to the reduced commuting and travel needs associated with working from home. The traffic counts collected in January 2021 for this Study may not be accurately representing the level of traffic volume due to lower travel rates. As part of this study, previously collected traffic data was compared to the 2021 data to determine an estimated percent change in volume. MDOT's 2019 traffic data provided a baseline to compare the 2021 data to and is recent enough to be a reasonably close expectation of what 2020 or 2021 counts would be without COVID.

Table 8 below shows comparisons of 2019 and 2021 traffic at locations in the Study Area where the MDOT traffic counts and the Transportation Study's counts intersect. By comparing the 2019 traffic counts to the most recent traffic counts, an estimated percent change can be calculated. This change is the amount traffic has either decreased or increased between 2019 and 2021. Percent changes range from -46% to 136% based on the intersection, direction of travel, and study area zone.

Traffic counts were broken into three zones in the study area to account for potentially different traffic pattens in the areas outside of the City of Grayling. Within each zone, two or three intersections were compared to determine an average percent change in traffic due to COVID. These intersections were those that had a direct comparison to the 2019 MDOT counts. Traffic changes for the three zones were calculated for each leg of the intersection and range -67% to +136%. The traffic changes were averaged for each zone and range from -20% to -27%.

The north and south zones experienced a larger decrease in traffic, than the central zone, at -26% and -27%. This is likely due to the concentration of essential services located in and directly adjacent to the City of Grayling. The central zone experienced a decrease of 20% from the 2019 counts, based on this date, however because of the high number of essential trips in this area, the actual decrease is likely higher. Residents from the north and south zones are still traveling into Grayling for groceries, medical appointments, school, and some jobs, but may only be making a single trip per day. Based on these observations, a standard 25% increase to account for COVID was applied to all of the intersections in the Study Area.

Table 8: 2019 - 2021 Traffic Comparisons

	N	lorth Le	g		East Le	g	South Leg			West Leg		
Location	2019	2021	% Change	2019	2021	% Change	2019	2021	% Change	2019	2021	% Change
South Zone												
W 4 Mile Rd @ S Military Rd	1,682	988	-41%	1,285	799	-38%						
W 4 Mile Rd @ SB I-75 on/off ramp	1,497	1,618	8%				2,230	1,026	-54%	1,285	3,033	136%
N Higgins Lake Dr @ US-127 SB on/off ramp	423	228	-46%	2,815	916	-67%	746	356	-52%	2,815	642	-77%
Average Traffic Change: -27%												
Central Zone												
I-75 BL @ Huron St	15,424	12,453	-19%	6,232	5,378	-14%	18,474	12,151	-34%			
Cedar St/M- 93/McClellan/Lake	5,308	4,983	-6%				9,836	8,623	-12%	11,825	8,558	-28%
M-93 @ M-72				6,093	6,561	8%	2,890	1,826	-37%	8,651	5,330	-38%
Average Traffic Change:	-20%			<u>.</u>							<u>.</u>	
North Zone												
N Old 27 @ Hartwick Pines Rd	1,990	1,209	-39%	5,720	3,079	-46%				1,860	2,425	30%
Hartwick Pines Rd @ I-75 NB on/off ramp	852	416	-51%	1,032	1,119	8%	365	239	-35%	1,990	920	-54%
Average Traffic Change:	-26%											

Study Area Traffic Counts

The 25% COVID adjustment factor has been applied to the 2021 traffic counts to estimate what traffic conditions may have looked like in a "normal" year. The traffic counts were collected at major intersections around the Study Area, including the I-75 on and off ramps, along M-72 and M-93, and where large County roads intersect. These locations allow for a comprehensive view of the Study Area and will help in determining where potential capacity upgrades are needed.

It is important to note that the adjusted traffic count figures are estimates based on comparisons between 2019 and 2021 traffic levels and may not represent actual traffic levels. However, it is likely that the comparative traffic levels between the various intersections remains the same.

Table 9 and Table 10 below show the actual traffic counts collected in January 2021 and the COVID adjusted traffic counts. Overall, the intersections with the highest volumes are located in the center of the Study Area

in and around the City of Grayling. The busiest intersections in the Study Area and the legs which carry the most volume are shown in bold in the tables. These intersections are all located along the M-72, M-93, and I-75 BL through Grayling. Other pockets of high volume exist throughout the Study Area but are isolated and typically associated with an on or off ramp to I-75 to US-27.

Table 9: Gray	ling Study 1	1rea – January 1	2021 Raw Traffic Co	unts
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			Janu	1ary 2021 T	Traffic Co	unts		
	South I	.eg (NB)	East Le	eg (WB)	North Leg (SB)		West Leg (EB)	
Intersection		Departure	Approach	Departure	Approach	Departure	Approach	Departure
W County Rd 612 @ I-75 SB on/off ramp	0	216	345	372	256	0	409	421
Hartwick Pines Rd @ I-75 NB on/off ramp	239	0	465	455	0	416	643	476
N Old 27 @ Hartwick Pines Rd	124	146	1,552	1,527	594	615	1,212	1,213
N Down River Rd @ I-75 SB off ramp	80	82	1,439	2,263	957	0	2,279	2,375
McCellan St @ N Down River Rd	2,681	2,725	1,120	1,052	2,248	2,274	116	114
McCellan St @ Grayling Army Air Field entrance	2,285	2,257	0	0	2,256	2,283	1	2
M-93 @ Walker Dr	4,247	4,322	4	11	4,348	4,256	18	28
M-93 @ Evergreen Dr	4,101	4,159	13	19	4,246	4,154	121	149
M-93 @ W Pine Point Rd	72	72	3,494	3,516	145	53	3,423	3,493
M-93 @ M-72	923	903	3,275	3,286	592	517	2,623	2,707
M-72 @ S Blue Bear Trail	0	1	2,506	2,406	9	9	2,403	2,502
M-93 @ S Military Rd	468	429	614	654	87	79	254	261
Cedar St @ Michigan Ave	4,734	5,864	2,074	1,111	4,357	4,400	552	894
M-72 @ State St	6,474	5,926	419	1,957	5,802	4,812	0	0
I-75 BL @ Huron St	6,043	6,108	2,923	2,455	5,978	6,457	152	76
Huron St @ Industrial St	678	677	1,704	1,785	28	36	2,345	2,257
W 4 Mile Rd @ NB I-75 on/off ramp	931	932	1,689	1,714	0	1,485	1,847	1,267
W 4 Mile Rd @ SB I-75 on/off ramp	0	1,026	1,265	1,845	1,618	0	1,510	1,523
W 4 Mile Rd @ S Military Rd	291	306	421	378	480	508	0	0
N Higgins Lake Dr @ US-127 SB on/off ramp	0	356	514	402	228	0	329	313
S Military Rd @ N Higgins Lake Dr	70	82	315	328	313	288	0	0

Tahle	10.	Gravlino	Study	Area	_	COV D	Adjust	dT	raffic	Counts	
1 4010	10.	Gruyung	Sinay	<i>_</i> 1/ <i>cu</i>	-	COVID	Lujusu	<i>u</i> 1	rujju	Counts	

	2021 "COVID Adjusted" ADT							
	South Leg (NB)		East Leg (WB)		North Leg (SB)		West Leg (EB)	
Intersection	Approach	Departure	Approach	Departure	Approach	Departure	Approach	Departure
W County Rd 612 @ I-75 SB on/off ramp	0	270	431	465	320	0	511	526
Hartwick Pines Rd @ I-75 NB on/off ramp	299	0	581	569	0	520	804	595
N Old 27 @ Hartwick Pines Rd	155	183	1,940	1,909	743	769	1,515	1,516
N Down River Rd @ I-75 SB off ramp	100	103	1,799	2,829	1,196	0	2,849	2,969
McCellan St @ N Down River Rd	3,351	3,406	1,400	1,315	2,810	2,843	145	143
McCellan St @ Grayling Army Air Field entrance	2,856	2,821	0	0	2,820	2,854	1	3
M-93 @ Walker Dr	5,309	5,403	5	14	5,435	5,320	23	35
M-93 @ Evergreen Dr	5,126	5,199	16	24	5,308	5,193	151	186
M-93 @ W Pine Point Rd	90	90	4,368	4,395	181	66	4,279	4,366
M-93 @ M-72	1,154	1,129	4,094	4,108	740	646	3,279	3,384
M-72 @ S Blue Bear Trail	0	1	3,133	3,008	11	11	3,004	3,128
M-93 @ S Military Rd	585	536	768	818	109	99	318	326
Cedar St @ Michigan Ave	5,918	7,330	2,593	1,389	5,446	5,500	690	1,118
M-72 @ State St	8,093	7,408	524	2,446	7,253	6,015	0	0
I-75 BL @ Huron St	7,554	7,635	3,654	3,069	7,473	8,071	190	95
Huron St @ Industrial St	848	846	2,130	2,231	35	45	2,931	2,821
W 4 Mile Rd @ NB I-75 on/off ramp	1,164	1,165	2,111	2,143	0	1,856	2,309	1,584
W 4 Mile Rd @ SB I-75 on/off ramp	0	1,283	1,581	2,306	2,023	0	1,888	1,904
W 4 Mile Rd @ S Military Rd	364	383	526	473	600	635	0	0
N Higgins Lake Dr @ US-127 SB on/off ramp	0	445	643	503	285	0	411	391
S Military Rd @ N Higgins Lake Dr	88	103	394	410	391	360	0	0

Figure 10 and Figure 11 below show the location and traffic volumes at the intersections in the Study Area where data was collected. The figures also show the main direction of travel and volume through the intersection. Figure 10 shows all of the intersections in the Study Area and Figure 11 shows a detailed look at the City of Grayling and nearby areas.



Figure 10: 2021 Grayling Study Area Traffic Counts

Figure 11: 2021 City of Grayling Traffic Counts



Previous Planning

2008 Grayling Area Transportation Study

In 2008, the precursor to this Study was completed. The goal of the study was to collect traffic volume data, examine the existing transportation and land use conditions, and, ultimately, develop a set of feasible alternatives that improve access between I-75 and the Grayling area that reduce travel time, reduce complexity of wayfinding, and promote economic vitality. The Study Area for the 2008 study is the same as this plan. Recommendations from this Study include the following:

- Add a full access interchange at I-75 and N Down River Rd.
- Update roadway geometry at N Down River Rd, M-72 East, I-75 BL, and 4 Mile Rd.
- Truck route/by-pass signage along 4 Mile Rd and Military Rd.
- Add space along M-93 overpass for a trail connection to the Hartwick Pines Trail.
- Upgrade deer crossing signs throughout the Study Area.

Camp Grayling Joint Land Use Study

Camp Grayling Joint Maneuver Training Center and the Alpena Combat Readiness Training Center completed a Joint Land Use Study to look at the ways the civilian and military life intersect and to help ensure an optimal experience for both sides. Safety for residents while ensuring the military can train soldiers and airmen is paramount, but through the suggested strategies in this plan, partnerships can be forged to help all parties thrive. Incompatible development across the study area is addressed to resolve existing and future conflicts. A number of recommendations were identified for Camp Grayling to improve land use around the facility, including:

- Creating military overlay zones around Camp Grayling
- Create a joint landscape plan with MDNR
- Conduct a noise study
- Commission a Camp Grayling Installation Master Plan
- Update the Grayling Area Transportation Study
- Initiate Camp Grayling outreach and community council
- Develop a water resources plan for Northeast Michigan
- Create a fire protection services agreement
- Conduct an economic impact study

City of Grayling Master Plan

The City of Grayling's Master Plan was completed in 2015 and identifies recommendations for land use, natural resources, transportation, and economic development needs. The transportation section identifies roadway improvements to the I-75 interchanges to allow for better access into and out of Grayling. Additionally, the City would like to update the Norway Streetscape to provide a catalyst for redevelopment. Additionally, the Master Plan recommends the following policy directives around the city:

- Construct new residential streets to be a safe width for travel, but not unnecessarily wide.
- Implement transportation management options to add to travel choices.
- Identify traffic calming measures and implement in specific areas.
- Implement access management guidelines in commercial areas.
- Require traffic impact analyses for large developments.

• Incorporate streetscape design elements into new roadway projects.

Grayling Township Master Plan

Grayling Township's Master Plan was completed in 2014 and consists mostly of land use recommendations for the Township. Few specific transportation recommendations are included in the plan. The goal of the Infrastructure and Public Services section is to "Maintain and improve the transportation systems, community facilities, and programs consistent with the community needs, and the ability to finance the improvements." The Master Plan also mentions that the Recreation Plan's proposed pathway projects are consistent with NEMCOG's Non-Motorized Transportation Plan and Investment Strategy.

NEMCOG Non-Motorized Trail Plan

The 2009 NEMCOG Non-Motorized Trail Plan identifies a number of potential trails and non-motorized corridors within the NEMCOG region and in Crawford and Roscommon Counties. Major on-road trails are identified along the state highways through the study area. A combination off-road and on-road trail would travel along Old-27 into Downtown Grayling. An off-road trail is also identified between N Down River Rd and M-72 near Headquarters Rd.

Kirtland College Event Center Expansion

Kirtland Community College opened an event center just prior to the COVID-19 pandemic starting and was hosting approximately 5,000 visitors each month. Future plans for the event center include a Field House for athletic events, including volleyball, basketball, and high school sporting events. Kirtland estimates an additional 6,000 visitors per month when the Field House opens. Additionally, the Roscommon Campus of Kirtland is closing, and those students would use the Grayling campus, adding an additional 2,000 visitors per month. Overall, an increase of potentially 13,000 trips per month is expected when the campus is complete and in-person events have fully returned.