Michigan Motorcyclist Crash and Fatality Data and Charts

January, 2022

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INTRODUCTION

The charts included in this document were developed by the Skilled Motorcyclist Association – Responsible, Trained and Educated Riders, Inc. (SMARTER) at www.smarter-usa.org. Please contact us at smarterusa@gmail.com with any questions. SMARTER began collecting this data in 2007, the year the association was incorporated.

The source for motorcyclist crash and fatality data represented in these charts is the Michigan Traffic Crash Reporting System annual report titled Motorcycle Helmet Traffic Crash Statistics. This report is available from the Michigan State Police Traffic Crash Reporting Unit at 517-241-1699 or by contacting SMARTER. A preliminary report is often published in December of each year after it is assumed the riding season has concluded and the final is usually published in mid-April of the following year. The data used in these charts is from the final reports except for 2021 which is preliminary data as reported on January 25, 2022.

Motorcycle registration data is from *Motorcycles registered in the United States, 2002 – 2021,* published by the Insurance Institute for Highway Safety, March 2021. Census data as publicly reported is used for population.

Fatality rate per registration, fatality rate per million population and crash/fatality ratio are calculated statistics based on the raw number reported by the sources. Increases or decreases reported are calculated statistics.

Chart # 1
Michigan Motorcyclist Fatalities 1992- 2021

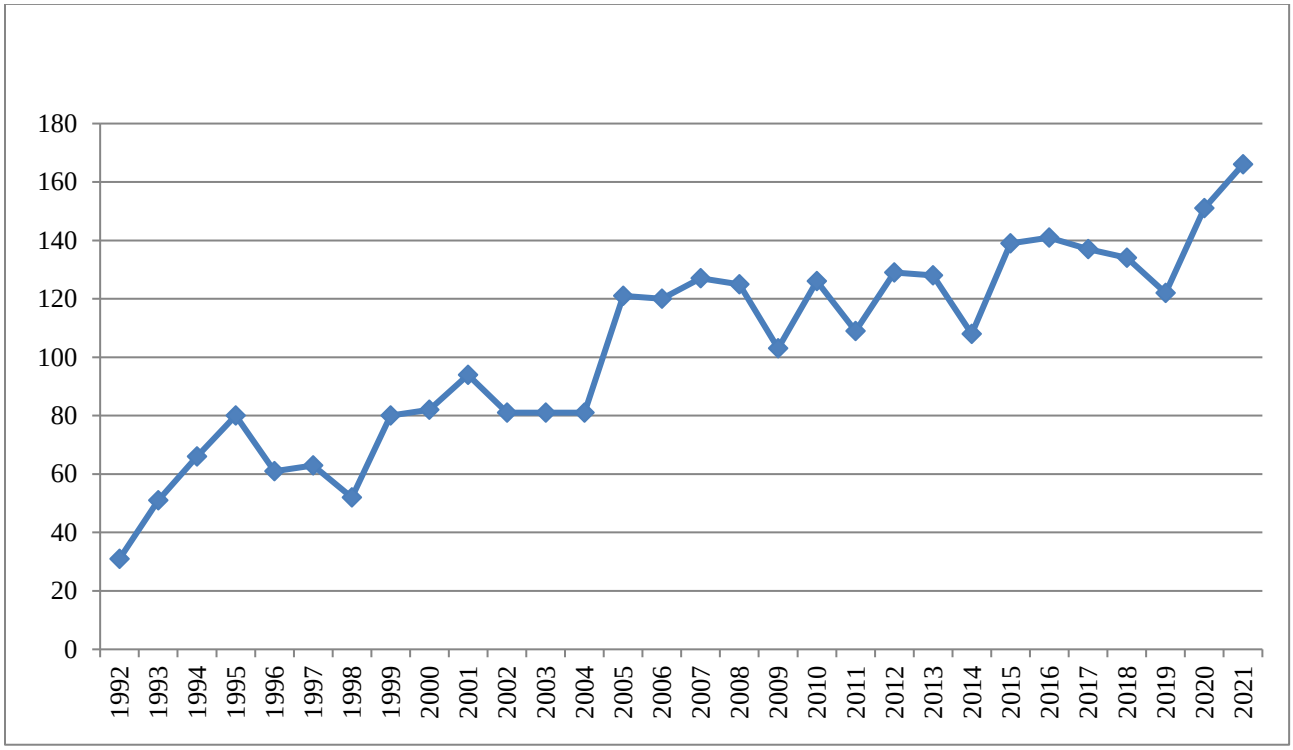

Chart # 1 displays the number of Michigan motorcyclist fatalities for years 1992 through 2021. Low was 31 fatalities in 1992 – highs are 151 in 2020 and 166 in 2021.

Collection of motorcyclist fatality data began in 1952 - there were 29 fatalities reported that year. Triple digit fatalities (104) were first recorded in 1966 and the highest fatality number of 209 was reported in 1973.

Following the 1973 high, fatality numbers gradually decreased returning to double digits of 84 in 1988 and remaining double digits until 122 fatalities were recorded in 2005. Between 2003 and 2011 fatality numbers varied year to year but averaged about 110 per year until 2012 when the average fatalities per year rose to 135 through 2021 (see chart # 3).

The data shows a steady increase in fatalities for three decades.

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Chart # 2
Michigan Motorcyclist Fatalities per Year 2007 - 2021

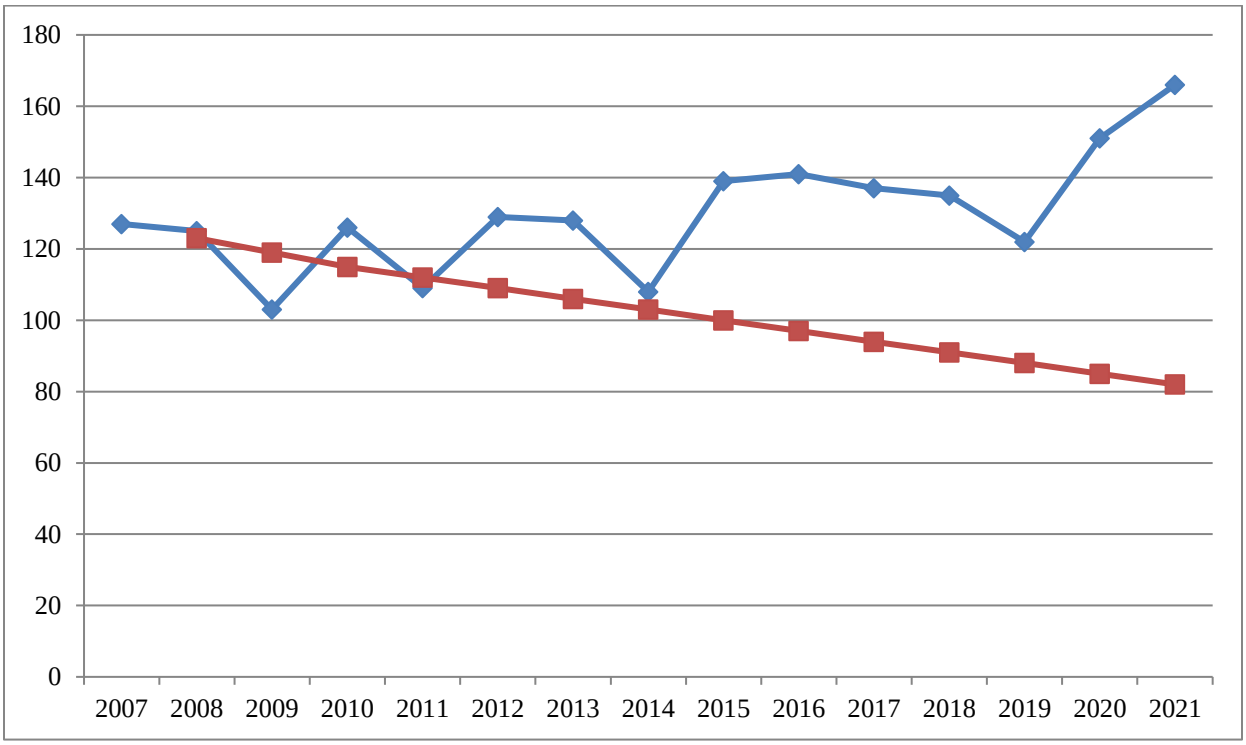

Chart # 2 highlights Michigan motorcyclist fatality numbers in recent years. The **blue line and diamonds display fatalities for each year. A 3% reduction per year to represent theoretical progress is shown by the red line with squares. Michigan is not making progress as measured by a reduction in motorcyclist fatalities.**

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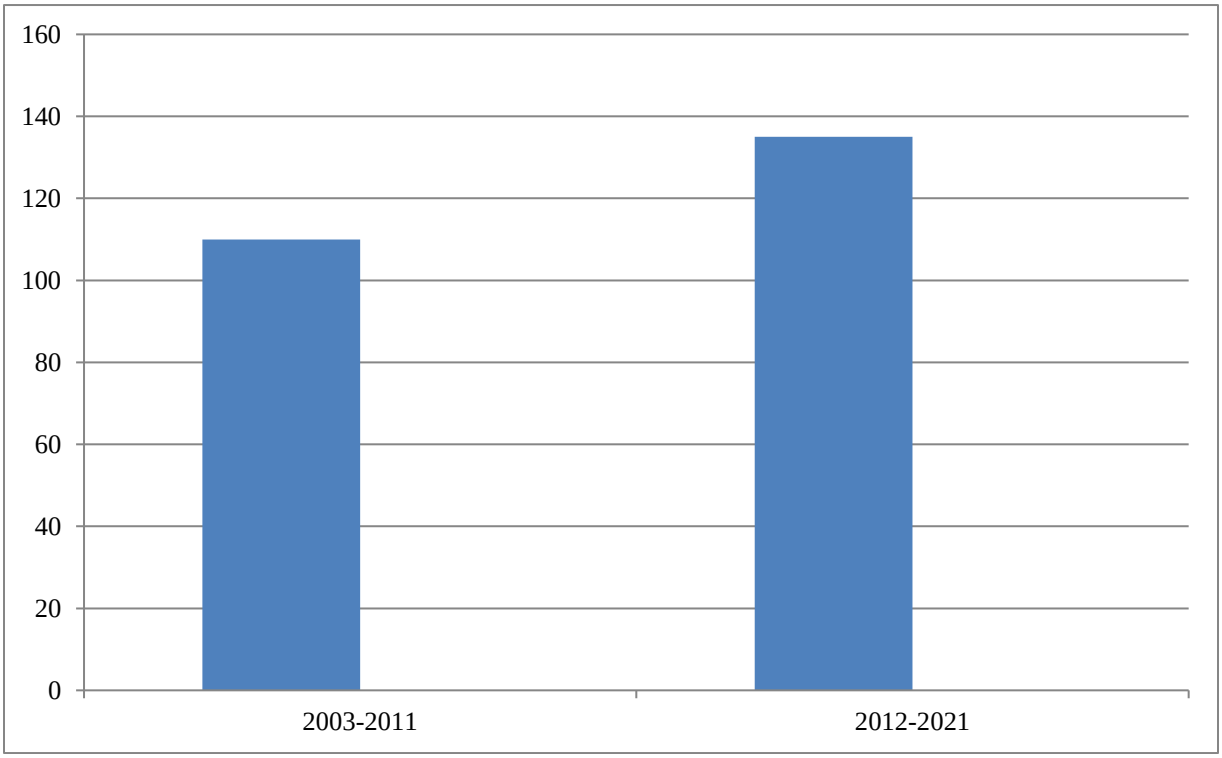
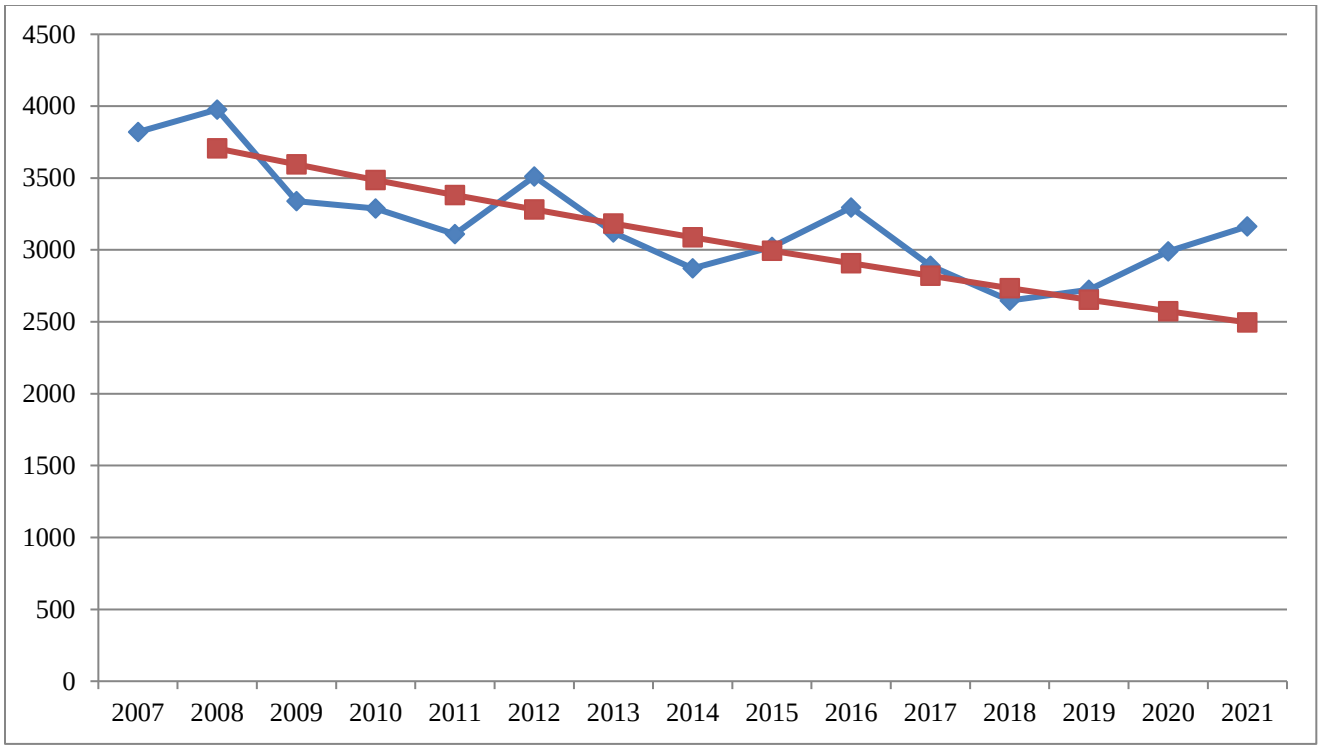
Chart # 3
Michigan Motorcyclist Average Fatalities per Year Prior to Compared to Post Helmet Law Change



Michigan weakened its universal helmet law in April 2012 to exempt riders 21 and older who have at least $20,000 of medical insurance coverage and have either passed a motorcycle safety course or held a motorcycle license endorsement for at least two years.

This chart displays a yearly average of 110 fatalities in the nine years prior to the law change compared to an average of 135 fatalities in the 10 years post law change. **Average # of fatalities per year has increased 22.73 % in the ten years post helmet law change compared to the nine years prior.**

Chart #4
Michigan Total Motorcyclist Crashes per Year 2007-2021



The number of motorcyclist crashes was first reported in 1966 (5,770). Highest number of crashes was 11,024 reported in 1973 - the same year as the highest number of fatalities.

A bright spot in recent Michigan motorcyclist crash statistics had been the overall reduction in the number of crashes per year 2007 - 2019. This trend, however, has not continued in 2020 and 2021. **The red line represents 3% reduction each year.**

There is no readily apparently reason for the decline in crashes through 2019 and the reduction in crashes did not result in a corresponding reduction in fatalities.

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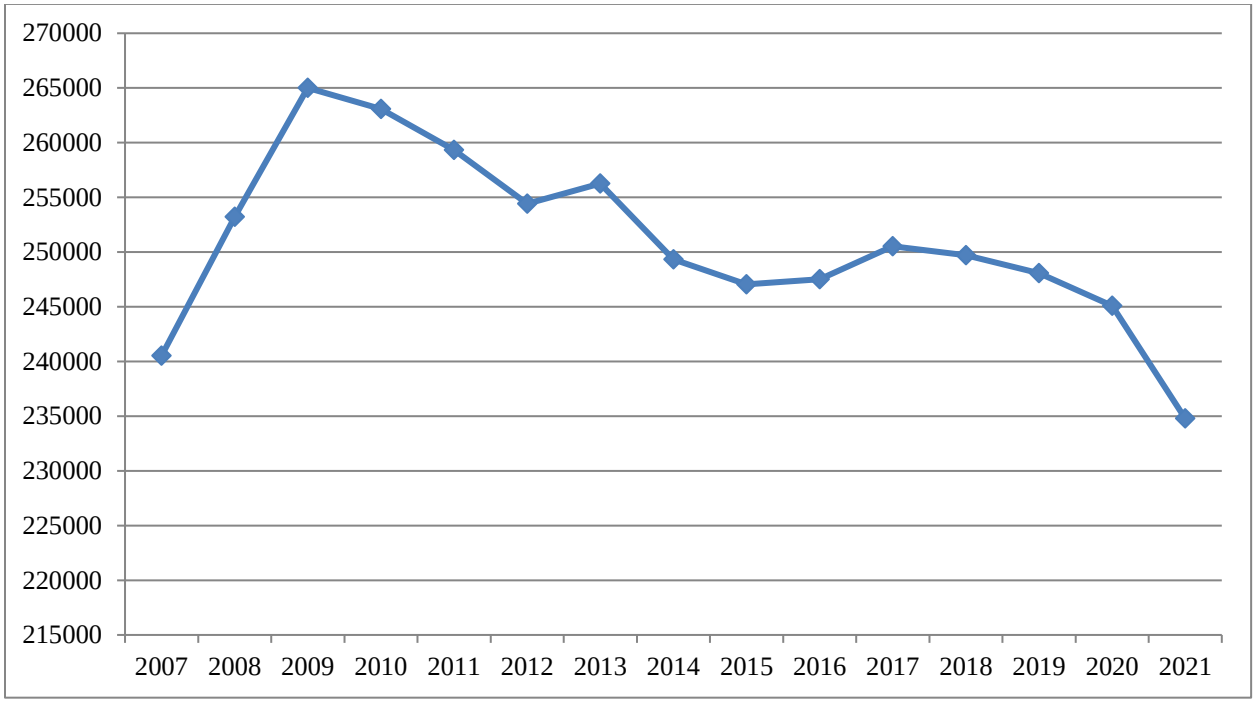
Chart 5
Michigan Motorcycle Registrations per Year 2007 - 2021



Registration data is available back to 1916. Registration numbers dipped during the 1920's compared to earlier years through about 1934, remained relatively steady for about a decade and began increasing significantly in 1946.

Exposure (how many motorcyclists are on the road) is often measured by the number of motorcycles registered. Measuring exposure is important because motorcyclist crashes and fatalities are impacted by the number of motorcyclists on the road. A reason advocates for weakening Michigan's helmet law stated to support their cause was that providing riders with a choice regarding wearing or not of a helmet would result in increased motorcycle sales – more individuals would choose to ride (more motorcycles would be registered) if riders were not required to wear a helmet. This chart shows the claim that changing the helmet law would result in increased motorcycle ownership, to be false. Weakening the helmet law has not resulted in an increase in registrations. Registrations have not increased.

A previous edition of this document used registration numbers provided by the MI Secretary of State office. The accuracy those numbers came into question in 2019 and 2020. Registration numbers used here are from *Motorcycles registered in the United States, 2002 – 2021, Insurance Institute for Highway Safety, March 2021*

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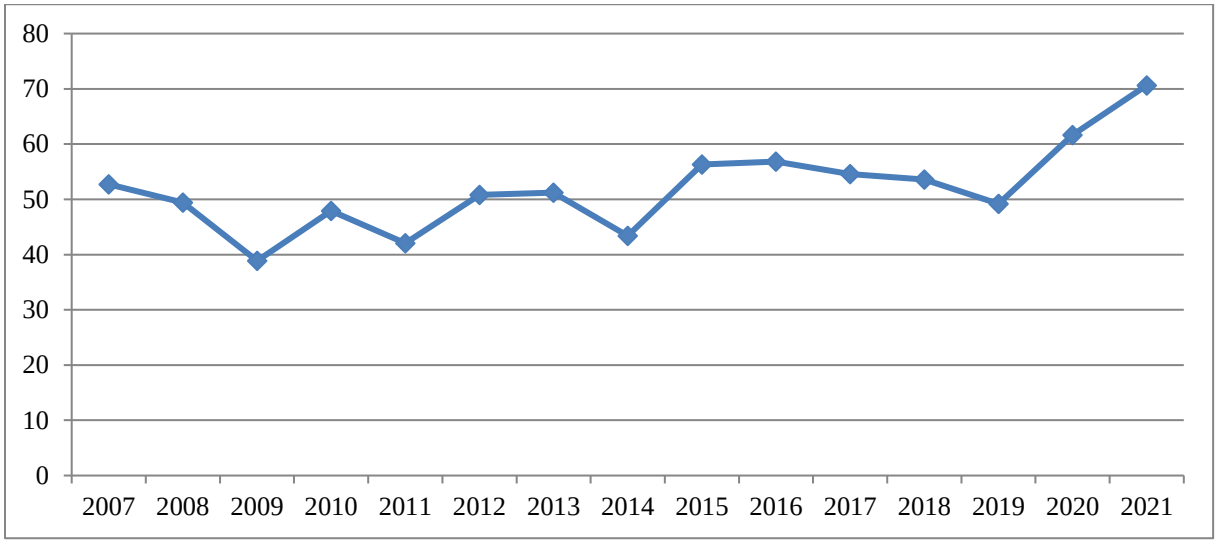
Chart # 6
Michigan Motorcyclist Fatality Rate per 100,000 Motorcycle Registrations



The standard (historical) way to calculate fatality rate is to compare the number of fatalities to the number of registered motorcycles. The rate is typically Fatalities per 100,000 Registered Motorcycles. For example, if there are 275,000 registered motorcycles in a given year and in that same year 120 individuals are killed in motorcyclist crashes, then the fatality rate per 100,000 registered motorcycles is 43.64.

> *To calculate the fatality rate per 100,000 registered motorcycles, first divide the total registrations by 100,000 (275,000 ·/· 100,000 =2.75). Second divide the number of fatalities (120) by 2.75= 43.6 fatality rate (fatalities per 100,000 registered motorcycles.*

Fatality rate per 100,000 registered motorcycles is usually considered a better measure of motorcyclist safety program effectiveness than just the raw number of fatalities because to some degree is takes into account the popularity of motorcycling – the number of motorcycles (with riders) potentially on the road.

An increase in registrations (the number of riders on the road) is often given as an acceptable reason for increased fatalities. Chart # 5 shows registrations have not increased. **This chart # 6 shows variability in fatality rate 2007 – 2014, then an increase with slight variability 2015 – 2019 and significant increases in 2020 and 2021. Increases in registrations do not account for the increase in fatalities. Obviously progress is not being made as measured by a decrease in fatalities or fatality rate per 100,000 registered motorcycles.**

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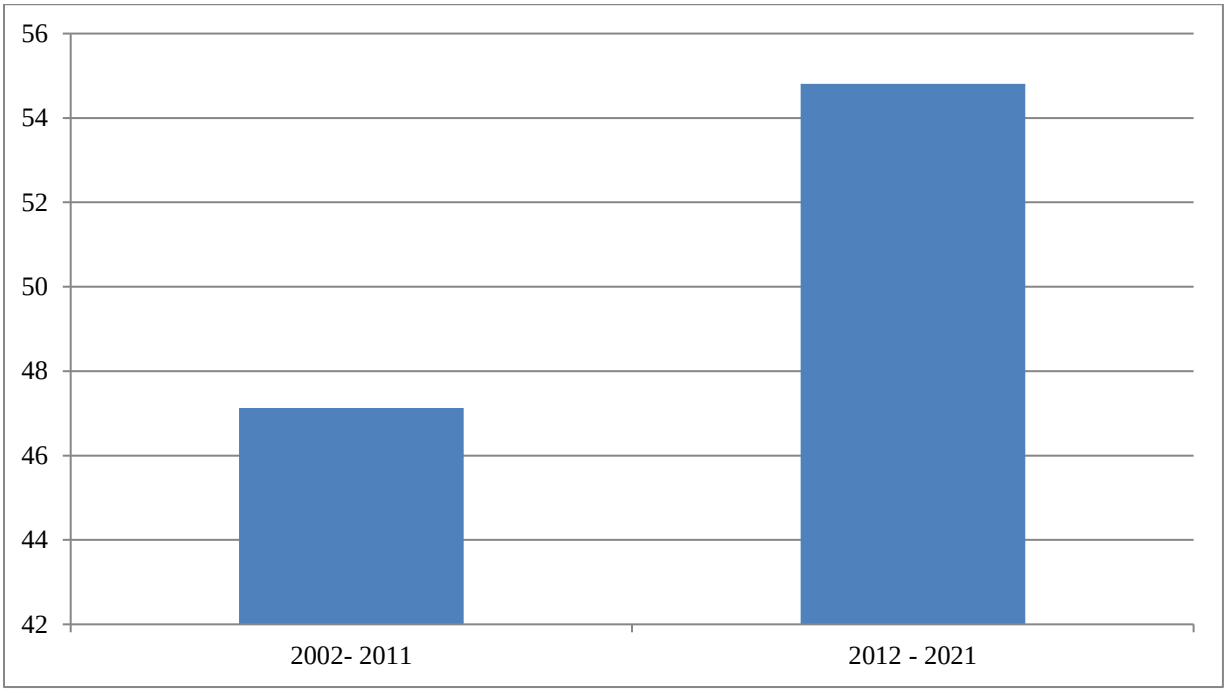
Chart # 7
Average Motorcyclist Fatality Rate per 100,000 registrations Prior to and Post Helmet Law Change



This chart shows a 16.30 % increase in Michigan motorcyclist fatality rate per 100,000 registrations comparing years prior to and after the helmet law change.

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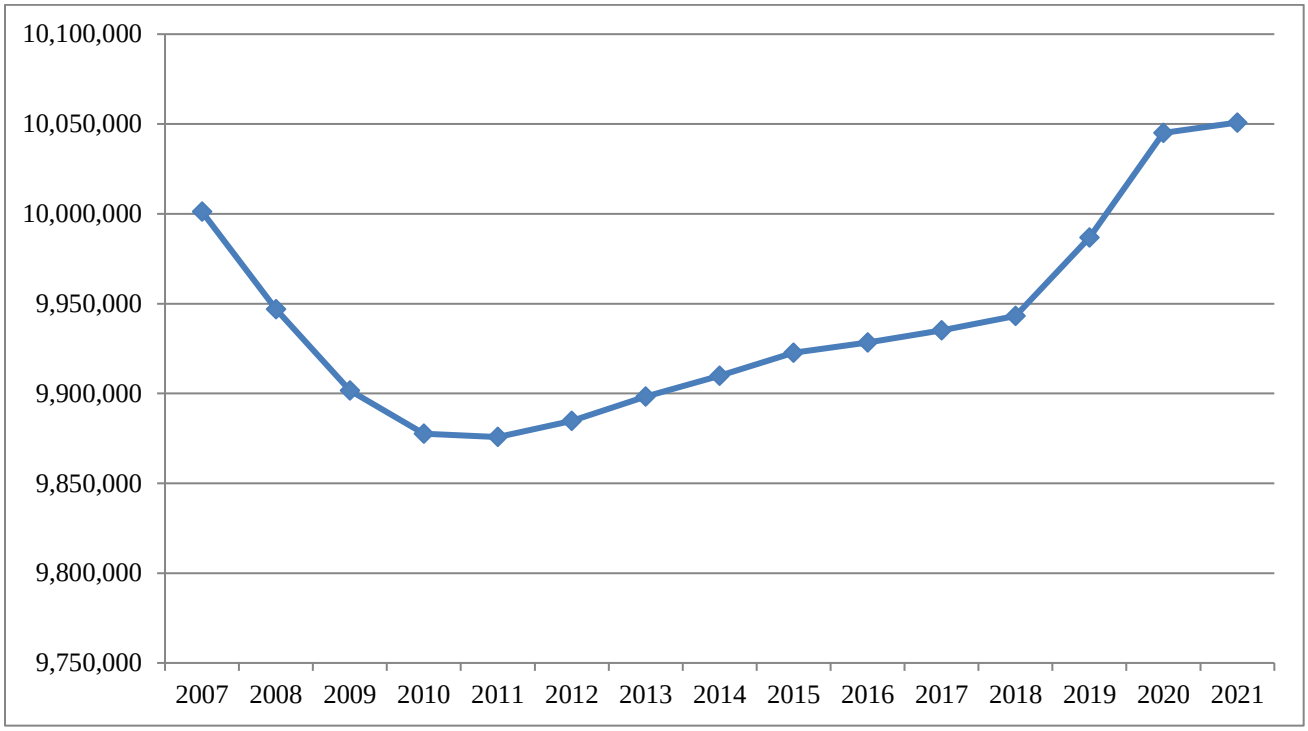
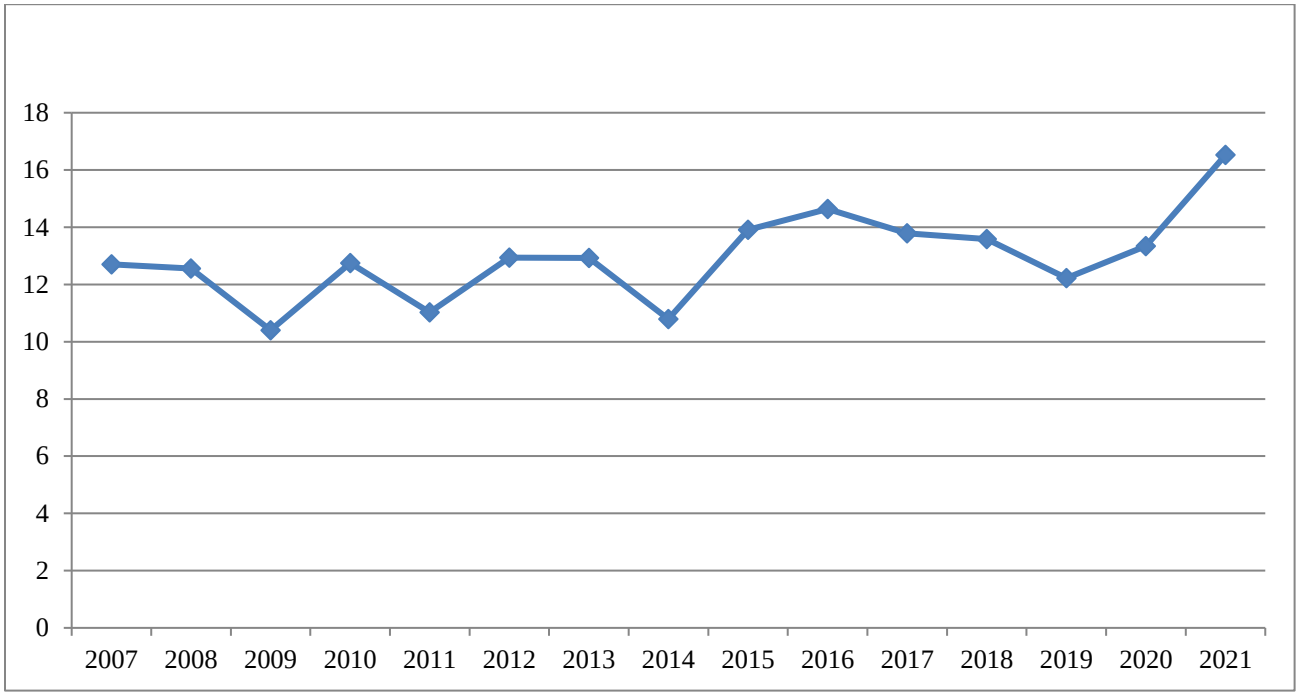
Chart # 8
Michigan Population 2007-2021



Total state population is important to consider when reviewing traffic safety measures. One possible assumption is that the number of people/vehicles on the road varies with increases and decreases in total population. This chart displays the changes in Michigan total population 2007 – 2021.

Chart # 9
Michigan Motorcyclist Fatality Rate per Million Population



The National Motorcycle Training Institute (NMCTI), a nonprofit/public benefit organization incorporated in Oregon in 2009, (www.nmtci.org) proposes an alternative to using motorcycle registrations to measure the motorcyclist fatality rate - compare motorcyclist fatalities to the general population.

David Hough (national motorcyclist safety author and expert) says the idea of using population as the base for the motorcyclist fatality rate is to make it simple and reliable. According to Mr. Hough, this method is extremely reliable because both fatalities and population are well documented and trustworthy numbers. This rate allows a state to evaluate progress (or lack thereof) over time, allows one state to be compared to others, and allows the USA to be compared to other countries.

To compute the rate, it is typically calculated as fatalities per million population. For example, Michigan's 2019 population of 9,986,857 would be 9.986 million. Then simply divide the number of 2019 fatalities (122) by 9.986 to get the fatality rate per million population for 2019 of 12.22.

Michigan is not making progress – there is no steady decline in fatality rate per million population and the 2021 fatality rate per million population is the highest in the 15 years displayed.

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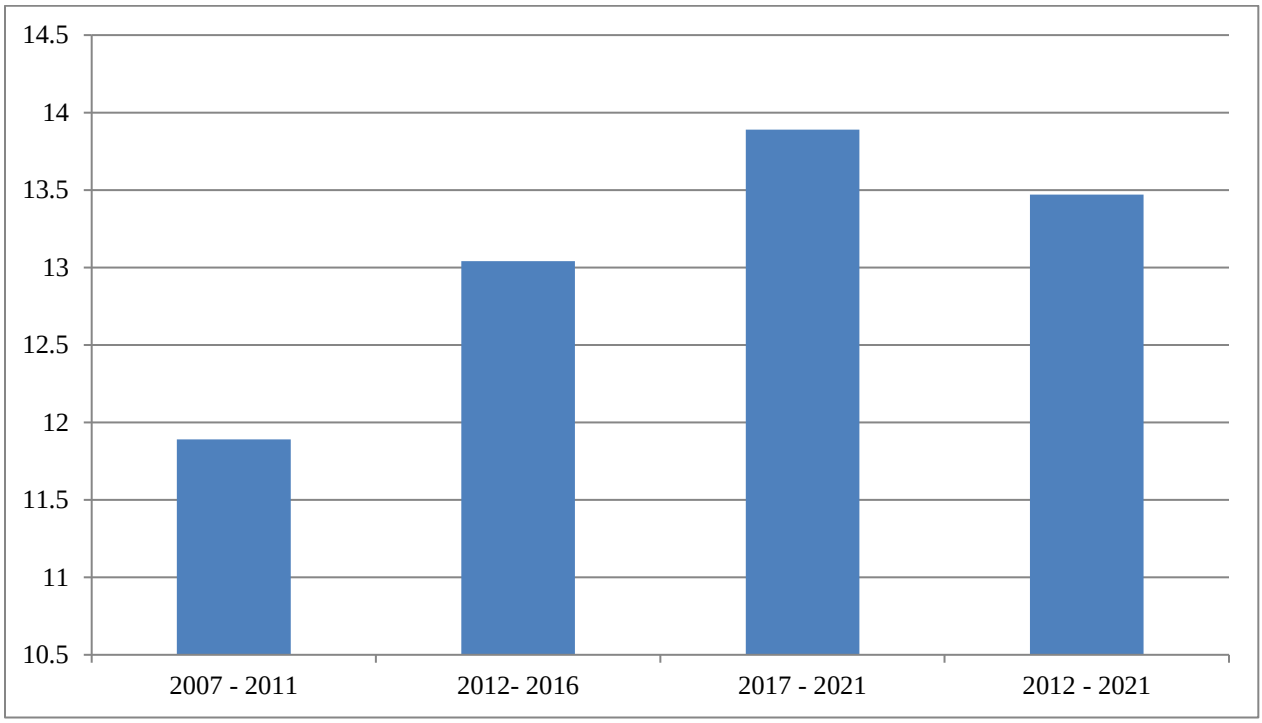
Chart # 10
Average Motorcyclist Fatality Rate per Million Population Prior to & Post Helmet Law Change



Average fatality rate per million population 2007 - 2011 = 11.89
Average fatality rate per million population 2012 - 2016 = 13.04
Average fatality rate per million population 2017 - 2021 = 13.89
Average fatality rate per million population 2012 - 2020 = 13.47

This change of 2.00 fatalities per million population in the five years prior to the weakening of the helmet law compared to the five most recent years post law change multiplied by an average 2007 - 2021 population equals nearly 20 additional fatalities per year. Twenty lives lost per year due to the repeal of the all-rider helmet is the same number predicted in this analysis: https://smarter-usa.org/wp-content/uploads/2018/03/1e.-Estimate-of-Reductions-in-Deaths-Injuriesd-and-Societal-Costs-Societal-Cost-in-2015-Michigan-Motorcycle-Crashes-with-Helmet-Use-2017-2015-Data.pdf

An increase in the population of the state DOES NOT account for the increase in fatalities.

The economic burden related to non-helmet use is extensive. See https://smarter-usa.org/research/helmets-laws/economic-impact/.

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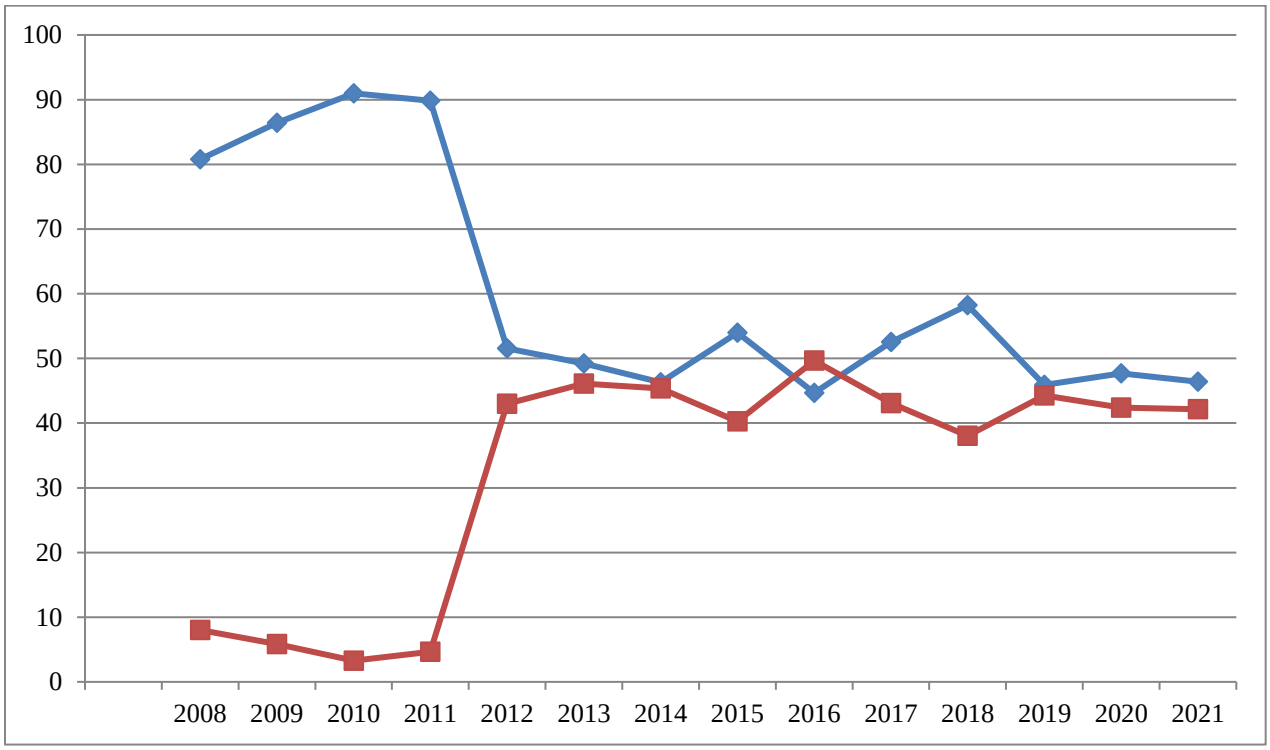
Chart # 11
Michigan Motorcyclist Helmet Use: Fatal Crashes 2008 - 2021

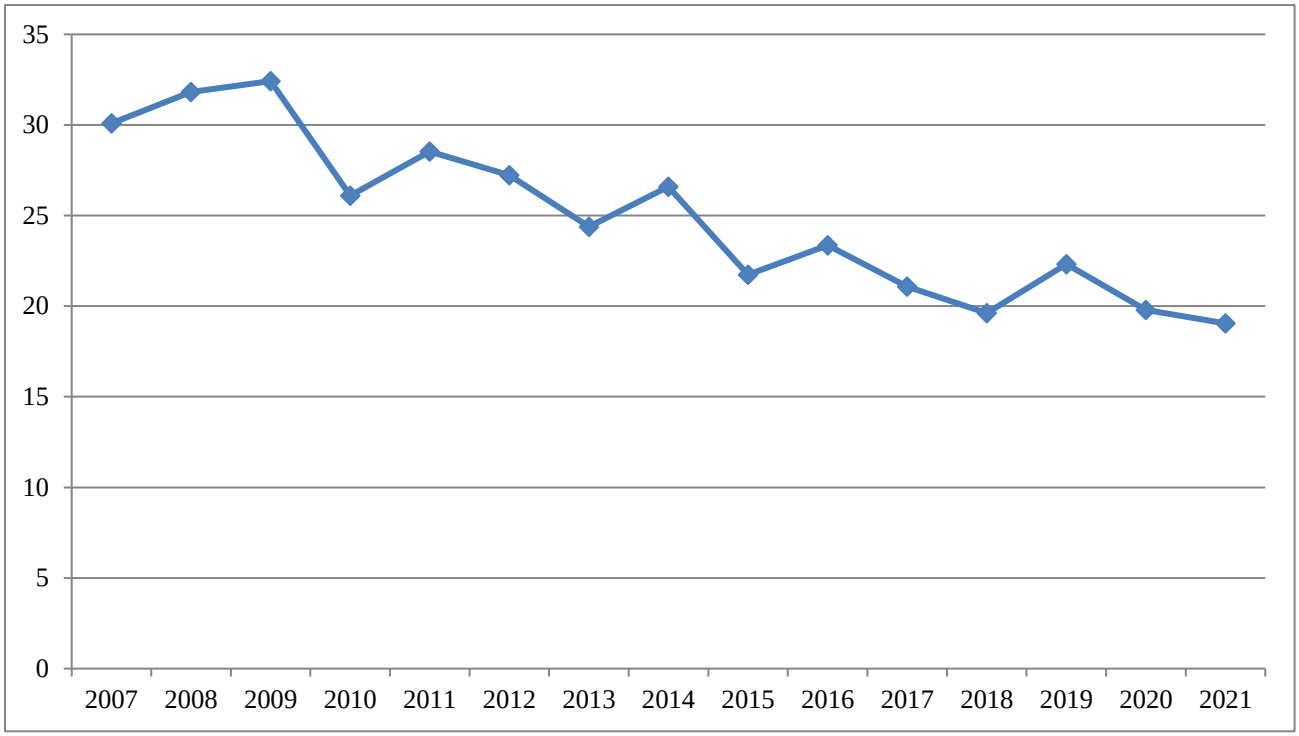


Blue line = helmet worn
Red line = helmet not worn

Michigan's motorcycle helmet law was weakened in April of 2012. This data is consistent with all research studies which shows **when an all-rider motorcycle helmet law is in effect helmet use is 80 percent or higher and when the law is repealed or weakened helmet use drops to 50 percent or lower.**

The numbers on the chart do not total 100% as each year there is a percentage of "Helmet Use Unknown" and "Other."

Chart #12
Michigan Crash/fatality ratio 2007 - 2021
Crashing is getting more dangerous



Preventing crashes is always a main goal of a comprehensive motorcyclist safety program. For a period of recent years this was the lone bright spot in the Michigan motorcyclist traffic safety data – see Chart #4.

However, if crashing is getting more dangerous – i.e. riders are more likely to die if they crash, then the goal of reducing the likelihood of a fatality in the event of a crash becomes even more important. Crash/fatality ratio looks at this issue.

Crash/fatality ratio is the number of crashes it takes to produce a fatality.

If this goal was being achieved, each year it would take more crashes to produce a fatality and the line on this chart would be rising left to right.

The chart line on a downward trend left to right represents crashing is getting more dangerous - the situation is getting worse.

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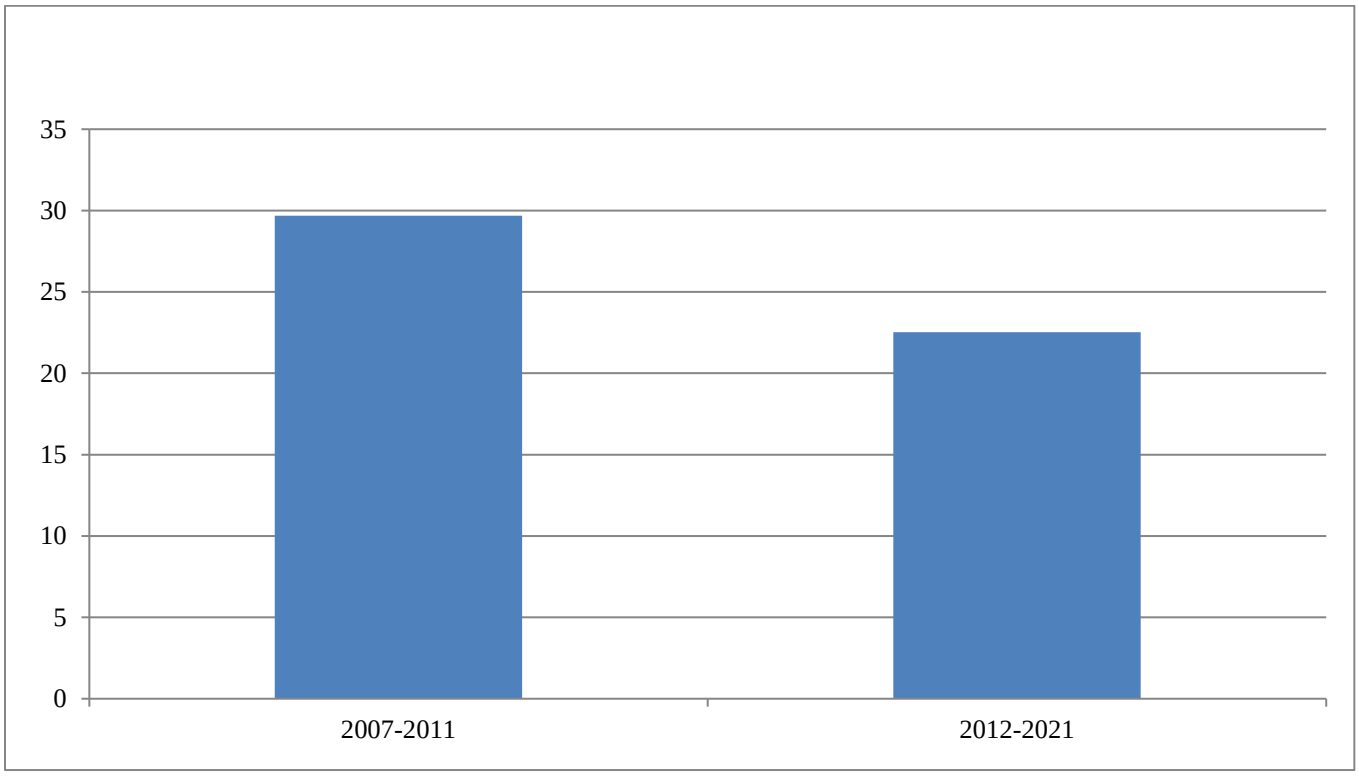
Chart #13
Crash/fatality ratio Prior to and Post Helmet Law Change



Why is the Michigan motorcyclist crash/fatality ratio going down – getting worse? Main factors correlated with fatal crashes include higher speed, striking a solid object or a vehicle and not wearing a helmet.

In the ten years since the helmet law was changed the crash/fatality ratio has decreased. It takes approximately 7 fewer crashers per 100 to produce a fatality following the law change. Crashing is getting more dangerous.

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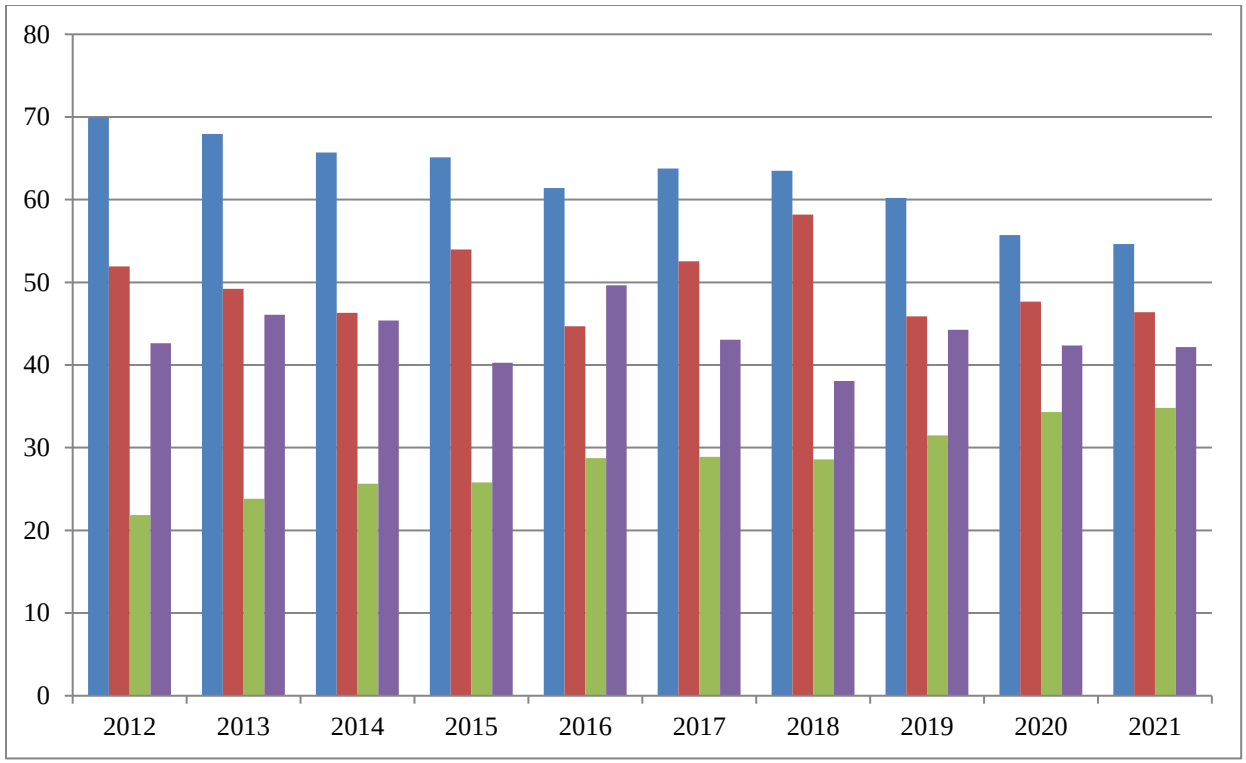
Chart # 14
Over-under Representation in Fatalities Compared to Percent of Riders in the Crash Population - Helmet vs. No Helmet 2012 - 2021



The Motorcycle Helmet Traffic Crash Statistics reported annually by the Michigan State Police Traffic Crash Reporting Unit separates motorcyclists involved in crashes into two categories – those who were wearing a helmet at the time of their crash and those who were not.

For example, in 2012 of the 3,949 motorcyclists involved in the 3,511 crashes, 2,762 or **69.94%** were wearing a helmet (**represented by the blue line**) and 863 or **21.85%** were not wearing a helmet (**represented by the green line**).

This report also provides total fatalities, fatalities for riders wearing a helmet, the percentage of riders wearing a helmet who were killed (**51.94 - represented by the dark red line**), fatalities for riders not wearing a helmet, and the percentage of riders not wearing a helmet who died in their crash (**42.64 - represented by the purple line**) for our 2012 example.

This data shows that for each year since the helmet law change in 2012 helmeted riders are under-represented in the fatality data compared to their number in the crash population and un-helmeted riders are over-represented in the fatality data compared to their number in the crash population.

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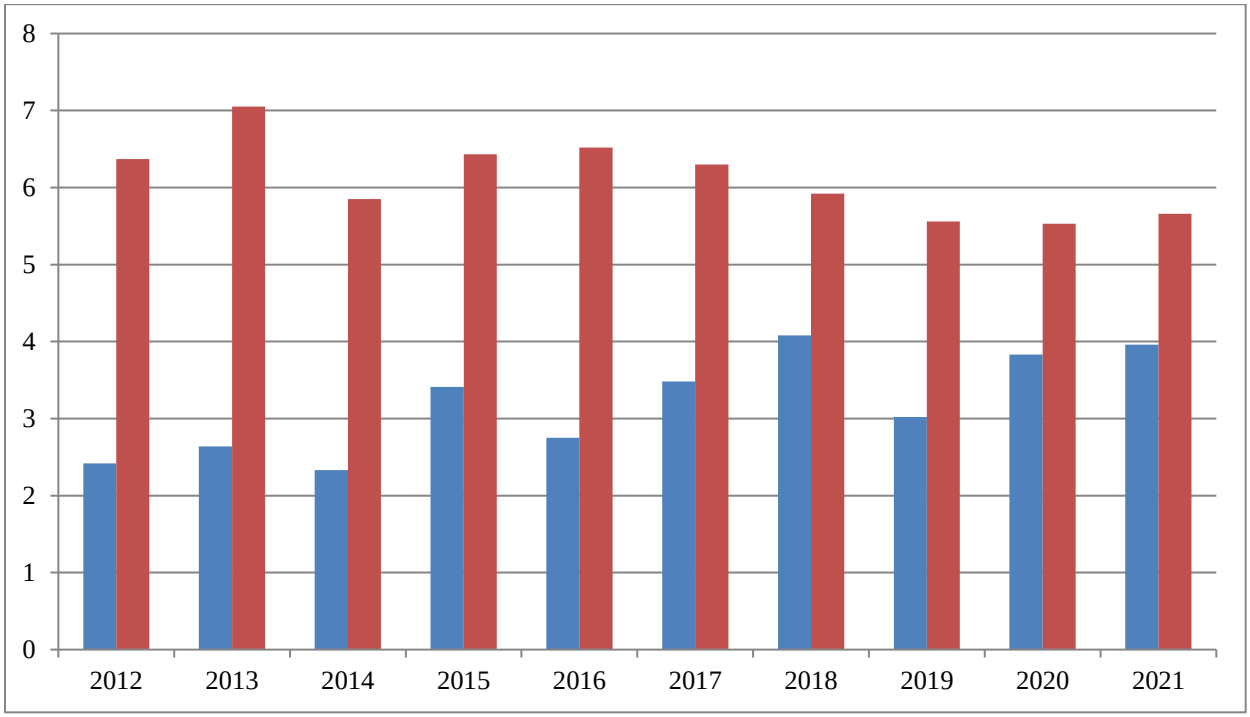
Chart #15
Death Rate per 100 Crashes – Helmet vs No Helmet 2012 – 2021



Helmet worn - No helmet worn

What choice can a rider make if they want to increase their chance of being killed if they are in a crash? Choose not to wear a helmet.

In each year since Michigan weakened the all-rider helmet law in 2012, the data show that un-helmeted riders who crash die at a rate often double that of riders who are wearing a helmet.

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The National Motorcycle Institute Fatality Reporting System

SMARTER recommends the NMI Fatality Reporting System as an excellent one-stop spot for accessing USA motorcycle crash and motorcyclist fatality data: https://motorcyclefatalities.org/.

The National Motorcycle Institute (NMI) is a 501(c)(3) nonprofit educational think tank. NMI manages a data and statistics reporting system. NMI's goal is to provide scientifically meaningful data, statistics, and analysis while being an effective, transparent and professionally run 501(c)(3) public charity. NMI is a resource for the general public and governmental agencies, which purposefully maintains independence of the motorcycling industry.

Below are the NMI links to Michigan data.

NMI Michigan Motorcyclist Fatalities Annual Counts 1994 – 2018 can be accessed here: https://motorcyclefatalities.org/data/occupant/mf5/Motorcyclist.Fatalities.5yrRolling.MICHIGAN.pdf

NMI Michigan Motorcyclist Fatalities Five Year Rolling Average 1998-2018 can be accessed here: https://motorcyclefatalities.org/data/occupant/mf5/Motorcyclist.Fatalities.5yrRolling.MICHIGAN.pdf

NMI Michigan Fatal Motorcycle Crashes per Million Population Annual Count 1994 – 2018 can be accessed here: https://motorcyclefatalities.org/data/crash/fmca/Fatal.Motorcycle.Crashes.Annual.MICHIGAN.pdf Also included here is a chart showing Michigan Fatal Vehicle Crashes per Million Population so a comparison between fatal motorcycle crashes and fatal vehicle crashes is displayed.

NMI Michigan Fatal Motorcycle Crashes per Million Population Five Year Rolling Average 1998-2018 and Michigan Fatal Vehicle Crashes per Million Population Five Year Rolling Average 1998-2018 are displayed here: https://motorcyclefatalities.org/data/crash/fmc5/Fatal.Motorcycle.Crashes.5yrRolling.MICHIGAN.pdf