

OUR MAIN STREET SPRINGFIELD



MAIN STREET SAFETY PROJECT | 20th Street to 72nd Street

TECHNICAL MEMORANDUM #6 ADDENDUM #2: CRASH DATA UPDATE

DATE: April 4, 2022

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SUBJECT: Technical Memorandum #6 Addendum #2:
Crash Data Update for 2017 – 2019

DKS Project 14180-023

The safety evaluation of existing conditions presented in Technical Memorandum #6 was based on the most recent five years of crash data that was available at the time (2012 – 2016). In September 2019, DKS prepared an addendum that evaluated 2017 crash data and supplemental (partial) crash data for 2018 and 2019. Since then, the Oregon Department of Transportation (ODOT) has finalized 2018, 2019, and 2020 crash data and made it available for use. This addendum compares the corridor-wide 2017 – 2019 crash trends to the 2012 – 2016 crash trends to determine whether notable changes in crash patterns have occurred since the development of the Main Street Safety Project recommended improvements. Anecdotally, this addendum also presents 2020 crash data for the corridor, though it is strongly influenced by changes in travel patterns associated with the COVID-19 pandemic and as a result is not useful for guiding crash mitigation decisions.

RECENT SAFETY IMPROVEMENT PROJECTS

Since 2013, several safety improvements have been applied along the Main Street corridor, as summarized in Table 1 on the following page. The impacts of these projects are likely reflected, to some degree, in the observed crash data presented in this memorandum. However, it is important to note that determining the true safety benefit of any individual project requires multiple years of post-installation data, after which the natural fluctuations in crash frequency (i.e. regression to the mean) can be accounted for. Additionally, smaller data sets (e.g., fewer years of data or individual crash severity levels) are inherently more variable and observed patterns may be less reliable than those of larger, more comprehensive data sets.



Table 1. Summary of Main Street Safety Infrastructure Projects Implemented 2013-2020

Project Type and Location	Improvements Description	Installation Year
Post Speed Limit Reduction between 20 th Street and 60 th Place	Posted speed limit reduction from 40 mph to 35 mph.	2016
Signalized Intersection Upgrades 21 st Street 28 th Street 32 nd Street 42 nd Street 54 th Street Bob Straub Parkway 58 th Street 69 th Street	Installation of reflectorized backplates, supplemental signal heads, and pedestrian countdown timers. 69 th Street improvements also included conversion to Flashing Yellow Arrow (FYA) operations.	2014 (all locations)
Signalized Intersection Upgrades 21 st Street 28 th Street 32 nd Street 58 th Street 42 nd Street	Conversion to FYA operations when a pedestrian is not present.	2016 2016 2016 2016 2019
Signalized Intersection Upgrades 54 th Street	Installation of split phase signal operations for minor road approaches.	2019
Pedestrian Crossing Enhancements 44 th Street 35 th Street 41 st Street 48 th Street Chapman Lane	Installation of median refuge islands, striped crosswalks, warning signing, flashing beacons, advanced stop bars, and lighting.	2013 2014 2014 2016 2016
Pedestrian Crossing Enhancements 66 th / 67 th Street	Installation of pedestrian hybrid beacon, median refuge island, striped crosswalk, and advanced stop bars.	2019

COMPARISON OF CRASH TRENDS

It is important to note that crashes are random events, and that crash frequency will fluctuate naturally over time, whether or not there is an underlying change in crash risk. As such, short-term changes in crash frequency may be indicative of a true change in crash patterns or may represent only a temporary fluctuation. The following two charts summarize the annual crash frequency (number of crashes per year) along the Main Street corridor from 2012 to 2019. Figure 1 presents the data for all crashes (separated by injury and non-injury), while Figure 2 presents the data for fatal and severe injury crashes only.



As shown in Figure 1, the number of reported crashes per year has decreased in the most recent three years of data. This reduction in overall crash frequency is likely attributed to two primary factors.

- The numerous safety improvements made along the corridor since 2014 have successfully reduced crash risk along the corridor, and
- The minimum damage dollar value for reporting a crash increased from \$1,500 to \$2,500 on January 1, 2018, meaning fewer crashes may have been legally required to be reported since 2018.

Although the overall crash frequency in 2017-2019 is lower than in 2012-2016, the average number of crashes resulting in an injury or fatality have remained relatively constant while the number of property damage only crashes is notably lower. In other words, the data suggests there are fewer reported crashes that do not result in bodily harm; however, the higher severity crashes that the Main Street Safety Project aims to prevent are still occurring. This finding is echoed in Figure 2 on the following page.

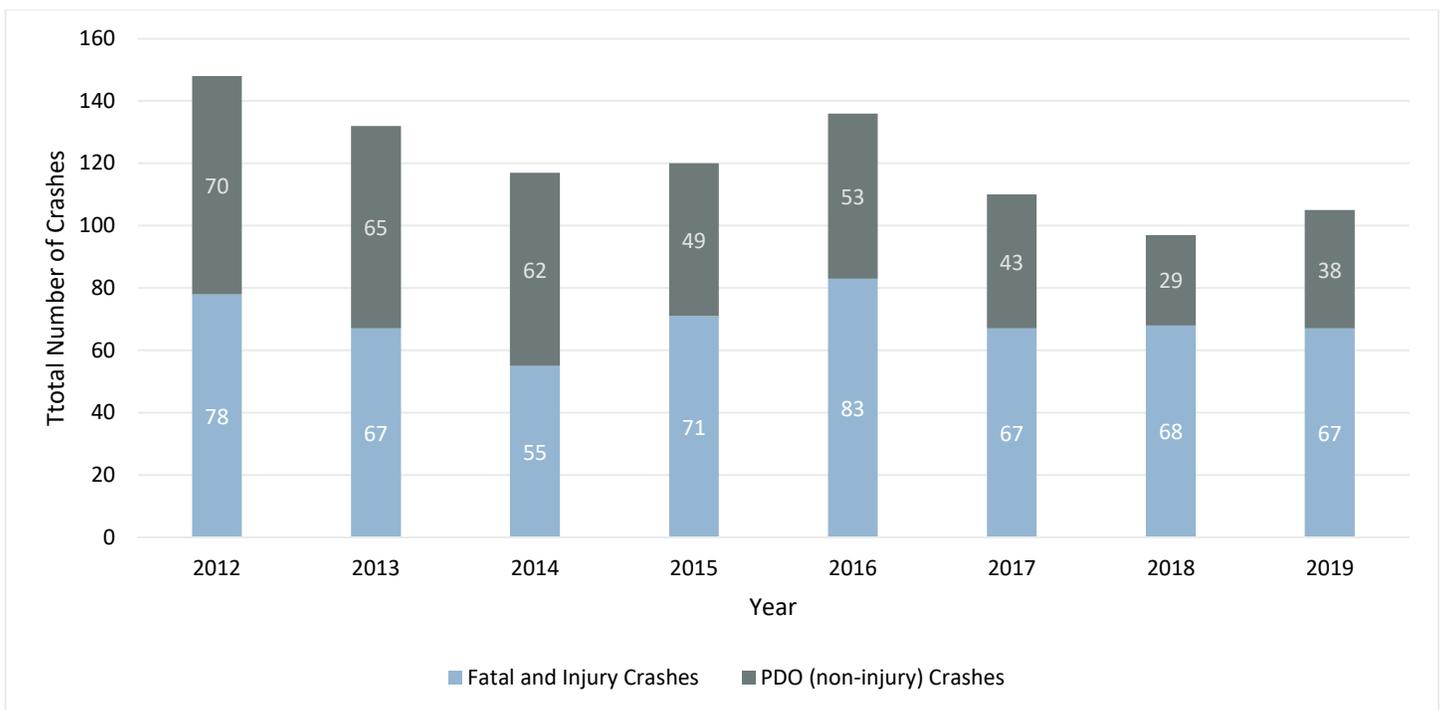


Figure 1. Crash Frequency per Year (All Crashes)

As shown in Figure 2 on the following page, the number of fatal and severe injury crashes along the corridor have remained consistent over time. In fact, the combined number of fatal and severe injury crashes in the three years from 2014-2016 is exactly the same as the three years from 2017-2019.

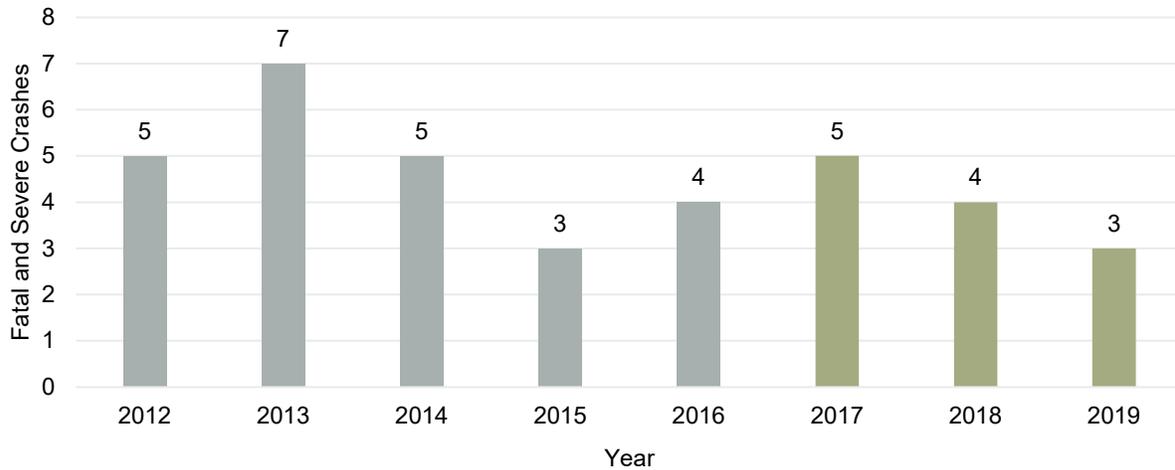


Figure 2. Crash Frequency per Year (Fatal and Severe Injury Crashes)

Table 2 presents the breakdown of crash severity for both analysis periods. As shown, the proportion of fatal, severe injury, and visible injury crashes are nearly identical during both analysis periods. However, during the 2017-2019 analysis period, there was a lower proportion of non-injury (property damage only) crashes and a higher proportion of possible injury crashes (Injury C), which is consistent with the data trends discussed on Page 3.

Table 2. Comparison of Crash Frequency and Crash Severity

Severity ^a	2012 - 2016			2017 - 2019		
	Crashes (All 5 years)	Average Crashes/Year	Percentage	Crashes (All 3 years)	Average Crashes/Year	Percentage
Fatal	4	1	1%	2	1	1%
Injury A	20	4	3%	10	3	3%
Injury B	102	20	16%	53	18	17%
Injury C	228	46	35%	137	46	44%
PDO	299	60	46%	110	37	35%
Total	653	131	100%	312	104	100%

^a The overall crash severity represents the most severe injury level of any individual involved in the crash.

Fatal: Injuries resulting in death within 30 days of the crash

Injury A: Severe (Incapacitating) Injury

Injury B: Moderate (Non-Incapacitating) Injury

Injury C: Possible Injury (Complaint of Pain)

PDO: Property Damage Only, No Injuries



Table 3 presents the number of crashes by crash type. Overall, the types of crashes occurring on the corridor have remained consistent since 2012. Rear-end and turning type crashes continue to represent approximately 70-80% of all crashes on the corridor. The proportions of bicycle and pedestrian crashes both increased by 2% in the most recent analysis period (from 4% to 6% for bicycle crashes and from 3% to 5% for pedestrian crashes).

Table 3. Summary of Crash Frequency and Crash Type

Crash Type	2012 - 2016			2017 - 2019		
	Crashes (All 5 years)	Average Crashes/Year	Percentage	Crashes (All 3 years)	Average Crashes/Year	Percentage
Angle	16	3	2%	11	4	4%
Backing	7	1	1%	3	1	1%
Bike	26	5	4%	19	6	6%
Fixed Object or Other Object	33	7	5%	18	6	6%
Miscellaneous	6	1	1%	2	1	1%
Pedestrian	20	4	3%	15	5	5%
Rear-End	305	61	47%	132	44	42%
Sideswipe - Meeting	3	1	0%	2	1	1%
Sideswipe - Overtaking	26	5	4%	12	4	4%
Turning Movement	211	42	32%	98	33	31%
Total	653	131	100%	312	104	100%

Turning movement and rear end crashes are also the predominant crash types that result in fatal and severe injuries in both analysis periods, as shown in Table 4 on the following page. The crash types most likely to be prevented by the installation of roundabouts and raised medians remain the primary contributors to fatal and severe injuries on Main Street.

It is interesting to note that the number of pedestrian crashes increased in 2017-2019 over 2012-2016 (Table 3), while the proportion of fatal and severe injury crashes that involved a pedestrian dropped significantly in the later analysis period (Table 4). While there are likely several factors contributing to this trend, it is possible that, although crashes are still occurring, the injury severity is lower due to the installation of enhanced crossings that increase driver awareness of potential pedestrian crossing activity.



Table 4. Summary of Fatal and Severe Injury Crash Types

Crash Type	Percent of Fatal & Severe Injury Crashes	
	2012 – 2016 (4.8 crashes per year)	2017 – 2019 (4.0 crashes per year)
Angle and Turning Movement	46%	50%
Rear-End	21%	25%
Pedestrian-Involved	21%	8%
Fixed Object	8%	17%
Sideswipe - Meeting	4%	0%

The recommended safety improvements developed as part of the Main Street Safety Project are focused on eliminating risks that result in the highest frequency and severity of crashes, including angle, turning, and rear-end crashes, which most often occur at intersections and driveways. The data presented in Table 3 and Table 4 suggest that the underlying crash patterns that originally prompted and guided this project (using crash data from 2012-2016) remain consistent through 2019 and the recommended safety solutions are just as, if not more, relevant to the current crash patterns on Main Street.

2020 CRASH TRENDS

ODOT has recently released the finalized crash data for 2020. Due to the COVID-19 pandemic influence on travel patterns, there is a notable shift in statewide reported crash patterns in 2020 compared to previous years. Between 2019 and 2020, the statewide vehicle miles traveled (VMT) dropped by approximately 10.7%, and the total number of reported crashes decreased by approximately 27%. However, the number of fatal crashes did not fall, and thus fatal crashes make up a larger proportion of total crashes in 2020 than in 2019. The Main Street corridor is no exception to this trend. In 2020, there were 73 reported crashes on the corridor (a 30% reduction over the 2017-2019 average), including 6 fatal or severe injury crashes (a 50% increase over the 2017-2019 average).

SUMMARY

Overall, the crash trends observed between 2012 and 2016 are relatively similar to those observed between 2017 and 2019. Although the overall reported crash frequency has decreased in recent years, the number of crashes resulting in injury or death have remained consistent through 2019, as have the most predominant crash types. The findings originally outlined in Technical Memorandum #6 are still relevant, and the safety solutions developed over the course of this project address the predominant safety needs that persist along this corridor. ***The crash types most likely to be prevented by the installation of roundabouts and raised medians remain the primary contributors to fatal and severe injuries on Main Street.***