Crash Analysis for NE Marine Drive

2nd Avenue to 185th Avenue

9/21/15

This crash analysis was prepared at the request of Soniq Transportation and Warehouse, so they can better understand the crash trends and safety issues on Marine Drive and perhaps use this to inform truck routing and schedules. Unless otherwise stated, crash data included in this report is provided by Oregon DMV and covers the most recent 10 years of available crash data from January 1, 2004 to December 31, 2013.

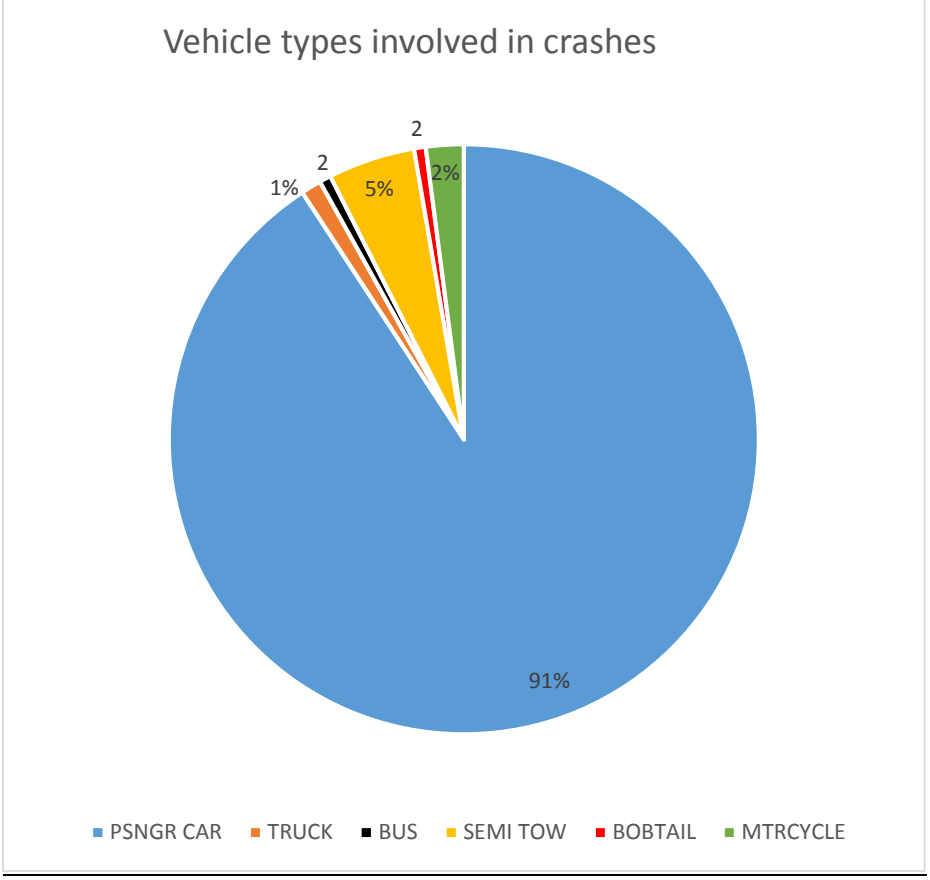
Overview of Marine Drive Crash Trends

While the focus of this report is on truck-involved crashes, this section provides an overview of key findings from the Marine Drive High Crash Corridor Safety Plan (March 2013), which compares all crashes on NE Marine Drive to citywide crash rates.

- Fatality Rate: The fatality rate on NE Marine Drive is substantially higher than the citywide rate. Citywide 3 out of 1000 crashes result in a fatality; on Marine Drive, 28 out of 1000 crashes result in a fatality.
- Lane Departure Crashes: The percentage of crashes that occur when a vehicle goes outside of its travel lane (e.g. head-on crashes, sideswipes, roll-overs, hitting fixed objects) along Marine Drive is three times higher than the citywide percentage (19% versus 5.5%). Open stretches of roadway, clear sight lines and few intersections are all characteristics that may contribute to the high percentage of lane departure crashes.
- DUII Crash Rate: The incidence of crashes involving DUII is slightly higher than the citywide average.
- Speeding: About 7% of drivers are driving 10 mph or more over the posted speed limit.

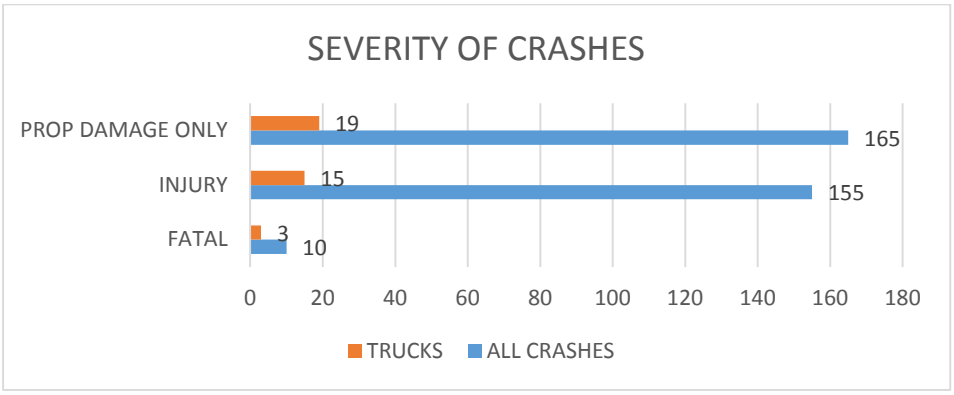
Truck Involved Crashes

330 crashes were reported on NE Marine Drive from 2nd Avenue to the Portland city limits at 185th Avenue. Of those crashes, 37 involved trucks. Although Marine Drive is classified as a "Local Truck Street", it is adjacent to a freight district and carries 16-22% truck traffic. By comparison, nearby NE Columbia Blvd is classified as "Priority Truck Street" and carries 17-18% truck traffic. Though there is a high percentage of trucks using Marine Drive, the percentage of trucks involved in crashes is relatively low, approximately 11%. Additionally, truck crashes involving alcohol and drugs is very low; only 1 out of 37 crashes involved alcohol (3%) versus a total of 28 crashes (7.6%) involving drugs or alcohol for all crashes on NE Marine Drive.



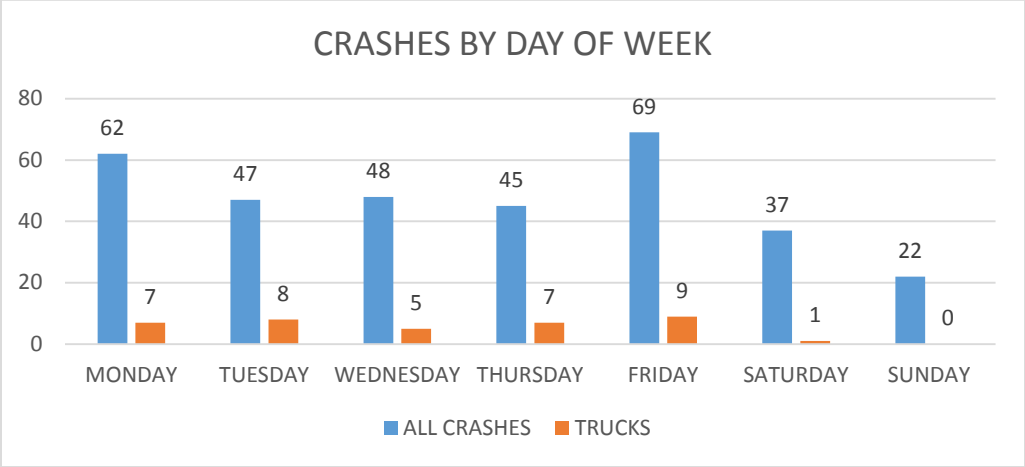
Crash Severity

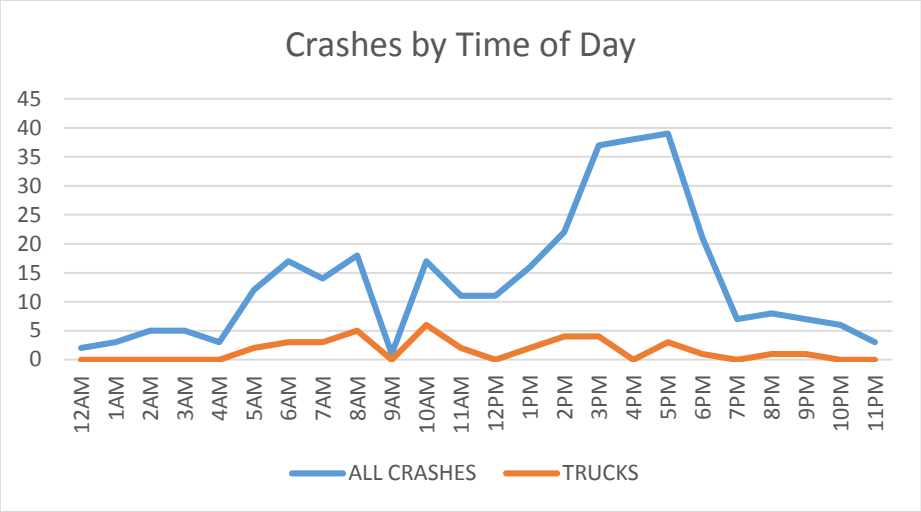
Unfortunately, fatal crashes are more prevalent when trucks are involved; 3 of the 10 fatal crashes involved trucks. Past studies have shown that the fatality rate on Marine is nearly 10 times higher than the citywide fatality rate. This is largely due to the high speeds on Marine Drive and the fact that it is on a levee (drivers leaving the roadway roll down a steep embankment and often land in the river.)

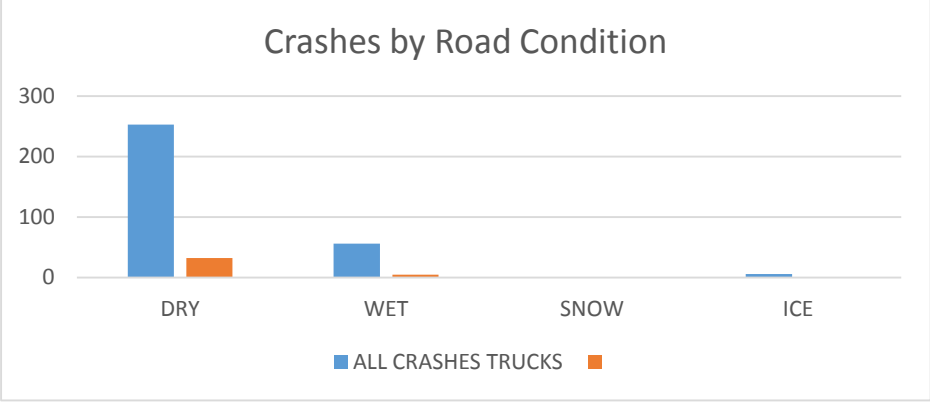


Crash Occurrence

The following graphs show when crashes occurred on Marine Drive. The crash trends for all crashes is fairly typical, with a high incidence occurring on weekdays during the afternoon peak hour. It is important to note that truck crashes do not appear to spike during the afternoon peak hour. Additionally, most crashes are occurring during dry roadway conditions, which is typical for the Portland area.



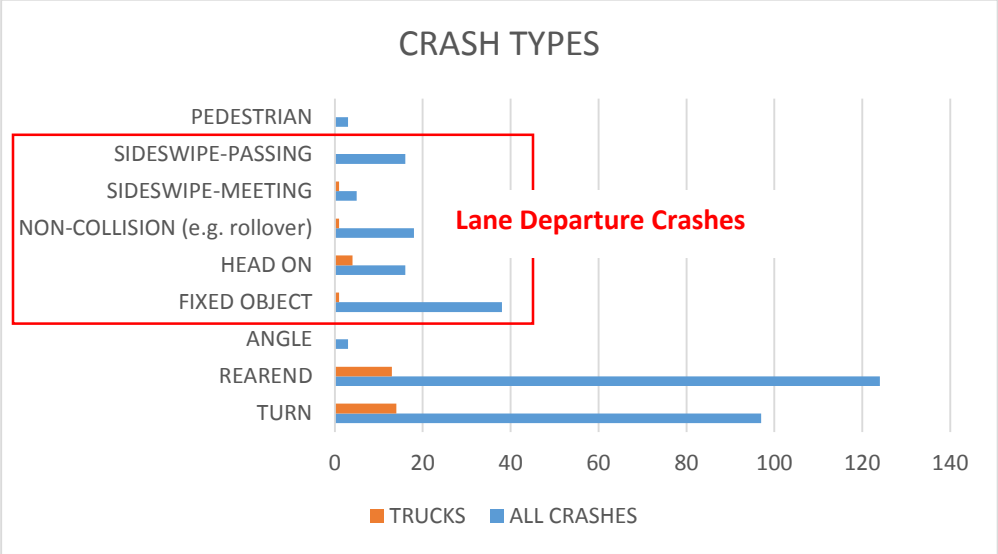




Crash Trends

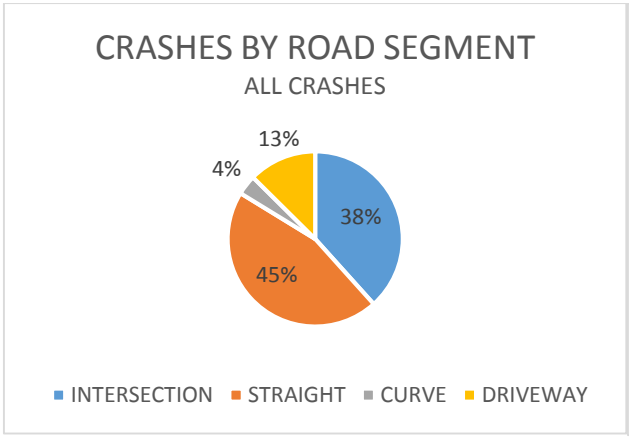
The City of Portland evaluated Marine Drive in 2012/13 (Marine Drive High Crash Corridor Safety Plan, March 2013.) The following crash trends were identified at that time and appear to still be consistent trends.

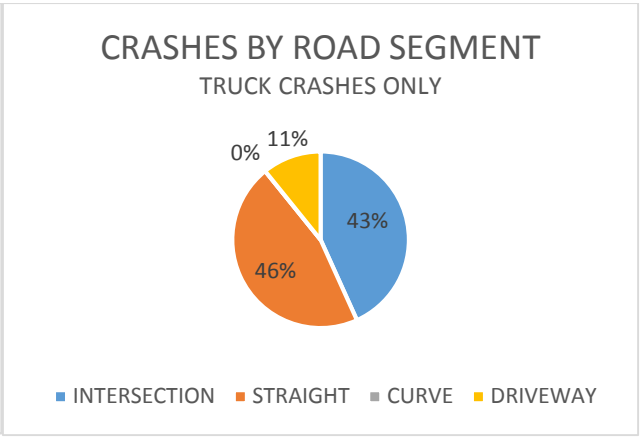
Lane departure crashes include fixed object, head-on, sideswipe (passing and opposing) and non-collision (roll-over) crashes. These types of crashes are significantly higher on NE Marine Drive than on other city streets. This applies to truck crashes as well.

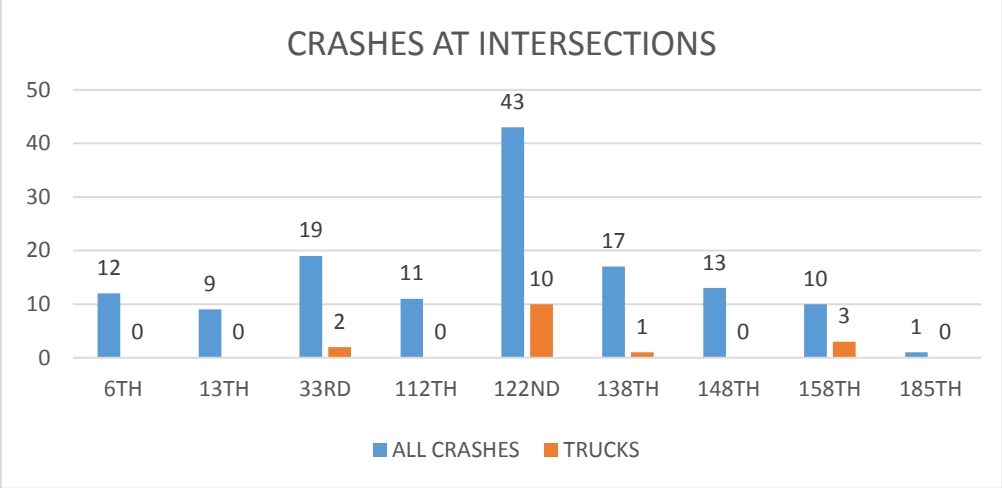


- There is no pattern of where drivers are leaving the roadway or in which direction they are leaving the roadway.
- Head-on crashes are twice as likely to result in a fatality as other lane departure crashes.
- To address head-on crashes and other lane departure crashes, centerline rumble strips have been installed from 33rd Avenue to 4000 feet east and are recommended all the way to 185th Avenue. To address run-off road crashes, shoulder delineation should be employed – this treatment should accommodate bicycle traffic on the shoulder of Marine Drive.
- The City has a safety project to add both centerline and shoulder rumble strips from 33rd to NE 185th Avenue. Funding for this project (federal) is available in 2017.

Given the rural nature of Marine Drive, there is a higher proportion of non-intersection crashes than is typical across the city. The graphs below show crashes by road segment and at intersections.







Intersection Crashes

The graph above includes the most recent 10 years of crash data (2004-2013.) The Marine Drive High Crash Corridor Safety Plan looked in depth at the types of crashes occurring at intersections along Marine Drive. The crash types at the intersections with highest number of crashes are discussed below (note that these statistics are from the High Crash Corridor report and based on older crash data from 2001-2010.)

122nd Avenue: 45 crashes are coded to this intersection, 29 turning related crashes and 16 rearend crashes.

- A traffic signal would address the turning crashes here but may result in more rearend crashes. However, rearend crashes are typically less severe than turning crashes. Portland Parks and Metro have a project to install a traffic signal here in 2016.

33rd Avenue: 20 crashes are coded to this intersection, 11 turning and 7 rearend crashes.

- A traffic signal would address the turning crashes (traffic volumes also warrant a traffic signal here) but may result in more rearend crashes. However, rearend crashes are typically less severe than turning crashes. A signal is recommended as a long-term solution; no funding is currently identified for this project.

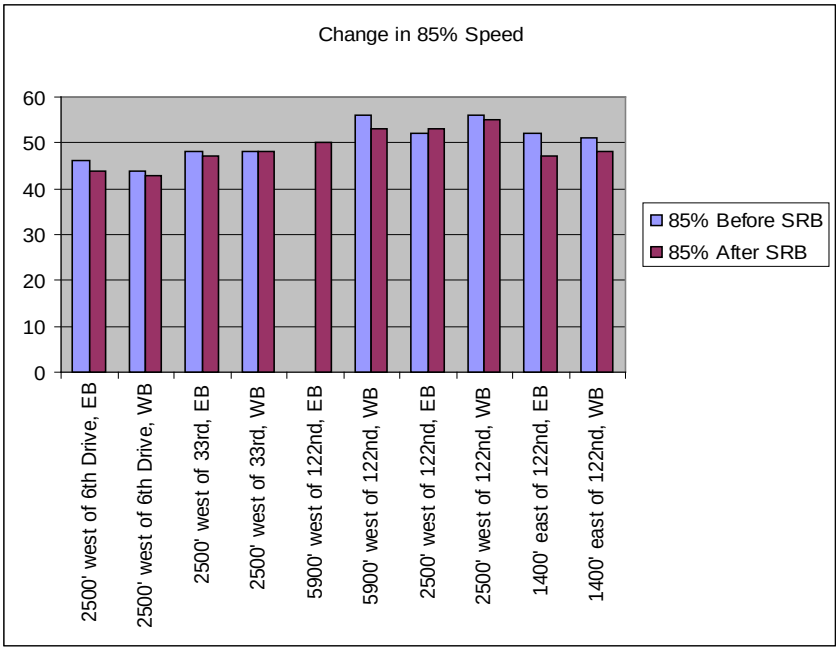
138th Avenue: 13 crashes are coded to this intersection, 6 turning and 6 rearend. 1 turning crash every other year does not warrant a traffic signal, nor do current traffic volumes.

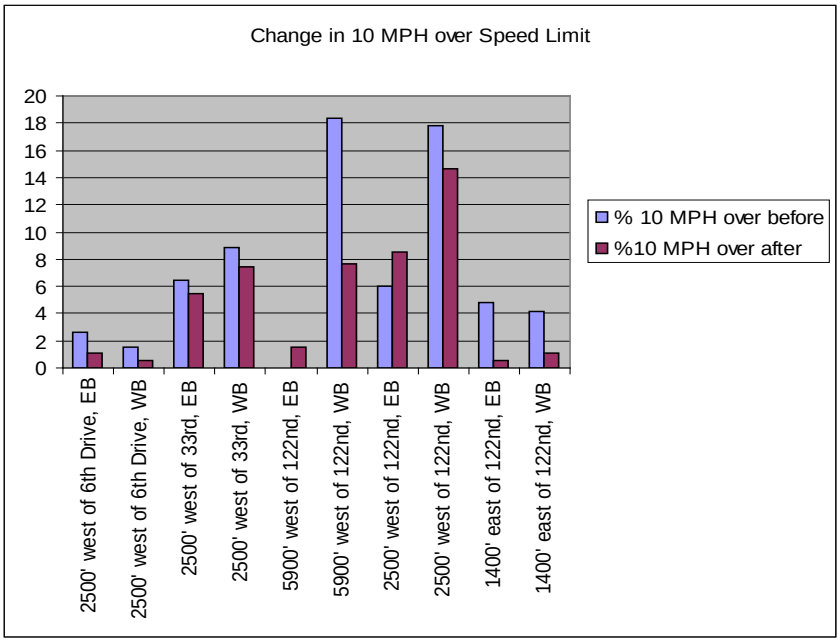
- An experimental lane narrowing striping treatment has been employed here. Studies have shown that lane narrowing can result in slower speeds and more awareness at intersections. We will monitor this to see if driver behavior is changed.

Speed Data

Traffic speed data was taken at several points along Marine Drive in January 2012 at the beginning of the High Crash Corridor evaluation. At that time, about 50% of drivers were driving faster than the posted speed. Additionally, 5% of drivers were driving 50 MPH or faster in the 40 MPH zone (west of 33rd Avenue) and 10% were driving 55 MPH or faster in the 45 MPH zone (east of 33rd Avenue.) One strategy of the High Crash Corridor program is to reduce speeds on Marine Drive through education. In July 2012, seven (7) speed reader boards were installed on Marine Drive to make drivers aware of the posted speed and their travel speed. In January 2013, six months after installation of the speed reader boards, travel speeds decreased slightly (on average 2 MPH.) Most notable, is that, drivers driving 55 MPH or faster have decreased from 10% to 5% east of 33rd Avenue.

The City has since relocated the speed reader boards to other high crash corridors to supplement speed zone reductions. The City plans to reinstall the speed reader boards on Marine Drive next summer to coincide with the installation of the new traffic signal at 122nd Avenue and several new trail crossings east of I-205.





Additional information about the Marine Drive High Crash Corridor can be found on PBOT's website at http://www.portlandoregon.gov/transportation/article/469704.