

## Time-of-Return (TOR) Analysis Example

Sample Project: Install center left hand turn lanes on Road 1.  
Total Project Cost: \$400,000

1. Data sets of crashes should include 3 to 5 years of information. After obtaining your data for Road 1 segment (or intersection), make sure to pay attention to the following fields of data in RoadSoft GIS to fill out the TOR application:
  - a. PR Number(s)
  - b. PR Milepoint(s) Range
  - c. PDO injuries (Property Damage Only ) – note: this will show as NoUninj on the RoadSoft GIS software
  - d. C Injuries
  - e. B Injuries
  - f. A injuries
  - g. K injuries (Killed or Fatal)
2. Check the crash data against the UD-10 forms to ensure that all data is accurate and will produce the cost benefit as presented.
3. For this example, in the past five years there were 94 accidents along the specified segment of Road 1.
4. Accidents involving left-turning north and south bound drivers may be mitigated.
  - 56 of the 94 may be mitigated by the proposed project.
  - 26 of the 56 were Rear End-Left Turn
  - 30 of the 56 were Head On, Angle, Other
5. Looking at the attached crash reduction chart for adding a Center Left Turn Lane, accidents involving Head On, Angle or Other will have a crash reduction factor of .20, and accidents involving Rear End-Left Turns will have a crash reduction factor of .80.
6. Of the 26 Rear End-Left Turns there were 15 PDO or “C” injuries, 20 “B” injuries and 1 “K” fatalities or “A” injury accidents. Of the 30 Head On, Angle or Other crashes, there were 28 PDO or “C” injuries, 15 “B” injuries and 1 “K” fatality or “A” injuries.
7. PDO/”C” injuries - \$8,300  
“B” injuries- \$21,800  
“A” injuries - \$61,200  
“K” fatalities - \$1,300,000
8. Follow the instructions on the spreadsheet provided by MDOT to fill out the TOR and get a calculated value. Make sure to fill out all portions of the yellow / red areas (you can leave a whole chart blank for number of

crashes and injured persons if you do not need to use it). The TOR on this example was 1.96 years to recoup the cost of the project in regards to accident mitigation. A cost-effective project will have a TOR of less than 10 years.