

Economic Costs associated with KSI Crashes along Philadelphia's Draft High Injury Network in 2016

The National Safety Council makes estimates of the average costs of fatal and nonfatal unintentional injuries to illustrate their impact on the nation's economy. The costs are a measure of the dollars spent and income not received due to accidents, injuries, and fatalities. It is another way to measure the importance of prevention work. Major revisions were made to the National Safety Council (NSC) cost model starting with the 2014 data year that take advantage of data sources not previously available. Because of the changes made to the cost model, cost estimates provided prior to 2014 are not comparable to current estimates.

The calculable costs of motor-vehicle crashes are wage and productivity losses, medical expenses, administrative expenses, motor vehicle damage, and employers' uninsured costs. In addition to the economic cost components, the following comprehensive costs also include a measure of the value of lost quality of life which was obtained through empirical studies of what people actually pay to reduce their safety and health risks.

In the following calculations, Fatal crashes were associated with Death (K) and Major Injury crashes were associated with Disabling (A). It was assumed that any crash resulting in a death or severe injury also resulted in property damage to all vehicles involved in the crash.

KSI Crashes along 40-100% HIN Roads in 2016

Total Fatal Crashes on HIN	49
1 Fatality	48
2 Fatalities	1
3 Fatalities	0

Total Persons Killed on HIN 50

Total Major Injury Crashes on HIN	99
1 Major Injury	91
2 Major Injuries	6
3 Major Injuries	2

Total Persons with MI on HIN 109

Total KSI Crashes on HIN 145

Crash Vehicle Count on HIN

1 vehicle	80
2 vehicles	44
3 vehicles	15
4 vehicles	1
5 vehicles	4
6 vehicles	1

Total Vehicles damaged on HIN 243

Average Economic Cost by Injury Severity, or Crash, 2015

Category	Cost
Death (K)	\$ 1,542,000.00
Disabling (A)	\$ 90,000.00
Evident (B)	\$ 26,000.00
Possible (C)	\$ 21,400.00
No Injury observed (O)	\$ 11,400.00
Property damage only (cost per vehicle)	\$ 4,200.00

Source: http://www.nsc.org/NSCDocuments_Corporate/estimating-costs.pdf

* Costs are for each death (not each fatal crash), injury (not each injury crash), and per-damaged vehicle

Average Comprehensive Cost by Injury Severity 2015

Category	Cost
Death (K)	\$10,082,000
Disabling (A)	\$ 1,103,000.00
Evident (B)	\$ 304,000.00
Possible (C)	\$ 141,000.00
No Injury observed (O)	\$ 46,000.00

Source: http://www.nsc.org/NSCDocuments_Corporate/estimating-costs.pdf

* Costs are for each death (not each fatal crash), injury (not each injury crash), and per-damaged vehicle

* Since the lost quality of life figures, which are included in the above comprehensive costs calculations, do not represent real income not received nor expenses incurred, they should not be used to determine the pure economic impact of past crashes.

Average Economic Cost of KSI Crashes along 40-100% HIN, 2016

Category	Crashes	Persons or Vehicles	Cost
Death (K)	49	50	\$ 77,100,000.00
Disabling (A)	99	109	\$ 9,810,000.00
Evident (B)	-	-	-
Possible (C)	-	-	-
No Injury observed (O)	-	-	-
Property damage only (cost per vehicle, KSI only)	145	243	\$ 1,020,600.00

HIN 80-100% Routes KSI Cost 2016: \$ 87,930,600.00

Average Comprehensive Cost of KSI Crashes along 40-100% HIN, 2016

Category	Crashes	Persons or Vehicles	Cost
Death (K)	49	50	\$ 504,100,000.00
Disabling (A)	99	109	\$ 120,227,000.00
Evident (B)	-	-	-
Possible (C)	-	-	-
No Injury observed (O)	-	-	-

HIN 80-100% Routes KSI Cost 2016: \$ 624,327,000.00

NOTES:

1. Because the current High Injury Network is still a draft, this data uses crashes that occurred along the top 60% of High-Injury routes (80-100%) in the current High Injury Network model. **These calculations should be re-run once the High Injury Network is finalized.**
2. The crash data used for these calculation was provided by Phaedra Tinder July 13th, 2017, and is the same data used to create the High Injury Network. For this analysis, the full High Injury Network crash data was cleaned to include only 2016 crashes with a KSI value of 1 (indicating a fatality or serious injury). The data was further pared to exclude any crashes that did not occur along a 40-60% High Injury Network road were excluded. **This resulted in a final data set of 145 crashes, all of which occurred along the 40-60% High Injury Network (in its current form) in 2016.**
3. These 145 crashes do not include side street crashes at intersections. once the High Injury Network is finalized, we can map the intersection nodes and create 250-foot buffers around them to include side-street crashes if we wish to do so.