Crash Cost Estimates by Maximum Police-Reported Injury Severity Within Selected Crash Geometries

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Foreword

In conventional traffic safety evaluations, the outcome measure is typically the frequency of police-reported crashes, often with separate estimates for different severity levels. However, some treatments may decrease some crash types but increase others. If these crash types are characterized by different average injury severities, then comparing crash frequencies will not provide the user with an accurate picture of treatment effectiveness. Such a scenario led to the development of the crash cost estimates by crash geometry described in this report.

This paper presents estimates for the economic (human capital) and comprehensive costs per crash for six KABCO groupings (used by police to classify injury) within 22 selected crash types and within two speed limit categories (<=72 kilometers per hour (km/h) (<=45 miles per hour (mi/h)) and >=80 km/h (>=50 mi/h)). The comprehensive costs include nonmonetary losses. To produce these cost estimates, previously developed costs per victim keyed on the Abbreviated Injury Scale (AIS) injury severity scale were merged into U.S. traffic crash data files that scored injuries in both AIS and KABCO scales to produce per crash estimates. The detailed estimates of this study make it possible to include crash severity comparisons in the analysis of different types of crashes by attaching costs to them and to do so in 2001 dollars.

Michael Trentacoste, Director
Office of Safety Research and Development

Notice

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16. Abstract

This paper presents estimates for the economic (human capital) and comprehensive costs per crash for six KABCO groupings within 22 selected crash types and within two speed limit categories (<=72 km/h (<=45 mi/h) and >=80 km/h (>= 50 mi/h)). The comprehensive costs include nonmonetary losses. To produce these cost estimates, previously developed costs per victim keyed on the AIS injury severity scale were merged into U.S. traffic crash data files that scored injuries in both AIS and KABCO scales to produce per crash estimates. The detailed estimates of this study make it possible to include crash severity comparisons in the analysis of different types of crashes by attaching costs to them and to do so in 2001 dollars.

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SI* (MODERN METRIC) CONVERSION FACTORS

APPROXIMATE CONVERSIONS TO SI UNITS

Symbol	When You Know	Multiply By	To Find	Symbol
		LENGTH		
in	inches	25.4	millimeters	mm
ft	feet	0.305	meters	m
yd	yards	0.914	meters	m
mi	miles	1.61	kilometers	km
		AREA		
in^2	square inches	645.2	square millimeters	mm^2
ft^2	square feet	0.093	square meters	m^2
yd^2	square yard	0.836	square meters	m^2
ac	acres	0.405	hectares	ha
mi^2	square miles	2.59	square kilometers	km^2
		VOLUME		
fl oz	fluid ounces	29.57	milliliters	mL
gal	gallons	3.785	liters	L
ft^3	cubic feet	0.028	cubic meters	m^3
yd^3	cubic yards	0.765	cubic meters	m^3
		NOTE: volumes greater than 1000 L shall be shown in m^3		
		MASS		
oz	ounces	28.35	grams	g
lb	pounds	0.454	kilograms	kg
T	short tons (2000 lb)	0.907	megagrams (or "metric ton")	Mg (or "t")
		TEMPERATURE (exact degrees)		
^oF	Fahrenheit	5 (F-32)/9 or (F-32)/1.8	Celsius	^oC
		ILLUMINATION		
fc	foot-candles	10.76	lux	lx
fl	foot-Lamberts	3.426	candela/m^2	cd/m^2
		FORCE and PRESSURE or STRESS		
lbf	poundforce	4.45	newtons	N
lbf/in^2	poundforce per square inch	6.89	kilopascals	kPa

APPROXIMATE CONVERSIONS FROM SI UNITS

Symbol	When You Know	Multiply By	To Find	Symbol
		LENGTH		
mm	millimeters	0.039	inches	in
m	meters	3.28	feet	ft
m	meters	1.09	yards	yd
km	kilometers	0.621	miles	mi
		AREA		
mm^2	square millimeters	0.0016	square inches	in^2
m^2	square meters	10.764	square feet	ft^2
m^2	square meters	1.195	square yards	yd^2
ha	hectares	2.47	acres	ac
km^2	square kilometers	0.386	square miles	mi^2
		VOLUME		
mL	milliliters	0.034	fluid ounces	fl oz
L	liters	0.264	gallons	gal
m^3	cubic meters	35.314	cubic feet	ft^3
m^3	cubic meters	1.307	cubic yards	yd^3
		MASS		
g	grams	0.035	ounces	oz
kg	kilograms	2.202	pounds	lb
Mg (or "t")	megagrams (or "metric ton")	1.103	short tons (2000 lb)	T
		TEMPERATURE (exact degrees)		
^oC	Celsius	1.8C+32	Fahrenheit	^oF
		ILLUMINATION		
lx	lux	0.0929	foot-candles	fc
cd/m^2	candela/m^2	0.2919	foot-Lamberts	fl
		FORCE and PRESSURE or STRESS		
N	newtons	0.225	poundforce	lbf
kPa	kilopascals	0.145	poundforce per square inch	lbf/in^2

*SI is the symbol for the International System of Units. Appropriate rounding should be made to comply with Section 4 of ASTM E380.
(Revised March 2003)

Table of Contents

List of Tables

INTRODUCTION

In conventional traffic safety evaluations, the outcome measure is typically the frequency of police-reported crashes, often with separate estimates for different severity levels. However, some treatments may decrease some crash types but increase others. If these crash types are characterized by different average injury severities, then comparing crash frequencies will not provide the user with an accurate picture of treatment effectiveness. Such a scenario led to the development of the crash cost estimates by crash geometry described in this report.

An example of this scenario can be found in an evaluation of red-light camera (RLC) programs in seven jurisdictions nationwide funded by the Federal Highway Administration (FHWA) Intelligent Transportation System Joint Program Office and the Office of Safety Research and Development. RLC programs can be expected to decrease angle-type crashes, but to increase rear-end crashes. The former is usually more severe than the latter. For that reason, the study not only examined crash frequency by type, but also included crash severity in the analysis by converting each crash to an economic cost, based on unit costs by police-reported crash severity. Similar procedures would be appropriate in the evaluation of such roadside hardware as median barriers, which would be expected to increase the number of less severe sideswipe and angle crashes into the barrier while decreasing or eliminating the more severe head-on crashes into vehicles in opposing lanes of traffic.

Although many past studies developed crash costs (Miller, et al. 1997; Zaloshnja, et al., 2004), most studies provide estimates per person injured or vehicle damaged rather than the cost per crash.[(1,2)] Moreover, they often provide cost breakdowns by body region and within that by injury severity measured on the Abbreviated Injury Scale (AIS). AIS is specified by trained medical data coders, usually within a hospital context. It is not recorded on police crash reports, making these cost estimates unusable in the majority of safety studies conducted.

Miller et al.[(1)] successfully linked crash costs to police-reported crash profiles for a number of crash scenarios by using data files that contained both AIS and police-reported KABCO[1] severity (National Safety Council, 1990).[(3)] That study provided aggregate costs, not unit cost, estimates by KABCO severity and crash type. It was intended to aid vehicle design that minimized overall harm. Wang et al. undertook a similar study, estimating unit costs by crash geometry and AIS for crashes that could be averted by Intelligent Vehicle-Highway Systems (IVS) technologies.[(4)]

This study builds on the prior studies, providing current unit costs by crash type and severity. Modifications of the previous work included:

- Providing the human capital (economic) cost estimates of hard dollar consequences and comprehensive cost estimates that add the value of the nonmonetary losses to the economic costs for six KABCO groupings within 22 critical crash types (e.g., pedestrian crash at signalized intersection; multivehicle cross-path crash at unsignalized intersection) and within two speed limit categories to account for possible differences in cost for a given KABCO level between crashes in urban and rural locales.

[1] The KABCO severity scale (National Safety Council, 1990) is used by the investigating police officer on the scene to classify injury severity for occupants with five categories: K, killed; A, disabling injury; B, evident injury; C, possible injury; O, no apparent injury. These definitions may vary slightly for different police agencies.

- Giving estimates for six different combinations of KABCO severity (e.g., each KABCO level, K+A versus B+C+O, all levels combined, etc.). These groupings facilitate use in studies where, for example, the sample size of fatalities is so small as to be unstable, and thus where one or two fatalities might bias the study results.

TARGET CRASH TYPES AND COST LEVELS

Based on the past work by Miller et al. the needs of the red-light camera evaluation effort, and projected needs in future FHWA safety studies, the decision was made to estimate human capital and comprehensive costs for each of 22 geometry categories.[(5)] (For a detailed listing of the crash geometries and the definitions and names, see appendix A.)

As noted earlier, the goal of this crash-cost estimation process is to produce a cost for each police-reported crash severity level (i.e., KABCO level) within each of the 22 crash geometries. However, since KABCO levels are much broader than AIS levels, the cost of injury *within* any KABCO level for a given crash geometry might differ depending on speed limit or urban/rural location. For example, the severity and thus the cost of A-injury angle crashes at rural higher-speed intersections may be greater than A-injury angle crashes at urban intersections. Given this fact, it was desirable to categorize these 22 geometries further by speed limit and either urban or rural location.

Unfortunately, examination of documentation for the databases to be used by Miller indicated no urban/rural indicator in one of the critical files. However, speed limit variables were present. Analyses using the Fatality Analysis Reporting System (FARS), National Accident Sampling System (NASS), General Estimates System (GES), and Highway Safety Information System (HSIS) data from two States were then conducted to compare crash-related speed limits to various urban versus rural designations. There was significant overlap of limits within urban and rural designations in all three files. Based on the distributions and on the need to have sufficient samples sizes in all the subcategories, cost estimates were categorized by locations with speed limits of 72 kilometers per hour (km/h) (45 miles per hour (mi/h)) and below versus 80 km/h (50 mi/h) and above.

A third issue concerned the levels of police-reported severity for which crash cost should be estimated. Initially, the desire was to develop a human capital and comprehensive cost estimate for each level of crash severity (i.e., each KABCO level) within each speed limit category within each of the 22 crash geometries. In addition, since safety studies sometimes are based on limited data samples in which there are very few fatalities or serious injuries, it was desirable to develop costs when some of the KABCO levels are combined and costs where crash types are not separated. Preliminary analysis of the databases used in the cost development indicated some problems due to small samples within the most detailed cells. Based on the needs of the RLC evaluation and the available sample sizes, the following levels of costs were ultimately developed. In each case, “cost estimate” refers to an estimate of both human capital cost and of comprehensive cost, and each geometry is always further subdivided by the two speed limit categories, unless otherwise noted.

- Level 1 **–** For each of the 22 crash geometries (categorized by two speed limit categories as a surrogate for urban/rural locales), estimates of cost were made for crash severity levels K, A, B+C, and O. (Sample size issues in the cost databases made it impossible to develop reasonable estimates of B versus C separately.) This analysis first was performed for each of the two speed limit categories and then with all speed limits combined.

- Level 2—For each crash geometry, estimates of cost when K and A are combined into one cost level and B and C are combined into one cost level—thus K+A, B+C, O. Again, estimates were calculated with and without categorization by the two speed-limit categories.
- Level 3—This level was defined to allow for comparison of “injury” versus “noninjury” crashes. Note that some crash forms (and some reporting officers) define a “C-injury” as a “minor injury” while others define it as a “possible injury.” Thus, two definitions of Level 3 costs were used.
    - 3.A—For each crash geometry (with and without speed limit categorization), estimates of cost when all injuries are combined into one cost level separated from the property damage only (PDO) cost level—thus K+A+B+C versus O.
    - 3.B—For each (urban/rural) crash geometry (with and without speed limit categorization), estimates of cost when K, A, and B injuries are combined into one cost level separated from the C and PDO cost level—thus K+A+B versus C+O.
- Level 4—For each crash geometry (with and without speed limit categorization), estimates of crash cost without regard to crash severity (i.e., no division by levels of severity).
- Level 5—For each level of crash severity (with and without speed limit categorization), estimates of cost without regard to crash geometry.
- Level 6—Level 5 cost estimates, but with the following categories: K+A, K+A+B, K+A+B+C, B+C, C+O.

In summary, the analyses were designed to produce both the human capital and comprehensive costs of crashes with 22 crash types, with and without categorization, by two speed limit categories. Crash severity levels within each crash type were defined to allow a variety of different levels of analysis for future studies.

METHODOLOGY

Estimating crash costs requires estimates of the number of people involved in a given crash, the severity of each person’s injuries, and the costs of those injuries, as well as associated vehicle damage and travel delay. The following section describes the methodology used to estimate the incidence and severity of crashes for selected geometries and speed limits. The succeeding section explains how the costs of crashes were estimated.

Injury Incidence and Severity Estimation

To estimate injury incidence and severity, procedures developed by Miller and Blincoe (1994) and Miller, Galbraith, et al. (1995) and applied in Blincoe, Seay, et al (2002) were followed.[5,6,7] The estimates of the average number of people involved in a crash-by-crash geometry, speed limit, and police-reported severity come from National Highway Traffic Safety Administration’s (NHTSA() GES and Crashworthiness Data System (CDS).

Crash databases do not accurately describe the severity of crashes. Accordingly, several adjustments, described below, were made to more accurately reflect the severity of crashes.

First, GES provides a sample of U.S. crashes by police-reported severity for all crash types. GES records injury severity by crash victim on the KABCO scale (National Safety Council, 1990) from police crash reports.[3] Police reports in almost every State use KABCO to classify crash victims as K-killed, A-disabling injury, B-evident injury, C-possible injury, or O-no apparent injury. KABCO ratings are coarse and inconsistently coded between States and over time. The codes are selected by police officers without medical training, typically without benefit of a hands-on examination. Some victims are transported from the scene before the police officer who completes the crash report even arrives. Miller, Viner et al. (1991) and Blincoe and Faigin (1992) documented the great diversity in KABCO coding across cases.[8,9] O'Day (1993) more carefully quantified the great variability in use of the A-injury code between States.[10] Viner and Conley (1994) explained the contribution to this variability of differing State definitions of A-injury.[11] Miller, Whiting, et al. (1987) found police-reported injury counts by KABCO severity systematically varied between States because of differing State crash reporting thresholds (the rules governing which crashes should be reported to the police).[12] Miller and Blincoe (1994) found that State reporting thresholds often changed over time.[5]

Thus, police reports do not accurately describe injuries medically. To minimize the effects of variability in severity definitions between States, reporting thresholds, and police perception of injury severity, NHTSA national data sets were used that included both police-reported KABCO and medical descriptions of injury in the Occupant Injury Coding system (OIC) (American Association of Automotive Medicine (AAAM), 1990; AAAM, 1985).[13,14] OIC codes include AIS score and body region and more detailed type injury descriptors that changed from the 1985 to the 1990 edition. Both 1999–2001 CDS (NHTSA, 2002) and 1982–1986 NASS (NHTSA, 1987) data were used.[15,16] CDS describes injuries to passenger vehicle occupants involved in tow-away crashes, but not in nontow-away crashes. The 1982–1986 NASS data were used to fill this gap. While not recent, these data provide the most recent medical description available of injuries to other non-CDS crash victims. The NASS data were coded with the 1980 version of AIS, which differs slightly from the 1985 version; but NHTSA made most AIS-85 changes well before their formal adoption. CDS data were coded in AIS-85, then in AIS-90.

The 1999–2001 GES data were used to weight the NASS data so they represent the annual estimated GES injury victim counts in non-CDS crashes. In applying these weights, the data was controlled by crash type, police-reported injury severity, speed limit <=72 km/h (<=45 mi/h) and >=80 km/h (>= 50 mi/h), and restraint use. Weighting the NASS data to GES restraint use levels updates the NASS injury profile to a profile reflecting contemporary belt usage levels. Sample size considerations drove the decision to pool 3 years worth of data. At the completion of the weighting process, a hybrid CDS/NASS file had been developed that included weights that summed to the estimated current annual incidence by police-reported injury severity and other relevant factors.

Crash Cost Estimation

The second step required to estimate average crash costs was to generate estimates of crash costs by severity, as described in this section. To estimate the average costs per crash by geometry, speed limit, and police-reported crash severity, costs per injury by maximum AIS (MAIS), body part, and whether the victim suffered a fracture/dislocation were adapted from the costs in Zaloshnja, Miller, et al. (2002).[2] These costs were merged onto the GES-weighted NASS/CDS file.

Comprehensive costs represent the present value, computed at a 4 percent discount rate, of all costs over the victim's expected life span that result from a crash. The following major categories of costs were included in the calculation of comprehensive costs:

- Medically-related costs.
- Emergency services.

- Property damage.
- Lost productivity.
- Monetized Quality-Adjusted Life Years (QALYs).

Human capital costs excluded the last item. The following text provides an overview of the bases for each of these cost components.

Medically-Related Costs

Medically related costs include ambulance, emergency medical, physician, hospital, rehabilitation, prescription, and related treatment costs, as well as the ancillary costs of crutches, physical therapy, etc. To estimate medical costs, nationally representative samples that use *International Classification of Diseases, Ninth Revision, Clinical Modification* (ICD9-CM) diagnosis codes to describe the injuries of U.S. crash victims were used.[17] The samples were the 1996–1997 National Hospital Discharge Survey (NHDS) for hospitalized victims and 1990–1996 National Health Interview Survey (NHIS) for nonhospitalized victims. The analysis included the following steps, some of which are explained in further detail below:

1. Assign a cause or probabilistic cause distribution for each NHDS and NHIS case.
2. Estimate the costs associated with each crash case in NHDS and NHIS.
3. Use ICDmap-85 software (Johns Hopkins University, Tri-Analytics, 1997) to assign 1985 OIC or code groups to each NHDS and NHIS case.
4. Collapse the code groups to achieve adequate case counts per cell by MAIS, body part, and whether fracture/dislocation was involved.
5. Tabulate ICD-based costs by MAIS, diagnosis code grouping, and whether hospital admitted.
6. Estimate the percentage of hospital admitted cases by diagnosis group from 1996–1999 CDS and apply it to collapse the cost estimates to eliminate hospital admission status as a stratifier (necessary because current admission rates are unknown for crash victims in non-CDS strata).
7. Infer costs for diagnosis groups that appear in CDS crash data but not in the ICD-based file.

Cause of Injury Assignment:

NHIS explicitly identifies victims of road crashes and NHDS includes data fields where hospitals code injury diagnoses or causes. When all seven fields are used, a cause code is rarely included. Typically, diagnosis codes (which are linked to insurance reimbursement costs) are given priority over cause codes. More than 70 percent of 1996–1997 NHDS cases with less than six diagnoses were cause-coded by age group, sex, and diagnoses for these cases were representative of all injury admissions with less than six diagnoses. For NHDS cases with six or seven diagnoses, causation probabilities by age group, sex, and diagnosis were inferred using data for cases with at least six diagnoses in cause-coded State hospital discharge censuses that had previously been pooled from California, Maryland, Missouri, New York, and Vermont (Lawrence et al., 2000).[18] As a partial check, the resulting firearm injury estimate was compared with a published national surveillance estimate (Annest et al., 1995).[19] The two estimates were less than 5 percent apart.

Estimation of Medical Costs Associated with Each Crash Case in NHDS and NHIS:

Except for added tailoring to differentiate the costs of child from adult injury and estimating fatality costs, the methods used were the same as those employed in building the U.S. Consumer Product Safety Commission's (CPSC) injury cost model. These methods are summarized below and documented in detail in Zaloshnja, Miller, et al (2002), Lawrence et al. (2000), Miller et al. (1998), and Miller, Romano, and Spicer (2000). (See references 2, 18, 20 and 21.)

Although the methods for estimating the costs and consequences associated with each case differed for fatally injured persons, survivors admitted to the hospital, and survivors treated elsewhere, in each case, costs of initial treatment were extracted from nationally representative or statewide data sets. For survivors, diagnosis, aggregate medical followup, rehabilitation, and long-term costs computed from national data on the percentage of medical costs associated with initial treatment were added. Due to data unavailability, these percentages were less current than the costs for initial treatment.

For hospitalized survivors, medical costs were computed in stages. Maryland and New York were the only States that regulated and tracked the detailed relationships between charges, payments, and actual costs of hospital care in recent years. Moreover, because U.S. health care payers negotiate widely varying, sometimes large discounts from providers, hospital charges bear little relationship to actual hospital costs. Computations were by diagnosis group. Using average cost per day of hospital stay by State as an adjuster (Bureau of the Census, 1999, Table 189), diagnosis-specific hospital costs per day from Maryland in 1994–1995 and New York in 1994 (the last year of that State's cost control) were price-adjusted to national estimates.[(22)] The costs per day were multiplied by diagnosis times corresponding NHDS lengths of hospital stay. Physician costs estimated from Civilian Health and Medical Program of the Uniformed Services (CHAMPUS) data for 1992–1994 were added to the hospital costs.[(23)] Costs after hospital discharge were computed from the most recent nationally representative sources available, the "1987 National Medical Expenditure Survey (NMES)" and National Council on Compensation Insurance (NCCI) data for 1979–1987.[(24,25)] Both CHAMPUS and NCCI data report only primary diagnoses at the three-digit ICD level or broader, so mapping was imperfect, especially for brain injury. The NCCI data describe occupational injury; however, following Rice et al. (1989), Miller (1993), and Miller et al. (1995), we assumed the time track of medical care by diagnosis is independent of injury cause. [(26,27,28)] Where the victim was discharged to a nursing home, following Lawrence et al. (2000),[(18)] nursing home lengths of stay were estimated at 2 years for burn victims and 10 years for other catastrophic injuries, at a cost double the cost of an intermediate care facility. Costs per visit for other nonfatal injuries came from CHAMPUS.

Past studies (e.g., Rice et al., 1989; Miller, 1993; and Miller et al., 1995) estimated lifetime medical spending due to a child's injury from the all-age average acute care spending shortly after the injury and the longer term recovery pattern of adults or victims of all ages.[(26,27,28)] In this study, the hospitalization cost estimates are age-specific. Using longitudinal 1987–1989 health care claims data from Medstat MarketScan® Databases, diagnosis-specific factors were estimated to adjust all-age and adult estimates of followup and longer-term care to child-specific treatment patterns.[(29)] The percentage of medical costs in the first 6 months that resulted from the initial medical visit or hospitalization did not vary with age. After that, children were more resilient; the percentage of their total treatment costs incurred in the first 6 months often was higher, especially for brain injuries. These conclusions were derived from analysis of a random sample of 15,526 episodes of childhood injury and 40,624 episodes of nonoccupational adult injury to victims covered by private health insurance. For each episode, the claims data covered a range of 13–36 months and an average of 24 months after injury. Because it was decided that the diagnostic detail preserved should be maximized, sample size considerations dictated bringing costs forward onto CDS files that represented averages across victims of all ages.

For spinal cord injuries (SCI) and burns, medical costs were not estimated from NHDS and NHIS files because of the limited number of these cases in the files. In addition, long-term SCI costs are not captured in the NHDS and NHIS data. Information from a special study (Berkowitz et al., 1993) was used to estimate first year and annual medical costs for SCI.[30] Costs were estimated by applying the age and gender distribution of SCI victims in the CDS 1993–1999 to a lifetime estimating model with 1997 life expectancy tables adjusted for spinal cord injury mortality rates from Berkowitz et al. (1993).[30] Highway crash-specific costs for burns were adapted from Miller, Brigham, and Cohen et al. (1993), using its regression equations.[31]

Mapping ICD Codes into OIC Codes:

ICD-based injury descriptors were mapped to AIS-85 and body part to make the ICD data compatible with CDS and NASS descriptors. AIS-85 was mapped using the ICDmap-85. This map lists AIS by each ICD code up to the five-digit level of detail. For NHIS, which uses almost exclusively three-digit ICDs (85.5 percent of the data set), the lowest AIS within that three-digit group was selected.

Body part was mapped to AIS from previously collapsed ICD groupings (Miller et al., 1995) and fracture or dislocation was identified with the ICD codes.[28] The ICD/AIS mapping was developed by consensus and contains many assumptions related to the assignment of AIS codes to ICD rubrics (Miller et al. 1995).[28] For multiple-injury NHDS cases, the body part of the maximum AIS injury was assigned. In case of a tie in AIS, the body part defined by the principal diagnosis in discharge records was used. NHIS reports only principal diagnoses.

Inferring Costs for Categories that Appear in CDS Data, but not in the ICD-Based File:

Six percent of the AIS/body part/fracture diagnosis categories that appear in CDS crash data did not appear in the ICD-based files. Costs for these categories were assigned as follows: (1) mean costs were estimated for each AIS, (2) based on these averages, incremental cost ratios from one preferably lower AIS to another were estimated. Lower AIS was preferred because it offered larger case counts. Finally, (3) costs for empty ICD-based cells were assigned by multiplying costs from adjacent cells by this ratio. For instance, if the mean medical costs for AIS-2 and AIS-3 were $500 and $1,000, respectively, then the incremental ratio for AIS-2 to AIS-3 was set to: 1,000/500 = 2. Then, the cost for an empty AIS-3 cell was estimated by multiplying the body part/fracture-specific cost for AIS-2 times the ratio. For body parts with no cost estimates available for any AIS, a general average cost for the appropriate AIS was assigned.

Emergency Services Costs

This cost category includes police and fire services. Fire and police costs were computed from assumed response patterns by crash severity and vehicle involvement, constrained by data on total responses. For fatal, injury, and PDO crashes, time spent per police cruiser responding came from ten jurisdictions with automated police time-tracking systems. A single officer was assumed to have responded to a PDO crash and one officer per injury to other crashes. Time spent per fire truck responding came from nine large fire departments. It was assumed that the fire personnel would respond to the following:

- Ninety percent of fatal and severe injury crashes and 95 percent of critical injury crashes.

- Forty percent of crashes involving injury.
- Twenty-five percent of police-reported crashes involving only property damage.

Property Damage Cost

This includes the cost to repair or replace damaged vehicles, cargo, and other property, including the costs of damage compensation. Property damage costs are from Blincoe, Seay, et al (2002).[8]

Lost Productivity Cost

Lost productivity costs include wages, benefits, and household work lost by the injured, as well as the costs of processing productivity loss compensation claims. It also includes productivity loss by those stuck in crash-related traffic jams and by coworkers and supervisors investigating crashes, recruiting and training replacements for disabled workers, and repairing damaged company vehicles. Excluded are earnings lost by family and friends caring for the injured and the value of schoolwork lost. The productivity loss resulting from traffic delay is part of the total productivity lost.

Future work-loss costs were estimated using methods that parallel the Consumer Product Safety Council (CPSC) Injury Cost Model. These methods are summarized below and documented in detail in Zaloshnja, Miller, et al. (2002); Blincoe, Seay, et al (2002); Lawrence et al. (2000); Miller et al. (1998); Miller, Romano, and Spicer (2000). (See references 2, 7, 18, 20, and 21)

For nonfatal injuries, the work loss cost is the sum of the lifetime loss due to permanent disability (averaged across permanently disabling and nondisabling cases) plus the loss due to temporary disability. Lifetime wage and household work losses due to a death or permanent total disability were computed and then discounted to present value with the standard age-earnings model described in Rice et al. (1989) and in Miller et al. (1998).[26,20] The inputs to this model were for 1997–2000. They include, by age group and sex, survival probabilities from National Vital Statistics Reports (1999); weighted estimates of annual earnings tabulated from the 2001 Current Population Survey, a nationally representative sample; and the value of household work performed from Expectancy Data (1999).[33]

For survivors, NCCI probabilities that an occupational injury will result in permanent partial or total disability and the NCCI percentage of earning power lost to partial disability were applied to compute both the number of permanently disabled victims and the percentage of lifetime work lost. These data are listed by diagnosis group and whether injuries resulted in hospitalization. The ICD maps were used to assign 1985 and 1990 OIC injury codes or code groups to each category.

Diagnosis-specific probabilities of injuries to employed people causing wage work loss came from CDS 1993–1999. The days of work loss per person losing work were estimated from the 1999 Survey of Occupational Injury and Illness of the U.S. Bureau of Labor Statistics. This survey contains employer reports of work losses for more than 600,000 workplace injuries coded in a system akin to the OIC but with less diagnostic detail. According to a survey of 10,000 households, injured people lose housework on 90 percent of the days they lose wage work (S. Marquis, 1992).[34] Thus, it was possible to compute the days of household work lost from the days of wage work lost. Household work was valued based on the cost of hiring people to perform household tasks (e.g., cooking, cleaning, and yard work) and the hours typically devoted to each task from Expectancy Data (1999).[33] Lost productivity for repairing vehicles involved in crashes was updated from Miller et al. (1991) and included in the lost household productivity.[8]

For temporary disability, it was assumed that an adult caregiver would lose the same number of days of wage work or housework because of a child's temporarily disabling injury as an adult would lose when suffering the same injury. Since the adult with the lowest salary often stays home as the caregiver, caregiver wages were estimated as the mean hourly earnings for nonsupervisory employees in private nonagricultural industries. These assumptions may provide a small overestimate because the caregiver may be able to do some work at home. Conversely, the analysis may underestimate the losses because it ignored the work loss of other individuals who visit a hospitalized child or rush to the child's bedside shortly after an injury and any temporary wage work or household work loss by adolescents.

Legal and insurance administration costs per crash victim were derived from the medical and work loss costs, using models developed by Miller (1997).[1] Legal costs include the legal fees and court costs associated with civil litigation resulting from motor vehicle crashes. In estimating these costs, the probability of losing work, the percentage of victims who filed claims, the percentage of claimants who hired an attorney, estimated plaintiff’s attorney fees, and the ratio of legal costs over plaintiff’s attorney fees was taken into consideration. Insurance administration costs include the administrative costs associated with processing insurance claims resulting from motor vehicle crashes and defense attorney fees. In estimating these costs, medical expense claims, liability claims, disability insurance, Worker’s Compensation, welfare payments, sick leave, property damage, and life insurance were estimated.

Following Blincoe, Seay, et al (2002) and Zaloshnja, Miller et al. (2002), travel delay was computed with three refinements.[7,2] First, using a newer and broader survey of five police departments, the hours-of-delay ratio was updated to 49:86:233 for the delays due to PDO, injury, and fatal crashes, respectively. Second, to extract delay per person from delay per crash, data on the average number of people killed or injured in a crash were used. Finally, it was conservatively assumed that only police-reported crashes delay traffic, based on the premise that any substantial impact on traffic would attract the attention of the police.

Monetized Quality-Adjusted Life Years (QALYs)

Monetary losses associated with medical care, other resources used, and lost work do not fully capture the burden of injuries. Injuries also cost victims and families by reducing their quality of life. The good health lost when someone suffers an injury or dies can be accounted for by estimating QALYs lost. A QALY is a health outcome measure that assigns a value of one to a year of perfect health and zero to death (Gold et al., 1996).[35] QALY loss is determined by the duration and severity of the health problem. To compute it, this analysis followed Miller et al. (1993) and used diagnosis and age-group specific estimates from Miller et al. (1995) of the fraction of perfect health lost during each year that a victim is recovering from a health problem or living with a residual disability.[31,6] Such an impairment fraction was estimated by body part, AIS-85, and fracture/dislocation. The resulting estimates in AIS-85 were applied to NHDS and NHIS cases, and the respective AIS90 estimates were computed from the diagnosis specific AIS90 ratings. The monetary value of a QALY ($91,752) was derived by dividing the value of statistical life by the number of years in the person’s life span. The value of statistical life used in this study came from a systematic review found in Miller (1990) and lies midway the values in two recent meta-analyses (Miller, 2000; Mrozek and Taylor, 2002).[36,37,38] As with the other components of cost, QALY losses in future years are discounted to present value at a 3 percent discount rate (Gold et al., 1996; Cropper et al, 1991; Viscusi and Moore, 1989).[35,39,40]

Crash Cost Variance Estimation:

In addition to estimates of average human capital and comprehensive crash cost for the different crash types and police-reported severity levels, this analysis also attempted to produce an estimate of the standard deviation and the 95 percent confidence intervals for each average cost. Here, the procedure "svymean" in the software STATA® 7 is designed specifically to estimate standard errors and confidence intervals for complex survey data. It takes into account the stratification (strata) and clustering (Primary Sampling Units (PSUs)) used in the survey.

It was not possible to measure the variance of unit cost elements like medical costs, property damage, emergency service, travel delay, insurance administration, etc. Therefore standard errors represent the variance in crash costs caused by differences in the number of people involved in crashes of the same type, the severity of injuries suffered (as described by AIS, body part, and fracture status of the injury), and the age and sex of the victims (very important for the magnitude of lost productivity and QALYs).

RESULTS

The results of the analyses are included in tables found in appendix A. They are organized into the following six categories or levels:

- Level 1—For each of the 22 crash geometries, estimates of cost for crash severity levels K, A, B+C, and O. (Sample size issues in the cost databases made it impossible to develop reasonable estimates of B versus C separately.) These are first presented categorized by the two speed limit categories (<=72 km/h (<=45 mi/h) and >=80 km/h (>=50 mi/h)), and then with all speed limits combined.
- Level 2—For each crash geometry, estimates of cost when K and A are combined into one cost level and B and C are combined into one cost level—thus K+A, B+C, O. Again, estimates were calculated with and without categorization by the two speed limit categories.
- Level 3—This level was defined to allow for comparison of "injury" versus "noninjury" crashes. Note that some crash forms (and some reporting officers) define a "C-injury" as a "minor injury" while others define it as a "possible injury." Thus, two definitions of Level 3 costs were used.
    - 3.A—For each crash geometry (with and without speed limit categorization), estimates of cost when all injuries are combined into one cost level separated from the PDO cost level—thus K+A+B+C versus O.
    - 3.B—For each crash geometry (with and without speed limit categorization), estimates of cost when K, A, and B injuries are combined into one cost level separated from the C and PDO cost level—thus K+A+B versus C+O.
- Level 4—For each crash geometry (with and without speed limit categorization), estimates of crash cost without regard to crash severity (i.e., no division by levels of severity).
- Level 5—For each level of crash severity (with and without speed limit categorization), estimates of cost without regard to crash geometry.
- Level 6—Level 5 cost estimates, but with the following categories—K+A, K+A+B, K+A+B+C, B+C, C+O.

At each level, in addition to estimates for individual KABCO levels and combinations, crash cost estimates are also included for two additional categories—"Injured, severity unknown (sev unk)," which means there was at least one injury in the crash, but the severity was not recorded in the police files, and “Unknown severity,” which means no injury severities were provided on the police report. These cost categories are not expected to be used very often, but they are included for completeness.

The output is presented in tabular form in appendix A. The title of each tables provides the number of the Level (e.g., “Level 1…”) and a designation of whether the estimates are categorized by speed limit (e.g., “Level 1 by speed limit”) or not (e.g., “Level 1 without speed limit”). An example of the top portion of the “Level 2 by speed limit” output is shown in table 1 below. The first column, which is a crash geometry number, and the columns labeled “Maximum Injsev Code” are included to assist the user in later sorts of the data. The remaining columns headings are self-explanatory.

In the more detailed levels such as Levels 1 and 2, one finding that appears somewhat counter-intuitive is that the cost estimates for the same crash injury level within the same crash type are sometimes greater for the lower speed limits. For example, in the table below, the human capital and comprehensive cost estimates for a K+A injury crash at the lower speed limit (row three) is greater than for the comparable crash at the higher speed limit in row eight (i.e., $576,985 versus $425,414 for mean comprehensive costs). This resulted from the fact that the cost for the A-injury crash at the lower speed limit was greater than the cost for the A-injury crash at the higher speed limit. Examination of the base data indicated that this may be a function of the fact that lower speed limits are generally in urban areas, where there may be more occupants (and younger occupants) in the involved vehicles (or more or younger pedestrians in the same crash). It is noted, however, that this pattern does not hold for all crash types even at the lower levels. This means that there are other unknown factors at work in the database used in the cost development. The user will note that this counter-intuitive finding can be overcome by using costs with combined speed limits, or using higher-level cost (e.g., Level 3 estimates include fewer of these counter-intuitive findings than Level 2 estimates, which have less than in Level 1).

Small Samples and Outliers

Note that some of the rows in the table are coded S, I, and N. All three codes are included as “flags” to the user that these estimates are felt to be less accurate than estimates in other rows. The S-coded rows indicate estimates that were derived from small sample sizes. For example, the second S-coded row in the table (i.e., the sixth row of data in the table) indicates that there were only five observations (i.e., crashes in the CDS files used) where a no-injury pedestrian crash occurred at an intersection with a speed limit of 80 km/h (50 mi/h) or greater. A decision was made to flag *fatal* crash cost estimates where less than five observations were present, and to flag estimates in all other injury levels where less than 10 observations were present. In these rows, only the mean crash cost estimates are included. The standard deviations and confidence intervals are omitted from the output since these are felt to be virtually meaningless given the small sample sizes. Suggestions to the user for dealing with these questionable estimates are included in the next section.

The I-coded rows indicate what are felt to be “illogical values” or “outliers” in the data—cells with ample sample sizes, but where the cost for a given injury level is an outlier when compared with either other costs within the same crash type (e.g., a B+C cost that is greater than an A-injury cost for a given crash type), or when compared to costs of different crash types at the same injury level (e.g., a no-injury cost that is much greater than all other no-injury costs). These illogical estimates were identified by looking at patterns of costs in similar severity levels or crash types. For example, the first I-coded row in table 1 (i.e., the tenth row of data in the table) indicates a very high cost per crash when compared to other no-injury level pedestrian crashes and other no-injury level crashes in general. Additional examination of the cost-development data indicated that some of these outliers might be due to erroneous coding by the police officer (e.g., in one case, a "no-injury" pedestrian crash was found to have two rather severe injuries.) Since it was not possible to examine each illogical finding in detail, they were flagged for the user's benefit. Again, suggestions for dealing with these are found in the next section.

In addition, there are crash types in the NASS data used to develop these estimates where no fatal crashes were present. For example, if the comparable "Level 1 by speed limit" table had been presented here, the user would note the absence of a crash cost estimate for fatal crashes within the Type 3, single-vehicle animal crashes. No such fatal crash existed in the NASS data used to develop these estimates. As a result, the estimate for "K+A" crashes in the final row of table 1 below does not have a fatal crash cost component and is less accurate than similar combined costs where both K and A crashes existed in the NASS data. All combined estimates (e.g., K+A, K+A+B, K+A+B+C) with no fatal component are coded N in the tables.

Table 1. Example output for Level 2 crash cost estimates categorized by speed limits.

Code	Crash geometry		Speed limit (mi/h)	Maximum injsev in crash	Maximum injsev code	Observ	Mean human capital cost per crash	Standard Error	[95% Confidence Interval]		Mean comprehensive cost per crash	Standard Error	[95% Confidence Interval]	
	1	sv, ped, int	<=45	No injury	0	31	$ 8,512	997	6,537	10,486	$ 10,249	1,408	7,461	13,036
	1	sv, ped, int	<=45	B or C	1.5	515	$ 33,369	4,561	24,340	42,398	$ 60,333	9,021	42,474	78,192
	1	sv, ped, int	<=45	K or A	3.5	401	$ 235,729	17,317	201,444	270,013	$ 576,985	53,159	471,743	682,227
	1	sv, ped, int	<=45	Injured, sev unk	5	53	$ 67,342	22,127	23,536	111,149	$ 129,418	42,249	45,774	213,061
S	1	sv, ped, int	<=45	Unknown	9	4	$ 14,386	—	—	—	$ 22,841	—	—	—
S	1	sv, ped, int	>=50	No injury	0	5	$ 3,672	—	—	—	$ 4,015	—	—	—
	1	sv, ped, int	>=50	B or C	1.5	35	$ 54,605	32,590	—	119,126	$ 101,712	61,756	—	223,975
	1	sv, ped, int	>=50	K or A	3.5	17	$ 182,970	52,554	78,925	287,014	$ 425,414	161,107	106,460	744,369
S	1	sv, ped, int	>=50	Injured, sev unk	5	2	$ 61,573	—	61,573	61,573	$ 146,281	—	—	—
I	2	sv, ped,n-int	<=45	No injury	0	33	$ 28,370	18,026	—	64,059	$ 40,428	27,351	—	94,577
	2	sv, ped,n-int	<=45	B or C	1.5	721	$ 38,674	3,258	32,225	45,123	$ 70,188	7,021	56,288	84,087
	2	sv, ped,n-int	<=45	K or A	3.5	733	$ 322,119	21,628	279,301	364,937	$ 918,824	71,514	777,243	1,060,406
	2	sv, ped,n-int	<=45	Injured, sev unk	5	59	$ 26,089	8,056	10,139	42,039	$ 42,107	14,891	12,627	71,587
	2	sv, ped,n-int	<=45	Unknown	9	25	$ 24,427	8,511	7,578	41,276	$ 35,189	10,607	14,190	56,189
	2	sv, ped,n-int	>=50	No injury	0	18	$ 2,797	145	2,509	3,085	$ 2,831	175	2,484	3,178
	2	sv, ped,n-int	>=50	B or C	1.5	54	$ 31,103	8,151	14,967	47,240	$ 54,703	16,739	21,563	87,843
	2	sv, ped,n-int	>=50	K or A	3.5	121	$ 465,397	60,737	345,152	585,643	$ 1,389,804	214,297	965,546	1,814,062
S	2	sv, ped,n-int	>=50	Injured, sev unk	5	3	$ 36,790	—	—	—	$ 65,026	—	—	—
S	2	sv, ped,n-int	>=50	Unknown	9	2	$ 12,423	—	—	—	$ 18,224	—	—	—
	3	sv, animal	<=45	No injury	0	10	$ 2,617	—	2,617	2,617	$ 2,617	—	2,617	2,617
S	3	sv, animal	<=45	B or C	1.5	3	$ 37,280	—	—	—	$ 89,287	—	—	—
S	3	sv, animal	<=45	K or A	3.5	3	$ 67,137	—	—	—	$ 96,055	—	—	—
	3	sv, animal	>=50	No injury	0	61	$ 4,904	2,047	852	8,956	$ 5,619	2,661	351	10,887
	3	sv, animal	>=50	B or C	1.5	18	$ 14,246	3,482	7,353	21,139	$ 22,916	7,663	7,745	38,087
N	3	sv, animal	>=50	K or A	3.5	20	$ 76,781	20,958	35,288	118,273	$ 165,302	40,911	84,308	246,296

45 mi/h = 72 km/h   50 mi/h = 80 km/h

Code S	=	Derived from small sample.	Sv, ped, int	=	Single-vehicle pedestrian crash at an intersection	Injsev	=	Injury severity
Code I	=	Illogical values or outliers in data.	Sv, ped, n-int	=	Single-vehicle pedestrian crash, nonintersection location	Observ	=	Observations
Code N	=	Combined estimate with no fatal component.	Sv, animal	=	Single-vehicle crash with animal	—	=	Sample size too small to calculate or the lower bound of the confidence interval was below zero.

While these flagged estimates do exist, in general, most estimates are felt to be stable and usable in analysis. Many of the small sample estimates are for "unknown severity" conditions, where the officer either failed to code the injury level or simple coded it as "injured" without a specific level provided. As noted earlier, these categories are not likely to be used very often in subsequent analyses.

Suggestions for Handling Flagged Estimates

There are at least four alternative "corrections" a user could consider when a pertinent cost estimate is flagged for sample size or as an outlier or questionable combined-severity estimate.

1. *Use the small sample estimate as is.* There may be cases where, even though a given estimate is flagged as having a small sample size, the estimate may appear sound. This decision can be based on study of costs within the same crash type or similar crash types. For example, while the sixth-row comprehensive-cost estimate of $4,015 for a no-injury intersection-related pedestrian crash with a speed limit of 80 km/h (50 mi/h) or greater is only based on five observations and is coded red, it is not greatly different from the comprehensive-cost estimate of $2,831 for the same type crash in a nonintersection location shown in the fifteenth row of the table. If so, the user might then decide that the first estimate is suitable for use.

2. *Substitute an estimate from a similar category.* Using the same example as above, the user might decide that the estimate the no-injury nonintersection pedestrian crash with a speed limit of 80 km/h (50 mi/h) or greater could be substituted for the small sample estimate for the comparable intersection-related crash.

3. *Use the "combined speed limit" estimate from the same level.* If using crash costs at a level where speed limit categories are important, a flagged crash cost and its companion cost (i.e., same crash type but at the other speed limit) can be replaced with the same estimate where speed limits are combined. For example, both the first and sixth-row speed limit based estimates for no-injury intersection-related pedestrian crashes could be replace with the estimate for the same crash type where speed limits are combined (e.g., $5,432 in this case—not shown in this table, but found in the appendix A, table 2 entitled "Level 1 without speed limit").

4. *Use the "next-level" cost estimate.* If the user is trying to use the combined speed limit costs or feels that substituting for cost is not preferable, the user could decide to use the next higher level cost in all analyses (e.g., moving from a Level 1 to a Level 2 or Level 3 cost), since the higher levels will have larger sample sizes and fewer outliers.

Finally, it might appear that a fifth option would be for researchers to develop a customized cost specific analysis using a weighted combination of estimates provided. ***This should not be done.*** To combine different estimates (e.g., combine a K estimate and an A estimate into a K+A estimate), it is necessary to weight the individual estimates by the national estimates of the number of applicable crashes in each cell. The sample sizes provided in the output under "Observ" represent the number of *raw* cases in the NASS files used to develop the estimate provided. (See appendix A.) They do not represent the extrapolation of this raw frequency into a national estimate. (Pacific Institute for Research and Evaluation (PIRE) used the extrapolated national estimates in developing the combined estimates in the appendix tables.)

GUIDANCE ON THE USE OF CRASH COST ESTIMATES

The preceding two sections provided a discussion of possible issues with the cost estimates developed and guidance related to how some of these issues might be overcome. This section provides some limited general guidance on the use of crash cost estimates in safety studies.

Comprehensive versus Human Capital (Economic) Cost Estimates

As noted earlier, both comprehensive and human capital cost estimates are provided in the accompanying tables. Comprehensive cost estimates include not only the monetary losses associated with medical care, other resources used, and lost work, but also nonmonetary costs related to the reduction in the quality of life. Since human capital costs do not capture the full burden of injury, comprehensive costs are generally used in analyses related to not only safety issues, but also other public health issues (e.g., effects of the environment on health) and by other nontransportation federal and State agencies. Thus, it is recommended that the comprehensive cost estimates provided in the tables be used.

Choice of Cost "Level"

By developing six different levels of crash-cost estimates, this study has provided future users with a significant amount of flexibility in what crash-cost estimates to use in a given study. As described above, a component of the decision concerning which level of estimate to use will be the stability of the cost estimates for the crash types being studies—whether or not there are a large number of "flagged" estimates.

However, the most important determinate of the cost level to be used is the size of the crash data samples under study, more specifically, the number of fatal and serious-injury crashes available for study. If the analysis involves a national sample of data (e.g., an analysis using multiple years of FARS or GES data), then it may be possible to use the more detailed crash-cost estimates where each fatal crash is assigned a cost (i.e., Level 1estimates). However, in most safety studies, the number of fatal crashes in a given analysis "cell" (e.g., a specific type of crash at signalized intersections) is limited, and often the presence of one of two additional fatal crashes can greatly inflate the cost for the entire cell and disproportionately affect the economic results of the study. Hall (1998) noted in crash-cost research conducted for New Mexico that not only are such fatalities somewhat "random" in any crash sample, but that the main factors determining whether an injury is a fatality rather than a severe injury are not very likely to be affected by roadway-related treatments.[(42)] They are more likely to be related to occupant age, restraint use, type and size of vehicles involved, etc. He therefore argues that such small numbers of fatalities should not be allowed to affect decisions on roadway-based treatments such as those often of interest to FHWA.

In summary, the decision concerning which level of cost estimate to use in a given study will have to be made by the researcher after review based on the nature of the data—specifically the number of fatal crashes in the data set—and the stability of the comprehensive cost estimates provided for the types of crashes under study. Generally, researchers should use the highest (least detailed) cost level possible that can still provide information on the study question of interest. For example, the research information needed may require that specific crash types be analyzed, but may not require categorization by speed limit. Other studies may not require categorization by crash type, and available sample sizes of fatal crashes may allow the use of crash-cost for each KABCO severity level (i.e., as in Level 5 estimates).

Modifying Crash Cost Estimates for Specific Years

The cost estimates developed in this study use 2001 dollars. If human capital crash costs are required for another year, the recommended adjustment procedure is to multiply the human capital costs provided in the tables by a ratio of the Consumer Price Index (CPI)—all items (CPI) for the year of interest divided by the CPI for 2001.(42) If comprehensive crash costs are required for another year, a two-step process is recommended. First, the human capital portion of each unit cost is adjusted as described above. Then, the difference between the comprehensive cost and the human capital cost for a given unit crash cost should be multiplied by a ratio similar to that for human capital costs. However, instead of using the CPI, one should use the Employment Cost Index, not seasonally adjusted, total compensation, total private industry. (43) Adding the two components yields updated comprehensive costs. This procedure should provide adequate cost estimates for roughly 5 years or until the next major DOT update of unit crash cost data and methods.

APPENDIX A: CRASH TYPES AND COST LEVELS TABLES

Based on the past work by Miller et al., the needs of the red-light camera evaluation effort, and projected needs in future FHWA safety studies, the decision was made to estimate human capital and comprehensive costs for each of the following 22 geometry categories.[1,6,8] The geometry names used in the output tables are shown in parentheses.

1. Single-vehicle struck human, at intersection (sv, ped, int).
2. Single-vehicle struck human, not at intersection (sv, ped, n-int).
3. Single-vehicle struck animal (sv, animal).
4. Single-vehicle struck object (sv, object).
5. Single-vehicle struck parked vehicle (sv, prkveh).
6. Single-vehicle rolled over (sv, rollover).
7. Multiple vehicles cross paths at signal (mcp, sig).
8. Multiple vehicles cross paths at sign (mcp, sign).
9. Multiple vehicles cross paths no signage (mcp, nosgn).
10. Multiple vehicles cross paths unspecified (mcp, unk).
11. Multiple vehicles rear-end at all locations (re-all locations).
12. Multiple vehicles rear-end at intersection with no/unknown signage (re-unk int).
13. Multiple vehicles rear-end at signed intersection (re-signed int).
14. Multiple vehicles, rear-end at signalized intersection (re-signl int).
15. Multiple vehicles rear-end, no intersection (re-no int).
16. Multiple vehicles sideswipe (ss).
17. Multiple vehicles, opposite direction not at intersection (ho, n-int).
18. Multiple vehicles, opposite direction at signalized intersection (ho, sig).
19. Multiple vehicles, opposite direction at signed intersection (ho, sign).
20. Multiple vehicles, opposite direction no/unknown signage (ho, unksgn).
21. Multiple vehicles backing (backing).
22. Undefined crash type (undefined).

In the original analyses, multiple vehicle, cross-path categories 7, 8, and 9 above were further categorized by turning maneuver—"both vehicles straight," "one turn right," "one turn left," or "unknown direction." These were later combined into the larger categories due to sample size.

Note that some of the rows in the table are coded 'S', 'I', or 'N' under the code column. All three codes are included as "flags" to the user that these estimates are felt to be less accurate than estimates in other rows.

The 'S' coded rows indicate estimates that were derived from small sample sizes. The 'I' coded rows indicate what are felt to be "illogical values" or "outliers" in the data—cells with ample sample sizes, but where the cost for a given injury level is an outlier when compared with either other costs within the same crash type (e.g., a B+C cost that is greater than an A-injury cost for a given crash type), or when compared to costs of different crash types at the same injury level (e.g., a no-injury cost that is much greater than all other no-injury costs). These illogical estimates were identified by looking at patterns of costs in similar severity levels or crash types. Since it was not possible to examine each illogical finding in detail, they were flagged for the user's benefit. Again, suggestions for dealing with these are found in the next section.

In addition, there are crash types in the NASS data used to develop these estimates where no fatal crashes were present. For example, if the comparable "Level 1 w SL" table had been presented here, the user would note the absence of a crash cost estimate for fatal crashes within the Type 3, single-vehicle animal crashes. No such fatal crash existed in the NASS data used to develop these estimates. All combined estimates (e.g., K+A, K+A+B, K+A+B+C) with no fatal component are coded 'N' in the tables.

Table 2. Level 1 by speed limits

Code		Crash geometry	Speed limit (mi/h)	Maximum injsev in crash	Maximum injsev code	Observ	Mean human capital cost per crash	Std. Err.	[95% Conf. Interval]		Mean comprehensive cost per crash	Std. Err.	[95% Conf. Interval]	
	1	sv, ped, int	<=45	No injury	0	31	$ 8,512	997	6,537	10,486	$ 10,249	1,408	7,461	13,036
S	1	sv, ped, int	>=50	No injury	0	5	$ 3,672	—	—	—	$ 4,015	—	—	—
	1	sv, ped, int	<=45	B or C	1.5	515	$ 33,369	4,561	24,340	42,398	$ 60,333	9,021	42,474	78,192
	1	sv, ped, int	>=50	B or C	1.5	35	$ 54,605	32,590	—	119,126	$ 101,712	61,756	—	223,975
	1	sv, ped, int	<=45	A	3	354	$ 163,157	15,153	133,157	193,157	$ 316,380	33,532	249,994	382,766
	1	sv, ped, int	>=50	A	3	12	$ 116,545	26,407	64,265	168,824	$ 189,805	36,182	118,174	261,436
	1	sv, ped, int	<=45	K	4	47	$ 975,643	30,468	915,323	1,035,963	$ 3,234,016	114,015	3,008,294	3,459,737
	1	sv, ped, int	>=50	K	4	5	$ 1,022,983	1,695	1,019,626	1,026,340	$ 3,404,944	2,819	3,399,363	3,410,526
	1	sv, ped, int	<=45	Injured, sev unk	5	53	$ 67,342	22,127	23,536	111,149	$ 129,418	42,249	45,774	213,061
S	1	sv, ped, int	>=50	Injured, sev unk	5	2	$ 61,573	—	—	—	$ 146,281	—	—	—
S	1	sv, ped, int	<=45	Unknown	9	4	$ 14,386	—	—	—	$ 22,841	—	—	—
I	2	sv, ped,n-int	<=45	No injury	0	33	$ 28,370	18,026	—	64,059	$ 40,428	27,351	—	94,577
	2	sv, ped,n-int	>=50	No injury	0	18	$ 2,797	145	2,509	3,085	$ 2,831	175	2,484	3,178
	2	sv, ped,n-int	<=45	B or C	1.5	721	$ 38,674	3,258	32,225	45,123	$ 70,188	7,021	56,288	84,087
	2	sv, ped,n-int	>=50	B or C	1.5	54	$ 31,103	8,151	14,967	47,240	$ 54,703	16,739	21,563	87,843
	2	sv, ped,n-int	<=45	A	3	602	$ 143,333	9,895	123,743	162,924	$ 284,403	21,568	241,703	327,103
	2	sv, ped,n-int	>=50	A	3	77	$ 177,246	28,631	120,564	233,928	$ 348,100	66,386	216,672	479,529
	2	sv, ped,n-int	<=45	K	4	131	$ 1,008,927	10,105	988,922	1,028,932	$ 3,355,959	33,842	3,288,960	3,422,958
	2	sv, ped,n-int	>=50	K	4	44	$ 994,717	33,843	927,716	1,061,719	$ 3,303,364	113,434	3,078,790	3,527,937
	2	sv, ped,n-int	<=45	Injured, sev unk	5	59	$ 26,089	8,056	10,139	42,039	$ 42,107	14,891	12,627	71,587
S	2	sv, ped,n-int	>=50	Injured, sev unk	5	3	$ 36,790	—	—	—	$ 65,026	—	—	—
	2	sv, ped,n-int	<=45	Unknown	9	25	$ 24,427	8,511	7,578	41,276	$ 35,189	10,607	14,190	56,189
S	2	sv, ped,n-int	>=50	Unknown	9	2	$ 12,423	—	—	—	$ 18,224	—	—	—
	3	sv, animal	<=45	No injury	0	10	$ 2,617	—	2,617	2,617	$ 2,617	—	2,617	2,617
	3	sv, animal	>=50	No injury	0	61	$ 4,904	2,047	852	8,956	$ 5,619	2,661	351	10,887
S	3	sv, animal	<=45	B or C	1.5	3	$ 37,280	—	—	—	$ 89,287	—	—	—
	3	sv, animal	>=50	B or C	1.5	18	$ 14,246	3,482	7,353	21,139	$ 22,916	7,663	7,745	38,087
S	3	sv, animal	<=45	A	3	3	$ 67,137	—	—	—	$ 96,055	—	—	—
	3	sv, animal	>=50	A	3	20	$ 76,781	20,958	35,288	118,273	$ 165,302	40,911	84,308	246,296
	4	sv, object	<=45	No injury	0	608	$ 4,835	1,016	2,825	6,846	$ 5,721	1,195	3,355	8,087
	4	sv, object	>=50	No injury	0	618	$ 4,513	298	3,923	5,104	$ 5,565	428	4,718	6,413
	4	sv, object	<=45	B or C	1.5	446	$ 34,027	2,466	29,145	38,909	$ 65,888	6,016	53,978	77,797
	4	sv, object	>=50	B or C	1.5	688	$ 30,965	4,069	22,910	39,020	$ 62,025	9,203	43,806	80,244
	4	sv, object	<=45	A	3	695	$ 110,069	27,670	55,289	164,849	$ 213,926	53,846	107,322	320,529
	4	sv, object	>=50	A	3	1430	$ 127,805	15,770	96,584	159,026	$ 252,767	28,168	197,001	308,533
	4	sv, object	<=45	K	4	78	$ 1,146,488	43,236	1,060,891	1,232,084	$ 3,686,830	115,708	3,457,756	3,915,904
	4	sv, object	>=50	K	4	287	$ 1,257,090	28,045	1,201,568	1,312,612	$ 4,041,313	87,734	3,867,621	4,215,005
S	4	sv, object	<=45	Injured, sev unk	5	9	$ 19,267	—	—	—	$ 33,034	—	—	—

45 mi/h = 72 km/h 50 mi/h = 80 km/h

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Code I = Illogical values or outliers in data.
Observ = Observations
— = Sample size too small to calculate or the lower bound of the confidence interval was below zero.

Code N = Combined estimate with no fatal component.
St. Err. = Standard Error

Table 2. Level 1 by speed limits—continued

Code		Crash geometry	Speed limit (mi/h)	Maximum injsev in crash	Maximum injsev code	Observ	Mean human capital cost per crash	Std. Err.	[95% Conf. Interval]		Mean comprehensive cost per crash	Std. Err.	[95% Conf. Interval]	
	4	sv, object	>=50	Injured, sev unk	5	21	$ 9,205	1,629	5,980	12,430	$ 14,358	3,114	8,193	20,522
	4	sv, object	<=45	Unknown	9	74	$ 12,992	744	11,520	14,465	$ 22,521	1,332	19,884	25,158
	4	sv, object	>=50	Unknown	9	25	$ 11,690	213	11,268	12,112	$ 20,024	389	19,253	20,794
	5	sv, prkveh	<=45	No injury	0	161	$ 3,438	278	2,887	3,988	$ 3,738	407	2,932	4,544
	5	sv, prkveh	>=50	No injury	0	25	$ 5,288	462	4,373	6,203	$ 6,223	1,364	3,523	8,923
	5	sv, prkveh	<=45	B or C	1.5	59	$ 17,434	3,051	11,394	23,473	$ 28,188	6,444	15,430	40,946
	5	sv, prkveh	>=50	B or C	1.5	32	$ 26,234	4,849	16,634	35,835	$ 52,251	11,729	29,031	75,472
	5	sv, prkveh	<=45	A	3	64	$ 86,245	30,807	25,255	147,235	$ 178,027	65,217	48,914	307,141
	5	sv, prkveh	>=50	A	3	41	$ 111,920	37,026	38,618	185,223	$ 210,159	72,792	66,047	354,270
S	5	sv, prkveh	<=45	K	4	3	$ 1,211,910	—	—	—	$ 3,757,471	—	—	—
	5	sv, prkveh	>=50	K	4	16	$ 1,045,397	13,444	1,018,780	1,072,014	$ 3,475,275	32,346	3,411,238	3,539,312
S	5	sv, prkveh	<=45	Injured, sev unk	5	5	$ 13,616	—	—	—	$ 17,840	—	—	—
S	5	sv, prkveh	>=50	Injured, sev unk	5	3	$ 28,688	—	—	—	$ 57,388	—	—	—
	5	sv, prkveh	<=45	Unknown	9	44	$ 11,941	137	11,669	12,213	$ 20,581	249	20,089	21,073
	6	sv, rollover	<=45	No injury	0	31	$ 6,940	806	5,343	8,536	$ 9,697	1,398	6,930	12,464
	6	sv, rollover	>=50	No injury	0	89	$ 8,798	3,583	1,705	15,892	$ 13,526	5,772	2,098	24,954
	6	sv, rollover	<=45	B or C	1.5	147	$ 31,170	2,925	25,379	36,961	$ 57,820	6,324	45,299	70,341
	6	sv, rollover	>=50	B or C	1.5	247	$ 36,312	9,490	17,524	55,101	$ 70,548	19,852	31,247	109,850
	6	sv, rollover	<=45	A	3	134	$ 78,704	24,866	29,476	127,933	$ 149,754	50,463	49,848	249,659
	6	sv, rollover	>=50	A	3	450	$ 152,275	22,178	108,368	196,183	$ 316,117	46,358	224,339	407,895
	6	sv, rollover	<=45	K	4	17	$ 1,085,757	37,715	1,011,090	1,160,425	$ 3,527,283	73,033	3,382,695	3,671,871
	6	sv, rollover	>=50	K	4	125	$ 1,283,820	48,179	1,188,437	1,379,202	$ 4,179,740	152,995	3,876,847	4,482,632
S	6	sv, rollover	<=45	Injured, sev unk	5	5	$ 15,202	—	—	—	$ 32,393	—	—	—
S	6	sv, rollover	>=50	Injured, sev unk	5	4	$ 248,826	—	—	—	$ 465,130	—	—	—
S	6	sv, rollover	<=45	Unknown	9	1	$ 11,888	—	—	—	$ 20,537	—	—	—
S	6	sv, rollover	>=50	Unknown	9	2	$ 11,888	—	—	—	$ 20,537	—	—	—
	7	mcp, sig	<=45	No injury	0	1043	$ 7,503	925	5,671	9,334	$ 8,673	1,285	6,130	11,217
	7	mcp, sig	>=50	No injury	0	301	$ 6,735	863	5,027	8,443	$ 8,544	1,294	5,983	11,105
	7	mcp, sig	<=45	B or C	1.5	625	$ 29,271	6,547	16,310	42,232	$ 46,660	11,847	23,206	70,114
	7	mcp, sig	>=50	B or C	1.5	636	$ 29,636	2,959	23,778	35,493	$ 53,195	5,794	41,724	64,666
	7	mcp, sig	<=45	A	3	327	$ 67,332	11,352	44,858	89,807	$ 120,810	22,042	77,173	164,447
	7	mcp, sig	>=50	A	3	828	$ 91,786	17,354	57,428	126,143	$ 182,177	30,442	121,908	242,446
	7	mcp, sig	<=45	K	4	16	$ 1,302,570	116,570	1,071,790	1,533,350	$ 4,090,042	305,360	3,485,501	4,694,582
	7	mcp, sig	>=50	K	4	98	$ 1,258,183	34,427	1,190,026	1,326,340	$ 4,025,777	109,148	3,809,690	4,241,865
	7	mcp, sig	<=45	Injured, sev unk	5	15	$ 31,469	9,239	13,179	49,759	$ 47,639	14,994	17,954	77,323
S	7	mcp, sig	>=50	Injured, sev unk	5	5	$ 24,588	—	—	—	$ 45,148	—	—	—
	7	mcp, sig	<=45	Unknown	9	55	$ 16,983	1,688	13,641	20,324	$ 26,911	2,496	21,969	31,852
	7	mcp, sig	>=50	Unknown	9	11	$ 25,684	3,867	18,028	33,340	$ 37,871	6,988	24,037	51,705

45 mi/h = 72 km/h 50 mi/h = 80 km/h

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Observ = Observations

St. Err. = Standard Error

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— = Sample size too small to calculate or the lower bound of the confidence interval was below zero.

Table 2. Level 1 by speed limits—continued

Code		Crash geometry	Speed limit (mi/h)	Maximum injsev in crash	Maximum injsev code	Observ	Mean human capital cost per crash	Std. Err.	[95% Conf. Interval]		Mean comprehensive cost per crash	Std. Err.	[95% Conf. Interval]	
	8	mcp, sign	<=45	No injury	0	773	$ 6,574	724	5,141	8,007	$ 7,910	1,255	5,426	10,394
	8	mcp, sign	>=50	No injury	0	194	$ 4,797	975	2,867	6,726	$ 5,444	1,265	2,941	7,948
	8	mcp, sign	<=45	B or C	1.5	463	$ 28,436	4,701	19,128	37,744	$ 48,035	10,156	27,928	68,142
	8	mcp, sign	>=50	B or C	1.5	328	$ 43,234	5,109	33,119	53,348	$ 77,886	10,157	57,778	97,995
	8	mcp, sign	<=45	A	3	323	$ 118,781	19,681	79,817	157,745	$ 218,027	28,767	161,076	274,977
	8	mcp, sign	>=50	A	3	453	$ 122,047	17,848	86,712	157,382	$ 233,136	34,669	164,500	301,772
	8	mcp, sign	<=45	K	4	18	$ 1,426,917	150,590	1,128,784	1,725,050	$ 4,402,315	392,377	3,625,500	5,179,129
	8	mcp, sign	>=50	K	4	77	$ 1,214,659	61,754	1,092,401	1,336,918	$ 3,917,185	181,562	3,557,736	4,276,634
	8	mcp, sign	<=45	Injured, sev unk	5	11	$ 57,990	13,690	30,888	85,092	$ 102,485	21,789	59,348	145,621
S	8	mcp, sign	>=50	Injured, sev unk	5	5	$ 62,318	—	—	—	$ 123,919	—	—	—
	8	mcp, sign	<=45	Unknown	9	44	$ 18,249	1,235	15,805	20,694	$ 25,553	3,294	19,032	32,073
S	8	mcp, sign	>=50	Unknown	9	4	$ 22,226	—	—	—	$ 41,391	—	—	—
	9	mcp, nosgn	<=45	No injury	0	244	$ 5,257	366	4,532	5,982	$ 5,604	471	4,672	6,537
	9	mcp, nosgn	>=50	No injury	0	69	$ 6,708	1,456	3,826	9,590	$ 7,920	2,000	3,961	11,880
	9	mcp, nosgn	<=45	B or C	1.5	153	$ 21,012	2,879	15,312	26,712	$ 32,708	5,017	22,776	42,640
	9	mcp, nosgn	>=50	B or C	1.5	108	$ 35,837	6,324	23,317	48,357	$ 66,026	11,270	43,714	88,337
	9	mcp, nosgn	<=45	A	3	79	$ 113,013	38,489	36,813	189,212	$ 220,991	79,947	62,715	379,266
	9	mcp, nosgn	>=50	A	3	143	$ 161,624	40,502	81,439	241,809	$ 297,296	76,356	146,129	448,464
	9	mcp, nosgn	>=50	K	4	9	$ 1,228,360	161,555	908,519	1,548,201	$ 3,802,881	315,457	3,178,351	4,427,410
S	9	mcp, nosgn	<=45	Injured, sev unk	5	6	$ 196,721	—	—	—	$ 508,627	—	—	—
S	9	mcp, nosgn	>=50	Injured, sev unk	5	1	$ 13,917	—	—	—	$ 22,566	—	—	—
S	9	mcp, nosgn	<=45	Unknown	9	9	$ 27,860	—	—	—	$ 49,825	—	—	—
	10	mcp, unk	<=45	No injury	0	687	$ 5,230	370	4,498	5,961	$ 5,607	554	4,510	6,705
	10	mcp, unk	>=50	No injury	0	69	$ 4,682	251	4,185	5,178	$ 4,844	299	4,252	5,436
	10	mcp, unk	<=45	B or C	1.5	267	$ 41,536	10,224	21,295	61,777	$ 73,694	19,429	35,230	112,159
	10	mcp, unk	>=50	B or C	1.5	31	$ 38,410	6,896	24,758	52,061	$ 69,357	11,681	46,231	92,483
	10	mcp, unk	<=45	A	3	108	$ 168,993	49,016	71,953	266,032	$ 338,201	93,816	152,467	523,935
	10	mcp, unk	>=50	A	3	25	$ 73,469	10,859	51,970	94,967	$ 142,085	20,168	102,157	182,012
S	10	mcp, unk	>=50	K	4	2	$ 1,175,471	—	—	—	$ 3,723,798	—	—	—
S	10	mcp, unk	<=45	Injured, sev unk	5	6	$ 26,944	—	—	—	$ 50,197	—	—	—
S	10	mcp, unk	>=50	Injured, sev unk	5	1	$ 70,578	—	—	—	$ 137,479	—	—	—
	10	mcp, unk	<=45	Unknown	9	27	$ 16,510	1,295	13,946	19,074	$ 27,255	2,777	21,758	32,753
S	10	mcp, unk	>=50	Unknown	9	4	$ 17,186	—	—	—	$ 27,805	—	—	—
	11	re-all locations	<=45	No injury	0	1916	$ 7,465	1,261	4,969	9,962	$ 8,399	1,653	5,127	11,671
	11	re-all locations	>=50	No injury	0	1040	$ 8,911	1,474	5,992	11,829	$ 10,764	2,167	6,473	15,055
	11	re-all locations	<=45	B or C	1.5	1274	$ 29,079	9,064	11,135	47,023	$ 39,038	10,423	18,404	59,673
	11	re-all locations	>=50	B or C	1.5	895	$ 38,040	6,002	26,157	49,923	$ 65,298	14,951	35,698	94,897
	11	re-all locations	<=45	A	3	375	$ 67,682	20,697	26,707	108,658	$ 129,799	40,851	48,923	210,675

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Table 2. Level 1 by speed limits—continued

Code		Crash geometry	Speed limit (mi/h)	Maximum injsev in crash	Maximum injsev code	Observ	Mean human capital cost per crash	Std. Err.	[95% Conf.	Interval]	Mean comprehensive cost per crash	Std. Err.	[95% Conf.	Interval]
	11	re-all locations	>=50	A	3	556	$ 60,472	11,586	37,534	83,410	$ 116,043	22,213	72,066	160,019
	11	re-all locations	<=45	K	4	5	$ 1,093,043	76,787	941,023	1,245,063	$ 3,566,627	175,139	3,219,893	3,913,360
	11	re-all locations	>=50	K	4	83	$ 1,205,689	64,889	1,077,224	1,334,155	$ 3,876,484	173,224	3,533,541	4,219,427
	11	re-all locations	<=45	Injured, sev unk	5	20	$ 32,655	8,696	15,440	49,870	$ 55,850	17,596	21,014	90,686
	11	re-all locations	>=50	Injured, sev unk	5	10	$ 35,395	2,190	31,059	39,731	$ 73,527	8,798	56,109	90,946
	11	re-all locations	<=45	Unknown	9	164	$ 17,215	1,228	14,783	19,647	$ 27,432	2,100	23,275	31,590
	11	re-all locations	>=50	Unknown	9	65	$ 20,771	3,219	14,398	27,144	$ 33,123	5,861	21,520	44,725
	12	re-unk int	<=45	No injury	0	422	$ 5,297	785	3,744	6,851	$ 5,649	914	3,839	7,459
	12	re-unk int	>=50	No injury	0	109	$ 11,783	6,066	—	23,793	$ 13,573	6,809	93	27,053
I	12	re-unk int	<=45	B or C	1.5	300	$ 65,077	23,715	18,127	112,027	$ 78,872	24,711	29,950	127,795
	12	re-unk int	>=50	B or C	1.5	116	$ 40,144	4,035	32,156	48,132	$ 55,679	5,115	45,553	65,805
	12	re-unk int	<=45	A	3	85	$ 93,454	35,487	23,197	163,711	$ 141,623	42,431	57,621	225,626
	12	re-unk int	>=50	A	3	52	$ 88,912	16,368	56,506	121,317	$ 170,096	34,658	101,481	238,711
S	12	re-unk int	<=45	K	4	1	$ 1,021,014	—	—	—	$ 3,401,670	—	—	—
	12	re-unk int	>=50	K	4	5	$ 1,315,720	118,458	1,081,202	1,550,238	$ 4,253,444	392,486	3,476,415	5,030,474
S	12	re-unk int	<=45	Injured, sev unk	5	6	$ 29,812	—	—	—	$ 52,029	—	—	—
S	12	re-unk int	>=50	Injured, sev unk	5	1	$ 5,235	—	—	—	$ 5,235	—	—	—
	12	re-unk int	<=45	Unknown	9	37	$ 19,416	1,445	16,555	22,277	$ 31,827	2,795	26,294	37,360
S	12	re-unk int	>=50	Unknown	9	4	$ 17,386	—	—	—	$ 26,753	—	—	—
	13	re - signed int	<=45	No injury	0	99	$ 10,586	3,540	3,577	17,595	$ 12,295	4,622	3,145	21,445
	13	re - signed int	>=50	No injury	0	18	$ 3,302	549	2,215	4,389	$ 3,788	978	1,851	5,725
	13	re - signed int	<=45	B or C	1.5	50	$ 25,003	4,819	15,463	34,542	$ 46,644	16,047	14,875	78,412
	13	re - signed int	>=50	B or C	1.5	14	$ 11,759	1,367	9,052	14,465	$ 15,268	2,002	11,305	19,230
	13	re - signed int	<=45	A	3	22	$ 71,190	18,954	33,666	108,714	$ 127,706	39,338	49,826	205,586
S	13	re - signed int	>=50	A	3	7	$ 88,088	—	—	—	$ 159,658	—	—	—
S	13	re - signed int	<=45	Injured, sev unk	5	1	$ 13,878	—	—	—	$ 15,958	—	—	—
S	13	re - signed int	>=50	Injured, sev unk	5	1	$ 83,223	—	—	—	$ 267,019	—	—	—
S	13	re - signed int	<=45	Unknown	9	7	$ 13,737	—	—	—	$ 20,755	—	—	—
	14	re - signl int	<=45	No injury	0	492	$ 9,454	2,295	4,910	13,997	$ 11,463	3,338	4,853	18,072
	14	re - signl int	>=50	No injury	0	142	$ 4,810	671	3,481	6,139	$ 5,901	1,082	3,758	8,044
	14	re - signl int	<=45	B or C	1.5	418	$ 26,255	4,476	17,394	35,117	$ 39,398	8,202	23,160	55,637
	14	re - signl int	>=50	B or C	1.5	165	$ 19,658	4,724	10,306	29,010	$ 32,761	8,592	15,750	49,772
	14	re - signl int	<=45	A	3	90	$ 43,601	10,054	23,696	63,506	$ 84,820	19,977	45,269	124,370
	14	re - signl int	>=50	A	3	119	$ 45,685	14,383	17,210	74,161	$ 76,587	25,960	25,194	127,981
	14	re - signl int	>=50	K	4	8	$ 1,379,204	224,716	934,319	1,824,089	$ 4,541,549	766,973	3,023,124	6,059,974
S	14	re - signl int	<=45	Injured, sev unk	5	6	$ 29,111	—	—	—	$ 44,120	—	—	—
S	14	re - signl int	>=50	Injured, sev unk	5	2	$ 30,447	—	—	—	$ 58,458	—	—	—
	14	re - signl int	<=45	Unknown	9	49	$ 16,136	1,579	13,011	19,262	$ 26,930	4,043	18,926	34,934

45 mi/h = 72 km/h 50 mi/h = 80 km/h

Code S = Derived from small sample.
Injsev = Injury severity
Conf. Interval = Confidence Interval

Code I = Illogical values or outliers in data.
Observ = Observations
— = Sample size too small to calculate or the lower bound of the confidence interval was below zero.

Code N = Combined estimate with no fatal component.
St. Err. = Standard Error

Table 2. Level 1 by speed limits—continued

Code		Crash geometry	Speed limit (mi/h)	Maximum injsev in crash	Maximum injsev code	Observ	Mean human capital cost per crash	Std. Err.	[95% Conf. Interval]		Mean comprehensive cost per crash	Std. Err.	[95% Conf. Interval]	
S	14	re - signl int	>=50	Unknown	9	3	$ 30,665	—	—	—	$ 48,029	—	—	—
	15	re - no int	<=45	No injury	0	903	$ 5,516	176	5,168	5,864	$ 5,756	269	5,223	6,289
	15	re - no int	>=50	No injury	0	771	$ 9,055	1,556	5,975	12,135	$ 10,972	2,319	6,382	15,562
	15	re - no int	<=45	B or C	1.5	506	$ 18,630	2,479	13,722	23,539	$ 26,642	3,940	18,842	34,442
	15	re - no int	>=50	B or C	1.5	600	$ 43,717	12,936	18,108	69,327	$ 88,498	33,108	22,951	154,045
	15	re - no int	<=45	A	3	178	$ 95,474	48,023	400	190,548	$ 187,886	98,120	—	382,140
	15	re - no int	>=50	A	3	378	$ 61,150	13,487	34,449	87,852	$ 120,371	26,588	67,733	173,009
S	15	re - no int	<=45	K	4	4	$ 1,207,297	—	—	—	$ 3,828,285	—	—	—
	15	re - no int	>=50	K	4	70	$ 1,189,841	65,935	1,059,306	1,320,377	$ 3,817,558	169,794	3,481,406	4,153,710
S	15	re - no int	<=45	Injured, sev unk	5	7	$ 41,326	—	—	—	$ 75,081	—	—	—
S	15	re - no int	>=50	Injured, sev unk	5	6	$ 34,399	—	—	—	$ 68,218	—	—	—
	15	re - no int	<=45	Unknown	9	71	$ 18,029	1,668	14,728	21,331	$ 27,042	1,646	23,783	30,301
	15	re - no int	>=50	Unknown	9	58	$ 20,478	3,347	13,853	27,104	$ 32,695	6,093	20,633	44,758
	16	ss	<=45	No injury	0	1658	$ 5,679	330	5,026	6,332	$ 6,007	416	5,185	6,830
	16	ss	>=50	No injury	0	681	$ 5,218	211	4,801	5,636	$ 5,762	348	5,072	6,452
	16	ss	<=45	B or C	1.5	590	$ 30,396	7,243	16,055	44,736	$ 51,211	11,817	27,817	74,606
	16	ss	>=50	B or C	1.5	506	$ 37,641	4,667	28,402	46,880	$ 68,009	8,958	50,274	85,743
	16	ss	<=45	A	3	340	$ 66,070	9,314	47,630	84,510	$ 132,981	25,544	82,409	183,552
	16	ss	>=50	A	3	578	$ 78,551	17,404	44,095	113,007	$ 141,088	32,543	76,660	205,516
	16	ss	<=45	K	4	10	$ 1,133,746	76,354	982,583	1,284,909	$ 3,754,731	242,558	3,274,524	4,234,937
	16	ss	>=50	K	4	120	$ 1,325,226	47,759	1,230,675	1,419,778	$ 4,228,996	152,281	3,927,516	4,530,476
	16	ss	<=45	Injured, sev unk	5	13	$ 93,418	21,175	51,495	135,340	$ 173,762	41,739	91,129	256,396
S	16	ss	>=50	Injured, sev unk	5	7	$ 34,884	—	—	—	$ 60,877	—	—	—
	16	ss	<=45	Unknown	9	134	$ 16,110	1,092	13,948	18,272	$ 24,956	1,132	22,716	27,197
	16	ss	>=50	Unknown	9	61	$ 13,978	915	12,167	15,789	$ 21,870	1,763	18,381	25,360
	17	ho, n-int	<=45	No injury	0	55	$ 3,830	703	2,438	5,222	$ 3,948	739	2,486	5,410
	17	ho, n-int	>=50	No injury	0	25	$ 3,272	396	2,487	4,056	$ 3,471	510	2,460	4,481
	17	ho, n-int	<=45	B or C	1.5	55	$ 25,137	4,715	15,801	34,472	$ 40,463	9,495	21,666	59,260
	17	ho, n-int	>=50	B or C	1.5	51	$ 72,561	11,836	49,129	95,993	$ 126,409	18,294	90,190	162,627
	17	ho, n-int	<=45	A	3	74	$ 143,913	30,745	83,045	204,781	$ 261,596	58,929	144,931	378,262
	17	ho, n-int	>=50	A	3	250	$ 235,646	13,880	208,167	263,126	$ 445,413	28,962	388,075	502,751
	17	ho, n-int	<=45	K	4	7	$ 1,737,819	264,933	1,213,314	2,262,324	$ 5,424,317	840,137	3,761,045	7,087,590
	17	ho, n-int	>=50	K	4	100	$ 1,489,908	74,012	1,343,381	1,636,434	$ 4,673,628	201,957	4,273,801	5,073,455
S	17	ho, n-int	>=50	Injured, sev unk	5	3	$ 36,258	—	—	—	$ 64,704	—	—	—
S	17	ho, n-int	<=45	Unknown	9	2	$ 5,560	—	—	—	$ 5,984	—	—	—
S	17	ho, n-int	>=50	Unknown	9	3	$ 13,001	—	—	—	$ 21,528	—	—	—
	18	ho, sig	<=45	No injury	0	42	$ 5,053	229	4,599	5,507	$ 5,101	245	4,617	5,586
S	18	ho, sig	>=50	No injury	0	2	$ 2,617	—	—	—	$ 2,617	—	—	—

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Table 2. Level 1 by speed limits—continued

Code		Crash geometry	Speed limit (mi/h)	Maximum injsev in crash	Maximum injsev code	Observ	Mean human capital cost per crash	Std. Err.	[95% Conf. Interval]		Mean comprehensive cost per crash	Std. Err.	[95% Conf. Interval]	
	18	ho, sig	<=45	B or C	1.5	18	$ 67,648	9,797	48,252	87,043	$ 119,622	11,151	97,545	141,700
S	18	ho, sig	>=50	B or C	1.5	2	$ 19,761	—	—	—	$ 29,181	—	—	—
S	18	ho, sig	<=45	A	3	8	$ 141,744	—	—	—	$ 239,933	—	—	—
	18	ho, sig	>=50	A	3	12	$ 204,874	45,975	113,856	295,893	$ 360,354	130,323	102,345	618,363
S	18	ho, sig	<=45	Unknown	9	2	$ 14,384	—	—	—	$ 23,033	—	—	—
S	18	ho, sig	>=50	Unknown	9	1	$ 44,909	—	—	—	$ 75,386	—	—	—
	19	ho, sign	<=45	No injury	0	10	$ 4,793	407	3,987	5,599	$ 4,806	399	4,017	5,596
S	19	ho, sign	>=50	No injury	0	4	$ 5,027	—	—	—	$ 6,169	—	—	—
S	19	ho, sign	<=45	B or C	1.5	3	$ 20,809	—	—	—	$ 27,351	—	—	—
S	19	ho, sign	>=50	B or C	1.5	7	$ 44,684	—	—	—	$ 74,466	—	—	—
S	19	ho, sign	<=45	A	3	4	$ 43,138	—	—	—	$ 73,751	—	—	—
S	19	ho, sign	>=50	A	3	8	$ 100,465	—	—	—	$ 259,822	—	—	—
S	19	ho, sign	>=50	K	4	2	$ 1,734,700	—	—	—	$ 5,495,375	—	—	—
	20	ho, unksgn	<=45	No injury	0	29	$ 7,000	4,060	—	15,037	$ 10,110	7,031	—	24,030
S	20	ho, unksgn	>=50	No injury	0	6	$ 4,738	—	—	—	$ 4,738	—	—	—
	20	ho, unksgn	<=45	B or C	1.5	14	$ 22,311	8,526	5,431	39,191	$ 33,767	14,933	4,204	63,330
S	20	ho, unksgn	>=50	B or C	1.5	3	$ 38,747	—	—	—	$ 72,630	—	—	—
S	20	ho, unksgn	<=45	A	3	8	$ 67,464	—	—	—	$ 121,628	—	—	—
S	20	ho, unksgn	<=45	Unknown	9	2	$ 15,264	—	—	—	$ 24,292	—	—	—
	21	backing	<=45	No injury	0	11	$ 4,579	548	3,495	5,663	$ 4,579	548	3,495	5,663
S	21	backing	<=45	B or C	1.5	2	$ 35,485	—	—	—	$ 68,936	—	—	—
S	21	backing	<=45	A	3	1	$ 12,654	—	—	—	$ 16,172	—	—	—
S	21	backing	<=45	Unknown	9	1	$ 14,506	—	—	—	$ 23,154	—	—	—
	22	undefined	<=45	No injury	0	735	$ 5,193	1,539	2,147	8,240	$ 6,386	2,323	1,787	10,985
	22	undefined	>=50	No injury	0	304	$ 3,617	262	3,098	4,135	$ 3,826	330	3,172	4,479
	22	undefined	<=45	B or C	1.5	794	$ 32,737	3,914	24,989	40,485	$ 62,752	9,564	43,818	81,687
	22	undefined	>=50	B or C	1.5	261	$ 30,933	4,466	22,091	39,775	$ 54,777	8,173	38,595	70,958
	22	undefined	<=45	A	3	680	$ 100,526	9,455	81,807	119,244	$ 197,468	19,478	158,906	236,029
	22	undefined	>=50	A	3	309	$ 165,327	21,138	123,479	207,175	$ 300,201	39,200	222,593	377,808
	22	undefined	<=45	K	4	24	$ 1,055,005	28,556	998,471	1,111,538	$ 3,459,892	49,940	3,361,024	3,558,761
	22	undefined	>=50	K	4	42	$ 1,395,316	83,640	1,229,727	1,560,904	$ 4,537,653	254,912	4,032,989	5,042,318
	22	undefined	<=45	Injured, sev unk	5	39	$ 30,476	4,280	22,002	38,951	$ 57,595	10,398	37,009	78,180
S	22	undefined	>=50	Injured, sev unk	5	3	$ 59,349	—	—	—	$ 117,523	—	—	—
	22	undefined	<=45	Unknown	9	200	$ 13,341	684	11,986	14,696	$ 22,856	1,216	20,450	25,263
	22	undefined	>=50	Unknown	9	18	$ 13,196	1,904	9,427	16,965	$ 21,671	3,747	14,254	29,089

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Table 3. Level 1 without speed limits

Code		Crash geometry	Maximum injsev in crash	Maximum injsev code	Observ	Mean human capital cost per crash	Std. Err.	[95% Conf.	Interval]	Mean comprehensive cost per crash	Std. Err.	[95% Conf.	Interval]
	1	sv, ped, int	No injury	0	36	$ 4,772	1,339	2,121	7,423	$ 5,432	1,762	1,943	8,921
	1	sv, ped, int	B or C	1.5	550	$ 39,195	9,051	21,277	57,113	$ 71,684	17,485	37,069	106,300
	1	sv, ped, int	A	3	366	$ 147,881	14,469	119,236	176,527	$ 274,900	28,937	217,610	332,189
	1	sv, ped, int	K	4	52	$ 988,999	23,270	942,930	1,035,068	$ 3,282,239	86,943	3,110,113	3,454,365
	1	sv, ped, int	Injured, sev unk	5	55	$ 63,856	8,681	46,671	81,042	$ 139,607	17,911	104,148	175,066
S	1	sv, ped, int	Unknown	9	4	$ 14,386	—	—	—	$ 22,841	—	—	—
	2	sv, ped,n-int	No injury	0	51	$ 3,158	391	2,384	3,933	$ 3,362	565	2,244	4,480
	2	sv, ped,n-int	B or C	1.5	775	$ 35,810	3,852	28,185	43,435	$ 64,329	7,962	48,566	80,092
	2	sv, ped,n-int	A	3	679	$ 153,326	11,740	130,085	176,568	$ 303,172	26,880	249,956	356,388
	2	sv, ped,n-int	K	4	175	$ 1,002,301	16,535	969,566	1,035,036	$ 3,331,435	55,187	3,222,177	3,440,692
	2	sv, ped,n-int	Injured, sev unk	5	62	$ 28,020	7,345	13,479	42,561	$ 46,242	13,672	19,174	73,310
	2	sv, ped,n-int	Unknown	9	27	$ 23,618	7,949	7,881	39,356	$ 34,047	9,922	14,404	53,690
	3	sv, animal	No injury	0	71	$ 4,544	1,751	1,077	8,011	$ 5,147	2,277	639	9,654
	3	sv, animal	B or C	1.5	21	$ 17,106	4,771	7,660	26,551	$ 31,156	11,954	7,490	54,821
	3	sv, animal	A	3	23	$ 75,715	18,629	38,835	112,595	$ 157,649	36,300	85,784	229,515
	4	sv, object	No injury	0	1230	$ 4,624	402	3,827	5,420	$ 5,618	513	4,602	6,633
	4	sv, object	B or C	1.5	1139	$ 31,968	2,770	26,485	37,452	$ 63,329	6,247	50,962	75,696
	4	sv, object	A	3	2147	$ 125,498	17,195	91,455	159,540	$ 247,690	31,376	185,572	309,808
	4	sv, object	K	4	372	$ 1,227,688	25,930	1,176,352	1,279,024	$ 3,943,720	76,265	3,792,732	4,094,708
	4	sv, object	Injured, sev unk	5	31	$ 13,658	3,034	7,652	19,664	$ 22,662	5,621	11,534	33,790
	4	sv, object	Unknown	9	100	$ 12,616	594	11,439	13,792	$ 21,799	1,063	19,695	23,902
	5	sv, prkveh	No injury	0	187	$ 4,070	258	3,560	4,580	$ 4,587	494	3,610	5,564
	5	sv, prkveh	B or C	1.5	91	$ 20,118	3,037	14,105	26,130	$ 35,527	6,996	21,677	49,376
	5	sv, prkveh	A	3	105	$ 95,778	23,257	49,734	141,821	$ 189,957	48,463	94,011	285,903
	5	sv, prkveh	K	4	19	$ 1,070,587	30,652	1,009,903	1,131,271	$ 3,517,965	56,552	3,406,005	3,629,925
S	5	sv, prkveh	Injured, sev unk	5	8	$ 21,022	—	—	—	$ 37,273	—	—	—
	5	sv, prkveh	Unknown	9	44	$ 11,941	137	11,669	12,213	$ 20,581	249	20,089	21,073
	6	sv, rollover	No injury	0	121	$ 8,704	3,395	1,983	15,425	$ 13,331	5,462	2,518	24,144
	6	sv, rollover	B or C	1.5	398	$ 35,014	7,217	20,726	49,303	$ 67,357	15,105	37,453	97,261
	6	sv, rollover	A	3	594	$ 136,563	18,584	99,771	173,354	$ 280,609	38,364	204,658	356,560
	6	sv, rollover	K	4	145	$ 1,256,949	34,952	1,187,752	1,326,145	$ 4,092,803	107,091	3,880,787	4,304,818
S	6	sv, rollover	Injured, sev unk	5	9	$ 182,849	—	—	—	$ 342,922	—	—	—
S	6	sv, rollover	Unknown	9	4	$ 12,315	—	—	—	$ 21,032	—	—	—
	7	mcp, sig	No injury	0	1347	$ 7,210	678	5,868	8,553	$ 8,598	952	6,713	10,483
	7	mcp, sig	B or C	1.5	1265	$ 29,553	3,036	23,543	35,564	$ 51,150	5,687	39,892	62,409
	7	mcp, sig	A	3	1161	$ 87,490	12,604	62,538	112,443	$ 171,360	20,902	129,979	212,740
	7	mcp, sig	K	4	114	$ 1,261,770	34,996	1,192,485	1,331,054	$ 4,030,971	105,615	3,821,877	4,240,064
	7	mcp, sig	Injured, sev unk	5	20	$ 28,828	6,332	16,291	41,365	$ 46,683	11,165	24,578	68,787
	7	mcp, sig	Unknown	9	66	$ 18,338	1,632	15,108	21,569	$ 28,618	2,441	23,786	33,451

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Table 3. Level 1 without speed limits—continued

Code		Crash geometry	Maximum injsev in crash	Maximum injsev code	Observ	Mean human capital cost per crash	Std. Err.	[95% Conf.	Interval]	Mean comprehensive cost per crash	Std. Err.	[95% Conf.	Interval]
	8	mcp, sign	No injury	0	968	$ 5,861	700	4,476	7,247	$ 6,922	1,034	4,875	8,969
	8	mcp, sign	B or C	1.5	795	$ 35,644	4,007	27,710	43,577	$ 62,632	8,271	46,257	79,007
	8	mcp, sign	A	3	781	$ 120,938	15,999	89,264	152,612	$ 228,827	29,123	171,172	286,483
	8	mcp, sign	K	4	95	$ 1,245,078	61,206	1,123,905	1,366,251	$ 3,986,710	171,125	3,647,922	4,325,497
	8	mcp, sign	Injured, sev unk	5	16	$ 60,937	28,720	4,078	117,795	$ 117,079	52,562	13,018	221,140
	8	mcp, sign	Unknown	9	48	$ 18,600	1,381	15,866	21,334	$ 26,949	3,768	19,489	34,409
	9	mcp, nosgn	No injury	0	314	$ 5,912	703	4,521	7,304	$ 6,650	975	4,719	8,580
	9	mcp, nosgn	B or C	1.5	262	$ 27,698	3,620	20,532	34,865	$ 47,758	7,595	32,721	62,795
	9	mcp, nosgn	A	3	222	$ 135,922	27,889	80,708	191,137	$ 256,952	56,170	145,749	368,155
	9	mcp, nosgn	K	4	9	$ 1,228,360	161,555	908,519	1,548,201	$ 3,802,881	315,457	3,178,351	4,427,410
S	9	mcp, nosgn	Injured, sev unk	5	7	$ 110,650	—	—	—	$ 279,770	—	—	—
S	9	mcp, nosgn	Unknown	9	9	$ 27,860	—	—	—	$ 49,825	—	—	—
	10	mcp, unk	No injury	0	756	$ 5,025	251	4,529	5,521	$ 5,322	371	4,588	6,055
	10	mcp, unk	B or C	1.5	298	$ 41,000	8,487	24,198	57,802	$ 72,951	16,103	41,069	104,832
	10	mcp, unk	A	3	133	$ 83,715	11,888	60,180	107,251	$ 163,121	22,857	117,869	208,373
S	10	mcp, unk	K	4	2	$ 1,175,471	—	—	—	$ 3,723,798	—	—	—
S	10	mcp, unk	Injured, sev unk	5	7	$ 48,360	—	—	—	$ 93,037	—	—	—
	10	mcp, unk	Unknown	9	31	$ 16,585	1,413	13,789	19,381	$ 27,316	2,851	21,671	32,961
	11	re-all locations	No injury	0	2958	$ 8,230	1,046	6,160	10,301	$ 9,651	1,505	6,672	12,631
	11	re-all locations	B or C	1.5	2172	$ 32,708	6,125	20,582	44,834	$ 49,701	9,271	31,347	68,054
	11	re-all locations	A	3	933	$ 62,390	9,623	43,340	81,440	$ 119,696	18,639	82,795	156,596
	11	re-all locations	K	4	88	$ 1,194,939	57,952	1,080,208	1,309,669	$ 3,846,912	154,104	3,541,822	4,152,002
	11	re-all locations	Injured, sev unk	5	30	$ 33,948	4,640	24,763	43,134	$ 64,194	10,434	43,538	84,850
	11	re-all locations	Unknown	9	229	$ 18,120	1,266	15,614	20,625	$ 28,880	2,209	24,506	33,253
	12	re-unk int	No injury	0	532	$ 6,997	1,941	3,154	10,841	$ 7,735	2,226	3,328	12,142
	12	re-unk int	B or C	1.5	416	$ 50,583	12,393	26,048	75,118	$ 65,390	13,047	39,559	91,221
	12	re-unk int	A	3	137	$ 89,901	15,120	59,966	119,836	$ 163,895	29,660	105,175	222,615
	12	re-unk int	K	4	6	$ 1,127,670	100,821	928,067	1,327,272	$ 3,709,932	302,540	3,110,974	4,308,890
S	12	re-unk int	Injured, sev unk	5	7	$ 29,389	—	—	—	$ 51,224	—	—	—
	12	re-unk int	Unknown	9	41	$ 19,369	1,418	16,561	22,177	$ 31,709	2,745	26,276	37,143
	13	re - signed int	No injury	0	117	$ 10,325	3,437	3,520	17,130	$ 11,990	4,482	3,117	20,863
	13	re - signed int	B or C	1.5	64	$ 21,767	3,829	14,186	29,348	$ 38,978	12,123	14,978	62,978
	13	re - signed int	A	3	29	$ 75,825	15,849	44,448	107,201	$ 136,469	33,137	70,865	202,073
S	13	re - signed int	Injured, sev unk	5	2	$ 45,197	—	—	—	$ 129,348	—	—	—
S	13	re - signed int	Unknown	9	7	$ 13,737	—	—	—	$ 20,755	—	—	—
	14	re - signl int	No injury	0	634	$ 8,165	1,706	4,788	11,541	$ 9,919	2,460	5,048	14,790
	14	re - signl int	B or C	1.5	584	$ 23,070	3,275	16,587	29,554	$ 36,170	5,986	24,318	48,021
	14	re - signl int	A	3	210	$ 44,597	8,813	27,148	62,045	$ 80,617	16,420	48,109	113,125
	14	re - signl int	K	4	8	$ 1,379,204	224,716	934,319	1,824,089	$ 4,541,549	766,973	3,023,124	6,059,974

45 mi/h = 72 km/h 50 mi/h = 80 km/h

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Observ = Observations

St. Err. = Standard Error

Conf. Interval = Confidence Interval

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Table 3. Level 1 without speed limits—continued

Code		Crash geometry	Maximum injsev in crash	Maximum injsev code	Observ	Mean human capital cost per crash	Std. Err.	[95% Conf. Interval]		Mean comprehensive cost per crash	Std. Err.	[95% Conf. Interval]	
S	14	re - signl int	Injured, sev unk	5	8	$ 29,525	—	—	—	$ 48,564	—	—	—
	14	re - signl int	Unknown	9	52	$ 16,493	1,683	13,161	19,826	$ 27,448	4,109	19,313	35,583
	15	re - no int	No injury	0	1675	$ 8,020	1,433	5,184	10,857	$ 9,447	2,109	5,273	13,622
	15	re - no int	B or C	1.5	1108	$ 26,205	5,975	14,376	38,033	$ 45,321	14,558	16,499	74,142
	15	re - no int	A	3	557	$ 66,818	13,933	39,235	94,401	$ 131,515	27,830	76,418	186,613
	15	re - no int	K	4	74	$ 1,190,595	62,816	1,066,234	1,314,956	$ 3,818,021	161,219	3,498,845	4,137,197
	15	re - no int	Injured, sev unk	5	13	$ 36,478	8,007	20,626	52,331	$ 70,278	16,573	37,468	103,088
	15	re - no int	Unknown	9	129	$ 19,191	1,840	15,548	22,834	$ 29,724	3,097	23,592	35,856
	16	ss	No injury	0	2341	$ 5,490	222	5,050	5,930	$ 5,905	300	5,311	6,498
	16	ss	B or C	1.5	1100	$ 35,037	4,669	25,793	44,281	$ 62,075	8,707	44,838	79,313
	16	ss	A	3	919	$ 75,763	13,211	49,608	101,917	$ 139,357	25,736	88,407	190,308
	16	ss	K	4	131	$ 1,313,060	45,665	1,222,654	1,403,466	$ 4,200,729	146,185	3,911,317	4,490,141
	16	ss	Injured, sev unk	5	20	$ 57,389	16,033	25,648	89,129	$ 104,279	30,930	43,046	165,512
	16	ss	Unknown	9	195	$ 15,325	843	13,656	16,995	$ 23,820	1,058	21,726	25,914
	17	ho, n-int	No injury	0	80	$ 3,543	403	2,745	4,341	$ 3,703	446	2,819	4,587
	17	ho, n-int	B or C	1.5	107	$ 44,037	6,435	31,297	56,777	$ 74,719	12,115	50,735	98,703
	17	ho, n-int	A	3	324	$ 219,850	11,885	196,321	243,379	$ 413,759	23,703	366,833	460,686
	17	ho, n-int	K	4	108	$ 1,499,348	75,001	1,350,863	1,647,832	$ 4,700,542	203,273	4,298,110	5,102,974
S	17	ho, n-int	Injured, sev unk	5	3	$ 36,258	—	—	—	$ 64,704	—	—	—
S	17	ho, n-int	Unknown	9	5	$ 9,876	—	—	—	$ 15,000	—	—	—
	18	ho, sig	No injury	0	44	$ 4,934	271	4,397	5,470	$ 4,980	276	4,433	5,527
	18	ho, sig	B or C	1.5	20	$ 36,567	13,544	9,753	63,382	$ 60,922	24,775	11,875	109,970
	18	ho, sig	A	3	20	$ 182,970	29,693	124,184	241,755	$ 318,572	78,070	164,012	473,131
S	18	ho, sig	Unknown	9	3	$ 15,813	—	—	—	$ 25,483	—	—	—
	19	ho, sign	No injury	0	14	$ 4,870	787	3,312	6,429	$ 5,256	1,075	3,128	7,385
	19	ho, sign	B or C	1.5	10	$ 37,405	8,530	20,518	54,292	$ 60,103	16,669	27,102	93,104
	19	ho, sign	A	3	12	$ 72,870	23,874	25,605	120,136	$ 170,256	70,472	30,738	309,774
S	19	ho, sign	K	4	2	$ 1,734,700	—	—	—	$ 5,495,375	—	—	—
	20	ho, unksgn	No injury	0	35	$ 6,478	3,104	334	12,622	$ 8,870	5,375	—	19,512
	20	ho, unksgn	B or C	1.5	17	$ 23,300	8,641	6,193	40,407	$ 36,106	15,529	5,361	66,850
S	20	ho, unksgn	A	3	8	$ 67,464	—	—	—	$ 121,628	—	—	—
S	20	ho, unksgn	Unknown	9	2	$ 15,264	—	—	—	$ 24,292	—	—	—
	21	backing	No injury	0	11	$ 4,579	548	3,495	5,663	$ 4,579	548	3,495	5,663
S	21	backing	B or C	1.5	2	$ 35,485	—	—	—	$ 68,936	—	—	—
S	21	backing	A	3	1	$ 12,654	—	—	—	$ 16,172	—	—	—
S	21	backing	Unknown	9	1	$ 14,506	—	—	—	$ 23,154	—	—	—
	22	undefined	No injury	0	1041	$ 4,010	268	3,480	4,540	$ 4,463	423	3,626	5,300
	22	undefined	B or C	1.5	1055	$ 31,516	3,424	24,738	38,294	$ 57,354	6,476	44,532	70,176
	22	undefined	A	3	991	$ 150,722	16,870	117,323	184,121	$ 277,883	30,661	217,182	338,584

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Table 3. Level 1 without speed limits—continued

Code	Crash geometry	Maximum injsev in crash	Maximum injsev code	Observ	Mean human capital cost per crash	Std. Err.	[95% Conf. Interval]		Mean comprehensive cost per crash	Std. Err.	[95% Conf. Interval]	
22	undefined	K	4	66	$ 1,328,461	87,397	1,155,435	1,501,487	$ 4,325,925	268,760	3,793,844	4,858,007
22	undefined	Injured, sev unk	5	42	$ 32,550	4,279	24,078	41,022	$ 61,899	10,297	41,513	82,285
22	undefined	Unknown	9	218	$ 13,333	636	12,074	14,591	$ 22,790	1,115	20,583	24,997

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Observ = Observations
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Conf. Interval = Confidence Interval
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Table 4. Level 2 by speed limits

Code		Crash geometry	Speed limit (mi/h)	Maximum injsev in crash	Maximum injsev code	Observ	Mean human capital cost per crash	Std. Err.	[95% Conf. Interval]		Mean comprehensive cost per crash	Std. Err.	[95% Conf. Interval]	
	1	sv, ped, int	<=45	No injury	0	31	$ 8,512	997	6,537	10,486	$ 10,249	1,408	7,461	13,036
S	1	sv, ped, int	>=50	No injury	0	5	$ 3,672	—	—	—	$ 4,015	—	—	—
	1	sv, ped, int	<=45	B or C	1.5	515	$ 33,369	4,561	24,340	42,398	$ 60,333	9,021	42,474	78,192
	1	sv, ped, int	>=50	B or C	1.5	35	$ 54,605	32,590	—	119,126	$ 101,712	61,756	—	223,975
	1	sv, ped, int	<=45	K or A	3.5	401	$ 235,729	17,317	201,444	270,013	$ 576,985	53,159	471,743	682,227
	1	sv, ped, int	>=50	K or A	3.5	17	$ 182,970	52,554	78,925	287,014	$ 425,414	161,107	106,460	744,369
	1	sv, ped, int	<=45	Injured, sev unk	5	53	$ 67,342	22,127	23,536	111,149	$ 129,418	42,249	45,774	213,061
S	1	sv, ped, int	>=50	Injured, sev unk	5	2	$ 61,573	—	—	—	$ 146,281	—	—	—
S	1	sv, ped, int	<=45	Unknown	9	4	$ 14,386	—	—	—	$ 22,841	—	—	—
I	2	sv, ped,n-int	<=45	No injury	0	33	$ 28,370	18,026	—	64,059	$ 40,428	27,351	—	94,577
	2	sv, ped,n-int	>=50	No injury	0	18	$ 2,797	145	2,509	3,085	$ 2,831	175	2,484	3,178
	2	sv, ped,n-int	<=45	B or C	1.5	721	$ 38,674	3,258	32,225	45,123	$ 70,188	7,021	56,288	84,087
	2	sv, ped,n-int	>=50	B or C	1.5	54	$ 31,103	8,151	14,967	47,240	$ 54,703	16,739	21,563	87,843
	2	sv, ped,n-int	<=45	K or A	3.5	733	$ 322,119	21,628	279,301	364,937	$ 918,824	71,514	777,243	1,060,406
	2	sv, ped,n-int	>=50	K or A	3.5	121	$ 465,397	60,737	345,152	585,643	$ 1,389,804	214,297	965,546	1,814,062
	2	sv, ped,n-int	<=45	Injured, sev unk	5	59	$ 26,089	8,056	10,139	42,039	$ 42,107	14,891	12,627	71,587
S	2	sv, ped,n-int	>=50	Injured, sev unk	5	3	$ 36,790	—	—	—	$ 65,026	—	—	—
	2	sv, ped,n-int	<=45	Unknown	9	25	$ 24,427	8,511	7,578	41,276	$ 35,189	10,607	14,190	56,189
S	2	sv, ped,n-int	>=50	Unknown	9	2	$ 12,423	—	—	—	$ 18,224	—	—	—
	3	sv, animal	<=45	No injury	0	10	$ 2,617	—	2,617	2,617	$ 2,617	—	2,617	2,617
	3	sv, animal	>=50	No injury	0	61	$ 4,904	2,047	852	8,956	$ 5,619	2,661	351	10,887
S	3	sv, animal	<=45	B or C	1.5	3	$ 37,280	—	—	—	$ 89,287	—	—	—
	3	sv, animal	>=50	B or C	1.5	18	$ 14,246	3,482	7,353	21,139	$ 22,916	7,663	7,745	38,087
S	3	sv, animal	<=45	K or A	3.5	3	$ 67,137	—	—	—	$ 96,055	—	—	—
N	3	sv, animal	>=50	K or A	3.5	20	$ 76,781	20,958	35,288	118,273	$ 165,302	40,911	84,308	246,296
	4	sv, object	<=45	No injury	0	608	$ 4,835	1,016	2,825	6,846	$ 5,721	1,195	3,355	8,087
	4	sv, object	>=50	No injury	0	618	$ 4,513	298	3,923	5,104	$ 5,565	428	4,718	6,413
	4	sv, object	<=45	B or C	1.5	446	$ 34,027	2,466	29,145	38,909	$ 65,888	6,016	53,978	77,797
	4	sv, object	>=50	B or C	1.5	688	$ 30,965	4,069	22,910	39,020	$ 62,025	9,203	43,806	80,244
	4	sv, object	<=45	K or A	3.5	773	$ 252,398	53,322	146,832	357,963	$ 690,850	145,223	403,343	978,358
	4	sv, object	>=50	K or A	3.5	1717	$ 240,662	49,910	141,853	339,472	$ 631,384	144,371	345,562	917,205
S	4	sv, object	<=45	Injured, sev unk	5	9	$ 19,267	—	—	—	$ 33,034	—	—	—
	4	sv, object	>=50	Injured, sev unk	5	21	$ 9,205	1,629	5,980	12,430	$ 14,358	3,114	8,193	20,522
	4	sv, object	<=45	Unknown	9	74	$ 12,992	744	11,520	14,465	$ 22,521	1,332	19,884	25,158
	4	sv, object	>=50	Unknown	9	25	$ 11,690	213	11,268	12,112	$ 20,024	389	19,253	20,794
	5	sv, prkveh	<=45	No injury	0	161	$ 3,438	278	2,887	3,988	$ 3,738	407	2,932	4,544
	5	sv, prkveh	>=50	No injury	0	25	$ 5,288	462	4,373	6,203	$ 6,223	1,364	3,523	8,923
	5	sv, prkveh	<=45	B or C	1.5	59	$ 17,434	3,051	11,394	23,473	$ 28,188	6,444	15,430	40,946

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Table 4. Level 2 by speed limits—continued

Code		Crash geometry	Speed limit (mi/h)	Maximum injsev in crash	Maximum injsev code	Observ	Mean human capital cost per crash	Std. Err.	[95% Conf. Interval]		Mean comprehensive cost per crash	Std. Err.	[95% Conf. Interval]	
	5	sv, prkveh	>=50	B or C	1.5	32	$ 26,234	4,849	16,634	35,835	$ 52,251	11,729	29,031	75,472
	5	sv, prkveh	<=45	K or A	3.5	67	$ 119,690	37,540	45,369	194,011	$ 284,378	97,780	90,797	477,958
	5	sv, prkveh	>=50	K or A	3.5	57	$ 322,281	126,992	70,866	573,696	$ 945,959	424,109	106,323	1,785,594
S	5	sv, prkveh	<=45	Injured, sev unk	5	5	$ 13,616	—	—	—	$ 17,840	—	—	—
S	5	sv, prkveh	>=50	Injured, sev unk	5	3	$ 28,688	—	—	—	$ 57,388	—	—	—
	5	sv, prkveh	<=45	Unknown	9	44	$ 11,941	137	11,669	12,213	$ 20,581	249	20,089	21,073
	6	sv, rollover	<=45	No injury	0	31	$ 6,940	806	5,343	8,536	$ 9,697	1,398	6,930	12,464
	6	sv, rollover	>=50	No injury	0	89	$ 8,798	3,583	1,705	15,892	$ 13,526	5,772	2,098	24,954
	6	sv, rollover	<=45	B or C	1.5	147	$ 31,170	2,925	25,379	36,961	$ 57,820	6,324	45,299	70,341
	6	sv, rollover	>=50	B or C	1.5	247	$ 36,312	9,490	17,524	55,101	$ 70,548	19,852	31,247	109,850
	6	sv, rollover	<=45	K or A	3.5	151	$ 179,719	67,445	46,194	313,243	$ 488,542	202,926	86,796	890,289
	6	sv, rollover	>=50	K or A	3.5	575	$ 385,376	37,935	310,274	460,478	$ 1,112,032	116,282	881,821	1,342,242
S	6	sv, rollover	<=45	Injured, sev unk	5	5	$ 15,202	—	—	—	$ 32,393	—	—	—
S	6	sv, rollover	>=50	Injured, sev unk	5	4	$ 248,826	—	—	—	$ 465,130	—	—	—
S	6	sv, rollover	<=45	Unknown	9	1	$ 11,888	—	—	—	$ 20,537	—	—	—
S	6	sv, rollover	>=50	Unknown	9	2	$ 11,888	—	—	—	$ 20,537	—	—	—
	7	mcp, sig	<=45	No injury	0	1043	$ 7,503	925	5,671	9,334	$ 8,673	1,285	6,130	11,217
	7	mcp, sig	>=50	No injury	0	301	$ 6,735	863	5,027	8,443	$ 8,544	1,294	5,983	11,105
	7	mcp, sig	<=45	B or C	1.5	625	$ 29,271	6,547	16,310	42,232	$ 46,660	11,847	23,206	70,114
	7	mcp, sig	>=50	B or C	1.5	636	$ 29,636	2,959	23,778	35,493	$ 53,195	5,794	41,724	64,666
	7	mcp, sig	<=45	K or A	3.5	343	$ 96,057	17,573	61,267	130,848	$ 213,113	44,733	124,553	301,674
	7	mcp, sig	>=50	K or A	3.5	926	$ 155,748	43,945	68,747	242,748	$ 392,949	118,813	157,728	628,170
	7	mcp, sig	<=45	Injured, sev unk	5	15	$ 31,469	9,239	13,179	49,759	$ 47,639	14,994	17,954	77,323
S	7	mcp, sig	>=50	Injured, sev unk	5	5	$ 24,588	—	—	—	$ 45,148	—	—	—
	7	mcp, sig	<=45	Unknown	9	55	$ 16,983	1,688	13,641	20,324	$ 26,911	2,496	21,969	31,852
	7	mcp, sig	>=50	Unknown	9	11	$ 25,684	3,867	18,028	33,340	$ 37,871	6,988	24,037	51,705
	8	mcp, sign	<=45	No injury	0	773	$ 6,574	724	5,141	8,007	$ 7,910	1,255	5,426	10,394
	8	mcp, sign	>=50	No injury	0	194	$ 4,797	975	2,867	6,726	$ 5,444	1,265	2,941	7,948
	8	mcp, sign	<=45	B or C	1.5	463	$ 28,436	4,701	19,128	37,744	$ 48,035	10,156	27,928	68,142
	8	mcp, sign	>=50	B or C	1.5	328	$ 43,234	5,109	33,119	53,348	$ 77,886	10,157	57,778	97,995
	8	mcp, sign	<=45	K or A	3.5	341	$ 188,771	42,447	104,735	272,807	$ 441,901	112,658	218,864	664,937
	8	mcp, sign	>=50	K or A	3.5	530	$ 229,032	37,727	154,342	303,723	$ 593,866	104,565	386,852	800,881
	8	mcp, sign	<=45	Injured, sev unk	5	11	$ 57,990	13,690	30,888	85,092	$ 102,485	21,789	59,348	145,621
S	8	mcp, sign	>=50	Injured, sev unk	5	5	$ 62,318	—	—	—	$ 123,919	—	—	—
	8	mcp, sign	<=45	Unknown	9	44	$ 18,249	1,235	15,805	20,694	$ 25,553	3,294	19,032	32,073
S	8	mcp, sign	>=50	Unknown	9	4	$ 22,226	—	—	—	$ 41,391	—	—	—
	9	mcp, nosgn	<=45	No injury	0	244	$ 5,257	366	4,532	5,982	$ 5,604	471	4,672	6,537
	9	mcp, nosgn	>=50	No injury	0	69	$ 6,708	1,456	3,826	9,590	$ 7,920	2,000	3,961	11,880

45 mi/h = 72 km/h   50 mi/h = 80 km/h

Code S	=	Derived from small sample.	Injsev	=	Injury severity	Conf. Interval	=	Confidence Interval
Code I	=	Illogical values or outliers in data.	Observ	=	Observations	—	=	Sample size too small to calculate or the lower bound of the confidence interval was below zero.
Code N	=	Combined estimate with no fatal component.	St. Err.	=	Standard Error			

Table 4. Level 2 by speed limits—continued

Code		Crash geometry	Speed limit (mi/h)	Maximum injsev in crash	Maximum injsev code	Observ	Mean human capital cost per crash	Std. Err.	[95% Conf. Interval]		Mean comprehensive cost per crash	Std. Err.	[95% Conf. Interval]	
	9	mcp, nosgn	<=45	B or C	1.5	153	$ 21,012	2,879	15,312	26,712	$ 32,708	5,017	22,776	42,640
	9	mcp, nosgn	>=50	B or C	1.5	108	$ 35,837	6,324	23,317	48,357	$ 66,026	11,270	43,714	88,337
N	9	mcp, nosgn	<=45	K or A	3.5	79	$ 113,013	38,489	36,813	189,212	$ 220,991	79,947	62,715	379,266
	9	mcp, nosgn	>=50	K or A	3.5	152	$ 245,301	42,427	161,306	329,296	$ 572,280	91,308	391,512	753,047
S	9	mcp, nosgn	<=45	Injured, sev unk	5	6	$ 196,721	—	—	—	$ 508,627	—	—	—
S	9	mcp, nosgn	>=50	Injured, sev unk	5	1	$ 13,917	—	—	—	$ 22,566	—	—	—
S	9	mcp, nosgn	<=45	Unknown	9	9	$ 27,860	—	—	—	$ 49,825	—	—	—
	10	mcp, unk	<=45	No injury	0	687	$ 5,230	370	4,498	5,961	$ 5,607	554	4,510	6,705
	10	mcp, unk	>=50	No injury	0	69	$ 4,682	251	4,185	5,178	$ 4,844	299	4,252	5,436
	10	mcp, unk	<=45	B or C	1.5	267	$ 41,536	10,224	21,295	61,777	$ 73,694	19,429	35,230	112,159
	10	mcp, unk	>=50	B or C	1.5	31	$ 38,410	6,896	24,758	52,061	$ 69,357	11,681	46,231	92,483
N	10	mcp, unk	<=45	K or A	3.5	108	$ 168,993	49,016	71,953	266,032	$ 338,201	93,816	152,467	523,935
	10	mcp, unk	>=50	K or A	3.5	27	$ 242,084	135,897	—	511,128	$ 690,116	439,224	—	1,559,676
S	10	mcp, unk	<=45	Injured, sev unk	5	6	$ 26,944	—	—	—	$ 50,197	—	—	—
S	10	mcp, unk	>=50	Injured, sev unk	5	1	$ 70,578	—	—	—	$ 137,479	—	—	—
	10	mcp, unk	<=45	Unknown	9	27	$ 16,510	1,295	13,946	19,074	$ 27,255	2,777	21,758	32,753
S	10	mcp, unk	>=50	Unknown	9	4	$ 17,186	—	—	—	$ 27,805	—	—	—
	11	re-all locations	<=45	No injury	0	1916	$ 7,465	1,261	4,969	9,962	$ 8,399	1,653	5,127	11,671
	11	re-all locations	>=50	No injury	0	1040	$ 8,911	1,474	5,992	11,829	$ 10,764	2,167	6,473	15,055
	11	re-all locations	<=45	B or C	1.5	1274	$ 29,079	9,064	11,135	47,023	$ 39,038	10,423	18,404	59,673
	11	re-all locations	>=50	B or C	1.5	895	$ 38,040	6,002	26,157	49,923	$ 65,298	14,951	35,698	94,897
	11	re-all locations	<=45	K or A	3.5	380	$ 90,390	30,528	29,952	150,828	$ 205,910	79,568	48,385	363,435
	11	re-all locations	>=50	K or A	3.5	639	$ 144,733	31,887	81,605	207,861	$ 392,723	92,181	210,227	575,219
	11	re-all locations	<=45	Injured, sev unk	5	20	$ 32,655	8,696	15,440	49,870	$ 55,850	17,596	21,014	90,686
	11	re-all locations	>=50	Injured, sev unk	5	10	$ 35,395	2,190	31,059	39,731	$ 73,527	8,798	56,109	90,946
	11	re-all locations	<=45	Unknown	9	164	$ 17,215	1,228	14,783	19,647	$ 27,432	2,100	23,275	31,590
	11	re-all locations	>=50	Unknown	9	65	$ 20,771	3,219	14,398	27,144	$ 33,123	5,861	21,520	44,725
	12	re-unk int	<=45	No injury	0	422	$ 5,297	785	3,744	6,851	$ 5,649	914	3,839	7,459
	12	re-unk int	>=50	No injury	0	109	$ 11,783	6,066	—	23,793	$ 13,573	6,809	93	27,053
	12	re-unk int	<=45	B or C	1.5	300	$ 65,077	23,715	18,127	112,027	$ 78,872	24,711	29,950	127,795
	12	re-unk int	>=50	B or C	1.5	116	$ 40,144	4,035	32,156	48,132	$ 55,679	5,115	45,553	65,805
	12	re-unk int	<=45	K or A	3.5	86	$ 272,506	141,848	—	553,332	$ 770,927	509,026	—	1,778,679
	12	re-unk int	>=50	K or A	3.5	57	$ 133,568	39,759	54,854	212,282	$ 318,731	125,481	70,308	567,155
S	12	re-unk int	<=45	Injured, sev unk	5	6	$ 29,812	—	—	—	$ 52,029	—	—	—
S	12	re-unk int	>=50	Injured, sev unk	5	1	$ 5,235	—	—	—	$ 5,235	—	—	—
	12	re-unk int	<=45	Unknown	9	37	$ 19,416	1,445	16,555	22,277	$ 31,827	2,795	26,294	37,360
S	12	re-unk int	>=50	Unknown	9	4	$ 17,386	—	—	—	$ 26,753	—	—	—
	13	re - signed int	<=45	No injury	0	99	$ 10,586	3,540	3,577	17,595	$ 12,295	4,622	3,145	21,445

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Injsev = Injury severity

Observ = Observations

St. Err. = Standard Error

Conf. Interval = Confidence Interval

— = Sample size too small to calculate or the lower bound of the confidence interval was below zero.

Table 4. Level 2 by speed limits—continued

Code		Crash geometry	Speed limit (mi/h)	Maximum injsev in crash	Maximum injsev code	Observ	Mean human capital cost per crash	Std. Err.	[95% Conf. Interval]		Mean comprehensive cost per crash	Std. Err.	[95% Conf. Interval]	
	13	re - signed int	>=50	No injury	0	18	$ 3,302	549	2,215	4,389	$ 3,788	978	1,851	5,725
	13	re - signed int	<=45	B or C	1.5	50	$ 25,003	4,819	15,463	34,542	$ 46,644	16,047	14,875	78,412
	13	re - signed int	>=50	B or C	1.5	14	$ 11,759	1,367	9,052	14,465	$ 15,268	2,002	11,305	19,230
N	13	re - signed int	<=45	K or A	3.5	22	$ 71,190	18,954	33,666	108,714	$ 127,706	39,338	49,826	205,586
S	13	re - signed int	>=50	K or A	3.5	7	$ 88,088	—	—	—	$ 159,658	—	—	—
S	13	re - signed int	<=45	Injured, sev unk	5	1	$ 13,878	—	—	—	$ 15,958	—	—	—
S	13	re - signed int	>=50	Injured, sev unk	5	1	$ 83,223	—	—	—	$ 267,019	—	—	—
S	13	re - signed int	<=45	Unknown	9	7	$ 13,737	—	—	—	$ 20,755	—	—	—
	14	re - signl int	<=45	No injury	0	492	$ 9,454	2,295	4,910	13,997	$ 11,463	3,338	4,853	18,072
	14	re - signl int	>=50	No injury	0	142	$ 4,810	671	3,481	6,139	$ 5,901	1,082	3,758	8,044
	14	re - signl int	<=45	B or C	1.5	418	$ 26,255	4,476	17,394	35,117	$ 39,398	8,202	23,160	55,637
	14	re - signl int	>=50	B or C	1.5	165	$ 19,658	4,724	10,306	29,010	$ 32,761	8,592	15,750	49,772
N	14	re - signl int	<=45	K or A	3.5	90	$ 43,601	10,054	23,696	63,506	$ 84,820	19,977	45,269	124,370
	14	re - signl int	>=50	K or A	3.5	127	$ 77,797	27,435	23,482	132,111	$ 184,104	79,930	25,862	342,346
S	14	re - signl int	<=45	Injured, sev unk	5	6	$ 29,111	—	—	—	$ 44,120	—	—	—
S	14	re - signl int	>=50	Injured, sev unk	5	2	$ 30,447	—	—	—	$ 58,458	—	—	—
	14	re - signl int	<=45	Unknown	9	49	$ 16,136	1,579	13,011	19,262	$ 26,930	4,043	18,926	34,934
S	14	re - signl int	>=50	Unknown	9	3	$ 30,665	—	—	—	$ 48,029	—	—	—
	15	re - no int	<=45	No injury	0	903	$ 5,516	176	5,168	5,864	$ 5,756	269	5,223	6,289
	15	re - no int	>=50	No injury	0	771	$ 9,055	1,556	5,975	12,135	$ 10,972	2,319	6,382	15,562
	15	re - no int	<=45	B or C	1.5	506	$ 18,630	2,479	13,722	23,539	$ 26,642	3,940	18,842	34,442
	15	re - no int	>=50	B or C	1.5	600	$ 43,717	12,936	18,108	69,327	$ 88,498	33,108	22,951	154,045
	15	re - no int	<=45	K or A	3.5	182	$ 119,894	56,253	8,527	231,262	$ 267,844	129,536	11,394	524,294
	15	re - no int	>=50	K or A	3.5	448	$ 162,582	45,649	72,207	252,957	$ 452,624	134,484	186,379	718,870
S	15	re - no int	<=45	Injured, sev unk	5	7	$ 41,326	—	—	—	$ 75,081	—	—	—
S	15	re - no int	>=50	Injured, sev unk	5	6	$ 34,399	—	—	—	$ 68,218	—	—	—
	15	re - no int	<=45	Unknown	9	71	$ 18,029	1,668	14,728	21,331	$ 27,042	1,646	23,783	30,301
	15	re - no int	>=50	Unknown	9	58	$ 20,478	3,347	13,853	27,104	$ 32,695	6,093	20,633	44,758
	16	ss	<=45	No injury	0	1658	$ 5,679	330	5,026	6,332	$ 6,007	416	5,185	6,830
	16	ss	>=50	No injury	0	681	$ 5,218	211	4,801	5,636	$ 5,762	348	5,072	6,452
	16	ss	<=45	B or C	1.5	590	$ 30,396	7,243	16,055	44,736	$ 51,211	11,817	27,817	74,606
	16	ss	>=50	B or C	1.5	506	$ 37,641	4,667	28,402	46,880	$ 68,009	8,958	50,274	85,743
	16	ss	<=45	K or A	3.5	350	$ 92,479	16,725	59,368	125,590	$ 222,564	51,456	120,694	324,434
	16	ss	>=50	K or A	3.5	698	$ 182,885	47,686	88,478	277,291	$ 483,204	135,764	214,424	751,984
	16	ss	<=45	Injured, sev unk	5	13	$ 93,418	21,175	51,495	135,340	$ 173,762	41,739	91,129	256,396
S	16	ss	>=50	Injured, sev unk	5	7	$ 34,884	—	—	—	$ 60,877	—	—	—
	16	ss	<=45	Unknown	9	134	$ 16,110	1,092	13,948	18,272	$ 24,956	1,132	22,716	27,197
	16	ss	>=50	Unknown	9	61	$ 13,978	915	12,167	15,789	$ 21,870	1,763	18,381	25,360

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Table 4. Level 2 by speed limits—continued

Code		Crash geometry	Speed limit (mi/h)	Maximum injsev in crash	Maximum injsev code	Observ	Mean human capital cost per crash	Std. Err.	[95% Conf. Interval]		Mean comprehensive cost per crash	Std. Err.	[95% Conf. Interval]	
	17	ho, n-int	<=45	No injury	0	55	$ 3,830	703	2,438	5,222	$ 3,948	739	2,486	5,410
	17	ho, n-int	>=50	No injury	0	25	$ 3,272	396	2,487	4,056	$ 3,471	510	2,460	4,481
	17	ho, n-int	<=45	B or C	1.5	55	$ 25,137	4,715	15,801	34,472	$ 40,463	9,495	21,666	59,260
	17	ho, n-int	>=50	B or C	1.5	51	$ 72,561	11,836	49,129	95,993	$ 126,409	18,294	90,190	162,627
	17	ho, n-int	<=45	K or A	3.5	81	$ 250,035	81,522	88,641	411,429	$ 605,328	224,211	161,444	1,049,212
	17	ho, n-int	>=50	K or A	3.5	350	$ 605,568	89,412	428,553	782,584	$ 1,692,450	281,255	1,135,632	2,249,268
S	17	ho, n-int	>=50	Injured, sev unk	5	3	$ 36,258	—	—	—	$ 64,704	—	—	—
S	17	ho, n-int	<=45	Unknown	9	2	$ 5,560	—	—	—	$ 5,984	—	—	—
S	17	ho, n-int	>=50	Unknown	9	3	$ 13,001	—	—	—	$ 21,528	—	—	—
	18	ho, sig	<=45	No injury	0	42	$ 5,053	229	4,599	5,507	$ 5,101	245	4,617	5,586
S	18	ho, sig	>=50	No injury	0	2	$ 2,617	—	—	—	$ 2,617	—	—	—
	18	ho, sig	<=45	B or C	1.5	18	$ 67,648	9,797	48,252	87,043	$ 119,622	11,151	97,545	141,700
S	18	ho, sig	>=50	B or C	1.5	2	$ 19,761	—	—	—	$ 29,181	—	—	—
S	18	ho, sig	<=45	K or A	3.5	8	$ 141,744	—	—	—	$ 239,933	—	—	—
N	18	ho, sig	>=50	K or A	3.5	12	$ 204,874	45,975	113,856	295,893	$ 360,354	130,323	102,345	618,363
S	18	ho, sig	<=45	Unknown	9	2	$ 14,384	—	—	—	$ 23,033	—	—	—
S	18	ho, sig	>=50	Unknown	9	1	$ 44,909	—	—	—	$ 75,386	—	—	—
	19	ho, sign	<=45	No injury	0	10	$ 4,793	407	3,987	5,599	$ 4,806	399	4,017	5,596
S	19	ho, sign	>=50	No injury	0	4	$ 5,027	—	—	—	$ 6,169	—	—	—
S	19	ho, sign	<=45	B or C	1.5	3	$ 20,809	—	—	—	$ 27,351	—	—	—
S	19	ho, sign	>=50	B or C	1.5	7	$ 44,684	—	—	—	$ 74,466	—	—	—
S	19	ho, sign	<=45	K or A	3.5	4	$ 43,138	—	—	—	$ 73,751	—	—	—
	19	ho, sign	>=50	K or A	3.5	10	$ 225,249	107,412	12,598	437,900	$ 659,591	351,717	—	1,355,907
	20	ho, unksgn	<=45	No injury	0	29	$ 7,000	4,060	—	15,037	$ 10,110	7,031	—	24,030
S	20	ho, unksgn	>=50	No injury	0	6	$ 4,738	—	—	—	$ 4,738	—	—	—
	20	ho, unksgn	<=45	B or C	1.5	14	$ 22,311	8,526	5,431	39,191	$ 33,767	14,933	4,204	63,330
S	20	ho, unksgn	>=50	B or C	1.5	3	$ 38,747	—	—	—	$ 72,630	—	—	—
S	20	ho, unksgn	<=45	K or A	3.5	8	$ 67,464	—	—	—	$ 121,628	—	—	—
S	20	ho, unksgn	<=45	Unknown	9	2	$ 15,264	—	—	—	$ 24,292	—	—	—
	21	backing	<=45	No injury	0	11	$ 4,579	548	3,495	5,663	$ 4,579	548	3,495	5,663
S	21	backing	<=45	B or C	1.5	2	$ 35,485	—	—	—	$ 68,936	—	—	—
S	21	backing	<=45	K or A	3.5	1	$ 12,654	—	—	—	$ 16,172	—	—	—
S	21	backing	<=45	Unknown	9	1	$ 14,506	—	—	—	$ 23,154	—	—	—
	22	undefined	<=45	No injury	0	735	$ 5,193	1,539	2,147	8,240	$ 6,386	2,323	1,787	10,985
	22	undefined	>=50	No injury	0	304	$ 3,617	262	3,098	4,135	$ 3,826	330	3,172	4,479
	22	undefined	<=45	B or C	1.5	794	$ 32,737	3,914	24,989	40,485	$ 62,752	9,564	43,818	81,687
	22	undefined	>=50	B or C	1.5	261	$ 30,933	4,466	22,091	39,775	$ 54,777	8,173	38,595	70,958
	22	undefined	<=45	K or A	3.5	704	$ 251,783	37,408	177,724	325,842	$ 714,468	124,606	467,777	961,159

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Table 4. Level 2 by speed limits—continued

Code		Crash geometry	Speed limit (mi/h)	Maximum injsev in crash	Maximum injsev code	Observ	Mean human capital cost per crash	Std. Err.	[95% Conf. Interval]		Mean comprehensive cost per crash	Std. Err.	[95% Conf. Interval]	
	22	undefined	>=50	K or A	3.5	351	$ 405,324	81,478	244,018	566,630	$ 1,127,019	258,416	615,417	1,638,621
	22	undefined	<=45	Injured, sev unk	5	39	$ 30,476	4,280	22,002	38,951	$ 57,595	10,398	37,009	78,180
S	22	undefined	>=50	Injured, sev unk	5	3	$ 59,349	—	—	—	$ 117,523	—	—	—
	22	undefined	<=45	Unknown	9	200	$ 13,341	684	11,986	14,696	$ 22,856	1,216	20,450	25,263
	22	undefined	>=50	Unknown	9	18	$ 13,196	1,904	9,427	16,965	$ 21,671	3,747	14,254	29,089

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Table 5. Level 2 without speed limits

Code		Crash geometry	Maximum injsev in crash	Maximum injsev code	Observ	Mean human capital cost per crash	Std. Err.	[95% Conf. Interval]		Mean comprehensive cost per crash	Std. Err.	[95% Conf. Interval]	
	1	sv, ped, int	No injury	0	36	$ 4,772	1,339	2,121	7,423	$ 5,432	1,762	1,943	8,921
	1	sv, ped, int	B or C	1.5	550	$ 39,195	9,051	21,277	57,113	$ 71,684	17,485	37,069	106,300
	1	sv, ped, int	K or A	3.5	418	$ 218,641	22,157	174,775	262,508	$ 527,895	66,675	395,894	659,896
	1	sv, ped, int	Injured, sev unk	5	55	$ 63,856	8,681	46,671	81,042	$ 139,607	17,911	104,148	175,066
S	1	sv, ped, int	Unknown	9	4	$ 14,386	—	—	—	$ 22,841	—	—	—
	2	sv, ped,n-int	No injury	0	51	$ 3,158	391	2,384	3,933	$ 3,362	565	2,244	4,480
	2	sv, ped,n-int	B or C	1.5	775	$ 35,810	3,852	28,185	43,435	$ 64,329	7,962	48,566	80,092
	2	sv, ped,n-int	K or A	3.5	854	$ 370,632	26,751	317,672	423,592	$ 1,078,294	90,694	898,742	1,257,846
	2	sv, ped,n-int	Injured, sev unk	5	62	$ 28,020	7,345	13,479	42,561	$ 46,242	13,672	19,174	73,310
	2	sv, ped,n-int	Unknown	9	27	$ 23,618	7,949	7,881	39,356	$ 34,047	9,922	14,404	53,690
	3	sv, animal	No injury	0	71	$ 4,544	1,751	1,077	8,011	$ 5,147	2,277	639	9,654
	3	sv, animal	B or C	1.5	21	$ 17,106	4,771	7,660	26,551	$ 31,156	11,954	7,490	54,821
N	3	sv, animal	K or A	3.5	23	$ 75,715	18,629	38,835	112,595	$ 157,649	36,300	85,784	229,515
	4	sv, object	No injury	0	1230	$ 4,624	402	3,827	5,420	$ 5,618	513	4,602	6,633
	4	sv, object	B or C	1.5	1139	$ 31,968	2,770	26,485	37,452	$ 63,329	6,247	50,962	75,696
	4	sv, object	K or A	3.5	2519	$ 246,564	50,504	146,577	346,550	$ 653,667	145,010	366,582	940,752
	4	sv, object	Injured, sev unk	5	31	$ 13,658	3,034	7,652	19,664	$ 22,662	5,621	11,534	33,790
	4	sv, object	Unknown	9	100	$ 12,616	594	11,439	13,792	$ 21,799	1,063	19,695	23,902
	5	sv, prkveh	No injury	0	187	$ 4,070	258	3,560	4,580	$ 4,587	494	3,610	5,564
	5	sv, prkveh	B or C	1.5	91	$ 20,118	3,037	14,105	26,130	$ 35,527	6,996	21,677	49,376
	5	sv, prkveh	K or A	3.5	124	$ 205,829	54,914	97,113	314,545	$ 565,673	178,449	212,387	918,959
S	5	sv, prkveh	Injured, sev unk	5	8	$ 21,022	—	—	—	$ 37,273	—	—	—
	5	sv, prkveh	Unknown	9	44	$ 11,941	137	11,669	12,213	$ 20,581	249	20,089	21,073
	6	sv, rollover	No injury	0	121	$ 8,704	3,395	1,983	15,425	$ 13,331	5,462	2,518	24,144
	6	sv, rollover	B or C	1.5	398	$ 35,014	7,217	20,726	49,303	$ 67,357	15,105	37,453	97,261
	6	sv, rollover	K or A	3.5	739	$ 347,981	38,097	272,558	423,403	$ 999,974	119,769	762,859	1,237,088
S	6	sv, rollover	Injured, sev unk	5	9	$ 182,849	—	—	—	$ 342,922	—	—	—
S	6	sv, rollover	Unknown	9	4	$ 12,315	—	—	—	$ 21,032	—	—	—
	7	mcp, sig	No injury	0	1347	$ 7,210	678	5,868	8,553	$ 8,598	952	6,713	10,483
	7	mcp, sig	B or C	1.5	1265	$ 29,553	3,036	23,543	35,564	$ 51,150	5,687	39,892	62,409
	7	mcp, sig	K or A	3.5	1275	$ 145,482	32,497	81,145	209,818	$ 361,964	86,603	190,512	533,417
	7	mcp, sig	Injured, sev unk	5	20	$ 28,828	6,332	16,291	41,365	$ 46,683	11,165	24,578	68,787
	7	mcp, sig	Unknown	9	66	$ 18,338	1,632	15,108	21,569	$ 28,618	2,441	23,786	33,451
	8	mcp, sign	No injury	0	968	$ 5,861	700	4,476	7,247	$ 6,922	1,034	4,875	8,969
	8	mcp, sign	B or C	1.5	795	$ 35,644	4,007	27,710	43,577	$ 62,632	8,271	46,257	79,007
	8	mcp, sign	K or A	3.5	876	$ 218,871	34,898	149,781	287,962	$ 556,209	93,667	370,771	741,648
	8	mcp, sign	Injured, sev unk	5	16	$ 60,937	28,720	4,078	117,795	$ 117,079	52,562	13,018	221,140
	8	mcp, sign	Unknown	9	48	$ 18,600	1,381	15,866	21,334	$ 26,949	3,768	19,489	34,409
	9	mcp, nosgn	No injury	0	314	$ 5,912	703	4,521	7,304	$ 6,650	975	4,719	8,580

45 mi/h = 72 km/h 50 mi/h = 80 km/h

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Injsev = Injury severity

Observ = Observations

St. Err. = Standard Error

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Table 5. Level 2 without speed limits—continued

Code		Crash geometry	Maximum injsev in crash	Maximum injsev code	Observ	Mean human capital cost per crash	Std. Err.	[95% Conf. Interval]		Mean comprehensive cost per crash	Std. Err.	[95% Conf. Interval]	
	9	mcp, nosgn	B or C	1.5	262	$ 27,698	3,620	20,532	34,865	$ 47,758	7,595	32,721	62,795
	9	mcp, nosgn	K or A	3.5	231	$ 178,055	26,434	125,722	230,388	$ 393,709	57,834	279,211	508,207
S	9	mcp, nosgn	Injured, sev unk	5	7	$ 110,650	—	—	—	$ 279,770	—	—	—
S	9	mcp, nosgn	Unknown	9	9	$ 27,860	—	—	—	$ 49,825	—	—	—
	10	mcp, unk	No injury	0	756	$ 5,025	251	4,529	5,521	$ 5,322	371	4,588	6,055
	10	mcp, unk	B or C	1.5	298	$ 41,000	8,487	24,198	57,802	$ 72,951	16,103	41,069	104,832
	10	mcp, unk	K or A	3.5	135	$ 235,333	124,107	—	481,036	$ 657,610	401,759	—	1,452,998
S	10	mcp, unk	Injured, sev unk	5	7	$ 48,360	—	—	—	$ 93,037	—	—	—
	10	mcp, unk	Unknown	9	31	$ 16,585	1,413	13,789	19,381	$ 27,316	2,851	21,671	32,961
	11	re-all locations	No injury	0	2958	$ 8,230	1,046	6,160	10,301	$ 9,651	1,505	6,672	12,631
	11	re-all locations	B or C	1.5	2172	$ 32,708	6,125	20,582	44,834	$ 49,701	9,271	31,347	68,054
	11	re-all locations	K or A	3.5	1021	$ 130,557	24,538	81,978	179,136	$ 344,032	69,989	205,470	482,595
	11	re-all locations	Injured, sev unk	5	30	$ 33,948	4,640	24,763	43,134	$ 64,194	10,434	43,538	84,850
	11	re-all locations	Unknown	9	229	$ 18,120	1,266	15,614	20,625	$ 28,880	2,209	24,506	33,253
	12	re-unk int	No injury	0	532	$ 6,997	1,941	3,154	10,841	$ 7,735	2,226	3,328	12,142
	12	re-unk int	B or C	1.5	416	$ 50,583	12,393	26,048	75,118	$ 65,390	13,047	39,559	91,221
	12	re-unk int	K or A	3.5	143	$ 168,235	55,178	58,995	277,475	$ 431,562	185,747	63,827	799,296
S	12	re-unk int	Injured, sev unk	5	7	$ 29,389	—	—	—	$ 51,224	—	—	—
	12	re-unk int	Unknown	9	41	$ 19,369	1,418	16,561	22,177	$ 31,709	2,745	26,276	37,143
	13	re - signed int	No injury	0	117	$ 10,325	3,437	3,520	17,130	$ 11,990	4,482	3,117	20,863
	13	re - signed int	B or C	1.5	64	$ 21,767	3,829	14,186	29,348	$ 38,978	12,123	14,978	62,978
N	13	re - signed int	K or A	3.5	29	$ 75,825	15,849	44,448	107,201	$ 136,469	33,137	70,865	202,073
S	13	re - signed int	Injured, sev unk	5	2	$ 45,197	—	—	—	$ 129,348	—	—	—
S	13	re - signed int	Unknown	9	7	$ 13,737	—	—	—	$ 20,755	—	—	—
	14	re - signl int	No injury	0	634	$ 8,165	1,706	4,788	11,541	$ 9,919	2,460	5,048	14,790
	14	re - signl int	B or C	1.5	584	$ 23,070	3,275	16,587	29,554	$ 36,170	5,986	24,318	48,021
	14	re - signl int	K or A	3.5	218	$ 60,813	15,202	30,717	90,909	$ 134,821	41,745	52,176	217,466
S	14	re - signl int	Injured, sev unk	5	8	$ 29,525	—	—	—	$ 48,564	—	—	—
	14	re - signl int	Unknown	9	52	$ 16,493	1,683	13,161	19,826	$ 27,448	4,109	19,313	35,583
	15	re - no int	No injury	0	1675	$ 8,020	1,433	5,184	10,857	$ 9,447	2,109	5,273	13,622
	15	re - no int	B or C	1.5	1108	$ 26,205	5,975	14,376	38,033	$ 45,321	14,558	16,499	74,142
	15	re - no int	K or A	3.5	631	$ 155,885	38,259	80,142	231,628	$ 423,697	110,143	205,641	641,753
	15	re - no int	Injured, sev unk	5	13	$ 36,478	8,007	20,626	52,331	$ 70,278	16,573	37,468	103,088
	15	re - no int	Unknown	9	129	$ 19,191	1,840	15,548	22,834	$ 29,724	3,097	23,592	35,856
	16	ss	No injury	0	2341	$ 5,490	222	5,050	5,930	$ 5,905	300	5,311	6,498
	16	ss	B or C	1.5	1100	$ 35,037	4,669	25,793	44,281	$ 62,075	8,707	44,838	79,313
	16	ss	K or A	3.5	1050	$ 163,818	33,960	96,585	231,050	$ 428,393	96,749	236,854	619,933
	16	ss	Injured, sev unk	5	20	$ 57,389	16,033	25,648	89,129	$ 104,279	30,930	43,046	165,512
	16	ss	Unknown	9	195	$ 15,325	843	13,656	16,995	$ 23,820	1,058	21,726	25,914

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Table 5. Level 2 without speed limits—continued

Code		Crash geometry	Maximum injsev in crash	Maximum injsev code	Observ	Mean human capital cost per crash	Std. Err.	[95% Conf.	Interval]	Mean comprehensive cost per crash	Std. Err.	[95% Conf.	Interval]
	17	ho, n-int	No injury	0	80	$ 3,543	403	2,745	4,341	$ 3,703	446	2,819	4,587
	17	ho, n-int	B or C	1.5	107	$ 44,037	6,435	31,297	56,777	$ 74,719	12,115	50,735	98,703
	17	ho, n-int	K or A	3.5	432	$ 558,183	65,796	427,923	688,444	$ 1,547,300	206,716	1,138,052	1,956,548
S	17	ho, n-int	Injured, sev unk	5	3	$ 36,258	—	—	—	$ 64,704	—	—	—
S	17	ho, n-int	Unknown	9	5	$ 9,876	—	—	—	$ 15,000	—	—	—
	18	ho, sig	No injury	0	44	$ 4,934	271	4,397	5,470	$ 4,980	276	4,433	5,527
	18	ho, sig	B or C	1.5	20	$ 36,567	13,544	9,753	63,382	$ 60,922	24,775	11,875	109,970
N	18	ho, sig	K or A	3.5	20	$ 182,970	29,693	124,184	241,755	$ 318,572	78,070	164,012	473,131
S	18	ho, sig	Unknown	9	3	$ 15,813	—	—	—	$ 25,483	—	—	—
	19	ho, sign	No injury	0	14	$ 4,870	787	3,312	6,429	$ 5,256	1,075	3,128	7,385
	19	ho, sign	B or C	1.5	10	$ 37,405	8,530	20,518	54,292	$ 60,103	16,669	27,102	93,104
	19	ho, sign	K or A	3.5	14	$ 141,193	27,499	86,752	195,635	$ 389,188	83,302	224,271	554,106
	20	ho, unksgn	No injury	0	35	$ 6,478	3,104	334	12,622	$ 8,870	5,375	—	19,512
	20	ho, unksgn	B or C	1.5	17	$ 23,300	8,641	6,193	40,407	$ 36,106	15,529	5,361	66,850
S	20	ho, unksgn	K or A	3.5	8	$ 67,464	—	—	—	$ 121,628	—	—	—
S	20	ho, unksgn	Unknown	9	2	$ 15,264	—	—	—	$ 24,292	—	—	—
	21	backing	No injury	0	11	$ 4,579	548	3,495	5,663	$ 4,579	548	3,495	5,663
S	21	backing	B or C	1.5	2	$ 35,485	—	—	—	$ 68,936	—	—	—
S	21	backing	K or A	3.5	1	$ 12,654	—	—	—	$ 16,172	—	—	—
S	21	backing	Unknown	9	1	$ 14,506	—	—	—	$ 23,154	—	—	—
	22	undefined	No injury	0	1041	$ 4,010	268	3,480	4,540	$ 4,463	423	3,626	5,300
	22	undefined	B or C	1.5	1055	$ 31,516	3,424	24,738	38,294	$ 57,354	6,476	44,532	70,176
	22	undefined	K or A	3.5	1057	$ 369,312	66,870	236,926	501,698	$ 1,029,205	210,245	612,970	1,445,441
	22	undefined	Injured, sev unk	5	42	$ 32,550	4,279	24,078	41,022	$ 61,899	10,297	41,513	82,285
	22	undefined	Unknown	9	218	$ 13,333	636	12,074	14,591	$ 22,790	1,115	20,583	24,997

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Table 6. Level 3A by speed limits

Code		Crash geometry	Speed limit (mi/h)	Maximum injsev in crash	Maximum injsev code	Observ	Mean human capital cost per crash	Std. Err.	[95% Conf. Interval]		Mean comprehensive cost per crash	Std. Err.	[95% Conf. Interval]	
	1	sv, ped, int	<=45	No injury	0	31	$ 8,512	997	6,537	10,486	$ 10,249	1,408	7,461	13,036
S	1	sv, ped, int	>=50	No injury	0	5	$ 3,672	—	—	—	$ 4,015	—	—	—
	1	sv, ped, int	<=45	K/A/B/C	2.5	916	$ 75,967	8,246	59,643	92,291	$ 169,090	20,584	128,340	209,841
	1	sv, ped, int	>=50	K/A/B/C	2.5	52	$ 87,023	32,842	22,003	152,043	$ 183,461	72,718	39,496	327,426
	1	sv, ped, int	<=45	Injured, sev unk	5	53	$ 67,342	22,127	23,536	111,149	$ 129,418	42,249	45,774	213,061
S	1	sv, ped, int	>=50	Injured, sev unk	5	2	$ 61,573	—	—	—	$ 146,281	—	—	—
S	1	sv, ped, int	<=45	Unknown	9	4	$ 14,386	—	—	—	$ 22,841	—	—	—
I	2	sv, ped,n-int	<=45	No injury	0	33	$ 28,370	18,026	—	64,059	$ 40,428	27,351	—	94,577
	2	sv, ped,n-int	>=50	No injury	0	18	$ 2,797	145	2,509	3,085	$ 2,831	175	2,484	3,178
	2	sv, ped,n-int	<=45	K/A/B/C	2.5	1454	$ 122,306	8,019	106,429	138,182	$ 320,581	25,583	269,933	371,228
	2	sv, ped,n-int	>=50	K/A/B/C	2.5	175	$ 144,192	32,144	80,554	207,829	$ 402,358	102,159	200,108	604,608
	2	sv, ped,n-int	<=45	Injured, sev unk	5	59	$ 26,089	8,056	10,139	42,039	$ 42,107	14,891	12,627	71,587
S	2	sv, ped,n-int	>=50	Injured, sev unk	5	3	$ 36,790	—	—	—	$ 65,026	—	—	—
	2	sv, ped,n-int	<=45	Unknown	9	25	$ 24,427	8,511	7,578	41,276	$ 35,189	10,607	14,190	56,189
S	2	sv, ped,n-int	>=50	Unknown	9	2	$ 12,423	—	—	—	$ 18,224	—	—	—
	3	sv, animal	<=45	No injury	0	10	$ 2,617	—	2,617	2,617	$ 2,617	—	2,617	2,617
	3	sv, animal	>=50	No injury	0	61	$ 4,904	2,047	852	8,956	$ 5,619	2,661	351	10,887
S	3	sv, animal	<=45	K/A/B/C	2.5	6	$ 44,585	—	—	—	$ 90,943	—	—	—
N	3	sv, animal	>=50	K/A/B/C	2.5	38	$ 31,122	7,390	16,491	45,752	$ 61,341	16,437	28,800	93,881
	4	sv, object	<=45	No injury	0	608	$ 4,835	1,016	2,825	6,846	$ 5,721	1,195	3,355	8,087
	4	sv, object	>=50	No injury	0	618	$ 4,513	298	3,923	5,104	$ 5,565	428	4,718	6,413
	4	sv, object	<=45	K/A/B/C	2.5	1219	$ 81,907	7,631	66,800	97,014	$ 202,918	23,472	156,450	249,386
	4	sv, object	>=50	K/A/B/C	2.5	2405	$ 98,810	14,095	70,905	126,716	$ 246,235	35,535	175,884	316,587
S	4	sv, object	<=45	Injured, sev unk	5	9	$ 19,267	—	—	—	$ 33,034	—	—	—
	4	sv, object	>=50	Injured, sev unk	5	21	$ 9,205	1,629	5,980	12,430	$ 14,358	3,114	8,193	20,522
	4	sv, object	<=45	Unknown	9	74	$ 12,992	744	11,520	14,465	$ 22,521	1,332	19,884	25,158
	4	sv, object	>=50	Unknown	9	25	$ 11,690	213	11,268	12,112	$ 20,024	389	19,253	20,794
	5	sv, prkveh	<=45	No injury	0	161	$ 3,438	278	2,887	3,988	$ 3,738	407	2,932	4,544
	5	sv, prkveh	>=50	No injury	0	25	$ 5,288	462	4,373	6,203	$ 6,223	1,364	3,523	8,923
	5	sv, prkveh	<=45	K/A/B/C	2.5	126	$ 29,325	7,848	13,788	44,862	$ 57,980	18,768	20,823	95,137
	5	sv, prkveh	>=50	K/A/B/C	2.5	89	$ 79,984	21,027	38,355	121,614	$ 214,511	68,242	79,408	349,615
S	5	sv, prkveh	<=45	Injured, sev unk	5	5	$ 13,616	—	—	—	$ 17,840	—	—	—
S	5	sv, prkveh	>=50	Injured, sev unk	5	3	$ 28,688	—	—	—	$ 57,388	—	—	—
	5	sv, prkveh	<=45	Unknown	9	44	$ 11,941	137	11,669	12,213	$ 20,581	249	20,089	21,073
	6	sv, rollover	<=45	No injury	0	31	$ 6,940	806	5,343	8,536	$ 9,697	1,398	6,930	12,464
	6	sv, rollover	>=50	No injury	0	89	$ 8,798	3,583	1,705	15,892	$ 13,526	5,772	2,098	24,954
	6	sv, rollover	<=45	K/A/B/C	2.5	298	$ 66,485	13,011	40,726	92,244	$ 160,218	40,791	79,461	240,975
	6	sv, rollover	>=50	K/A/B/C	2.5	822	$ 135,611	17,335	101,292	169,930	$ 366,821	56,319	255,322	478,319

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Observ = Observations
St. Err. = Standard Error
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Table 6. Level 3A by speed limits—continued

Code		Crash geometry	Speed limit (mi/h)	Maximum injsev in crash	Maximum injsev code	Observ	Mean human capital cost per crash	Std. Err.	[95% Conf.	Interval]	Mean comprehensive cost per crash	Std. Err.	[95% Conf.	Interval]
S	6	sv, rollover	<=45	Injured, sev unk	5	5	$ 15,202	—	—	—	$ 32,393	—	—	—
S	6	sv, rollover	>=50	Injured, sev unk	5	4	$ 248,826	—	—	—	$ 465,130	—	—	—
S	6	sv, rollover	<=45	Unknown	9	1	$ 11,888	—	—	—	$ 20,537	—	—	—
S	6	sv, rollover	>=50	Unknown	9	2	$ 11,888	—	—	—	$ 20,537	—	—	—
	7	mcp, sig	<=45	No injury	0	1043	$ 7,503	925	5,671	9,334	$ 8,673	1,285	6,130	11,217
	7	mcp, sig	>=50	No injury	0	301	$ 6,735	863	5,027	8,443	$ 8,544	1,294	5,983	11,105
	7	mcp, sig	<=45	K/A/B/C	2.5	968	$ 36,416	6,183	24,174	48,658	$ 64,468	11,919	40,872	88,064
	7	mcp, sig	>=50	K/A/B/C	2.5	1562	$ 56,986	3,804	49,455	64,516	$ 126,878	9,619	107,835	145,922
	7	mcp, sig	<=45	Injured, sev unk	5	15	$ 31,469	9,239	13,179	49,759	$ 47,639	14,994	17,954	77,323
S	7	mcp, sig	>=50	Injured, sev unk	5	5	$ 24,588	—	—	—	$ 45,148	—	—	—
	7	mcp, sig	<=45	Unknown	9	55	$ 16,983	1,688	13,641	20,324	$ 26,911	2,496	21,969	31,852
	7	mcp, sig	>=50	Unknown	9	11	$ 25,684	3,867	18,028	33,340	$ 37,871	6,988	24,037	51,705
	8	mcp, sign	<=45	No injury	0	773	$ 6,574	724	5,141	8,007	$ 7,910	1,255	5,426	10,394
	8	mcp, sign	>=50	No injury	0	194	$ 4,797	975	2,867	6,726	$ 5,444	1,265	2,941	7,948
	8	mcp, sign	<=45	K/A/B/C	2.5	804	$ 41,837	5,702	30,549	53,126	$ 80,956	13,346	54,534	107,379
	8	mcp, sign	>=50	K/A/B/C	2.5	858	$ 87,129	10,124	67,086	107,172	$ 199,788	27,768	144,813	254,763
	8	mcp, sign	<=45	Injured, sev unk	5	11	$ 57,990	13,690	30,888	85,092	$ 102,485	21,789	59,348	145,621
S	8	mcp, sign	>=50	Injured, sev unk	5	5	$ 62,318	—	—	—	$ 123,919	—	—	—
	8	mcp, sign	<=45	Unknown	9	44	$ 18,249	1,235	15,805	20,694	$ 25,553	3,294	19,032	32,073
S	8	mcp, sign	>=50	Unknown	9	4	$ 22,226	—	—	—	$ 41,391	—	—	—
	9	mcp, nosgn	<=45	No injury	0	244	$ 5,257	366	4,532	5,982	$ 5,604	471	4,672	6,537
	9	mcp, nosgn	>=50	No injury	0	69	$ 6,708	1,456	3,826	9,590	$ 7,920	2,000	3,961	11,880
N	9	mcp, nosgn	<=45	K/A/B/C	2.5	232	$ 32,286	8,340	15,775	48,798	$ 55,782	16,840	22,442	89,122
	9	mcp, nosgn	>=50	K/A/B/C	2.5	260	$ 65,511	12,366	41,028	89,993	$ 137,743	29,329	79,678	195,808
S	9	mcp, nosgn	<=45	Injured, sev unk	5	6	$ 196,721	—	—	—	$ 508,627	—	—	—
S	9	mcp, nosgn	>=50	Injured, sev unk	5	1	$ 13,917	—	—	—	$ 22,566	—	—	—
S	9	mcp, nosgn	<=45	Unknown	9	9	$ 27,860	—	—	—	$ 49,825	—	—	—
	10	mcp, unk	<=45	No injury	0	687	$ 5,230	370	4,498	5,961	$ 5,607	554	4,510	6,705
	10	mcp, unk	>=50	No injury	0	69	$ 4,682	251	4,185	5,178	$ 4,844	299	4,252	5,436
N	10	mcp, unk	<=45	K/A/B/C	2.5	375	$ 44,673	10,203	24,474	64,873	$ 80,205	19,393	41,811	118,600
	10	mcp, unk	>=50	K/A/B/C	2.5	58	$ 149,420	84,273	—	316,261	$ 407,695	271,139	—	944,486
S	10	mcp, unk	<=45	Injured, sev unk	5	6	$ 26,944	—	—	—	$ 50,197	—	—	—
S	10	mcp, unk	>=50	Injured, sev unk	5	1	$ 70,578	—	—	—	$ 137,479	—	—	—
	10	mcp, unk	<=45	Unknown	9	27	$ 16,510	1,295	13,946	19,074	$ 27,255	2,777	21,758	32,753
S	10	mcp, unk	>=50	Unknown	9	4	$ 17,186	—	—	—	$ 27,805	—	—	—
	11	re-all locations	<=45	No injury	0	1916	$ 7,465	1,261	4,969	9,962	$ 8,399	1,653	5,127	11,671
	11	re-all locations	>=50	No injury	0	1040	$ 8,911	1,474	5,992	11,829	$ 10,764	2,167	6,473	15,055
	11	re-all locations	<=45	K/A/B/C	2.5	1654	$ 31,061	9,037	13,169	48,952	$ 44,433	11,213	22,233	66,633

45 mi/h = 72 km/h 50 mi/h = 80 km/h

Code S = Derived from small sample.

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Code N = Combined estimate with no fatal component.

Injsev = Injury severity

Observ = Observations

St. Err. = Standard Error

Conf. Interval = Confidence Interval

— = Sample size too small to calculate or the lower bound of the confidence interval was below zero.

Table 6. Level 3A by speed limits—continued

Code		Crash geometry	Speed limit (mi/h)	Maximum injsev in crash	Maximum injsev code	Observ	Mean human capital cost per crash	Std. Err.	[95% Conf. Interval]		Mean comprehensive cost per crash	Std. Err.	[95% Conf. Interval]	
	11	re-all locations	>=50	K/A/B/C	2.5	1534	$ 51,036	5,685	39,780	62,291	$ 105,180	17,694	70,149	140,210
	11	re-all locations	<=45	Injured, sev unk	5	20	$ 32,655	8,696	15,440	49,870	$ 55,850	17,596	21,014	90,686
	11	re-all locations	>=50	Injured, sev unk	5	10	$ 35,395	2,190	31,059	39,731	$ 73,527	8,798	56,109	90,946
	11	re-all locations	<=45	Unknown	9	164	$ 17,215	1,228	14,783	19,647	$ 27,432	2,100	23,275	31,590
	11	re-all locations	>=50	Unknown	9	65	$ 20,771	3,219	14,398	27,144	$ 33,123	5,861	21,520	44,725
	12	re-unk int	<=45	No injury	0	422	$ 5,297	785	3,744	6,851	$ 5,649	914	3,839	7,459
	12	re-unk int	>=50	No injury	0	109	$ 11,783	6,066	—	23,793	$ 13,573	6,809	93	27,053
	12	re-unk int	<=45	K/A/B/C	2.5	386	$ 67,455	22,710	22,494	112,415	$ 86,806	23,203	40,869	132,743
	12	re-unk int	>=50	K/A/B/C	2.5	173	$ 42,433	3,262	35,976	48,891	$ 62,125	7,023	48,222	76,028
S	12	re-unk int	<=45	Injured, sev unk	5	6	$ 29,812	—	—	—	$ 52,029	—	—	—
S	12	re-unk int	>=50	Injured, sev unk	5	1	$ 5,235	—	—	—	$ 5,235	—	—	—
	12	re-unk int	<=45	Unknown	9	37	$ 19,416	1,445	16,555	22,277	$ 31,827	2,795	26,294	37,360
S	12	re-unk int	>=50	Unknown	9	4	$ 17,386	—	—	—	$ 26,753	—	—	—
	13	re - signed int	<=45	No injury	0	99	$ 10,586	3,540	3,577	17,595	$ 12,295	4,622	3,145	21,445
	13	re - signed int	>=50	No injury	0	18	$ 3,302	549	2,215	4,389	$ 3,788	978	1,851	5,725
N	13	re - signed int	<=45	K/A/B/C	2.5	72	$ 30,387	6,918	16,692	44,082	$ 56,093	19,589	17,313	94,874
N	13	re - signed int	>=50	K/A/B/C	2.5	21	$ 21,959	6,450	9,189	34,729	$ 34,563	12,845	9,133	59,993
S	13	re - signed int	<=45	Injured, sev unk	5	1	$ 13,878	—	—	—	$ 15,958	—	—	—
S	13	re - signed int	>=50	Injured, sev unk	5	1	$ 83,223	—	—	—	$ 267,019	—	—	—
S	13	re - signed int	<=45	Unknown	9	7	$ 13,737	—	—	—	$ 20,755	—	—	—
	14	re - signl int	<=45	No injury	0	492	$ 9,454	2,295	4,910	13,997	$ 11,463	3,338	4,853	18,072
	14	re - signl int	>=50	No injury	0	142	$ 4,810	671	3,481	6,139	$ 5,901	1,082	3,758	8,044
N	14	re - signl int	<=45	K/A/B/C	2.5	508	$ 28,275	4,631	19,107	37,443	$ 44,687	9,276	26,322	63,052
	14	re - signl int	>=50	K/A/B/C	2.5	292	$ 27,155	5,544	16,180	38,130	$ 52,276	13,794	24,966	79,585
S	14	re - signl int	<=45	Injured, sev unk	5	6	$ 29,111	—	—	—	$ 44,120	—	—	—
S	14	re - signl int	>=50	Injured, sev unk	5	2	$ 30,447	—	—	—	$ 58,458	—	—	—
	14	re - signl int	<=45	Unknown	9	49	$ 16,136	1,579	13,011	19,262	$ 26,930	4,043	18,926	34,934
S	14	re - signl int	>=50	Unknown	9	3	$ 30,665	—	—	—	$ 48,029	—	—	—
	15	re - no int	<=45	No injury	0	903	$ 5,516	176	5,168	5,864	$ 5,756	269	5,223	6,289
	15	re - no int	>=50	No injury	0	771	$ 9,055	1,556	5,975	12,135	$ 10,972	2,319	6,382	15,562
	15	re - no int	<=45	K/A/B/C	2.5	688	$ 20,589	3,120	14,413	26,765	$ 31,307	6,028	19,373	43,242
	15	re - no int	>=50	K/A/B/C	2.5	1048	$ 67,216	11,856	43,744	90,688	$ 160,484	31,087	98,939	222,028
S	15	re - no int	<=45	Injured, sev unk	5	7	$ 41,326	—	—	—	$ 75,081	—	—	—
S	15	re - no int	>=50	Injured, sev unk	5	6	$ 34,399	—	—	—	$ 68,218	—	—	—
	15	re - no int	<=45	Unknown	9	71	$ 18,029	1,668	14,728	21,331	$ 27,042	1,646	23,783	30,301
	15	re - no int	>=50	Unknown	9	58	$ 20,478	3,347	13,853	27,104	$ 32,695	6,093	20,633	44,758
	16	ss	<=45	No injury	0	1658	$ 5,679	330	5,026	6,332	$ 6,007	416	5,185	6,830
	16	ss	>=50	No injury	0	681	$ 5,218	211	4,801	5,636	$ 5,762	348	5,072	6,452

45 mi/h = 72 km/h 50 mi/h = 80 km/h

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Injsev = Injury severity

Observ = Observations

St. Err. = Standard Error

Conf. Interval = Confidence Interval

— = Sample size too small to calculate or the lower bound of the confidence interval was below zero.

Table 6. Level 3A by speed limits—continued

Code		Crash geometry	Speed limit (mi/h)	Maximum injsev in crash	Maximum injsev code	Observ	Mean human capital cost per crash	Std. Err.	[95% Conf.	Interval]	Mean comprehensive cost per crash	Std. Err.	[95% Conf.	Interval]
	16	ss	<=45	K/A/B/C	2.5	940	$ 38,840	6,637	25,700	51,981	$ 74,519	13,210	48,367	100,672
	16	ss	>=50	K/A/B/C	2.5	1204	$ 73,123	7,643	57,992	88,255	$ 169,438	20,048	129,748	209,128
	16	ss	<=45	Injured, sev unk	5	13	$ 93,418	21,175	51,495	135,340	$ 173,762	41,739	91,129	256,396
S	16	ss	>=50	Injured, sev unk	5	7	$ 34,884	—	—	—	$ 60,877	—	—	—
	16	ss	<=45	Unknown	9	134	$ 16,110	1,092	13,948	18,272	$ 24,956	1,132	22,716	27,197
	16	ss	>=50	Unknown	9	61	$ 13,978	915	12,167	15,789	$ 21,870	1,763	18,381	25,360
	17	ho, n-int	<=45	No injury	0	55	$ 3,830	703	2,438	5,222	$ 3,948	739	2,486	5,410
	17	ho, n-int	>=50	No injury	0	25	$ 3,272	396	2,487	4,056	$ 3,471	510	2,460	4,481
	17	ho, n-int	<=45	K/A/B/C	2.5	136	$ 62,767	8,639	45,664	79,870	$ 134,978	20,938	93,526	176,430
	17	ho, n-int	>=50	K/A/B/C	2.5	401	$ 420,577	39,986	341,414	499,740	$ 1,148,922	121,500	908,380	1,389,464
S	17	ho, n-int	>=50	Injured, sev unk	5	3	$ 36,258	—	—	—	$ 64,704	—	—	—
S	17	ho, n-int	<=45	Unknown	9	2	$ 5,560	—	—	—	$ 5,984	—	—	—
S	17	ho, n-int	>=50	Unknown	9	3	$ 13,001	—	—	—	$ 21,528	—	—	—
	18	ho, sig	<=45	No injury	0	42	$ 5,053	229	4,599	5,507	$ 5,101	245	4,617	5,586
S	18	ho, sig	>=50	No injury	0	2	$ 2,617	—	—	—	$ 2,617	—	—	—
N	18	ho, sig	<=45	K/A/B/C	2.5	26	$ 87,735	17,108	53,865	121,606	$ 152,240	28,564	95,690	208,789
N	18	ho, sig	>=50	K/A/B/C	2.5	14	$ 70,592	43,848	—	157,399	$ 120,118	78,628	—	275,783
S	18	ho, sig	<=45	Unknown	9	2	$ 14,384	—	—	—	$ 23,033	—	—	—
S	18	ho, sig	>=50	Unknown	9	1	$ 44,909	—	—	—	$ 75,386	—	—	—
	19	ho, sign	<=45	No injury	0	10	$ 4,793	407	3,987	5,599	$ 4,806	399	4,017	5,596
S	19	ho, sign	>=50	No injury	0	4	$ 5,027	—	—	—	$ 6,169	—	—	—
S	19	ho, sign	<=45	K/A/B/C	2.5	7	$ 25,922	—	—	—	$ 37,976	—	—	—
	19	ho, sign	>=50	K/A/B/C	2.5	17	$ 68,501	28,058	12,952	124,049	$ 151,647	79,655	—	309,344
	20	ho, unksgn	<=45	No injury	0	29	$ 7,000	4,060	—	15,037	$ 10,110	7,031	—	24,030
S	20	ho, unksgn	>=50	No injury	0	6	$ 4,738	—	—	—	$ 4,738	—	—	—
N	20	ho, unksgn	<=45	K/A/B/C	2.5	22	$ 34,601	13,128	8,611	60,591	$ 57,682	24,730	8,723	106,641
S	20	ho, unksgn	>=50	K/A/B/C	2.5	3	$ 38,747	—	—	—	$ 72,630	—	—	—
S	20	ho, unksgn	<=45	Unknown	9	2	$ 15,264	—	—	—	$ 24,292	—	—	—
	21	backing	<=45	No injury	0	11	$ 4,579	548	3,495	5,663	$ 4,579	548	3,495	5,663
S	21	backing	<=45	K/A/B/C	2.5	3	$ 29,008	—	—	—	$ 53,966	—	—	—
S	21	backing	<=45	Unknown	9	1	$ 14,506	—	—	—	$ 23,154	—	—	—
	22	undefined	<=45	No injury	0	735	$ 5,193	1,539	2,147	8,240	$ 6,386	2,323	1,787	10,985
	22	undefined	>=50	No injury	0	304	$ 3,617	262	3,098	4,135	$ 3,826	330	3,172	4,479
	22	undefined	<=45	K/A/B/C	2.5	1498	$ 77,783	9,800	58,381	97,184	$ 196,775	31,322	134,764	258,785
	22	undefined	>=50	K/A/B/C	2.5	612	$ 139,915	42,181	56,408	223,423	$ 366,898	126,183	117,086	616,710
	22	undefined	<=45	Injured, sev unk	5	39	$ 30,476	4,280	22,002	38,951	$ 57,595	10,398	37,009	78,180
S	22	undefined	>=50	Injured, sev unk	5	3	$ 59,349	—	—	—	$ 117,523	—	—	—
	22	undefined	<=45	Unknown	9	200	$ 13,341	684	11,986	14,696	$ 22,856	1,216	20,450	25,263

45 mi/h = 72 km/h 50 mi/h = 80 km/h

Code S = Derived from small sample.

Code I = Illogical values or outliers in data.

Code N = Combined estimate with no fatal component.

Injsev = Injury severity

Observ = Observations

St. Err. = Standard Error

Conf. Interval = Confidence Interval

— = Sample size too small to calculate or the lower bound of the confidence interval was below zero.

Table 6. Level 3A by speed limits—continued

Code		Crash geometry	Speed limit (mi/h)	Maximum injsev in crash	Maximum injsev code	Observ	Mean human capital cost per crash	Std. Err.	[95% Conf. Interval]		Mean comprehensive cost per crash	Std. Err.	[95% Conf. Interval]	
	22	undefined	>=50	Unknown	9	18	$ 13,196	1,904	9,427	16,965	$ 21,671	3,747	14,254	29,089

45 mi/h = 72 km/h   50 mi/h = 80 km/h

Code S	=	Derived from small sample.	Injsev	=	Injury severity	Conf. Interval	=	Confidence Interval
Code I	=	Illogical values or outliers in data.	Observ	=	Observations	—	=	Sample size too small to calculate or the lower bound of the confidence interval was below zero.
Code N	=	Combined estimate with no fatal component.	St. Err.	=	Standard Error			

Table 7. Level 3A without speed limits

Code		Crash geometry	Maximum injsev in crash	Maximum injsev code	Observ	Mean human capital cost per crash	Std. Err.	[95% Conf.	Interval]	Mean comprehensive cost per crash	Std. Err.	[95% Conf.	Interval]
	1	sv, ped, int	No injury	0	36	$ 4,772	1,339	2,121	7,423	$ 5,432	1,762	1,943	8,921
	1	sv, ped, int	K/A/B/C	2.5	968	$ 79,122	10,561	58,213	100,030	$ 173,191	24,844	124,005	222,376
	1	sv, ped, int	Injured, sev unk	5	55	$ 63,856	8,681	46,671	81,042	$ 139,607	17,911	104,148	175,066
S	1	sv, ped, int	Unknown	9	4	$ 14,386	—	—	—	$ 22,841	—	—	—
	2	sv, ped,n-int	No injury	0	51	$ 3,158	391	2,384	3,933	$ 3,362	565	2,244	4,480
	2	sv, ped,n-int	K/A/B/C	2.5	1629	$ 130,340	12,791	105,018	155,663	$ 350,602	40,023	271,366	429,839
	2	sv, ped,n-int	Injured, sev unk	5	62	$ 28,020	7,345	13,479	42,561	$ 46,242	13,672	19,174	73,310
	2	sv, ped,n-int	Unknown	9	27	$ 23,618	7,949	7,881	39,356	$ 34,047	9,922	14,404	53,690
	3	sv, animal	No injury	0	71	$ 4,544	1,751	1,077	8,011	$ 5,147	2,277	639	9,654
N	3	sv, animal	K/A/B/C	2.5	44	$ 32,744	7,069	18,750	46,739	$ 64,908	16,048	33,138	96,678
	4	sv, object	No injury	0	1230	$ 4,624	402	3,827	5,420	$ 5,618	513	4,602	6,633
	4	sv, object	K/A/B/C	2.5	3658	$ 95,318	11,158	73,228	117,408	$ 237,600	29,053	180,081	295,118
	4	sv, object	Injured, sev unk	5	31	$ 13,658	3,034	7,652	19,664	$ 22,662	5,621	11,534	33,790
	4	sv, object	Unknown	9	100	$ 12,616	594	11,439	13,792	$ 21,799	1,063	19,695	23,902
	5	sv, prkveh	No injury	0	187	$ 4,070	258	3,560	4,580	$ 4,587	494	3,610	5,564
	5	sv, prkveh	K/A/B/C	2.5	215	$ 45,610	10,606	24,613	66,608	$ 108,300	31,050	46,827	169,772
S	5	sv, prkveh	Injured, sev unk	5	8	$ 21,022	—	—	—	$ 37,273	—	—	—
	5	sv, prkveh	Unknown	9	44	$ 11,941	137	11,669	12,213	$ 20,581	249	20,089	21,073
	6	sv, rollover	No injury	0	121	$ 8,704	3,395	1,983	15,425	$ 13,331	5,462	2,518	24,144
	6	sv, rollover	K/A/B/C	2.5	1137	$ 121,261	14,585	92,385	150,137	$ 324,366	48,474	228,399	420,333
S	6	sv, rollover	Injured, sev unk	5	9	$ 182,849	—	—	—	$ 342,922	—	—	—
S	6	sv, rollover	Unknown	9	4	$ 12,315	—	—	—	$ 21,032	—	—	—
	7	mcp, sig	No injury	0	1347	$ 7,210	678	5,868	8,553	$ 8,598	952	6,713	10,483
	7	mcp, sig	K/A/B/C	2.5	2540	$ 50,907	3,784	43,416	58,398	$ 108,401	9,292	90,005	126,797
	7	mcp, sig	Injured, sev unk	5	20	$ 28,828	6,332	16,291	41,365	$ 46,683	11,165	24,578	68,787
	7	mcp, sig	Unknown	9	66	$ 18,338	1,632	15,108	21,569	$ 28,618	2,441	23,786	33,451
	8	mcp, sign	No injury	0	968	$ 5,861	700	4,476	7,247	$ 6,922	1,034	4,875	8,969
	8	mcp, sign	K/A/B/C	2.5	1671	$ 65,895	6,331	53,361	78,428	$ 144,123	16,739	110,984	177,261
	8	mcp, sign	Injured, sev unk	5	16	$ 60,937	28,720	4,078	117,795	$ 117,079	52,562	13,018	221,140
	8	mcp, sign	Unknown	9	48	$ 18,600	1,381	15,866	21,334	$ 26,949	3,768	19,489	34,409
	9	mcp, nosgn	No injury	0	314	$ 5,912	703	4,521	7,304	$ 6,650	975	4,719	8,580
	9	mcp, nosgn	K/A/B/C	2.5	493	$ 47,382	7,122	33,282	61,482	$ 93,048	16,473	60,436	125,661
S	9	mcp, nosgn	Injured, sev unk	5	7	$ 110,650	—	—	—	$ 279,770	—	—	—
S	9	mcp, nosgn	Unknown	9	9	$ 27,860	—	—	—	$ 49,825	—	—	—
	10	mcp, unk	No injury	0	756	$ 5,025	251	4,529	5,521	$ 5,322	371	4,588	6,055
	10	mcp, unk	K/A/B/C	2.5	433	$ 76,870	27,828	21,777	131,963	$ 180,867	86,866	8,893	352,841
S	10	mcp, unk	Injured, sev unk	5	7	$ 48,360	—	—	—	$ 93,037	—	—	—
	10	mcp, unk	Unknown	9	31	$ 16,585	1,413	13,789	19,381	$ 27,316	2,851	21,671	32,961
	11	re-all locations	No injury	0	2958	$ 8,230	1,046	6,160	10,301	$ 9,651	1,505	6,672	12,631

45 mi/h = 72 km/h   50 mi/h = 80 km/h

Code S	=	Derived from small sample.	Injsev	=	Injury severity	Conf. Interval	=	Confidence Interval
Code I	=	Illogical values or outliers in data.	Observ	=	Observations	—	=	Sample size too small to calculate or the lower bound of the confidence interval was below zero.
Code N	=	Combined estimate with no fatal component.	St. Err.	=	Standard Error			

Table 7. Level 3A without speed limits—continued

Code		Crash geometry	Maximum injsev in crash	Maximum injsev code	Observ	Mean human capital cost per crash	Std. Err.	[95% Conf. Interval]		Mean comprehensive cost per crash	Std. Err.	[95% Conf. Interval]	
	11	re-all locations	K/A/B/C	2.5	3193	$ 39,642	6,451	26,870	52,413	$ 70,557	11,994	46,813	94,302
	11	re-all locations	Injured, sev unk	5	30	$ 33,948	4,640	24,763	43,134	$ 64,194	10,434	43,538	84,850
	11	re-all locations	Unknown	9	229	$ 18,120	1,266	15,614	20,625	$ 28,880	2,209	24,506	33,253
	12	re-unk int	No injury	0	532	$ 6,997	1,941	3,154	10,841	$ 7,735	2,226	3,328	12,142
	12	re-unk int	K/A/B/C	2.5	559	$ 52,829	11,822	29,423	76,235	$ 72,379	12,052	48,518	96,240
S	12	re-unk int	Injured, sev unk	5	7	$ 29,389	—	—	—	$ 51,224	—	—	—
	12	re-unk int	Unknown	9	41	$ 19,369	1,418	16,561	22,177	$ 31,709	2,745	26,276	37,143
	13	re - signed int	No injury	0	117	$ 10,325	3,437	3,520	17,130	$ 11,990	4,482	3,117	20,863
N	13	re - signed int	K/A/B/C	2.5	93	$ 28,297	5,897	16,622	39,972	$ 50,755	15,973	19,132	82,378
S	13	re - signed int	Injured, sev unk	5	2	$ 45,197	—	—	—	$ 129,348	—	—	—
S	13	re - signed int	Unknown	9	7	$ 13,737	—	—	—	$ 20,755	—	—	—
	14	re - signl int	No injury	0	634	$ 8,165	1,706	4,788	11,541	$ 9,919	2,460	5,048	14,790
	14	re - signl int	K/A/B/C	2.5	802	$ 27,687	3,648	20,465	34,909	$ 48,236	8,422	31,562	64,909
S	14	re - signl int	Injured, sev unk	5	8	$ 29,525	—	—	—	$ 48,564	—	—	—
	14	re - signl int	Unknown	9	52	$ 16,493	1,683	13,161	19,826	$ 27,448	4,109	19,313	35,583
	15	re - no int	No injury	0	1675	$ 8,020	1,433	5,184	10,857	$ 9,447	2,109	5,273	13,622
	15	re - no int	K/A/B/C	2.5	1739	$ 36,716	8,729	19,434	53,998	$ 75,990	23,076	30,306	121,675
	15	re - no int	Injured, sev unk	5	13	$ 36,478	8,007	20,626	52,331	$ 70,278	16,573	37,468	103,088
	15	re - no int	Unknown	9	129	$ 19,191	1,840	15,548	22,834	$ 29,724	3,097	23,592	35,856
	16	ss	No injury	0	2341	$ 5,490	222	5,050	5,930	$ 5,905	300	5,311	6,498
	16	ss	K/A/B/C	2.5	2150	$ 61,848	6,715	48,553	75,142	$ 138,339	16,816	105,048	171,630
	16	ss	Injured, sev unk	5	20	$ 57,389	16,033	25,648	89,129	$ 104,279	30,930	43,046	165,512
	16	ss	Unknown	9	195	$ 15,325	843	13,656	16,995	$ 23,820	1,058	21,726	25,914
	17	ho, n-int	No injury	0	80	$ 3,543	403	2,745	4,341	$ 3,703	446	2,819	4,587
	17	ho, n-int	K/A/B/C	2.5	539	$ 283,845	41,386	201,910	365,780	$ 761,559	117,293	529,346	993,771
S	17	ho, n-int	Injured, sev unk	5	3	$ 36,258	—	—	—	$ 64,704	—	—	—
S	17	ho, n-int	Unknown	9	5	$ 9,876	—	—	—	$ 15,000	—	—	—
	18	ho, sig	No injury	0	44	$ 4,934	271	4,397	5,470	$ 4,980	276	4,433	5,527
N	18	ho, sig	K/A/B/C	2.5	40	$ 76,590	31,203	14,816	138,364	$ 131,356	55,993	20,504	242,209
S	18	ho, sig	Unknown	9	3	$ 15,813	—	—	—	$ 25,483	—	—	—
	19	ho, sign	No injury	0	14	$ 4,870	787	3,312	6,429	$ 5,256	1,075	3,128	7,385
	19	ho, sign	K/A/B/C	2.5	24	$ 54,426	15,577	23,586	85,266	$ 114,072	43,990	26,982	201,162
	20	ho, unksgn	No injury	0	35	$ 6,478	3,104	334	12,622	$ 8,870	5,375	—	19,512
	20	ho, unksgn	K/A/B/C	2.5	25	$ 34,786	12,633	9,776	59,796	$ 58,347	23,901	11,028	105,666
S	20	ho, unksgn	Unknown	9	2	$ 15,264	—	—	—	$ 24,292	—	—	—
	21	backing	No injury	0	11	$ 4,579	548	3,495	5,663	$ 4,579	548	3,495	5,663
S	21	backing	K/A/B/C	2.5	3	$ 29,008	—	—	—	$ 53,966	—	—	—
S	21	backing	Unknown	9	1	$ 14,506	—	—	—	$ 23,154	—	—	—
	22	undefined	No injury	0	1041	$ 4,010	268	3,480	4,540	$ 4,463	423	3,626	5,300

45 mi/h = 72 km/h 50 mi/h = 80 km/h

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Code N = Combined estimate with no fatal component.

Injsev = Injury severity

Observ = Observations

St. Err. = Standard Error

Conf. Interval = Confidence Interval

— = Sample size too small to calculate or the lower bound of the confidence interval was below zero.

Table 7. Level 3A without speed limits—continued

Code	Crash geometry	Maximum injsev in crash	Maximum injsev code	Observ	Mean human capital cost per crash	Std. Err.	[95% Conf. Interval]		Mean comprehensive cost per crash	Std. Err.	[95% Conf. Interval]	
22	undefined	K/A/B/C	2.5	2112	$ 121,590	29,936	62,324	180,857	$ 316,501	89,655	139,006	493,997
22	undefined	Injured, sev unk	5	42	$ 32,550	4,279	24,078	41,022	$ 61,899	10,297	41,513	82,285
22	undefined	Unknown	9	218	$ 13,333	636	12,074	14,591	$ 22,790	1,115	20,583	24,997

45 mi/h = 72 km/h 50 mi/h = 80 km/h

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Code N = Combined estimate with no fatal component.

Injsev = Injury severity

Observ = Observations

St. Err. = Standard Error

Conf. Interval = Confidence Interval

— = Sample size too small to calculate or the lower bound of the confidence interval was below zero.

Table 8. Level 3B by speed limits

Code		Crash geometry	Speed limit (mi/h)	Maximum injsev in crash	Maximum injsev code	Observ	Mean human capital cost per crash	Std. Err.	[95% Conf.	Interval]	Mean comprehensive cost per crash	Std. Err.	[95% Conf.	Interval]
	1	sv, ped, int	<=45	No injury or C	0.5	260	$ 23,506	4,700	14,202	32,809	$ 37,829	8,191	21,614	54,045
	1	sv, ped, int	>=50	No injury or C	0.5	18	$ 12,033	2,291	7,497	16,568	$ 18,253	3,920	10,493	26,013
	1	sv, ped, int	<=45	K/A/B	3	687	$ 103,147	9,232	84,871	121,424	$ 237,532	24,589	188,852	286,212
	1	sv, ped, int	>=50	K/A/B	3	39	$ 157,464	52,158	54,203	260,725	$ 340,672	118,613	105,846	575,497
	1	sv, ped, int	<=45	Injured, sev unk	5	53	$ 67,342	22,127	23,536	111,149	$ 129,418	42,249	45,774	213,061
S	1	sv, ped, int	>=50	Injured, sev unk	5	2	$ 61,573	—	—	—	$ 146,281	—	—	—
S	1	sv, ped, int	<=45	Unknown	9	4	$ 14,386	—	—	—	$ 22,841	—	—	—
	2	sv, ped, n-int	<=45	No injury or C	0.5	303	$ 28,864	3,707	21,525	36,203	$ 50,680	7,457	35,918	65,442
	2	sv, ped, n-int	>=50	No injury or C	0.5	32	$ 18,435	7,776	3,040	33,830	$ 32,422	15,703	1,334	63,510
	2	sv, ped, n-int	<=45	K/A/B	3	1184	$ 156,307	10,751	135,023	177,592	$ 418,747	34,254	350,933	486,562
	2	sv, ped, n-int	>=50	K/A/B	3	161	$ 211,462	44,317	123,725	299,199	$ 612,370	145,036	325,234	899,507
	2	sv, ped, n-int	<=45	Injured, sev unk	5	59	$ 26,089	8,056	10,139	42,039	$ 42,107	14,891	12,627	71,587
S	2	sv, ped, n-int	>=50	Injured, sev unk	5	3	$ 36,790	—	—	—	$ 65,026	—	—	—
	2	sv, ped, n-int	<=45	Unknown	9	25	$ 24,427	8,511	7,578	41,276	$ 35,189	10,607	14,190	56,189
S	2	sv, ped, n-int	>=50	Unknown	9	2	$ 12,423	—	—	—	$ 18,224	—	—	—
	3	sv, animal	<=45	No injury or C	0.5	11	$ 2,687	72	2,544	2,829	$ 2,719	105	2,511	2,928
	3	sv, animal	>=50	No injury or C	0.5	68	$ 4,964	2,002	1,000	8,928	$ 5,716	2,603	562	10,870
S	3	sv, animal	<=45	K/A/B	3	5	$ 64,229	—	—	—	$ 134,391	—	—	—
N	3	sv, animal	>=50	K/A/B	3	31	$ 43,794	9,483	25,021	62,567	$ 89,348	20,511	48,741	129,955
	4	sv, object	<=45	No injury or C	0.5	776	$ 8,743	1,231	6,305	11,180	$ 12,806	1,832	9,179	16,433
	4	sv, object	>=50	No injury or C	0.5	933	$ 8,918	969	6,999	10,837	$ 14,586	1,940	10,746	18,426
	4	sv, object	<=45	K/A/B	3	1051	$ 109,100	11,129	87,068	131,132	$ 281,968	33,326	215,989	347,946
	4	sv, object	>=50	K/A/B	3	2090	$ 140,416	12,972	114,734	166,099	$ 358,218	33,272	292,347	424,090
S	4	sv, object	<=45	Injured, sev unk	5	9	$ 19,267	—	—	—	$ 33,034	—	—	—
	4	sv, object	>=50	Injured, sev unk	5	21	$ 9,205	1,629	5,980	12,430	$ 14,358	3,114	8,193	20,522
	4	sv, object	<=45	Unknown	9	74	$ 12,992	744	11,520	14,465	$ 22,521	1,332	19,884	25,158
	4	sv, object	>=50	Unknown	9	25	$ 11,690	213	11,268	12,112	$ 20,024	389	19,253	20,794
	5	sv, prkveh	<=45	No injury or C	0.5	182	$ 4,056	414	3,236	4,876	$ 4,718	629	3,473	5,964
	5	sv, prkveh	>=50	No injury or C	0.5	39	$ 5,803	622	4,572	7,035	$ 6,881	1,481	3,949	9,813
	5	sv, prkveh	<=45	K/A/B	3	105	$ 33,106	10,180	12,952	53,260	$ 68,390	24,479	19,927	116,853
	5	sv, prkveh	>=50	K/A/B	3	75	$ 107,488	29,462	49,161	165,815	$ 298,505	95,514	109,410	487,600
S	5	sv, prkveh	<=45	Injured, sev unk	5	5	$ 13,616	—	—	—	$ 17,840	—	—	—
S	5	sv, prkveh	>=50	Injured, sev unk	5	3	$ 28,688	—	—	—	$ 57,388	—	—	—
	5	sv, prkveh	<=45	Unknown	9	44	$ 11,941	137	11,669	12,213	$ 20,581	249	20,089	21,073
	6	sv, rollover	<=45	No injury or C	0.5	62	$ 33,760	6,018	21,846	45,673	$ 60,195	10,558	39,293	81,097
	6	sv, rollover	>=50	No injury or C	0.5	173	$ 12,133	2,551	7,082	17,185	$ 19,816	4,014	11,870	27,762
	6	sv, rollover	<=45	K/A/B	3	267	$ 70,505	15,828	39,169	101,841	$ 175,585	49,362	77,860	273,310
	6	sv, rollover	>=50	K/A/B	3	738	$ 166,177	21,872	122,875	209,479	$ 454,443	70,180	315,503	593,382

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Table 8. Level 3B by speed limits—continued

Code		Crash geometry	Speed limit (mi/h)	Maximum injsev in crash	Maximum injsev code	Observ	Mean human capital cost per crash	Std. Err.	[95% Conf.	Interval]	Mean comprehensive cost per crash	Std. Err.	[95% Conf.	Interval]
S	6	sv, rollover	<=45	Injured, sev unk	5	5	$ 15,202	—	—	—	$ 32,393	—	—	—
S	6	sv, rollover	>=50	Injured, sev unk	5	4	$ 248,826	—	—	—	$ 465,130	—	—	—
S	6	sv, rollover	<=45	Unknown	9	1	$ 11,888	—	—	—	$ 20,537	—	—	—
S	6	sv, rollover	>=50	Unknown	9	2	$ 11,888	—	—	—	$ 20,537	—	—	—
	7	mcp, sig	<=45	No injury or C	0.5	1420	$ 10,182	1,003	8,196	12,168	$ 13,366	1,522	10,354	16,379
	7	mcp, sig	>=50	No injury or C	0.5	653	$ 14,250	1,581	11,121	17,380	$ 22,992	3,000	17,053	28,931
	7	mcp, sig	<=45	K/A/B	3	591	$ 75,943	14,355	47,523	104,362	$ 148,170	26,674	95,362	200,978
	7	mcp, sig	>=50	K/A/B	3	1210	$ 97,600	7,293	83,163	112,038	$ 232,175	18,822	194,912	269,438
	7	mcp, sig	<=45	Injured, sev unk	5	15	$ 31,469	9,239	13,179	49,759	$ 47,639	14,994	17,954	77,323
S	7	mcp, sig	>=50	Injured, sev unk	5	5	$ 24,588	—	—	—	$ 45,148	—	—	—
	7	mcp, sig	<=45	Unknown	9	55	$ 16,983	1,688	13,641	20,324	$ 26,911	2,496	21,969	31,852
	7	mcp, sig	>=50	Unknown	9	11	$ 25,684	3,867	18,028	33,340	$ 37,871	6,988	24,037	51,705
	8	mcp, sign	<=45	No injury or C	0.5	1034	$ 11,742	2,249	7,289	16,194	$ 17,670	4,637	8,490	26,850
	8	mcp, sign	>=50	No injury or C	0.5	380	$ 14,535	4,726	5,180	23,891	$ 23,810	9,079	5,835	41,785
	8	mcp, sign	<=45	K/A/B	3	543	$ 67,650	12,181	43,534	91,765	$ 141,272	30,640	80,613	201,931
	8	mcp, sign	>=50	K/A/B	3	672	$ 139,498	14,525	110,743	168,254	$ 338,661	38,262	262,911	414,411
	8	mcp, sign	<=45	Injured, sev unk	5	11	$ 57,990	13,690	30,888	85,092	$ 102,485	21,789	59,348	145,621
S	8	mcp, sign	>=50	Injured, sev unk	5	5	$ 62,318	—	—	—	$ 123,919	—	—	—
	8	mcp, sign	<=45	Unknown	9	44	$ 18,249	1,235	15,805	20,694	$ 25,553	3,294	19,032	32,073
S	8	mcp, sign	>=50	Unknown	9	4	$ 22,226	—	—	—	$ 41,391	—	—	—
	9	mcp, nosgn	<=45	No injury or C	0.5	334	$ 7,776	927	5,940	9,611	$ 9,839	1,568	6,736	12,943
	9	mcp, nosgn	>=50	No injury or C	0.5	135	$ 11,343	2,409	6,573	16,113	$ 16,086	4,090	7,989	24,183
N	9	mcp, nosgn	<=45	K/A/B	3	142	$ 65,743	22,040	22,109	109,376	$ 123,655	45,730	33,120	214,190
	9	mcp, nosgn	>=50	K/A/B	3	194	$ 95,720	26,241	43,770	147,671	$ 219,823	62,960	95,177	344,470
S	9	mcp, nosgn	<=45	Injured, sev unk	5	6	$ 196,721	—	—	—	$ 508,627	—	—	—
S	9	mcp, nosgn	>=50	Injured, sev unk	5	1	$ 13,917	—	—	—	$ 22,566	—	—	—
S	9	mcp, nosgn	<=45	Unknown	9	9	$ 27,860	—	—	—	$ 49,825	—	—	—
	10	mcp, unk	<=45	No injury or C	0.5	829	$ 18,809	4,498	9,904	27,713	$ 31,221	8,686	14,026	48,417
	10	mcp, unk	>=50	No injury or C	0.5	87	$ 10,036	4,046	2,026	18,046	$ 14,866	7,529	—	29,772
N	10	mcp, unk	<=45	K/A/B	3	233	$ 64,339	15,627	33,402	95,276	$ 118,891	30,214	59,073	178,708
	10	mcp, unk	>=50	K/A/B	3	40	$ 206,310	118,362	—	440,638	$ 584,072	381,252	—	1,338,861
S	10	mcp, unk	<=45	Injured, sev unk	5	6	$ 26,944	—	—	—	$ 50,197	—	—	—
S	10	mcp, unk	>=50	Injured, sev unk	5	1	$ 70,578	—	—	—	$ 137,479	—	—	—
	10	mcp, unk	<=45	Unknown	9	27	$ 16,510	1,295	13,946	19,074	$ 27,255	2,777	21,758	32,753
S	10	mcp, unk	>=50	Unknown	9	4	$ 17,186	—	—	—	$ 27,805	—	—	—
	11	re-all locations	<=45	No injury or C	0.5	2837	$ 15,181	3,088	9,068	21,295	$ 19,138	3,423	12,361	25,915
	11	re-all locations	>=50	No injury or C	0.5	1635	$ 14,205	2,261	9,728	18,681	$ 19,351	3,081	13,251	25,452
	11	re-all locations	<=45	K/A/B	3	733	$ 38,135	8,370	21,564	54,706	$ 71,114	21,383	28,781	113,447

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Table 8. Level 3B by speed limits—continued

Code		Crash geometry	Speed limit (mi/h)	Maximum injsev in crash	Maximum injsev code	Observ	Mean human capital cost per crash	Std. Err.	[95% Conf. Interval]		Mean comprehensive cost per crash	Std. Err.	[95% Conf. Interval]	
	11	re-all locations	>=50	K/A/B	3	939	$ 96,000	15,512	65,290	126,710	$ 239,439	39,691	160,859	318,019
	11	re-all locations	<=45	Injured, sev unk	5	20	$ 32,655	8,696	15,440	49,870	$ 55,850	17,596	21,014	90,686
	11	re-all locations	>=50	Injured, sev unk	5	10	$ 35,395	2,190	31,059	39,731	$ 73,527	8,798	56,109	90,946
	11	re-all locations	<=45	Unknown	9	164	$ 17,215	1,228	14,783	19,647	$ 27,432	2,100	23,275	31,590
	11	re-all locations	>=50	Unknown	9	65	$ 20,771	3,219	14,398	27,144	$ 33,123	5,861	21,520	44,725
	12	re-unk int	<=45	No injury or C	0.5	641	$ 31,314	19,188	—	69,302	$ 36,718	21,507	—	79,298
	12	re-unk int	>=50	No injury or C	0.5	185	$ 33,197	5,980	21,358	45,036	$ 45,205	6,442	32,452	57,958
	12	re-unk int	<=45	K/A/B	3	167	$ 40,361	14,136	12,375	68,347	$ 73,475	41,087	—	154,817
	12	re-unk int	>=50	K/A/B	3	97	$ 70,429	18,635	33,537	107,322	$ 153,875	51,005	52,898	254,853
S	12	re-unk int	<=45	Injured, sev unk	5	6	$ 29,812	—	—	—	$ 52,029	—	—	—
S	12	re-unk int	>=50	Injured, sev unk	5	1	$ 5,235	—	—	—	$ 5,235	—	—	—
	12	re-unk int	<=45	Unknown	9	37	$ 19,416	1,445	16,555	22,277	$ 31,827	2,795	26,294	37,360
S	12	re-unk int	>=50	Unknown	9	4	$ 17,386	—	—	—	$ 26,753	—	—	—
	13	re - signed int	<=45	No injury or C	0.5	136	$ 10,785	3,478	3,899	17,671	$ 12,659	4,539	3,672	21,645
	13	re - signed int	>=50	No injury or C	0.5	29	$ 4,233	1,006	2,240	6,225	$ 5,019	1,498	2,053	7,984
N	13	re - signed int	<=45	K/A/B	3	35	$ 42,595	19,836	3,324	81,865	$ 93,492	53,697	—	199,800
N	13	re - signed int	>=50	K/A/B	3	10	$ 45,960	17,504	11,306	80,614	$ 79,782	34,457	11,565	147,998
S	13	re - signed int	<=45	Injured, sev unk	5	1	$ 13,878	—	—	—	$ 15,958	—	—	—
S	13	re - signed int	>=50	Injured, sev unk	5	1	$ 83,223	—	—	—	$ 267,019	—	—	—
S	13	re - signed int	<=45	Unknown	9	7	$ 13,737	—	—	—	$ 20,755	—	—	—
	14	re - signl int	<=45	No injury or C	0.5	811	$ 14,198	2,604	9,043	19,353	$ 19,524	3,839	11,923	27,125
	14	re - signl int	>=50	No injury or C	0.5	248	$ 9,707	1,001	7,725	11,689	$ 14,259	1,856	10,584	17,934
N	14	re - signl int	<=45	K/A/B	3	189	$ 24,840	5,851	13,257	36,424	$ 40,002	14,285	11,721	68,282
	14	re - signl int	>=50	K/A/B	3	186	$ 53,082	13,978	25,408	80,756	$ 114,230	37,606	39,780	188,680
S	14	re - signl int	<=45	Injured, sev unk	5	6	$ 29,111	—	—	—	$ 44,120	—	—	—
S	14	re - signl int	>=50	Injured, sev unk	5	2	$ 30,447	—	—	—	$ 58,458	—	—	—
	14	re - signl int	<=45	Unknown	9	49	$ 16,136	1,579	13,011	19,262	$ 26,930	4,043	18,926	34,934
S	14	re - signl int	>=50	Unknown	9	3	$ 30,665	—	—	—	$ 48,029	—	—	—
	15	re - no int	<=45	No injury or C	0.5	1249	$ 11,804	2,148	7,552	16,056	$ 15,660	3,063	9,596	21,725
	15	re - no int	>=50	No injury or C	0.5	1173	$ 10,956	957	9,062	12,850	$ 14,827	1,622	11,616	18,039
	15	re - no int	<=45	K/A/B	3	342	$ 65,618	21,060	23,924	107,312	$ 139,143	47,517	45,070	233,216
	15	re - no int	>=50	K/A/B	3	646	$ 109,491	19,221	71,438	147,544	$ 279,997	50,069	180,873	379,121
S	15	re - no int	<=45	Injured, sev unk	5	7	$ 41,326	—	—	—	$ 75,081	—	—	—
S	15	re - no int	>=50	Injured, sev unk	5	6	$ 34,399	—	—	—	$ 68,218	—	—	—
	15	re - no int	<=45	Unknown	9	71	$ 18,029	1,668	14,728	21,331	$ 27,042	1,646	23,783	30,301
	15	re - no int	>=50	Unknown	9	58	$ 20,478	3,347	13,853	27,104	$ 32,695	6,093	20,633	44,758
	16	ss	<=45	No injury or C	0.5	1995	$ 6,709	458	5,802	7,616	$ 8,024	702	6,635	9,413
	16	ss	>=50	No injury or C	0.5	964	$ 9,614	1,754	6,141	13,086	$ 14,471	3,624	7,296	21,645

45 mi/h = 72 km/h 50 mi/h = 80 km/h

Code S = Derived from small sample.

Code I = Illogical values or outliers in data.

Code N = Combined estimate with no fatal component.

Injsev = Injury severity

Observ = Observations

St. Err. = Standard Error

Conf. Interval = Confidence Interval

— = Sample size too small to calculate or the lower bound of the confidence interval was below zero.

Table 8. Level 3B by speed limits—continued

Code		Crash geometry	Speed limit (mi/h)	Maximum injsev in crash	Maximum injsev code	Observ	Mean human capital cost per crash	Std. Err.	[95% Conf. Interval]		Mean comprehensive cost per crash	Std. Err.	[95% Conf. Interval]	
	16	ss	<=45	K/A/B	3	603	$ 58,815	5,185	48,551	69,080	$ 117,422	15,568	86,601	148,243
	16	ss	>=50	K/A/B	3	921	$ 106,755	13,125	80,771	132,738	$ 259,439	35,590	188,979	329,899
	16	ss	<=45	Injured, sev unk	5	13	$ 93,418	21,175	51,495	135,340	$ 173,762	41,739	91,129	256,396
S	16	ss	>=50	Injured, sev unk	5	7	$ 34,884	—	—	—	$ 60,877	—	—	—
	16	ss	<=45	Unknown	9	134	$ 16,110	1,092	13,948	18,272	$ 24,956	1,132	22,716	27,197
	16	ss	>=50	Unknown	9	61	$ 13,978	915	12,167	15,789	$ 21,870	1,763	18,381	25,360
	17	ho, n-int	<=45	No injury or C	0.5	78	$ 7,806	2,167	3,517	12,095	$ 10,412	3,438	3,605	17,219
	17	ho, n-int	>=50	No injury or C	0.5	50	$ 12,845	3,003	6,899	18,790	$ 19,617	5,304	9,117	30,117
	17	ho, n-int	<=45	K/A/B	3	113	$ 110,682	32,619	46,103	175,260	$ 250,217	84,076	83,766	416,669
	17	ho, n-int	>=50	K/A/B	3	376	$ 482,960	55,063	373,950	591,971	$ 1,331,706	174,575	986,090	1,677,322
S	17	ho, n-int	>=50	Injured, sev unk	5	3	$ 36,258	—	—	—	$ 64,704	—	—	—
S	17	ho, n-int	<=45	Unknown	9	2	$ 5,560	—	—	—	$ 5,984	—	—	—
S	17	ho, n-int	>=50	Unknown	9	3	$ 13,001	—	—	—	$ 21,528	—	—	—
	18	ho, sig	<=45	No injury or C	0.5	52	$ 5,977	895	4,206	7,749	$ 7,083	1,956	3,211	10,955
S	18	ho, sig	>=50	No injury or C	0.5	3	$ 13,171	—	—	—	$ 18,824	—	—	—
N	18	ho, sig	<=45	K/A/B	3	16	$ 104,522	23,312	58,370	150,673	$ 174,272	41,100	92,904	255,640
N	18	ho, sig	>=50	K/A/B	3	13	$ 198,547	43,255	112,913	284,182	$ 349,486	122,653	106,663	592,309
S	18	ho, sig	<=45	Unknown	9	2	$ 14,384	—	—	—	$ 23,033	—	—	—
S	18	ho, sig	>=50	Unknown	9	1	$ 44,909	—	—	—	$ 75,386	—	—	—
	19	ho, sign	<=45	No injury or C	0.5	11	$ 7,825	3,091	1,705	13,945	$ 9,055	4,398	348	17,761
S	19	ho, sign	>=50	No injury or C	0.5	6	$ 21,699	—	—	—	$ 32,452	—	—	—
S	19	ho, sign	<=45	K/A/B	3	6	$ 33,259	—	—	—	$ 55,484	—	—	—
N	19	ho, sign	>=50	K/A/B	3	15	$ 115,538	42,498	31,401	199,675	$ 306,343	135,457	38,171	574,515
	20	ho, unksgn	<=45	No injury or C	0.5	36	$ 7,768	4,051	—	15,789	$ 11,189	6,966	—	24,980
S	20	ho, unksgn	>=50	No injury or C	0.5	8	$ 4,904	—	—	—	$ 4,984	—	—	—
	20	ho, unksgn	<=45	K/A/B	3	15	$ 34,915	15,144	4,934	64,895	$ 59,390	29,049	1,880	116,900
S	20	ho, unksgn	>=50	K/A/B	3	1	$ 67,108	—	—	—	$ 134,010	—	—	—
S	20	ho, unksgn	<=45	Unknown	9	2	$ 15,264	—	—	—	$ 24,292	—	—	—
	21	backing	<=45	No injury or C	0.5	13	$ 7,162	1,356	4,479	9,846	$ 9,958	3,073	3,874	16,042
S	21	backing	<=45	K/A/B	3	1	$ 12,654	—	—	—	$ 16,172	—	—	—
S	21	backing	<=45	Unknown	9	1	$ 14,506	—	—	—	$ 23,154	—	—	—
	22	undefined	<=45	No injury or C	0.5	1055	$ 9,023	1,611	5,835	12,212	$ 14,104	2,866	8,431	19,778
	22	undefined	>=50	No injury or C	0.5	419	$ 6,533	1,288	3,983	9,084	$ 9,043	2,281	4,527	13,558
	22	undefined	<=45	K/A/B	3	1178	$ 110,116	16,014	78,412	141,820	$ 291,023	51,484	189,097	392,949
	22	undefined	>=50	K/A/B	3	497	$ 198,685	58,631	82,610	314,760	$ 535,779	176,517	186,318	885,241
	22	undefined	<=45	Injured, sev unk	5	39	$ 30,476	4,280	22,002	38,951	$ 57,595	10,398	37,009	78,180
S	22	undefined	>=50	Injured, sev unk	5	3	$ 59,349	—	—	—	$ 117,523	—	—	—
	22	undefined	<=45	Unknown	9	200	$ 13,341	684	11,986	14,696	$ 22,856	1,216	20,450	25,263

45 mi/h = 72 km/h 50 mi/h = 80 km/h

Code S = Derived from small sample.
Code I = Illogical values or outliers in data.
Code N = Combined estimate with no fatal component.
Injsev = Injury severity
Observ = Observations
St. Err. = Standard Error
Conf. Interval = Confidence Interval
— = Sample size too small to calculate or the lower bound of the confidence interval was below zero.

Table 8. Level 3B by speed limits—continued

Code	Crash geometry	Speed limit (mi/h)	Maximum injsev in crash	Maximum injsev code	Observ	Mean human capital cost per crash	Std. Err.	[95% Conf. Interval]		Mean comprehensive cost per crash	Std. Err.	[95% Conf. Interval]	
22	undefined	>=50	Unknown	9	18	$ 13,196	1,904	9,427	16,965	$ 21,671	3,747	14,254	29,089

45 mi/h = 72 km/h   50 mi/h = 80 km/h

Code S	=	Derived from small sample.	Injsev	=	Injury severity	Conf. Interval	=	Confidence Interval
Code I	=	Illogical values or outliers in data.	Observ	=	Observations	—	=	Sample size too small to calculate or the lower bound of the confidence interval was below zero.
Code N	=	Combined estimate with no fatal component.	St. Err.	=	Standard Error			

Table 9. Level 3B without speed limits

Code		Crash geometry	Maximum injsev in crash	Maximum injsev code	Observ	Mean human capital cost per crash	Std. Err.	[95% Conf.	Interval]	Mean comprehensive cost per crash	Std. Err.	[95% Conf.	Interval]
	1	sv, ped, int	No injury or C	0.5	278	$ 18,446	2,731	13,039	23,852	$ 29,196	4,634	20,021	38,371
	1	sv, ped, int	K/A/B	3	726	$ 115,893	13,612	88,943	142,842	$ 261,734	31,772	198,833	324,634
	1	sv, ped, int	Injured, sev unk	5	55	$ 63,856	8,681	46,671	81,042	$ 139,607	17,911	104,148	175,066
S	1	sv, ped, int	Unknown	9	4	$ 14,386	—	—	—	$ 22,841	—	—	—
	2	sv, ped,n-int	No injury or C	0.5	335	$ 22,160	5,334	11,601	32,720	$ 38,944	10,697	17,766	60,122
	2	sv, ped,n-int	K/A/B	3	1345	$ 174,354	15,876	142,923	205,785	$ 482,101	51,172	380,792	583,410
	2	sv, ped,n-int	Injured, sev unk	5	62	$ 28,020	7,345	13,479	42,561	$ 46,242	13,672	19,174	73,310
	2	sv, ped,n-int	Unknown	9	27	$ 23,618	7,949	7,881	39,356	$ 34,047	9,922	14,404	53,690
	3	sv, animal	No injury or C	0.5	79	$ 4,607	1,716	1,210	8,004	$ 5,246	2,231	829	9,663
N	3	sv, animal	K/A/B	3	36	$ 46,281	8,887	28,687	63,875	$ 94,830	19,836	55,559	134,101
	4	sv, object	No injury or C	0.5	1716	$ 8,882	744	7,408	10,356	$ 14,039	1,414	11,240	16,839
	4	sv, object	K/A/B	3	3172	$ 133,469	9,895	113,880	153,059	$ 342,071	25,783	291,027	393,114
	4	sv, object	Injured, sev unk	5	31	$ 13,658	3,034	7,652	19,664	$ 22,662	5,621	11,534	33,790
	4	sv, object	Unknown	9	100	$ 12,616	594	11,439	13,792	$ 21,799	1,063	19,695	23,902
	5	sv, prkveh	No injury or C	0.5	222	$ 4,653	338	3,983	5,323	$ 5,457	615	4,238	6,675
	5	sv, prkveh	K/A/B	3	180	$ 55,877	14,665	26,843	84,911	$ 138,837	43,098	53,512	224,162
S	5	sv, prkveh	Injured, sev unk	5	8	$ 21,022	—	—	—	$ 37,273	—	—	—
	5	sv, prkveh	Unknown	9	44	$ 11,941	137	11,669	12,213	$ 20,581	249	20,089	21,073
	6	sv, rollover	No injury or C	0.5	238	$ 14,302	2,561	9,231	19,372	$ 23,847	4,123	15,686	32,009
	6	sv, rollover	K/A/B	3	1020	$ 145,413	18,025	109,727	181,099	$ 394,571	59,294	277,182	511,959
S	6	sv, rollover	Injured, sev unk	5	9	$ 182,849	—	—	—	$ 342,922	—	—	—
S	6	sv, rollover	Unknown	9	4	$ 12,315	—	—	—	$ 21,032	—	—	—
	7	mcp, sig	No injury or C	0.5	2079	$ 11,932	909	10,132	13,732	$ 17,525	1,634	14,290	20,760
	7	mcp, sig	K/A/B	3	1808	$ 93,277	6,363	80,679	105,875	$ 215,386	15,590	184,522	246,251
	7	mcp, sig	Injured, sev unk	5	20	$ 28,828	6,332	16,291	41,365	$ 46,683	11,165	24,578	68,787
	7	mcp, sig	Unknown	9	66	$ 18,338	1,632	15,108	21,569	$ 28,618	2,441	23,786	33,451
	8	mcp, sign	No injury or C	0.5	1418	$ 12,955	2,353	8,296	17,613	$ 20,343	4,629	11,178	29,508
	8	mcp, sign	K/A/B	3	1221	$ 111,360	10,375	90,821	131,899	$ 261,449	26,868	208,256	314,642
	8	mcp, sign	Injured, sev unk	5	16	$ 60,937	28,720	4,078	117,795	$ 117,079	52,562	13,018	221,140
	8	mcp, sign	Unknown	9	48	$ 18,600	1,381	15,866	21,334	$ 26,949	3,768	19,489	34,409
	9	mcp, nosgn	No injury or C	0.5	471	$ 9,359	1,209	6,966	11,753	$ 12,621	2,100	8,463	16,779
	9	mcp, nosgn	K/A/B	3	336	$ 83,110	15,900	51,633	114,587	$ 179,370	35,877	108,342	250,397
S	9	mcp, nosgn	Injured, sev unk	5	7	$ 110,650	—	—	—	$ 279,770	—	—	—
S	9	mcp, nosgn	Unknown	9	9	$ 27,860	—	—	—	$ 49,825	—	—	—
	10	mcp, unk	No injury or C	0.5	916	$ 16,121	3,579	9,035	23,207	$ 26,210	6,881	12,587	39,833
	10	mcp, unk	K/A/B	3	273	$ 167,342	87,933	—	341,429	$ 456,390	282,992	—	1,016,647
S	10	mcp, unk	Injured, sev unk	5	7	$ 48,360	—	—	—	$ 93,037	—	—	—
	10	mcp, unk	Unknown	9	31	$ 16,585	1,413	13,789	19,381	$ 27,316	2,851	21,671	32,961
	11	re-all locations	No injury or C	0.5	4477	$ 14,704	1,941	10,861	18,547	$ 19,242	2,263	14,761	23,723

45 mi/h = 72 km/h 50 mi/h = 80 km/h

Code S	=	Derived from small sample.	Injsev	=	Injury severity	Conf. Interval	= Confidence Interval
Code I	=	Illogical values or outliers in data.	Observ	=	Observations	—	= Sample size too small to calculate or the lower bound of the confidence interval was below zero.
Code N	=	Combined estimate with no fatal component.	St. Err.	=	Standard Error		

Table 9. Level 3B without speed limits—continued

Code		Crash geometry	Maximum injsev in crash	Maximum injsev code	Observ	Mean human capital cost per crash	Std. Err.	[95% Conf. Interval]		Mean comprehensive cost per crash	Std. Err.	[95% Conf. Interval]	
	11	re-all locations	K/A/B	3	1674	$ 72,045	8,638	54,945	89,145	$ 169,757	23,629	122,978	216,537
	11	re-all locations	Injured, sev unk	5	30	$ 33,948	4,640	24,763	43,134	$ 64,194	10,434	43,538	84,850
	11	re-all locations	Unknown	9	229	$ 18,120	1,266	15,614	20,625	$ 28,880	2,209	24,506	33,253
I	12	re-unk int	No injury or C	0.5	827	$ 32,191	10,592	11,222	53,161	$ 40,683	11,813	17,296	64,070
	12	re-unk int	K/A/B	3	264	$ 47,680	14,875	18,231	77,129	$ 93,045	41,635	10,617	175,474
S	12	re-unk int	Injured, sev unk	5	7	$ 29,389	—	—	—	$ 51,224	—	—	—
	12	re-unk int	Unknown	9	41	$ 19,369	1,418	16,561	22,177	$ 31,709	2,745	26,276	37,143
	13	re - signed int	No injury or C	0.5	165	$ 10,523	3,358	3,875	17,171	$ 12,353	4,375	3,691	21,016
N	13	re - signed int	K/A/B	3	45	$ 43,384	16,516	10,687	76,081	$ 90,276	43,260	4,632	175,920
S	13	re - signed int	Injured, sev unk	5	2	$ 45,197	—	—	—	$ 129,348	—	—	—
S	13	re - signed int	Unknown	9	7	$ 13,737	—	—	—	$ 20,755	—	—	—
	14	re - signl int	No injury or C	0.5	1060	$ 12,545	1,661	9,257	15,834	$ 17,587	2,473	12,692	22,483
	14	re - signl int	K/A/B	3	376	$ 35,021	8,668	17,860	52,182	$ 66,762	22,286	22,642	110,882
S	14	re - signl int	Injured, sev unk	5	8	$ 29,525	—	—	—	$ 48,564	—	—	—
	14	re - signl int	Unknown	9	52	$ 16,493	1,683	13,161	19,826	$ 27,448	4,109	19,313	35,583
	15	re - no int	No injury or C	0.5	2425	$ 11,314	1,156	9,025	13,602	$ 15,179	1,652	11,909	18,449
	15	re - no int	K/A/B	3	989	$ 102,705	16,760	69,524	135,887	$ 258,216	43,536	172,025	344,406
	15	re - no int	Injured, sev unk	5	13	$ 36,478	8,007	20,626	52,331	$ 70,278	16,573	37,468	103,088
	15	re - no int	Unknown	9	129	$ 19,191	1,840	15,548	22,834	$ 29,724	3,097	23,592	35,856
	16	ss	No injury or C	0.5	2962	$ 7,957	766	6,441	9,473	$ 10,795	1,520	7,785	13,804
	16	ss	K/A/B	3	1529	$ 92,161	9,181	73,985	110,338	$ 216,519	25,765	165,511	267,527
	16	ss	Injured, sev unk	5	20	$ 57,389	16,033	25,648	89,129	$ 104,279	30,930	43,046	165,512
	16	ss	Unknown	9	195	$ 15,325	843	13,656	16,995	$ 23,820	1,058	21,726	25,914
	17	ho, n-int	No injury or C	0.5	129	$ 10,174	2,059	6,099	14,250	$ 14,735	3,433	7,939	21,531
	17	ho, n-int	K/A/B	3	490	$ 387,139	47,660	292,783	481,494	$ 1,053,257	140,814	774,479	1,332,034
S	17	ho, n-int	Injured, sev unk	5	3	$ 36,258	—	—	—	$ 64,704	—	—	—
S	17	ho, n-int	Unknown	9	5	$ 9,876	—	—	—	$ 15,000	—	—	—
	18	ho, sig	No injury or C	0.5	55	$ 6,827	1,426	4,003	9,651	$ 8,470	2,656	3,212	13,728
N	18	ho, sig	K/A/B	3	29	$ 145,588	24,794	96,502	194,674	$ 250,798	53,653	144,578	357,018
S	18	ho, sig	Unknown	9	3	$ 15,813	—	—	—	$ 25,483	—	—	—
	19	ho, sign	No injury or C	0.5	17	$ 13,737	5,562	2,725	24,749	$ 19,025	8,849	1,505	36,544
	19	ho, sign	K/A/B	3	21	$ 89,902	21,483	47,370	132,434	$ 228,182	66,864	95,807	360,557
	20	ho, unksgn	No injury or C	0.5	44	$ 7,113	3,088	999	13,226	$ 9,769	5,313	—	20,288
	20	ho, unksgn	K/A/B	3	16	$ 35,709	15,169	5,678	65,740	$ 61,231	29,265	3,293	119,170
S	20	ho, unksgn	Unknown	9	2	$ 15,264	—	—	—	$ 24,292	—	—	—
	21	backing	No injury or C	0.5	13	$ 7,162	1,356	4,479	9,846	$ 9,958	3,073	3,874	16,042
S	21	backing	K/A/B	3	1	$ 12,654	—	—	—	$ 16,172	—	—	—
S	21	backing	Unknown	9	1	$ 14,506	—	—	—	$ 23,154	—	—	—
	22	undefined	No injury or C	0.5	1476	$ 7,156	972	5,233	9,079	$ 10,302	1,786	6,766	13,838

45 mi/h = 72 km/h 50 mi/h = 80 km/h

Code S = Derived from small sample.

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Code N = Combined estimate with no fatal component.

Injsev = Injury severity

Observ = Observations

St. Err. = Standard Error

Conf. Interval = Confidence Interval

— = Sample size too small to calculate or the lower bound of the confidence interval was below zero.

Table 9. Level 3B without speed limits—continued

Code	Crash geometry	Maximum injsev in crash	Maximum injsev code	Observ	Mean human capital cost per crash	Std. Err.	[95% Conf. Interval]		Mean comprehensive cost per crash	Std. Err.	[95% Conf. Interval]	
22	undefined	K/A/B	3	1677	$ 173,905	42,818	89,135	258,674	$ 466,928	128,957	211,624	722,232
22	undefined	Injured, sev unk	5	42	$ 32,550	4,279	24,078	41,022	$ 61,899	10,297	41,513	82,285
22	undefined	Unknown	9	218	$ 13,333	636	12,074	14,591	$ 22,790	1,115	20,583	24,997

45 mi/h = 72 km/h   50 mi/h = 80 km/h

Code S = Derived from small sample.

Code I = Illogical values or outliers in data.

Code N = Combined estimate with no fatal component.

Injsev = Injury severity

Observ = Observations

St. Err. = Standard Error

Conf. Interval = Confidence Interval

— = Sample size too small to calculate or the lower bound of the confidence interval was below zero.

Table 10. Level 4 by speed limits

Code		Crash geometry	Speed limit (mph)	Observ		Mean human capital cost per crash	Std. Err.	[95% Conf.	Interval]		Mean comprehensive cost per crash	Std. Err.	[95% Conf.	Interval]
	1	sv, ped, int	<=45	1004	$	73,887	7,844	58,357	89,416	$	164,029	19,570	125,285	202,774
	1	sv, ped, int	>=50	59	$	70,493	24,849	21,299	119,687	$	148,326	54,685	40,062	256,590
	2	sv, ped, n-int	<=45	1571	$	114,529	7,774	99,137	129,920	$	297,917	24,330	249,750	346,085
	2	sv, ped, n-int	>=50	198	$	99,255	20,711	58,253	140,258	$	275,162	66,241	144,022	406,303
N	3	sv, animal	<=45	16	$	3,959	1,010	1,959	5,959	$	5,441	2,398	693	10,190
N	3	sv, animal	>=50	99	$	6,033	2,071	1,933	10,132	$	8,018	2,905	2,268	13,768
	4	sv, object	<=45	1910	$	29,201	4,288	20,712	37,691	$	67,353	11,517	44,552	90,154
	4	sv, object	>=50	3069	$	44,461	9,795	25,069	63,852	$	107,423	24,691	58,541	156,305
	5	sv, prkveh	<=45	336	$	8,763	948	6,887	10,639	$	14,580	1,960	10,700	18,460
	5	sv, prkveh	>=50	117	$	15,681	5,167	5,452	25,911	$	35,123	15,281	4,871	65,375
	6	sv, rollover	<=45	335	$	61,500	11,960	37,822	85,178	$	147,629	37,400	73,586	221,672
	6	sv, rollover	>=50	917	$	96,174	14,925	66,625	125,723	$	255,916	48,527	159,844	351,988
	7	mcp, sig	<=45	2081	$	14,351	1,844	10,699	18,002	$	21,863	3,119	15,688	28,039
	7	mcp, sig	>=50	1879	$	35,114	3,106	28,965	41,263	$	75,197	7,747	59,859	90,535
	8	mcp, sign	<=45	1632	$	18,655	2,710	13,290	24,019	$	32,559	5,873	20,932	44,185
	8	mcp, sign	>=50	1061	$	43,646	10,571	22,718	64,574	$	96,942	25,619	46,222	147,663
N	9	mcp, nosgn	<=45	491	$	12,268	2,551	7,217	17,319	$	18,862	5,096	8,774	28,950
	9	mcp, nosgn	>=50	330	$	21,325	4,367	12,681	29,970	$	40,190	10,008	20,376	60,003
N	10	mcp, unk	<=45	1095	$	19,141	2,284	14,619	23,663	$	32,191	4,366	23,548	40,834
	10	mcp, unk	>=50	132	$	48,607	22,310	4,438	92,775	$	120,308	70,448	—	259,777
	11	re-all locations	<=45	3754	$	16,648	2,623	11,455	21,842	$	22,664	2,873	16,976	28,352
	11	re-all locations	>=50	2649	$	21,497	3,768	14,038	28,957	$	38,892	8,886	21,300	56,483
	12	re-unk int	<=45	851	$	31,716	16,091	—	63,573	$	40,559	17,928	5,066	76,051
	12	re-unk int	>=50	287	$	34,884	5,136	24,715	45,052	$	50,173	5,573	39,140	61,205
N	13	re - signed int	<=45	179	$	11,064	3,388	4,357	17,771	$	13,377	4,446	4,574	22,180
N	13	re - signed int	>=50	40	$	6,719	2,146	2,471	10,967	$	10,008	4,027	2,036	17,980
N	14	re - signl int	<=45	1055	$	16,184	2,162	11,904	20,465	$	23,872	3,532	16,879	30,865
	14	re - signl int	>=50	439	$	17,689	2,290	13,155	22,223	$	32,544	6,219	20,233	44,856
	15	re - no int	<=45	1669	$	13,284	1,789	9,742	16,827	$	18,933	2,510	13,964	23,903
	15	re - no int	>=50	1883	$	19,564	4,076	11,493	27,634	$	37,785	11,267	15,478	60,091
	16	ss	<=45	2745	$	10,628	1,229	8,195	13,062	$	16,019	2,261	11,543	20,494
	16	ss	>=50	1953	$	25,913	4,592	16,822	35,003	$	55,339	11,182	33,201	77,476
	17	ho, n-int	<=45	193	$	29,264	10,211	9,049	49,480	$	60,451	23,223	14,476	106,426
	17	ho, n-int	>=50	432	$	225,530	52,181	122,223	328,837	$	613,098	144,416	327,189	899,007
N	18	ho, sig	<=45	70	$	10,909	3,196	4,582	17,236	$	15,788	5,874	4,159	27,417
N	18	ho, sig	>=50	17	$	49,741	24,071	2,086	97,397	$	84,052	42,658	—	168,505
N	19	ho, sign	<=45	17	$	9,828	3,254	3,385	16,271	$	12,711	4,722	3,363	22,060
	19	ho, sign	>=50	21	$	40,730	15,707	9,633	71,826	$	87,997	41,091	6,647	169,347
N	20	ho, unksgn	<=45	53	$	12,643	4,565	3,606	21,680	$	19,832	8,028	3,939	35,725

45 mi/h = 72 km/h   50 mi/h = 80 km/h

Code S = Derived from small sample.

Code I = Illogical values or outliers in data.

Code N = Combined estimate with no fatal component.

Injsev = Injury severity

Observ = Observations

St. Err. = Standard Error

Conf. Interval = Confidence Interval

— = Sample size too small to calculate or the lower bound of the confidence interval was below zero.

Table 10. Level 4 by speed limits—continued

Code		Crash geometry	Speed limit (mph)	Observ	Mean human capital cost per crash	Std. Err.	[95% Conf. Interval]		Mean comprehensive cost per crash	Std. Err.	[95% Conf. Interval]	
S	20	ho, unksgn	>=50	9	$ 5,998	—	—	—	$ 7,253	—	—	—
N	21	backing	<=45	15	$ 10,165	2,572	5,073	15,257	$ 15,283	4,878	5,626	24,940
	22	undefined	<=45	2472	$ 16,656	897	14,880	18,433	$ 32,236	2,373	27,538	36,934
	22	undefined	>=50	937	$ 37,479	11,473	14,766	60,192	$ 93,322	33,754	26,496	160,148

45 mi/h = 72 km/h 50 mi/h = 80 km/h

Code S	=	Derived from small sample.	Injsev	=	Injury severity	Conf. Interval	=	Confidence Interval
Code I	=	Illogical values or outliers in data.	Observ	=	Observations	—	=	Sample size too small to calculate or the lower bound of the confidence interval was below zero.
Code N	=	Combined estimate with no fatal component.	St. Err.	=	Standard Error			

Table 11. Level 4 without speed limits

Code		Crash geometry	Observ	Mean human capital cost per crash	Std. Err.	[95% Conf. Interval]		Mean comprehensive cost per crash	Std. Err.	[95% Conf. Interval]	
	1	sv, ped, int	1063	$ 72,771	9,585	53,795	91,746	$ 158,866	22,288	114,740	202,992
	2	sv, ped,n-int	1769	$ 107,816	11,086	85,868	129,765	$ 287,917	34,152	220,304	355,530
N	3	sv, animal	115	$ 5,710	1,785	2,177	9,243	$ 7,617	2,526	2,616	12,617
	4	sv, object	5019	$ 39,569	7,086	25,541	53,598	$ 94,669	18,284	58,471	130,867
	5	sv, prkveh	454	$ 10,573	1,320	7,959	13,187	$ 19,964	3,550	12,935	26,993
	6	sv, rollover	1271	$ 90,932	13,119	64,960	116,905	$ 239,721	42,950	154,690	324,752
	7	mcp, sig	3973	$ 24,260	2,133	20,036	28,484	$ 47,333	5,135	37,167	57,500
	8	mcp, sign	2703	$ 29,741	4,644	20,547	38,935	$ 61,114	11,205	38,932	83,296
	9	mcp, nosgn	823	$ 16,361	2,432	11,546	21,177	$ 28,501	5,339	17,930	39,071
	10	mcp, unk	1227	$ 27,135	6,509	14,249	40,022	$ 56,098	19,525	17,442	94,753
	11	re-all locations	6410	$ 19,002	2,120	14,805	23,199	$ 30,544	3,945	22,735	38,353
	12	re-unk int	1139	$ 33,093	9,482	14,321	51,865	$ 44,744	10,766	23,430	66,059
N	13	re - signed int	219	$ 10,885	3,256	4,438	17,332	$ 13,238	4,267	4,792	21,685
	14	re - signl int	1496	$ 16,675	1,660	13,388	19,962	$ 26,735	3,303	20,195	33,274
	15	re - no int	3556	$ 17,001	2,130	12,784	21,218	$ 30,090	5,641	18,922	41,259
	16	ss	4706	$ 17,610	2,033	13,585	21,636	$ 34,004	4,803	24,495	43,514
	17	ho, n-int	627	$ 140,997	35,901	69,923	212,072	$ 375,075	98,140	180,782	569,368
N	18	ho, sig	87	$ 15,620	5,102	5,518	25,722	$ 24,069	9,082	6,089	42,050
	19	ho, sign	38	$ 24,098	8,484	7,302	40,895	$ 47,478	20,253	7,382	87,574
	20	ho, unksgn	62	$ 11,378	3,579	4,292	18,464	$ 17,437	6,313	4,940	29,935
	21	backing	15	$ 10,165	2,572	5,073	15,257	$ 15,283	4,878	5,626	24,940
	22	undefined	3413	$ 24,448	4,247	16,040	32,855	$ 55,060	12,560	30,194	79,926

45 mi/h = 72 km/h 50 mi/h = 80 km/h

Code S = Derived from small sample.
Injsev = Injury severity
Conf. Interval = Confidence Interval

Code I = Illogical values or outliers in data.
Observ = Observations
— = Sample size too small to calculate or the lower bound of the confidence interval was below zero.

Code N = Combined estimate with no fatal component.
St. Err. = Standard Error

Table 12. Level 5 with speed limits

Code	Maximum injsev in crash	Maximum injsev codes	Speed limit (mi/h)	Mean human capital cost per crash	Std. Err.	[95% Conf. Interval]		Observ	Mean comprehensive cost per crash	Std. Err.	[95% Conf. Interval]	
	No injury	0	<=45	$ 6,291	423	5,454	7,128	8077	$ 7,068	547	5,985	8,152
	No injury	0	>=50	$ 6,497	737	5,039	7,956	3511	$ 7,800	1,003	5,813	9,786
	C	1	<=45	$ 27,393	5,760	15,991	38,796	3211	$ 40,074	7,100	26,017	54,131
	C	1	>=50	$ 29,401	2,511	24,430	34,372	2092	$ 49,549	3,807	42,012	57,086
	B	2	<=45	$ 35,114	2,695	29,779	40,449	2938	$ 62,180	5,562	51,169	73,190
	B	2	>=50	$ 46,464	6,779	33,043	59,886	1810	$ 91,622	15,405	61,123	122,120
	A	3	<=45	$ 101,125	10,682	79,978	122,272	4179	$ 194,725	21,053	153,045	236,405
	A	3	>=50	$ 114,414	10,335	93,953	134,874	5192	$ 222,311	18,795	185,101	259,520
	K	4	<=45	$ 1,117,167	30,422	1,056,939	1,177,396	356	$ 3,622,179	80,996	3,461,826	3,782,533
	K	4	>=50	$ 1,277,640	17,259	1,243,471	1,311,809	1010	$ 4,106,620	50,820	4,006,008	4,207,232
	Injured, sev unk	5	<=45	$ 38,344	4,437	29,559	47,128	241	$ 72,002	9,971	52,262	91,742
	Injured, sev unk	5	>=50	$ 49,624	14,695	20,531	78,717	68	$ 95,368	29,184	37,590	153,146
	Unknown	9	<=45	$ 14,577	385	13,814	15,340	788	$ 23,993	621	22,763	25,223
	Unknown	9	>=50	$ 16,027	1,225	13,600	18,453	196	$ 25,735	2,085	21,608	29,863

45 mi/h = 72 km/h   50 mi/h = 80 km/h

Code S = Derived from small sample.

Code I = Illogical values or outliers in data.

Code N = Combined estimate with no fatal component.

Injsev = Injury severity

Observ = Observations

St. Err. = Standard Error

Conf. Interval = Confidence Interval

— = Sample size too small to calculate or the lower bound of the confidence interval was below zero.

Table 13. Level 5 without speed limits

Code	Maximum injsev in crash	Maximum injsev codes	Mean human capital cost per crash	Std. Err.	[95% Conf. Interval]		Observ	Mean comprehensive cost per crash	Std. Err.	[95% Conf. Interval]	
	No injury	0	$ 6,390	396	5,607	7,173	11605	$ 7,428	548	6,342	8,513
	C	1	$ 28,405	3,143	22,183	34,626	5320	$ 44,868	4,254	36,445	53,291
	B	2	$ 41,882	3,918	34,125	49,638	4757	$ 79,777	8,636	62,679	96,874
	A	3	$ 111,376	9,037	93,486	129,267	9419	$ 216,059	16,506	183,382	248,737
	K	4	$ 1,245,579	15,182	1,215,522	1,275,637	1378	$ 4,008,885	45,148	3,919,504	4,098,267
	Injured, sev unk	5	$ 43,469	7,798	28,031	58,907	310	$ 82,642	15,447	52,060	113,224
	Unknown	9	$ 14,799	406	13,995	15,603	986	$ 24,248	668	22,926	25,570

45 mi/h = 72 km/h 50 mi/h = 80 km/h

Code S = Derived from small sample.

Code I = Illogical values or outliers in data.

Code N = Combined estimate with no fatal component.

Injsev = Injury severity

Observ = Observations

St. Err. = Standard Error

Conf. Interval = Confidence Interval

— = Sample size too small to calculate or the lower bound of the confidence interval was below zero.

Table 14. Level 6 with speed limits

Code	Maximum injsev in crash	Maximum injsev codes	Speed limit (mi/h)	Mean human capital cost per crash	Std. Err.	[95% Conf. Interval]		Observ	Mean comprehensive cost per crash	Std. Err.	[95% Conf. Interval]	
	No injury	0	<=45	$ 6,291	423	5,454	7,128	8,077	$ 7,068	547	5,985	8,152
	No injury	0	>=50	$ 6,497	737	5,039	7,956	3,511	$ 7,800	1,003	5,813	9,786
	C/O	0.5	<=45	$ 11,040	1,282	8,501	13,579	11,288	$ 14,496	1,482	11,563	17,430
	C/O	0.5	>=50	$ 11,762	963	9,856	13,668	5,603	$ 17,396	1,508	14,410	20,382
	B/C	1.5	<=45	$ 29,575	4,634	20,402	38,748	6,149	$ 46,321	6,241	33,966	58,676
	B/C	1.5	>=50	$ 35,632	2,674	30,338	40,927	3,902	$ 64,914	5,968	53,098	76,730
	A/B/C	2	<=45	$ 36,604	4,700	27,298	45,910	10,328	$ 60,900	7,441	46,169	75,631
	A/B/C	2	>=50	$ 52,569	3,436	45,766	59,372	9,094	$ 98,752	7,689	83,530	113,974
	K/A	3.5	<=45	$ 184,538	21,186	142,595	226,481	4,535	$ 476,104	58,473	360,341	591,867
	K/A	3.5	>=50	$ 246,331	33,294	180,417	312,246	6,202	$ 662,817	95,875	473,008	852,626
	K/A/B	3	<=45	$ 79,309	6,048	67,335	91,283	7,473	$ 184,605	17,106	150,739	218,471
	K/A/B	3	>=50	$ 138,049	8,804	120,619	155,479	8,012	$ 353,359	24,917	304,029	402,690
	K/A/B/C	2.5	<=45	$ 46,015	5,864	34,407	57,624	10,684	$ 91,917	12,881	66,415	117,420
	K/A/B/C	2.5	>=50	$ 85,356	8,135	69,250	101,461	10,104	$ 206,015	23,787	158,922	253,108
	Injured, sev unk	5	<=45	$ 38,344	4,437	29,559	47,128	241	$ 72,002	9,971	52,262	91,742
	Injured, sev unk	5	>=50	$ 49,624	14,695	20,531	78,717	68	$ 95,368	29,184	37,590	153,146
	Unknown	9	<=45	$ 14,577	385	13,814	15,340	788	$ 23,993	621	22,763	25,223
	Unknown	9	>=50	$ 16,027	1,225	13,600	18,453	196	$ 25,735	2,085	21,608	29,863

45 mi/h = 72 km/h   50 mi/h = 80 km/h

Code S = Derived from small sample.

Code I = Illogical values or outliers in data.

Code N = Combined estimate with no fatal component.

Injsev = Injury severity

Observ = Observations

St. Err. = Standard Error

Conf. Interval = Confidence Interval

— = Sample size too small to calculate or the lower bound of the confidence interval was below zero.

Table 15. Level 6 without speed limits

Code	Maximum injsev in crash	Maximum injsev codes	Mean human capital cost per crash	Std. Err.	[95% Conf. Interval]		Observ	Mean comprehensive cost per crash	Std. Err.	[95% Conf. Interval]	
	No injury	0	$ 6,390	396	5,607	7,173	11,605	$ 7,428	548	6,342	8,513
	C/O	0.5	$ 11,403	756	9,906	12,899	16,925	$ 15,953	995	13,983	17,922
	B/C	1.5	$ 32,807	2,658	27,544	38,071	10,077	$ 56,272	4,627	47,111	65,434
	A/B/C	2	$ 45,747	3,267	39,278	52,216	19,496	$ 82,588	6,587	69,547	95,629
	K/A	3.5	$ 232,167	25,876	180,939	283,395	10,797	$ 619,988	73,407	474,659	765,316
	K/A/B	3	$ 118,594	7,632	103,486	133,703	15,554	$ 297,561	22,069	253,869	341,252
	K/A/B/C	2.5	$ 68,846	6,694	55,593	82,099	20,874	$ 158,177	18,832	120,894	195,460
	Injured, sev unk	5	$ 43,469	7,798	28,031	58,907	310	$ 82,642	15,447	52,060	113,224
	Unknown	9	$ 14,799	406	13,995	15,603	986	$ 24,248	668	22,926	25,570

45 mi/h = 72 km/h   50 mi/h = 80 km/h

Code S	=	Derived from small sample.	Injsev	=	Injury severity	Conf. Interval	=	Confidence Interval
Code I	=	Illogical values or outliers in data.	Observ	=	Observations	—	=	Sample size too small to calculate or the lower bound of the confidence interval was below zero.
Code N	=	Combined estimate with no fatal component.	St. Err.	=	Standard Error			

REFERENCES

1. Miller, T.R. (1997) "Societal Costs of Transportation Crashes," *The Full Social Costs and Benefits of Transportation*, D. Greene, D. Jones, M. Delucchi, eds., Springer-Verlag, Heidelberg, Germany, pp. 281–314.
2. Zaloshnja, E., Miller, T.R., Romano, E.O., and Spicer, R.S. (2002) "Crash Costs by Body Part Injured, Fracture Involvement, and Threat-to-Life Severity," *Accident Analysis and Prevention* 36 (3), May 2004, pp. 415–427.
3. National Safety Council. *Manual on Classification of Motor Vehicle Traffic Accidents, Fifth Edition* (ANSI D-16.1-1989). National Safety Council, Itasca, IL.
4. Wang, J.S., Knipling, R.R., and Blincoe, L.J. (1999) "The Dimensions of Motor Vehicle Crash Risk." *Journal of Transportation and Statistics*, 2, pp.19–43.
5. Miller, T.R. and Blincoe, L.J. (1994) "Incidence and Cost of Alcohol-Involved Crashes in the United States." *Accident Analysis and Prevention* 26(5), October 1994, pp. 583–592.
6. Miller, T.R., Galbraith, M.S., Lestina, D.C., Schlax, T., Mabery, P., Deering, R., Massie, D., and Campbell, K. (1995) "Understanding the Harm from U.S. Motor Vehicle Crashes." *39th Proceedings,* Association for the Advancement of Automotive Medicine, Des Plaines, IL, pp. 327-342.
7. Blincoe, L.J., Seay, A. G., Zaloshnja, E., Miller, T.R., Romano, E.O., Luchter, S., and Spicer, R.S. (2002). *The Economic Impact of Motor Vehicle Crashes, 2000*. Report DOT HS 809 446. U.S. Department of Transportation, National Highway Traffic Safety Administration, Washington, DC.
8. Miller, T. R., Viner, J., Rossman, S., Pindus, N., Gellert, W., Dillingham, A., and Blomquist, G. (1991) *The Costs of Highway Crashes*. The Urban Institute, Washington DC.
9. Blincoe, L.J. and Faigin, B.M. (1992) *The Economic Cost of Motor Vehicle Crashes, 1990*. National Highway Traffic Safety Administration, DOT HS 807 876, Washington DC:.
10. O'Day, J., ed. (1993) "Accident Data Quality: A Synthesis of Highway Practice," *National Cooperative Highway Research Program Synthesis 192*, Transportation Research Board, National Research Council, National Academy Press: Washington, DC.
11. Viner, J.G. and Conley, C. (1994) *Consistency of Police Reported "Incapacitating Injuries between States*. Working Paper; Federal Highway Administration.
12. Miller T.R., Whiting, B., Kragh, B., and Zegeer, C. (1987) *Sensitivity of a Highway Safety Resource Allocation Model to Variations in Benefit Computation Parameters*, Transportation Research Record 1124, pp. 58–65.
13. Association for the Advancement of Automotive Medicine (AAAM) (1990) *The Abbreviated Injury Scale (AIS) 1990*.Barrington, IL:
14. Association for the Advancement of Automotive Medicine (AAAM) (1985) *The Abbreviated Injury (AIS) Scale 1985*. Barrington, IL:.
15. National Highway Traffic Safety Administration (1987) *National Accident Sampling System 1984–86*. Washington, DC.
16. National Highway Traffic Safety Administration (2002) *National Accident Sampling System Crashworthiness Data System 1999-2001*. Washington, DC.
17. National Center for Health Statistics (2005) *International Classification of Diseases, Ninth Revision, Clinical Modification* (ICD-9-CM). Hyattsville, MD. http://www.cdc.gov/nchs/about/otheract/icd9/abticd9.htm.
18. Lawrence, B.A., Miller, T.R., Jensen, A.F., Fisher, D. A., and Zamula, W.W. (2000). "Estimating the Costs of Nonfatal Consumer Product Injuries in the United States." *Injury Control and Safety Promotion – 2000*, 7(2), pp. 97–113.

19. Annest, J. L., Mercy, J.A., Gibson, D.R., and Ryan, G.W. (1995). "National Estimates of Nonfatal Firearm-Related Injuries: Beyond the tip of the iceberg." *Journal of the American Medical Association*, 273(22), pp. 1749–1754.
20. Miller, T.R., B Lawrence, B., Jensen, A., Waehrer, G., Spicer, R., Lestina, D., Cohen, M. (1998) *Estimating the Cost to Society of Consumer Product Injuries: The Revised Injury Cost Model.* U.S. Consumer Product Safety Commission. Bethesda, MD.
21. Miller, T.R., Romano, E., and Spicer, R.S. (2000) "The Cost of Unintentional Childhood Injuries and the Value of Prevention," *The Future of Children*, p. 10,1, pp. 137–163
22. Bureau of the Census (1999) *1997 Economic Census–Vehicle Inventory and Use Survey (VIUS).* U.S. Department of Commerce, Washington, DC.
23. Department of Defense (1996). Civilian Health and Medical Program of the Uniformed Services 1992–1994 Reimbursement Summary Tables. Unpublished computer printout.
24. Department of Health and Human Services, Agency for Health Care Policy and Research (now the Agency for Healthcare Research and Quality) (1987) "National Medical Expenditure Survey (NMES)." Rockville, MD. Accessible at http://webapp.icpsr.umich.edu/cocoon/ICPSR-SERIES/00045.xml (last accessed 5/9/05).
25. National Council on Compensation Insurance(NCCI) Annual Data for 1979–1987. NCCI Manuals, Boca Raton, FL.
26. Rice, D.P., MacKenzie, E.J., Jones, A.S., Kaufman, S.R., deLissovoy, G.V., Max, W., McLoughlin, E., Miller, T.R., Robertson, L.S., Salkever, D.S., and Smith, G.S. (1989). *Cost of Injury in the United States: A Report to Congress*. Prepared for the National Highway Traffic Safety Administration, U.S. Department of Transportation, the Centers for Disease Control and Prevention, and the U.S. Department of Health and Human Services.
27. Miller, T.R. (1993) "Costs and Functional Consequences of U.S. Roadway Crashes." *Accident Analysis and Prevention*. 25(5), pp. 593–607.
28. Miller, T.R., Pindus, N.; Douglass, J.; Rossman, S. (1995) *Databook on Nonfatal Injury–Incidence, Costs, and Consequences*. The Urban Institute Press: Washington DC.
29. MedStat Systems Group (2003). Medstat MarketScan® Database. Ann Arbor, MI. Thomson Medstat Inc.
30. Berkowitz, M.; Harvey, C.; Greene, C.; Wilson, and S. (1993) *The Economic Consequences of Spinal Cord Injury*, Demos Medical Publishing, New York, NY.
31. Miller, T.R., Brigham, P., Cohen, M., Douglass, J., Galbraith, M., Lestina, D., Nelkin, V., Pindus, N., and Regojo-Smith, P. (1993). "Estimating the Costs to Society of Cigarette Fire Injuries." In Report to Congress in response to the Fire Safe Cigarette Act of 1990. (Vol. 85, pp. 932–938). Washington, DC: U.S. Government Printing Office and Consumer Product Safety Commission.
32. National Vital Statistics Reports. (1999, 12/13/99). *United States Life Tables, 1997*. (Vol. 47, No. 28). National Center for Health Statistics, Center for Disease Control and Prevention, Atlanta, GA.
33. Expectancy Data. (1999). *The Dollar Value of a Day –1997 Dollar Valuation*. Shawnee Mission, KS: Expectancy Data.
34. Marquis, S. (1992). The RAND Corporation. Personal communication.
35. Gold, M. R., Siegel, J.E., Russell, L. B., and Weinstein, M. C. (Eds.). (1996). *Cost-Effectiveness in Health and Medicine*. Oxford University Press, New York, NY.
36. Miller, T.R. (1990, Fall). "The plausible range for the value of life: Red herrings among the mackerels." *Journal of Forensic Economics*, 3(3), pp. 75–89.
37. Miller, T.R. (2000). "Valuing Nonfatal Quality of Life Losses with Quality-Adjusted Life Years: The Health Economist's Meow." *Journal of Forensic Economics*, 13(2), pp. 145–168.

38. Mrozek, J.R., and Taylor, L.O. (2002). “What Determines the Value of Life? A Meta-Analysis.” *Journal of Policy Analysis and Management*, 21(2), pp. 253-270.
39. Cropper, M.L., Aydede, S.K., and Portney, P.R. (1991). “Discounting Human Lives.” *American Journal of Agricultural Economics*, 73, pp. 1410–1415.
40. Viscusi, W.K., and Moore, M.W. (1989). “Rates of Time Preference and Valuations of the Duration of Life.” *Journal of Public Economics*, 38, pp. 297–317.
41. Hall, J.W. (1998). Economic benefit of accident reductions,” *Proceedings of the 68th Annual Meeting of the Institute of Transportation Engineers*, Washington, DC: ITE, 1998.
42. *Economic Report of the President (2002)*. U.S. Government Printing Office, Washington DC.