Unintentional and violence-related injuries, including suicide, homicide, overdoses, motor vehicle crashes, and falls, were among the top 10 causes of death for all age groups in the United States and caused nearly 27 million nonfatal emergency department (ED) visits in 2019.† CDC estimated the economic cost of injuries that occurred in 2019 by assigning costs for medical care, work loss, value of statistical life, and quality of life losses to injury records from the CDC’s Web-based Injury Statistics Query and Reporting System (WISQARS).§ In 2019, the economic cost of injury was $4.2 trillion, including $327 billion in medical care, $69 billion in work loss, and $3.8 trillion in value of statistical life and quality of life losses. More than one half of this cost ($2.4 trillion) was among working-aged adults (aged 25–64 years). Individual persons, families, organizations, communities, and policymakers can use targeted proven strategies to prevent injuries and violence. Resources for best practices for preventing injuries and violence are available online from CDC’s National Center for Injury Prevention and Control.¶

The economic cost estimate for injuries that occurred in 2019 uses the societal perspective, including tangible and intangible costs to multiple payers, and a 1-year time horizon (period over which costs are assessed) for nonfatal injuries. Costs are presented in 2019 U.S. dollars (USD). WISQARS nonfatal injury counts are hospital ED injury visits from the nationally representative National Electronic Injury Surveillance System – All Injury Program. WISQARS fatal injury counts are from CDC’s National Vital Statistics System mortality data.

Medical and work loss costs (1,2) were adjusted for patient clinical and demographic characteristics, including comorbidities, sex, and age, and modified to 2019 USD.** Medical costs were assigned to WISQARS records by injury outcome (fatal or nonfatal), mechanism (e.g., fall), intent (e.g., unintentional), and place of death (e.g., inpatient hospital) or ED visit disposition (treated and released or hospitalized, including transferred). Work loss costs for nonfatal injuries were assigned by injury mechanism and ED visit disposition.

** U.S. Bureau of Economic Analysis, National Income and Product Accounts: Table 2.5.4: Price Indexes for Personal Consumption Expenditures by Function (37. Health) and Table 1.1.4: Price Indexes for Gross Product D. (1. Gross domestic product); 2020. https://www.bea.gov/itable (Accessed August 3, 2020).
to injured persons of all ages; this approach assumes injured children and older adults incur lost productivity among working-aged adult caregivers. Aggregated medical and work loss costs (e.g., combined intents by mechanism or combined mechanisms by ED visit disposition) from reference sources were assigned when specific estimates by intent or mechanism were not available.

The cost of injury mortality includes value of statistical life, a monetary estimate of the collective value placed on mortality risk reduction as derived in research studies through revealed preferences (e.g., observed wage differences for dangerous occupations) or stated preferences from surveys of individual persons’ willingness to pay for mortality risk reduction (3). Value of statistical life estimates were assigned by decedent age: 0–17 years, $16.9 million (4); 18–65 years, $10.7 million (3); and values descending from $6 million (aged 66 years) to $410,000 (aged ≥100 years), reflecting the estimate for persons aged 18–65 years adjusted for older adults’ decreasing general life expectancy and baseline quality of life. Cost of nonfatal injury morbidity includes quality of life losses measured in terms of quality-adjusted life years (QALY; 1 QALY equals 1 year of perfect health) (5) and valued at $540,000 per QALY (3). Injury count, rate per 100,000 population, cost by type (medical, work loss, value of statistical life, and quality of life loss), and total cost are reported by intent, sex, and age group. All reported data can be queried online using WISQARS. This activity was reviewed by CDC and was conducted consistent with applicable federal law and CDC policy.

In 2019, the economic cost of injury was $4.2 trillion, including $327 billion in medical care, $69 billion in work loss, and $3.8 trillion in value of statistical life and quality of life losses (Table). The economic costs were $2.2 trillion for fatal injuries and $2.0 trillion for nonfatal injuries. The number of injury deaths and associated economic cost were higher among males (169,628 and $1.6 trillion, respectively) than among females (76,413 and $607 billion, respectively). The cost of nonfatal injury was similar for males and females ($1 trillion). Except for nonfatal self-harm, the age-adjusted rate, number, and economic cost for all injury outcomes (fatal and nonfatal) and intents (unintentional, homicide or assault) were higher for males than for females.

Economic cost was highest for persons aged 25–44 and 45–64 years ($1.2 trillion each), followed by those aged ≥65 years ($906 billion), 15–24 years ($512 billion), and 0–14 years ($396 billion). Although the injury fatality rate was highest among those aged ≥65 years (132.1 per 100,000; mostly unintentional [112.0]), the economic cost of fatal injuries was higher for those aged 25–44 years ($808 billion) and 45–64 years ($755 billion) than for those aged ≥65 years.

†† 45 C.F.R. part 46; 21 C.F.R. part 56; 42 U.S.C. Sect. 241(d); 5 U.S.C. Sect. 552a; 44 U.S.C. Sect. 3501 et seq.
TABLE. Number, rates, and estimated costs of injuries, by outcome, intent, sex, and age group — United States, 2019

| Outcome and intent | Total | Male | Female | 0–14 | 15–24 | 25–44 | 45–64 | ≥65 |
|--------------------|-------|------|--------|------|-------|-------|-------|-----|
| Total cost         | 4,208,579 | 2,609,647 | 1,598,906 | 396,491 | 512,206 | 1,213,049 | 1,180,231 | 905,945 |
| Medical            | 326,774 | 179,673 | 147,094 | 33,151 | 38,522 | 82,724 | 83,724 | 77,607 | 94,314 |
| Work loss          | 68,729 | 37,085 | 31,642 | 7,472 | 8,751 | 18,165 | 16,758 | 17,545 |
| Value of statistical life and quality of life | 3,813,077 | 2,392,888 | 1,420,170 | 355,868 | 464,932 | 1,112,160 | 1,085,866 | 793,886 |

Fatal injuries

All intents†

No. of deaths | 246,041 | 169,628 | 76,413 | 5,590 | 23,051 | 75,488 | 70,453 | 71,435 |
Rate§ | 71.1 | 102.8 | 40.8 | 9.2 | 54.0 | 86.2 | 84.6 | 132.1 |
Costs | 2,186,049 | 1,578,711 | 607,338 | 94,559 | 267,218 | 808,334 | 754,570 | 261,368 |
Medical | 3,786 | 2,226 | 1,560 | 88 | 205 | 612 | 723 | 2,158 |
Value of statistical life | 2,182,263 | 1,576,484 | 605,778 | 94,471 | 267,013 | 516,874 | 519,736 | 259,210 |

Unintentional

No. of deaths | 173,040 | 112,720 | 60,320 | 3,907 | 11,755 | 48,586 | 48,251 | 75,847 |
Rate§ | 49.2 | 68.2 | 31.3 | 6.5 | 27.5 | 55.5 | 57.9 | 112.0 |
Costs | 1,447,643 | 1,006,091 | 441,552 | 66,086 | 134,498 | 520,291 | 516,874 | 209,894 |
Medical | 3,265 | 1,834 | 1,430 | 58 | 114 | 421 | 588 | 2,084 |
Value of statistical life | 1,444,378 | 1,004,257 | 440,122 | 66,028 | 134,384 | 519,870 | 516,286 | 207,810 |

Homicide

No. of deaths | 19,141 | 15,264 | 3,877 | 893 | 4,774 | 8,787 | 3,614 | 1,071 |
Rate§ | 6.0 | 9.6 | 31.3 | 6.5 | 27.5 | 55.5 | 57.9 | 112.0 |
Costs | 209,019 | 167,502 | 41,517 | 15,109 | 55,581 | 94,105 | 38,710 | 51,514 |
Medical | 204 | 179 | 73 | 7 | 39 | 84 | 40 | 4 |
Value of statistical life | 208,816 | 167,332 | 41,484 | 15,092 | 55,533 | 94,021 | 38,670 | 5,500 |

Suicide

No. of deaths | 47,511 | 37,256 | 10,255 | 946 | 5,954 | 15,584 | 16,250 | 9,173 |
Rate per 100,000§ | 13.9 | 22.4 | 6.0 | 0.9 | 14.0 | 17.8 | 19.5 | 17.0 |
Costs | 463,193 | 359,092 | 104,102 | 9,235 | 70,567 | 166,836 | 173,946 | 42,610 |
Medical | 252 | 179 | 73 | 7 | 39 | 87 | 71 | 47 |
Value of statistical life | 462,941 | 358,912 | 104,029 | 9,227 | 70,528 | 166,749 | 173,875 | 42,562 |

See table footnotes on the next page.

($261 billion) because of higher value of statistical life cost. The economic cost of suicide deaths was highest among those aged 25–44 years ($167 billion) and 45–64 years ($174 billion). The economic cost of deaths from homicide was highest among those aged 25–44 years ($94 billion), followed by those aged 15–24 years ($56 billion). The economic cost of nonfatal injuries was highest among those aged ≥65 years ($645 billion), primarily because of quality of life loss costs from unintentional injuries, followed by those aged 45–64 years ($426 billion), 25–44 years ($405 billion), 0–14 years ($302 billion), and 15–24 years ($245 billion). The economic cost of nonfatal injuries from assault and self-harm were highest among those aged 25–44 years ($66 billion and $10 billion, respectively).

Discussion

This report used injury incidence data to estimate the economic cost of injuries that occurred in the United States during 2019. Economic cost was highest among working-aged adults, highlighting that injuries during the most productive part of people’s lives result in a high societal cost. These findings highlight the need for targeted prevention strategies to achieve long-term value, or even cost-savings, by preventing injury morbidity and mortality through addressing the causes of unintentional and violence-related injuries at the individual, family, organizational, and community levels.

The 2019 economic cost of injuries ($4.2 trillion) is more than six times as high as a comparable estimate in 2013 ($671 billion) (6,7). Even though the number of nonfatal ED injury visits in 2019 was approximately 15% lower than it was in 2013, the 2019 nonfatal injury economic cost ($2.0 trillion) is more than four times as high as the 2013 estimate ($457 billion) (6), primarily because of including the cost of diminished quality of life. The 2019 fatal injury economic cost ($2.2 trillion) is substantially higher than the similar estimate in 2013 ($214 billion) (7). This difference reflects a 28% higher number of injury deaths in 2019 and mortality cost based on value of statistical life, which represents a value that is approximately 10 times as high as the value attributed to mortality based on foregone employment compensation, which was used in the previous estimate.

The findings in this report are subject to at least five limitations. First, the economic cost of nonfatal injuries is underestimated because only injuries treated in an ED are included (injuries initially treated in urgent care or doctor’s offices not included),...
TABLE. (Continued) Number, rates, and estimated costs* of injuries, by outcome, intent, sex, and age group — United States, 2019

| Outcome and intent | Total | Male | Female | 0–14 | 15–24 | 25–44 | 45–64 | ≥65 |
|--------------------|-------|------|--------|------|-------|-------|-------|-----|
| No. of injuries    | 25,933,780 | 13,973,305 | 11,960,119 | 4,102,128 | 3,842,368 | 7,275,609 | 5,929,789 | 4,778,380 |
| Rate†             | 7,881.5 | 8,699.3 | 7,037.9 | 6,722.5 | 9,001.2 | 8,305.5 | 7,116.6 | 8,839.3 |
| Costs             | 2,022,531 | 1,030,936 | 991,568 | 301,932 | 244,988 | 404,716 | 425,661 | 644,577 |
| Medical           | 322,988 | 177,447 | 145,534 | 33,063 | 38,317 | 82,112 | 76,884 | 92,356 |
| Work loss         | 68,729 | 37,085 | 31,642 | 7,472 | 8,751 | 18,165 | 16,758 | 17,545 |
| Quality of life   | 1,630,814 | 816,404 | 814,392 | 261,397 | 197,919 | 304,438 | 332,019 | 534,676 |
| Unintentional     | 23,973,103 | 12,865,348 | 11,107,407 | 3,953,061 | 3,319,180 | 6,412,723 | 5,556,825 | 4,727,632 |
| Rate†             | 7,256.4 | 8,001.0 | 6,484.9 | 6,326.3 | 7,775.5 | 7,320.5 | 6,669.0 | 8,745.4 |
| Costs             | 1,840,193 | 920,286 | 919,881 | 291,077 | 199,765 | 324,816 | 386,194 | 637,937 |
| Medical           | 285,673 | 154,120 | 131,548 | 30,854 | 28,092 | 65,722 | 69,641 | 91,250 |
| Work loss         | 62,889 | 33,896 | 28,991 | 7,081 | 7,124 | 15,763 | 15,554 | 17,341 |
| Quality of life   | 1,491,631 | 732,271 | 759,342 | 253,143 | 164,549 | 243,330 | 300,999 | 529,345 |
| Assault           | 1,421,988 | 854,340 | 567,648 | 101,918 | 348,467 | 659,136 | 277,316 | 33,403 |
| Rate†             | 452.2 | 537.8 | 366.7 | 168.3 | 816.3 | 752.4 | 332.8 | 61.8 |
| Costs             | 149,534 | 92,853 | 56,680 | 8,533 | 35,651 | 66,450 | 33,297 | 5,352 |
| Medical           | 23,689 | 17,116 | 6,573 | 1,046 | 5,883 | 11,386 | 4,625 | 609 |
| Work loss         | 2,605 | 1,821 | 784 | 125 | 605 | 1,229 | 555 | 80 |
| Quality of life   | 123,240 | 73,916 | 49,324 | 7,362 | 29,165 | 53,896 | 28,117 | 4,663 |
| Self-harm         | 460,416 | 186,954 | 273,455 | 46,429 | 157,635 | 158,489 | 82,642 | 15,221 |
| Rate†             | 147.9 | 118.1 | 178.9 | 76.7 | 369.3 | 180.9 | 99.2 | 28.2 |
| Costs             | 26,705 | 12,528 | 14,176 | 2,277 | 8,169 | 10,020 | 5,089 | 1,150 |
| Medical           | 12,601 | 5,340 | 7,260 | 1,157 | 4,127 | 4,425 | 2,432 | 459 |
| Work loss         | 3,104 | 1,259 | 1,845 | 266 | 994 | 1,098 | 627 | 120 |
| Quality of life   | 11,000 | 5,929 | 5,071 | 854 | 3,047 | 4,497 | 2,031 | 571 |

Abbreviation: USD = U.S. dollars.
* In millions of 2019 USD.
† Fatal all intents estimates include injuries with legal intervention intent, undetermined intent, unknown sex, and unknown age.
§ Per 100,000. Age-adjusted rate is presented for “Total,” “Male,” and “Female” columns.
¶ Nonfatal injuries are an estimated number of hospital visits for injury care that start in an emergency department (with disposition treated and released, transferred, or hospitalized; visits with observed, left against medical advice, and unknown disposition were not included) based on a nationally representative probability sample of hospitals.
** Nonfatal all intents estimates include injuries with legal intervention intent, unknown sex, and unknown age. Nonfatal assault, self-harm, and legal intervention include cases that are confirmed or suspected; all other cases are considered unintentional.

Other costs such as property damage and criminal justice are not included, and nonfatal costs address only the first year following an injury. The cost of nonfatal injury includes observed medical care and work loss attributable to injuries based on comparing injured patients and non-injured persons during the year following the injured patient’s initial ED visit (1,2). A 1-year time horizon is appropriate for many injury types but does not address the long-term physical and mental health consequences of some injuries (e.g., traumatic brain injury and violence-related injuries). Second, although injury-related medical care and work loss have costs to specific, identifiable payers (including individual persons, health insurance payors, and employers), the highest cost elements presented here are value of statistical life and quality of life losses; these costs are not readily identifiable through financial transactions and thus not as visible to some stakeholders as are direct costs, such as medical care. Third, although this study aimed for a reasonable use of available value of statistical life data, the relationship between value of statistical life and age (particularly, value of statistical life for older adults) is likely more complex than applied here and would benefit from further direct study (8). Fourth, quality of life loss estimates might indirectly capture some work loss; therefore, the nonfatal economic cost estimate might partially double count such costs. Finally, this report provides an initial assessment of the economic cost of injury by intent based on injured person sex and age group. Estimation of injury costs by other demographic and geographic factors within the United States can provide additional meaningful information for injury prevention.

Individual persons, families, organizations, communities, and policymakers can use targeted proven strategies to prevent injuries and violence. Data and resources that can assist in measuring and preventing injuries and violence, including suicide, overdoses, falls, firearm violence, motor vehicle crashes, traumatic brain injury, adverse childhood experiences, youth violence, sexual violence, and intimate partner violence,
Summary

What is already known about this topic?
Unintentional and violence-related injuries, including suicide, were among the top 10 causes of U.S. deaths for all age groups and caused nearly 27 million nonfatal emergency department visits in 2019.

What is added by this report?
Fatal and nonfatal injury data from CDC’s Web-based Injury Statistics Query and Reporting System were matched to medical care, work loss, value of statistical life, and quality of life loss costs. The estimated U.S. economic cost of injuries in 2019 was $4.2 trillion. More than one half of this cost ($2.4 trillion) was among working-aged adults (aged 25–64 years).

What are the implications for public health practice?
Unintentional and violence-related injuries are costly and preventable. Resources for best practices for preventing injuries and violence are available online from CDC’s National Center for Injury Prevention and Control.

are available online from CDC’s National Center for Injury Prevention and Control. Opportunities to investigate injury data and costs are available online from WISQARS.

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