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Systematic Review of Per Person Violence Costs

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Abstract

Introduction: Data on the long-term and comprehensive cost of violence are essential for informed decision making regarding the future benefits of resources directed toward violence prevention. This review aimed to summarize original per-person estimates of the attributable cost of interpersonal violence to support public health economic research and decision making.

Methods: In 2023, English-language peer-reviewed journal articles published in 2000–2022 with a focus on high-income countries reporting original per-person average cost of violence estimates were identified using index terms in multiple databases. Study contents, including violence type (e.g., adverse childhood experiences), timeline and payer cost perspective (e.g., hospitalization event-only healthcare payer cost), and associated per-person cost estimates, were summarized. Costs were in 2022 U.S. dollars.

Results: Per-person cost estimates related to adverse childhood experiences, community violence, sexual violence, intimate partner violence, homicide, firearm violence, youth violence, workplace violence, and bullying from 73 studies (majority focusing on the U.S.) were summarized. For example, among 23 studies with a focus on adverse childhood experiences, monetary estimates ranged from \$390 for adverse childhood experience–related annual healthcare out-of-pocket costs per U.S. adult with 3 adverse childhood experiences to \$20.2 million for the lifetime societal economic burden of a U.S. child maltreatment fatality.

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SUPPLEMENTAL MATERIAL

Supplemental materials associated with this article can be found in the online version at <https://doi.org/10.1016/j.amepre.2023.08.009>.

Conclusions: This review provides a descriptive summary of available per-person cost of violence estimates. Results can help public health professionals to describe the economic burden of violence, identify the best available estimate for a particular public health question, and address data gaps. Ultimately, understanding the long-term and comprehensive cost of violence is necessary to anticipate the economic benefits of prevention.

INTRODUCTION

Interpersonal violence refers to physical, sexual, or psychological attack or deprivation perpetrated by families or partners (e.g., child abuse and neglect, intimate partner violence, elder abuse) or in the community (e.g., assault by acquaintances or strangers, violence related to property crimes, and workplace violence).¹ Data on the cost of violence are essential for informed decision making regarding the future benefits of resources directed toward violence prevention. The average per-person financial value of avoided violence is a particularly important measure because it can be used in cost-benefit analysis to compare the average per-person cost of a prevention strategy (typically, a short-term financial cost to a specific payer) with the average per-person value of averted violence (typically, a long-term benefit that accrues to individuals, their associates, employers, and communities). A recent review highlighted that the difference between the lowest and highest per-victim valuation of averted sexual assault (\$15,000 vs \$103,000 in 2008 U.S. dollars) used among assessed violence prevention economic evaluations could mean the difference between concluding that a prevention strategy is economically beneficial or not.² This review sought to summarize original per-person estimates of the attributable cost of interpersonal violence to support public health research and decision making.

METHODS

This review used publicly available data. In 2023, English-language peer-reviewed journal articles published in 2000–2022 with a focus on high-income countries³ and reporting original per-person average cost of interpersonal violence estimates were identified using index terms in multiple databases (Appendix Table [A]1, available online). Included studies reported attributable average per-person monetary valuations of violence on the basis of the original source data (e.g., financial transactions, survey data on willingness to pay to avert violence, online query system). Studies were excluded owing to incorrect focus (e.g., collective violence, no comparison between people with and without violence exposure to identify attributable cost), source data predominantly in years before 2000, or only hospital facility charges analyzed.

Violence types were classified using Centers for Disease Control and Prevention (CDC) categories,^{4–6} including adverse childhood experiences (ACEs)—violence such as physical or sexual abuse as well as nonviolent adversity such as parental incarceration. Studies investigating only fatal violence (homicide) were separately assessed. Key study elements such as time horizon (period over which costs are measured) and cost perspective (e.g., societal, costs to multiple payers) were identified (Appendix Table [A]2, available online). These elements influence the magnitude of cost estimates, although this review did not attempt to assess quality nor prioritize among available estimates; other resources exist with

a general discussion of cost of illness data and methods.^{7–9} Cost estimates were extracted for concise presentation using each study’s most aggregated average per-person monetary estimate (e.g., medical plus lost work productivity), for the most recent study year, per injury outcome (e.g., moderate versus severe), with currency year assumed as the last data year if not reported. Cost estimates by violence type were summarized by timeline and payer’s perspective (e.g., hospitalization event-only healthcare payer cost). Foreign currency values were converted using July 1 data (www.xe.com), and all costs were inflated to 2022 U.S. dollars.¹⁰

RESULTS

Database searches identified 3,849 articles, and 6 more were identified during review (Figure 1). Title and abstract screening identified 178 articles, and 73 articles—each describing a separate study—met inclusion criteria. About 50% of analyzed studies addressed fatal violence costs, 66% had a focus on the U.S., 70% analyzed administrative cost data, 52% reported a societal cost perspective, 33% reported lifetime costs, 33% discounted future costs, and 70% assessed direct healthcare costs (Table 1). The range of monetary estimates by violence type was as follows:

- Among 23 ACEs studies (Table 1), monetary estimates ranged from \$390 for ACE-related annual healthcare out-of-pocket costs per U.S. adult with 3 ACEs¹¹ to \$20.2 million for the lifetime societal economic burden of a U.S. child maltreatment fatality¹² (Figure 2A).^{11–33}
- Among 19 community violence studies, monetary estimates ranged from \$130 for the annual societal cost of a common assault in Uruguay³⁴ to \$304,970 for the U.S. lifetime societal economic burden of an assault hospitalization²⁸ (Figure 2B).^{28,34–51}
- Among 15 sexual violence studies, monetary estimates ranged from \$880 for the U.S. societal cost of victims’ short-term lost work productivity⁵² to \$386,490 for the U.S. lifetime societal economic burden of rape or sexual assault³⁷ (Figure 2C).^{28,34,36,37,39,43,44,46,51–57}
- Among 14 homicide studies, monetary estimates ranged from \$8,410 for the U.S. healthcare payer event-only cost of fatal assault emergency department (ED) visit⁵⁰ to \$15.8 million for the U.S. lifetime societal economic burden of a homicide death³⁷ (Figure 2D).^{28,34,37,38,43,44,46,49–51,53,58–60}
- Among 11 intimate partner violence studies, monetary estimates ranged from \$350 for the Iceland healthcare payer event-only cost of an assault ED visit⁶¹ to \$154,800 for the United Kingdom lifetime societal economic burden of intimate partner violence⁶² (Figure 2E).^{28,34,61–69}
- Among 17 bullying, firearm violence, workplace violence, or youth violence studies (grouped for presentation owing to low study count), monetary estimates ranged from \$60 for the U.S. school district funding loss of a bullying-related missed school day⁷⁰ to \$86,890 for the U.S. long-term taxpayer cost of a youth aggravated assault⁵³ (Figure 2F).^{35,48,53,70–83}

DISCUSSION

This review highlights the range of peer-reviewed estimates representing an average per-person attributable cost of interpersonal violence available to public health professionals to address questions related to the economic burden of violence or the cost effectiveness of violence-prevention strategies. This concise presentation is a novel effort to distill a complex data topic and improve the efficiency of violence prevention researchers and public health decision makers.

Limitations

This review has limitations. Recognizing that a variety of research and policymaking questions could be addressed using these cost data, this review sought to describe the data landscape but did not attempt to assess study quality nor make direct comparisons among available estimates; therefore, this information may provide a starting point when thorough investigation into individual estimates is warranted. For example, lifetime societal perspective cost estimates are useful for expressing the economic burden of violence, whereas a healthcare payer perspective on the financial cost of an ED visit for violence injuries may be relevant to forecast the return on investment of a hospital-based violence prevention program. There is variable quality among cost-of-illness studies and violence cost studies, in particular⁸⁴; careful consumers should be familiar with the benefits and limitations of the contributing methods. This review focused on English-language peer-reviewed studies indexed in selected databases and addressed interpersonal violence costs in high-income countries. A growing literature addresses the economic value of violence-prevention interventions in middle- and low-income countries and should be the subject of a future similar review.^{85,86} Summary data similarly aggregated on intervention program costs would be beneficial. Studies with relevant cost estimates could have been missed if not indexed using terms that were the basis for the database search strategy presented in this review. This review did not attempt to quantitatively combine results from multiple studies through meta-analysis.

CONCLUSIONS

The primary value of this review is in systematically assembling the available data on per-person attributable cost of interpersonal violence estimates by violence-prevention category so that public health professionals can refer to this information in aggregate and understand where economic evidence for prevention already exists or could be improved. Ultimately, understanding the long-term and comprehensive cost of violence is necessary to understand the economic benefits of prevention.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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All authors led the study design and interpretation of results, analyzed data, edited the manuscript, and approved the final manuscript as submitted. CP conceived the study and drafted the manuscript.

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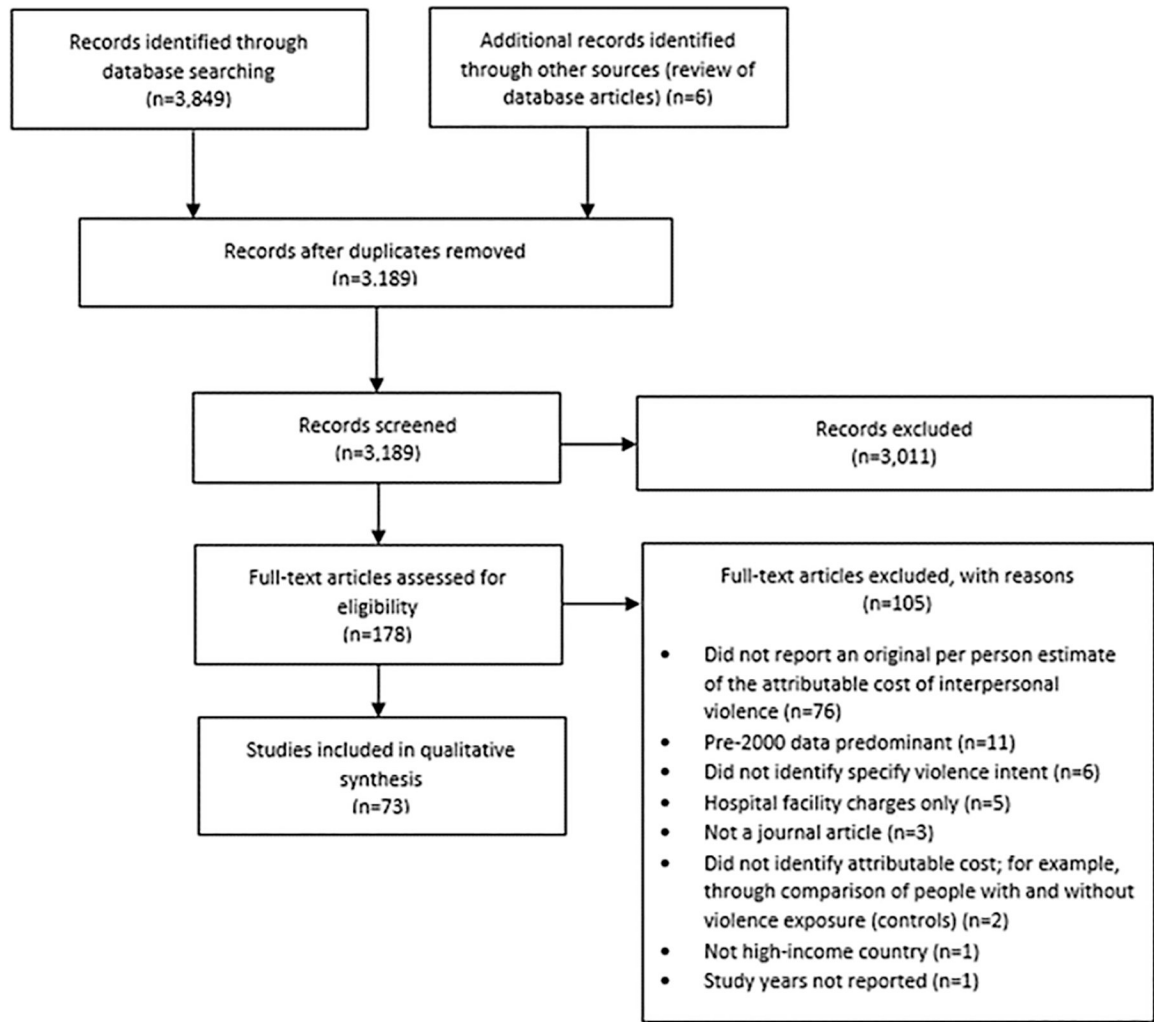
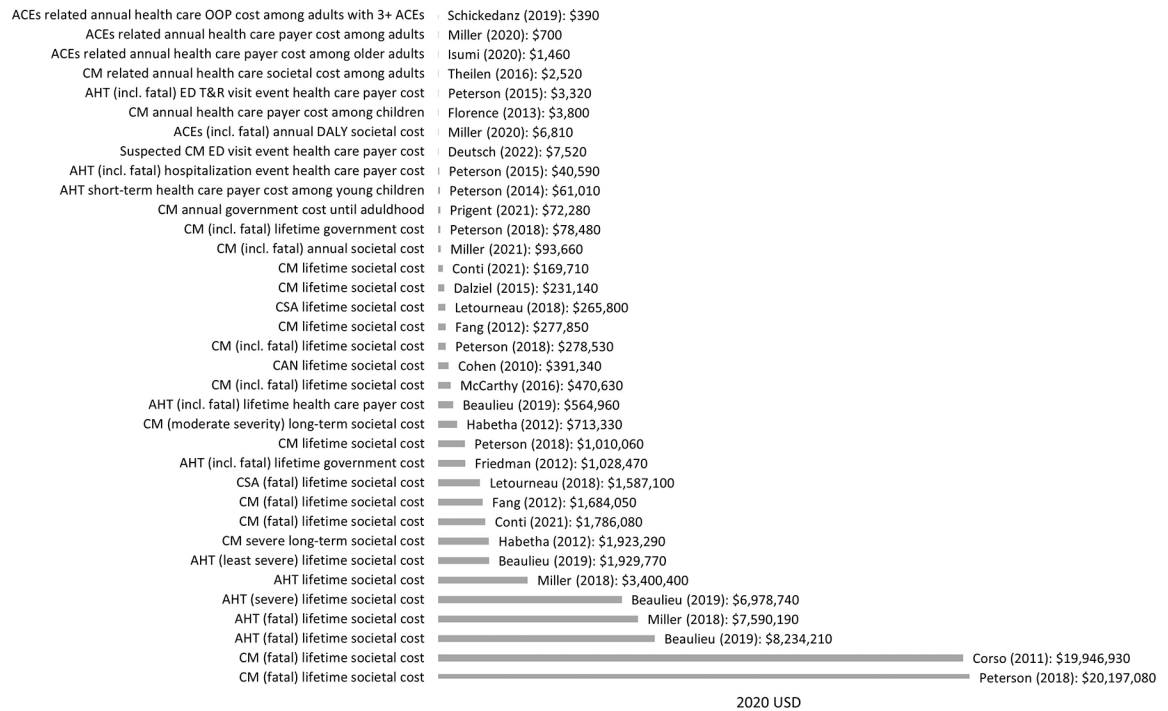
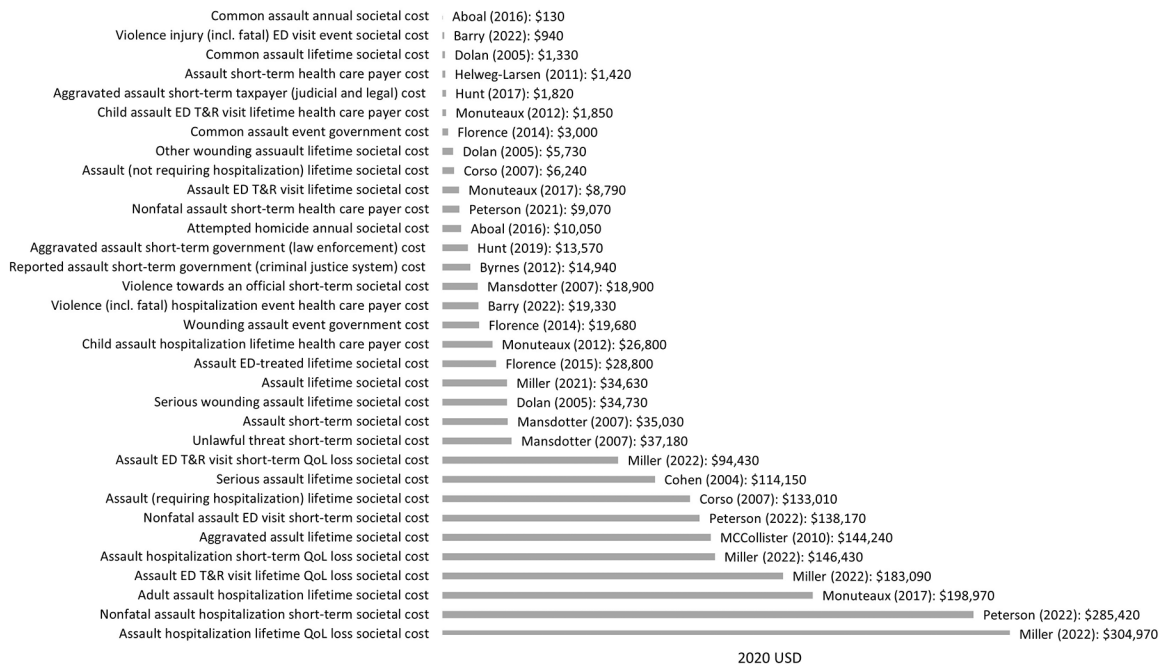


Figure 1.
PRISMA flowchart.



2020 USD



2020 USD

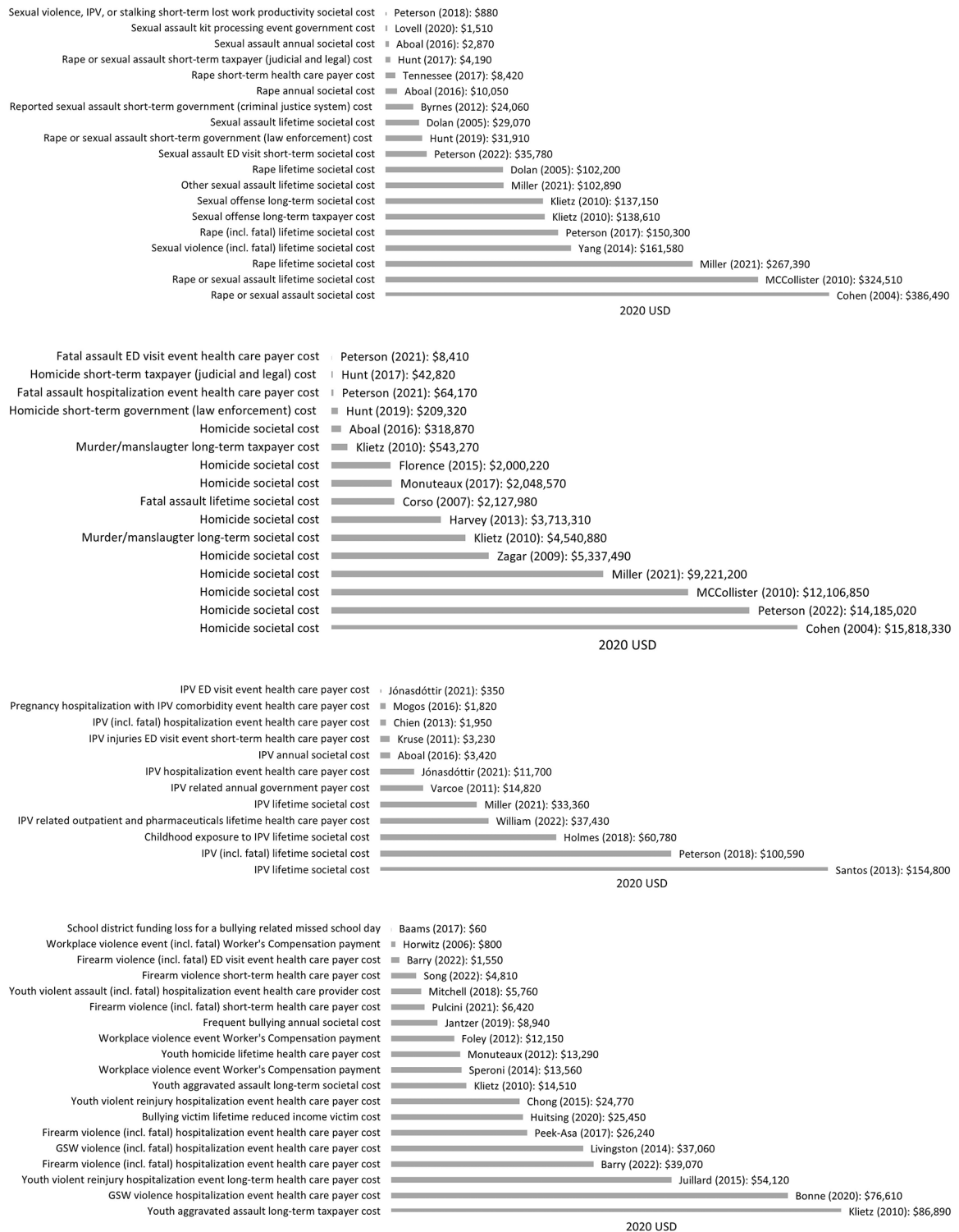


Figure 2. Per-person violence cost estimates. (A) Adverse childhood experiences. (B) Community violence. (C) Sexual violence. (D) Homicide. (E) Intimate partner violence. (F) Bullying, firearm violence, workplace violence, and youth violence.

Cost estimates are in 2022 USD and refer to nonfatal violence unless otherwise specified. See Appendix Table [A]2 (available online) for all summarized study elements (e.g., future cost discount rate) and identification of when reported study cost data were combined for presentation (such as a weighted average of estimated costs separately presented for males and females).

ACE, adverse childhood experience; AHT, abusive head trauma; CM, child maltreatment; CSA, child sexual abuse; ED, emergency department; GSW, gunshot wound; IPV, intimate partner violence; OOP, out of pocket; QoL, quality of life; T&R, treated and released; USD, U.S. dollar.

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Table 1.

Summary Cost Elements Among Analyzed Studies

Measure	No. studies (%)	Community violence	Sexual violence	Homicide	Intimate partner violence	Firearm violence	Youth violence	Workplace violence	Bullying	Total ^c
Total ^a	23 (100)	19 (100)	15 (100)	14 (100)	11 (100)	6 (100)	5 (100)	3 (100)	3 (100)	73 (100)
Fatal events assessed	13 (57)	1 (5)	2 (13)	14 (100)	2 (18)	3 (50)	2 (40)	1 (33)	0 (0)	36 (49)
Country: USA	14 (61)	13 (68)	12 (80)	12 (86)	4 (36)	6 (100)	4 (80)	3 (100)	1 (33)	48 (66)
Cost data source										
Administrative	16 (70)	16 (84)	12 (80)	11 (79)	9 (82)	5 (83)	4 (80)	3 (100)	1 (33)	52 (70)
Hospital facility costs only	0 (0)	1 (5)	0 (0)	0 (0)	2 (18)	4 (67)	2 (40)	0 (0)	0 (0)	8 (11)
Previous studies	14 (61)	9 (47)	8 (53)	10 (71)	5 (45)	0 (0)	0 (0)	0 (0)	2 (67)	33 (45)
Survey/interview	5 (22)	6 (32)	2 (13)	4 (29)	4 (36)	0 (0)	0 (0)	1 (33)	2 (67)	17 (23)
Trial (e.g., RCT)	1 (4)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (1)
Online query system	1 (4)	3 (16)	1 (7)	3 (21)	0 (0)	0 (0)	2 (40)	0 (0)	0 (0)	6 (8)
Economic perspective: Societal	15 (65)	11 (58)	10 (67)	11 (79)	7 (64)	0 (0)	1 (20)	0 (0)	1 (33)	38 (52)
Time horizon										
Event (e.g., ED visit)	2 (9)	3 (16)	3 (20)	1 (7)	3 (27)	4 (67)	3 (60)	2 (67)	0 (0)	19 (26)
Short-term (< 1y)	7 (30)	8 (42)	5 (33)	2 (14)	3 (27)	2 (33)	0 (0)	1 (33)	1 (33)	23 (32)
Long-term (1y to lifetime)	2 (9)	0 (0)	1 (7)	1 (7)	0 (0)	0 (0)	1 (20)	0 (0)	0 (0)	3 (4)
Lifetime	12 (52)	9 (47)	6 (40)	10 (71)	5 (45)	0 (0)	1 (20)	0 (0)	1 (33)	33 (45)
Future costs discounted ^b	10 (43)	4 (21)	6 (40)	6 (43)	3 (27)	NA	1 (20)	NA	1 (33)	24 (33)
Cost elements										
DCH	23 (100)	15 (79)	10 (67)	12 (86)	11 (100)	6 (100)	4 (80)	3 (100)	1 (33)	51 (70)
DCO	13 (57)	13 (68)	13 (87)	11 (79)	6 (55)	0 (0)	1 (20)	0 (0)	2 (67)	40 (55)
ICO	13 (57)	11 (58)	9 (60)	11 (79)	6 (55)	0 (0)	1 (20)	3 (100)	2 (67)	43 (59)

Notes: DCH=direct costs within health care sector (e.g., hospital stay); DCO=direct costs outside the health care sector (e.g., traveling costs); ED=emergency department; ICO=indirect costs outside the health care sector (e.g., productivity loss); NA=not applicable; RCT=Randomized control trial.

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^aSum of study count by column for subcategories may exceed 100% because some studies used >1 cost data type or reported >1 qualifying cost estimate. See A2 for details.

^bApplicable to studies with time horizon >1 year.

^cSum of study count by row may exceed "Total" count because some studies addressed >1 violence type.