Hindawi International Journal of Pediatrics Volume 2020, Article ID 8169030, 13 pages https://doi.org/10.1155/2020/8169030

Research Article

Injury Patterns and Demographics in Child and Adolescent Assault Victims Presenting to US Emergency Departments

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Received 4 June 2020; Revised 30 September 2020; Accepted 9 October 2020; Published 24 October 2020

Academic Editor: Somashekhar Marutirao Nimbalkar

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Objective. To correlate injury patterns with patient demographics in child and adolescent assault victims. *Methods*. The National Electronic Injury Surveillance System-All Injury Program data for the years 2005 through 2015 was used. Injuries due to assault were identified and analyzed with SUDAAN 11.0.01[™] software to account for the weighted, stratified nature of the data. *Results*. There were an estimated 4,407,009 ED visits for assault in patients ≤ 19 years of age. With increasing age, the percentage of females decreased. Sexual assaults were more common in females (87.4%), and robbery/burglary was more common in males (79.8%). When the perpetrator was a spouse/partner, the assault victim was most commonly female (88.8%), and when a stranger, the assault victim was most commonly male (71.5%). With increasing age, the percentage of sexual assaults decreased while the reason for the assault being unknown increased. The assault occurred in the home in 59.6% of those ≤ 4 years of age, decreasing to 18.7% in those 15 to 19 years of age. The anatomic location was the head/neck in 32.8% of those ≤ 4 years of age, increasing to 60.6% in those 15-19 years old. Those ≤ 4 years old had the highest hospital admission rate (8.3%). The main diagnoses were concussion (3.0%), contusion/abrasion (33.3%), fracture (11.5%), laceration (11.5%), internal organ injury (11.5%), puncture (2.8%), and strain/sprain (20.7%). The number of assaults from 2005 to 2015 decreased for all age groups except for those ≤ 4 years old. *Conclusions*. These data provide a comprehensive overview of child and adolescent assault victims presenting to the ED in the USA and can be used as background data for further study. The decreasing numbers of assaults over the 11 years of the study are encouraging, and challenges still exist in decreasing the number for those ≤ 4 years old.

1. Introduction

Violence and assault are significant public health issues [1]. Although they have been studied in the general population, there are few overall studies of assault in children and adolescents that correlate injury patterns with the demographics of age and gender. Most studies in children and adolescents only address particular anatomic areas (e.g., craniofacial) or singular mechanisms of injury (firearm injuries, sexual assault, and nonaccidental trauma). Barmparas et al. [2] studied children admitted to a trauma center for assault using the National Trauma Data Bank; however, such results are skewed to more serious injuries as these children were seen at a major trauma center. Mollen et al. [3] reviewed youth violence patients presenting to three hospitals in the Philadelphia area, but the study was limited by age (8 to 24 years),

as well as urban location. The purpose of this study was to analyze all child/adolescent assault patients in the USA presenting to emergency departments (ED) and correlate the injury patterns with patient demographics by age and gender. Such information will be very useful to all health care providers involved in caring for injured children and adolescents. Understanding injury patterns with their associated demographics will be helpful information for such a health care provider by giving clues to the potential for assault when not immediately divulged by the patient.

2. Materials and Methods

Children and adolescents were defined as individuals ≤ 19 years of age. The National Electronic Injury Surveillance System- (NEISS-) All Injury Program (AIP) data was used for

this study. The NEISS is a stratified, weighted dataset managed by the US Consumer Product Safety Commission (USCPSC) which collects injury data from ~100 hospitals in the United States and its territories having an emergency department (ED). It was initially designed for injuries due to consumer products. However, not all injuries are from consumer products; thus, the USCPSC selected ~65 of these hospitals (actual numbers vary slightly from year to year) to obtain data for all nonfatal injuries, regardless of the association with consumer products. This has been designated the All Injury Program (AIP). This data is in the public domain and housed by the Inter-University Consortium for Political and Social Research (ICPSR). It can be accessed at https:// www.icpsr.umich.edu/icpsrweb/ICPSR/search/studies?q=all +injury+program. Use of this publicly available deidentified data was considered exempt by our local Institutional Review Board.

The database includes date of ED visit, gender/race/age of the injured patient, diagnosis, disposition from the ED, incident locale, body part injured, perpetrator and type of assault, reason for assault, causative agent/event of the injury, and hospital size (strata). Detailed descriptions of these variables are given in the appendix. The NEISS-AIP data for the years 2005 through 2015 was used. These years were chosen because 2015 was the last available year at the time the study began in mid-2019, and data before 2005 was coded differently for many variables, making it difficult to combine the years before 2005 with those afterwards. Injuries due to assault were identified using the code INTENT=1 (assault). Race was classified as White, Black, Amerindian (Hispanic and Native American), and Asian [4]. NEISS does not code for Polynesian and Indo-Mediterranean peoples.

2.1. Statistical Analysis. Statistical analyses were performed with SUDAAN 11.0.01[™] software (RTI International, Research Triangle Park, North Carolina, 2013) which accounts for the weighted, stratified nature of the data. The estimated number of injuries/ED visits is calculated, along with 95% confidence intervals (CIs) of the estimate. When the actual number of patients (n) is <20, the estimated number (N) becomes unstable and should be interpreted with caution; thus, we report both the n and N. The annual incidence of ED visits for assault was calculated using the US Census Bureau data. Analyses between groups of continuous data were performed with the t-test (2 groups) or ANOVA (3 or more groups). Differences between groups of categorical data were analyzed by the χ^2 test. A p < 0.05 was considered to be statistically significant.

3. Results

There were a total of 5,702,369 ED visits in the NEISS-AIP database from 2005 through 2015, for an estimated 337,627,315 patients. Of these estimated 337,627,315 patients, there were an estimated 18,116,132 (14,855,602–22,013,301) due to assault (5.4%). Of these assault patients, an estimated 4,407,009 (4,139,536–4,686,643) were in those \leq 19 years of age (24.3% of all assault patients).

The average age of these 4,407,009 patients was 14.5 years. Age group distribution was 286,883 (228,316–359,410) (6.5%) (≤4 years), 322,164 (282,865–366,449) (7.3%) (5 to 9 years), 995,807 (922,941–1,072,512) (22.6%) (10 to 14 years), and 2,794,290 (92,693,157–2,892,438) (63.5%) (15 to 19 years old). There were 2,653,938 (60.2%) males and 1,752,659 females (39.8%). Racial composition was known in 3,506,513 patients: White in 1,517,881 (993,044–2089,531) (43.3%), Black in 1,264,225 (974,460–1,586,346) (36.1%), Amerindian in 692,581 (351,002–1,236,046) (19.8%), and Asian in 31,826 (16,831–59,961) (0.9%). Disposition from the ED was known in 4,329,619 patients: 4,110,966 (3,997,537–4,187,175) (94.9%) were treated and released and 281,653 (142,444–332,082) (5.1%) were admitted to the hospital.

3.1. Analyses by Gender. There were differences by gender for all demographic variables (Table 1). With increasing age, the percentage of female patients decreased. Sexual assaults occurred most commonly in females (87.4%), and robbery/burglary most commonly in males (79.8%) (Figure 1(a)) When the perpetrator was a spouse/partner, the assault victim was most commonly female (88.8%); when it was a stranger, the assault victim was most commonly male (71.5%) (Figure 1(b)). When the assault occurred at home, the victim was female in 55.9%, and when on the street, the victim was male in 71.0%. When the injury involved the lower trunk, 70.5% of the victims were female, and when the upper extremity, only 32.8% were female. When the victim was admitted to the hospital, 78.8% were male.

3.2. Analyses by Age Groups. The NEISS data is divided into different age groups; for this study, the groups were ≤4 years, 5 to 9 years, 10 to 14 years, and 15 to 19 years old. With increasing age (Table 2), the percentage of sexual assaults decreased while the reason for the assault being unknown increased (Figure 2(a)). Similarly, the perpetrator being a parent decreased with increasing age (Figure 2(b)) while the identity being unknown increased. The home was the incident locale in 59.6% of those \leq 4 years of age which decreased to 18.7% in those 15 to 19 years of age. Injuries involving the head/neck increased from 32.8% in those ≤ 4 years of age to 60.6% in those 15 to 19 years of age, while lower trunk injuries decreased from 38.9% in those \leq 4 years to 8.1% in those 15 to 19 years old. While the vast majority of patients in all four groups were discharged from the ED, those ≤ 4 years old had the highest hospital admission rate (8.3%).

3.3. Analyses by Diagnosis. There were seven major diagnoses (Table 3) that accounted for 99.6% of all the injuries. These were concussions (N=129,580-3.0%), contusion/abrasion (N=1,459,483-33.3%), fracture (N=504,522-11.5%), laceration (N=758,519-17.3%), internal organ injury (N=505,545-11.5%), puncture (N=122,679-2.8%), and strain/sprain (N=906,855-20.7%). The punctures and lacerations (penetrating trauma) comprised 20.1% of the assaults with blunt trauma comprising the remaining 79.9%. The common penetrating trauma was overwhelmingly in the 15- to 19-year-old age group (76.6% of the

Table 1: General demographics and demographics by gender.

	и	Z	All U95%	T95%	%	и	N	Male U95%	T95%	%	и	N	Female U95%	T95%	%	% female	p value
Average age \pm 1 SD (years)			14.5 ± 5.1					14.8 ± 4.8					14.0 ± 5.4				<10-4
Age group (years)	10,017	286,857 322,079	359,382 366,420	228,298 282,843	6.5	4,176	119,739 183,605	146,910 212,821	97,411 158,027	4.5	5,841	167,118 138,475	210,389 157,135	132,084 121,749	9.5	58.3	<10-4
10 to 14 15 to 19 Race	25,031 57,749	995,786 2,794,082	1,072,429	922,869	22.6	14,658 35,430	604,745 1,738,937	651,433 1,798,125	560,375 1,677,950	22.8	10,373 22,319	391,041 1,055,145	426,733 1,099,767	357,538 1,009,550	22.3	39.3 37.8	
White Black Amerindian Asian Reason	27,090 40,032 12,877 699	1,517,881 1,264,082 692,488 31,826	2,089,390 1,592,551 1,235,612 59,957	992,977 974,043 350,978 16,830	43.3 36.1 19.7 0.9	15,349 23,349 7,853 471	903,556 751,445 440,438 22,587	1,260,861 955,018 779,645 42,784	579,068 570,173 224,087 11,861	42.7 35.5 20.8 1.1	11,741 16,683 5,024 228	614,325 512,636 252,050 9,239	830,312 635,124 455,485 17,492	412,866 401,204 127,025 4,859	44.3 36.9 18.2 0.7	40.5 40.6 36.4 29.0	0.015
Altercation Robbery/burglary Sexual assault Other specified Unknown	27,268 1,253 14,810 2,677 56,551	1,244,983 53,672 453,496 87,088 2,558,422	1,331,674 73,150 583,433 103,114 2,685,821	1,161,579 39,219 349,884 73,590 2,428,916	28.3 1.2 10.3 2.0 58.1	17,564 1,024 2,275 1,607 37,117	814,419 42,806 57,234 53,934 1,678,462	878,188 56,529 77,760 66,348 1,747,618	753,188 32,378 41,932 43,790 1,607,225	30.7 1.6 2.2 2.0 63.2	9,704 229 12,535 1,070 19,434	430,565 10,865 396,262 33,154 879,960	484,961 17,702 488,116 37,857 936,972	380,327 6,660 317,407 28,919 822,873	24.6 0.6 22.6 1.9 50.2	34.6 20.2 87.4 38.1 34.4	<10-4
Spouse/partner Parent Other relative Friend/acquaintance Multiple Stranger Other specified Unknown	3,190 8,245 8,660 22,655 15,281 2,883 2,303 39,072	168,516 293,505 319,136 942,928 642,918 113,461 110,746	189,043 333,579 350,324 1,001,619 763,663 140,570 120,741 1,911,582	150,265 257,786 290,835 886,607 538,486 91,657 101,792	3.8 6.7 7.2 21.4 14.6 2.6 2.5 40.9	358 3,672 3,878 12,854 9,346 2,023 1,780 25,616	18,912 132,079 151,728 568,282 409,989 81,162 86,635	22,824 151,540 168,790 611,202 490,713 99,788 96,073 1,272,563	15,658 114,916 136,412 527,603 340,500 65,818 78,026 1,125,270	0.7 5.0 5.7 21.4 115.4 3.1 3.3	2,832 4,573 4,782 9,801 5,935 860 523 13,456	149,604 1161,426 167,408 374,646 232,930 32,298 24,111 602,712	164,575 179,823 182,101 394,173 273,415 41,012 26,816 644,803	135,831 144,770 153,883 355,790 197,700 25,414 21,733 561,902	8.5 9.2 9.6 21.4 13.3 1.8 1.4	88.8 55.0 52.5 39.7 36.2 28.5 21.8	<10 ⁻⁴
Unknown Home School/sports Street Other property	36,784 26,586 19,195 9,485 10,708	1,620,207 1,019,068 862,116 440,176 464,533	1,930,530 1,204,764 943,893 621,330 581,671	1,332,996 854,439 786,137 307,580 368,832	36.8 23.1 19.6 10.0 10.5	22,069 11,136 12,680 6,814 7,045	993,134 449,374 585,871 312,618 312,590	1,195,334 540,076 641,457 438,165 399,683	806,266 371,286 533,707 219,481 242,570	37.4 16.9 22.1 11.8	14,715 15,450 6,515 2,671 3,663	627,073 569,694 276,246 127,558 151,943	739,096 659,701 309,520 186,483 185,607	523,344 486,538 245,898 86,231 123,913	35.8 32.5 15.8 7.3 8.7	38.7 55.9 32.0 29.0	<10 ⁻⁴
Unknown	2,572	87,316	137,045	55,523	2.0	781	25,706	39,278	16,720	1.0	1,791	61,610	100,953	37,156	3.5	70.6	<10-4

TABLE 1: Continued.

			All					Male					Female			%	d
	и	N	M360	T62 %	%	и	N	% 560	T62 %	%	и	N	%56N	T62%	%	female	value
Head/neck	54,620	2,489,646	54,620 2,489,646 2,583,147 2,395,426 56.5	2,395,426	56.5	35,868		1,654,719 1,690,028 1,614,125 62.3 18,752	1,614,125	62.3	18,752	834,927	899,289	770,995	47.6	33.5	
Upper trunk	926,9	308,217	6,976 308,217 331,817 285,988	285,988	7.0	4,521	199,149	218,950	180,999	7.5	2,455	109,068	117,954	100,778	6.2	35.4	
Lower trunk	15,961	520,630	642,923	419,067	11.8	4,411	153,453	178,079	131,901	5.8	11,550	367,177	459,722	289,013	20.9	70.5	
Upper extremity	15,442	700,595	743,834	659,227	15.9	10,316	471,143	643,845	598,728	17.8	5,126	229,451	255,012	206,113	13.1	32.8	
Lower extremity	7,197	300,192	341,511	263,515	8.9	3,851	149,766	172,241	130,043	5.6	3,346	150,426	179,472	125,666	8.6	50.1	
Disposition from ED																	
Release	94,251	4,110,626	94,251 4,110,626 4,186,797 3,997,177	3,997,177	95.0	53,657	2,441,560	2,498,849	2,358,485 93.4 40,594	93.4		1,669,065	1,687,753	1,638,350	97.3	40.6	<10-4
Admit	6,712	218,603	218,603 332,052 142,432	142,432	5.0	5,211	172,298	255,374	115,010	9.9	1,501	46,305	77,020	27,617	2.7	21.2	
Hospital size																	
Small	6,408	779,276	779,276 1,096,361 538,927	538,927	17.7	3,647	443,477	634,291	301,487	16.7	2,761	335,799	464,104	236,434	19.2	43.1	0.012
Medium	996'9	887,698	887,698 1,234,288 619,568	619,568	20.1	4,260	539,925	756,106	373,409	20.3	2,706	347,773	486,363	241,166	19.8	39.2	
Large	17,353	1,535,598	17,353 1,535,598 2,189,197 990,162	990,162	34.8	10,910	965,666	1,386,151	611,201	36.4	6,443	569,932	804,646	376,471	32.5	37.1	
Very large	41,098	937,644	41,098 937,644 1,302,590 653,498	653,498	21.3	24,827	566,153	802,816	384,821	21.3	16,271	371,490	504,766	265,878	21.2	39.6	
Children's	30,943	266,381	30,943 266,381 479,878 144,536	144,536	0.9	16,104	138,716	253,982	74,045	5.2	14,839	127,665	227,495	69,581	7.3	47.9	

n =actual number of ED visits; N =estimated number of ED visits; 1.95% =lower 95% confidence interval of the estimate; 1.95% =upper 95% confidence interval of the estimate. Those categories comprising less than 1% of the variables as described in the appendix are excluded; thus, the percentage sum will not add up to 100.

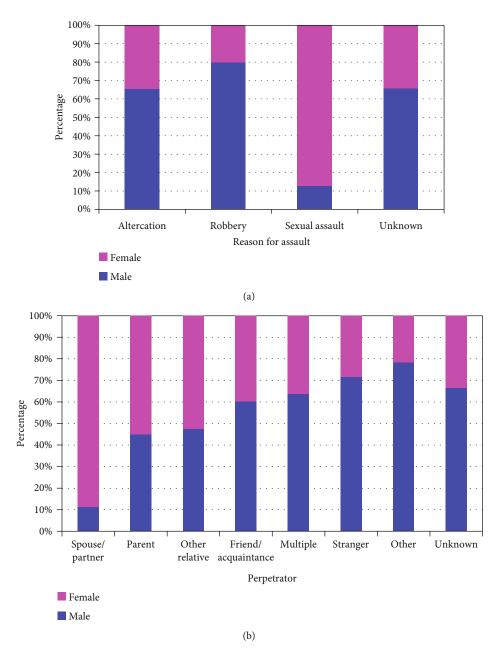


FIGURE 1: Differences by gender in child and adolescent assault victims. (a) By reason for assault ($p < 10^{-4}$). (b) By perpetrator of assault ($p < 10^{-4}$).

lacerations and 79.1% of the punctures were in those 15 to 19 years old). These diagnoses differed markedly by age group (Figure 3(a)) and gender (Figure 3(b)). Strain/sprains were most common in females, and fractures in males.

3.4. Changes Over Time. There was a gradual decrease in the number of assaults from 2005 to 2015 for all age groups except for those < 4 years old (Figure 4).

4. Discussion

While there are some similar studies, none have focused on all injured patients who present to the emergency department

across a whole country. Most focus on a certain city or county [3, 5, 6], only patients admitted to the hospital [2], or a certain type/cause of injury [7–12]. This study is more expansive, studying all assault victims in children and adolescents, not just those admitted to the hospital or having a particular type of injury, involving a particular anatomic area or encompassing a particular geographic location. In this study, only 5.0% of the patients were admitted to the hospital.

4.1. Literature Comparison. The study most similar to the present one is that of Barmparas et al. [2]. However, they used the National Trauma Data Bank, only studying patients admitted to the hospital. They found a slightly higher median

TABLE 2: Demographics by age group.

c 5.841 167178 119472 111042 128.627 41.7 5.287 183.668 170.3416 196.598 570 14.668 604.775 592.393 16.6889 607 35.440 1.738.397 1481.758 187.048 57.0 14.688 604.775 592.393 16.6889 607 35.440 1.758.397 1481.758 187.048 57.0 14.688 604.775 592.393 16.6889 607 35.440 1.758.397 1481.759 18.0 14.247 17.0 14.0 14.0 14.0 14.0 14.0 14.0 14.0 14		и	N	≤4 years L95%		%	и	N 52	5 to 9 years L95%	, U95%	%	и	10 t N	10 to 14 years L95%	rs U95%	%	и	15 to N	15 to 19 years N L95%	M62%	%	p value
4,17 19.79 114.02 118.64 118.65 14.7 2.87 18.86 170.316 18.658 170.316 18.658 170.316 18.658 170.316 18.658 170.316 18.658 170.316 18.658 170.316 18.658 170.316 18.658 170.316 18.658 170.316 18.658 170.316 18.658 170.316 18.658 170.316 18.658 170.316 170.316 18.658 170.316 170.31	Sex																					
5,841 167,118 188,230 175,815 83,3 4,466 138,475 125,482 151,766 430 105,73 391,041 378,887 401,393 392,3219 1,055,145 999,166 2,700 856,23 35,112 13,722 5,46 127,75 106,866 1,341 138,418 41,5 5,437 30,890 167,741 599,140 31,275 106,873 34,723 34,723 34,723 34,723 34,933 31,723 34,7	Male	4,176	119,739	111,042	128,627	41.7	5,287	183,605	170,316	196,598		14,658	604,775	592,393		60.7	35,430	1,738,937	1,681,758	1,794,918	62.2	<10-4
3.65 120.74 87.64 153.72 54.6 27.25 10.668 6 13.41 184.18 41.5 5943 20.89 196.76 4 645.82 3.8 14.79 64.86 20.0 14.8 14.27 20.8 14.79 16.8 17.2 17.2 17.2 17.2 17.2 17.2 17.2 17.2	Female	5,841	167,118			58.3	4,461	138,475	125,482	151,764		10,373	391,041	378,897		39.3	22,319	1,055,145	999,164	1,112,324	37.8	
3.652 1974 8.576 18.272 8.65 3.725 90,006 61,41 18,418 415 5,943 30,089 19676 46,421 29 96,890 16,505 17 18,09 18,005 18,005 18,005 18,005 18,005 18,005 18,005 18,005 19,005 18,	Race																					
279 85623 9954 87272 265 375 94703 6470 120523 353 10,987 315,873 344,675 91,975 99 1 22427 79,687 91 10,98	White	3,652	120,734	85,764	153,782		2,725	106,686	61,341	158,418	41.5	5,943	320,890				14,749	968,890	647,627	1,316,096	43.7	<10-4
1184 40319 23123 67443 184 1,270 56,185 2840 98,799 219 3187 164481 78689 344750 204 720 340,248 21945 2184 2	Black	2,790	58,623	39,541	82,732			90,703	64,761	120,523	35.3	10,987	315,873	241,475		39.1	22,432	796,637	616,366	996,827	35.9	
Sign 1731 1302 2.583 2.146 0.5 88 3.515 1800 6.787 0.0 154 5.627 3.067 10.976 0.7 3.067 10.976	Amerindian	1,184	40,819	23,123	67,443	18.4	1,270	56,185	28,640	98,799	21.9	3,187	164,481	78,689		20.4	7,220	430,248	217,945	769,792	19.4	
glay 12 338 17315 13024 22,893 6.0 1,187 0.1 1,687 0.2 1,687 0.2 1,687 0.2 1,687 0.2 1,687 0.2 1,687 0.2 1,687 0.2 1,687 0.2 1,687 0.1 1,688 1,687 0.1 1,688 0.3 1,686 0.3 1,686 0.3 1,586 0.3 1,586 0.3 1,587 0.3 1,587 0.3 1,587 0.3 1,587 0.3 1,587 0.3 1,588 1,589 0.3 0.3 0.3 1,589 0.3	Asian	28	1,093	553	2,146	0.5	88	3,515	1,800	6,787	0.0	154	5,627	3,067	10,976	0.7	398	21,369	10,864	41,904	1.0	
1338 17315 1304 22,893 60 1,187 41,909 36,694 64,541 128 7,685 41,985 133,658 310 17835 87,578 81,928 1444 117669 9,061 13216 41,01 1,188 61,035 10,370 250 31,41 81,755 65,607 115,016 90 39,61 135,104 135,104 135,016 31,41 135,016 30,041 135,018 10,375 13,41 13,506 9,061 13,116 10,188 10,139 10,188 17,139 44 578 20,045 13,488 13,516 20,047 13,481 13,481 11,790 14,416 11,700 14,410 14,410	Reason																					
glay 12 338 172 631 0.1 18 616 226 1,675 0.2 4182 11,950 0.7 101 48 616 226 1,675 0.2 11,86 0.0 13,961 62,953 11,81 0.3 18 16,20 20,861 11,81 0.7 10,10 62,07 13,118 19,910 26,967 11,910 0.0 10,10 62,07 20,148 20 0.0 10,10 10,27 20,21 10,10 10,27 20 10,10 10,27 20 10,10 10,27 20 10,10 10,27 20 10,10 10,27 20 10,10 10,27 20 10,10 10,27 20 10,10 10,27 20 10,10 10,20 20 10,10 10,20 10,20 20 10,10 10,20 20 10,10 10,20 20 10,10 10,20 20 10,10 10,20 20 10,10 10,10 10,20	Altercation	533	17,315	13,024	22,893	0.9	1,187	41,309	36,694	46,424	12.8	7,681	308,946	281,813		31.0	17,853	87,678	819,286	936,367	3.1	<10-4
Hard	Robbery/burglary	12	338	172	631	0.1	18	616	226	1,675	0.2	198	7,055	4,182	11,950	0.7	1,016	45,392	33,811	60,916	1.6	
March Marc	Sexual assault	4,441	117,669	190,66	137,216		3,240	80,435	61,598	102,770	25.0	3,143	89,755	69,607	115,016	9.0	3,986	165,624	125,743	216,837	5.9	
Here 17 889 430 1,549 0.3 6 68 32 161 0.0 157 5,368 398 7,170 0.5 30,07 162,033 1,590,230 regiver 302 4,865 80,872 9,2520 302 1,616 35,295 43,589 64,658 165 1,829 66,299 57,956 75,681 67 1,867 87,334 76,005 regiver 302 7,818 61,97 9,889 2.7 73 2,302 1,546 83,949 0.157 83,989 7,170 0.5 30,07 162,203 144,666 1,905 4,9724 44,696 58,008 18 3,504 19,545 10,596 1,546 81,267 73,959 91,116 8.2 2,595 14,378 11,339 11,330 regiver 302 7,818 61,97 9,889 2.7 73 2,302 1,546 83,949 0.0 35 14,268 838 regiver 302 7,818 61,97 9,889 2.7 73 2,302 1,546 83,949 0.0 35 14,269 37,899 56. 2,499 0.0 35 14,378 11,339 11,339 11,349 11,348 11,349 11,488 2,381 0.0 496 1,489 1,	Other specified	957	23,181	19,910	26,967	8.1	490	14,286	11,888	17,139	4.4	578	20,045	16,530	24,198	2.0	651	29,555	22,913	38,282	1.1	
regiver 302 7,818 6,197 9,886 55,188 17,10 6,187 6,588 16,187 6,187 6,290 57,966 75,681 67 1,877 6,108 7,187 6,197 9,886 55,188 17,187 6,197 9,886 55,188 17,187 6,197 9,886 57,187 6,197 9,188 57,187 6,197 9,198 6,197 6,197 6,197 6,197 6,197 6,197 6,197 6,197 6,197 6,197 6,198 6,197 6	Unknown	4,075	128,333	111,970	145,105	44.7	4,812	185,502	166,752	203,608	57.6	13,395	568,737	537,337		57.1	34,078	1,669,333	1,590,230	1,746,711	59.7	
regiver 17 809 430 1.549 0.3 6 68 32 161 0.0 157 5.368 3,983 7,170 0.5 5.00 162,203 144,466 2,983 8,684 6,854 8,854 8,854 8,854 8,872 1.245 8,742 8,745 8,744 8,745 8,74	Perpetrator																					
Figure 1,955 83.86 80.872 91.250 30.2 1,616 532.95 43.589 64.658 16.5 1,829 66.290 57.956 75.681 6.7 1,867 87.334 76.052 regive 1,955 93.86 61.97 49.96 53.68 17.3 2,115 63.76 80.894 69.877 19.8 2,046 81.267 72.395 91.116 82 2.955 11.43.39 11.33.90 11.33.90 11.33.90 11.33.90 11.33.90 11.33.90 11.33.90 11.34.9	Spouse/partner	17	808	430	1,549	0.3	9	89	32	161	0.0	157	5,368	3,983	7,170	0.5	3,007	162,203	144,465	181,908	5.8	<10-4
regiver 1905 49,724 44,696 55,168 17.3 2,115 63,766 58,054 69,877 19,8 2,046 81,267 72,395 91,116 8.2 2,490 10. 35 1,468 838 12,302 15,48 61,97 9,869 2.7 73 2,502 15,46 3,447 0.7 44 20 996 2,490 10. 35 1,468 838 14,362 11,324 832 1,364 83,81 11,349 11,34	Parent	2,933	86,586	80,872	92,520	30.2	1,616	53,295	43,589	64,658	16.5	1,829	66,290	57,956	75,681	6.7	1,867	87,334	76,005	100,315	3.1	
regiver 302 7,818 6,197 9,869 2,7 73 2,302 1,546 3,447 0,7 4 20 996 2,490 0, 35 1,468 838 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Other relative	1,905	49,724	44,696	55,168	17.3	2,115	63,766	58,054	69,877	19.8	2,046	81,267	72,395	91,116	8.2	2,595	124,378	112,330	137,758	4.5	
tune (2.5) (2.3864 4)946 (58,008 18.8 3,504 119,545 105,799 133,956 37.1 8,756 360,802 344,250 377,809 367,809 367,809 367,809 354,037 (1.54)	Unrelated caregiver	302	7,818	6,197	698'6	2.7	73	2,302	1,546	3,447	0.7	44	20	966	2,490	0.0	35	1,468	838	2,235	0.1	
629 15.486 13.168 18.18 5.4 737 2.2615 20.361 25.097 7.0 4.080 150.827 120,791 186,714 15.1 9,823 453,753 381,144 43 1.234 832 1,807 0.4 55 2.064 1,450 2,932 0.6 415 12.433 10.058 15.335 1.2 2.352 97.008 77.402 2.179 6.9713 63.258 76.598 2.43 1,546 55.083 49,001 61.727 17.1 6,569 286,770 25.667 315.571 28 28,199 1,383.384 1,316,949 2.542 84.218 69,254 100.925 29.4 2.718 74,272 88,054 97.7 17.1 6,569 286,770 25.667 315.571 28 28,199 1,383.384 1,316,949 2.542 84.218 69,254 100.925 29.4 2.718 74,272 88,054 97,74 135.18 29,58 19,560 11,022 231,027 19,4 10,55 52.617 426.88 2.543 84.10 11.254 10.928 15.266 6.9 2,546 95,004 70,74 123.518 29,58 19,560 11,022 231,027 19,4 10,55 52.617 426.88 2.544 11.2 37.25 2.588 6.168 1.3 260 9,457 7.216 12.339 2.9 1,493 71,395 60.445 97,889 77,989 77,989 77,989 77,989 77,989 77,989 77,989 77,989 77,989 77,989 77,989 77,989 78,989 78,989 78,989 78,999 7	Friend/acquaintance	1,955	53,864	49,946	58,008	18.8	3,504	119,545	105,799	133,956	37.1	8,756	360,802	344,250	377,809	36.2	8,436	408,563	354,037	470,000	14.6	
ted 37 1,234 822 1,807 0.4 55 2,064 1,450 2,932 0.6 415 12,433 10,058 15,335 1.2 2,352 97,008 77,402 1,148 2,381 0.6 95 3,297 2,513 4,317 1.0 728 30,247 26,688 34,256 3.0 14,23 75,552 68,181 2,199 69,713 63,258 76,598 24,3 1,546 55,083 49,001 61,727 17.1 6,905 286,770 259,607 315,571 28.8 28,199 1,383,384 1,316,949 5,740 5	Multiple	629	15,486	13,168	18,188	5.4	737	22.615	20,361	25.097	7.0	4.080	150.827	120,791	186.714	15.1	9.823	453,753	381,141	537,342	16.2	
ied 37 1649 1,148 2,381 0.6 95 3.297 2,513 4,317 1.0 728 30,247 26,688 34,256 3.0 1,423 75,552 68,181 2,179 69,713 63,258 76,598 24,3 1,546 55,083 49,001 61,727 17.1 6,969 286,770 259,607 315,571 28.8 28,199 1,383,384 1,316,949 2,542 84,218 69,254 100,925 29.4 2,218 74,272 58,054 93,428 23.1 7,268 270,454 220,773 327,222 27.2 24,653 1,187,179 955,647 2,542 84,218 69,254 100,925 29.4 2,218 74,272 58,054 93,428 23.1 7,268 13,660 161,022 23,1027 194 10,356 522,617 426,688 2,134 112 3,725 2,238 6,168 1.3 260 9,457 7,216 12,339 2.9 1,690 77,337 51,882 13,722 7,399 370,264 314,916 3,043 93,972 78,950 110,364 32.8 3,607 131,804 115,013 149,259 40.9 13,852 567,114 542,914 591,908 77, 7,974 365,657 104,304 4,317 111,495 91,430 132,970 38,9 3,251 84,128 66,398 104,639 26,1 13,218 78,606 4 5,097 13,804 115,013 149,229 11,794 13,013 14,428 184,055 12,693 14,401 17,168 33,846 27,971 40,766 11.8 816 33,390 27,674 40,142 10.4 1,501 56,076 11,799 12,999 51,408 11,142 23,456 14,690 31,245 23,736 12,495 14,401 91,745 23,456 14,690 31,245 23,456 14,690 31,245 23,456 14,690 31,245 23,456 14,690 31,245 23,456 14,690 31,245 23,756 14,690 31,245 23,756 14,690 31,245 23,456 14,690 31,245 23,756 31,247 31,248 31,244 31,7	Stranger	43	1.234	832	1.807	0.4	55	2.064	1.450	2.932	9.0	415	12,433	10,058	15,335	1.2	2,352	800.26	77.402	121,552		
2,542 84,218 69,254 100,925 29,4 2,218 74,272 58,054 93,428 23.1 7,268 270,454 220,273 327,222 27.2 24,653 1,187,179 955,647 10,928 15,5749 182,687 59,6 4,411 131,254 109,987 153,640 40.7 5,358 193,660 161,022 231,027 19.4 10,356 522,617 426,688 s 671 19,845 15,262 25,676 6.9 2,546 95,004 70,747 123,518 29,5 8,579 377,087 347,935 407,185 37.9 7,399 370,264 314,916 112 3,725 2,238 6,168 1.3 260 9,487 7,216 12,359 2.9 1,690 77,337 51,882 113,721 78 73.66 348,235 243,888 100 3.043 93,972 78,950 110,364 2.8 313 12,168 8,698 16,978 3.8 2,134 77,150 60,645 97,689 77 7,974 365,657 289,488 101,002 15,635 46 588 21,683 19,491 24,130 6.7 1,501 65,076 59,748 70,901 6.5 4,382 206,583 189,173 111,495 91,430 132,970 38,9 3,251 84,128 66,398 104,639 26.1 3,213 98,207 78,967 11,495 91,497 19,795 5.8 1,036 37,670 33,956 41,752 11.7 4,438 184,055 172,693 64,013 56,064 72,993 64,013 56,049 17,467 13,499 17,468 38,993 36,299 8.3 207 6,019 2,868 12,408 12,409 2,868 12,409	Other specified	37	1,649	1.148	2,381	90	95	3 2 9 7	2,513	4.317	10	728	30.247	26.688	34.256	3.0	1.423	75,552	68.181	83,549		
2,542 84,218 69,254 100,925 29,4 2,218 74,272 58,054 93,428 23.1 7,268 270,454 220,273 377,222 77. 24,653 1,187,179 955,647 6,445 170,958 155,749 182,687 59,6 4,411 131,254 109,987 153,640 40.7 5,358 193,660 161,022 231,027 19,4 10,356 522,617 426,688 112 3,725 2,238 6,168 1.3 260 9,457 7,216 123,518 29,5 8,579 377,087 347,935 407,185 37,9 7,399 370,264 314,916 and the standard of the standard o	Unknown	2.179	69.713	63.258	76.598	24.3	1.546	55.083	49.001	61.727	17.1	696.9	286.770	259.607	315.571		28.199	1.383.384	1.316.949	1.449.957	,	
2.542 84,218 69,254 100,925 25,676 69 2,546 95,004 70,747 123,518 29.5 8,579 377,087 377,222 231,022 19.4 10,356 522,617 426,688 67.1 19,845 15,262 25,676 69 2,546 95,004 70,747 123,518 29.5 8,579 377,087 347,935 40,7185 37.9 7,399 370,264 314,916 11.2 3,725 2,238 6,168 1.3 260 9,457 7,216 12,339 2.9 1,690 77,337 51,882 113,721 7.8 7,366 348,235 243,383 140 11.2 3,725 2,238 6,168 1.3 260 9,457 7,216 12,339 2.9 1,690 77,337 51,882 113,721 7.8 7,366 348,235 243,383 140 11.2 3,043 93,972 78,950 110,364 2.8 313 12,168 8,698 16,978 3.8 2,134 77,150 60,645 97,689 7.7 7,974 365,657 28,948 140 11.495 91,400 11.495 91,4	Incident locale	î				i				i	!								1			
6,445 1,0568 155,749 182,687 59.6 4,411 131,254 109,987 135,640 40.7 5,358 193,660 161,022 231,027 19.4 10,356 522,017 426,688 618 13,725 25,676 6.9 2,546 95,004 70,747 123,518 29.5 8,579 377,087 347,935 407,185 37.9 7,399 370,264 314,916 112 3,725 2,238 6,168 1.3 260 9,457 7,216 12,339 2.9 1,690 77,337 51,882 113,721 7.8 7,366 348,235 243,383 2,48 8,107 6,053 10,844 2.8 313 12,168 8,698 16,978 3.8 2,134 77,150 60,645 97,689 7.7 7,974 365,657 289,488 3,043 93,972 78,950 110,364 32.8 3,607 131,804 115,013 149,259 40.9 13,852 567,114 542,914 591,908 57.0 34,026 1,693,398 1,643,043 438 111,495 91,490 32,570 38.9 3,251 84,128 66,398 104,639 26.1 3,213 98,207 78,967 121,488 99 5,136 225,432 145,583 17,168 33,846 27,971 40,766 11.8 816 33,390 27,674 40,142 10.4 1,501 64,013 56,064 72,993 6.4 3,811 168,324 145,583 1.142 23,456 14,050 38,299 8.3 207 6,019 2,868 12,462 1.9 780 21,665 11,729 39,720 2.2 4,408 16,133 106,643 1.142 23,456 14,050 38,299 8.3 207 535 65,156 41,205 98,196 20.2 14,957 12,168 33,843 467,014 23,843 12,462 1.9 780 21,665 11,729 39,720 2.2 4,408 16,133 106,643 106,643 11,42 23,456 14,050 38,299 8.3 207 54,126 12,000 21,405 18,120 39,720 2.2 4,408 16,133 106,643 106,643 11,42 23,456 14,050 38,299 8.3 207 54,126 12,000 21,495 18,1770 120,493 264,688 18,3 3,843 467,014 32,736 41,205 18,1750 120,493 264,688 18,3 3,843 467,014 32,781 41,120 23,456 14,050 38,299 8.3 207 54,120 34,	IInbrown	2 542	84718	69 254	100 925	70.4	2 2 18	74 2 7 2	58.054	93 478	23.1	7 268	270.454	220 273		777	24653	1 187 179	955 647	1 431 235	7 CA	/10-4
671 19,845 15,262 25,676 6.9 2,546 95,004 70,747 123,518 29.5 8,579 377,087 347,935 407,185 37.9 7,399 370,264 314,916 112 3,725 2,238 6,168 1.3 260 9,457 7,216 12,339 2.9 1,690 77,337 51,882 113,721 7.8 7,366 348,235 243,383 2,48 8,107 6,053 10,844 2.8 313 12,168 8,698 16,978 377,087 77,150 60,645 97,689 7.7 7,974 365,657 289,488 3,043 93,972 78,950 110,364 32.8 3,607 131,804 115,013 149,259 40.9 13,852 567,114 542,914 591,908 57.0 34,026 1,693,398 1,643,043 4,317 111,495 91,430 132,970 38.9 3,251 84,128 66,398 104,639 26.1 3,213 98,207 78,967 121,488 9.9 5,136 225,432 184,144 586 116,560 13,971 19,795 5.8 1,036 37,670 33,956 41,752 11.7 4,438 184,055 172,673 195,975 18.5 9,374 461,971 432,556 17,168 33,846 27,971 40,766 11.8 816 33,390 27,674 40,142 10.4 1,501 64,013 56,064 72,993 6.4 3,811 168,324 145,583 1,142 23,456 14,050 38,299 8.3 207 6,019 2,868 12,462 1.9 780 11,729 39,720 2.2 4,408 161,133 106,643 12,814 12,142 23,456 14,050 38,299 8.3 207 6,019 2,868 12,465 1.9 780 14,050 11,729 39,720 2.2 4,408 161,133 106,643 12,814 12,142 23,456 14,610 91,745 22.7 535 65,156 41,205 98,196 20.2 14,95 18,128 65,156 41,205 98,196 20.2 14,95 18,128 65,156 41,205 98,196 20.2 14,95 18,128 65,156 41,205 98,196 20.2 14,95 18,128 65,156 41,205 18,128 61,038 12,462 1.9 780 11,729 39,720 2.2 4,408 161,133 106,643 11,142 23,456 14,610 91,745 22.7 535 65,156 41,205 98,196 20.2 14,95 18,128 18,128 65,156 41,205 98,196 20.2 14,95 18,128 18,128 65,164 11,729 39,720 2.2 4,408 161,133 106,643 11,142 23,456 14,610 91,745 22,75 535 65,156 41,205 20,1440 11,14	Unkliown	2,342	170.050	155,740	162 667		2,210	121 254	100,004	152 640		007,	102 660			7. 7.	10.25	1,10/,1/9	755,047	1,451,255		
6/1 19,845 15,262 25,676 6.9 2,546 95,004 70,747 123,518 29; 8,579 377,087 347,535 407,185 57.9 7,599 370,264 314,916 112 3,725 2,238 6,168 1.3 260 9,457 7,216 12,339 2.9 1,690 77,337 51,882 113,721 7.8 7,366 348,235 243,383 248 8,107 6,053 10,844 2.8 313 12,168 8,698 16,978 3.8 2,134 77,150 60,645 97,689 7.7 7,974 365,657 289,488 3,043 93,972 78,950 110,364 32.8 3,607 131,804 115,013 149,259 40.9 13,852 567,114 542,914 591,908 57.0 34,026 1,693,398 1,643,043 4,317 111,495 91,430 132,970 38,9 3,251 84,128 66,398 104,639 26.1 3,213 98,207 78,967 121,488 9.9 5,136 225,432 184,144 586 16,567 13,971 19,795 5.8 1,036 37,670 33,956 41,752 11.7 4,438 184,055 172,673 195,975 18.5 9,374 461,971 432,556 17,168 33,846 27,971 40,766 11.8 816 33,390 27,674 40,142 10.4 1,501 64,013 56,064 72,993 6.4 3,811 168,324 145,583 1,142 23,456 14,050 38,299 8.3 207 6,019 2,868 12,462 1.9 780 21,665 11,729 39,720 2.2 4,408 161,133 106,643 1,142 23,456 44,610 91,745 22.7 535 65,156 41,205 98,196 20.2 1,495 18,1770 120,493 26,488 3,844 46,101 12,142 23,456 14,610 91,745 22.7 535 65,156 41,205 98,196 20.2 1,495 18,1770 120,493 26,488 3,844 46,101 12,142 23,456 14,610 91,745 22.7 535 65,156 41,205 98,196 20.2 1,495 18,1770 120,493 26,488 3,844 46,101 12,142 23,456 14,610 91,745 22.7 535 65,156 41,205 98,196 20.2 1,495 18,1770 120,493 26,488 3,844 46,101 12,142 23,414 46,101 12,142 23,414 52,144	nome	0,445	1/0,938	155,/49	102,007		4,411	151,254	109,901	155,040		0,000	193,000				00001	777,017	420,000	654,504	10.7	
112 3,725 2,238 6,168 1.3 260 9,457 7,216 12,339 2.9 1,690 77,337 51,882 113,721 7.8 7,366 348,235 243,383 2,48 8,107 6,653 10,844 2.8 313 12,168 8,698 16,978 3.8 2,134 77,150 60,645 97,689 7.7 7,974 365,657 289,488 3,043 93,972 78,950 110,364 32.8 3,607 131,804 115,013 149,259 40.9 13,852 567,114 542,914 591,908 57.0 34,026 1,693,398 1,643,043 4,317 111,495 91,430 132,970 38.9 3,251 84,128 66,398 104,639 26.1 3,213 98,207 78,967 121,488 9.9 5,136 225,432 184,144 58 11,1495 91,430 132,970 38.9 3,251 84,128 66,398 104,639 26.1 3,213 98,207 78,967 121,488 9.9 5,136 225,432 184,144 58 11,1495 91,430 132,970 38,93,557 41,752 11.7 4,438 184,055 172,673 195,975 18.5 9,374 461,971 432,556 17,168 33,846 27,971 40,766 11.8 816 33,390 27,674 40,142 10.4 1,501 64,013 56,064 72,993 6.4 3,811 168,324 145,583 1,142 23,456 14,050 38,299 8.3 207 6,019 2,868 12,462 1.9 780 21,665 11,729 39,720 2.2 4,408 161,133 106,643 1,142 23,456 14,050 38,299 8.3 207 6,019 2,868 12,465 183 181,770 120,493 264,686 183 3,843 467,014 325,814	School/sports	6/1	19,845	15,262	72,676	6.9	2,546	95,004	/0,/4/	123,518	29.5	8,5/9	3//,08/	347,935			665.	3/0,264	314,916	433,394	13.3	
248 8,107 6,053 10,844 2.8 313 12,168 8,698 16,978 3.8 2,134 77,150 60,645 97,689 7.7 7,974 365,657 289,488 3,043 93,972 78,950 110,364 32.8 3,607 131,804 115,013 149,259 40.9 13,852 567,114 542,914 591,908 57.0 34,026 1,693,398 1,643,043 4,317 111,495 91,430 132,970 38.9 3,251 84,128 66,398 104,639 26.1 3,213 98,207 78,967 121,488 9.9 5,136 225,432 184,144 58 116,509 13,971 19,795 5.8 1,036 37,670 33,956 41,752 11.7 4,438 184,055 172,673 195,975 18.5 9,374 461,971 432,556 17,168 33,846 27,971 40,766 11.8 816 33,390 27,674 40,142 10.4 1,501 64,013 56,064 72,993 6.4 3,811 168,324 145,583 1,142 23,456 14,050 38,299 8.3 207 6,019 2,868 12,462 1.9 780 21,665 11,729 39,720 2.2 4,408 161,133 106,643 35,84 65,216 44,610 91,745 22.7 535 65,156 41,205 98,196 20.2 1,495 18,1770 120,493 264,686 18.3 3,843 467,014 325,814	Street	112	3,725	2,238	6,168	1.3	260	9,457	7,216	12,339	5.9	1,690	77,337	51,882	113,721	7.8	7,366	348,235	243,383	489,560	12.5	
3,043 93,972 78,950 110,364 32.8 3,607 131,804 115,013 149,259 40.9 13,852 567,114 542,914 591,908 57.0 34,026 1,693,398 1,643,043 4,317 111,495 91,430 132,970 38.9 3,251 84,128 66,398 104,639 26.1 3,213 98,207 78,967 121,488 9.9 5,136 225,432 184,144 586 16,650 13,971 19,795 5.8 1,036 37,670 33,956 41,752 11.7 4,438 184,055 172,673 195,975 18.5 9,374 461,971 432,556 17,168 33,846 27,971 40,766 11.8 816 33,390 27,674 40,142 10.4 1,501 64,013 56,064 72,993 6.4 3,811 168,324 145,583 1,142 23,456 14,050 38,299 8.3 207 6,019 2,868 12,462 1.9 780 21,665 11,729 39,720 2.2 4,408 161,133 106,643 35,814 652.16 44,610 91,745 22.7 535 65,156 41,205 98,196 20.2 1,495 18,770 120,493 264,686 18,3 3,844 467014 325,814	Other property	248	8,107	6,053	10,844	2.8	313	12,168	8,698	16,978	3.8	2,134	77,150	60,645	689,'26	7.7	7,974	365,657	289,488	458,264	13.1	
3,043 93,972 78,950 110,364 32.8 3,607 131,804 115,013 149,259 40.9 13,852 567,114 542,914 591,908 57.0 34,026 1,693,398 1,643,043 458 13,063 10,902 15,635 4.6 588 21,683 19,491 24,130 6.7 1,501 65,076 59,748 70,901 6.5 4,382 206,583 189,173 4,317 111,495 91,430 132,970 38.9 3,251 84,128 66,398 104,639 26.1 3,213 98,207 78,967 121,488 9.9 5,136 225,432 184,144 586 16,650 13,971 19,795 5.8 1,036 37,670 33,956 41,752 11.7 4,438 184,055 172,673 195,975 18.5 9,374 461,971 432,556 17,168 33,846 27,971 40,766 11.8 816 33,390 27,674 40,142 10.4 1,501 64,013 56,064 72,993 6.4 3,811 168,324 145,583 1,142 23,456 14,050 38,299 8.3 207 6,019 2,868 12,462 1.9 780 21,665 11,729 39,720 2.2 4,408 161,133 106,643 53,84 65,216 44,610 91,745 22.7 535 65,156 41,205 98,196 20.2 1,495 181,770 120,493 264,686 18.3 3,843 467,014 325,814	Anatomic location																					•
458 13,063 10,902 15,635 4.6 588 21,683 19,491 24,130 6.7 1,501 65,076 59,748 70,901 6.5 4,382 206,583 189,173 4,317 111,495 91,430 132,970 38.9 3,251 84,128 66,398 104,639 26.1 3,213 98,207 78,967 121,488 9.9 5,136 225,432 184,144 586 16,650 13,971 19,795 5.8 1,036 37,670 33,956 41,752 11.7 4,438 184,055 172,673 195,975 18.5 9,374 461,971 432,556 17,168 33,846 27,971 40,766 11.8 816 33,390 27,674 40,142 10.4 1,501 64,013 56,064 72,993 6.4 3,811 168,324 145,583 8,736 259,819 244,976 269,225 91.7 9,409 312,693 306,250 315,844 98.1 23,984 963,933 945,877 973,868 97.8 52,093 2,573,306 2,493,535 1,142 23,456 14,050 38,299 8.3 207 6,019 2,868 12,462 1.9 780 21,665 11,729 39,720 2.2 4,408 161,133 106,643 1,142 23,456 44,610 91,745 22.7 535 65,156 41,205 98,196 20.2 1,495 181,770 120,493 264,686 18.3 3,843 467,014 325,814	Head/neck	3,043	93,972	78,950	110,364		3,607	131,804	115,013	149,259		13,852	567,114	542,914		57.0	34,026	1,693,398	1,643,043	1,742,799	9.09	$< 10^{-4}$
4,317 111,495 91,430 132,970 38.9 3,251 84,128 66,398 104,639 26.1 3,213 98,207 78,967 121,488 9.9 5,136 225,432 184,144 586 16,650 13,971 19,795 5.8 1,036 37,670 33,956 41,752 11.7 4,438 184,055 172,673 195,975 18.5 9,374 461,971 432,556 17,168 33,846 27,971 40,766 11.8 816 33,390 27,674 40,142 10.4 1,501 64,013 56,064 72,993 6.4 3,811 168,324 145,583 8,736 259,819 244,976 269,225 91.7 9,409 312,693 306,250 315,844 98.1 23,984 963,933 945,877 973,868 97.8 52,093 2,573,306 2,493,535 1,142 23,456 14,050 38,299 8.3 207 6,019 2,868 12,462 1.9 780 21,665 11,729 39,720 2.2 4,408 161,133 106,643	Upper trunk	458	13,063	10,902	15,635	4.6	588	21,683	19,491	24,130	6.7	1,501	920,59	59,748	70,901	6.5	4,382	206,583	189,173	225,220	7.4	
586 16,650 13,971 19,795 5.8 1,036 37,670 33,956 41,752 11.7 4,438 184,055 172,673 195,975 18.5 9,374 461,971 432,556 17,168 33,846 27,971 40,766 11.8 816 33,390 27,674 40,142 10.4 1,501 64,013 56,064 72,993 6.4 3,811 168,324 145,583 8,736 259,819 244,976 269,225 91.7 9,409 312,693 306,250 315,844 98.1 23,984 963,933 945,877 973,868 97.8 52,093 2,573,306 2,493,535 1,142 23,456 14,050 38,299 8.3 207 6,019 2,868 12,462 1.9 780 21,665 11,729 39,720 2.2 4,408 161,133 106,643 534 652,16 44,010 91,745 22.7 535 65,156 41,205 98,196 20.2 14,95 181,770 120,493 264,686 183 3843 467014 325,814	Lower trunk	4,317	111,495		132,970			84,128	866,398	104,639	26.1	3,213	98,207	78,967	121,488	6.6	5,136	225,432	184,144	274,958	8.1	
17,168 33,846 27,671 40,162 40,142 10.4 1,501 64,013 56,064 72,993 6.4 3,811 168,324 145,583 8,736 259,819 244,976 269,225 91.7 9,409 312,693 306,250 315,844 98.1 23,984 963,933 945,877 973,868 97.8 52,093 2,573,306 2,493,535 1,142 23,456 14,050 38,299 8.3 207 6,019 2,868 12,462 1.9 780 21,665 11,729 39,720 2.2 4,408 161,133 106,643 534 652,16 44,610 91,745 22.7 535 65,156 41,205 98,196 20.2 1,495 181,770 120,493 264,686 18.3 3,843 467,014 325,814	Upper extremity	286	16,650	13,971	19,795	5.8	1,036	37,670	33,956	41,752	11.7	4,438	184,055	172,673		18.5	9,374	461,971	432,556	492,913	16.5	
8,736 259,819 244,976 269,225 91.7 9,409 312,693 306,250 315,844 98.1 23,984 963,933 945,877 973,868 97.8 52,093 2,573,306 2,493,535 1,142 23,456 14,050 38,299 8.3 207 6,019 2,868 12,462 1.9 780 21,665 11,729 39,720 2.2 4,408 161,133 106,643 1,142 23,456 14,050 38,299 8.3 5.7 6,019 2,868 12,462 1.9 780 21,665 11,729 39,720 3.2 4,408 161,133 106,643 1,142 23,456 14,010 91,745 22.7 535 65,156 41,205 98,196 20.2 1,495 181,770 120,493 264,686 18.3 3,843 467,014 325,814	Lower extremity	17,168	33,846	27,971	40,766	11.8	816	33,390	27,674	40,142	10.4	1,501	64,013	56,064	72,993	6.4	3,811	168,324	145,583	194,483	6.0	
8,736 259,819 244,976 269,225 91.7 9,409 312,693 306,250 315,844 98.1 23,984 963,933 945,877 973,868 97.8 52,093 2,573,306 2,493,535 1,142 23,456 14,050 38,299 8.3 207 6,019 2,868 12,462 1.9 780 21,665 11,729 39,720 2.2 4,408 161,133 106,643 105,643 105,641 105,	Disposition from ED																					
1,142 23,456 14,050 38,299 8.3 207 6,019 2,868 12,462 1.9 780 21,665 11,729 39,720 2.2 4,408 161,133 106,643 16,643 134 65216 44,610 91,745 22,7 535 65,156 41,205 98,196 20,2 1,495 181,770 120,493 264,686 18,3 3,843 467,014 325,814	Release	8,736	259,819				9,409	312,693	306,250	315,844		23,984	963,933	945,877		8.76	52,093	2,573,306		2,627,796	94.1	0.0005
534 65.216 44.610 91.745 22.7 535 65.156 41.205 98.196 20.2 1.495 181.770 120.493 264.686 18.3 3.843 467.014 325.814	Admit	1,142	23,456	14,050	38,299	8.3	207	6,019	2,868	12,462	1.9	780	21,665	11,729	39,720	2.2	4,408	161,133	106,643	240,904	5.9	
534 65216 44610 91.745 22.7 535 65.156 41.205 98.196 20.2 1.495 181.770 120.493 264.686 18.3 3.843 467.014 325.814	Hospital size																					
	Small	534	65,216	44,610	91,745	22.7	535	65,156	41,205	98,196	20.2	1,495	181,770	120,493	264,686	18.3	3,843	467,014	325,814	653,305	16.7	<10-4

TABLE 2: Continued.

≤4 years	≤4 years	4 years					5 t	to 9 years	,-			10 t	10 to 14 years	s.			15 to	15 to 19 years		6	d
n N L'95% U95% n N			U95% % n N	N u %	n N	N		L95%	M95%	%	и	Z	T95%	M32%	%	и	N	<u>1</u> 95%	M32%	8	value
237 31,526 19,795 48,942 11.0 336 43,526	48,942 11.0 336	48,942 11.0 336	1	1	1	43,526	ı	27,030		13.5	1,504	193,179	67,816 13.5 1,504 193,179 125,372 285,597 19.4 4,889	285,597	19.4	4,889	619,468	440,380	844,993	22.2	
1,022 90,183 57,836 130,331 31.4 1,272 111,658	57,836 130,331 31.4 1,272	130,331 31.4 1,272	130,331 31.4 1,272	1,272		111,658	~	60,148	177,416	34.7	3,856	340,230	340,230 195,875	285,597	34.2	11,165	990,152	655,261	1,385,409	35.4	
2,039 46,684 27,684 74,963 16.3 2,557 58,396	27,684 74,963 16.3 2,557	74,963 16.3 2,557	16.3 2,557	2,557	-	58,396		34,021	94,491	18.1 8,722		199,260	199,260 121,488	521,604 20.0	20.0	27,610	629,400	455,469	845,832	22.5	
6,188 53,274 27,311 94,930 18.6 5,049 43,428	27,311 94,930 18.6 5,049	94,930 18.6 5,049	18.6 5,049	5,049		43,428		22,713	78,093	13.5	13.5 9,455	81,368	43,517	309,198 8.2	8.2	10,245	88,255	47,503	162,069	3.2	

n = actual number of ED visits; N = estimated number of ED visits; L95% = lower 95% confidence interval of the estimate; U95% = upper 95% confidence interval of the estimate. Those categories comprising less than 1% of the variables as described in the appendix are excluded; thus, the percentage sum will not add up to 100.

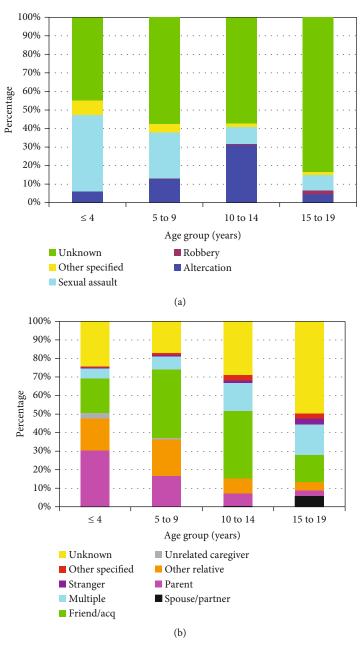


FIGURE 2: Differences by gender in child and adolescent assault victims. (a) By reason for assault $(p < 10^{-4})$. (b) By perpetrator of assault $(p < 10^{-4})$.

age (16 years vs. 15 years). Both studies noted that most of the assault victims were adolescents. They noted that with increasing age, a greater proportion of their patients were Black and fewer were White. While this trend was also seen in our data until age 15 years, in those aged 15 to 19, there was an increase in the proportion of White patients (Table 2). Amerindian and Asian races demonstrated a consistent proportion across all four age groups. Barmparas et al. [2] found that younger children were more likely to sustain a head injury, while we found that they were more likely to have lower trunk injury. This difference is likely due to the fact that they only studied those admitted to the hospital. In this study, all other age groups were more likely to have a head injury, especially concussions in those 15 to 19 years

of age. Additionally, the present study used different classifications for reason of injury. When known, a sexual assault was the most common reason for the assault, except for those 10 to 14 years of age, who were most likely to be injured in an altercation. This also likely explains the fact that most of the injuries in the group ≤ 4 years old involved the lower trunk (sexual assault) as discussed above. We found that adolescents were most likely to be injured in the street, while younger patients were more likely to be injured at home. Children 10 to 14 years of age were most likely to be assaulted at school and by a friend or acquaintance. This finding is consistent with other studies [6, 11] which found that older children and adolescents tended to experience more violent injury further away from home.

TABLE 3: Demographics by major diagnoses.

	2	රි ×	Concussion L95%	U95%	8		Contusion N L	Contusion/abrasion L95% U95%	2%	=	2	Fracture L95%	U95%	38	=	2	F62% OS	Laceration U95% %	tion	2	195%	N95%	3º	=	Internal organ N L95%	1	% %S60	% ~	Puncture n N	Strain/sprain L95%	%56N	p value	
Automotion of the Contraction of		1	15.7+3.1				14.2 + 4.6	+449				15.2+4.8				-	58+30				149+47			١	4	L	١	١	12.8+3	7	ľ		
Age group (years)																															7		<10-4
7 1 1 7 7	21	521	259	1,048		2,593 86,	86,948 69	69,164 108,853			19,635	13,197	29,013	3.9		16,550 13	13,414 20,	20,463 2.2		22,313	16,894	29,300	4.4					9 4,886	129,464	102,769	161,714	14.3	
5 to 9		4,052	1,113	2,407		3,037 120	120,383 10	105,934 136,576			15,804	12,089	20,601			36,397 30	30,391 43,	43,578 4.8		26,130	20,929	32,578	5.2						111,056	98,876	124,500	12.3	
10 to 14				36,431								109,051	131,465										23.6								214,864	22.0	
15 to 19	2,055 9	92,459	87,784	96,805	71.4 16	16,556 868	868,838 82	823,252 913,282	282 59.5	.5 7,080	348,368	336,168	360,094	69.2	11,961 58	580,629 56	566,895 594	594,709 76.6	6,882	337,023	323,713	349,836	8'99	2,468 9.	95,005 80	80,830 105	105,034 79.1	1.0,595	5 465,591	430,544	500,445	51.4	
Sex																																	1
Male	_			92,118								958//65	410,522	80.1									65.4								365,974	35.4	. 01>
Female	992 4	40,717	37,462	44,122	31.4	13,521 641	641,552 62	623,293 659,923	923 44.0	.0 2,463	100,166	93,991	106,654		4,107 17	174,229 16	164,784 183	183,970 23.0	0 4,056	175,037	163,945	186,492	34.6	622	26,824 18	18,647 37,	37,294 21.	21.9 16,973	3 585,673	540,801	627,942	64.6	
Race																																	
White				71,955						.6 3,268		134,381	250,850	48.0							_		48.7	327				16.1 7,541			451,099	47.1	<10.
Black	1,055 2	25,423	16,713	36,749	24.6 12	12,568 432	432,994 33	338,667 537,019	019 36.3		131,405	965'66	167,727			258,985 20	205,292 315			107,107										183,117	328,001	35.2	
Amerindian	348 1	15,352		24,413		4,082 238	238,734 11	110,819 452,710		.0 1,434		38,143	130,543	18.4		132,636 65	65,844 237	237,813 21.5	5 1,537		82,477	141,447	21.7	391 2/	10	90	46,598 28.	28.6 2,771	121,803		219,569	17.1	
Asian		1,500	704	3,156	1.4	241 13,	13,146 6	6,329 27,347	347 1.1		2,741	1,399	5,358	0.7	134 6	6,756 3.	3,388 13,	13,304 1.1		3,195	1,714	5,960	6.0		630	300 1,3	1,320 0.5	7. 119	3,751	2,278	6,052	0.5	
Reason																																	
Altercation		31,990	28,080	36,256	24.7 8	8,723 433	433,742 40	401,212 467,764	764 29.7		200,255	181,833	219,047		6,014 26	267,732 24	243,181 293	293,319 35.3		117,918		128,307	23.3		_		29,934 18.	3,875	168,912	146,004	194,520	18.6	<10.4
Robbery/burglary	52	1,361	206	1,944	77	341 15,	15,701 11	11,092 22,038			5,910	4,286	8,118	1.2		14,770 9.	9,937 21,	21,845 1.9		7,810	5,460	11,173	1.5		2,335 1,	3,0	3,055 1.5	1.9 142	5,464		7,436	9.0	
Sexual assault	4	109	36	518	0.1	434 14,	14,988 10	10,508 21,454		61 0	542	252	1,160	0.1		4,397 2.	2,579 7,3	7,509 0.6		685	354	1,264	0.1		104	25 45	491 0.1	.1 14,212	2 432,545	364,102	501,944	47.7	
Other specified		1,050	505	2,164	0.8			32,109 47,871		7 3,334		7,009	13,111	1.9		7,523 5,	5,992 9,	9,406 1.0	242	8,247	6,926	808'6	1.6	126 5			9,692 4.3	4.3 480			17,593	1.5	
Unknown			89,475	7.20,66				918,015 988,946		-	2	7269,977	304,014	_						369,375	357,471			-	91,294 85			1.4 6,924	285,213	236,054	339,345	31.5	
Perpetrator																																	
Spouse/partner		3,703	2,786	4,898		1,336 75,	75,153 64	64,655 87,277			11,350	9,177	13,968	2.3		22,299 18	18,660 26,	26,548 2.9		18,710	15,824	22,092	3.7		3,265 2,	2,306 4,6	4,600 2.7		33,651	28,385	39,902	3.7	<10-4
Parent	87	3,639	2,799	4,717	2.8 3	3,704 146	146,722 12	125,661 170,760	760 10.1		14,696	11,850	18,153	2.9		20,384 17		23,514 2.7			19,868	29,574	4.8	35 1							89,779	9.8	
Other relative	116	4,948	3,499	6,958	3.8 2	2,055 98,	98,017 86	86,255 111,213	213 6.7		25,953	22,389	30,003	5.1	1,490 59	59,888 53	53,020 67,	67,584 7.9		23,630	20,272	27,502	4.7		3,909 2,	2,110 7,1		2 3,542		89,235	112,359	11.1	
Friend/acquaintance	869	32,355	29,285	35,635	25.0 6	6,835 324	324,462 30	308,681 340,789			97,439	87,891	107,658			135,055 11	117,798 154	154,207 17.8		112,084	101,766	123,151	22.2	350 10	,6 004-91	9,385 27,		13.4 6,678		206,400	239,863	24.6	
Multiple	816 2	28,528	24,231	33,354	22.0 5	5,142 232	232,283 18	184,625 289,415	415 15.9		62,270	56,930	80,075	12.3	2,210 10	75 67,101	75,852 134	134,637 13.4	4 2,782	114,150	99,390	130,431		184 8	8,192 6,	6,784 9,8	29 9286	.7 2,548	22,857	79,531	98,031	2.5	
Stranger		2,243	1,697	2,954	1.7	464 20,	20,543 16	16,638 25,249		4 294	11,392	8,421	15,329	2.3	506 23	22,978 19	19,039 27,	27,686 3.0		13,024	10,414	16,329	2.6		15,212 10	10,084 22,					37,725	3.0	
Other specified		180	65	505	0.1	576 31,	31,207 27	27,000 36,049			46,843	41,853	52,291			10,145 8.	8,192 12,	12,591 1.3	32		1,011	2,174	0.3	22 1		761 2,4	2,429 1.3	1.3 427			23,760	2.1	
Unknown	1,154 5	53,975	48,955	59,140	41.7 10	10,408 525	525,182 47-	474,478 578,101	101 36.0		228,203	215,366	240,881		,	385,365 36	363,027 407	407,704 50.8		197,224	181,541	213,340			72,664 60	50,419 84,			331,872	,	361,926	36.6	
Incident locale																																	
Unknown		37,540	27,924	48,865	29.0 10	10,090 486	486,378 39	396,979 584,669	699 33.3		206,266	168,773	245,772		,	303,689 23	238,023 374	374,481 40.0	0 4,403	205,820	163,797	250,700	40.7		41,077 28	28,179 56,	56,359 33.	33.5 8,684			390,084	36.8	<10-4
Home		18,581	15,550	22,080	14.3 8	8,040 360	360,952 30	300,799 428,650	650 24.7			69,133	100,951			139,087 10	109,378 174		3 1,909												363,467	34.5	
School/sports		40,060	36,697	43,578		6,756 327		297,589 360,492			108,056	191'96	120,869			127,793 10	109,758 148	148,139 16.8			106,771								122,514		137,389	13.5	
Street		16,993	10,587	26,408			142,208 99	99,245 200,971			49,317	32,877	72,612	8.6			67,356 139						8.5								87,693	6.4	
Other property	428	16,407	13,697	19,567	12.7 3	3,162 141	141,780 11	110,483 180,684	,684 9.7	7 1,236	15,664	45,937	70,242	3.1	2,044 90	60,119	69,860 115	115,219 11.9	9 1,453	63,776	47,218	85,083	12.6	339 1	01 610'51	10,845 20,	20,512 12.	12.2 2,016	79,372	63,661	98,484	8.8	
Anatomic location																																	
Unknown	0		0	0						9 6		20	206	0.0	20			1,593 0.1	0				0.0	11	282	123 6.	675 0.2	0.2 1,758	57,573	35,005	93,134	6.3	<10-4
Head/neck		129,580	5,183	8,773	10000	17,788 864	864,682 82	824,024 904,442	442 59.2		264,463	253,135	275,473		-,	573,946 55	559,559 587	_		491,673	•	•									161,602	15.7	
Upper trunk	0	0	0	0	0.0		165,040 14	149,743 181,706	706 11.3		15,027	11,900	18,909	3.0		24,961 19	19,873 31,				5,308	12,083	1.6			21,677 33,				53,504	81,345	7.3	
Lower trunk	0	0	0	0			99,615 82	82,023 120,699				2,773	5,143					18,053 2.0		5	3,792	8,999	1.2					_			443,180	41.1	
Upper extremity	0	0	0	0	0.0	4,557 220	220,084 20	206,079 234,977		4	_	180,018	207,197	38.4	2,637 12	11,514 11.	112,792 130	130,769 16.0	0 0	0	0	0	0.0				38,877 23.	23.3 2,871		113,810	149,631	14.4	
Lower extremity	0	0	0	0		1,943 81,	81,653 74	74,288 89,758	758 5.6	826	27,540	21,733	34,793			22,571 19	19,873 25,			0	0	0	0.0	784 27	27,396 22	22,720 32,	32,718 22.	3 3,026	138,051		173,028	15.2	
Disposition from ED																																	
Release	2,909 12	122,178 1	116,361	125,441		29,616 1,41	35,1 561,114,1	1,386,136 1,423,273	3,273 98.4	-	456,900	437,159	470,879				713,651 728				436,482	475,624	92.6						7 839,692	805,339	156'658	94.7	<10-4
Admit	281	6,984	3,720	12,800	5.4	591 22,	22,691 10	10,611 47,748	748 1.6	1,501	43,395	29,417	63,137	8.7	512 19	19,370 13	13,208 28,	28,344 2.6	1,175	36,752	21,735	60,877	7.4	1,214 40	40,805 25	25,578 59,	59,444 33.7	1,7 1,341	46,856	26,596	81,208	5.3	
Hospital size																																	
Small	196 2			33,237						.8 727	88,418	62,628	121,777	17.5	950 11			176,128 15.2	2 447				10.8	26 97			16,697 7.5	5 1,472	179,271		249,204	19.8	<10-4
Medium		30,923		44,614	23.9 2	2,680 337	337,993 22	228,847 478,856	856 23.2																						212,748		
Large		40,610	29,739	53,335			470,519 25	254,826 754,407	407 32.2		175,824	124,248						448,436 37.2			165,010		44.0						286,070		401,555		
Very large	1,004 2		15,498	33,017			278,097 18	181,852 408,947	947 19.1				134,131	6.61	7,547 17			262,220 22.6	6 4,624			155,961	2.1	2,014 4.	45,606 24	24,548 72,	72,172 37.	37.2 9,132		143,011	293,549	23.0	
Children's		11,035	6,336	18,685	8.5 7	7,999 68,	68,927 37	37,217 125,078	078 4.7	7 3,485	30,075	15,985	55,064			32,678 15	15,246 68,			25,830	15,318		5.1						3 92,284		173,753		

n =actual number of ED visits; N =estimated number of ED visits; L95% =lower 95% confidence interval of the estimate; L95% =upper 95% confidence interval of the estimate. Those categories comprising less than 1% of the variables as described in the appendix are excluded; thus, the percentage sum will not add up to 100.



FIGURE 3: Diagnosis in child and adolescent assault victims. STSP = strain/sprain; PCT = puncture; Int Org = internal organ injury; LAC = laceration; FX = fracture; CTAB = contusion/abrasion; Conc = Concussion. (a)By age group $(p < 10^{-4})$. (b) By gender $(p < 10^{-4})$.

The study of Herbert et al. [5] from Cape Town, South Africa, had a younger population while Mollen et al. [3] studied victims of violence limited in the age from 8 to 24 years; however, both noted that most of the injuries were either to the extremities or the head. We found that in those ≤ 4 years old, most of the injuries were to the lower trunk, which has been noted by others to be more serious than other areas of injury [5].

4.2. Our Findings. Most patients in this study were children 15 to 19 years old (64.7%). They were more likely to be male in all age groups except those \leq 4 years old. As has been previously noted, victims of sexual assault are more likely to be female [13]. In this study, females were more likely to be injured by a partner (8.5% vs. 0.7%) compared to males, but both sexes were more likely to be assaulted by a known

person. More importantly, sexual assault accounted for 87.4% of all assaults in females (Table 1). This is likely a low estimate, as many cases of sexual assault are not reported to health care providers [14–18] or police [19]. The perpetrator was unknown in 45.2% of male and 33.5% of female victims (Table 1).

All of the diagnoses (concussions, contusions/abrasions, fractures, lacerations, internal organ injuries, and punctures) were most likely to occur in 15- to 19-year-olds and male patients and least likely to occur in the younger patients. Strains and sprains were the only injuries to occur more often in female patients and have a younger average age of injury presentation. This finding differs from Mollen et al. [3] who found that females were more likely to sustain bruises/abrasions and be injured in an event involving multiple perpetrators. They also noted that older patients were less likely to

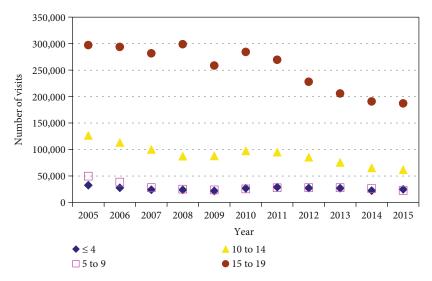


FIGURE 4: Number of assaults in child and adolescent assault victims over time and by age group. There was a gradual decrease for all age groups except for those ≤ 4 years of age. The number of assaults decreased by 23.7% for those ≤ 4 years old (p = 0.28, $r^2 = 0.13$), 54.4% for those 5 to 9 years old (p = 0.026, $r^2 = 0.44$), 51.1% for those 10 to 14 years old ($p < 10^{-6}$, $p^2 = 0.84$), and 37.0% for those 15 to 19 years old (p = 0.0007, $p^2 = 0.84$).

sustain a fracture [3]. This information may coincide with results from a study of Indianapolis youth [6] which found that there was a significant spike in violent injury events between the ages of 13 and 16. This is in contrast to Mollen et al. [3] who found that females were more likely to sustain bruises/abrasions and be injured by multiple perpetrators. They also found that older patients were less likely to sustain a fracture. The discrepancies between this study and that of Mollen et al. [3] are likely due to the fact that their study was limited to the Philadelphia area, thus not representative of the entire US, as well as limiting the patient age from 8 to 24 years.

Although concussions only accounted for 3.0% of the diagnoses, nearly all occurred in those ≥ 10 years of age. This is likely due to the fact that those ≥ 10 years old also accounted for nearly all of the altercations. Altercations often involve fighting, where exchanges of blows are likely to result in a concussion if delivered to the head. Within the youngest age group (≤ 4 years old), strains/sprains were quite common. These are typically less severe injuries than fractures, concussions, and internal organ injuries. The exact reason why there are more strains/sprains in this age group cannot be stated with certainty. Possible explanations are that, in spite of parents being the most common perpetrator of the assault of the four different age groups, the assault involved lower amounts of energy being delivered to the patient, resulting in a strain/sprain. Also, if the perpetrator was another child, such as in a day care center, a younger child would also likely not be able to deliver adequate injury that would result in a fracture or concussion. However, nearly 50% of the children in the ≤4-year-old age group were assaulted by parents or other relatives. These could also be defined as child abuse, battered child syndrome, or nonaccidental trauma. This leads to the next topic.

4.3. Government and Other Social Factors. All 50 of the states in the US have mandatory reporting of potential or actual child abuse to appropriate legal authorities for certain professionals and groups [20]. These include social workers, teachers/other school personnel, all health care workers, counselors and mental health professions, child care providers, and law enforcement officers. Also, anyone can file a concern for child maltreatment with appropriate authorities, and in 18 states, it is law that any person who suspects child abuse or neglect is required to report such concerns [20]. Most states have a toll-free number to call to report suspected abuse. Child Welfare Information Gateway, a service of the Children's Bureau (https://www.childwelfare.gov), provides a list of state child abuse reporting numbers. Another source on how and where to file a report of suspected child abuse and neglect is the National Child Abuse Hotline and can be reached 7 days a week, 24 hours a day, at its toll-free number, 1.800.4-A-CHILD (1.800.422.4453).

Once such a report has been filed, then each state's Child Protective Services agency follows its own investigation algorithm. The Child Protective Services response is often differential [21]. In serious cases, the state will take legal custody of the child and place them into foster care. In less serious cases, they will use community agencies to support families who are considered lower risk, recognizing that variations in families' needs and strengths require different approaches. In-home services play an important role in safety and permanence for the majority of families that receive a report of child maltreatment [22].

There is now an even stronger push to keep children in their own home when possible. The 2018 signing of the Family First Prevention Services Act (H.R. 1892) [23] redirects federal funds to provide services to keep children safely with their families and out of foster care, and when foster care is needed, it allows federal reimbursement for care in family-

based settings and certain residential treatment programs for children with emotional and behavioral disturbance requiring special treatment. As the data used in this was collected before the implementation of this law, further research and follow-up will be needed to assess its impact on the incidence of child maltreatment occurring in their own home.

4.4. Limitations. There are certain limitations to this study. One potential limitation is the accuracy of the NEISS data. However, two studies have demonstrated over 90% accuracy [24, 25]. The NEISS only identifies individuals who sought care in an ED. It does not include those who might have been treated in urgent care centers, physician offices, and other non-ED venues or those persons who did not seek medical care, and therefore, the assault was never reported to any agency collecting such data. Another limitation is injury severity. The only proxy of injury severity with NEISS data is disposition from the ED as being treated and released or admitted to the hospital. The NEISS-AIP does not include fatal injuries nor does it record the Injury Severity Score. Finally, the race was not known in 20.4% of the patients; this is due to either the patient refusing to divulge such information or it not being collected on the medical record so that the NEISS coders could include it. However, acknowledging these limitations, we noted many interesting findings as described above.

5. Conclusion

These data provide a comprehensive overview of child and adolescent assault victims presenting to the ED in the USA. They can be used as background data for further study. The decreasing numbers of assaults over the 11 years of the study are encouraging, but there still exist challenges in decreasing the number for those \leq 4 years old.

Appendix

A. NEISS Definitions [26]

A.1 Assault. Assault is defined as injury from an act of violence where physical force by one or more persons is used with the intent of causing harm, injury, or death to another person or an intentional poisoning by another person. This category includes perpetrators as well as intended and unintended victims of violent acts (e.g., innocent bystanders). This category excludes unintentional shooting victims (other than those occurring during an act of violence), unintentional drug overdoses, and children or teenagers "horsing" around.

A.2 Hospital Strata. Four are based on size (the total number of ED visits reported by the hospital, which are small (0–16,830), medium (16,831–21,850), large (28,151–41,130), and very large (>41,130)), and one includes children's hospitals of all sizes. The actual age is also categorized into 18 different groups in 5-year increments with the last group including all those ≥ 85 years old. The injured body part is classified into five major locations (head/neck, upper trunk, lower trunk, upper extremity, and lower extremity).

A.3 Incident Locale. This is categorized into home/apartment/mobile, school/sports, street, other property, farm, and unknown. Other property consists of stores, office buildings, restaurants, churches, hotel/motels, hospital/nursing homes, adult day care facility, fraternity/sorority houses, theaters, sidewalks, and parking lots/garages.

A.4 Perpetrator. This is categorized into spouse/partner, parent, other relative, unrelated caregiver, friend/acquaintance, official authorities, multiple perpetrators, stranger, other specified, and unknown.

A.5 Reason for Assault. This is categorized into altercation, robbery/burglary, drug-related, sexual assault, gang-related, other specified, and unknown.

A.6 Causative Agent of Injury. This is categorized into motor vehicle occupant, motorcyclist, pedal cyclist, pedestrian, other transport, fall, struck by/against, cut/pierced, overexertion, fire/burn, poisoning, inhalation/suffocation, drowning/near drowning, machinery, foreign body, dog bite, other bite/sting, firearm gunshot, BB/pellet gunshot, and natural/environmental causes.

Data Availability

The raw data is in the public domain and housed by the Inter-University Consortium for Political and Social Research (ICPSR). It can be accessed at https://www.icpsr.umich.edu/icpsrweb/ICPSR/search/studies?q=all+injury+program. The refined data are available from the corresponding author upon request.

Conflicts of Interest

The authors declare that there are no conflicts of interest.

Authors' Contributions

RTL conceived and designed the study. RTL, SP, and MS collected and analyzed the data. RTL performed the statistical analyses. RTL, SP, and MS prepared the original manuscript. RTL, SP, and MS participated in manuscript reviews and approved the final manuscript.

Acknowledgments

This study was supported in part by the Garceau Professorship Endowment and Rapp Pediatric Orthopaedic Research Fund, Riley Children's Foundation.

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