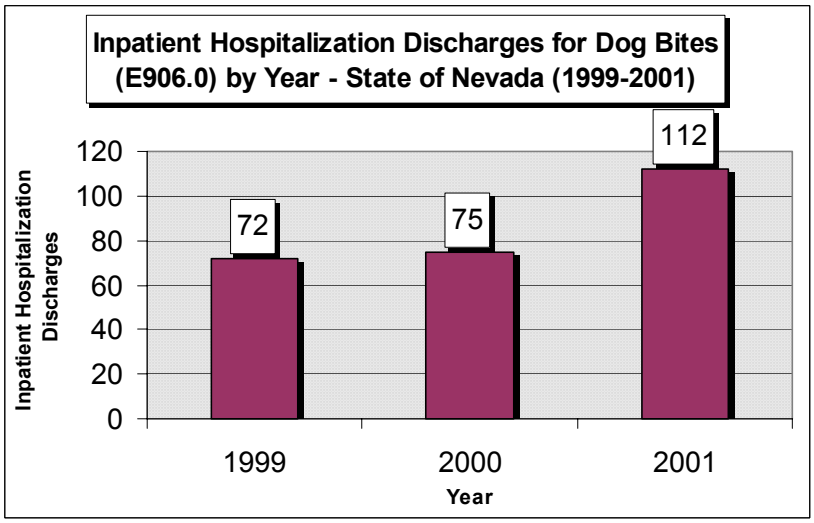
NEVADA STATE HEALTH DIVISION

A Special Report on Dog Bites

in Nevada, 1999-2001



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SPECIAL REPORT ON DOG BITES IN NEVADA, 1999-2001.

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BACKGROUND

Dog bites represent one of the major sources of morbidity, mortality, disability, and health care cost in the United States.[1] Man's best friend bites approximately 4.7 million people in the United States annually. Approximately 800,000 of those bitten, with more than half being children, require medical attention.[2] According to the Insurance Information Institute insurance companies paid $250 million for dog bite liability claims in 1996 alone. The American Veterinary Medical Association (AVMA) reports that State Farm Fire and Casualty Company paid nearly $80 million in dog bite-related claims in 1997. AVMA also states, in their dog bite fact sheet, that dog bite attacks represent one-third of all homeowner claims, causing losses that exceed one billion dollars per year.

In a study[3] between 1979 and 1996, dog attacks resulted in more than 300 dog bite–related fatalities (DBRF). Breed information was available for 238 human DBRF. At least 25 breeds of dogs were involved in these deaths, with Pit bull-type and Rottweilers involved in more than half. Of the 227 reports with relevant data, 55 (24%) human deaths involved unrestrained dogs off their owners' property, 133 (58%) involved unrestrained dogs on their owners' property, 38 (17%) involved restrained dogs on their owners' property, and one case involved a restrained dog off its owner's property.

Dog bite attacks appear to be on the increase in the United States. To determine how serious dog bite attacks are in Nevada, the State Health Division and the Department of Agriculture collaborated on a retrospective study to evaluate the incidence of dog bite related-injuries, their public health impact, and the associated medical costs.

This study covers the period from 1999 through 2001. From this point forward, an individual in this report referred to as a dog bite victim, had either an inpatient hospital discharge or outpatient discharge passed with an International Classification of Diseases, 9th Revision (ICD-9) diagnosis of E906.0 (dog bite). The diagnosis did not necessarily have to be the primary diagnosis of the patient; if any of the diagnoses passed on a patient were for a dog bite, that individual was considered for this report. This study looked at data from state hospital discharges as provided by the Center for Health Information Analysis (CHIA) and data directly collected from hospitals. Medical records staff from 10 major hospitals, which represent over 90% of hospitalizations in the State, were asked to query outpatient and inpatient records of those treated for dog bite related-injuries.

Some of the estimates used in this study were calculated by establishing ratios between the data from CHIA and the data collected by individual hospitals. Whenever an estimate was used from the CHIA data, it is noted in the study. The bulk of this study was based on reporting directly from the hospitals since they were found to be more reliable as a data source. The 10 hospitals that provided data for this study were Desert Springs Hospital, Lake Mead Hospital, Mountain View Hospital, St. Rose Hospital, Summerlin Hospital, Sunrise Hospital, University Medical Center, and Valley Hospital in Clark County; St. Mary's Medical Center and Washoe Medical Center in Washoe County.

LIMITATIONS

This study provides a good base for evaluating the magnitude and scope of Nevada's dog attack problem. However, there are some limitations that need to be recognized. This study aggregates the data and is not able to describe the specific details of each bite or the emotional effect the bite may have, which may underreport the true harm caused by these attacks. Also, not all medical treating facilities in the state are diligent in recording E-codes for the hospital discharge database that is maintained by CHIA. This limitation results in underestimates of data reported, and necessitates further review of hospital records in order to obtain accurate counts for this injury.

The underestimates in the hospital discharge database were recognized after an extensive review of the data contrasted regular inpatient hospitalizations and E-coded injury hospitalizations at each hospital. Many hospitals appeared to be under representing E-coded injuries in comparison to the caseload they handle in general. It was also discovered that the proportion of E-coded injuries at hospitals could vary greatly from year to year, which might be related to turnover of staff responsible for the coding. In some hospitals no E-coded injuries were reported in given years, though they represented a fairly large portion of hospitalizations for the State.

When this error in data was discovered the authors of this report decided to contact the hospitals directly for dog bite data. The data from CHIA were used to establish length of stay, payer, and cost information and those data were extrapolated to the data received directly from the hospitals. Two major hospitals that had consistent E-coded injury data over the years of this study matched with data collected directly from the hospitals for dog bites, helping to validate the data collection method from hospitals directly. The hospitals that were underreporting E-coded injuries in the hospital discharge database were able to provide what appears to be accurate data when asked for it directly. Their data were proportional to size of patients discharged, based on the two hospitals that were established as reliable in both CHIA and direct from hospital data. Therefore it is the authors' opinions that the data in this report are accurate, though it is admittedly based on hospitals direct reporting rather than the hospital discharge database.

The outpatient injury data also presented obstacles for this report. Since the outpatient data were not available at the time of this report in a large database format, reporting was taken from representatives at each hospital. In order to associate cost with this type of injury, rates were established for Emergency Department (ED) data from two major area hospitals representing both Clark and Washoe counties, St. Mary's Medical Center and University Medical Center. The average dog bite charge as established by these hospitals for ED visits was $676.44. Since University Medical Center represented over 99% of quick care injuries in this report, their average cost for these injuries was applied at $146.90. The reason University Medical Center represents such a large portion of the quick care injuries is they have the largest quick care facility in the State and other hospitals were not able to provide data on their quick care services at this time. This means that dog bite injuries treated at other quick care facilities are not included in this report, resulting in possible underestimates of dog bite injuries and costs.

SUMMARY AND HIGHLIGHTS

- Inpatient hospitalizations result in billed charges of $884,053 per year due to dog bites (method for calculation covered in limitations section of this report). The best estimate for total hospital billing amounts, which includes both inpatient and outpatient injuries to Nevadans for dog bites over this period is $1,920,817 per year. The actual amount may be even higher since these figures represent only 90% of hospital injuries in the State, and non-hospital injuries are not included.

- The average dog bite victim in Nevada that had inpatient hospitalization spent over three days in the hospital and incurred over $10,000 in hospital charges.

- There were at least 259 persons with inpatient hospitalization from dog bites in Nevada from 1999 to 2001; there were also at least 6,761 dog bite injuries that resulted in outpatient care over the same period.

- More persons under 10 years of age were hospitalized over night due to a dog bite than 10-19 year olds, 20-29 year olds, and 30-39 year olds combined.

- The inpatient hospitalization rate of the population for Nevadans due to dog bites was at least 4.25 per 100,000; the rate for outpatients was 110.87 per 100,000. This means outpatient injuries occurred at a rate of 26 to one to inpatient injuries.

- More than half of the reported injuries resulting in outpatient care in this study were treated at the University Medical Center (N=3,582) in Clark County. Most of these cases however occurred at their Quick Care facilities (N=2,742), other Quick Care facilities were unable to report their injuries for this report.

- The outpatient hospital rate from dog bites for less than nine year olds (212.32 per 100,000) is almost double the total hospital outpatient rate due to dog bites for all ages (110.87 per 100,000).

Total Inpatient and Outpatient Injuries and Injury Rate (per 100,000 pop.) from Dog Bites (E906.0) State of Nevada 1999 - 2001

Nevada Dog Bite Injuries								
Year	**Type / Age Group**	**0-4**	**5-9**	**10-14**	**15-19**	**20-39**	**40+**	**TOTAL**
1999	Dog Bite Injuries	290	382	282	132	589	610	2,285
	Population	144,301	146,681	136,476	125,211	597,651	817,331	1,967,650
	Injury Rate (per 100,000)	200.97	260.43	206.63	105.42	98.55	74.63	116.13
2000	Dog Bite Injuries	229	303	297	130	607	604	2,170
	Population	148,447	152,007	141,659	129,416	613,447	849,073	2,034,050
	Injury Rate (per 100,000)	154.26	199.33	209.66	100.45	98.95	71.14	106.68
2001	Dog Bite Injuries	309	439	329	122	663	703	2,565
	Population	155,714	159,396	148,408	135,560	643,646	889,774	2,132,498
	Injury Rate (per 100,000)	198.44	275.41	221.69	90.00	103.01	79.01	120.28
TOTAL	Dog Bite Injuries	828	1,124	908	384	1,859	1,917	7,020
	Population	448,462	458,085	426,543	390,187	1,854,743	2,556,179	6,134,198
	Injury Rate (per 100,000)	185	245.37	212.87	98.41	100.23	74.99	114.44

- ✓ The average injury rate from dog bites for those five to nine years of age (245.37 per 100,000) is more than double the total injury rate of the total population (114.44 per 100,000).

- ✓ The injury rate from dog bites is based on confirmed cases from 10 hospitals and as such is underreported, it was at its highest in 2001 (120.28 per 100,000).

- ✓ There were a total of 7,020 confirmed dog bite injuries resulting in either inpatient or outpatient hospital care in Nevada for a three year period from 1999-2001. That amounts to 2,340 bites necessitating inpatient or outpatient care each year.

- ✓ The largest five-year age group of persons with dog bite injuries was five to nine year olds (N=1,124); the second largest group was 10-14 year olds (N=908).

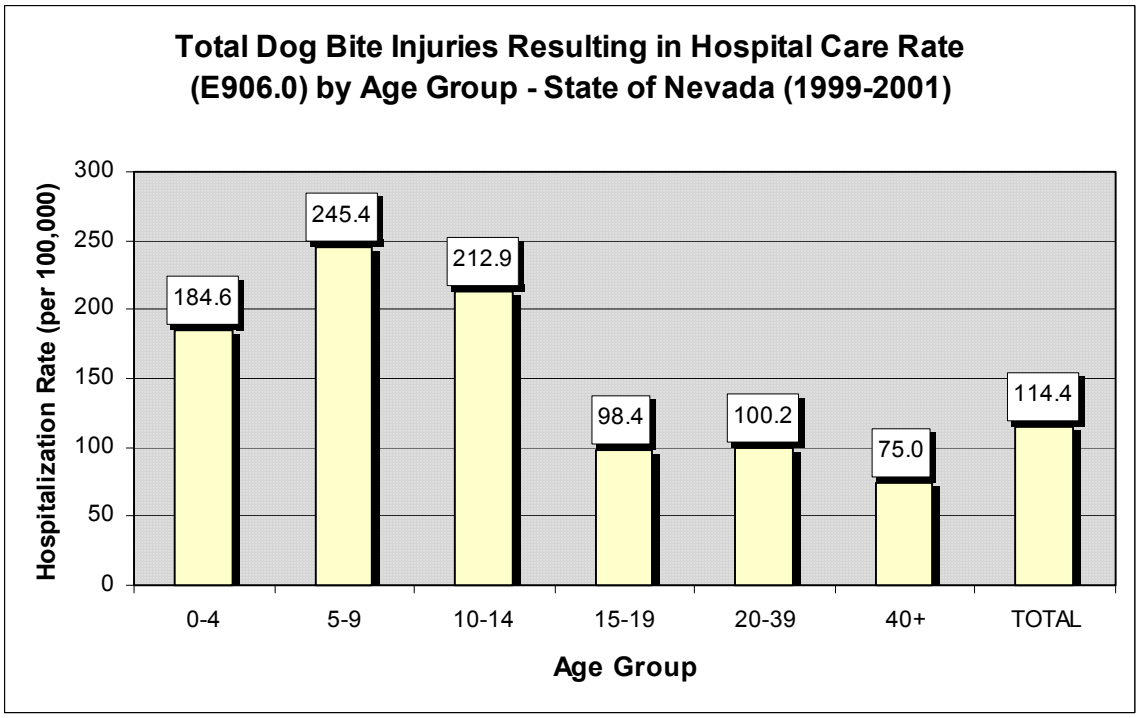

Figure 1 – Total Dog Bite Injury Rate

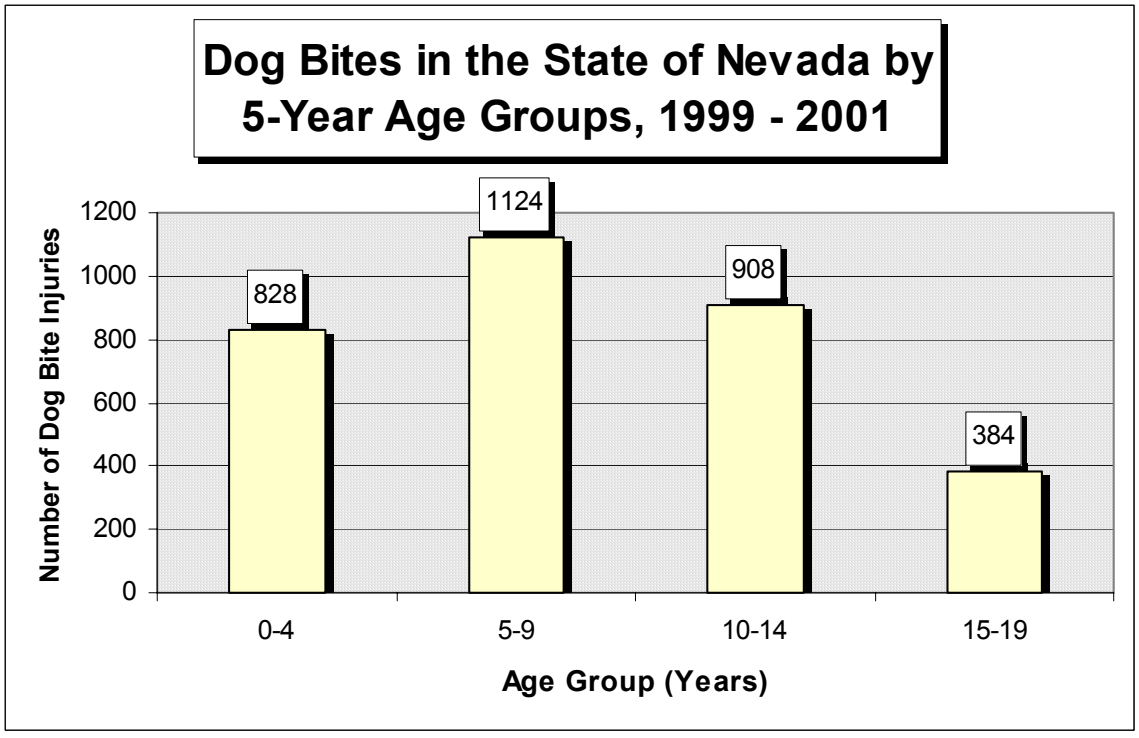

Figure 2 – Inpatient and Outpatient Injuries from Dog Bites

Inpatient Hospitalization Rate (per 100,000 pop.) and Inpatient Injury Rate for Dog Bites (E906.0) State of Nevada 1999-2001

Inpatient Injuries Caused by Dog Bites										
Year	**Type / Age Group**	**0-9**	**10-19**	**20-29**	**30-39**	**40-49**	**50-59**	**60-69**	**70+**	**TOTAL**
1999	Dog Bite Injuries	16	7	7	12	13	12	0	5	72
	Population	270,969	254,371	269,922	342,000	302,978	227,431	157,283	142,471	1,967,425
	Injury Rate (per 100,000)	5.90	2.75	2.59	3.51	4.29	5.28	0.00	3.51	3.66
2000	Dog Bite Injuries	19	8	4	12	12	8	4	8	75
	Population	295,139	266,362	273,093	330,593	298,520	230,480	156,518	147,553	1,998,258
	Injury Rate (per 100,000)	6.44	3.00	1.46	3.63	4.02	3.47	2.56	5.42	3.75
2001	Dog Bite Injuries	46	8	4	18	13	7	7	9	112
	Population	315,111	283,968	297,839	345,807	315,892	249,470	167,090	157,322	2,132,499
	Injury Rate (per 100,000)	14.60	2.82	1.34	5.21	4.12	2.81	4.19	5.72	5.25
TOTAL	Dog Bite Injuries	81	23	15	42	38	27	11	22	259
	Population	881,219	804,701	840,854	1,018,400	917,390	707,381	480,891	447,346	6,098,182
	Injury Rate (per 100,000)	9.19	2.86	1.78	4.12	4.14	3.82	2.29	4.92	4.25

- ✓ The average inpatient hospitalization rate for those less than 10 years old (9.19 per 100,000) is more than double the average overall rate (4.25 per 100,000). The next highest inpatient hospitalization rate for a ten-year age group is those 40 to 49 years of age at 4.14 per 100,000.

- ✓ The inpatient hospitalization rate was highest in 2001 (5.25 per 100,000); it was lowest in 1999 (3.66 per 100,000).

- ✓ The average number of persons that receive inpatient hospitalization care each year from dog bites occurring in Nevada is 86.33 based on data collected from 1999 to 2001. That means there are a little more than seven persons a month that receive inpatient hospital care due to a dog bite.

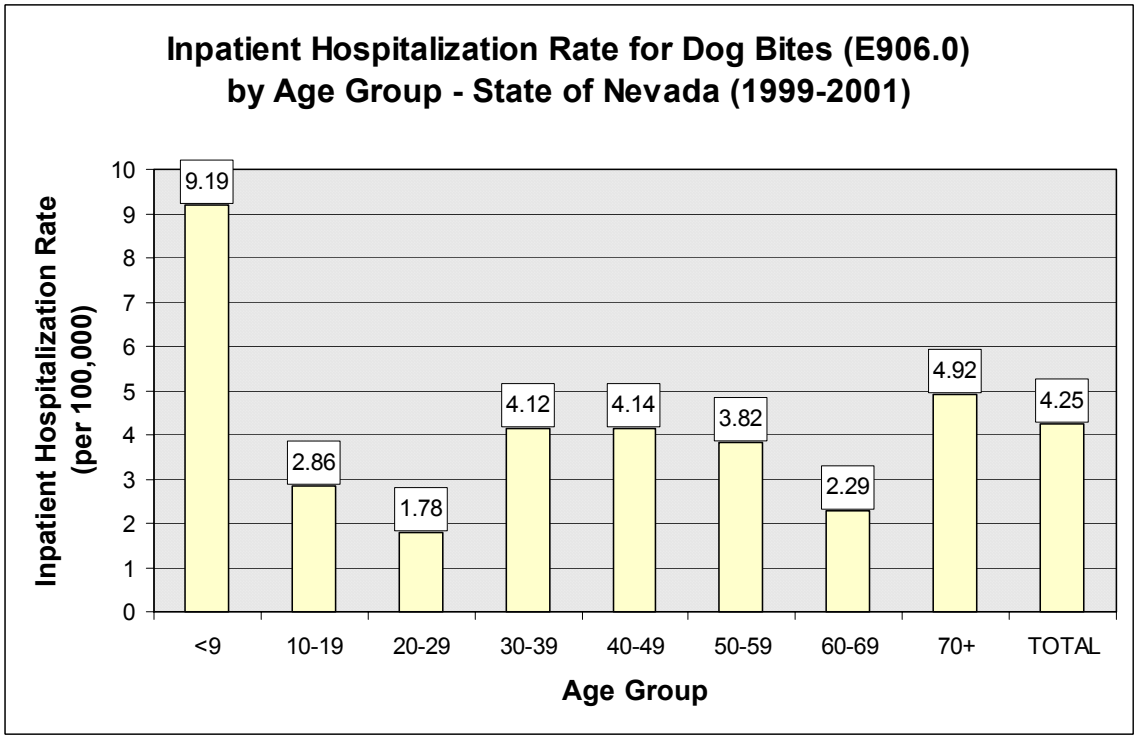

Figure 3 - Inpatient Hospitalization Rate

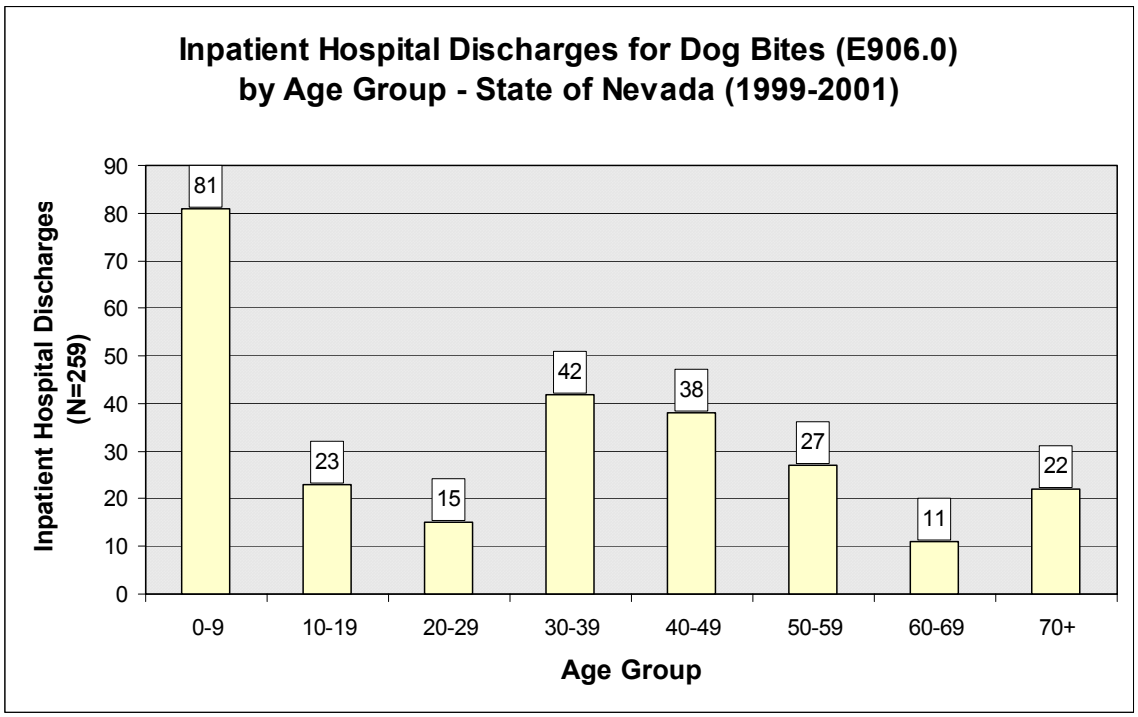

Figure 4 - Inpatient Hospital Discharges

Outpatient Hospitalization Rate (per 100,000 pop.) and Outpatient Injury Rate for Dog Bites (E906.0) State of Nevada 1999-2001

Outpatient Injuries Caused by Dog Bites										
Year	**Type / Age Group**	**0-9**	**10-19**	**20-29**	**30-39**	**40-49**	**50-59**	**60-69**	**70+**	**TOTAL**
1999	Dog Bite Injuries	656	407	291	279	255	145	90	90	2,213
	Population	270,969	254,371	269,922	342,000	302,978	227,431	157,283	142,471	1,967,425
	Injury Rate (per 100,000)	242.09	160.00	107.81	81.58	84.16	63.76	57.22	63.17	112.48
2000	Dog Bite Injuries	513	419	256	335	281	147	76	68	2,095
	Population	295,139	266,362	273,093	330,593	298,520	230,480	156,518	147,553	1,998,258
	Injury Rate (per 100,000)	173.82	157.30	93.74	101.33	94.13	63.78	48.56	46.09	104.84
2001	Dog Bite Injuries	702	443	286	355	270	192	94	111	2,453
	Population	315,111	283,968	297,839	345,807	315,892	249,470	167,090	157,322	2,132,499
	Injury Rate (per 100,000)	222.78	156.00	96.03	102.66	85.47	76.96	56.26	70.56	115.03
TOTAL	Dog Bite Injuries	1,871	1,269	833	969	806	484	260	269	6,761
	Population	881,219	804,701	840,854	1,018,400	917,390	707,381	480,891	447,346	6,098,182
	Injury Rate (per 100,000)	212.32	157.70	99.07	95.15	87.86	68.42	54.07	60.13	110.87

- ✓ The average outpatient hospitalization rate, which includes Emergency Room and Quick Care services, for less than 10 year olds (212.32 per 100,000) is almost double the average hospital outpatient rate for all ages for this injury (110.87 per 100,000).
- ✓ The average outpatient hospitalization rate for the total population in Nevada from dog bites is 110.87 per 100,000 people.
- ✓ The estimated number of dog bite injuries resulting in outpatient hospitalization (N=6,761) is more than 26 times greater than the total number of hospital discharge inpatients from dog bites (N=259).
- ✓ Of the 6,761 outpatient hospital treatments for dog bites over this three-year period, 46.4% (N=3,140) of the injuries occurred to person 19 years of age or younger.

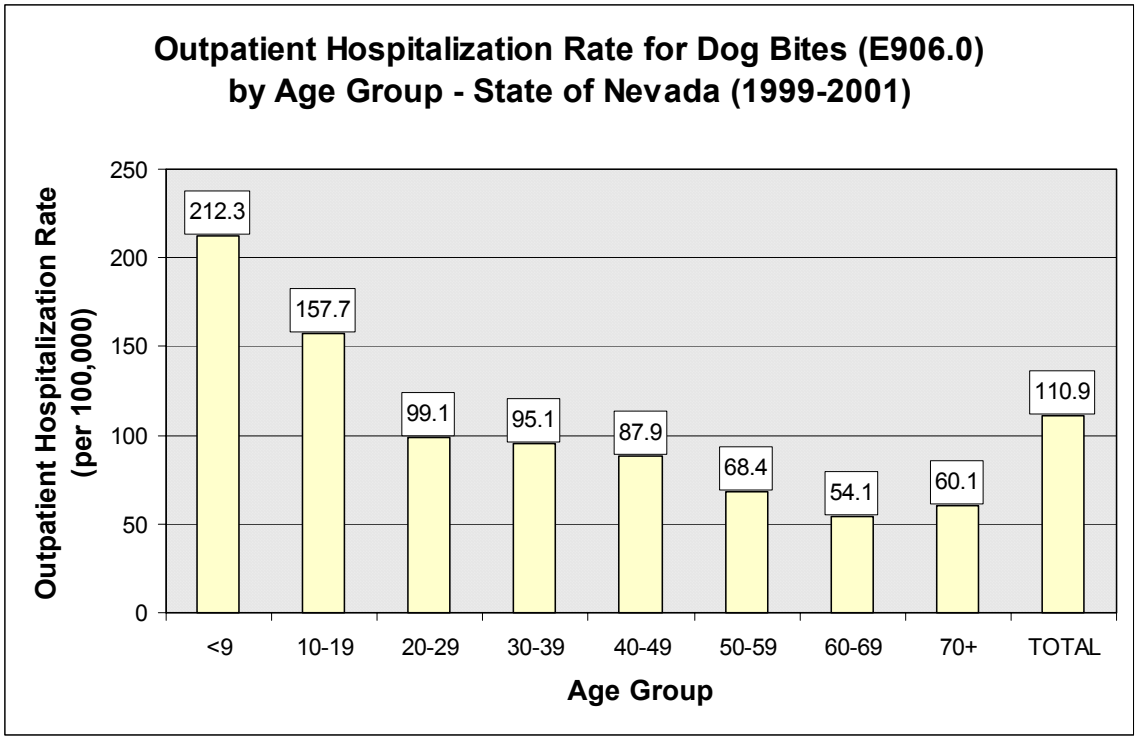

Figure 5 - Outpatient Hospitalization Rate

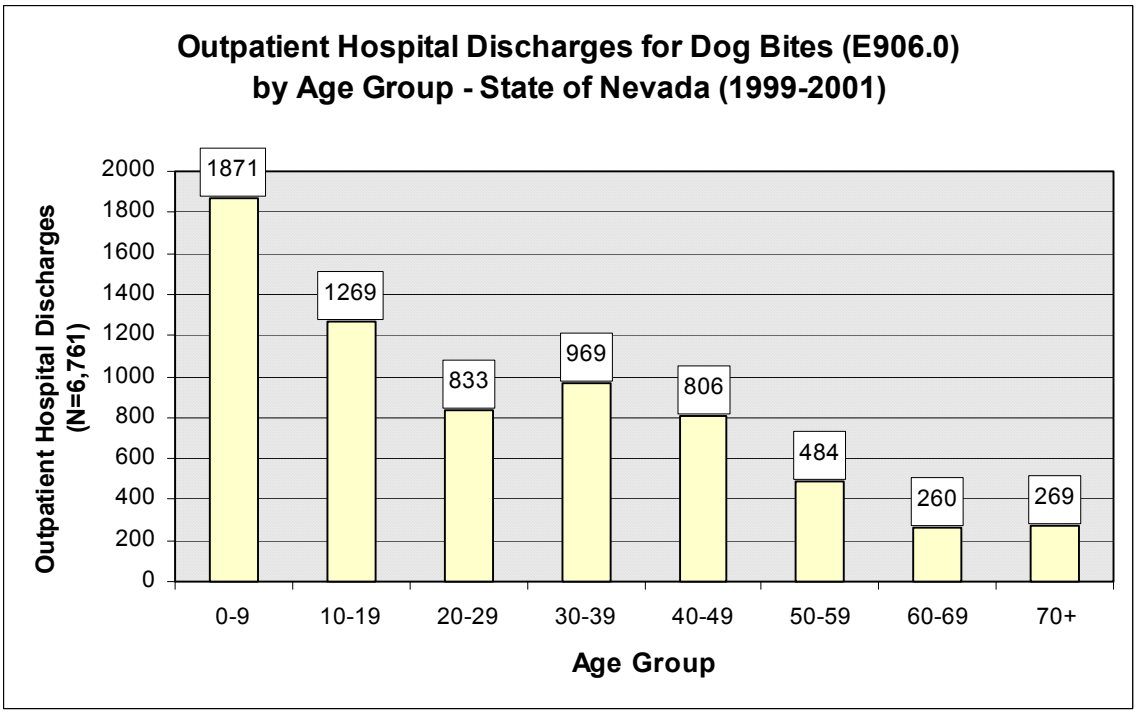

Figure 6 – Outpatient Hospital Discharges

Amounts Billed for Hospitalization Due to Dog Bites (E906.0) - State of Nevada 1999-2001

Nevada - Billing Data from Partial Inpatient Hospitalization, 1999-2001						
Age Group	Number	Minimum	Maximum	Mean	Median	TOTAL
<10	38	$ 1,479.00	$ 23,416.00	$ 6,710.55	$ 6,421.50	**$ 255,001.00**
10-19	6	$ 1,701.00	$ 7,955.00	$ 3,611.50	$ 2,939.00	**$ 21,669.00**
20-29	3	$ 3,909.00	$ 13,481.00	$ 8,903.00	$ 9,319.00	**$ 26,709.00**
30-39	19	$ 1,302.00	$ 19,576.00	$ 8,291.53	$ 7,168.00	**$ 157,539.00**
40-49	27	$ 1,793.00	$125,387.00	$ 15,439.89	$ 8,274.00	**$ 416,877.00**
50-59	10	$ 2,793.00	$ 15,275.00	$ 7,661.60	$ 7,242.50	**$ 76,616.00**
60-69	8	$ 1,636.00	$ 22,824.00	$ 11,445.63	$ 10,089.00	**$ 91,565.00**
70+	16	$ 3,657.00	$ 43,550.00	$ 15,907.63	$ 10,937.50	**$ 254,522.00**
TOTAL	**127**	**$ 1,302.00**	**$125,387.00**	**$ 10,240.14**	**$ 7,419.00**	**$ 1,300,498.00**

- ✓ Of the 127 dog bite injuries found in the hospital discharge database, the average bill was $10,240.14. The inpatient data set is not complete so data collected directly from hospitals were used for total cost estimates as is discussed in the limitations sections of this report. The best estimate of inpatient injuries is 259 over this three-year period, which would result in bills of $884,053 per year for these types of injuries.

- ✓ The median and mean amount billed of dog bite hospitalization was the highest for those in the population 70 years and older at $10,937.50 and $15,907.63 respectively.

Nevada - Billing Data from Partial Inpatient Hospitalization, 1999-2001						
Age Group	Number	Minimum	Maximum	Mean	Median	TOTAL
<5	25	$ 1,479.00	$ 13,683.00	$ 5,402.12	$ 3,613.00	**$ 135,053.00**
5-9	13	$ 2,649.00	$ 23,416.00	$ 9,226.77	$ 7,563.00	**$ 119,948.00**
10-14	5	$ 2,384.00	$ 7,955.00	$ 3,993.60	$ 3,456.00	**$ 19,968.00**
15-19	1	$ 1,701.00	$ 1,701.00	$ 1,701.00	$ 1,701.00	**$ 1,701.00**
20-39	22	$ 1,302.00	$ 19,576.00	$ 8,374.91	$ 8,030.50	**$ 184,248.00**
40+	61	$ 1,636.00	$125,387.00	$ 13,763.61	$ 8,274.00	**$ 839,580.00**
TOTAL	**127**	**$ 1,302.00**	**$125,387.00**	**$ 10,240.14**	**$ 7,419.00**	**$ 1,300,498.00**

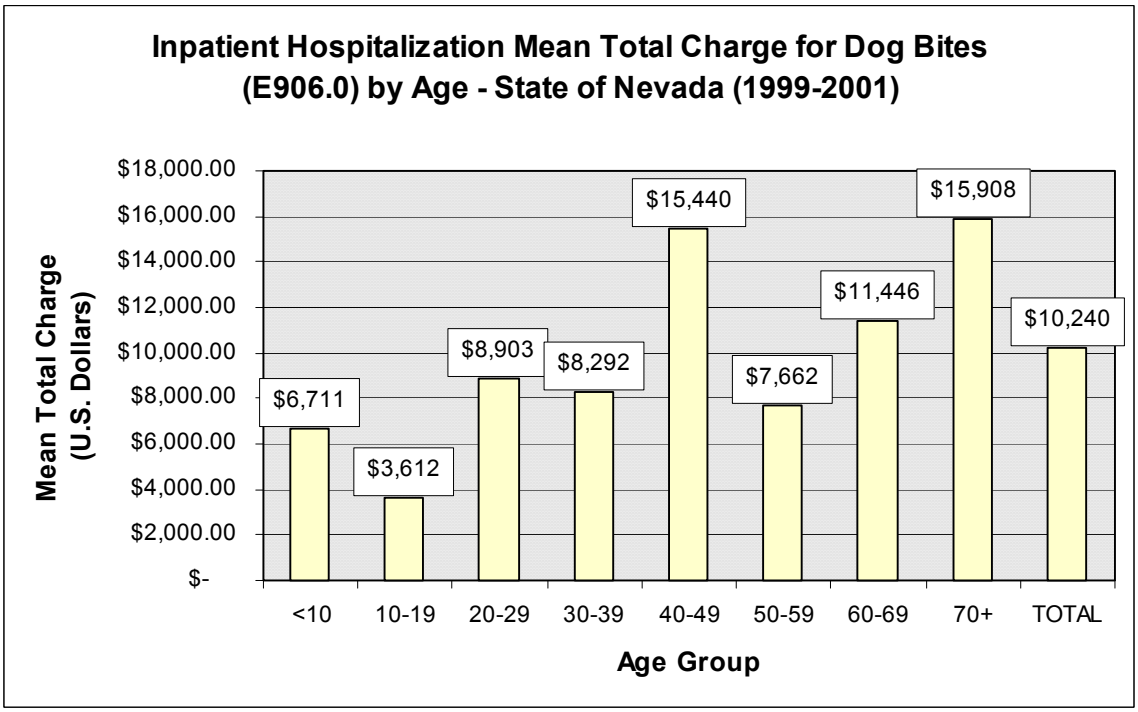

Figure 7 - Inpatient Hospitalization Mean Total Charge

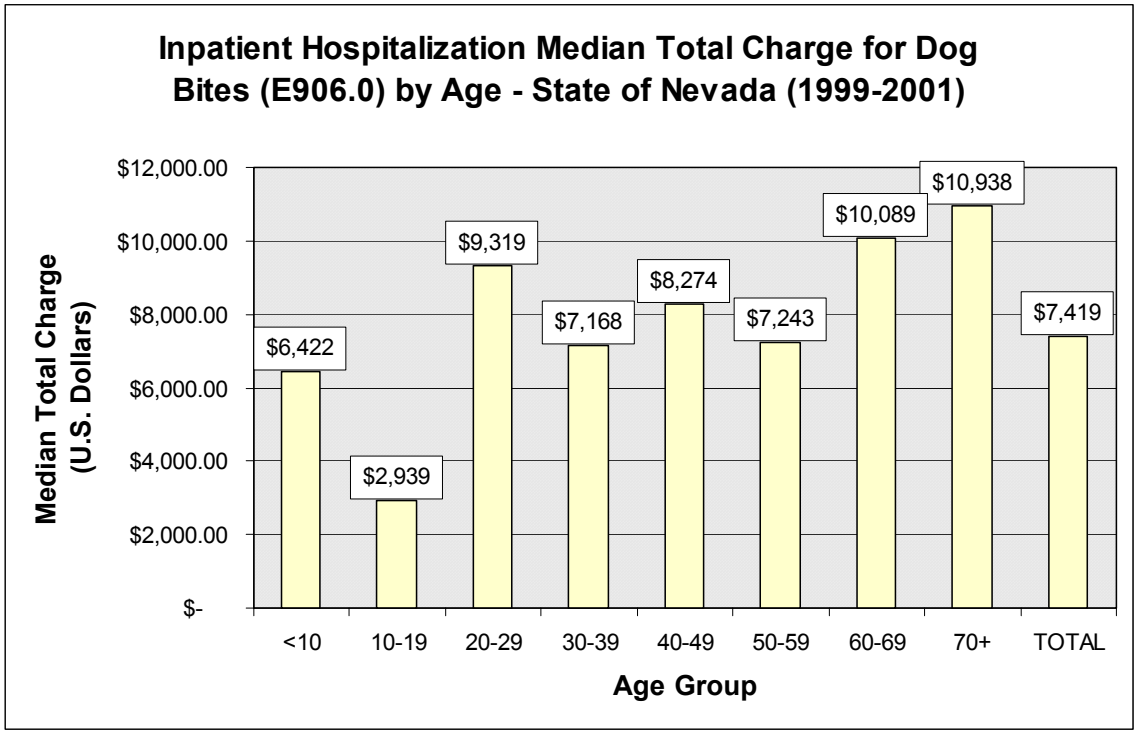

Figure 8 – Inpatient Hospitalization Median Total Charge

Length of Stay for Inpatient Hospitalization Due to Dog Bites (E906.0) - State of Nevada 1999-2001

Nevada - Length of Stay Data from Partial Inpatient Hospitalization, 1999-2001						
Age Group	Number	Minimum	Maximum	Mean	Median	TOTAL
<10	38	1	6	**1.97**	2	75
10-19	6	1	2	**1.33**	1	8
20-29	3	2	3	**2.67**	3	8
30-39	19	1	8	**2.47**	2	47
40-49	27	1	28	**4.33**	2	117
50-59	10	1	5	**2.9**	3	29
60-69	8	1	7	**3.25**	3	26
70+	16	1	24	**5.25**	3.5	84
TOTAL	**127**	**1**	**28**	**3.1**	**2**	**394**

- ✓ The 127 cases found in the hospital discharge database, of the possible 259 inpatient dog bite injuries statewide, showed an average stay of slightly more than three days in length. A discussion of the data from the discharge database can be found in the limitations section of this report.

- ✓ The median and mean length of stays from dog bite hospitalization were the highest for those in the population 70 years and older at 3.5 days and 5.25 days respectively.

Nevada - Length of Stay Data from Partial Inpatient Hospitalization, 1999-2001						
Age Group	Number	Minimum	Maximum	Mean	Median	TOTAL
<5	25	1	6	**1.96**	2	49
5-9	13	1	5	**2**	2	26
10-14	5	1	2	**1.4**	1	7
15-19	1	1	1	**1**	1	1
20-39	22	1	8	**2.5**	2	55
40+	61	1	28	**4.2**	3	256
TOTAL	**127**	**1**	**28**	**3.1**	**2**	**394**

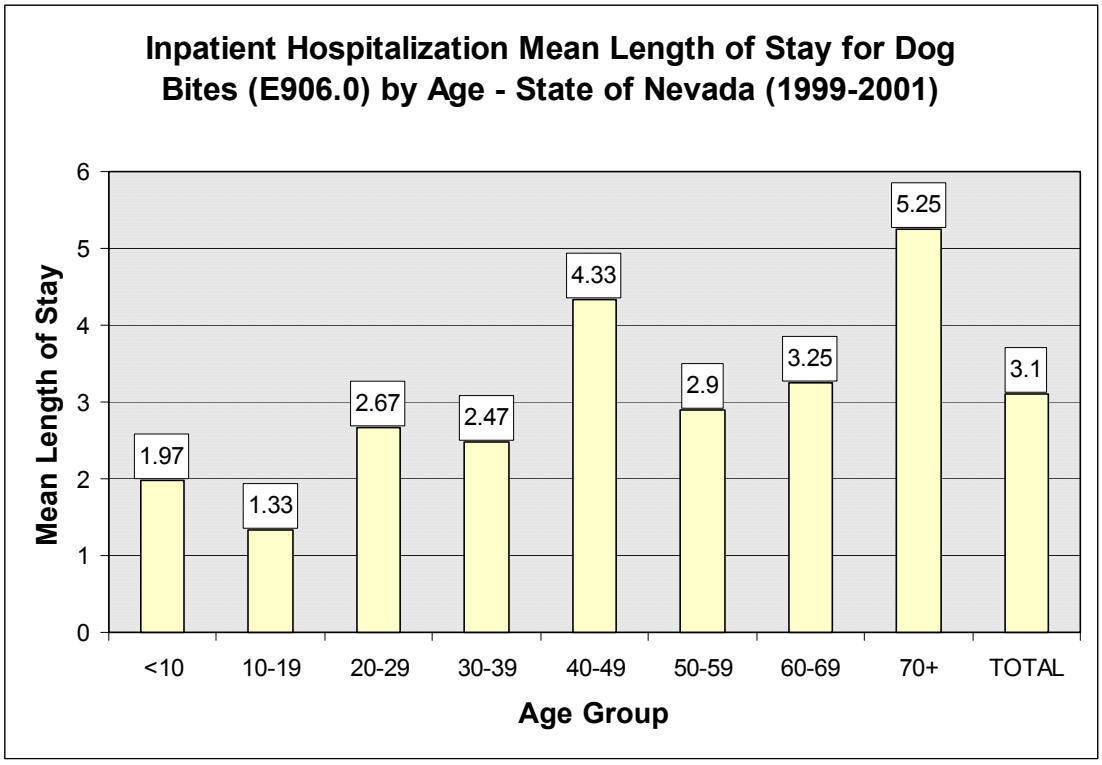

Figure 9 - Inpatient Hospitalization Mean Length of Stay

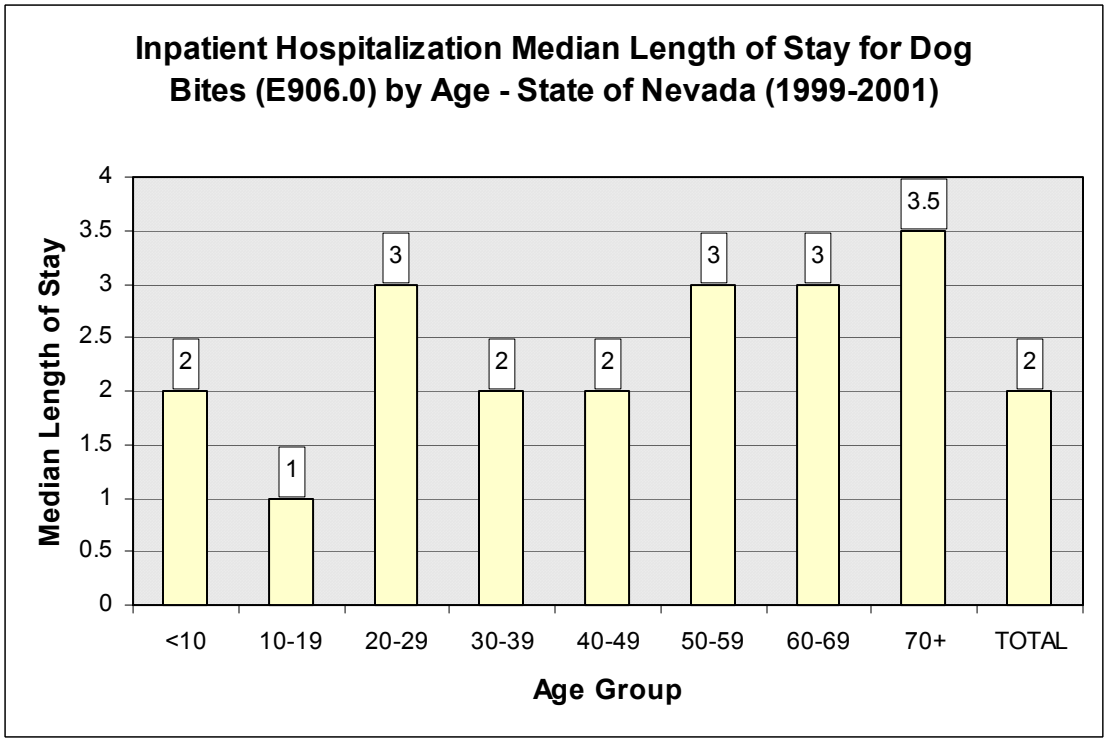

Figure 10 – Inpatient Hospitalization Median Length of Stay

Primary Payer for Inpatient Hospitalization Due to Dog Bites (E906.0) - State of Nevada 1999-2001

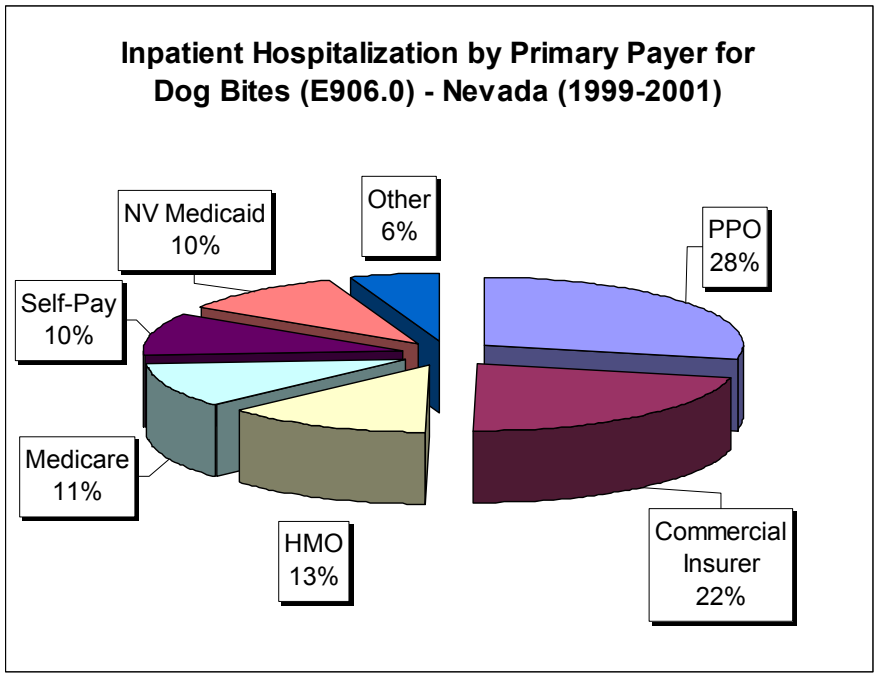

Figure 11- Primary Payer for Inpatient Hospitalization Due to Dog Bites

- ✓ PPOs paid for more than one out of four dog bite injuries resulting in inpatient care.
- ✓ Slightly more than 10% of dog bite injuries found in the partial inpatient hospitalization data are paid for by injured persons that do not have insurance.

Nevada - Primary Payer Data from Partial Inpatient Hospitalization, 1999 - 2001					
Payer/Year	1999	2000	2001	TOTAL	Percent
PPO	11	11	14	36	28.4%
Commercial Insurer	6	14	8	28	22.1%
HMO	4	3	9	16	12.6%
Medicare	1	5	8	14	11.0%
Self-Pay	5	2	6	13	10.2%
NV Medicaid	4	7	2	13	10.2%
Other	3	1	3	7	5.5%
TOTAL	**34**	**43**	**50**	**127**	**100.0%**

Outpatient Hospital Discharges
Dog Bites (E906.0) - Nevada 1999-2001

Nevada - Outpatient Hospitalization from Dog Bites (E906.0), 1999 - 2001			
Hospital/Year	Emergency Room	Quick Care	**TOTAL**
Desert Springs Hospital	141	-	**141**
Lake Mead Hospital	288	-	**288**
Mountain View Hospital	336	-	**336**
St. Mary's Medical Center	537	-	**537**
St. Rose Hospital	424	21	**445**
Summerlin Hospital	216	-	**216**
Sunrise Hospital	478	-	**478**
University Medical Center	840	2,742	**3,582**
Valley Hospital	135	-	**135**
Washoe Medical Center	603	-	**603**
TOTAL	**3,998**	**2,763**	**6,761**

- ✓ More than half (53%) of the injuries resulting in outpatient care reported from dog bites were treated at the University Medical Center (UMC) (N=3,582). This results from the fact that UMC was able to provide quick care injury data along with Emergency Room data, while other hospitals with quick care facilities were unable to report on that data at this time. The second largest hospital representing dog bite treatment in this study was Washoe Medical Center at 8.9% (N=603).

- ✓ The average charge of an outpatient injury was $676.44. This was calculated by taking the average facility charge and doctor's fee from dog bites at St. Mary's Medical Center and UMC. Since UMC represented over 99% of quick care injuries in this report their average cost for these injuries was applied at $146.90. When the estimated average amount billed of these types of dog bite injuries was used in conjunction with the number of outpatient care services provided for dog bites throughout the State, it resulted in an estimated amount of $1,036,764 per year. A more detailed discussion regarding this topic can be found in the limitations section of this report.

Total Inpatient and Outpatient Injuries and Injury Rate (per 100,000 pop.) from Dog Bites (E906.0) Clark County, Nevada 1999 - 2001

Clark County Dog Bite Injuries								
Year	**Type / Age Group**	**0-4**	**5-9**	**10-14**	**15-19**	**20-39**	**40+**	**TOTAL**
1999	Dog Bite Injuries	236	331	238	115	493	500	1913
	Population	101,168	101,371	90,506	82,721	424,141	543,633	1,343,540
	Injury Rate (per 100,000)	233.28	326.52	262.97	139.02	116.23	91.97	142.39
2000	Dog Bite Injuries	167	233	255	112	507	473	1747
	Population	105,504	106,490	95,118	86,441	440,990	570,556	1,405,099
	Injury Rate (per 100,000)	158.29	218.80	268.09	129.57	114.97	82.90	124.33
2001	Dog Bite Injuries	254	382	267	106	573	586	2168
	Population	111,567	112,611	100,585	91,409	466,336	603,348	1,485,855
	Injury Rate (per 100,000)	227.67	339.22	265.45	115.96	122.87	97.12	145.91
TOTAL	Dog Bite Injuries	657	946	760	333	1,573	1,559	5,828
	Population	318,239	320,472	286,208	260,570	1,331,467	1,717,538	4,234,494
	Injury Rate (per 100,000)	206.45	295.19	265.54	127.80	118.14	90.77	137.63

- ✓ The average injury rate for those five to nine years of age (295.19 per 100,000) is more than double the total injury rate (137.63 per 100,000). The second highest injury rate from an age group is 10-14 year olds at 265.54 per 100,000.

- ✓ The Clark County dog bite injury rate is based on inpatient and outpatient hospitalization data from eight area hospitals and was at its highest in 2001 (145.91 per 100,000).

- ✓ The largest five-year age group of total dog bite injuries was five to nine year olds (N=946) and the second largest group was 10-14 year olds (N=760).

- ✓ The average number of dog bite related injuries resulting in either inpatient or outpatient hospitalization per year in Clark County is 1,943.

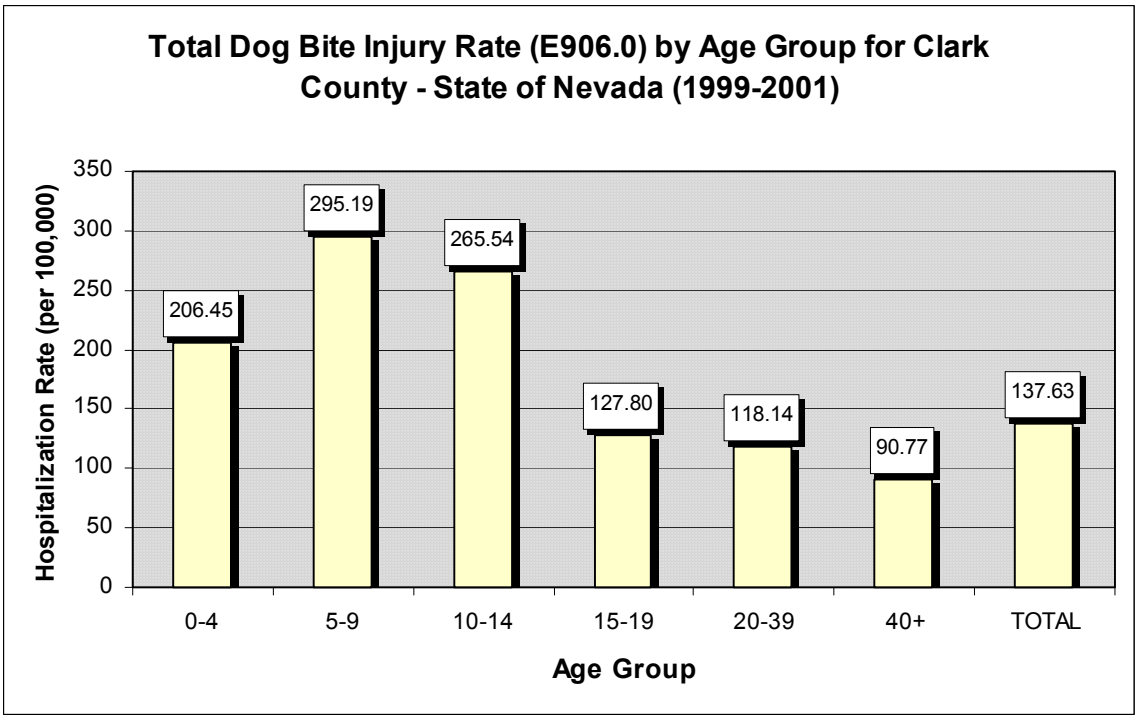

Figure 12 – Dog Bite Injury Rate for Clark County

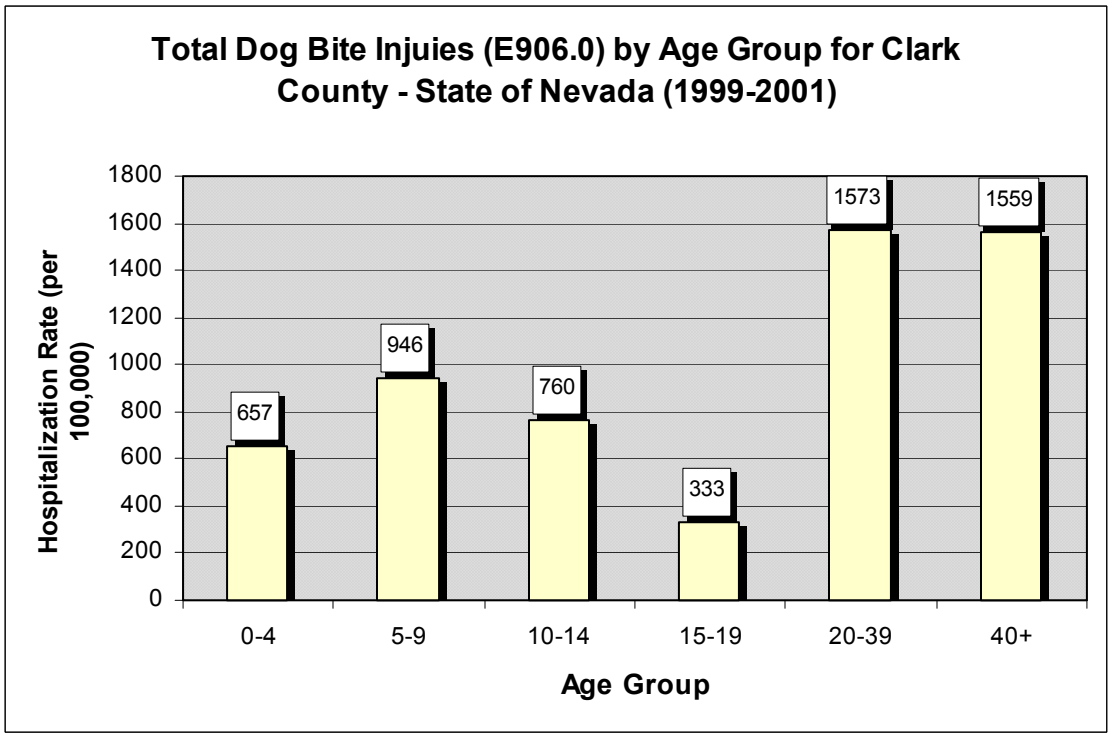

Figure 13 – Dog Bite Injuries for Clark County

Total Inpatient and Outpatient Injuries and Injury Rate (per 100,000 pop.) from Dog Bites (E906.0) Washoe County, Nevada 1999 - 2001

Washoe County Dog Bite Injuries								
Year	**Type / Age Group**	**0-4**	**5-9**	**10-14**	**15-19**	**20-39**	**40+**	**TOTAL**
1999	Dog Bite Injuries	54	51	44	17	96	110	372
	Population	22,662	22,839	22,262	21,476	97,491	136,940	323,670
	Injury Rate (per 100,000)	238.28	223.31	197.64	79.16	98.47	80.33	114.93
2000	Dog Bite Injuries	62	70	42	18	100	131	423
	Population	23,788	24,243	23,843	22,813	101,332	145,916	341,935
	Injury Rate (per 100,000)	260.63	288.75	176.15	78.90	98.69	89.78	123.71
2001	Dog Bite Injuries	55	57	62	16	90	117	397
	Population	24,577	25,046	24,633	23,570	104,691	150,754	353,271
	Injury Rate (per 100,000)	223.79	227.58	251.69	67.88	85.97	77.61	112.38
TOTAL	Dog Bite Injuries	171	178	148	51	286	358	1192
	Population	71,027	72,128	70,738	67,859	303,514	433,610	1,018,876
	Injury Rate (per 100,000)	240.75	246.78	209.22	75.16	94.23	82.56	116.99

- ✓ The average injury rate for those five to nine years of age (246.78 per 100,000) and those four years old and younger (240.75 per 100,000) is more than double the total average injury rate (116.99 per 100,000).

- ✓ The Washoe County dog bite injury rate is based on both inpatient and outpatient hospitalization data from the two largest area hospitals and was at its highest in 2000 (123.71 per 100,000).

- ✓ The largest five-year age group of total dog bite injuries was five to nine year olds (N=178) and the second largest group was four year olds and younger (N=171).

- ✓ The average number of dog bite related injuries resulting in either inpatient or outpatient hospitalization per year in Washoe County is 397.

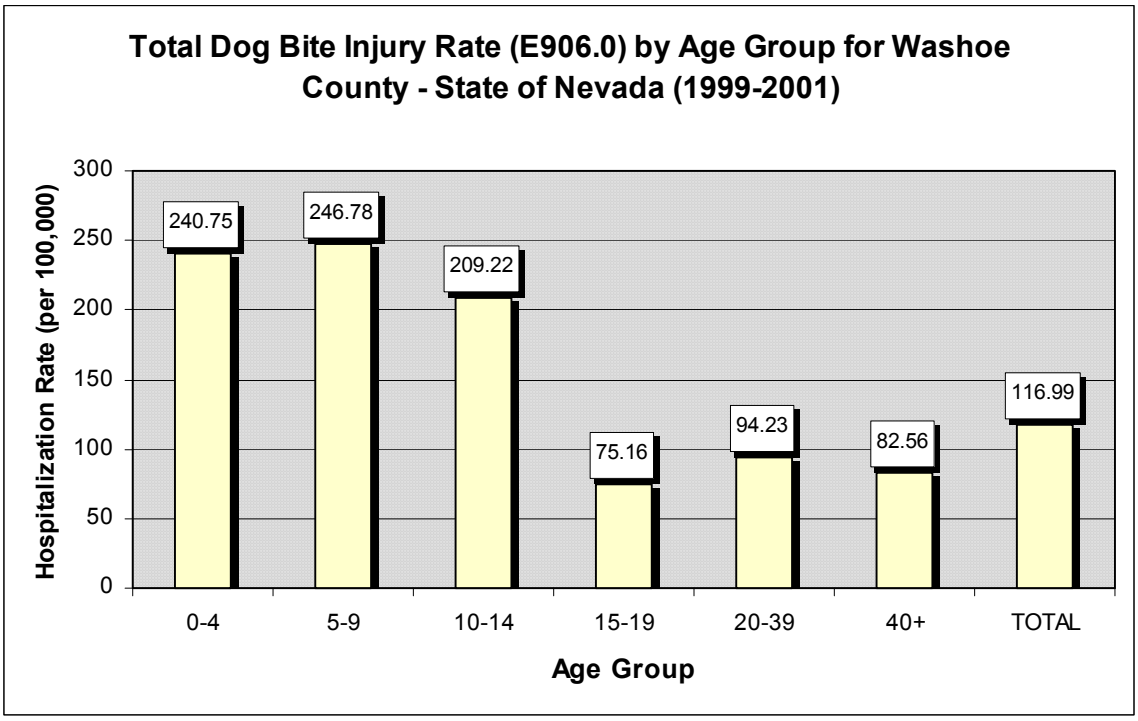

Figure 14 – Dog Bite Injury Rate for Washoe County

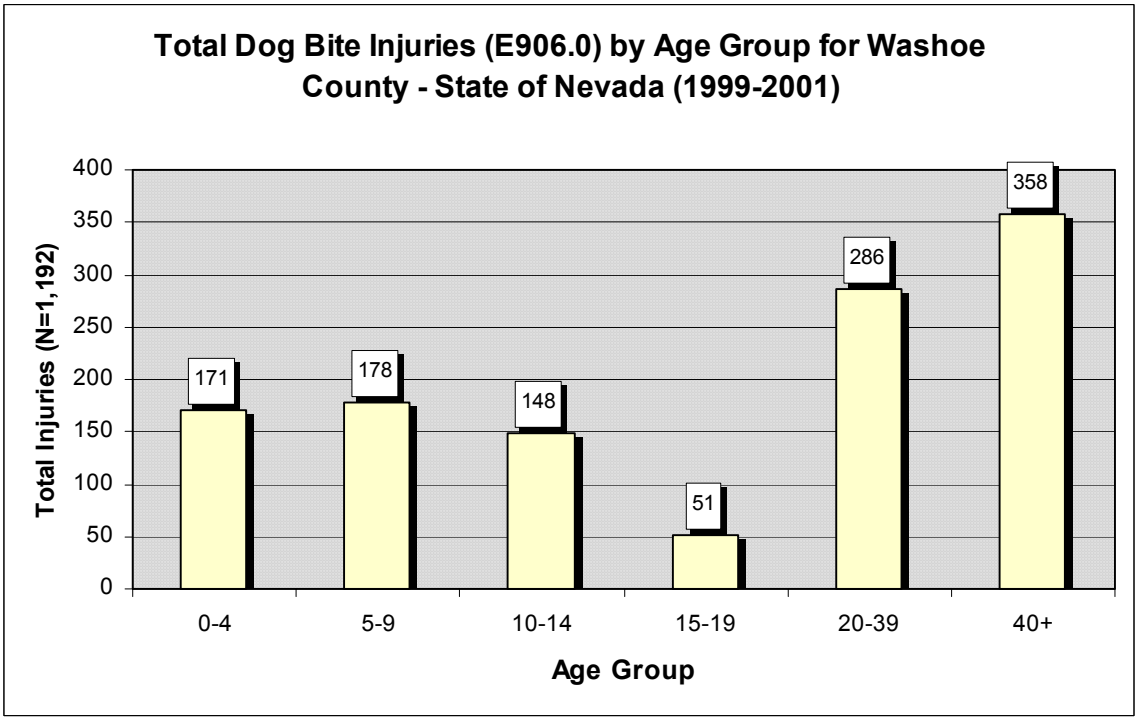

Figure 15 – Dog Bite Injuries for Washoe County

NARRATIVE

In this study, the outpatient visits were highest in the age group nine years and younger (212.32 per 100,000 persons). The average incidence rate for all ages was 110.87 per 100,000 persons. By comparison, a three-year study annualized, adjusted, and weighted estimate of new dog bite-related injury visits to US Emergency Departments (EDs) was 333,687, a rate of 129 per 100,000 persons (95% confidence interval, 105-154). This represents approximately 914 new dog bite injuries requiring ED visits per day. The median age of patients bitten was 15 years, with children, especially boys five to nine years, having the highest rate (607 per 100,000 persons for boys aged five to nine years).[4] In other population-base studies the incidence rate ranges from 175 per 100,000[5] to approximately 400 per 100,000 persons.[6]

The total number of children treated (outpatients and inpatients) for dog bite injuries under 10-years was 1,952 of which the age group less than five years were 828 and the age group five to nine years were 1,124. Of the 6,761 outpatient visits over the three-year period, 46.4% (N=3,140) of injuries occurred to victims under 20 years of age. Overall, the average number of visits to outpatient facilities (which includes quick care and EDs) due to dog bites was 6.2 per day (N=6,761). Inpatient hospitalizations were much less common and averaged a little over .2 visits a day, or 7.2 visits per month (N=259) during the three years of this study.

The incidence rate of inpatient hospitalization for dog bites for Nevada's population averaged 4.25 per 100,000 persons. The inpatient hospitalization from dog bites for those less than 10 years of age was 9.19 per 100,000 persons. By comparison, a nationwide study in New Zealand predicted an incidence of inpatient hospitalization due to dog bites in the year 2000 of 9.6 per 100,000 persons.[5] As expected, age group under 10 years was the largest group hospitalized (N=81) followed by age group 30-39 years (N=42). The authors' suspect that the age group 30-39 could represent service-related professions e.g., mail carriers and utility workers.

The mean hospital stay for those receiving inpatient care was 3.1 days (N=127). For persons 70 and over the average hospital stay was 4.2 days. By comparison, a Centers for Disease Control and Prevention (CDC) study found that the length of stay on average was 3.6 days and was longer for older persons (ranging from 2.7 days for less than five year olds compared to 4.7 days for those aged 40 years or older).[7] One study had a mean hospital stay of six days.[8]

The mean inpatient hospital bill was $10,240.00 (N=127) and was applied to the data collected directly from the hospitals for inpatient injuries (N=259) resulting in a total estimated cost of $884,053 per year of this study (this is covered in detail in the limitations section of the report). The median bill for the age group 70 years and older that was hospitalized was $10,937.50 with an average bill of $15,907.63. The CDC study found the mean hospital charges were highest at age extremes. The mean charge for those less than five year old was $6,369 and for 40 year olds or older the mean was $6,842. However, these charges do not include charges for physician services or subsequent post

discharge care. Inpatient physician fees are estimated as an additional 25% of hospital charges.[7]

The average Nevada cost for outpatient ED visits (hospital charges and average doctor fee) was estimated at $676.44 as was discussed in the limitations section of this report for a total estimate of charges at $901,469 per year (N=3,998). The average cost for quick care injuries was estimated at $146.90 for a total of $135,295 per year (N=2,763). This results in a total outpatient care estimated cost of $1,036,764 per year (N=6,761).

During the three-year study dog bite-related injuries amounted to bills at $1,920,817 per year. PPOs paid for 28% (N=36) of costs from dog bites found in the partial inpatient hospitalization data. PPOs were followed by Commercial Insurers at 22% (N=28). Nevada Medicaid paid 10% (N=13) and Medicare paid 11% (N=14) of the inpatient hospitalization costs. Dog bite injuries bills from just the inpatient injuries generate bills of approximately $185,651 to Nevada taxpayers each year.

DISCUSSION

Dog bite attacks can have serious ramifications that warrant description to relate the seriousness of this problem. After dog bite attacks, victims become concerned about contracting rabies, hence the primary reason for investigating animal bites. Issues that may be overlooked are infections and the tetanus status of the victim. Children that are attacked can have disfigurement caused by scaring[9] and are prone to suffer from facial injuries as well.[8,10,11] Bites can also crush the airway or penetrate the abdominal or thoracic cavities, resulting in life-threatening injuries.[12] Other serious complications of dog bite injuries include craniocerebral injury,[13] and even death.[3,11,14]

A national survey conducted by the American Veterinary Medical Association in 1996 estimated that 37.8% of households in Nevada (N=220,000) owned a dog(s) with a total dog population of 358,000.[15] In 2001, the estimated number of households owning a dog(s) increased to 283,940 with an estimated dog population of 459,983. The dog population was responsible for at least 7,020 dog bite related injuries that resulted in medical care in Nevada from 1999 to 2001.

Dog bites are a serious public health problem that inflicts considerable physical and emotional damage on victims and is responsible for immeasurable hidden costs to communities.[16] Yet, dog bites to a great extent are largely preventable and prevention must begin with the owner and how the owner interacts with the dog. A dog should be properly socialized with all members of the family, people outside the family, and other animals.[6] Dogs are most receptive to socialization and training between about eight and 12 weeks of age,[17] making this the ideal time to acquire a puppy. The dog owner should participate in basic obedience training and the family needs to interact with the dog in such a manner that aggressive behavior is not elicited.

Evaluation of the intervention strategies already in place requires improved surveillance of dog bites. The required reporting of all e-coded injuries including E906.0 (dog bite) by all medical treating facilities in the State hospital discharge database would greatly enhance the ability to obtain the true cost of dog bites injuries and help evaluate the effectiveness of existing preventive intervention programs. It would also help reduce the confusion between data collection from different sources for this or other injury related reports.

CONCLUSION

There were a total of 7,020 (2,340 per year) confirmed dog bite injuries resulting in either inpatient or outpatient hospital care in Nevada from 1999-2001. These bites come at a large cost financially, physically, and emotionally to the State, especially to those in the population nine years and younger. The average dog bite victim in Nevada that had inpatient hospitalization spent over three days in the hospital and incurred over $10,000 in hospital charges. During the three-year study dog bite-related injuries amounted to bills for victims at $1,920,817 per year. More persons under 10 years of age were hospitalized over night due to a dog bite than 10-19 year olds, 20-29 year olds, and 30-39 year olds combined. The outpatient hospitalization rate for less than 10 year olds (212.32 per 100,000) is almost double the total outpatient rate for all ages (110.87 per 100,000).

This report has established the foundation to continue to track dog bite injuries throughout the State in order to measure the success or failure of programs that seek to reduce dog bite injuries. As the data available for these types of injuries improve so should the overall accuracy of this study. It is the plan of the Department of Agriculture and the State Health Division to continue this study. As data have been collected for dog bite related injuries for this study, in the most recent year of data, cat bite data have also been collected in the same manner. Once viable ranges of data for this type of injury have been collected a similar study will be produced.

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