



# **Motor Vehicle Crashes With Child Fatalities: Summary of Snohomish County Child Death Review Data**

**January 1, 1999-October 31, 2002**



**SNOHOMISH  
HEALTH  
DISTRICT**

**HEALTH STATISTICS & ASSESSMENT  
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## **Introduction**

The purpose of Child Death Review (CDR) is to review all unexpected deaths of children younger than 18 years of age. The information gathered is used to identify preventable circumstances of these deaths and to consider strategies that may improve the overall health and safety of all children. Snohomish County has collected CDR data since 1999 under the authorization of RCW 70.05.170.

In Snohomish County, the leading cause of accidental childhood deaths was motor vehicle crashes for every year between 1999 and 2001, accounting for 24.8% of unexpected childhood deaths in those three years combined. CDR data were analyzed to describe the circumstances of fatal motor vehicle crashes among children.



## Executive Summary

This report includes a review of detailed analysis on deaths of children age 0-17 years who died as the result of a motor vehicle crash (MVC). The purpose of the report is to identify risk factors for children involved in a fatal MVC. The findings may be used to target prevention activities aimed at reducing the incidence of motor vehicle deaths among children.

The Snohomish County Child Death Review committee reviewed 125 unexpected child deaths between January 1, 1999, and October 31, 2002. A total of 31 child deaths (24.8%) were due to a MVC, making it the leading cause of unexpected death among children.

Among MVC cases, the majority occurred among males (61.3%), Whites (83.9%), and youth age 15-17 years (51.6%). There were no infant deaths as a result of a MVC in Snohomish County. The majority of incidents involved the child as an occupant of a car, truck, van, or sport utility vehicle (SUV). In approximately the same number of cases, the child was either the driver, a passenger in front seat, or a passenger in a rear seat. Fewer than one-third of cases were known to have worn a seatbelt or safety restraint.

Out of all the cases reviewed, 29.0% had at least one investigation from Child Protective Services prior to the MVC. Fewer cases (25.8%) received services from Department of Social and Health Services Children's Administration in the 12 months prior to the death of the child.

Most incidents occurred on either a highway or a rural road. Not unexpectedly, most occurred in the more populated southwest corner of Snohomish County. The greatest number of MVC cases occurred between 1:00 and 6:59 p.m. Although weather was a factor in some cases, most occurred in spring and summer. Driver error and excess speed were the greatest contributing factors. Criminal charges were filed in 29.0% of cases.

Washington State statistics are presented for comparison, but due to the small number of deaths there are no statistically significant differences between Snohomish County and the state.



### Methods

Representatives from community agencies in Snohomish County meet quarterly to review all unexpected child deaths (0-17 years of age). Information on circumstances of child deaths was gathered from a variety of sources, such as law enforcement, Department of Social and Health Services, public health, schools, and the Medical Examiner's office. However, data were not always available. For example, it may be undocumented or unknown if a seatbelt was used by a MVC victim. After the available data were compiled, the committee reviewed the information to identify possible prevention measures. Thus, this report represents the collaborative efforts of multiple agencies sharing data.

Data were entered in the CDR database created by Washington State Department of Health. Thirty-one cases included in the data analysis were deaths of children younger than 18 years of age that were reviewed by the Snohomish County CDR committee. While most data elements were on the standard data collection tool, the location of a MVC was identified through a review of individual records. The county population for 2002 was estimated based on the increase observed between 2000 and 2001.

The total number of unexpected childhood deaths per year was small and decreased dramatically when stratified by the circumstance of death. Statistics based on small numbers can be unstable. Thus, any fluctuations from year to year may be due to chance or random variation. To increase the number of MVC cases, data were combined from January 1, 1999 through October 31, 2002. Complete year 2002 data was not included because data analysis for this report began in November 2002. When available, Washington State data were provided as a comparison. Washington State data represents 1999 and 2000 MVC deaths that were reviewed by other county child death review committees. Seventy-five percent of all child MVC deaths in those years were reviewed. When the state value falls within the confidence interval of Snohomish County, the county statistics are interpreted as not significantly different from the state. Ninety-five percent confidence intervals were calculated as indicators of the precision of the statistics reported.



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## Incidence of Motor Vehicle Crashes

Snohomish County CDR reviewed a total of 31 MVC child deaths that occurred between January 1, 1999, and October 31, 2002. MVC deaths accounted for 24.8% of the 125 unexpected deaths reviewed in Snohomish County during that period, making it the leading cause of unexpected childhood deaths. There were five deaths in 1999, 10 deaths in 2000, seven deaths in 2001, and nine deaths from January 1 to October 31, 2002 (Table 1). The rates of death due to a MVC among children age 0-17 years were similar to Washington State rates in 1999 and 2000.

Table 1. Death Rates From Motor Vehicle Crashes Among Children, Snohomish County and Washington State

		Snohomish County Jan. 1, 1999-Oct. 31, 2002 (N=31)			Washington State 1999-2000 (N=132)
		Number of deaths	Rate per 100,000 children <18 years	95% CI*	Rate per 100,000 children <18 years
Year of death	1999	5	3.0	1.0, 7.1	5.5
	2000	10	6.0	2.9, 11.0	6.1
	2001	7	4.2	1.7, 8.6	**
	2002***	9	5.3	2.5, 10.0	**

\* 95% Confidence interval

\*\* Data not available

\*\*\* Jan. 1, 1999 - Oct. 31, 2002



## Demographics

### Sex

The majority of child deaths caused by MVC's occurred among males (Table 2). In Snohomish County, 61.3% of MVC deaths occurred in males, compared to only 51.3% of males in the total population younger than 18 years.

### Race/Ethnicity

Eighty-four percent of child deaths from MVC's were among Whites, which is less than the 90.2% of the population represented by White children in Snohomish County (Table 2). However, the highest rates in Snohomish County were among Blacks and Hispanics. Washington State reported the highest rates were among Native Americans and Hispanics.

### Age

Youth age 15-17 years accounted for 51.6% of all MVC cases reviewed in Snohomish County (Table 2). The proportion was not significantly different from the 47.0% reported for Washington State.

**Table 2. Proportion of Motor Vehicle Crash Deaths Among Children by Sex, Race, Ethnicity, and Age Group, Snohomish County and Washington State**

	Snohomish County Jan. 1, 1999-Oct. 31, 2002 (N=31)			Washington State 1999-2000 (N=132)
	Number of deaths reviewed	%	95% CI*	%
Sex				
Male	19	61.3	42.2, 78.2	62.1
Female	12	38.7	21.9, 57.8	37.9
Race				
White	26	83.9	66.3, 94.5	81.8
Asian/PI	2	6.5	0.8, 21.4	8.3
Black	1	3.2	0.1, 16.7	3.0
Native American	0	0	0	3.8
Unknown	2	6.5	0.8, 21.4	3.0
Ethnicity				
Hispanic	3	9.7	2.0, 25.8	13.6
Age group				
<1 year	0	0	0	2.3
1-4 years	6	19.4	7.5, 37.5	10.6
5-9 years	5	16.1	5.5, 33.7	15.2
10-14	4	12.9	3.6, 29.8	25.0
15-17	16	51.6	33.1, 69.8	47.0

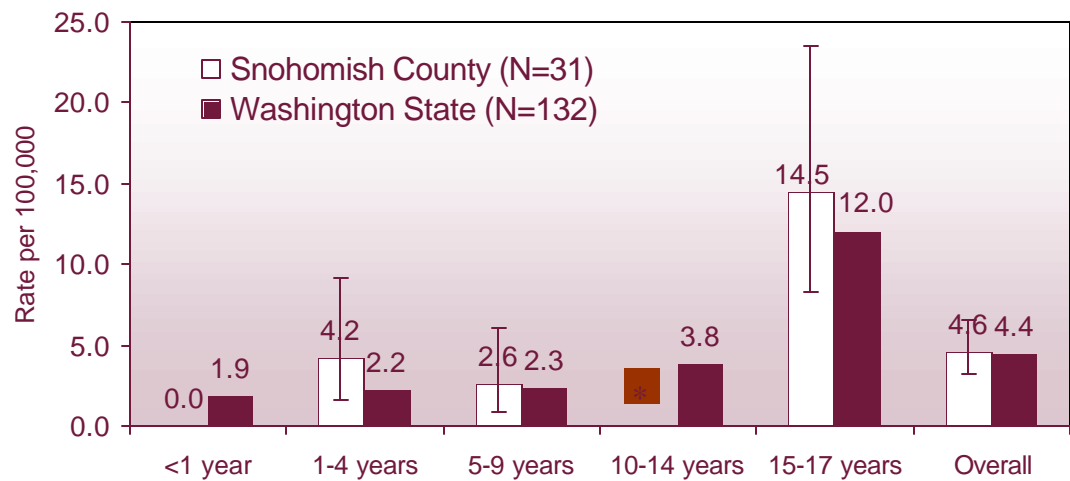
\* 95% Confidence interval



## Demographics

Rates of motor vehicle crashes were calculated to compensate for differences in the number of children per age group. Youth age 15-17 years had a significantly higher rate than other age groups (Figure 1). MVC death rates by age group were similar to Washington State rates.

**MVC Death Rate Among Children by Age Group  
Snohomish County and Washington State**



\* Rate not presented because fewer than five cases

Source: Snohomish County Child Death Review, Jan. 1, 1999-Oct. 31, 2002

Washington State Child Death Review, 1999-2000

**Figure 1**



## Demographics

### Child Protective Services (CPS)

Nearly a third of MVC cases (29.0%) in Snohomish County had at least one CPS investigation at some time in their past for the child or the child's family. Although Washington State had a lower proportion for CPS investigation (20%), the difference was not statistically significant.

### DSHS Client

In Snohomish County, 25.8% of children who died as the result of a MVC were DSHS Children's Administration cases. This means a child or a child's family received services from DSHS Children's Administration within the 12 months prior to the child's death. This includes cases that were investigated and some that were referred, but deemed not necessary to investigate. The proportion of DSHS Children's Administration cases in Washington State was almost half that seen in Snohomish County. However, due to the small number of cases the difference was not statistically significant.

Table 3. Motor Vehicle Crash Deaths Among Children by CPS and DSHS Involvement, Snohomish County and Washington State

		Snohomish County Jan. 1, 1999-Oct. 31, 2002 (N=31)			Washington State 1999-2000 (N=132)
		Number of deaths reviewed	%	95% CI*	%
CPS history**	Yes	9	29.0	14.2, 48.0	20
	No	20	64.5	45.4, 80.8	***
	Unknown	2	6.5	0.8, 21.4	***
DSHS case****	Yes	8	25.8	11.9, 44.6	14
	No	23	74.2	55.4, 88.1	***

\* 95% Confidence interval

\*\* Had one or more CPS investigations for the child or the child's family

\*\*\* Data not available

\*\*\*\* DSHS Children's Administration provided services to a child or a child's family within the 12 months prior to the child's death



## Circumstances of Crash

### Vehicle

The greatest majority (77.4%) of MVC's involved the child as an occupant of a car, truck, van, or SUV (Table 4). The remaining deaths included the child as a pedestrian, or as riding a bicycle, motorcycle, or all terrain vehicle (ATV).

### Position

The position of the child in the vehicle was fairly evenly distributed among operator, a passenger in a rear seat, and a passenger in the front seat (Table 4). A small percent were pedestrians or listed as 'other' positions. Among youth age 16-17 years, 41.7% (5 out of 12 cases) were the operator of the vehicle.

Table 4. Motor Vehicle Crash Deaths in Children by Vehicle Type, Position of Child, and Geographic Location, Snohomish County and Washington State

		Snohomish County Jan. 1, 1999-Oct. 31, 2002 (N=31)			Washington State 1999-2000 (N=132)
		Number of deaths reviewed	%	95% CI*	%
Vehicle of child	Car, Van, Truck, SUV	24	77.4	58.9, 90.4	67.9
	ATV	2	6.5	0.8, 21.4	2.3
	Motorcycle	1	3.2	0.1, 16.7	1.5
	Bicycle	1	3.2	0.1, 16.7	6.9
	Pedestrian	3	9.7	2.0, 25.8	13.0
Position of child	Operator	6	19.4	7.5, 37.5	20.5
	Passenger				
	Back or middle seat	9	29.0	14.2, 48.0	27.3
	Front seat	8	25.8	11.9, 44.6	22.7
	Pedestrian	3	9.7	2.0, 25.8	12.9
	Other	3	9.7	2.0, 25.8	5.3
Geographic location	Unknown	2	6.5	0.8, 21.4	11.4
	Highway	10	32.3	16.7, 51.4	27.3
	Rural road	9	29.0	14.2, 48.0	29.5
	City street	3	9.7	2.0, 25.8	17.4
	Off road	3	9.7	2.0, 25.8	8.3
	Driveway	1	3.2	0.1, 16.7	3.0
	Intersection	2	6.5	0.8, 21.4	7.6
Other	3	9.7	2.0, 25.8	13.6	

\* 95% Confidence interval

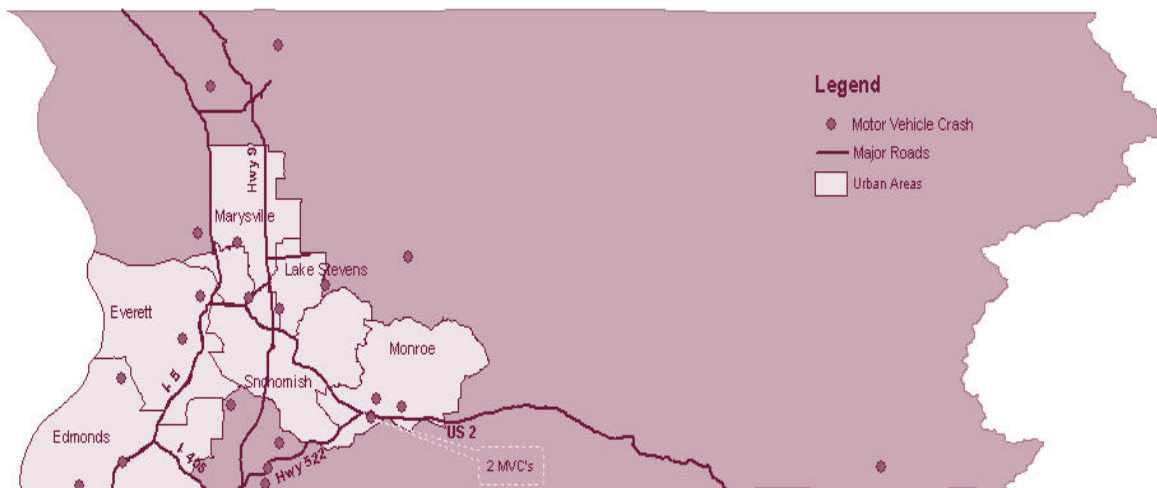


## Circumstances of Crash

### Location

The largest proportion of MVC's that killed Snohomish County children occurred on highways, followed by rural roads (Table 4). In Washington State most crashes occurred on rural roads, followed by highways. Identifying patterns for the geographical location was difficult because of the small numbers. Out of 31 MVC deaths to Snohomish County children, 22 occurred inside the county. A geographical representation of MVC's in Snohomish County shows most of the crashes occurred in the more populated southwest portion of the county (Figure 2). Of the crashes that occurred outside Snohomish County, four were in King County, two in Walla Walla County, and one each in Chelan County, Spokane County, and Yakima County.

**Location of Motor Vehicle Crashes in Snohomish County  
Resulting in the Death of a Child Younger Than 18 Years of Age  
Jan. 1, 1999 - Oct. 31, 2002**



**Cases Reviewed (N=31) by Snohomish County Child Death Review Committee  
Nine cases occurred outside Snohomish County**

**Figure 2**



## Circumstances of Crash

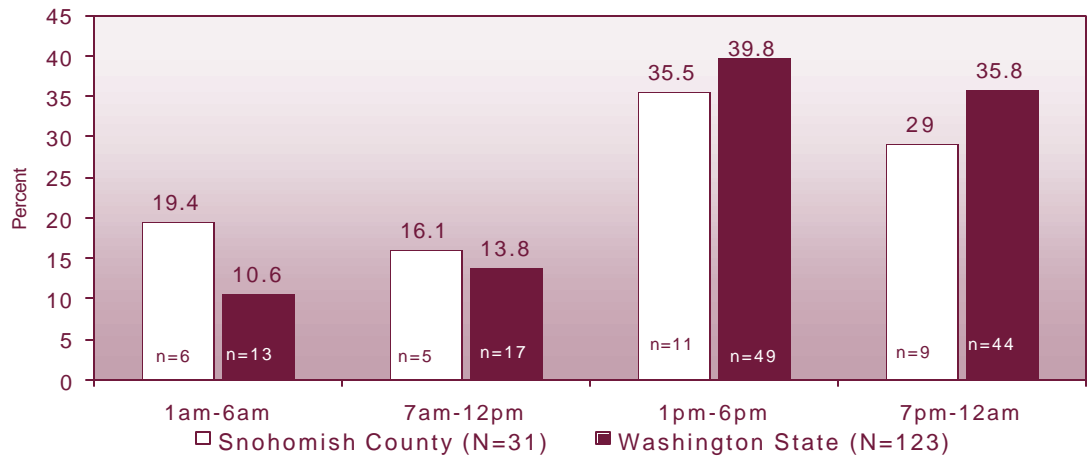
### Hour of Crash

The largest proportion of MVC's in Snohomish County occurred between 1:00 and 6:59 p.m. (Figure 3). The fewest occurred between 7:00 a.m. and 12:59 p.m. There was no significant difference by the time period of MVC's between Snohomish County and Washington State.

### Month of Crash

In Snohomish County, the number of MVC's resulting in the death of a child peaked in June and August (Figure 4). However, in July only one case occurred. Patterns in seasonal variations were difficult to identify because of small numbers.

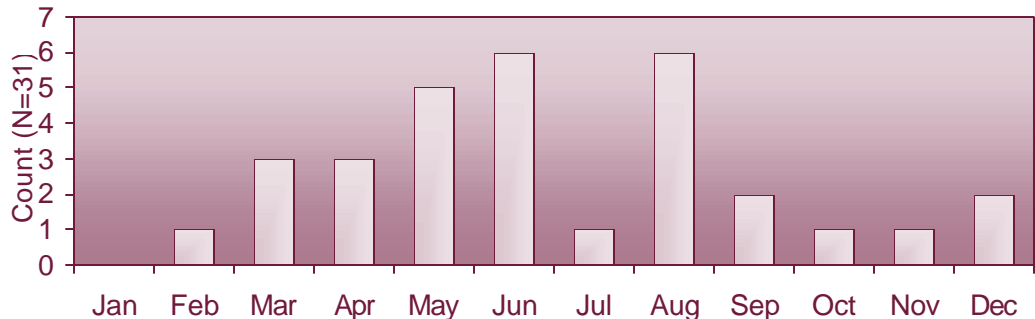
**MVC Deaths Among Children by Hour of Incident  
Snohomish County and Washington State**



Source: Snohomish County CDR Jan. 1, 1999-Oct. 31, 2002  
Washington State CDR, 1999-2000

**Figure 3**

**MVC Deaths Among Children by Month of Incident  
Snohomish County, Jan. 1, 1999-Oct. 31, 2002**



Source: Snohomish County CDR

**Figure 4**



## Factors in Crash

### Charges

All MVC deaths reviewed in Snohomish County were accidental. However, 29.0% of cases had criminal charges filed (9 out of 31 cases). The charges included negligent driving, vehicular homicide, vehicular manslaughter, vehicular assault, hit and run, and second degree manslaughter.

### Seatbelt Use

Of the 24 reviewed cases where a child was in a car, truck, van, or SUV, only 29.2% in Snohomish County were known to be wearing a seatbelt. In Washington State the proportion was 27%. The difference was not statistically significant.

Seatbelt use was unknown in nine Snohomish County cases. Where seatbelt use was known, 46.7% of cases were wearing a seatbelt at the time of the accident.

### Contributing Factors

Driver error was determined to be the greatest factor in MVC's, followed by excessive speed (Table 5). Examples of driver error included driving erratically or inattention. Alcohol or drug intoxication was a factor in 22.6% of Snohomish County cases and 19.7% statewide. The difference was not statistically significant.

Table 5. Factors in Motor Vehicle Crash Deaths Among Children, Snohomish County and Washington State

	Snohomish County Jan. 1, 1999-Oct. 31, 2002 (N=31)			Washington State 1999-2000 (N=132)
	Number of deaths reviewed	%	95% CI*	%
Contributing factors**				
•Driver error	11	35.5	19.2, 54.6	51.5
•Excess speed	10	32.3	16.7, 51.4	39.4
•Alcohol/Drug intoxication	7	22.6	9.6, 41.1	19.7
•Road conditions	3	9.7	2.0, 25.8	9.8
•Weather	3	9.7	2.0, 25.8	6.1

\* 95% Confidence interval

\*\* Numbers may exceed 100% because some MVC's involved multiple factors.



## Single Car Crashes

Of those MVC deaths where the child was in a car, truck, van, or SUV, 58.3% in Snohomish County and 53.9% in Washington State involved a single vehicle. In Snohomish County, the most common contributing factor among these cases was excess speed, followed by driver error, weather, and alcohol or drug intoxication (Table 6).

**Table 6. Factors in Single Vehicle Crash Deaths\* Among Children, Snohomish County**

		Snohomish County		
		Jan 1, 1999-Oct 31, 2002 (N=14)		
		Number of	%	95% CI**
		deaths		
		reviewed		
Contributing factors***	◆ Excess speed	5	35.7	12.8, 64.9
	◆ Driver error	3	21.4	4.7, 50.8
	◆ Weather	3	21.4	4.7, 50.8
	◆ Alcohol/Drug intoxication	3	21.4	4.7, 50.8
	◆ Road conditions	1	7.1	0.2, 33.9

\* Includes cases where the child was in a car, truck, van, or SUV

\*\* 95% Confidence interval

\*\*\* Numbers may exceed 100% because some MVC's involved multiple factors.



## Committee Conclusions

### Preventability

A death was determined to be preventable if a reasonable medical, educational, social, legal, or psychological intervention could have prevented the death. The Snohomish County CDR committee concluded that 77.4% of the cases were preventable. Statewide, 75% of MVC cases were determined to be preventable.

Snohomish County CDR committee identified several major areas for future potential prevention activities: Seatbelt use, speed of the vehicle, driver error, and alcohol or drug use.

### Policy or Practice Issues

Policy or practice issues were identified in 19% of MVC cases in Snohomish County and 15% in Washington State. These issues focus on those that are pertinent for a particular agency's policy or practice. The Snohomish County CDR identified the following issues: Law enforcement officers responding to the scene of a fatal MVC decide what type of ticket or charge a driver receives. The driver may be charged with a misdemeanor, regardless if someone dies, if there is no indication of reckless driving such as driving while intoxicated. Also, Child Protective Services (CPS) required notification of deaths for all children younger than 18 years. While CPS was immediately notified of deaths for infants or children younger than 14 years, they were not notified of all deaths for children age 14 to 17 years. To improve the investigation process they will be notified of all child deaths regardless of age.

### System Issues

The CDR committee identified issues that focus on ways in which various entities throughout the community interact with each other. System issues were identified in 26.7% of cases in Snohomish County and 23% of cases statewide. System issues raised in Snohomish County included enforcement of helmet and safety equipment use and a need for better communication between Child Protective Services and the Medical Examiner's office.



## Recent Motor Vehicle Safety Measures

The purpose of CDR is to use information to identify and support activities aimed at preventing or reducing child deaths. The Snohomish County CDR committee wrote a letter in February 2000 to the state legislature in support of graduated licensing for youth driving.

Washington State began using a graduated driver's license program for teens in 2000. A recent study showed that crash rates declined among 16-year-old drivers when a graduated drivers license was instituted.<sup>1</sup> With an instruction permit in Washington State, a teen may drive when supervised by an adult driver. An intermediate license prohibits passengers and nighttime driving between 1:00 and 5:00 a.m. No one under the age of 20 years, except for family members, may ride with a teen who has an intermediate license. A full-privilege driver's license is allowed after one year without collisions or traffic citations or at age 18 years.

Another motor vehicle safety measure in Washington State is a primary seatbelt law that went into effect June 13, 2002. Every person in a vehicle must use a safety restraint. The driver is responsible for ensuring children younger than 16 years of age are properly secured. A police officer may give a ticket for not using a safety restraint even if there is no other traffic violation.

1. Foss RD, Feaganes JR, Rodgman EA. Initial Effects of Graduated Drivers Licensing on 16-Year-Old Driver Crashes in North Carolina. JAMA 2001; 286: 1588-1592.

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*Motor Vehicle Crashes With Child Fatalities: Summary of Snohomish County Child Death Review Data* was created and prepared by:

Snohomish Health District  
Health Statistics and Assessment  
**Manager:** Jane Ballard, PhD  
**Analysis and Preparation:** Amy Riffe, MA, MPH  
**Design and Production:** Wendy Blaisdell

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For more information on this report, or to request additional copies, please contact the Health Statistics and Assessment Program, Snohomish Health District, 3020 Rucker Ave. #102, Everett, Washington, 98201, 425.339.8618 or 339.5210 or e-mail [wblaisdell@shd.snohomish.wa.gov](mailto:wblaisdell@shd.snohomish.wa.gov). Find on-line versions of Snohomish Health District reports at [www.snohd.org/hlthstats](http://www.snohd.org/hlthstats).