

Occupant Protection



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Section 2: Occupant Protection

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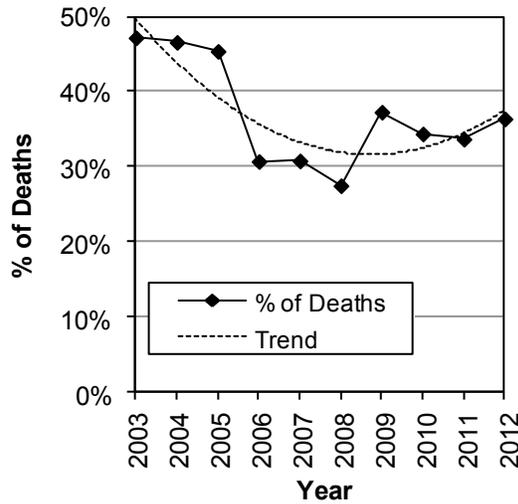
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Trends

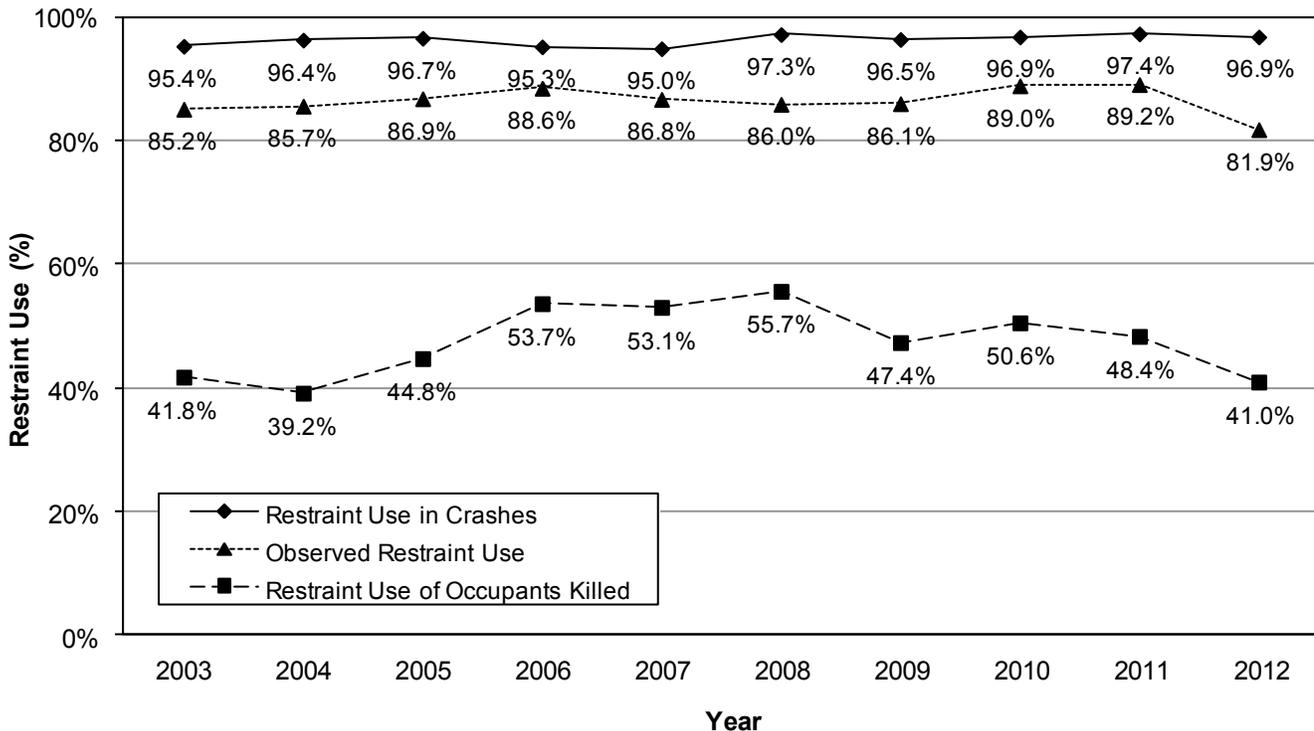
Unrestrained Occupant Deaths (Utah 2003-2012)

Year	Deaths		
	All	Unrestrained Occupants	
	#	#	%
2003	309	146	47.2%
2004	296	138	46.6%
2005	282	128	45.4%
2006	287	88	30.7%
2007	299	92	30.8%
2008	276	78	28.3%
2009	244	91	37.3%
2010	253	87	34.4%
2011	243	82	33.7%
2012	217	79	36.4%
Total	2,706	1,009	37.3%



- Over the past 10 years, 37.3% of deaths have been to unrestrained occupants.
- On average, 101 people die a year in Utah who are unrestrained.
- The percentage of deaths to unrestrained occupants increased 2.7% in 2012 from 2011.

Restraint Use of Occupants In Crashes and Observational Studies (Utah 2003-2012)



- Historically, there have been differences between restraint use of people in crashes (often self-reported) and seat belt use observed in observational studies. The difference may be due to over-reporting by the people in crashes.
- In 2012, the observational seat belt use decreased to 81.9% from 89.2% in 2011.
- The 2012 restraint use of people in crashes decreased to 96.9% from 97.4% in 2011.
- Restraint use among occupants killed decreased from 48.4% in 2011 to 41.0% in 2012.

Vehicle Occupants

Restraint Use by County (Utah 2012)

County	Persons											
	Non-Injured			Injured			Killed			Total		
	Unres #	Restrained #	%	Unres #	Restrained #	%	Unres #	Restrained #	%	Unrestrained #	Restrained #	%
Utah	217	14,493	98.5%	150	3,120	95.4%	7	1	12.5%	374	17,614	97.9%
Davis	144	7,795	98.2%	52	1,487	96.6%	5	3	37.5%	201	9,285	97.9%
Morgan	4	188	97.9%	1	28	96.6%	0	0	n/a	5	216	97.7%
Kane	4	214	98.2%	1	32	97.0%	1	3	75.0%	6	249	97.6%
Cache	58	3,015	98.1%	25	445	94.7%	1	5	83.3%	84	3,465	97.6%
Piute	0	34	100.0%	1	4	80.0%	0	0	n/a	1	38	97.4%
Salt Lake	997	40,264	97.6%	356	7,202	95.3%	16	16	50.0%	1,369	47,482	97.2%
Summit	34	1,683	98.0%	18	212	92.2%	3	0	0.0%	55	1,895	97.2%
Box Elder	31	1,588	98.1%	28	325	92.1%	0	1	100.0%	59	1,914	97.0%
Washington	66	3,853	98.3%	76	787	91.2%	2	5	71.4%	144	4,645	97.0%
Juab	9	418	97.9%	7	95	93.1%	1	0	0.0%	17	513	96.8%
Iron	33	1,421	97.7%	30	249	89.2%	0	0	n/a	63	1,670	96.4%
Wasatch	18	817	97.8%	17	130	88.4%	1	4	80.0%	36	951	96.4%
Carbon	19	547	96.6%	6	91	93.8%	2	0	0.0%	27	638	95.9%
Millard	17	572	97.1%	11	119	91.5%	5	1	16.7%	33	692	95.4%
Weber	357	7,307	95.3%	105	1,511	93.5%	6	4	40.0%	468	8,822	95.0%
Tooele	57	1,218	95.5%	15	305	95.3%	11	4	26.7%	83	1,527	94.8%
Emery	10	267	96.4%	7	81	92.0%	2	0	0.0%	19	348	94.8%
Garfield	9	189	95.5%	2	47	95.9%	2	0	0.0%	13	236	94.8%
Duchesne	43	753	94.6%	7	111	94.1%	1	1	50.0%	51	865	94.4%
Daggett	2	45	95.7%	0	5	100.0%	1	0	0.0%	3	50	94.3%
Rich	0	70	100.0%	6	22	78.6%	0	0	n/a	6	92	93.9%
Wayne	3	80	96.4%	4	9	69.2%	0	1	100.0%	7	90	92.8%
Uintah	46	945	95.4%	40	181	81.9%	5	2	28.6%	91	1,128	92.5%
Grand	19	266	93.3%	9	71	88.8%	2	0	0.0%	30	337	91.8%
Sanpete	24	318	93.0%	9	46	83.6%	1	0	0.0%	34	364	91.5%
San Juan	20	289	93.5%	10	59	85.5%	3	2	40.0%	33	350	91.4%
Sevier	33	487	93.7%	25	107	81.1%	0	2	100.0%	58	596	91.1%
Beaver	43	361	89.4%	23	63	73.3%	1	0	0.0%	67	424	86.4%
Statewide	2,317	89,497	97.5%	1,041	16,944	94.2%	79	55	41.0%	3,437	106,496	96.9%

- Restraint use is reported for occupants in a passenger car, light truck, van, SUV, or heavy truck. Occupants are considered "Restrained" if they were reported as using a shoulder/lap belt, lap belt, or a child safety seat at the scene of the crash.
- Restraint use is often self-reported by crash occupants and may be inflated due to over-reporting by the people in crashes.
- The officer determines restraint use in the event of a fatal or severe injury crash.
- The majority of persons in crashes reported being restrained (96.9%).
- Utah (97.9%), Davis (97.9%), and Morgan (97.7%) counties had the highest percentage of occupants that were restrained.
- Beaver (86.4%), Sevier (91.1%), and San Juan (91.4%) counties had the lowest percentage of occupants that were restrained.
- 41.0% of vehicle occupants killed in crashes in Utah were restrained.

Vehicle Occupants

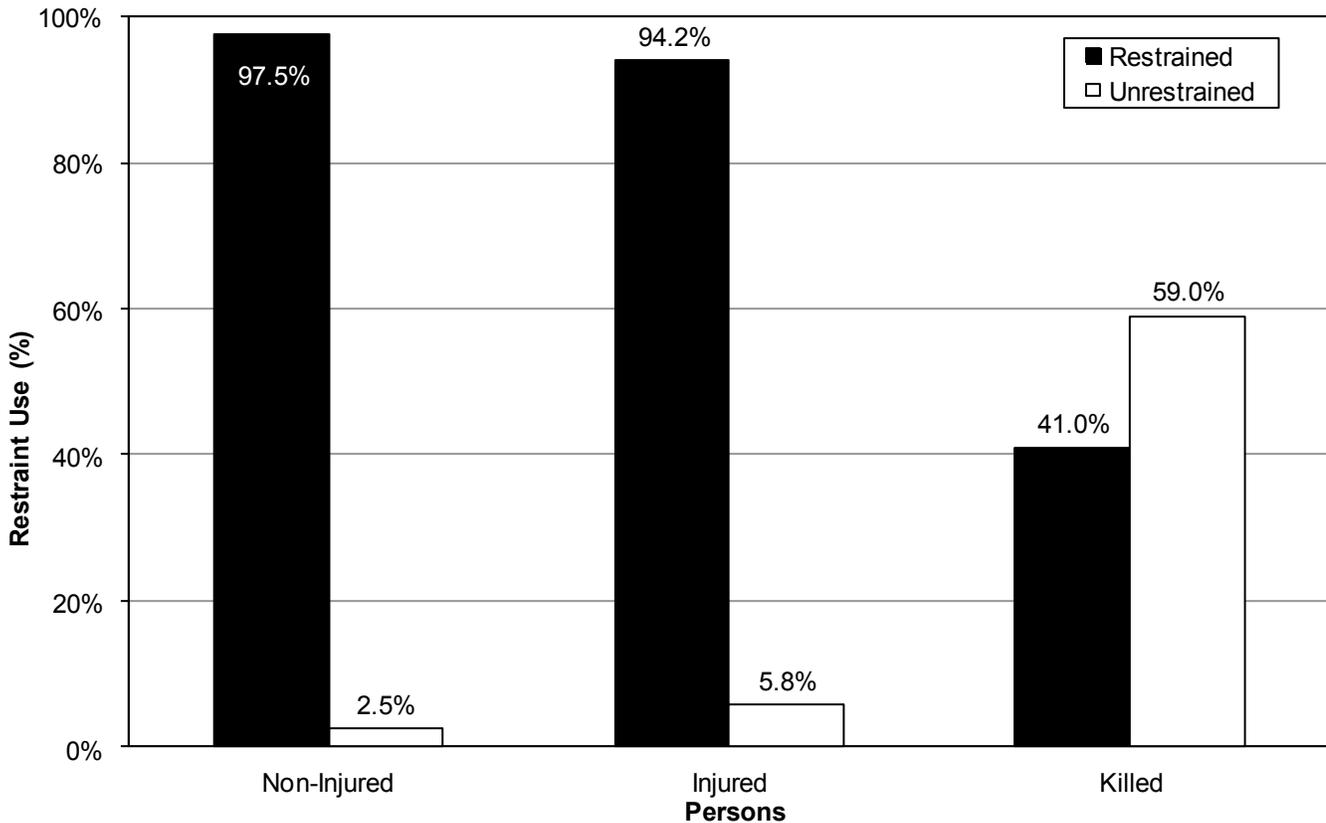
Restraint Use by Urban/Rural Location (Utah 2012)

Persons												
Location	Non-Injured			Injured			Killed			Total		
	Unres	Restrained	%	Unres	Restrained	%	Unres	Restrained	%	Unrestrained	Restrained	%
	#	#	%	#	#	%	#	#	%	#	#	%
Urban	1,839	76,727	97.7%	764	14,552	95.0%	37	34	47.9%	2,640	91,313	97.2%
Rural	478	12,770	96.4%	277	2,392	89.6%	42	21	33.3%	797	15,183	95.0%
Statewide	2,317	89,497	97.5%	1,041	16,944	94.2%	79	55	41.0%	3,437	106,496	96.9%

- Urban areas had a higher percentage of occupants that were restrained for all injury severity levels.
- Occupants in rural crashes were 1.8 times more likely to be unrestrained than occupants in urban crashes.

Restraint Use by Injury Severity (Utah 2012)

Persons									
Restraint Use	Non-Injured		Injured		Killed		Total		
	#	%	#	%	#	%	#	%	
Restrained	89,497	97.5%	16,944	94.2%	55	41.0%	106,496	96.9%	
Unrestrained	2,317	2.5%	1,041	5.8%	79	59.0%	3,437	3.1%	
Total	91,814	100.0%	17,985	100.0%	134	100.0%	109,933	100.0%	



- 97% of persons who survived a crash reported being restrained compared to less than half of the persons killed.
- Unrestrained crash occupants were 45 times more likely to be killed than restrained crash occupants.

Vehicle Occupants

Restraint Use by Ejection (Utah 2012)

Persons												
Ejection Status	Non-Injured			Injured			Killed			Total		
	Unres	Restrained		Unres	Restrained		Unres	Restrained		Unrestrained	Restrained	
	#	#	%	#	#	%	#	#	%	#	#	%
Not Ejected	2,298	88,990	97.5%	946	16,819	94.7%	34	53	60.9%	3,278	105,862	97.0%
Partially Ejected	0	1	100.0%	8	13	61.9%	3	1	25.0%	11	15	57.7%
Fully Ejected	0	1	100.0%	78	63	44.7%	42	1	2.3%	120	65	35.1%
Total	2,298	88,992	97.5%	1,032	16,895	94.2%	79	55	41.0%	3,409	105,942	96.9%

- There is an inverse relationship between ejection from a motor vehicle and restraint use.
- The majority (97.0%) of crash occupants not ejected from a motor vehicle were restrained compared to only 35.1% of crash occupants fully ejected from a motor vehicle.
- Unrestrained occupants were 59 times more likely to be fully ejected from a motor vehicle compared to restrained occupants.
- Ejection from the vehicle is one of the most harmful events that can happen to a person in a crash. Seat belts are effective in preventing total ejections.

Restraint Use by Occupant Placement (Utah 2012)

Persons												
Occupant Placement	Non-Injured			Injured			Killed			Total		
	Unres	Restrained		Unres	Restrained		Unres	Restrained		Unrestrained	Restrained	
	#	#	%	#	#	%	#	#	%	#	#	%
Driver	818	64,411	98.7%	529	11,879	95.7%	57	37	39.4%	1,404	76,327	98.2%
Front Seat	843	12,364	93.6%	292	3,182	91.6%	16	13	44.8%	1,151	15,559	93.1%
Back Seat(s)	352	12,262	97.2%	151	1,793	92.2%	5	5	50.0%	508	14,060	96.5%
Other/Unknown	304	460	60.2%	69	90	56.6%	1	0	0.0%	374	550	59.5%
Total	2,317	89,497	97.5%	1,041	16,944	94.2%	79	55	41.0%	3,437	106,496	96.9%

- Among all occupants, drivers had the highest restraint use (98.2%).

Restraint Use by Vehicle Type (Utah 2012)

Persons												
Vehicle Type	Non-Injured			Injured			Killed			Total		
	Unres	Restrained		Unres	Restrained		Unres	Restrained		Unrestrained	Restrained	
	#	#	%	#	#	%	#	#	%	#	#	%
Van	128	7,067	98.2%	60	1,262	95.5%	2	1	33.3%	190	8,330	97.8%
SUV	443	20,089	97.8%	236	3,617	93.9%	22	14	38.9%	701	23,720	97.1%
Passenger Car	1,161	45,483	97.5%	506	9,995	95.2%	37	35	48.6%	1,704	55,513	97.0%
Pickup Truck	427	13,955	97.0%	195	1,880	90.6%	16	5	23.8%	638	15,840	96.1%
Heavy Truck	158	2,903	94.8%	44	190	81.2%	2	0	0.0%	204	3,093	93.8%
Total	2,317	89,497	97.5%	1,041	16,944	94.2%	79	55	41.0%	3,437	106,496	96.9%

- Occupants in heavy truck (93.8%) and pickup truck (96.1%) were the least likely to be restrained.

Vehicle Occupants

Restraint Use by Gender of Crash Occupants (Utah 2012)

Persons												
Gender	Non-Injured			Injured			Killed			Total		
	Unres	Restrained	%	Unres	Restrained	%	Unres	Restrained	%	Unrestrained	Restrained	%
	#	#	%	#	#	%	#	#	%	#	#	%
Female	1,032	40,056	97.5%	516	9,839	95.0%	37	26	41.3%	1,585	49,921	96.9%
Male	1,267	49,223	97.5%	524	7,073	93.1%	42	29	40.8%	1,833	56,325	96.8%
Unknown	18	218	92.4%	1	32	97.0%	0	0	n/a	19	250	92.9%
Total	2,317	89,497	97.5%	1,041	16,944	94.2%	79	55	41.0%	3,437	106,496	96.9%

- Overall, restraint use of female (96.9%) crash occupants was slightly higher than males (96.8%).
- For persons killed, female crash occupants had higher restraint use (41.3%) than males (40.8%).

Restraint Use by Age of Crash Occupants (Utah 2012)

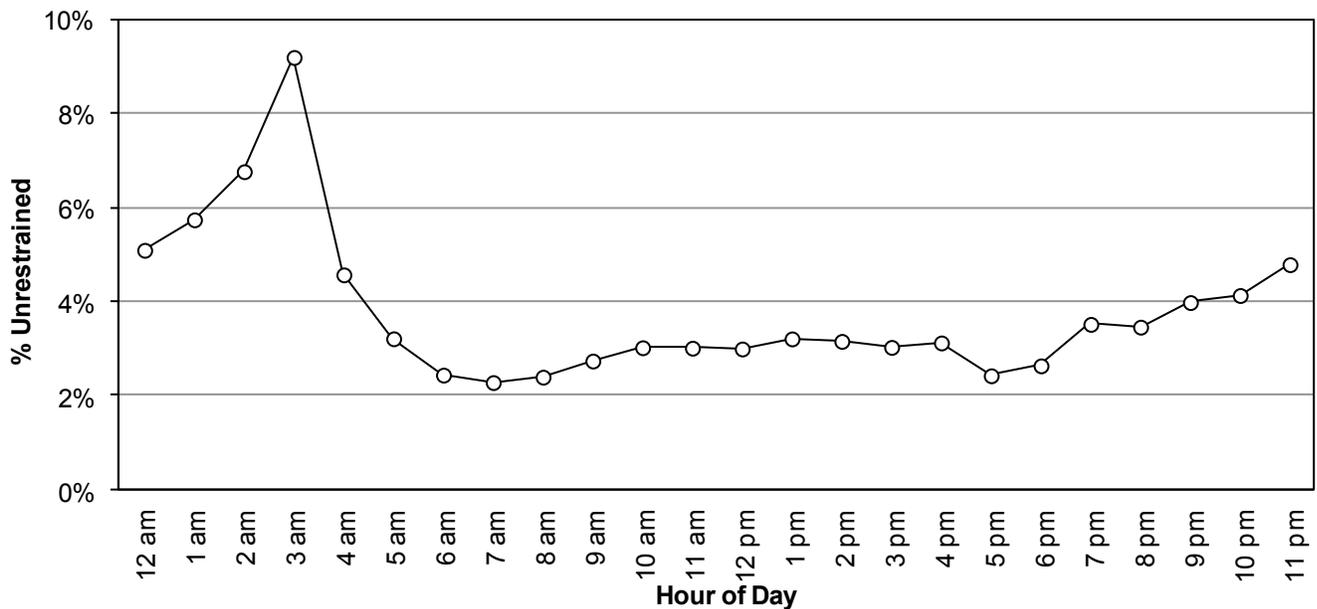
Persons												
Age	Non-Injured			Injured			Killed			Total		
	Unres	Restrained	%	Unres	Restrained	%	Unres	Restrained	%	Unrestrained	Restrained	%
	#	#	%	#	#	%	#	#	%	#	#	%
0-4	37	4,241	99.1%	8	410	98.1%	0	3	100.0%	45	4,654	99.0%
5-9	50	3,243	98.5%	35	478	93.2%	0	2	100.0%	85	3,723	97.8%
10-14	85	2,909	97.2%	51	551	91.5%	1	0	0.0%	137	3,460	96.2%
15-19	463	12,924	96.5%	218	2,157	90.8%	7	7	50.0%	688	15,088	95.6%
20-24	346	12,187	97.2%	175	2,273	92.9%	10	6	37.5%	531	14,466	96.5%
25-29	244	9,412	97.5%	128	1,862	93.6%	13	4	23.5%	385	11,278	96.7%
30-34	218	8,439	97.5%	98	1,612	94.3%	7	4	36.4%	323	10,055	96.9%
35-39	155	6,944	97.8%	55	1,385	96.2%	7	1	12.5%	217	8,330	97.5%
40-44	141	5,748	97.6%	45	1,180	96.3%	9	4	30.8%	195	6,932	97.3%
45-49	105	4,849	97.9%	49	976	95.2%	4	4	50.0%	158	5,829	97.4%
50-54	116	4,538	97.5%	45	1,024	95.8%	8	3	27.3%	169	5,565	97.1%
55-59	96	3,897	97.6%	33	851	96.3%	3	1	25.0%	132	4,749	97.3%
60-64	75	3,042	97.6%	28	673	96.0%	3	8	72.7%	106	3,723	97.2%
65-69	49	2,203	97.8%	24	524	95.6%	0	1	100.0%	73	2,728	97.4%
70-74	35	1,454	97.6%	12	308	96.3%	2	1	33.3%	49	1,763	97.3%
75-79	29	1,024	97.2%	9	207	95.8%	2	3	60.0%	40	1,234	96.9%
80-84	28	713	96.2%	12	175	93.6%	1	1	50.0%	41	889	95.6%
85+	15	458	96.8%	6	120	95.2%	2	2	50.0%	23	580	96.2%
Unknown	30	1,272	97.7%	10	178	94.7%	0	0	#DIV/0!	40	1,450	97.3%
Total	2,317	89,497	97.5%	1,041	16,944	94.2%	79	55	41.0%	3,437	106,496	96.9%

- Overall, crash occupants aged 80+ years and 10-19 years had the lowest percentages of being restrained.
- For persons killed, crash occupants aged 10-14 years and 35-39 years had the lowest percentages of being restrained.

Vehicle Occupants

Restraint Use by Hour (Utah 2012)

Persons						
Hour	Restrained		Unrestrained		Total	
	#	%	#	%	#	%
Midnight	1,173	94.9%	63	5.1%	1,236	100.0%
1 a.m.	738	94.3%	45	5.7%	783	100.0%
2 a.m.	523	93.2%	38	6.8%	561	100.0%
3 a.m.	483	90.8%	49	9.2%	532	100.0%
4 a.m.	626	95.4%	30	4.6%	656	100.0%
5 a.m.	1,146	96.8%	38	3.2%	1,184	100.0%
6 a.m.	2,084	97.6%	52	2.4%	2,136	100.0%
7 a.m.	4,553	97.7%	106	2.3%	4,659	100.0%
8 a.m.	5,512	97.6%	135	2.4%	5,647	100.0%
9 a.m.	4,268	97.3%	120	2.7%	4,388	100.0%
10 a.m.	4,306	97.0%	134	3.0%	4,440	100.0%
11 a.m.	5,319	97.0%	165	3.0%	5,484	100.0%
Noon	6,355	97.0%	196	3.0%	6,551	100.0%
1 p.m.	6,791	96.8%	225	3.2%	7,016	100.0%
2 p.m.	7,647	96.8%	249	3.2%	7,896	100.0%
3 p.m.	8,589	97.0%	268	3.0%	8,857	100.0%
4 p.m.	9,283	96.9%	299	3.1%	9,582	100.0%
5 p.m.	11,571	97.6%	287	2.4%	11,858	100.0%
6 p.m.	8,619	97.4%	233	2.6%	8,852	100.0%
7 p.m.	5,158	96.5%	188	3.5%	5,346	100.0%
8 p.m.	3,574	96.5%	128	3.5%	3,702	100.0%
9 p.m.	3,786	96.0%	157	4.0%	3,943	100.0%
10 p.m.	2,691	95.9%	116	4.1%	2,807	100.0%
11 p.m.	1,729	95.2%	87	4.8%	1,816	100.0%
Total	106,524	96.9%	3,408	3.1%	109,932	100.0%



- Vehicle occupants were least likely to be restrained at night (11:00 p.m. to 4:59 a.m.).

Children and Restraint Use

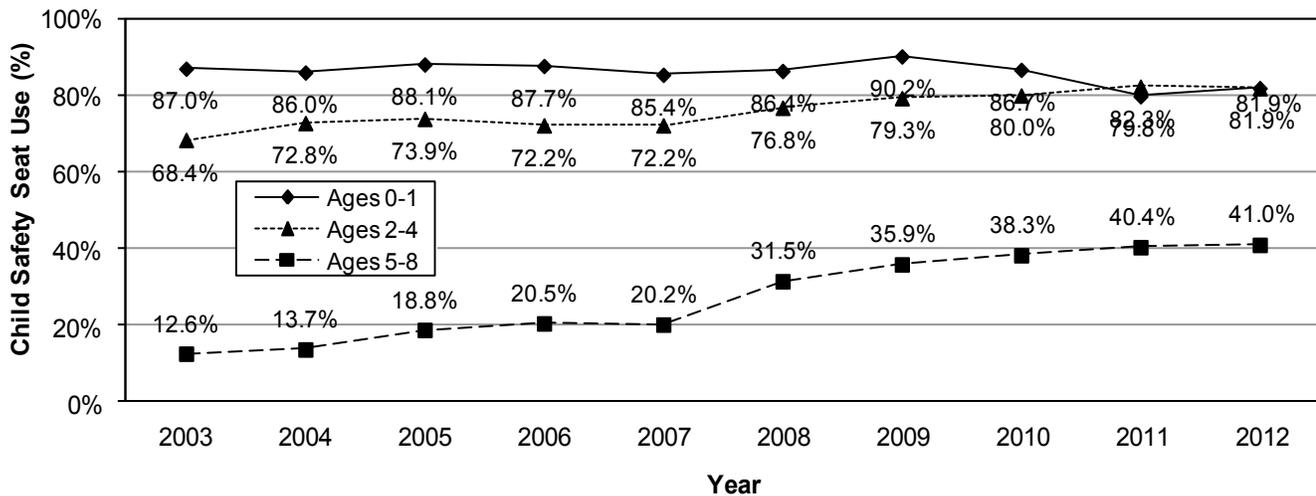
Restraint Use for Children Age 0 to 8 Years (Utah 2012)

Child Occupants								
Restraint Use	Ages 0-1		Ages 2-4		Ages 5-8		Total	
	#	%	#	%	#	%	#	%
Child Safety Seat	1,644	81.9%	2,206	81.9%	1,265	41.0%	5,115	65.7%
Seat Belt Only	347	17.3%	457	17.0%	1,758	56.9%	2,562	32.9%
Unrestrained	16	0.8%	29	1.1%	66	2.1%	111	1.4%
Total	2,007	100.0%	2,692	100.0%	3,089	100.0%	7,788	100.0%

- The older the child the less likely they were using a child safety seat.
- The drastic decrease in child safety seat use for children aged 5-8 years is concerning. This indicates that children are moving to adult-sized seat belts too early.

Child Safety Seat Use by Children Age 0 to 8 Years (Utah 2003-2012)

Child Occupants												
Year	Ages 0-1			Ages 2-4			Ages 5-8			Total		
	No CSS	Child Safety Seat	%	No CSS	Child Safety Seat	%	No CSS	Child Safety Seat	%	No CSS	Child Safety Seat	%
	#	#	%	#	#	%	#	#	%	#	#	%
2003	247	1,652	87.0%	1,070	2,320	68.4%	3,371	484	12.6%	4,688	4,456	48.7%
2004	275	1,688	86.0%	952	2,542	72.8%	3,577	567	13.7%	4,804	4,797	50.0%
2005	227	1,681	88.1%	960	2,721	73.9%	2,969	688	18.8%	4,156	5,090	55.1%
2006	267	1,897	87.7%	881	2,288	72.2%	2,654	683	20.5%	3,802	4,868	56.1%
2007	367	2,151	85.4%	961	2,495	72.2%	2,864	727	20.2%	4,192	5,373	56.2%
2008	286	1,822	86.4%	694	2,301	76.8%	2,125	978	31.5%	3,105	5,101	62.2%
2009	194	1,791	90.2%	606	2,326	79.3%	2,006	1,122	35.9%	2,806	5,239	65.1%
2010	261	1,703	86.7%	598	2,389	80.0%	1,833	1,139	38.3%	2,692	5,231	66.0%
2011	425	1,682	79.8%	520	2,414	82.3%	1,753	1,188	40.4%	2,698	5,284	66.2%
2012	363	1,644	81.9%	486	2,206	81.9%	1,824	1,265	41.0%	2,673	5,115	65.7%
Total	2,912	17,711	85.9%	7,728	24,002	75.6%	24,976	8,841	26.1%	35,616	50,554	58.7%

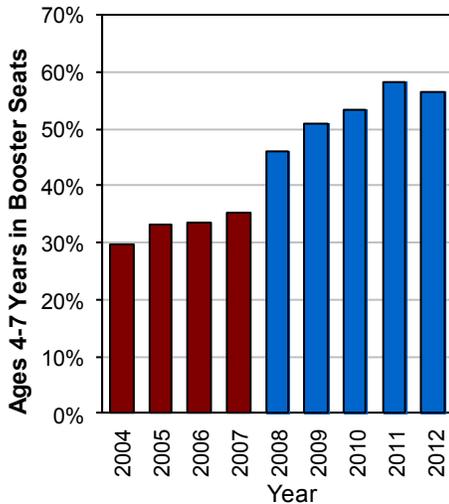


- The ten year trend shows an increase of child safety seat (CSS) use in crashes for ages 0-8 years.
- Ages 5-8 years showed the biggest gain in CSS use, increasing from 12.6% in 2003 to 41.0% in 2012.

Occupant Protection

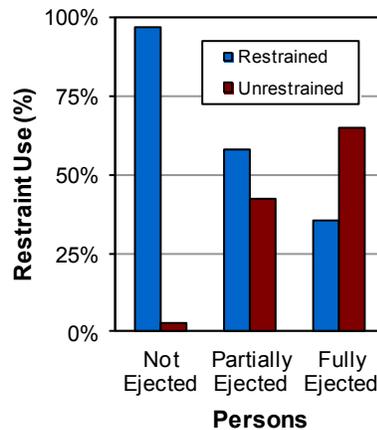


Effectiveness of Booster Seat Law (Utah 2004-2012)



- In 2008, a law was passed increasing the age of child safety seat use from up to age 4 years to up to age 8 years.
- In 2012, booster seat use among ages 4-7 years was 56%.
- Booster seat use increased 61% since passage of the law.

Ejection and Restraint Use (Utah 2012)



- 65% of crash occupants fully ejected from a motor vehicle were unrestrained.
- Unrestrained occupants were 59 times more likely to be fully ejected than restrained occupants.

Child Safety Seat Recommendations:

- Infants should be placed in a rear-facing safety seat until they are at least 20 pounds and 1 year of age.
- Never place a rear-facing child safety seat in the front seat of a vehicle with a passenger side air bag.
- Children at least 1 year of age weighing 20-40 pounds should ride in forward facing child safety seats.
- Older children (approximately 4-8 years of age) should ride in belt-positioning booster seats until they are 4'9" tall and the seat belt fits properly. Booster seats help position an adult-size seat belt for a safer fit on children.
- The safest place for any child aged 12 and under is in the back seat of the vehicle.

Seat Belt Recommendations:

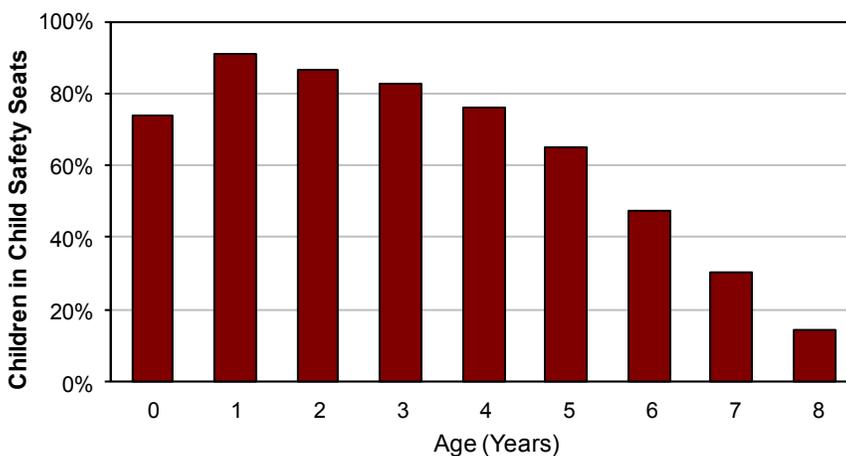
- Always use both the lap and shoulder belt. When worn properly, the shoulder belt should fit across the collar bone and the lap belt should fit low over the hips.
- Never place the shoulder strap under the arm or behind the back.

Safety Restraint Laws:

- Utah law requires all motor vehicle occupants to wear a seat belt. This is a secondary enforcement law for drivers and passengers age 19 years and older. This means an adult may be issued a citation and a \$45 fine only when the police officer has stopped the vehicle for another reason.
 - The law is a primary enforcement law for drivers and passengers under age 19 years.
 - ⇒ Children age 7 years and under must ride in an approved child safety seat.
 - ⇒ Children aged 8 to 18 years must ride in an appropriate child restraint or seat belt.
 - ⇒ There are a few exemptions to the law. Contact the Highway Safety Office for more information.
- This primary enforcement law means a person may be stopped and issued a citation for simply not buckling up.



Percent of Children Aged 0-8 Years in Crashes Using Child Safety Seats (Utah 2012)



- The older the child the less likely they were using a child safety seat.
- While 91% of 1-year-olds in a crash were in a child safety seat, only 76% of 4-year-olds, 47% of 6-year-olds, and 14% of 8-year-olds were in a child safety seat.
- The decrease in child safety seat use for children aged 4-8 years is concerning and indicates that children are moving to adult-sized seat belts too early.