



Research Note

The Use of Child Restraints in 2002

Donna Glassbrenner*

Restraint use by young children reached record levels in 2002, with 99% of infants and 94% of toddlers restrained. On the other hand, too many youngsters remain in the front seat, with 15% of infants, 10% of 1-3 year olds, and 29% of 4-7 year-olds in this more dangerous seating position. Also, the restraint status of the driver continues to be strongly related to that of his or her child passengers, indicating that belt enforcement programs save kids' lives as well as benefiting adults. These results are from the National Occupant Protection Use Survey (NOPUS), which provides the only probability-based observed data on the use of child restraints on the nation's roads. This survey is conducted by the National Center for Statistics and Analysis in the National Highway Traffic Safety Administration (NHTSA).

The survey also found:

- Only 83% of 4-7 year olds are restrained.
- Male drivers are improving at restraining their child passengers.
- Although some premature graduation remains, programs that educate caregivers about proper child restraints seem to be working.

This is the first time NOPUS has measured the restraint use of 4-7 year olds. In addition to observing restraint use for a larger range of children, the incorporation of this new age category gave rise to changes in the NOPUS definitions of toddlers, from 1-4 year olds to 1-3 year olds, and of children, from under 5 to under 8 years. Consequently changes in restraint estimates for toddlers and combined restraint estimates for all children could be due to these changes in age groups.

Table 1: The NOPUS Age Groups

Age Group	Definition Used by NOPUS During the Years	
	1994-2000	2002
Infant	0 years	0 years
Toddler	1-4 years	1-3 years
Booster-Age Child	NA	4-7 years
Child	0-4 years	0-7 years

Restraint Use of Young Children Reach Record Levels; Booster Age Kids Have Low Restraint Use

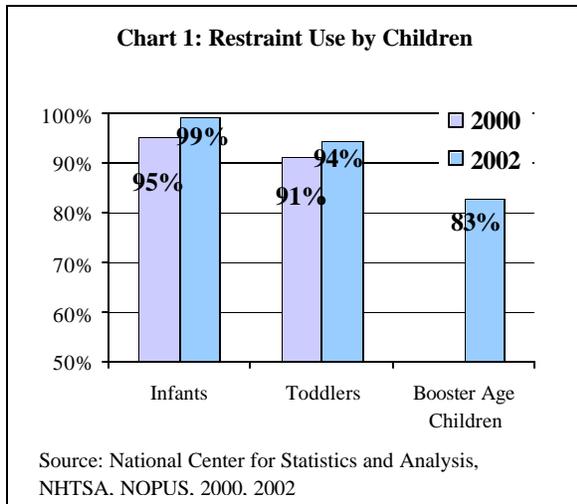
Restraint use for infants reach a record high of 99% and that for toddlers reached 94%. We are 85% confident that use increased among infants and 60% confident for toddlers. Use appears to drop off sharply when children reach the 4-7 age category.

Table 2: Restraint Use by Children

Age Group	Restraint Use		Standard Error	
	2000	2002	2000	2002
Infants (0 years)	95%	99%	2.9%	0.5%
Toddlers (1-4 years in 2000, 1-3 years in 2002)	91%	94%	3.7%	1.8%
Booster-Age Children (4-7 years)	NA	83%	NA	2.8%

Source: National Center for Statistics and Analysis, NHTSA, NOPUS, 2000, 2002.

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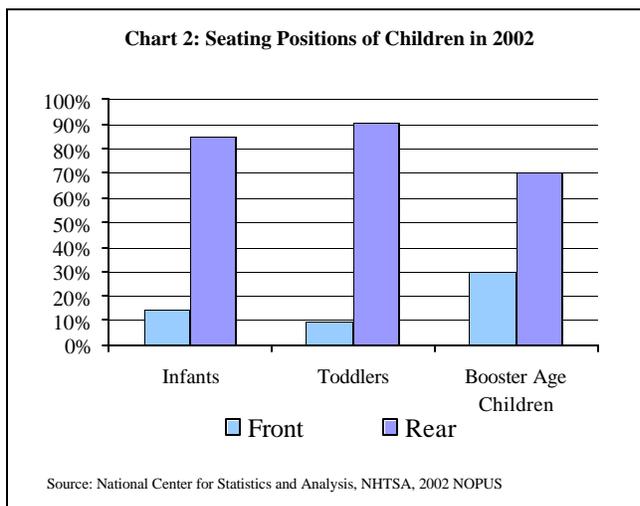
Many Children Continue to Ride in the Front Seat

NOPUS calculated front seat occupancy for the first time this year. NOPUS observed nearly a third of 4-7 year olds in the front seat. Perhaps more alarming is that 15% of infants are in this vulnerable seating position.

Table 2: Front Seat Occupancy in 2002

Age Group	Front Seat Occupancy	Standard Error
Infants	15%	4.5%
Toddlers	10%	2.5%
Booster-Age Children	29%	4.7%

Source: National Center for Statistics and Analysis, NHTSA, NOPUS, 2002.



Belted Drivers Restrain Their Child Occupants More than Unbelted Drivers

NOPUS has consistently seen evidence that programs that enforce or encourage belt use save children's, as well as adult's lives. Fully 92% of the time, when a driver is belted, his or her child passengers are restrained. In contrast, when the driver is unbelted, the children are restrained only 72% of the time.

Table 3: Restraint Use of Children by Belt Status of Driver

Belt Status of Driver	Restraint Use of Child Passenger		Standard Error	
	2000	2002	2000	2002
Belted	97%	92%	2.0%	5.8%
Unbelted	86%	72%	9.8%	9.1%

Source: National Center for Statistics and Analysis, NHTSA, NOPUS, 2000, 2002.

Note that the decreases in use in Table 3 could be due to the changes in the definition of "Child". The children observed in 2002 were under 8, and so were generally older than those observed in 2000, who were under 5. Also note that child passengers observed might or might not be related to the driver of their vehicle.

Male Drivers Are Improving at Restraining Their Child Passengers

The 2000 NOPUS data showed, to a reasonable 74% degree of confidence, that female drivers restrained their child passengers more than males drivers. There was a 7-point gap in the restraint use of children by the gender of their driver. In 2002, this gender gap has shrunk to a virtually nonexistent 1 percentage point, with only a 9% confidence in a gender difference.

Table 4: Restraint Use of Children by Gender of Driver

Gender of Driver	Restraint Use of Child Passenger		Standard Error	
	2000	2002	2000	2002
Female	97%	92%	3.5%	6.7%
Male	90%	91%	5.2%	7.0%

Source: National Center for Statistics and Analysis, NHTSA, NOPUS, 2000, 2002.

Again note that decreases in restraint use might be due the change in the definition of a “Child” in 2002.

Evidence that Education Programs on Proper Child Restraints Are Working

Using data on the height and weight distributions of children from [C], we can calculate the percentage of children in each NOPUS age category that should use a given type of child restraint. Based on these calculations, NOPUS saw improvements in the use of correct restraints for infants and toddlers, although some premature graduation remains.

According to NHTSA recommendations:

- Children under 1 year should be in a rear-facing safety seat.
- Children older than 1 year who are between 20 and 40 pounds should be in a forward-facing safety seat.
- Children who have exceeded the height or weight limit for their forward-facing safety seat, are less than eight years old, and are less than 4’9” tall should be in a booster seat.

All infants should be in rear-facing safety seats. NOPUS saw only 32% of infants in such restraints in 2002, but this was an improvement over the 24% seen in 2000.

Fully 92% of toddlers should be in forward-facing safety seats. NOPUS saw 62% of toddlers in these restraints, up from 39% in 2000. This is a statistically significant increase in the use of front-facing safety seats.

About 63% of 4-7 year olds should be in booster seats. NOPUS saw 6% in high-back boosters and 67% in belts or backless boosters. (When a child is in a backless booster, only the belt can be observed by a data collector.) Since we cannot say how many of the 67% observed were in belts, it is difficult to compare the NOPUS estimates with the 63% we should see in boosters.

On the other hand, NOPUS continues to see some degree of premature graduation. Although all infants should be in rear-facing safety seats,

NOPUS saw 68% of infants in front-facing seats in 2000 and 66% in 2002. Although virtually all toddlers should be in safety seats, NOPUS saw 45% in belts or boosters in 2000 and 29% in 2002. The survey results also indicated that some 4-7 year olds are being prematurely graduated into boosters. NOPUS only saw 9% of these youngsters in front-facing safety seats, but should have seen 37%.

Table 5: Restraint Use by Infants

Restraint	Use		Standard Error		What We Should See*
	2000	2002 [#]	2000	2002	
Front-facing car seat	68%	66%	20.8%	5.7%	0%
Rear-facing car seat	24%	32%	9.5%	5.6%	100%
High-back booster seat	NA	1%	NA	0.3%	0%
Belt or backless booster	3%	1%	3.1%	0.6%	0%
No restraint observed	5%	1%	2.9%	0.5%	0%

[#]Totals do not sum to 100% due to rounding.

*Based on NHTSA recommendations and [C]

Source: National Center for Statistics and Analysis, NHTSA, NOPUS, 2000, 2002.

Table 6: Restraint Use by Toddlers

Restraint	Use [#]		Standard Error		What We Should See*
	2000	2002	2000	2002	
Front-facing car seat	39%	62%	9.3%	3.5%	92%
Rear-facing car seat	8%	4%	2.7%	0.9%	8%
High-back booster seat	NA	16%	NA	3.3%	0%
Belt or backless booster	45%	13%	10.9%	2.6%	0%
No restraint observed	9%	6%	3.7%	1.8%	0%

[#]Totals do not sum to 100% due to rounding.

*Based on NHTSA recommendations and [C]

Source: National Center for Statistics and Analysis, NHTSA, NOPUS, 2000, 2002.

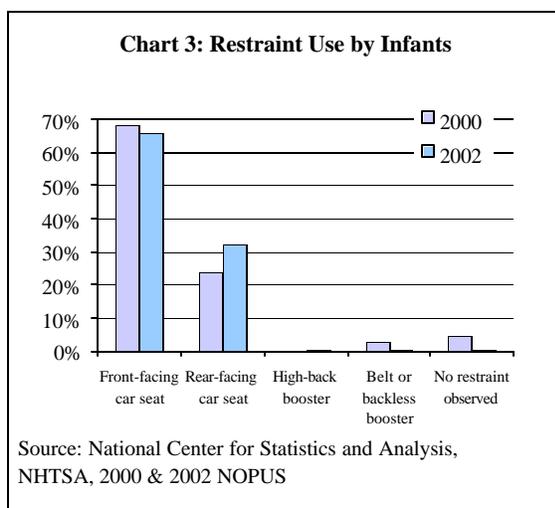
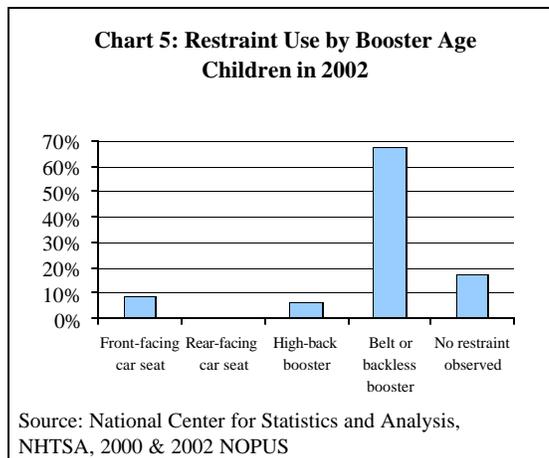
Table 7: Restraint Use by Booster Age Children in 2002

Restraint	Use	Std Error	What We Should See*
Front-facing car seat	9%	3.1%	37%
Rear-facing car seat	1%	0.4%	0%
High-back booster seat	6%	1.7%	**
Belt or backless booster	67%	3.2%	**
No restraint observed	17%	2.8%	0%

*Based on NHTSA recommendations and [C]

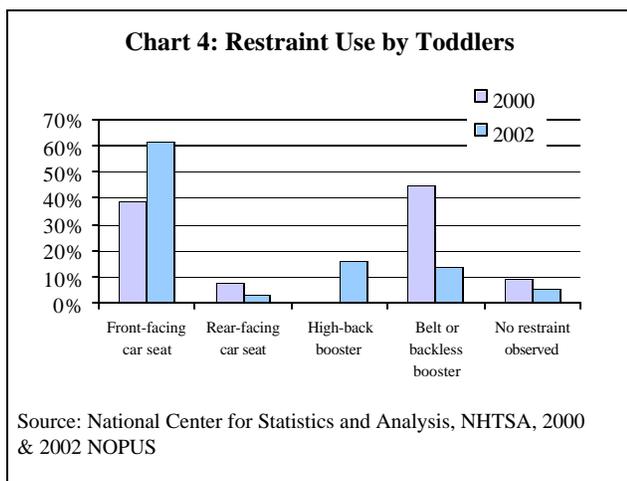
**These cells should sum to 63%.

Source: National Center for Statistics and Analysis, NHTSA, NOPUS, 2000, 2002.



NOPUS Cannot Estimate Booster Seat Use at This Time

Data collectors cannot observe backless boosters from the roadside. When data collectors observe children in these restraints, they are recorded as “Belted”. Not knowing how many of the 67% of 4-7 year olds observed in belts or backless boosters are in belts, NOPUS cannot estimate booster seat use in this age range. If we could obtain a reliable estimate of the distribution of backless versus high-back boosters, we could appropriately inflate the high-back estimate of 6% to a booster seat estimate. However we are not able to obtain a reliable estimate of the distribution at this time, largely because of the large numbers of convertible seats being used.



NHTSA also investigated whether it could be reliably assessed whether a child was elevated, in an attempt to incorporate backless boosters in the NOPUS estimates, but determined such appraisals would be unreliable.

SAFE KIDS estimated that 37% of children in 2001 who should be in a booster seat were in one. [S] They obtained their data by observing stopped vehicles at a convenience sample of 174 sites at which one would be likely to see children, including fast food restaurants, shopping centers, gas stations, and child care centers. By observing from the open doors of vehicles, they were able to see both backless and high-back boosters, and by interviewing occupants they were able to obtain accurate estimates of the ages and sizes of children. It would be desirable, however, to have an estimate

produced by a probability sample, in order to decrease possible biases.

Increase in Sample Size in 2002

The estimates in this note are generally more reliable than in previous years, due to an increase in sample size. In 2002, 1,500 kids under four were observed in 38,000 vehicles at 1,100 sites, compared to 300 kids under five in 12,000 vehicles at 700 sites in recent years. This cut standard errors approximately in half, and so made the NOPUS data much more reliable. In addition, NOPUS observed 2,000 4-7 year olds in 2002. For information on how the sample was supplemented, see [D].

Data Limitations

NOPUS conducts its observations during daylight hours and observes passenger vehicles having no commercial markings. Furthermore, NOPUS observes child restraint use at intersections that are controlled by a stop sign or stoplight. These protocols may slightly bias the estimates. In particular, the use of child restraints might be lower at night than during the day. Furthermore, the use of child restraints might be lower at general roadway sites than at controlled intersections, since controlled intersections are more common in more urbanized areas, which in turn tend to exhibit higher restraint use rates.

We thank John Kindelberger of NCSA for his calculations of the restraint use that we should see for children based on the data in [C].

Table 8: Restraint Use by Infants, Toddlers, and Booster-Age Children

Item	Use in 2002		Use in 2000		2000-2002 Change		
	Estimate	Standard Error	Estimate	Standard Error	Estimate#	Standard Error	Conversion Rate
Infants							
Front-facing car seat	66%	5.7%	68%	20.8%	-2%	22%	-6%
Rear-facing car seat	32%	5.6%	24%	9.5%	8%	11%	11%
High-back booster seat	1%	0.3%	NA	NA	NA	NA	NA
Belt or backless booster	1%	0.6%	3%	3.1%	-2%	3%	-2%
No restraint observed	1%	0.5%	5%	2.9%	-4%	3%	-4%
Toddlers (ages 1-4 in 2000 and 1-3 in 2002)							
Front-facing car seat	62%	3.5%	39%	9.3%	23% (S)	10%	38%
Rear-facing car seat	4%	0.9%	8%	2.7%	-4%	3%	-4%
High-back booster seat	16%	3.3%	NA	NA	NA	NA	NA
Belt or backless booster	13%	2.6%	45%	10.9%	-32% (S)	11%	-58%
No restraint observed	6%	1.8%	9%	3.7%	-3%	4%	-3%
Booster-Age Children (ages 4-7)							
Front-facing car seat	9%	3.1%	NA	NA	NA	NA	NA
Rear-facing car seat	1%	0.4%	NA	NA	NA	NA	NA
High-back booster seat	6%	1.7%	NA	NA	NA	NA	NA
Belt or backless booster	67%	3.2%	NA	NA	NA	NA	NA
No restraint observed	17%	2.8%	NA	NA	NA	NA	NA

*H,L: significantly high use in its category.

#S: significant 2000-2002 change.

Source: National Center for Statistics and Analysis, NHTSA, National Occupant Protection Use Survey, 2000, 2002.

Table 9: Restraint Use of 0-7 Year Olds in 2002 and 0-4 Year Olds in 2000

Characteristic	Use Among 0-7 Year Olds in 2002		Use Among 0-4 Year Olds in 2000		2000-2002 Change		
	Estimate*	Standard Error	Estimate*	Standard Error	Estimate#	Standard Error	Conversion Rate
Overall	88%	2.2%	91%	3.6%	-3%	5.7%	-33%
Northeast	87%	5.4%	84%	21.2%	3%	23.4%	19%
Midwest	86%	5.1%	91%	18.4%	-5%	20.8%	-56%
South	92%	3.0%	89%	14.2%	3%	15.9%	27%
West	86%	4.5%	96%	26.9%	-10%	28.1%	-250%
Urban	84%	4.7%	96%	2.3%	-12% (S)	9.9%	-300%
Suburban	85%	3.0%	94%	2.7%	-9% (S)	6.2%	-150%
Rural	87%	2.2%	72%	13.7%	15%	15.6%	54%
Weekday	89%	2.2%	94%	2.9%	-5%	5.8%	-83%
Weekend	85%	4.6%	84%	15.8%	1%	18.0%	6%
Weekday rush hour	90%	2.7%	95%	3.6%	-5%	7.9%	-100%
Weekday non-rush hour	87%	2.7%	92%	4.0%	-5%	6.7%	-63%
Passenger cars	88%	2.1%	92%	3.0%	-4%	3.7%	-50%
Vans & SUVs	91%	2.5%	NA	NA	NA	NA	NA
Pickups	77%	7.0%	NA	NA	NA	NA	NA
Front seat	83%	3.8%	94%	3.2%	-11% (S)	6.8%	-183%
Rear seat	90%	1.8%	91%	3.9%	-1%	6.1%	-11%

H,L: significantly high use in its category.

#S: significant 2000-2002 change.

Source: National Center for Statistics and Analysis, NHTSA, National Occupant Protection Use Survey, 2002.

Table 10: Belt Use of Drivers in 2002 by the Restraint Use of 0-7 Year Old Children

Scenario	Driver Belt Use	Standard Error	Scenario	Driver Belt Use	Standard Error
All Passenger Vehicles			Vans & SUVs		
All Children Restrained	86%	2%	All Children Restrained	90%	2%
At Least One Child Restrained	86%	2%	At Least One Child Restrained	90%	2%
At Least One Child Unrestrained	60%	4%	At Least One Child Unrestrained	67%	7%
All Children Unrestrained	58%	5%	All Children Unrestrained	64%	7%
No Children in Vehicle	74%	2%	No Children in Vehicle	77%	2%
Passenger Cars			Pickup Trucks		
All Children Restrained	86%	3%	All Children Restrained	74%	6%
At Least One Child Restrained	86%	3%	At Least One Child Restrained	73%	6%
At Least One Child Unrestrained	59%	5%	At Least One Child Unrestrained	57%	18%
All Children Unrestrained	56%	6%	All Children Unrestrained	58%	18%
No Children in Vehicle	76%	2%	No Children in Vehicle	64%	3%

Source: National Center for Statistics and Analysis, NHTSA, National Occupant Protection Use Survey, 2002.

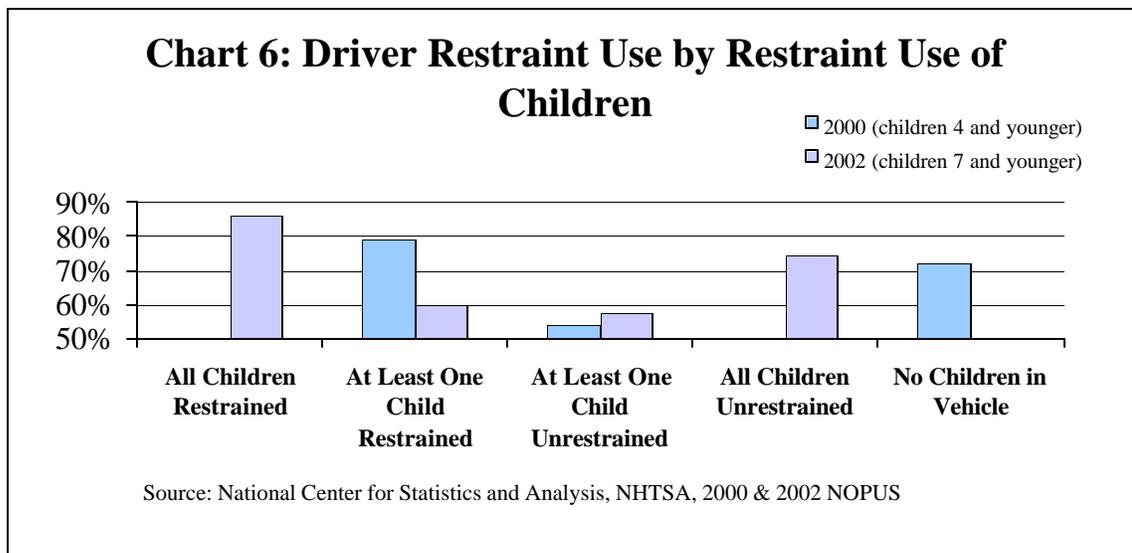


Table 11: Child Restraint Use in 2002 by Restraint Use and Gender of Driver and Vehicle Type

Item	Estimate	Standard Error	Item	Estimate	Standard Error
All Passenger Vehicles			Vans & SUVs		
Belted Driver	92%	5.8%	Belted Driver	93%	0.5%
Unbelted Driver	72%	9.1%	Unbelted Driver	74%	2.0%
Female Driver	92%	6.7%	Female Driver	96%	0.7%
Male Driver	91%	7.0%	Male Driver	92%	0.8%
Passenger Cars			Pickup Trucks		
Belted Driver	92%	0.5%	Belted Driver	80%	0.9%
Unbelted Driver	72%	1.3%	Unbelted Driver	67%	3.0%
Female Driver	91%	0.6%	Female Driver	92%	3.6%
Male Driver	93%	0.8%	Male Driver	77%	1.1%

Source: National Center for Statistics and Analysis, NHTSA, National Occupant Protection Use Survey, 2002.

Table 12: Driver and Child Restraint Use in 2000 and 2002

Item	2002		2000		2000-2002 Change	
	Estimate	Standard Error	Estimate	Standard Error	Estimate#	Standard Error
Driver Restraint Use When						
At Least One Child Is Restrained	86%	2.2%	79%	5.6%	7%	6.0%
At Least One Child Is Unrestrained	60%	3.7%	54%	13.9%	6%	14.4%
No Children Are in Vehicle	74%	1.6%	72%	2.9%	2%	3.3%
Child Restraint Use When						
Driver is Belted	92%	5.8%	97%	2.0%	-5%	6.1%
Driver is Unbelted	72%	9.1%	86%	9.8%	-14%	13.4%
Driver is Female	92%	6.7%	97%	3.5%	-5%	7.5%
Driver is Male	91%	7.0%	90%	5.2%	1%	8.7%

#S: significant 2000-2002 change.

Source: National Center for Statistics and Analysis, NHTSA, National Occupant Protection Use Survey, 2000, 2002.

More Detailed Estimates

Table 13: Restraint Use by Infants

Characteristic	Use in 2002		Use in 2000		2000-2002 Change		
	Estimate	Standard Error	Estimate	Standard Error	Estimate#	Standard Error	Conversion Rate
All Passenger Vehicles	99%	0.5%	95%	2.9%	4%	10.6%	80%
Front Facing Car Seat in Front Seat	11%	5.1%	36%	2.9%	-25%	5.8%	-39%
Rear Facing Car Seat in Front Seat	4%	1.3%	13%	8.3%	-9%	8.4%	-10%
High-Back Booster Seat in Front Seat	0%	0.0%	NA	NA	NA	NA	NA
Belted or Backless Booster in Front Seat	0%	0.0%	0%	0.0%	0%	0.0%	0%
Front Seat, No Restraint Observed	0%	0.1%	NA	NA	NA	NA	NA
Front Facing Car Seat in Rear Seat	55%	6.8%	32%	20.6%	23%	21.7%	34%
Rear Facing Car Seat in Rear Seat	28%	5.3%	11%	4.6%	17%	7.0%	19%
High-Back Booster Seat in Rear Seat	1%	0.3%	NA	NA	NA	NA	NA
Belted or Backless Booster in Rear Seat	1%	0.6%	3%	3.1%	-2%	3.2%	-2%
Rear Seat, No Restraint Observed	1%	0.5%	NA	NA	NA	NA	NA
Passenger Cars	99%	0.7%	97%	2.6%	2%	11.8%	67%
Front Facing Car Seat in Front Seat	10%	6.0%	48%	38.8%	-38%	39.3%	-73%
Rear Facing Car Seat in Front Seat	4%	1.6%	17%	14.0%	-13%	14.1%	-16%
High-Back Booster Seat in Front Seat	0%	0.0%	NA	NA	NA	NA	NA
Belted or Backless Booster in Front Seat	0%	0.0%	0%	0.0%	0%	0.0%	0%
Front Seat, No Restraint Observed	0%	0.1%	NA	NA	NA	NA	NA
Front Facing Car Seat in Rear Seat	56%	7.3%	21%	17.3%	35%	18.8%	44%
Rear Facing Car Seat in Rear Seat	28%	6.4%	7%	6.8%	21%	9.4%	23%
High-Back Booster Seat in Rear Seat	0%	0.2%	NA	NA	NA	NA	NA
Belted or Backless Booster in Rear Seat	0%	0.4%	3%	4.0%	-3%	4.0%	-3%
Rear Seat, No Restraint Observed	1%	0.7%	NA	NA	NA	NA	NA
Vans & SUVs	100%	0.1%	98%	1.2%	2%	17.9%	100%
Front Facing Car Seat in Front Seat	9%	8.1%	1%	0.8%	8%	8.2%	8%
Rear Facing Car Seat in Front Seat	1%	1.0%	11%	10.8%	-10%	10.8%	-11%
High-Back Booster Seat in Front Seat	0%	0.0%	NA	NA	NA	NA	NA
Belted or Backless Booster in Front Seat	0%	0.0%	0%	0.0%	0%	0.0%	0%
Front Seat, No Restraint Observed	0%	0.0%	NA	NA	NA	NA	NA
Front Facing Car Seat in Rear Seat	55%	11.6%	53%	24.0%	2%	26.7%	4%
Rear Facing Car Seat in Rear Seat	30%	10.5%	33%	17.0%	-3%	20.0%	-4%
High-Back Booster Seat in Rear Seat	2%	1.4%	NA	NA	NA	NA	NA
Belted or Backless Booster in Rear Seat	3%	2.6%	1%	0.7%	2%	2.7%	2%
Rear Seat, No Restraint Observed	0%	0.1%	NA	NA	NA	NA	NA
Pickup Trucks	97%	3.1%	75%	59.2%	22%	67.0%	88%

#S: significant 2000-2002 change.

Source: National Center for Statistics and Analysis, NHTSA, National Occupant Protection Use Survey, 2000, 2002.

Table 14: Restraint Use by Ages 1-3 in 2002 and Ages 1-4 in 2000

Characteristic	Use in 2002 for Ages 1-3		Use in 2000 for Ages 1-4		2000-2002 Change		
	Estimate	Standard Error	Estimate	Standard Error	Estimate#	Standard Error	Conversion Rate
All Passenger Vehicles	94%	1.8%	91%	3.7%	3%	6.7%	33%
Front Facing Car Seat in Front Seat	3%	0.8%	14%	6.7%	-11%	6.8%	-13%
Rear Facing Car Seat in Front Seat	0%	0.3%	2%	1.4%	-2%	1.4%	-2%
High-Back Booster Seat in Front Seat	1%	0.3%	NA	NA	NA	NA	NA
Belted or Backless Booster in Front Seat	4%	1.6%	19%	6.4%	-15%	6.6%	-19%
Front Seat, No Restraint Observed	2%	1.3%	NA	NA	NA	NA	NA
Front Facing Car Seat in Rear Seat	59%	3.6%	25%	6.5%	34%	7.4%	45%
Rear Facing Car Seat in Rear Seat	3%	0.9%	6%	2.3%	-3%	2.5%	-3%
High-Back Booster Seat in Rear Seat	15%	3.3%	NA	NA	NA	NA	NA
Belted or Backless Booster in Rear Seat	10%	1.9%	26%	8.8%	-16%	9.0%	-22%
Rear Seat, No Restraint Observed	4%	0.9%	NA	NA	NA	NA	NA
Passenger Cars	95%	1.4%	91%	3.4%	4%	7.8%	44%
Front Facing Car Seat in Front Seat	2%	0.8%	9%	4.3%	-7%	4.4%	-8%
Rear Facing Car Seat in Front Seat	1%	0.4%	2%	1.6%	-1%	1.7%	-1%
High-Back Booster Seat in Front Seat	1%	0.3%	NA	NA	NA	NA	NA
Belted or Backless Booster in Front Seat	4%	2.1%	24%	11.3%	-20%	11.5%	-26%
Front Seat, No Restraint Observed	0%	0.4%	NA	NA	NA	NA	NA
Front Facing Car Seat in Rear Seat	57%	4.6%	18%	7.6%	39%	8.9%	48%
Rear Facing Car Seat in Rear Seat	3%	1.1%	5%	2.7%	-2%	2.9%	-2%
High-Back Booster Seat in Rear Seat	15%	4.0%	NA	NA	NA	NA	NA
Belted or Backless Booster in Rear Seat	12%	2.4%	32%	13.1%	-20%	13.3%	-29%
Rear Seat, No Restraint Observed	5%	1.3%	NA	NA	NA	NA	NA
Vans & SUVs	99%	0.5%	98%	1.0%	1%	7.8%	50%
Front Facing Car Seat in Front Seat	3%	1.5%	11%	9.4%	-8%	9.5%	-9%
Rear Facing Car Seat in Front Seat	0%	0.2%	3%	3.6%	-3%	3.6%	-3%
High-Back Booster Seat in Front Seat	2%	1.0%	NA	NA	NA	NA	NA
Belted or Backless Booster in Front Seat	1%	0.7%	36%	16.5%	-35%	16.5%	-55%
Front Seat, No Restraint Observed	0%	0.1%	NA	NA	NA	NA	NA
Front Facing Car Seat in Rear Seat	69%	5.1%	34%	9.4%	35%	10.7%	53%
Rear Facing Car Seat in Rear Seat	3%	1.3%	7%	5.3%	-4%	5.5%	-4%
High-Back Booster Seat in Rear Seat	17%	5.0%	NA	NA	NA	NA	NA
Belted or Backless Booster in Rear Seat	4%	1.7%	7%	2.3%	-3%	2.9%	-3%
Rear Seat, No Restraint Observed	1%	0.5%	NA	NA	NA	NA	NA
Pickup Trucks	74%	15.9%	99%	1.2%	-25%	15.6%	-2500%

#S: significant 2000-2002 change.

Source: National Center for Statistics and Analysis, NHTSA, National Occupant Protection Use Survey, 2000, 2002.

Table 15: Restraint Use by Ages 4-7 in 2002

Characteristic	Use in 2002		Characteristic	Use in 2002	
	Estimate	Standard Error		Estimate	Standard Error
All Passenger Vehicles	83%	2.8%	Vans & SUVs	86%	3.6%
Front Facing Car Seat in Front Seat	2%	1.1%	Front Facing Car Seat in Front Seat	0%	0.2%
Rear Facing Car Seat in Front Seat	0%	0.0%	Rear Facing Car Seat in Front Seat	0%	0.0%
High-Back Booster Seat in Front Seat	1%	0.4%	High-Back Booster Seat in Front Seat	1%	0.4%
Belted or Backless Booster in Front Seat	20%	3.2%	Belted or Backless Booster in Front Seat	19%	5.9%
Front Seat, No Restraint Observed	6%	1.7%	Front Seat, No Restraint Observed	6%	3.0%
Front Facing Car Seat in Rear Seat	7%	2.2%	Front Facing Car Seat in Rear Seat	12%	3.6%
Rear Facing Car Seat in Rear Seat	1%	0.4%	Rear Facing Car Seat in Rear Seat	0%	0.2%
High-Back Booster Seat in Rear Seat	5%	1.4%	High-Back Booster Seat in Rear Seat	6%	1.7%
Belted or Backless Booster in Rear Seat	47%	4.8%	Belted or Backless Booster in Rear Seat	49%	6.9%
Rear Seat, No Restraint Observed	11%	2.0%	Rear Seat, No Restraint Observed	8%	2.0%
Passenger Cars	82%	3.1%	Pickup Trucks	78%	5.3%
Front Facing Car Seat in Front Seat	3%	1.6%			
Rear Facing Car Seat in Front Seat	0%	0.0%			
High-Back Booster Seat in Front Seat	1%	0.5%			
Belted or Backless Booster in Front Seat	18%	4.3%			
Front Seat, No Restraint Observed	6%	2.0%			
Front Facing Car Seat in Rear Seat	5%	2.3%			
Rear Facing Car Seat in Rear Seat	1%	0.7%			
High-Back Booster Seat in Rear Seat	5%	1.8%			
Belted or Backless Booster in Rear Seat	49%	5.4%			
Rear Seat, No Restraint Observed	13%	2.2%			

Source: National Center for Statistics and Analysis, NHTSA, National Occupant Protection Use Survey, 2002.

Survey Design

The data in this note were observed during the Controlled Intersection Study of NOPUS. This survey uses a multi-stage probability sample of roadways to ensure reliable estimates. The Controlled Intersection sample consists of intersections that are controlled by a stop sign or a stoplight, at which stopped and slowed traffic permit detailed observation. For a complete description of the sample design, see [N]. Data collectors observed the restraint use of children who appeared to be under 8, and the belt use and demographic characteristics (race, age, gender) of the drivers in passenger vehicles having no commercial markings during daylight hours between 10 AM and 6 PM. Demographic classifications, as well as urbanization, were according to the best determination of the data collectors. “Weekday rush hour” is defined to be 8:00 – 9:30 AM and 3:30 – 6:00 PM,

Monday through Friday. “Weekday non-rush hour” refers to the portions of the weekdays that don’t occur in rush hour. The results in this note were observed between June 3, 2002 and June 22, 2002, and are based on 38,000 vehicles.

The field data is entered, edited, and missing values of certain variables (race, age, and gender) imputed. Estimates and sampling errors are computed incorporating NOPUS’s complex sample design. Although we plan to use direct estimation of the variances of differences in future surveys, the variances on the 2000-2002 differences in this note are based on the assumption that the 2000 and 2002 surveys are independent.

Assessing Significance

Because NOPUS uses a probability sample, one can calculate the error its estimates incur from

observing use for a sample of roadways and times rather than for all roads and times. The actual quantity being estimated by a NOPUS estimate is within twice the standard error of the estimated value with 95% confidence. (Standard errors are provided in the tables in this note.)

This computation can be used to determine whether differences, such as differences in safety seat and belt use, are statistically significant. See [N] for detailed examples of such calculations.

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For additional copies of this research note, please call (800) 934-8517 or fax your request to (202) 366-3189. For questions regarding the data reported in this research, contact Donna Glassbrenner at (202) 366-5358. This research note and other general information on highway traffic safety may be accessed by internet users at: <http://www-nrd.nhtsa.dot.gov/departments/nrd-30/ncsa/AvailInf.html>

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