Published in final edited form as:

Traffic Inj Prev. 2015 October 8; 16(0 2): S41–S45. doi:10.1080/15389588.2015.1040115.

Reasons for child passenger non-restraint in motor vehicles

Mark R. Zonfrillo, MD, MSCE^{a,b}, Rennie W. Ferguson, MHS^c, and Lorrie Walker, MS^c

^aCenter for Injury Research and Prevention and Division of Emergency Medicine, The Children's Hospital of Philadelphia, Philadelphia, PA

^bDepartment of Pediatrics, Perelman School of Medicine, University of Pennsylvania, Philadelphia, PA

^cSafe Kids Worldwide, Washington, D.C.

Abstract

Objective—Although child passenger restraint use in motor vehicles has increased, there is an important minority of children who remain unrestrained. The goal of this study was to identify the frequency of, and under what circumstances, parents keep their children unrestrained.

Methods—A cross-sectional, online survey was distributed to parents and caregivers of children 10 years old and younger. Survey participants were asked about child restraint practices, including frequency of and reasons for non-use of restraints. Parents were specifically asked how acceptable it would be to keep their child unrestrained in certain situations.

Results—1,285 parents and guardians responded to the survey and 1,002 completed it. 23.8% (95% CI: 21.3-26.6%) of respondents said they had driven with their child not fully restrained on at least one occasion. Approximately 1 in 5 parents 'strongly' or 'somewhat' agreed that it would be acceptable to keep their child unrestrained in certain situations including: a short drive, in a rush, an inadequate number of restraints, riding in a taxi, if somebody was holding the child, and as a reward for a child. Parents were more likely to agree that it was acceptable to keep their child unrestrained under nearly all circumstances listed if they were: male, ages 18-29, with a graduate school education, in the \$100,000+ income bracket, or Latino.

Conclusions—There are certain situations for which parents find it acceptable to leave their children unrestrained. This has implications for targeted child passenger safety efforts designed to maximize consistent restraint use.

Keywords

child restraints; child seat; unrestrained; child safety

INTRODUCTION

Motor vehicle crashes (MVCs) are the leading cause of death for children older than 4 years, and lead to significant injury-related morbidity, disability, and societal burden.^{1,2} The

consistent and proper use of child passenger restraints reduces the risk of injury and death.²⁻⁵ There has been a decrease in motor vehicle crash occupant deaths and injuries to child passengers over the past 20 years, largely due to improved vehicle and restraint technology, passage and enforcement of legislation, and public awareness and education on the importance of car safety seat use. In 2013, 91% of children younger than 13 years were restrained in a vehicle, with higher restraint use in the youngest ages (98% for children birth-12 months) and lower use in older children (89% for 8-12 year olds).⁶ Despite these advances and relatively high restraint use, more than 600 children ages 12 years and younger die in motor vehicle crashes annually,⁷ and 40% of child occupants 14 years old and younger who are fatally injured in crashes are unrestrained.² In order to further reduce deaths associated with non-restraint, we sought to identify the frequency of, and under what circumstances, parents keep their children unrestrained. Our hypothesis was that while parents generally have high knowledge about the need for child restraint use in vehicles, they might have more lenient attitudes in particular scenarios.

METHODS

This was an online, cross-sectional, confidential survey that was exempt from review from our institutional review board. The survey was managed through an online respondent panel in the United States by Survey Sampling International (SSI), and consent was implied by completion of the survey. Potential survey participants were identified as a convenience sample through various market research methods, including selecting from proprietary panels, as well as from partnerships with web sites and various online sources. Eligible subjects included adults ages 18-65 years old who owned or leased a vehicle, and who were parents or primary caretakers of at least one child 10 years old or younger. Quality measures were completed for the sample, including digital fingerprinting to prevent duplication, spot checking via third party verification to prove identity, and reward redemption quality procedures. Respondents received participation points upon completion of the survey, equivalent to \$0.50 US. Data were imported into Stata/IC version 13.0 (StataCorp, College Station, Texas). The survey included multiple-choice, Likert-scale, and free-text questions. Outcomes measured included: demographics; self-reported child passenger safety practices and attitudes; frequency of and reasons for not using restraints; and patterns of child-driven decision of restraint use.

Data analysis

Standard descriptive summaries were used. Comparisons of categorical variables between subgroups were made by using the chi-square test. Other associations were explored by using univariate and multivariate analysis.

RESULTS

There were 1,285 respondents who accessed the survey URL. Of those, 1,002 participants from fifty states and the District of Columbia completed the survey. 23.8% (95% CI: 21.3%, 26.6%) of respondents said they had driven with their child or children not fully buckled in their car seat or booster on at least one occasion. 53.2% (95% CI 50.1%, 56.3%) said they knew of situations when other parents would permit their children to ride unrestrained.

80.2% (95% CI: 77.7%, 82.6%) of respondents said they wear a seatbelt every single time when riding in or driving an automobile.

Respondents were given situations and asked whether they strongly agree, somewhat agree, somewhat disagree or strongly disagree with the statement, “It is acceptable for a child to ride in a car not fully buckled in their car seat or booster...” for each situation. Overall, 21.4% (95% CI 18.9%, 24.0%) of parents strongly or somewhat agreed that it is acceptable for a child to ride in a car unrestrained when not driving far (Figure 1).

There were differences in responses by gender, age group, education, income and race/ethnicity (Tables 2 and 3). In several scenarios, men were almost twice as likely as women to say that it is acceptable for a child to ride unrestrained. 23% of men said that it was acceptable as a ‘reward’ for the child, compared to 12% of women ($p=0.000$). Women were 45% less likely to agree that it is acceptable to ride unrestrained as a ‘reward’ compared to men, controlling for other variables ($p=0.002$). Participants in the highest income bracket (\$100,000 and above) more frequently responded that it was acceptable for a child to ride unrestrained. The situation that the greatest proportion of respondents in this income group found acceptable was not driving far (34%), compared to 15% of respondents in the under \$35,000 income group ($p=0.000$). A greater proportion of parents 18-29 years responded that situations were acceptable, compared to those 30-49 years. 27% of parents in the younger age group said it would be acceptable for a child to ride unrestrained if not driving far, compared to 19% of parents in the older age group ($p=0.000$).

A greater proportion of parents with the highest incomes said it was acceptable for a child to ride unrestrained if they were in a rush compared to those with lower incomes: 22% of parents who earned more than \$100,000 versus 9% of parents who earned less than \$35,000, $p=0.002$. Similarly, those with a graduate school education also more frequently said non-restraint was acceptable when in a rush (20%), compared to those with a high school education or less (10%), $p=0.011$. Compared to respondents who earn less than \$35,000/year, respondents in the highest income bracket (\$100,000+) were 2.7 times more likely to agree that it was acceptable for a child to ride unrestrained when in a rush controlling for age, gender, education, region, and race/ethnicity ($p=0.006$). However, there was not a statistically significant relationship between education and acceptability of riding when in a rush, controlling for other variables.

30% of respondents who identified as Latino said it would be acceptable for a child to ride unrestrained if someone was holding the child, compared to 13% of White, 19% of Black, and 23% of other race/ethnicities. The proportion of respondents who completed graduate school and found this situation acceptable was 28%.

Respondents from the Northeast and West Census regions generally found scenarios more acceptable than respondents from the South and Midwest. In the scenario where riding unrestrained is a reward for the child, 23% of respondents from the Northeast and 20% from the West said it was acceptable, compared to 8% in the Midwest and 15% in the South ($p=0.000$). Compared to the Northeast, respondents from the Midwest, South, and West

were less likely to agree that it is acceptable to ride unrestrained as a reward, however the relationship was not statistically significant for the West ($p=0.324$).

DISCUSSION

Our study showed that although parents were aware of the need to keep their child restrained and were generally compliant with this practice, parents who were: male, younger, with a graduate school education, in a high-income bracket, or Latino were more likely to agree that it is acceptable to keep children unrestrained given certain circumstances. This ‘situational unrestraint’ is concerning, particularly since nearly half of all MVCs have historically occurred within 5 miles of the driver’s residence.⁸

Prior studies have shown that ethnic minorities and socioeconomically disadvantaged families are more likely to have inappropriately restrained or unrestrained child passengers.⁹⁻¹⁵ Given the self-reported nature of this survey and that we explored attitudes toward situational non-restraint and not overall non-restraint, our findings are not directly comparable to previous studies. However, the finding that higher-income parents and parents with more education were more willing to say that is acceptable for a child to not ride buckled up, particularly given certain circumstances, suggests that educational efforts may need to be strengthened among groups not typically perceived as at-risk. Some parents may believe that the risk of being injured in a crash is significantly low, with the risk of ‘getting caught’ unrestrained as being more likely. For these parents, particularly those with higher income/higher education, they may intentionally choose to forego the “time cost” associated with securing the restraint with that of actual cost of receiving a ticket for having their child unrestrained.

Another example of the potential need for awareness and education is the finding that, when controlling for other factors, respondents in the highest income bracket were 2.7 times more likely to agree that was acceptable for a child to ride unrestrained when in a rush. While parents may be concerned about the effect that a harried lifestyle has on their children, they may not be considering the risk of injury by not properly restraining their children in order to get to a destination faster.

Hyperbolic discounting is a model of temporal decision-making in which individuals value present rewards over the future consequences, to the point that possible negative future outcomes are ignored.¹⁶ It is possible that our findings may reflect this; that parents consider the convenience of non-restraint use in certain situations (e.g., short trips or being in a rush) more of a priority over the potential risk of being unrestrained. Similarly, although parents may realize the benefits of restraint use and the consequences of non-restraint, they may consider the risk minimized in certain situations, which then justifies their situational non-restraint.

Although parents with higher education and income were more likely to find it acceptable to have their child unrestrained in certain situations, it is important to note that disparities in overall restraint use still exist, with less use in ethnic minorities and socioeconomically disadvantaged individuals. Therefore, car seat education and distribution programs that are

focused in communities where there is a need are still important. However, results from this study show that additional, targeted education should be directed towards parents who, although may have been considered ‘low risk’ in the past, may have beliefs that serve as barriers to consistent restraint use for their children. Such education could be directed in the primary care setting, included with child restraint purchases, reinforced in child care and schools, and promoted in public service announcements targeted to this parental audience.

There were limitations of the study that should be noted. The voluntary nature and online source of this survey could have lead to a response bias, and may not be a representative sample. However, prior research using this data source has shown the sampling method and quality measures to minimize these biases. Additionally, there could have been acquiescence bias, particularly for proper child restraint, which is socially desirable. Similarly, this was a self-reported behavior and not directly observed practices. If present, however, these biases likely would have lead to an underrepresentation of the actual prevalence of, and reasons for, restraint non-use.

There are certain situations for which parents find it acceptable to leave their children unrestrained in motor vehicles. This has implications for targeted child passenger safety efforts designed to maximize consistent restraint use.

ACKNOWLEDGEMENTS

This project was supported by the Eunice Kennedy Shriver National Institute of Child Health and Human Development, National Institutes of Health (NIH) grant 5K08HD073241. The authors would like to thank General Motors (GM) Foundation for their support of the Safe Kids Buckle Up program. The views presented are those of the authors and not necessarily the views of the NIH or GM.

REFERENCES

- Centers for Disease Control-National Center for Injury Prevention and Control. [Accessed January 30, 2012] Web-based Injury Statistics Query and Reporting System (WISQARS). Available at: <http://www.cdc.gov/injury/wisqars/>
- NHTSA. National Highway Traffic Safety Administration. Traffic Safety Facts: 2012 Data. Department of Transportation HS 812 011; Available at: <http://www-nrd.nhtsa.dot.gov/Pubs/812011.pdf> [Accessed July 15, 2014]
- Arbogast KB, Jermakian JS, Kallan MJ, Durbin DR. Effectiveness of belt positioning booster seats: an updated assessment. *Pediatrics*. 2009; 124:1281–1286. [PubMed: 19841126]
- Elliott MR, Kallan MJ, Durbin DR, Winston FK. Effectiveness of child safety seats vs seat belts in reducing risk for death in children in passenger vehicle crashes. *Arch Pediatr Adolesc Med*. 2006; 160:617–621. [PubMed: 16754824]
- Winston FK, Durbin DR, Kallan MJ, Moll EK. The danger of premature graduation to seat belts for young children. *Pediatrics*. 2000; 105:1179–1183. [PubMed: 10835054]
- NHTSA. National Highway Traffic Safety Administration. The 2013 National Survey of the Use of Booster Seats. Department of Transportation HS 812 037; Available at: <http://www-nrd.nhtsa.dot.gov/Pubs/812037.pdf> [Accessed July 31, 2014]
- NHTSA. National Highway Traffic Safety Administration. Fatality Analysis Reporting System (FARS). Available at: <http://www.nhtsa.gov/FARS>.
- NHTSA. National Highway Traffic Safety Administration. Motor Vehicle Occupant Safety Survey. Department of Transportation HS 810 977; 2007. Available from: <http://www.ems.gov/pdf/810977.pdf> [Accessed August 1, 2014]

9. Gunn VL, Phillippi RM, Cooper WO. Racial differences in child safety restraint use in Tennessee. *Inj Prev*. 2005; 11:340–342. [PubMed: 16326767]
10. Winston FK, Chen IG, Smith R, Elliott MR. Parent driver characteristics associated with sub-optimal restraint of child passengers. *Traffic Inj Prev*. 2006; 7:373–380. [PubMed: 17114095]
11. Lee KC, Shults RA, Greenspan AI, Haileyesus T, Dellinger AM. Child passenger restraint use and emergency department--reported injuries: a special study using the National Electronic Injury Surveillance System--All Injury Program, 2004. *J Safety Res*. 2008; 39:25–31. [PubMed: 18325413]
12. Brixey SN, Corden TE, Guse CE, Layde PM. Booster seat legislation: does it work for all children? *Inj Prev*. 2011; 17:233–237. [PubMed: 21296801]
13. Lee SL, Yaghoubian A, Stark R, Munoz V, Kaji AH. Are there racial disparities in the use of restraints and outcomes in children after motor vehicle crashes? *J Pediatr Surg*. 2012; 47:1192–1195. [PubMed: 22703792]
14. Macy ML, Freed GL. Child Passenger safety practices in the U.S.: Disparities in light of updated recommendations. *Am J Prev Med*. 2012; 43:272–281. [PubMed: 22898120]
15. Macy ML, Cunningham RM, Resnicow K, Freed GL. Disparities in age-appropriate child passenger restraint use among children aged 1 to 12 years. *Pediatrics*. 2014; 133:262–271. [PubMed: 24420814]
16. Story GW, Vlaev I, Seymour B, Darzi A, Dolan RJ. Does temporal discounting explain unhealthy behavior? A systematic review and reinforcement learning perspective. *Front Behav Neurosci*. 2014; 8:76. [PubMed: 24659960]

Figure 1.

Respondents' agreement, by scenario, with the statement, "It is acceptable for a child to ride in a car unrestrained when..."

Table 1

Frequency and proportions of respondent characteristics

Characteristic	N	%	N ever unrestrained	% of row ever unrestrained
Age (years)				
18-24	131	13.1	36	27.5
25-29	243	24.3	68	28.0
30-39	334	33.3	82	24.6
40-49	218	21.8	41	18.8
50 or older	76	7.6	12	15.8
Gender				
Male	376	37.5	98	26.1
Female	626	62.5	141	22.5
Highest completed level of education				
High school degree/GED or less	239	23.9	46	19.2
Some college	294	29.3	61	20.7
College degree	356	35.5	91	25.6
Graduate degree	113	11.3	41	36.3
Region				
Region 1 (Northeast)	172	17.2	49	28.5
Region 2 (Midwest)	234	23.4	49	20.9
Region 3 (South)	376	37.5	92	24.5
Region 4 (West)	220	22.0	49	22.3
Total household income				
Under \$35,000	297	29.6	63	21.2
\$35,000 to \$49,999	187	18.7	38	20.3
\$50,000 to \$74,999	233	23.3	65	27.9
\$75,000 to \$99,999	141	14.1	26	18.4
\$100,000 or more	144	14.4	47	32.6
Race				
Caucasian/White	732	73.1	163	22.3
Black or African American	131	13.1	35	26.7
Asian	67	6.7	23	34.3
American Indian or Alaska Native	16*	1.6	4	25.0
Native Hawaiian or Other Pacific Islander	6*	0.6	3	50.0
Other	50	5.0	5	10.0
Hispanic/Latino				
Yes	155	15.5	40	25.8
No	847	84.5	199	23.5

Characteristic	N	%	N ever unrestrained	% of row ever unrestrained
Restraint Type **				
Rear-facing car seat	244	24.4	65	26.6
Front-facing car seat	487	48.6	119	24.4
Seatbelts with a booster seat	509	50.8	132	25.9
Seatbelts without a booster seat	197	19.7	45	22.8
Other/None	31	3.1	6	19.4

* Small base

** Total percentages greater than 100% as respondents selected all that applied

Table 2

Percentage of respondents who strongly or somewhat agreed, by scenario, by gender, age, and education

Scenario	Gender			Age Group				Education			
	M	F	p-value	18-29	30-49	50+	p-value	HS/GED and below	Some college/college	Grad school	p-value
"You're not driving far at all, just around the corner"	26%	18%	0.003	27%	19%	8%	0.000	18%	20%	37%	0.000
"You're in a rush and don't have the time"	15%	10%	0.045	16%	10%	3%	0.001	10%	11%	20%	0.011
"There aren't enough booster or car seats for the number of children"	22%	14%	0.004	23%	14%	7%	0.000	15%	16%	30%	0.000
"Riding in a taxi cab"	27%	22%	0.056	28%	22%	9%	0.001	20%	22%	39%	0.000
"Someone is holding the child"	21%	12%	0.000	22%	13%	4%	0.000	15%	13%	28%	0.000
"It's a reward for the child"	23%	12%	0.000	19%	14%	9%	0.039	14%	14%	29%	0.000
Base: total respondents	376	626	--	374	552	76	--	239	650	113	--

Table 3

Percentage of respondents who strongly or somewhat agreed, by scenario, by income, race/ethnicity, and region

	Income					Race/ethnicity					Region							
Scenario	<\$35k	\$35k- \$49.9k	\$50k- \$74.9k	\$75k- \$100k	\$100k+	p- value	Ethnicity			Race			Region 1 (North- east)	Region 2 (Mid- west)	Region 3 (South)	Region 4 (West)	p- value	
							Latino	Non- Latino	p- value	White	Black	Other						
“You’re not driving far at all, just around the corner”	15%	17%	27%	20%	34%	0.000	36%	19%	0.000	20%	19%	29%	0.067	27%	17%	20%	25%	0.050
“You’re in a rush and don’t have the time”	9%	12%	10%	10%	22%	0.002	28%	9%	0.000	10%	15%	19%	0.005	19%	5%	11%	15%	0.000
“There aren’t enough booster or car seats for the number of children”	14%	14%	18%	15%	28%	0.004	34%	14%	0.000	15%	19%	26%	0.006	20%	11%	18%	21%	0.019
“Riding in a taxi cab”	21%	24%	24%	18%	33%	0.023	43%	20%	0.000	21%	29%	33%	0.002	28%	18%	22%	28%	0.031
“Someone is holding the child”	14%	16%	14%	12%	24%	0.026	30%	13%	0.000	13%	19%	23%	0.006	20%	9%	15%	18%	0.012
“It’s a reward for the child”	11%	15%	16%	16%	26%	0.004	33%	13%	0.000	13%	24%	26%	0.000	23%	8%	15%	20%	0.000
Base: total respondents	297	187	233	141	144	--	155	847	--	732	131	139	--	172	234	376	220	--