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Looking back on rear-facing car seats: Surveying U.S. parents in 2011 and 2013

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Abstract

Objectives—We sought to determine the age at which U.S. parents first turned their child's car seat to face forward and information sources used to make that decision at the time of the release of the 2011 guidelines for child passenger safety and 30 months later.

Methods—Two separate cross-sectional Web-based surveys of nationally representative panels of U.S. parents, May 2011 and November 2013. Survey participation rate was 54% in both years. Parents of children 4 years old responded to questions about transitioning from rear-facing to forward-facing car seats (n=495 in 2011; n=521 in 2013).

Results—In 2011, 33% of parents of 1-to 4-year-old children who had been turned to face forward (n=409) turned at or before 12 months and 16% turned at 2 years or older. In 2013, 24% of parents of 1- to 4-year-old children who had been turned to face forward (n=413) turned at or before 12 months and 23% turned at 2 years or older. Car seat packaging and clinicians were the most common information sources. Demographic characteristics associated with turning to face forward at or before 12 months of age in 2011 (parent age, education, household income, rural residence) were not significantly associated with transitioning at or before 12 months in 2013.

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State Postal Code Abbreviations: AL, AK, CO, CT, IA, LA, NM, OR, SC, TN, VT, WI

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Conclusions—Delaying the transition to a forward-facing car seat still represents an opportunity to improve passenger safety in the U.S. As common sources of information, clinicians may be influential in a parent's decision to turn their child's car seat to face forward.

Keywords

Car seats; child passenger safety; parent survey

Introduction

In 2008 and 2009, the American Academy of Pediatrics (AAP) first published articles^{1,2} on the safety benefits of rear-facing car seat use until age two. These publications followed research that demonstrated a 5-fold reduction in the risk of severe injury for children who were rear-facing compared with forward-facing in motor vehicle collisions.³ Around that time, fewer than 20% of rear-facing child passengers in the United States (U.S.) were older than 1 year⁴ and just 3% of 1 to 3 year olds used rear-facing car seats.^{5,6} Car seats with rear-facing weight limits that accommodate children older than 1 year have been available since 2006.⁷

Between 2009 and 2011, rear-facing car seat use among infants and toddlers increased slightly.^{8,9} In March 2011, the AAP updated their guidelines for child passenger safety¹⁰ extending the recommendation for rear-facing car seat use from 1 year and 20 pounds to a minimum of 2 years or until a child has outgrown either the rear-facing weight or height limit of their car seat. However, the age which parents first transition from rear-facing to forward-facing car seats has not been examined. An understanding of *when* parents turn their children from rear-facing to forward-facing car seats is needed in order for clinicians and safety advocates to time their discussions with parents contemplating this transition.

In this study, consisting of two separate national surveys of parents of children 4 years old and younger, we assessed the age at which children were first transitioned from rear-facing to forward-facing car seats. The surveys were fielded in 2011, one month after the release of the updated AAP guidelines, and in 2013, 30 months later, in order to examine changes over time in the age at which parents reported transitioning to a forward-facing car seat.

Additionally, we examined information sources used by parents regarding when to face children's car seats forward and explored associations between demographic characteristics, information sources and parent report of turning their child's car seat to face forward at or before 12 months of age.

Methods

Two cross-sectional surveys of parents of children 4 years old and younger were conducted in May 2011 and November 2013 as a part of the C.S. Mott Children's Hospital National Poll on Children's Health (NPCH), a recurring online survey of parents and non-parents. Households with parents of children aged 17 or younger were over-sampled to improve statistical power for assessing parental views on child health issues. The surveys were administered at two separate time points to samples drawn exclusively for those studies,

without any designed overlap or longitudinal design. The study was approved by the University of Michigan Medical School Institutional Review Board.

The NPCH is conducted using the GfK Custom Research, LLC (GfK) Group's web-enabled KnowledgePanel®, a probability-based panel designed and recruited to be representative of the U.S. population.¹¹ Potential participants are chosen by a random selection of telephone numbers and residential addresses and then invited by telephone or by mail to participate in the web-enabled KnowledgePanel®. If individuals agree to participate, but do not already have Internet access, GfK provides them a laptop and Internet Service Provider (ISP) connection at no cost. Panelists then receive unique log-in information for accessing surveys online and are sent emails throughout each month inviting them to participate in research. The KnowledgePanel® has served as the sampling frame for other national peer-reviewed publications on health topics related to children and child health policy, including child passenger safety.^{12–14}

Responses were received from 1,516 of the 2,818 parents invited to participate in the full survey in 2011 and 1,522 of the 2,810 parents invited to participant in the full survey in 2013 (participation rate = 54% for both surveys). This study focused on parental responses to questions related to the transition from rear-facing to forward-facing car seats. These questions (Appendix 1) had a Flesch-Kincaid grade level of 5.6 for the 2011 survey and 4.5 for the 2013 survey, calculated using Microsoft Word 2010 built-in software (Microsoft Corporation, Redmond, Wash).¹⁵

In 2011, questions related to car seats were provided exclusively to the subsample of respondents who indicated that they were the parent, step-parent, or guardian of a child 7 months to 4 years old at the time of the survey. In 2013, questions related to car seats were provided to parents, step-parents, or guardians who indicated they had a child 4 years old or younger at the time of the survey. Parents of children 4 years old and younger were the population of interest because some rear-facing convertible car seats have a 40-pound upper weight limit that could conceivably accommodate a 4-year-old child. When parents indicated they had more than one child 4 years old or younger, the survey program selected one child in the household in this age range, about whom the parent was asked to respond. Parents who provided no response or indicated "I don't know" to the question: "At what age did you first have your child ride in a car seat that faced forward instead of backward?" (5% overall) were excluded from all analyses.

The main outcome of interest was the proportion of parents of 1- to 4-year-old children who reported their child used a forward-facing car seat at or before 12 months of age. The age of 12 months was selected based on the rear-facing car seat recommendations of the National Highway Traffic Safety Administration,¹⁶ the AAP guidelines for child passenger safety in place prior to March 2011,¹⁷ and the Bright Futures: Guidelines for Health Supervision of Infants, Children and Adolescents, Third Edition, published in 2008.¹⁸ Predictor variables included parental demographic characteristics, information sources, rural vs. urban residence (based on address outside of or within a Metropolitan Statistical Area), and residing in a state where the law in 2011 and 2013 specifically mentions rear-facing car seat use until 1 year of age and 20 pounds or forward-facing car seat use at 1 year of age (AL, AK, CO, CT,

IA, LA, NM, OR, SC, TN, VT, WI).¹⁹ In 2013, WI state law mentioned rear-facing car seats for 1 to 3 year olds.

Analysis

Weighted percentages for descriptive statistics were calculated. Respondents who provided an age at which their child first rode in a forward-facing car seat, regardless of the child's age at the time of the survey, were used to describe the information sources used by parents when deciding to turn their child's car seat to face forward (n=419 in 2011 and n=421 in 2013). Chi-square statistics were used to test for associations between demographic characteristics and information sources in each year.

Responses from the subset of parents of children who were at least 1 year of age and had been turned to face forward (n=409 in 2011 and n=413 in 2013) were used in chi-square analyses to compare the categorical age at which children were turned to face forward in 2011 and 2013. This analysis was limited to the subset of parents of children who were at least one year of age because the survey was fielded to parents of children 7 months to age 4 in 2011 and birth to age 4 in 2013. Chi-square analyses of demographic characteristics and information sources associated with turning a child's car seat to face forward at or before 12 months included responses from parents of children who had reached 1 year of age regardless of car seat orientation (n=440 in 2011 and n=462 in 2013). We took this approach due to censoring of data among parents of children younger than 1 year old who had not turned to face forward. Multivariable logistic regression using combined data from both survey years was used to test for associations between demographic characteristics, information sources, and turning to face forward at or before 12 months of age. All analyses were conducted with Stata 12 (Stata Corp. LP, College Station, TX), using Census-based sampling weights provided by GfK to draw nationally representative inferences. P-values <0.05 were considered statistically significant.

Results

Study Sample

More than 90% of parent respondents (495 of 526 respondents in 2011 and 521 of 541 respondents in 2013) provided the age at which their child first rode in a car seat that faced forward or indicated their child had not yet turned to face forward (Figure 1). Demographic characteristics of the respondents by year are presented in Table 1.

Information Sources

Car seat packaging and clinicians (doctor/nurse) were the most frequently selected information sources in both 2011 and 2013 (Figure 2). In 2013, parents were asked if they had heard of the AAP's updated guidelines for child passenger safety regarding the transition to forward-facing car seats and 69% of parent respondents answered "yes". However, just 22% of parents selected the American Academy of Pediatrics as an information source.

Younger parents more commonly selected family and friends as an information source in 2011 (64.2% of parents <30 years old, 50.0% of parents 30–40 years old, and 36.2% of parents >40 years old, $p=0.002$). The same pattern was observed in 2013. Younger parents less commonly selected daycare providers and teachers as an information source in 2011 (8.0% of parents <30 years old, 5.3% of parents 30–40 years old, and 23.6% of parents >40 years old, $p=0.003$). This option was not provided in 2013. Parents with at least some college education more commonly selected national organizations as an information source in 2011 (63.4% vs. 46.4%, $p=0.007$) and internet or social media as an information source in 2013 (32.5% vs. 19.0%, $p=0.048$). There were no other associations between demographic characteristics and information sources.

Age at Which Child First Faced Forward

The distribution of age at which parents of 1- to 4-year-old children reported first using a forward-facing car seat for their child is presented in Figure 3. Turning to face forward between 13 to 15 months of age was the most common response for parents in both years. When considering all seven age categories, differences between 2011 and 2013 were not statistically significant ($p=0.128$). However, there was a decrease in the proportion of parents who reported turning their child's car seat to face forward at or before 12 months of age [33% ($n=122$) in 2011 vs. 24% ($n=97$) in 2013, $p=0.035$]. In addition, only 16% ($n=67$) of parents surveyed in 2011 reported delaying the transition to a forward-facing car seat until after their child reached 2 years of age. This proportion rose to 23% ($n=95$) in 2013 ($p=0.028$).

Factors Associated with Forward-Facing Car Seat Use at or Before 12 Months of Age

Demographic characteristics associated with forward-facing car seat use at or before 12 months of age in 2011 (including younger parent age, lower education level, lower household income, and rural residence) were no longer statistically significant in 2013 (Table 2). However in 2013, race/ethnicity was associated with forward-facing car seat use at or before 12 months of age. Parents living in states where the child passenger safety law specifically mentioned car seat orientation were statistically no more or less likely to turn their child to face forward at or before 12 months of age than parents living in states where the law did not indicate car seat orientation.

In 2011, parents who selected “stores that sell car seats” as a source of information more commonly turned their child's car seat to face forward at or before 12 months of age compared with parents who did not select that information source (41% vs. 27%, $p=0.03$). In 2013, none of the information sources provided to parents as response options were significantly associated with turning a child's car seat to face forward at or before 12 months of age, but parents who reported they had heard of the AAP guidelines were significantly less likely to report turning their child's car seat to face forward at or before 12 months (15% vs. 40%, $p<0.001$). In multivariable analyses including both survey years, no demographic characteristics or information sources were significantly associated with turning a child's car seat to face forward at or before 12 months of age (Appendix 2).

Discussion

Increases in rear-facing car seat use have been directly observed in some regions of the U.S. between 2009 and 2011⁹ and in Indiana between 2005 and 2010.²⁰ This study is the first national assessment of the age at which parents report first making the transition from rear-facing to forward-facing car seats. We evaluated changes in the age of first forward-facing car seat use over time by conducting two surveys, separated by 30 months, allowing for uptake of the updated AAP guidelines and national media coverage of the recommendation to keep children rear facing until age two.^{21–23} Even though more parents reported delaying the transition to a forward-facing car seat until after 12 months of age in 2013 than in 2011, few parents reported waiting until their child was at least 2 years old before using a forward-facing car seat. Given the significant association of awareness of the AAP recommendations with lower rates of turning children forward-facing at or before 12 months, it appears that dissemination of those guidelines has influenced some parents' behavior.

Parents obtained information about when to turn their child's car seat to face forward from a variety of sources. Car seat packaging and clinicians were the most frequently selected information sources. Because many car seat manufacturer's instructions are written at a 7th grade reading level or higher²⁴ clinicians should be prepared to assist families with interpretation of this information. Clinicians must be well versed in the updated AAP guidelines and be able to help families resolve discrepancies that may arise from obtaining information from a variety of formal and informal sources. The updated AAP guidelines call for discussions of child passenger safety at every healthcare visit,¹⁰ but it is not clear now often such conversations occur. Child-specific safety seat recommendations can be reviewed in the context of the child's measured weight and length/height, and parents should be encouraged to review their car seat labels and instruction manual to determine if their child is at or near the size limits of a particular car seat. Clinicians can also draw parental attention to the important issue of child safety seat misuse²⁵ and encourage families to utilize online resources and community-based child safety seat inspection programs.¹⁶ Of note, the current Bright Futures guidelines mention that rear-facing car seats should be used "until 1 year AND 20 pounds" in their guidance for the 6 month and 9 month visits, adding that "it is best to use a rear-facing car safety seat until highest weight or height allowed by manufacturer" at the 12 month visit.¹⁸ Presently, this guidance may be a source of confusion for clinicians. The Fourth Edition of Bright Futures is expected to align with the current AAP guidelines for Child Passenger Safety.

Demographic differences associated with turning a child's car seat to face forward at or before 12 months of age were observed in 2011 but no longer present in 2013. Results from 2011 were consistent with prior research²⁶ finding that younger parents of lower educational attainment and lower income levels were more likely to report their child first used a forward-facing car seat at or before 12 months of age. Our findings in 2011 may have signaled early adoption of the recommendations to delay the transition to face forward in certain populations, whereas the lack of socioeconomic differences in 2013 may be the result of increased awareness and more widespread adoption of the recommendations across the nation. In 2013, higher proportions of non-Hispanic Black and Hispanic parents reported use of a forward-facing car seat at or before 12 months of age. Racial and ethnic disparities

in the use of age-appropriate restraints and in the use of any restraint have been previously described in the literature.^{4,26–28}

In contrast to studies that have demonstrated a positive impact of legislation on booster seat use,^{29,30} we did not find any association between the mention of car seat orientation in state laws and parental report of forward-facing car seat use at or before 12 months of age. More than half of parents surveyed in 2013 indicated that state laws were a source of information about when to turn their child to face forward, yet laws mentioning rear-facing car seat use are present in only 13 states. Moreover, laws in all but one state reference the outdated recommendation of 1 year of age as the transition point. Recognizing that laws have been effective to promote the use of booster seats, updates to child passenger safety legislation are needed. Modernizing state laws to match current national guidelines may be one mechanism to encourage parents to delay the transition to forward-facing car seats.

More can be done to prolong rear-facing car seat use in the U.S. as parents continue to fall short of the long-standing recommendations for children to remain rear facing until *at least* 1 year of age.¹⁷ In Sweden, it has long been advocated that children remain in rear-facing car seats as long as possible, it is culturally accepted that children up to 4 years of age are rearward facing in vehicles, and Swedish child traffic fatalities are among the lowest in the world.^{31–33} Although not assessed in these surveys, the reasons U.S. parents turn their children to face forward are varied and many are unrelated to safety such as the perception their children are too large, the desire to see their children when driving, and a greater ease of removing their children from a forward-facing car seat.³⁴ Because child leg length is a factor that many parents consider when turning their children to face forward,³⁴ clinicians may need to address parental concerns about their children's legs contacting the back of the vehicle seat and the low risk of injuries to the legs of children who are in rear-facing car seats. Qualitative research designs could provide a deeper understanding of parental perspectives on rear-facing car seats and could explore factors that contribute to parental decisions to prematurely transition children to face forward.

Limitations

Self-report of safety behaviors can be subject to social-desirability bias. However, higher proportions of parents in our 2011 survey reported turning children to face forward at or before 12 months of age (i.e., counter to a guideline-adherent, socially desirable response) when compared with direct observations conducted for the 2008, 2009, and 2011 National Surveys of the Use of Booster Seats in which 11–15% of infants under 1 year of age across the U.S. were observed to use a forward-facing car seat.^{5,6,9} This suggests that few parents were biased toward reporting that their child remained in a rear-facing car seat longer than they did. Another possible limitation is that our results are subject to recall bias for parental report of events that may have occurred years earlier. Recall bias could have led parents to report turning their children to face forward earlier or later than the actual transition. We cannot estimate the direction of this bias. In addition, our assessment of information sources was limited to the fixed-choice responses provided to parents. There may be other important and unmeasured sources of influence on this decision. We also cannot determine which information sources provide parents with guidance that is consistent with the national

recommendations for child passenger safety published by the AAP and the National Highway Traffic Safety Administration. Further research is needed to assess the quality of commonly utilized information sources and to determine if exposure to information sources results in parental knowledge acquisition that is translated into behavior change that increases child passenger safety. As with all national surveys, response bias related to demographic characteristics may affect our findings, although the direction and magnitude of such effects is unknown. We tried to minimize response bias by presenting a general invitation to participate that did not reveal specific topics that would be covered, and by applying statistical weights to reflect response patterns of the panel; nonetheless it is possible that our findings may not be generalizable to the entire U.S. population. Finally, although it is plausible that parents participated in two different samples at distinct time points, the anonymity of the responses for the investigators makes this impossible to gauge; furthermore, the probability of repeat participations is quite low given the size of the panel pool (over 55,000 households), continual refreshing of the panel to address attrition and shifting demographics of the US population, and the narrow child age specifications for the target sample.

Conclusions

Delaying the transition to a forward-facing car seat beyond 1 year of age and until at least 2 years of age or the child reaches the rear-facing weight or height limit of the car seat continues to represent an opportunity to improve passenger safety in the United States. As common sources of information, clinicians and authoritative national recommendations from professional organizations can be influential in a parent's decision to turn a child's car seat to face forward. Discussions about delaying the transition to face forward in the car should begin in the first year of life. Clinicians must be prepared to help parents resolve potentially conflicting information from a variety of information sources.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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Abbreviations

AAP	American Academy of Pediatrics
ISP	Internet Service Provider
NPCH	National Poll on Children's Health

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Appendix 1: Rear-Facing Car Seat Study-Specific Survey Questions in 2011 and 2013

Year	Question	Response Options
2011	Q1: At what age did you first have your child ride in a car seat that faced forward instead of backward?	a. My child has always faced forward b. Younger than 6 months c. 6 to 9 months d. 10 to 12 months e. 13 to 15 months f. 16 to 18 months g. 19 to 23 months h. 2 years or older i. I don't know j. I have not turned child to face forward
2011	Q2: From what sources did you get information on when to face your child's car seat forward? Select all that apply.	a. National organizations (such as the American Academy of Pediatrics, National Highway Traffic Safety Administration, Safe Kids)

Year	Question	Response Options
		b. Family and friends c. Doctor or nurse d. Daycare provider or teacher e. Police officer or firefighter f. Car seat packaging information g. Guidance from stores that sell car seats h. Books and magazines
2013	Q1: At what age did you first have your child ride in a car seat that faced forward instead of backward? (Same as 2011)	Same as 2011
2013	Q2: From what sources did you get information on when to face your child's car seat forward? Select all that apply. (Same as 2011)	a. Friends and family b. Doctor or nurse c. The American Academy of Pediatrics d. State law e. Car seat packaging information f. Guidance from stores that sell car seats g. Books, magazines h. Internet or social media <i>Italicized items same in 2011 and 2013</i>
2013	Q3: In 2011, the American Academy of Pediatrics (AAP) updated their recommendations to say: " <i>All infants and toddlers should ride in a rear-facing car safety seat until they are 2 years of age or until they reach the highest weight or height allowed by the manufacturer of their child safety seat</i> ". Have you heard of these AAP guidelines?	a Yes i No

Appendix 2: Logistic Regression of Forward-Facing Car Seat Use at or before 12 Months*

Characteristics		Odds Ratio	95% CI
Year	2011	Ref	
	2013	0.72	(0.46, 1.14)
Parent Gender	Male	Ref	
	Female	1.18	(0.76, 1.84)
Parent Age, years	<30	Ref	
	30–40	0.86	(0.51, 1.42)
	>40	0.63	(0.30, 1.31)
Parent Race/Ethnicity	Non-Hispanic White	Ref	
	Non-Hispanic Black	1.45	(0.77, 2.76)
	Hispanic	1.18	(0.50, 2.80)

Characteristics		Odds Ratio	95% CI
	Other	1.84	(1.05, 3.22)
Parent Education	High school or less	Ref	
	Some college or more	0.82	(0.51, 1.31)
Household Income	<\$30,000	Ref	
	\$30 – 60,000	1.02	(0.56, 1.84)
	\$60 – 100,000	0.95	(0.49, 1.82)
	>\$100,000	0.57	(0.28, 1.17)
Rural Residence	No	Ref	
	Yes	0.78	(0.44, 1.36)
State law mentions car seat orientation	No	Ref	
	Yes	1.49	(0.86, 2.61)
Child Age, years	1	Ref	
	2	0.78	(0.42, 1.44)
	3	0.76	(0.40, 1.45)
	4	1.25	(0.68, 2.32)
Parent has child older than child who is focus of survey	Yes	Ref	
	No	1.36	(0.86, 2.17)
Information Sources	Doctor/Nurse	Ref	
	No	0.97	(0.60, 1.54)
	Car Seat Packaging	Ref	
	No	1.15	(0.72, 1.83)
	Family/Friends	Ref	
	No	0.72	(0.47, 1.11)
	Stores that sell car seats	Ref	
	No	0.70	(0.39, 1.24)
	Books/magazines	Ref	
	No	1.19	(0.71, 1.99)

* Among parents of children 1 to 4 years old at the time of the survey (n=440 in 2011 and n=462 in 2013).

What's New

Two years after new recommendations were issued, a higher proportion of parents reported delaying forward-facing car seat use until age 2. However, nearly one-quarter of parents reported forward-facing car seat use at or before 12 months of age in 2013.

Figure 1. Survey Respondent Flow Diagram

Percentages reflect weighted results. *Subsample of parents included in analyses of information sources used by parents when deciding to turn their child's car seat to face forward. °Subsample of parents included in bivariate and multivariate analyses of predictors of turning child's car seat to face forward at or before 12 months.

Figure 2. Information Sources Regarding When to Turn Car Seats to Face Forward, by Survey Year

Bars indicate the proportion of parents who selected information source among parents who indicated the age at which their child's car seat was turned to face forward. Dark bars indicate responses of parents in 2011 (n=419). Light bars indicate responses from parents in 2013 (n=421). Information sources are listed in order from most frequently selected to least frequently selected response options in 2011. National Organizations, Police Officer/Firefighter, Daycare Provider/Teacher were not offered as options in 2013. State Law, Internet/Social Media and American Academy of Pediatrics were not offered as options in 2011.

Figure 3. Child Age When Car Seat Was Turned to Face Forward, by Survey Year

Bars indicate the proportion of parents selecting the age category among parents who indicated the age at which their child's car seat was turned to face forward. Dark bars indicate responses of parents in 2011 (n=409). Light bars indicate responses from parents in 2013 (n=413).

Table 1

Sample Characteristics of Responding Parents

	Responding Parents in 2011		Responding Parents in 2013	
	n=495*	Weighted %	n=521*	Weighted %
Parent Gender				
Male	245	45.01	266	50.39
Female	250	54.99	255	49.61
Parent Age, years				
<30	174	38.78	162	38.02
30-40	223	44.75	258	44.93
>40	98	16.47	101	17.05
Parent Race/Ethnicity				
Non-Hispanic White	341	57.24	378	65.25
Non-Hispanic Black	57	12.71	41	9.06
Hispanic	63	23.30	62	18.28
Non-Hispanic Other	34	6.75	40	7.40
Parent Education				
High school or less	174	37.74	156	32.58
Some college or more	321	62.26	365	67.42
Household Income				
<\$30,000	124	27.36	103	19.75
\$30 – 60,000	135	30.92	143	24.52
\$60 – 100,000	122	22.52	149	31.22
>\$100,000	114	19.21	126	24.51
Rural Residence				
Yes	89	16.33	86	16.00
No	406	83.67	435	84.00
State law mentions car seat orientation				
Yes	76	14.88	69	10.94
No	419	85.12	452	89.06
Child Age, years*				
<1	55	10.82	59	12.75
1	140	29.38	82	16.76
2	126	27.60	117	21.91
3	88	17.05	125	23.47

	Responding Parents in 2011		Responding Parents in 2013		
	n=495*	Weighted %	n=521*	Weighted %	
	86	15.14	138	25.11	
Parent has child older than child who is focus of survey	Yes	245	47.44	243	42.18
	No	250	52.56	278	57.82

* Including parents who provided an age at which their child's car seat was turned to face forward or indicated their child's car seat had not yet been turned to face forward. 2011 survey included parents of children age 7 months to 4 years; 2013 survey included parents of children birth to 4 years.

Table 2
Forward-Facing Car Seat Use at or before 12 Months of Age, by Demographic Characteristics and Survey Year

Age Child's Car Seat was Turned to Face Forward									
2011 Survey, N=440*					2013 Survey, N=462*				
	12 months		>12 months		p-value	12 months		>12 months	
	n	Wt'd %	n	Wt'd %		n	Wt'd %	n	Wt'd %
Parent Gender	Male	50	27.7	160	72.3	45	20.6	193	79.4
	Female	72	33.0	158	67.0	52	22.3	172	77.7
Parent Age, years	<30	59	40.5	91	59.5	30	19.4	107	80.6
	30-40	46	26.7	154	73.3	47	21.8	186	78.2
	>40	17	19.9	73	80.1	20	24.5	72	75.5
Parent Race/Ethnicity	Non-Hispanic White	72	25.2	230	74.8	64	18.4	270	81.6
	Non-Hispanic Black	20	36.0	32	64.0	13	34.3	26	65.7
	Hispanic	19	38.4	37	61.6	16	31.4	37	68.6
	Other	11	39.2	19	60.8	4	8.6	32	91.4
Parent Education	High school or less	57	40.8	93	59.2	37	27.3	101	72.7
	At least some college	65	24.9	225	75.1	60	18.6	264	81.4
Household Income	<\$30,000	42	41.6	68	58.4	20	24.0	69	76.0
	\$30 – 60,000	37	34.3	78	65.8	31	27.8	99	72.2
	\$60 – 100,000	27	26.3	82	73.7	29	21.0	102	79.0
	>\$100,000	16	15.9	90	84.1	17	13.9	95	86.1
Rural Residence	Yes	33	42.6	51	57.5	19	27.2	58	72.9
	No	89	28.3	267	71.7	78	20.3	307	79.7
Law mentions car seat orientation	Yes	15	31.5	50	68.5	20	33.0	40	67.0
	No	107	30.6	268	69.4	77	20.1	325	79.9
Child Age, years	1	48	37.7	92	62.3	12	10.0	70	90.0
					0.27				0.05

Age Child's Car Seat was Turned to Face Forward									
2011 Survey, N=440*					2013 Survey, N=462*				
12 months					12 months				
n	Wt'd %	n	Wt'd %	p-value	n	Wt'd %	n	Wt'd %	p-value
2	34	28.2	92	71.8	21	19.8	96	80.2	
3	18	23.2	70	76.8	27	23.1	98	76.9	
4	22	30.0	64	70.0	37	28.9	101	71.1	
Parent has child older than child who is focus of survey									
Yes	60	31.2	163	68.8	53	26.6	169	73.4	0.06
No	62	30.3	155	69.8	44	17.5	196	82.5	

* Among parents of children 1 to 4 years old at the time of the survey.