Final Comprehensive Report:
Family and Community Determinants of Childhood Injury Prevention

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Family and Community Determinants of Childhood Injury Prevention
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I. Introduction

A. Nature of the Problem

Injuries are the leading cause of death for Americans aged 1 to 44 [1]. Injuries are caused by human contact with uncontrolled kinetic, thermal, and chemical energy [2]. For children, the choices made by parents are the critical factor determining their risk of injury. Motor vehicle injuries, falls, burns, and poisonings are common injuries among infants and toddlers, and many can be prevented by parental behaviors. For instance, the use of safety products such as car seats, stair gates, smoke alarms, and cabinet latches has been shown to lower risk . Little is known about how best to facilitate parents' adoption of safety behaviors.What individual, familial, and social contexts best enable parents to provide safe homes and environments for their children?

The specific aims of this proposal were**:**
Aim 1. To identify child, household, and community characteristics associated with a set of parental safety behaviors when children were 4 to 33 months of age.
Aim 2. To test for associations between parental safety behaviors and experiences of medically attended injuries from 4 to 33 months of age, accounting for child, household, and neighborhood characteristics.
Aim 3. To examine whether family processes (parental mental health, alcohol use, parental competency, and life events) mediate and/or moderate associations between parental safety behaviors and child injuries over time

B. Purpose, Scope, and Methods of the Investigation

We addressed the problem using data from over 5500 children enrolled and followed in the National Evaluation of the Healthy Steps for Young Children Program (HS) since 1996[1]. This study was one of the largest assessments of parental safety behaviors together with the individual, family, and community background in which these behaviors occur. Children from 15 U.S. cities were enrolled at birth and followed until age 30-33 months. Data came from interviews with parents, medical records from their pediatricians, and U.S. census data about their communities.
We analyzed data on parental safety behaviors regarding car seats, electric outlet covers, cabinet safety latches, smoke detectors, emergency phone numbers, and tap water temperature. We controlled for household income, household makeup, marital status, parental work status, parental relocation, parental mental illness, and parental substance use. Outcome measures included each child's utilization of health services from their pediatrician, local emergency department, and hospital.

C. Nature of the Findings

Odds of medically attended injuries were decreased for children who daily caregiver was a grandparent (OR=0.666 p=0.059). Odds were increased for children living where fathers did not co-reside (OR=1.954, p<0.001), or in households where the parents never married (OR=1.938, p=0.019). Statistical results were robust to the addition of a variety of covariates such as income, education, age, sex, and race [3]. We also explored the role of depression in child safety and found a correlation between mothers' reports of depressive symptoms and safety behavior.

[1] HS is a new model of pediatric practice that incorporates child development specialists and enhanced developmental services for all families of young children into routine pediatric care for children under age 3. Funding by the Commonwealth Fund and a consortium of local donors was devoted to data collection with analysis limited only to the impact of HS on parents and children. In contrast to the previous project that focused only on evaluating the (HS) program, we intend to analyze the basic epidemiology and ecology of parental safety behaviors.

Mothers with depressive symptoms at 30 to 33 months were less likely to report the following parental safety behaviors: using a child safety seat correctly (OR 0.712; 95% Confidence Interval [CI], 0.517, 0.979); having covers on electrical outlets (OR 0.585; 95% CI, 0.482, 0.709), have safety latches on cabinets (OR 0.785; 95% CI, 0.603, 0.906), have stickers on bottles of poisonous liquids (OR 0.764; 95% CI, 0.612, 0.952), have smoke detector at home (OR 0.351; 95% CI, 0.205, 0.602), and lower the temperature on the water heater (OR 0.776; 95% CI, 0.648, 0.929). Multilevel models showed that which pediatric practice a child attended accounted for less than 10% of the variance in the odds that a child would be injured. Community level variables merged in at the level of census tracts had a negligible effect on the odds of childhood injury.

II. Review of the Literature

Our literature review organizes determinants of child injuries into 1) Individual child risk factors; 2) Family level risk factors and 3)Community level risk factors.

Individual Child Risk Factors

Age consistently emerges as a major determinant of unintentional child injury. The age pattern varies, however, based on the type of injury being investigated. For example, older children are more likely to experience major and minor injuries in general, but less likely to have major head injuries.[4] Being older than 2.5 is predictive of a 2.6 times higher injury risk.[5] In contrast, young children and infants are more at risk for injury from falls. [6] Male sex is one of the consistent risk factors for early childhood injuries. Many studies corroborate that males are more likely to be injured and to be injured repeatedly. These findings were further supported by a meta-analysis by Khambalia and Joshi et al. which found that male sex is one of the few consistent risk factors for injury throughout the literature. [6] Understanding injury risk factors can be used to target interventions towards children at higher risk and to guide future research that can examine moderating effects. [7], [4], [8], [9, 10], [11], [12]

Child temperament, defined as “stable behavioral tendencies,” is also a significant factor for injury. [13], [14], [15], [5], [4], [16] The relative risk of injury was 1.9 among children with both high activity and high aggression scores compared to low scorers on both behavioral scales.[15] Alkon et al. found that activity level and aggression affected play activities and peer relationships which in turn affected the risk of injury. [17]

Family Risk Factors

Systematic review of the literature shows that low socioeconomic status is a consistent risk factor. [6], [18] Perhaps more worrisome is the fact that poorer children not only have more injury episodes, but they also are more likely to die from injury than are children of families with more economic resources.[19] Several studies have found that children from families of low economic status or low median income have a higher risk of child injury. [20], [19, 21, 22] In another study low income was the strongest predictor of childhood injuries for all causes.[22] Several studies have found that children in families that receive government benefits or aid are more likely to be injured.[4, 18]

Parental unemployment has an obvious negative effect on family income and has also been shown to raise the risk of childhood injury. [5, 19, 22] In contrast, preschoolers whose mothers worked full-time were less likely to be injured than children with mothers that worked part-time or did not work.[5] Parental education is negatively associated with childhood injury rates. Parents that did not complete high school had children who were more likely to be inured than children of parents with high school degrees.[18], [22] Though it is often hard to separate the effect of race and ethnicity from other socioeconomic determinants of injury, minority children are at higher risk of injury. In the United States Native American children have the highest

unintentional injury death rate followed by Black children. Hispanic children have an unintentional injury death rate similar to non-Hispanic children.[23]

Family structure and its many components have also been shown to affect the risk of childhood injury. Several studies have shown that children who have serious injuries are more likely to have parents who are unmarried or single. [18], [22],[19], [7] Dawson found that one of the major risks for children in divorced families or disrupted marriages was a 20% to 30% greater risk of injury.[24] The number of siblings and their role in sibling supervision has also been noted as a risk factor. In one study an increase in the number of older siblings increased the risk of injury so that the children with greatest risk had three or more older siblings. The risk was also highest for those with birth intervals less than two years.[25] Other research finds more generally that more siblings (not just older) are associated with elevated injury risk. [18], [26] The relationship between siblings and injury is most likely modified by the amount of parental supervision such that more siblings result in less adult supervision and possibly more supervision by older siblings. Morrongiello and MacIsaac et al. applied this hypothesis and found that older siblings supervise younger ones about 11% of their mutual wake time; unfortunately, time supervised by a sibling was positively correlated with a history of younger sibling injury.[27]

In addition, specific characteristics associated with parents may affect the risk of injury in children; some factors increase the risk, while others decrease or moderate the number and severity of injuries.[13] Children of adolescent mothers are more likely to have more than one serious injury.[19] Mothers who are neurotic, depressed, or under significant stress had children that were more likely to experience an injury [7], [28] An older study found that among children with repeated injuries, 50% of cases had parents with serious psychiatric or physical illnesses. [29] Additionally, children are more likely to experience multiple injury episodes in circumstances where the mother has substance abuse problems.[19, 30] In contrast, Morrongiello and House have found that children of mothers who are more conscientious are less likely to experience an injury [8], [13] Additionally, another study found that the risk of injury was lower for children with mothers who were emotionally healthy. [31] However, some researchers believe that these associations may be overstated or modified by other factors. In one case control study the findings did not support any difference in physical or mental well being of the primary caregivers between the children that were injured and the controls. [18]

There has also been considerable speculation regarding the role of childcare in the risk of injury. One study has shown that better supervision of children is associated with fewer injuries,[8] but it is still not clear what kind of childcare situations provide the best form of supervision. What is known is that children in childcare centers rarely suffer severe injuries.[17] A recent study found that children who spent more time in non-parental childcare were slightly less likely to have an unintentional injury adjusting for other known risk factors and characteristics of childcare centers. [32] The authors note that childcare centers are highly regulated for safety in the United States, but the study also showed that this effect extended to less regulated family day care environments as well.[32] Another study compared the children that received home care, center based care and other forms of out-of-home day care. The rate of minor injuries was highest in center based care, but there was not a significant difference among the three types of care for severe injuries.[33]

Community Risk Factors

The communities that children live in are hypothesized to be factors for unintentional injury. Reading et al., using multi-level hierarchical modeling, found that unintentional injury rates were much higher in deprived urban neighborhoods compared to affluent neighborhoods. Further analysis, however, showed that much of the variation in rates was due to individual or family factors.[9] A separate study showed that compared to children in neighborhoods with few low-income households, children in low-income neighborhoods had more than twice the risk of severe injury.[22] A different study from Ireland established that there was significant difference in injury rates between the most and least deprived districts. [34] An ecological study found that

census tracts with higher injury rates had "lower median incomes, more people with less than a high school education, more unemployment, more families headed by females, more people living below the poverty level, and more non-Caucasians." [35] Regression analysis in the same study determined that the percentage of people living below the poverty level, percentage of those who did not graduate from high school, and percentage unemployment significantly impacted the likelihood of pediatric injury. [35]

More specifically, the quality of housing in a community has also been associated with pediatric injury. A study in Baltimore, Maryland using multi-level Poisson regression found communities with higher rates of housing violations were positively associated with the risk of an event of "injury-producing potential." [36] Dal Santo and Goodman et al. found that preschoolers who lived in homes in need of repair had 3.92 times the risk of injury of children in normal homes. [5] Furthermore, the age of housing has been studied as a possible determinant of injury because older buildings they are more likely to be in disrepair and violate codes.[21]

III. Study Design and Methods

A. Study design and Population Studied

Data are from the National Evaluation of the Healthy Steps for Young Children Program and the sampling strategy is described in detail elsewhere.[37] These data describe 5565 infants enrolled in 15 US cities in 1996-1997 with follow-up until they were 30-33 months old. Telephone interviews were conducted with parents of Healthy Steps families for Phase 1 of the National Evaluation as the Healthy Steps children reached 30 months of age. The primary respondent for the interview was the mother, or the guardian or primary caretaker if the mother was not available. The questionnaire included an update of socio-demographic characteristics of the family. This research was approved by the Johns Hopkins Committee on Human Research.

B. Sample selection

There were 5565 children enrolled in the National Evaluation and 3737 (67%) were followed up at 30-33 months. An analytic sample of 2450 children who had no missing data on any outcomes or co-variates was constructed. Each variable in the analytic sample was compared to the full sample of 3737 using z-tests and t-tests. The results showed that for all variables, the analytic sample does not differ significantly from the full sample.

C. Statistical techniques employed

Dependent Variables

This study included models with child injury as an outcome as well as parental safety behaviors as an outcome. Serious child injury as a dependent variable was measured by linking each child to their medical records in their pediatrician's office and noting any recorded hospital or emergency room visit for injury. The parent safety behaviors were assessed in a phone interview at 30-33 months. Self-administered forms distributed by the practices at 6, 12, 18, and 24 months also asked parents about the use of safety devices. Safety behaviors assessed the following: child safety seat use and position, covers on electrical outlets, latches on cabinets, and, lowering temperature on water heaters,.

Independent Variables

To determine whether safety behaviors were correlated with injury outcomes we checked bivariate regression models of each safety behavior as a predictor of injury. We also attempted to form an index of safety behavior first by simply adding up the number of safety behaviors and then by conducting principal components analysis to form a factor weighted scale of safety behaviors. We also included both the individual safety behaviors and the index of safety behaviors in models with the individual and family controls suggested by theory and the

literature. Individual safety behaviors predict specific types of injury, for example hot water temperatures are specific to scalds. Each of the 178 injuries observed in the data had an ICD-9 code that could indicate whether it was blunt trauma, poisoning, or burn. However there were only 6 hospitalized burns and 18 hospitalized poisonings recorded and efforts to model determinants of these specific events were attempted and abandoned due to small sample size. On the basis of the literature, we included the following child, maternal, and family characteristics in our analysis: child sex, child birth weight, maternal demographics (age race/ethnicity, education status, first time mother), maternal health (self-rated, physical limitations, sense of competence, CES-D maternal depression score), household income, household medical insurance, mother's behavior (smoking, drinking, illicit substances), mother's marital status, family structure (father co-resides, step-father co-resides, members of household, siblings), moved in the past year, and caregivers (who watches child if mother works).

Analyses

To determine which individual, maternal, and family characteristics affect the likelihood of childhood injury we regressed the indicator for injury on the independent variables discussed previously. To determine which factors are related to parental safety behaviors we generated an array of dichotomous variables indicating parental compliance with recommended safety behavior (as described above as outcome variables) based on the 30-33 month follow-up survey. For each individual safety behavior, we regressed the corresponding indicator variable on the set of controlling variables as described previously. For both sets of models, logit transformation was used to account for dichotomous outcomes. Since subjects from common Healthy Step Evaluation Sites (15 across U.S.) are believed to be correlated (due to their shared geographic characteristics surrounding the site), clustered robust errors are estimated on the site level and used for inference (i.e., calculation of standard errors and confidence intervals).

The variables shown in Table 1 were entered into the model one block at a time and the pattern of confounding was explored by observing how significance levels were altered as additional variables were entered. Models predicting injury were run both with and without including indicators of safety behavior. Alternative ways of recording the numbers of siblings and the mother's marital status were explored to make sure that findings were robust to different specifications. Robustness was assessed by observing effects which remained significant regardless of how many covariates were included and whether the effects were altered when safety behavior was entered as a scale or as a set of individual dummies.

IV. Detailed Findings

Table 2 presents pertinent correlates of hospitalized injury that were found to be significant and pertinent variables that were found to be insignificant. Child's birth weight had no statistically significant effect on injury; males had higher odds of injury at 1.121, but this was not statistically significant. African American and Hispanic children had similar injury rates to white children. Children of mothers over 40 had lower injury rates.

There was no statistically significant relationship between income and injury and including income measures in the model did not alter the effects of race and family structure. Compared to women who stayed married throughout the child's life odds of injury were statistically significantly higher for children whose parents never married. Children of women who became divorced or separated had a higher odds ratio of injury at 1.143 , but these results were not statistically significant and are not shown in Table 2. Also not shown in the Table are statistically insignificant results for mother's self rated health, depressive symptoms, and sense of competence.

Multilevel models using census tract variables did not identify any significant predictors of childhood injury in models including individual and family co-variates. Our study found negligible effects of community level and pediatric practice level factors on rates of child injury. It is notable that pediatric practices explained little of the variance in injury rates even in the

context of a quasi-experimental trial of the Healthy Steps intervention which included components on injury counseling and which would have made injury counseling practices more disparate.

Compared to a situation in which mother does not work, children whose mothers worked and arranged for grandparent caregivers had a statistically significantly lower odds of injury, but childcare by other relatives was not statistically significant. Because families are not always in a situation where family members can provide childcare while the mother works, a variable for child care by non-relatives was included in the model but it was not statistically significant. In households where the grandmother was listed as the "primary care giver" there was no difference in the odds of injury. Among the 64 households where fathers were cited as "the primary care giver" the odds ratio of child injury was higher with an odds ratio above 2.0 in multivariate models. However in situations where the father watched the child while mother worked there was no statistically significant difference in the odds of injury.

Contrary to expectation, there was a protective association between residential relocation since birth and the odds of injury; this finding was robust to including or excluding controls for marital transitions, household income and insurance.

V. Discussion and Interpretation of Findings

A. Conclusions to be drawn from findings

Our study of a nationwide survey of children enrolled at birth and followed until age 30-33 months found that having grandparents as caregivers was protective, cutting the odds of injury roughly by half compared to having a stay-at-home mother. We cannot claim that this association is causal although it remains robust after controlling for socioeconomic status, race, ethnicity, parental safety behavior and measures of family composition.

To our knowledge this is the first analysis to look at an association between grandparental caregivers and child injury. Our results provide evidence that children cared for by grandparents have a lower incidence of a medically attended injury. It may still be the case that the households that choose grandparents as caregivers selectively choose only those grandparents who will enforce healthier child safety behaviors. However, we note that when households "choose" relatives other than grandparents to look after their children the risk of child injury increases slightly.

B. Explanation of study limitations

There are several limitations in this study. It is unknown who was watching the child at the time of the injury, and it is possible that some injuries occurred that did not come to the knowledge of the pediatric office. The 7% incidence of injuries is lower than the 11% rate in children under 15 reported by the CDC(22). Unfortunately, despite the sample size of 3449, there is still not sufficient sample size to break down the effects of grandparental care by race/ethnicity, or by the number of children being watched by one caregiver. The data do not allow us to know how old the grandparents were, and this could affect the results. Other unmeasured aspects of the family may still confound this relationship.

C. Comparison with findings of other studies

We will now examine our principal findings in light of prior research in this area.

Mother's Demographics

A prior study found that children of adolescents are more likely to have more than one serious injury.[38] In contrast we found that mothers older than 40 years have lower odds of children with an injury, but we did not find that younger or adolescent mothers have a significantly higher odds of injury among their children.

The literature suggests that parental education is negatively associated with childhood injury. Parents who did not complete high school had children who were more likely to be injured than children of parents with high school degrees.[22, 39] Our results, confirm this by showing a significant relationship between the highest level of maternal education and lower rates of child injury. Though it is often hard to separate the effect of race and ethnicity from other socioeconomic determinants of injury, minority children are at higher risk of injury. In the U.S., Native American children have the highest unintentional injury death rate followed by African American children.[23] Our analysis showed no difference in injury rates for African American and Hispanic children in unadjusted models as well as models that controlled for income and other socioeconomic correlates of injury. In contrast to prior studies, one distinguishing feature of the sample we studied was that all of the children in the Healthy Steps sample had regular pediatric care, and this may have partially mitigated the effects of race and ethnicity.

Family Composition

Previous studies have shown that children who have serious injuries are more likely to have parents who are unmarried or single.[22, 30, 38, 39] Dawson found that children in divorced families or disrupted marriages had a 20% to 30% greater risk of injury.[24] Our results support the previous findings. Children who lived with parents who were cohabiting and never married had roughly twice the odds of injury, and children without co-resident fathers had a higher odds of injury, although the results were only significant in the bivariate and stepwise models.

D. Possible application of findings to actual MCH health care delivery situations

The findings could be applied in health care delivery situations in which new parents ask for advice on day care options. Some parents could be concerned about having an older parent act as caregiver for their child. If they ask whether there is evidence to guide this choice, our results show that there is no evidence that choosing grandparents to be caregivers places children at risk. These results must be interpreted with the understanding that the evidence presented in our paper is based on grandparents who were screened and chosen to be caregivers by families in the healthy steps study.

E. Policy implications

With the aging of the American population recent decades have shown growing rates of grandparents taking care of children. The results in our study indicate that this trend is unlikely to lead to a major rise in injury rates.

The inability of community and pediatric practice level factors to have a significant impact on childhood injury rates suggests that future work on childhood injury needs to focus primarily on changing family and individual risk factors. Achieving a change in community norms or pediatric practice behaviors should be pursued only as a means to alter intra-household behavior not as an end in itself.

F. Suggestions for further research

Additional studies of how households choose relatives to watch their children and the actual caregiving styles of grandparents are warranted, for now there is no evidence that grandparental care places children at higher risk.

VI. List of products (peer reviewed articles, books, chapters in books, master and doctoral dissertations, conference presentations, etc.).

Bishai, D., J. L. Trevitt, Y. Zhang, L. B. McKenzie, T. Leventhal, A. C. Gielen, and B. Guyer. 2008. "Risk factors for unintentional injuries in children: are grandparents protective?" Pediatrics 122:e980-7.

Bishai, D. A. Gielen, B. Guyer and L McKenzie Risk factors for unintentional injury in children Ninth World Conference on Injury Prevention and Safety Promotion March 16, 2008, Merida Mexico

Choi, Y., D. Bishai, and C. S. Minkovitz. 2009. "Multiple births are a risk factor for postpartum maternal depressive symptoms." Pediatrics 123:1147-54.

Table 1: Descriptive Data

Independent variables	Child had hospital or ER record of any injury in past year					
	No (N=3222)		Yes (N=227)		Total (N=3449)	
	Number	*(%)*	*Number*	*(%)*	*Number*	*(%)*
Baby is male	1,594	(49.5)	119	(52.4)	1,713	(49.7)
First time mother	1,565	(48.6)	100	(44.1)	1,665	(48.3)
Mother is 15-19 years old	89	(2.8)	4	(1.8)	93	(2.7)
Mother is 20-24 years old	577	(17.9)	50	(22)	627	(18.2)
Mother is 25-29 years old	794	(24.6)	63	(27.8)	857	(24.8)
Mother is 30-34 years old	904	(28.51)	63	(27.75)	976	(28.13)
Mother is 35-49 years old	630	(19.6)	40	(17.6)	670	(19.4)
Mother is 40+ years old	226	(7)	7	(3.1)	233	(6.8)
Never married not cohabiting to married	56	(1.7)	3	(1.3)	59	(1.7)
Never married not cohabiting at both rounds	74	(2.3)	5	(2.2)	79	(2.3)
Never married cohabiting to Married	111	(3.4)	6	(2.6)	117	(3.4)
Married to Unmarried	110	(3.4)	13	(5.7)	123	(3.6)
Partnered to Unmarried/unpartnered	111	(3.4)	9	(4)	120	(3.5)
Parents still partners, but not cohabiting both rounds	132	(4.1)	16	(7)	148	(4.3)
Never married and cohabiting both rounds	378	(11.7)	40	(17.6)	418	(12.1)
Other transitions in martial status	130	(4)	15	(6.6)	145	(4.2)
Mother's Education:less than high school	318	(9.87)	28	(12.33)	346	(10.03)
Mother's Education: high school graduate	877	(27.2)	74	(32.6)	951	(27.6)
Mother's Education: some college	919	(28.5)	69	(30.4)	988	(28.6)
Mother's Education: college graduate	1108	(34.4)	56	(24.7)	1164	(33.7)
Mother is White	1983	(62.32)	141	(63.23)	2124	(62.38)
Mother is African American	724	(22.5)	62	(27.3)	786	(22.8)
Mother is Asian or Native American	127	(3.9)	7	(3.1)	134	(3.9)
Mother is other race	371	(11.5)	15	(6.6)	386	(11.2)
Mother is Hispanic	587	(18.2)	36	(15.9)	623	(18.1)
Mother has physical limitations	594	(18.4)	44	(19.4)	638	(18.5)
Mother's self rated health is excellent	1071	(34.62)	77	(34.68)	1148	(34.62)
Mother's self rated health is very good	1119	(34.7)	74	(32.6)	1193	(34.6)
Mother's self rated health is good	734	(22.8)	55	(24.2)	789	(22.9)
Mother's self rated health is fair	209	(6.5)	19	(8.4)	228	(6.6)
Mother's self rated health is poor	27	(0.8)	2	(0.9)	29	(0.8)
Mother's cesd score is 16+	220	(6.8)	22	(9.7)	242	(7)
Mom works nobody else watches baby	196	(6.1)	14	(6.2)	210	(6.1)
Mom works father watches baby	235	(7.3)	17	(7.5)	252	(7.3)
Mom works grandparents watches baby	481	(14.9)	27	(11.9)	508	(14.7)
Mom works other relatives watches baby	170	(5.3)	18	(7.9)	188	(5.5)
Mom works non-relative or daycare watches baby	1013	(31.4)	73	(32.2)	1086	(31.5)
Mom works other watches baby	79	(2.5)	3	(1.3)	82	(2.4)
Primary care giver is father	57	(1.8)	7	(3.1)	64	(1.9)
Primary care giver is grandmother	419	(13)	22	(9.7)	441	(12.8)
HH income: $20,000-49,000	1025	(34.4)	60	(27.9)	1085	(34)
HH income: $50,000+	1408	(43.7)	88	(38.8)	1496	(43.4)
Moved in the past year	638	(19.8)	31	(13.7)	669	(19.4)
Father is not coresiding	737	(22.9)	77	(33.9)	814	(23.6)
Step or adoptive father coresiding	56	(1.7)	4	(1.8)	60	(1.7)
Biological grandparent coresidence	351	(10.9)	30	(13.2)	381	(11)
Non-biological grandparent coresidence	22	(0.7)	2	(0.9)	24	(0.7)
Great-grandparent coresidence	31	(1)	2	(0.9)	33	(1)

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Table 2: Logistic Regression Analysis for Any Hospital Record of Injury in Past Year Reported at Age 30-33 Months

Table: Logistic Regression Analysis

Outcome variable: Any Hospital Record of Injury in Past Year	Model A bivariate	Model B multivariate	Model C multivariate	Model D stepwise
	n = 3449	n = 3449	n = 3449	n = 3449
	Odds Ratio	Odds Ratio	Odds Ratio	Odds Ratio
Mother's Demographics				
Mother's education: college graduate	0.625	0.713	0.652	0.749
	[0.458 - 0.852]***	[0.398 - 1.276]	[0.358 - 1.187]	[0.536 - 1.047]*
Race: other race	0.544	0.409	0.416	0.535
	[0.319 - 0.928]**	[0.208 - 0.803]***	[0.211 - 0.820]**	[0.310 - 0.924]**
Mother's age is 40+	0.422	0.398	0.397	0.418
	[0.196 - 0.906]**	[0.178 - 0.888]**	[0.178 - 0.886]**	[0.193 - 0.903]**
Mother's Transitions				
Stayed partnered	1.775	1.99	2.093	1.938
	[1.037 - 3.038]**	[1.097 - 3.608]**	[1.147 - 3.818]**	[1.113 - 3.377]**
Stayed never married	1.609	1.519	1.567	
	[1.125 - 2.302]***	[0.645 - 3.578]	[0.665 - 3.693]	
Moved in the past year	0.641	0.584	0.584	0.6
	[0.434 - 0.945]**	[0.388 - 0.877]***	[0.389 - 0.878]***	[0.404 - 0.892]**
Family Structure				
Father does not coreside	1.731	1.493	1.516	1.909
	[1.299 - 2.306]***	[0.694 - 3.211]	[0.707 - 3.250]	[1.387 - 2.627]***
Care Givers				
Mom works nobody else watches baby	1.015	0.932	0.936	
	[0.580 - 1.776]	[0.506 - 1.719]	[0.507 - 1.726]	
Mom works grandparents watches baby	0.769	0.651	0.642	0.666
	[0.509 - 1.163]	[0.401 - 1.057]*	[0.395 - 1.043]*	[0.437 - 1.016]*
Primary Care Giver is Father	1.767	2.317	2.324	2.045
	[0.796 - 3.919]	[0.990 - 5.422]*	[0.993 - 5.442]*	[0.907 - 4.608]*
Log likelihood		-797.89	-797.07	-807.16
Pseudo R2		0.0467	0.0477	0.0356

NOTES:

** significant at 5%*

*** significant at 1%*

95% confidence intervals are in brackets

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