Race/Ethnic Differences in the Health of Co-resident Grandchildren in the U.S., 1978-2009*

September 17, 2010

Patrick M. Krueger

University of Colorado Denver
Department of Sociology and
Department of Health and Behavioral Science
University of Colorado Boulder
Population Program

ABSTRACT

We examine whether detailed family structures (including four family structures that include the presence of grandparents) are associated with child health and school progress across eight race/ethnic groups in the US. Our data come from the 1978 to 2009 waves of the National Health Interview Survey, which are nationally representative, and provide information on all individuals living in sampled households. Notably, family level socioeconomic status, the health of caregivers, and family demographic characteristics attenuate (a) the relationship between family structure and wellbeing, and (b) race/ethnic differences in the relationship between family structure and wellbeing. Our results suggest that it is the characteristics of families, rather than family structure per se, that largely shapes children's wellbeing.

* Please do not cite or circulate without permission from the first author. Direct all correspondence to the first author at Patric.Krueger@ucdenver.edu. We would like to acknowledge research support from the Eunice Kennedy Shriver National Institute of Child Health and Human Development (NICHD grant R03 HD057507 to Krueger), and administrative support from the University of Texas-Population Research Center (NICHD grant R24 HD42849) and the University of Colorado Population Program (NICHD grant R21 HD51146). Mark Hayward and Luisa Franzini have provided invaluable advice in support of this research.

In the contemporary US, a substantial number of children live in non-nuclear families, with many living in single parent households, or in households that include grandparents, with or without parents present (Cherlin 2010). Further, there are substantial race/ethnic differences in family structures, with blacks, Asians, and Hispanics far more likely to live in families that include grandparents than whites (Williams and Torrez 1998; Minkler and Fuller-Thomson 2005). There are strong connections between family structure and children's wellbeing. Children typically having the best cognitive, educational, and health outcomes if they live in families with two parents. Nevertheless, prior research does not provide a systematic overview of the relationship between child wellbeing and detailed family structures, across detailed race/ethnic groups (Crosnoe and Cavanaugh 2010). Two notable limitations of prior research stand out.

First, the literature offers little insight into detailed family structures. Many studies have focused on the wellbeing of children living in households that include married couples, cohabiting couples, and single mothers. However, only a few studies have focused on families that include grandparents (with or without parents present in the household), or single father households. Some family structures may arise out of social or economic need (such as when mothers or fathers are absent, or when grandparents are in poor health). In particular, black children often live in households where fathers and mothers are absent, and are more likely than whites to live with grandparents. Others family structures, however, may reflect preferences for living with extended kin among some race/ethnic groups. Indeed, Asians and some Hispanic subgroups may be more likely than whites to live with both parents and grandparents.

Different family structures may be able to offer different kinds of resources to support the health and wellbeing of children. Families that include grandparents who are in poor health and who can provide few economic resources to the family may draw social support and material

resources away from children. Grandparents who are the primary caretakers for their grandchildren because parents are absent (potentially because they are living elsewhere to work or attend school, or because they are in prison or incapacitated by drugs or alcohol) may be the family caretakers of last resort, and are likely to have few economic resources for caring for grandchildren (Burton 1992; Brandon 2005). Families where fathers are absent, even if the mother is present, may have fewer economic resources, and children might receive less supervision.

In contrast, some families may be especially supportive. If grandparents live in households due to cultural preferences for living with extended families, rather than the poor health of the grandparent or parent, then children may benefit from having more adults available who can provide time and effort to support their wellbeing. Similarly, although having two parents is typically associated with better wellbeing, children who live with fathers only may have better prospects than children who live with mothers only, given that fathers typically earn higher incomes.

Second, prior research offers little insight into detailed race/ethnic differences in the relationship between child wellbeing and family structure. Although some studies have focused on black-white differences in the relationship between living with a grandparent and child development (Dunifon and Kowaleski-Jones 2002, 2007), few nationally representative studies have examined Hispanics, and we are aware of no studies that have focused on Hispanic subgroups including Mexican Americans, Puerto Ricans, and Cubans, as well as Asians and Native Americans. In part, this is due to a paucity of data sets that include enough observations to provide stable estimates for groups that—though numerous—comprise a relatively small share of the US population.

Aims

Our first aim is to examine race/ethnic differences in the relationship between detailed family structures and health and educational outcomes. I include more detailed family structures than have been examined in prior research, including families that include married couples; single mothers; single fathers; extended households that include at least one grandparent in addition to at least one parent; and skipped generation households that include at least one grandparent and no parents. We will focus on detailed race/ethnic groups, including whites, blacks, Asian Americans, and Native Americans and American Indians (all non-Hispanic), as well as Hispanic subgroups including Mexican Americans, Cuban Americans, Puerto Ricans, and other Hispanics.

Our second aim is to examine whether the health, demographic characteristics, and socioeconomic status of parents and grandparents can explain the race/ethnic differences in the relationship between family structure and indicators of child wellbeing. The family socioeconomic measures include family income, levels of education, and employment ratios. The family health characteristics capture the ability of parents and grandparents to care for children, and include the proportion of adults who have activity limitations, and the proportion of adults who rate their health as fair or poor. Finally, we also examine the age structure of the household, because families that have very young or old caregivers may have more trouble caring for children (Burton and Bengston 1985).

DATA AND METHODS

We use data from the 1978-2009 waves of the National Health Interview Survey (NHIS), an annual, cross-sectional survey that conducts face-to-face interviews and collects information about all individuals in sampled households. The NHIS is particularly suitable for our analyses because it includes a large number of respondents each year (typically between 75,000 and

100,000 individuals of all ages). Beginning in 1978, the NHIS began collecting information about detailed race/ethnic groups. Further, the NHIS collects data on all individuals in sampled households, and provides information about how family members are related to each other, so we can identify various family structures and calculate family level variables. Pooling observations from 32 years of NHIS data yields 794,446 children from birth through age 17, which yields adequate observations for examining detailed race/ethnic and family structure groups.

Variables

Our first dependent variable is caregiver assessed health. The family respondent reports whether the child's health is excellent, very good, good, fair, or poor (1982-2009) or excellent, good, fair, or poor (1978-1981). The primary caretaker of the child typically reports the variables for children in the household. This is particularly useful if the caretaker is aware of the child's health and wellbeing. To account for the different response categories over time, we follow Liu and Umberson (2008) and code the global health measure as poor (=1), fair (=2), good (=3), and very good/excellent (=4), and we include a dummy variable in our multivariate analyses to indicate whether the item was originally measured on a four-point or a five-point scale. Separate analyses show that our results are substantively similar when using a dichotomous measure that indicates whether respondents are in fair or poor health, versus good, very good, or excellent health, or when we use a three point scale that ranges from poor, fair, or good/very good/excellent.

We are unaware of research that systematically examines the validity of caregiver assessed health for children of various ages. Table 1 shows correlations with our measure of global health and other variables that indicate the health or wellbeing of the child. Activity limitations are negatively correlated with better health assessments for both children under age 5,

and children aged 6 to 17. School aged children who missed more days of school were less likely to be in better health. For the years 1982-2007, we also have measures of children's progress through school. Children who are one or more years behind in school, relative to modal number of years completed for children of the same age in the same year of interview, are also significantly less likely to be in good health. In contrast, students who have completed more years of school than the modal child of the same age in the same survey year, are more likely to be in better health. Thus, the validity of the global health measure is bolstered by its correlations in the expected directions with other health and school outcomes of children.

(Table 1 about here)

The second dependent variable is a dichotomous and indicates whether children aged 7 through 17 are 1 or more years behind in schooling compared to their peers of the same age and in the same calendar year. We focus on children who are 7 or older, because many children aged 6 might just be starting school, and have not yet had time to get a year behind. The NHIS only began asking children about the years of schooling completed in 1982, so these analyses exclude data from 1981 and earlier. Our results are substantively similar when we examine the probability that children are 2 or more years behind in school.

The key predictor variables in our models are family structure and race/ethnicity. Family structure is categorical and indicates whether children are living in a: (1) skipped generation family, where they live with one or more grandparents, but no parents; (2) extended, mother only family that contains the mother and one or more grandparents, but no father; (3) extended, father only family that contains the father and one or more grandparents, but no mother; (4) extended, married couple family that holds both married parents and one or more grandparents; (5) a single mother family, where children live with their mother, but the father and grandparents are absent

from the household; (6) single father family, where children live with their father, but their mother and grandparents are absent; and (7) a family with married parents, but no grandparents.

Several aspects of the family relationship information in the NHIS warrant particular attention. First, a small number of children live in other kinds of families, and typically live with other family members (such as aunts or uncles) or unrelated adults. The NHIS is best suited to identifying "vertical" relationships among family members, such as grandparents, parents, children, and grandchildren, but collects little information on relationships among siblings, cousins, aunts, or uncles, so we exclude children living in other family structures. Second, the NHIS identifies families based on social rather than genetic relationships. Similarly, the NHIS seldom provides information about whether children are adopted or are step-children. Third, the NHIS did not ask about cohabiting relationships until 1997. However, if we restricted our analyses to the years 1997 and later, we would not have enough observations to examined detailed race/ethnic groups in combination with detailed family structure. Thus, we coded cohabiting adults according to their legal marital status when assigning them to groups for our analysis.

We code race/ethnicity categorically as non-Hispanic white, non-Hispanic black, Asian, Native American or American Indian, Mexican American, Cuban, Puerto Rican, or other Hispanics. We drop a small number of individuals who report that their race/ethnicity is "unknown" or that, in more recent years when the race/ethnicity questions are more detailed, report that they are multi-racial or multi-ethnic without a single dominant race or ethnicity.

We also create a series of caregiver level variables, based on both parent and grandparent characteristics (depending on who is present in the household), that may explain race/ethnic differences in the relationship between family structure and health. Family socioeconomic status

(SES) includes an employment ratio, education, and family income. The employment ratio is measured as the proportion of all individuals in the household who are working for pay. Caregiver education is coded as the maximum level of education held by any parent or grandparent in the family. Our results were substantively identical when focusing on the mean level of education among caregivers. Family income was reported in categories that varied across survey years. To approximate a continuous variable, we took the midpoint of each closed-ended interval and estimated a median value for the open-ended interval (Parker and Fenwick 1983), converted all values to 2009 dollars (U.S. Census Bureau 2007), adjusted for the purchasing power of different sized families (Van der Gaag and Smolensky 1982), and divided the variable by 10,000 and took the log to account for the diminishing returns to health as income increases (Rogers, Hummer, and Nam 2000).

We adjust for the health of parents and grandparents because caregivers who are in poor health may draw resources away from children, and to capture any correlation between the self-assessments of caregivers health and their assessments of children's health. We calculate measures for the proportion of parents and grandparents who report any activity limitations, and the proportion of parents and grandparents who are in fair or poor health.

We capture the age structure of households by including a measure for the average age of caregivers and the average age-squared. Households that have either very old or very young caregivers may have a weaker attachment to the labor force and be able to provide fewer economic resources, or may rely on parenting skills that are outdated (among older caregivers) or that reflect an absence of lifetime experience (among young caregivers). We also include a measure of the sex-ratio of the caregivers the household.

We include several control variables in all of our models. Sex is coded dichotomously,

with males coded as 1 and females coded as 0. We include age as a linear term, but we also include cubic splines at ages 6 and 12, to approximate transitions into school and into adolescence, respectively. We include only the linear term and the knot at age 12 when focusing on educational outcomes among older children. We also adjust for the year of survey in single years ranging from 0 in 1978 to 31 in 2009. Given the long time-span from which we draw our data, we include cubic splines with knots at 1990 and 2000, to adjust for any secular trends in health that might be correlated with race/ethnicity or family structure. Census region is coded categorically as the South, Midwest, West, or Northeast to account for regional variation in living with grandparents (Cherlin and Frurstenberg 1986; Fuller-Thomson and Minkler 2001), that might be correlated with regional variations in health and wellbeing (Krueger, Bhaloo, and Rosenau 2009).

Statistical Analyses

We use ordered logistic regression to model global health assessments. All of our analyses are weighted to the US population and use the "svy" commands in Stata to account for the stratified and clustered sampling frame used by the NHIS (StataCorp 2007; National Center for Health Statistics various years). Family income is missing for over 15% of the observations. The current draft of the paper uses a single imputation with stochastic variation added into the models (see Gelman and Hill 2007), but later drafts will use multiple imputation methods to account for missing data.

RESULTS

Table 2 presents the unweighted numbers of children aged birth through 17 in the years 1978-2009 (Panel A), and the number of children aged 7 through 17 in 1980 through 2009 (Panel B; the subsample who are available for the educational analyses). Although our sample size is

large, there are relatively few observations in some rare family structures (e.g. skipped generation families, and father only families), and for some small race/ethnic groups (e.g., Cuban Americans, Asian Americans, and American Indians). These data make clear the need for a large number of observations for these analyses. Subsequent analyses will test models that combine rare family structures or small race/ethnic groups, to assess whether our results are sensitive to small sample sizes for some groups.

(Table 2 about here)

Table 3 presents the percentage distribution of race/ethnic groups across family structures, weighted to the US population. Notably, 82% whites children live in married couple households, compared to just 41% of blacks and 48% of Puerto Ricans. In contast, blacks were quite likely to live in households that included a mother only, a mother and at least one grandparent, or skipped generation households comprised of grandparents and grandchildren, but not parents—each of these family structures suggest social disadvantage, due to the absence of one or both parents. In contrast, Asians and Cubans were among the most likely to live in families that include both the married parents and one or more grandparents, a family structure that may arise out of preferences for strong inter-generational ties.

(Table 3 about here)

Table 4 shows the results from the ordered logistic regression models of caregiver assessed health; all models adjust for calendar year, age, sex, geographic region, and a dumy variable that indicates the change in the categories of the caregiver assessed health across survey waves. Model 1 establishes that there are significant race/ethnic differences in health. Whites (the referent group) average the best health, followed by Cubans and Asians. Blacks, American Indians, Mexican Americans, and Puerto Ricans are among those with the worst health. Model 2

further includes the family structure variables, which partially explain race/ethnic differences in health. Children living with married parents (the referent) have the best health, followed by those living with a single father and in extended families that include the married parents and one or more grandparents. The worst health emerges among those who live in extended families that include a grandparent and either a father or a mother, and among those who live in skipped generation households.

(Table 4 about here)

Model 3 tests for interactions between the detailed race/ethnic groups and family structure. Separate tests (not shown) find that each group of interactions are significant at the $p < 0.05$ level, except for Cubans and Native Americans. Model 4 further adjusts for the family level covariates, whereupon many of the interactions are attenuated slightly, and the joint set of interactions for Asians are no longer significant at the $p < 0.05$ level.

To provide a better sense of the changes across Models 3 and 4, Figure 1a shows the predicted probability of being in very good/excellent health, by race/ethnicity and family structure, holding all other covariates at their means (from Table 4, Model 3). Figure 1b shows the equivalent results from Table 4, Model 4. The amount of variation across the race/ethnic and family structure groups is markedly greater in Figure 1a than in Figure 1b, which illustrates that the family level covariates we adjust for partially explain race/ethnic differences in the relationship between family structure and health.

(Figures 1a and 1b about here)

Table 5 presents logistic regression coefficients for the odds of being behind in school, in the somewhat smaller sample of children aged 7 through 17, in the years 1982 to 2009. Similar patterns emerge as in for caregiver assessed health, with a few notable exceptions. Model 1

shows that Asians are less likely to be behind in school than are whites, although Table 4 showed that Asians had worse health. In addition, Model 2 shows that Cubans are less likely to be behind in school than whites after adjusting for their family structure, although they had worse health than whites in table 4. Model 2 also shows that living in extended families that include both married parents and at least one grandparent is not associated with delays in schooling.

(Table 5 about here)

Model 3 tests for interactions between family structure and race/ethnicity. Wald tests for the groups of coefficients (not shown) show that the interactions are significant at the $p < 0.05$ level only for blacks, Cubans, Puerto Ricans, and other Hispanics. Thus, fewer interactions were significant when predicting educational delays than when predicting caregiver assessed health. Model 4 further adjusts for the family level covariates.

Figures 2a and 2b graphs the predicted probability of being behind in school across race/ethnic and family structure groups, with the other model covariates held at their means. Figure 2a shows a substantial amount of heterogeneity in the predicted probability of being behind in school (based on Table 5, Model 3). In figure 2b, however, that heterogeneity is greatly reduced (based on Table 5, Model 4). This is consistent with our finding that the Wald tests for each group of interaction terms from Table 5, Model 4, all fail to achieve significance at the $p < 0.05$ level.

(Figures 2a and 2b about here)

DISCUSSION

Our findings show that family structure is persistently associated with child health and wellbeing across diverse race/ethnic groups. Indeed, the main effects for the family structure variables in Model 4 on Tables 4 and 5 each suggest that children are disadvantaged if they live

in extended families that include a grandparent and either a mom or a dad (though we find no adverse relationship if both married parents are in the family), or if they live with single mothers. Although we find some evidence that the relationship between family structure and health or educational delays varies across race/ethnic groups, those differences are largely attenuated after adjusting for family level covariates, including caregiver socioeconomic status and health.

We will undertake several steps to further refine our analyses. First, we will examine whether our results vary if we collapse small race/ethnic groups, or certain family structures (e.g., extended families that contain only a father and extended families that contain only a mother in the parent generation). Second, we will test models that adjust for birth cohort rather than calendar year. Finally, we will conduct multiple imputation to limit the amount of missing data in our analyses.

These data have some important limitations that warrant mention. For example, the measures of health and educational progress are very broad, and we lack richer measures on specific domains of children's social or cognitive development. Further, we rely on pooled cross-sections of NHIS data, which limits our ability to identify causal effects. Indeed, it may be that children's family transitions, rather than their current family structure, drive their wellbeing (Fomby and Cherlin 2007). Nevertheless, to our knowledge, these are the only nationally representative data available that permit insight into both health and school progress outcomes among children who live in numerous family structures, and among the many diverse groups that comprise the US population.

REFERENCES

Brandon P. D. (2005). "Welfare Receipt among Children Living with Grandparents." *Population Research and Policy Review* 24:411-429.

Burton L. M. (1992). "Black Grandparents Rearing Children of Drug-Addicted Parents: Stressors, Outcomes, and Social Service Needs." *The Gerontologist* 32:744-751.

Burton L. M. and Bengston V. L. (1985). "Black Grandmothers: Issues of Timing and Continuity of Roles." Pp. 61-78 in *Grandparents: Research and Policy Perspectives*, edited by V. L. Bengston and J. F. Robertson. Beverly Hills, CA: Sage.

Cherlin A. J. (2010). "Demographic Trends in the United States: A Review of Research in the 2000s." *Journal of Marriage and Family* 72:403-419.

Cherlin A. J. and Frurstenberg F. F. (1986). *The New American Grandparent: A Place in the Family, a Life Apart*. New York: Basic Books.

Crosnoe R. and Cavanaugh S. E. (2010). "Families with Children and Adoleschents: A Review, Critique, and Future Agenda." *Journal of Marriage and Family* 72:594-611.

Dunifon R. and Kowaleski-Jones L. (2002). "Who's in the House? Race Differences in Cohabitation, Single Parenthood, and Child Development." *Child Development* 73:1249-1264.

—. (2007). "The Influence of Grandparents in Single-Mother Families." *Journal of Marriage and Family* 69:465-481.

Fomby P. and Cherlin A. J. (2007). "Family Instability and Child Well-Being." *American Sociological Review* 72:181-204.

Fuller-Thomson E. and Minkler M. (2001). "American Grandparents Providing Extensive Child Care to Their Grandchildren: Prevalence and Profile." *The Gerontologist* 41:201-209.

Gelman A. and Hill J. (2007). *Data Analysis Using Regression and Multilevel/Hierarchical Models*. New York: Cambridge University Press.

Krueger P. M., Bhaloo T., and Rosenau P. V. (2009). "Health Lifestyles in the U.S. And Canada: Are We Really So Different?" *Social Science Quarterly*:forthcoming.

Liu H. and Umberson D. J. (2008). "The Times They Are a Changin': Marital Status and Health Differentials from 1972 to 2003." *Journal of Health and Social Behavior* 49:239-253.

Minkler M. and Fuller-Thomson E. (2005). "African American Grandparents Raising Grandchildren: A National Study Using the Census 2000 American Community Survey." *Journal of Gerontology: Social Sciences* 60B:S82-S92.

National Center for Health Statistics. (various years). *National Health Interview Survey: Public Release Data Files and Documentation*. Hyattsville, MD: U.S. Department of Health and Human Services.

Parker R. N. and Fenwick R. (1983). "The Pareto Curve and Its Utility for Open-Ended Income Distributions in Survey Research." *Social Forces* 61:873-885.

Rogers R. G., Hummer R. A., and Nam C. (2000). *Living and Dying in the USA: Behavioral, Health, and Social Differentials of Adult Mortality*. New York, NY: Academic.

StataCorp. (2007). *Stata Statistical Software: Release 10.0*. College Station, TX: Stata Press.

U.S. Census Bureau. (2007). *Statistical Abstract of the United States: 2008*. Washington DC.

Van der Gaag J. and Smolensky E. (1982). "True Household Equivalence Scales and Characteristics of the Poor in the United States." *Review of Income and Wealth* 28:17-28.

Williams N. and Torrez D. J. (1998). "Grandparenthood among Hispanics." Pp. 87-96 in *Handbook on Grandparenthood*, edited by M. E. Szinovacz. Westport, CT: Greenwood.

Table 1: Validate Assessed Health for Children: Correlations Between Assessed Health and Other Indicators of Wellbeing, U.S. Children Aged 0 to 17 years, 1972-2009.

	Ages 0 to 5	Ages 6 to 17
Limitations of Activities		
Limited in any daily activities	-0.211*	-0.211*
Days lost from school[a]		
Days lost from 1972 to 1996	--	-0.114*
Days lost from 1997 to 2009	--	-0.056*
Progress in School (1982-2009)[b]		
$\geq$ 1 year behind in school (age $\geq$ 7)	--	-0.074*
$\geq$ 2 years behind in school (age $\geq$ 8)	--	-0.096*
$\geq$ 1 year ahead in school (age $\geq$ 6)	--	0.014*

Notes: * $p \leq 0.05$ (two-tailed test)

[a]The item for days lost from school asks about the past 2 weeks from 1972 to 1996, and the past year from 1997 to 2009.

[b]In 1982, the NHIS began asking about children's highest year of school completed.

Table 2. Unweighted Number of Children by Race/Ethnicity and Family Structure, NHIS

	Married Couple	Extended w/ mother	Extended w/ father	Extended w/ married couple	Skipped generation family	Mother only	Father only	Total
Panel A: Children from birth through age 17, 1978-2009								
Non-Hispanics								
White	410,929	11,638	2,847	7,088	3,148	59,587	9,076	504,313
Black	49,496	13,860	1,675	1,318	3,895	51,335	2,304	123,883
Asian	16,257	643	195	1,833	60	1,853	274	21,115
Amer. Indian	3,292	389	95	113	109	1,327	164	5,489
Hispanics								
Mexican Amer.	62,709	5,700	845	3,441	711	14,355	1,084	88,845
Cuban	3,691	392	64	381	61	1,018	55	5,662
Puerto Rican	6,745	917	111	289	256	6,003	213	14,534
Other Hispanic	19,933	1,744	261	1,235	214	6,752	466	30,605
Total	573,052	35,283	6,093	15,698		142,230	13,636	794,446
Panel B: Children from age 7 through age 17, 1982-2009								
Non-Hispanics								
White	206,014	3,951	1,260	3,559	2,069	34,045	6,318	257,216
Black	26,599	4,844	903	689	2,575	28,228	1,543	65,381
Asian	8,702	257	74	874	39	1,139	203	11,288
Amer. Indian	1,773	135	39	62	65	820	120	3,014
Hispanics								
Mexican Amer.	33,889	1,868	362	1,447	485	8,587	780	47,418
Cuban	2,001	172	26	203	35	594	45	3,076
Puerto Rican	3,587	295	54	140	186	3,399	155	7,816
Other Hispanic	10,306	637	112	608	141	3,961	355	16,120
Total	292,871	12,159	2,830	7,582		80,773	9,519	411,329

Table 3: Weighted Percent Distribution of Children Across Family Structures, By Race/Ethnicity, NHIS 1978-2009

	Married Couple	Extended w/ mother	Extended w/ father	Extended w/ married couple	Skipped generation family	Mother only	Father only
Non-Hispanics							
White	81.57	2.29	0.55	1.47	0.65	11.67	1.81
Black	41.47	10.74	1.26	1.15	2.97	40.53	1.88
Asian	77.14	2.88	0.88	8.78	0.25	8.78	1.29
Amer. Indian	59.50	7.13	1.88	2.01	2.26	24.16	3.05
Hispanics							
Mexican Amer.	71.82	6.03	0.86	3.50	0.73	15.79	1.27
Cuban	65.96	6.32	1.06	6.37	1.03	18.32	0.94
Puerto Rican	48.08	6.16	0.64	2.02	1.55	40.10	1.46
Other Hispanic	66.91	5.36	0.82	3.84	0.62	21.02	1.43

Table 4: Ordered Logistic Regression Coefficents for Caregiver Assessed Health, Children Aged Birth through 17, NHIS 1978-2009.[a]

	Model 1	Model 2	Model 3	Model 4
Race/Ethnicity				
White	ref	ref	ref	ref
Black	-0.813***	-0.627***	-0.652***	-0.432***
Asian	-0.414***	-0.413***	-0.454***	-0.395***
Amer. Indian	-0.797***	-0.701***	-0.743***	-0.376***
Mexican Amer.	-0.891***	-0.855***	-0.923***	-0.396***
Cuban	-0.280***	-0.214***	-0.226**	0.012
Puerto Rican	-0.887***	-0.744***	-0.691***	-0.309***
Other Hisp.	-0.559***	-0.502***	-0.508***	-0.267***
Family Structure				
Marriec couple		ref	ref	ref
Extend Mom		-0.565***	-0.674***	-0.288***
Extend Dad		-0.633***	-0.759***	-0.339***
Extend Mar		-0.232***	-0.314***	-0.097
Skipped		-0.695***	-0.797***	0.000
Mother		-0.422***	-0.440***	-0.044*
Father		-0.104**	-0.181***	0.071
Interactions				
Black by:				
Extend Mom			0.136**	0.113*
Extend Dad			0.118	0.104
Extend Mar			0.194	0.102
Skipped			0.134	0.304**
Mother			0.034	0.101***
Father			0.185*	0.176
Asian by:				
Extend Mom			0.369**	0.201
Extend Dad			0.418	0.205
Extend Mar			0.174	0.043
Skipped			0.089	-0.190
Mother			0.101	0.306**
Father			0.248	0.381
Amer. Indian by:				
Extend Mom			-0.017	-0.142
Extend Dad			0.320	0.346
Extend Mar			0.325	0.430
Skipped			0.330	-0.049
Mother			0.099	0.101
Father			0.317	0.406

Mexican Amer. by:		
Extend Mom	0.339***	0.032
Extend Dad	0.452***	0.167
Extend Mar	0.189*	0.073
Skipped	0.573***	0.540**
Mother	0.187***	0.137**
Father	0.286*	0.321*
Cuban by:		
Extend Mom	0.226	0.086
Extend Dad	0.201	-0.105
Extend Mar	0.289	0.054
Skipped	-0.130	-0.600
Mother	-0.094	-0.039
Father	1.270*	1.842
Puerto Rican by:		
Extend Mom	0.243	0.131
Extend Dad	0.187	0.243
Extend Mar	0.071	-0.163
Skipped	0.301	0.665**
Mother	-0.161*	-0.025
Father	0.274	0.438
Other Hisp by:		
Extend Mom	0.117	0.067
Extend Dad	0.929***	0.836**
Extend Mar	0.164	-0.002
Skipped	-0.110	-0.190
Mother	-0.050	0.071
Father	0.316	0.488**
Family income		0.238***
Adults' education, max		0.092***
Employment ratio		-0.030
Proportion of adults with activity limitations		-0.021
Proportion of adults in fair/poor health		-1.599***

[a] All models also adjust for calendar year, age, sex, geographic region, and the change in the caregiver assessed health categories.

Table 5: Logistic Regression Coefficents for Behind in School, Children Aged 6 through 17, NHIS 1982-2009.[a]

	Model 1	Model 2	Model 3	Model 4
Race/Ethnicity				
White				
Black	0.121***	0.037*	0.011	-0.094***
Asian	-0.190***	-0.181***	-0.201***	-0.248***
Amer. Indian	0.375***	0.332***	0.321***	0.147
Mexican Amer.	0.171***	0.159***	0.158***	-0.170***
Cuban	-0.103	-0.125*	-0.135*	-0.294***
Puerto Rican	0.211***	0.145***	0.082	-0.101*
Other Hisp.	0.033	0.008	0.038	-0.107***
Family Structure				
Marriec couple		ref	ref	ref
Extend Mom		0.269***	0.344***	0.171***
Extend Dad		0.277***	0.333***	0.144*
Extend Mar		-0.012	0.008	-0.057
Skipped		0.332***	0.295***	-0.031
Mother		0.195***	0.165***	-0.048**
Father		0.150***	0.150***	0.037
Interactions				
Black by:				
Extend Mom			-0.054	-0.072
Extend Dad			-0.109	-0.131
Extend Mar			-0.100	-0.033
Skipped			0.094	0.039
Mother			0.081**	0.016
Father			-0.087	-0.103
Asian by:				
Extend Mom			-0.175	-0.105
Extend Dad			0.091	0.217
Extend Mar			0.022	0.063
Skipped			0.181	0.148
Mother			0.176	0.105
Father			-0.063	-0.060
Amer. Indian by:				
Extend Mom			-0.030	-0.005
Extend Dad			0.017	-0.008
Extend Mar			-0.204	-0.230
Skipped			-0.487	-0.307
Mother			0.090	0.109
Father			0.100	0.113

Mexican Amer. by:		
Extend Mom	-0.170*	-0.034
Extend Dad	-0.185	0.014
Extend Mar	0.012	0.093
Skipped	0.177	0.291*
Mother	0.020	0.060
Father	0.107	0.198*
Cuban by:		
Extend Mom	-0.544	-0.420
Extend Dad	-0.340	-0.206
Extend Mar	0.026	0.133
Skipped	0.730*	0.831*
Mother	0.148	0.111
Father	0.000	-0.078
Puerto Rican by:		
Extend Mom	-0.322	-0.272
Extend Dad	-0.016	0.024
Extend Mar	-0.165	-0.035
Skipped	0.134	0.032
Mother	0.188**	0.073
Father	0.040	-0.065
Other Hisp by:		
Extend Mom	-0.323**	-0.265*
Extend Dad	-0.100	0.012
Extend Mar	-0.143	-0.048
Skipped	-0.311	-0.269
Mother	-0.060	-0.112*
Father	0.255*	0.256
Family income		-0.186***
Adults' education, max		-0.051***
Employment ratio		-0.069***
Proportion of adults with activity limitations		0.042*
Proportion of adults in fair/poor health		0.126***

[a] All models also adjust for calendar year, age, sex, and geographic region.

Figure 1a: Predicted Caregiver Assessed Health from Table 4, Model 3

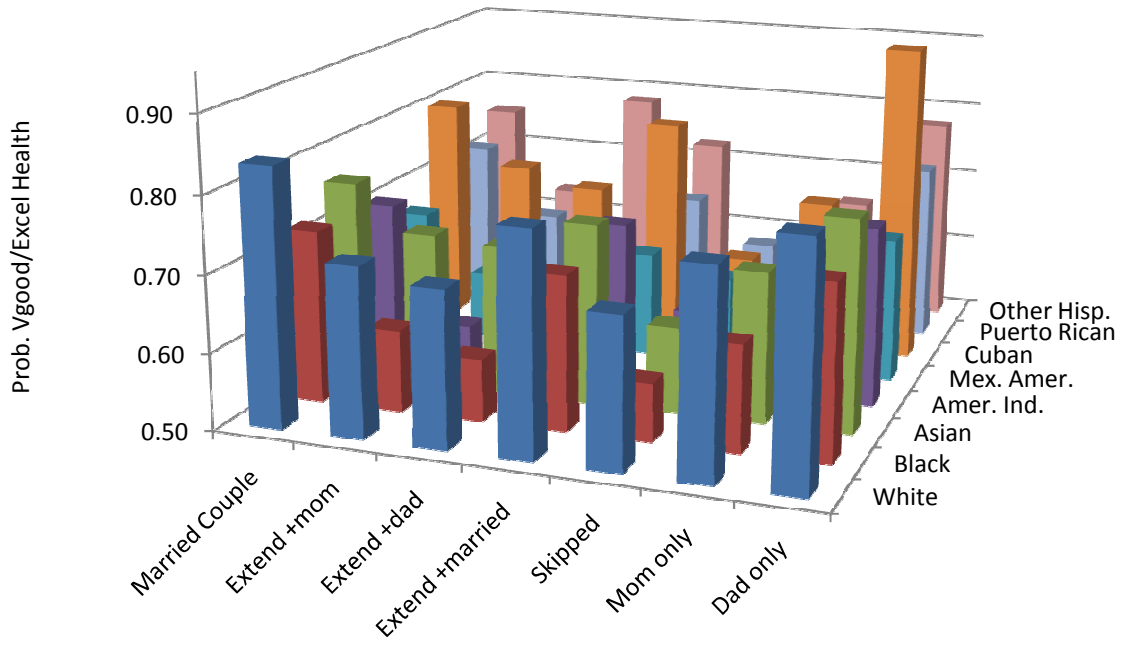

Figure 1b: Predicted Caregiver Assessed Health from Table 4, Model 4

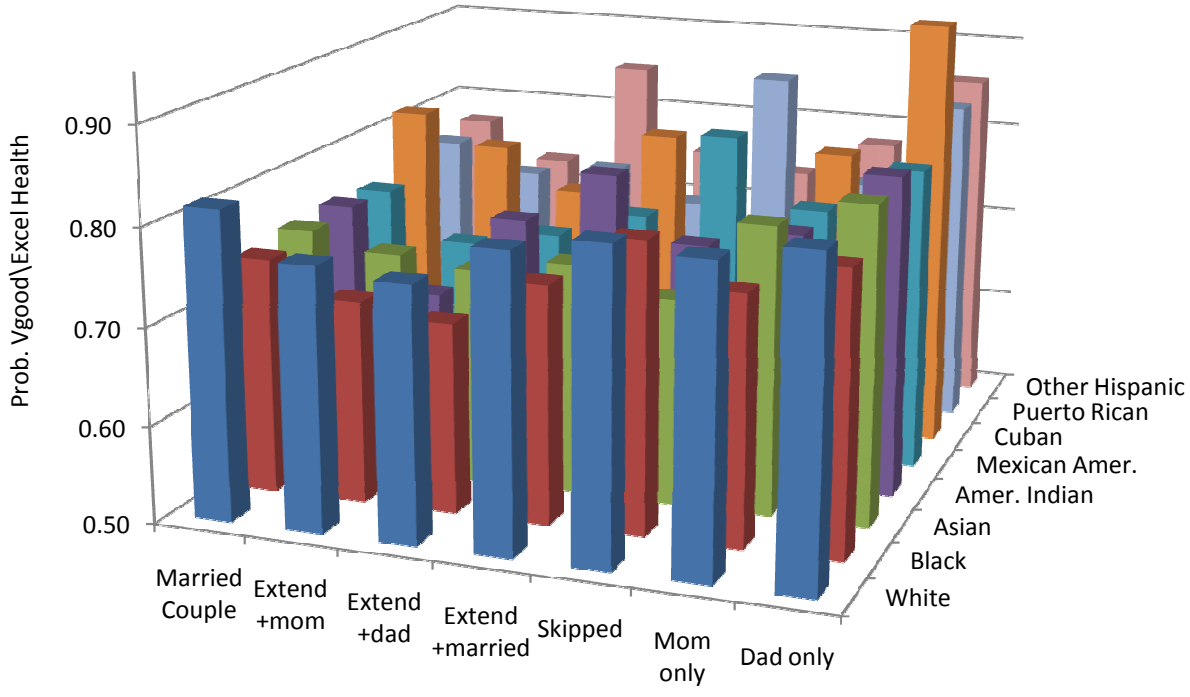

Figure 2a: Predicted Probability of Being Behind in School from Table 5, Model 3

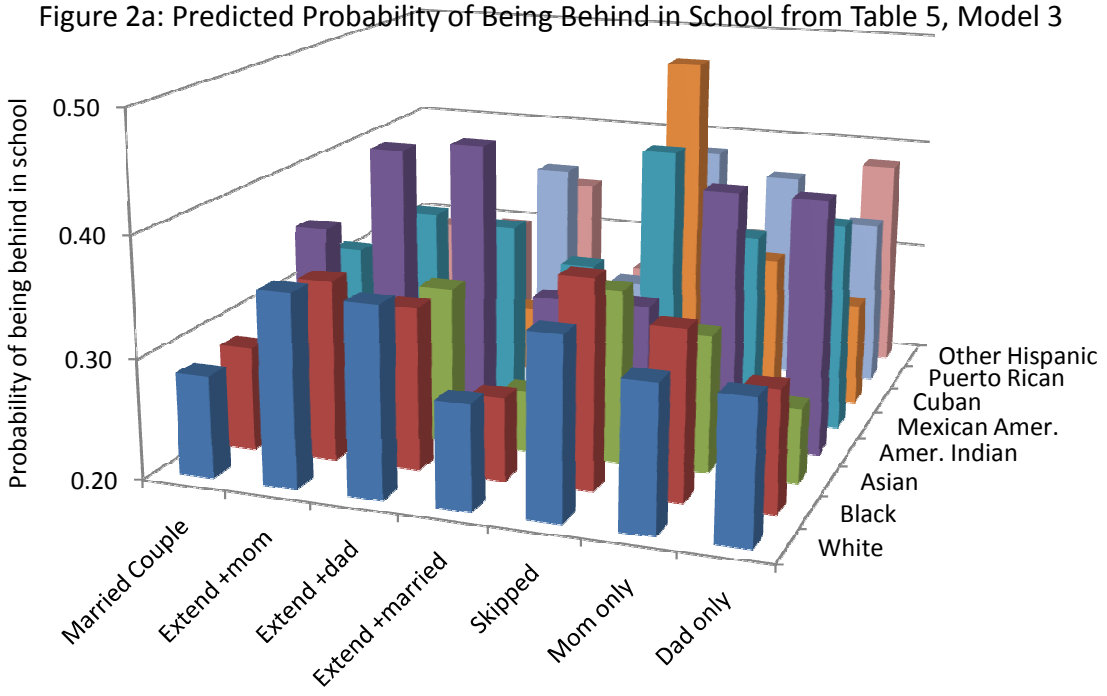

Figure 2b: Predicted Probabilities of Being Behind in School, From Table 5, Model 4