

Fall 2006

Family structure, the State Children's Health Insurance Program (SCHIP) and child outcomes

Minghua Li

University of New Hampshire, Durham

Follow this and additional works at: <https://scholars.unh.edu/dissertation>

Recommended Citation

Li, Minghua, "Family structure, the State Children's Health Insurance Program (SCHIP) and child outcomes" (2006). *Doctoral Dissertations*. 343.

<https://scholars.unh.edu/dissertation/343>

This Dissertation is brought to you for free and open access by the Student Scholarship at University of New Hampshire Scholars' Repository. It has been accepted for inclusion in Doctoral Dissertations by an authorized administrator of University of New Hampshire Scholars' Repository. For more information, please contact nicole.hentz@unh.edu.

NOTE TO USERS

Page(s) not included in the original manuscript and are unavailable from the author or university. The manuscript was scanned as received.

140

This reproduction is the best copy available.

UMI[®]

**FAMILY STRUCTURE, THE STATE CHILDREN'S HEALTH
INSURANCE PROGRAM (SCHIP) AND CHILD OUTCOMES**

By

MINGHUA LI

B.A. Nankai University, 1999

M.A. University of New Hampshire, 2002

DISSERTATION

Submitted to the University of New Hampshire
in Partial Fulfillment of
the Requirements for the Degree of

Doctor of Philosophy
in
Economics

September, 2006

UMI Number: 3231356

INFORMATION TO USERS

The quality of this reproduction is dependent upon the quality of the copy submitted. Broken or indistinct print, colored or poor quality illustrations and photographs, print bleed-through, substandard margins, and improper alignment can adversely affect reproduction.

In the unlikely event that the author did not send a complete manuscript and there are missing pages, these will be noted. Also, if unauthorized copyright material had to be removed, a note will indicate the deletion.

UMI[®]

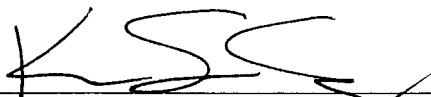
UMI Microform 3231356

Copyright 2006 by ProQuest Information and Learning Company.

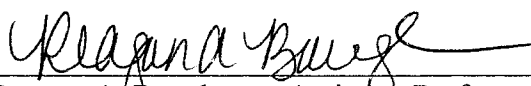
All rights reserved. This microform edition is protected against unauthorized copying under Title 17, United States Code.

ProQuest Information and Learning Company
300 North Zeeb Road
P.O. Box 1346
Ann Arbor, MI 48106-1346

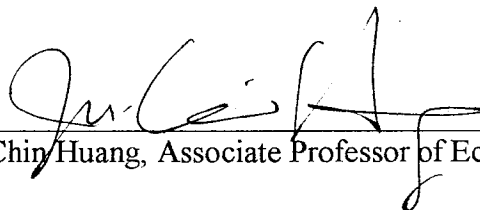
This dissertation has been examined and approved.



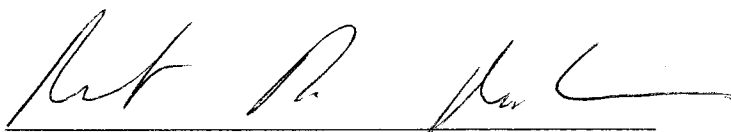
Dissertation Director, Karen S. Conway, Professor of Economics



Reagan A. Baughman, Assistant Professor of Economics



Ju-Chin Huang, Associate Professor of Economics



Robert D. Mohr, Assistant Professor of Economics



Robert S. Woodward, McKerley Professor of Health Economics

August 17, 2006

Date

DEDICATION

This dissertation is dedicated to my entire family and to the loving memory of my grandmother.

ACKNOWLEDGEMENTS

I would like to thank Karen Conway, Reagan Baughman, Ju-Chin Huang, Robert Mohr, and Robert Woodward for their comments and feedback on the dissertation.

Special thanks go to Professor Karen Conway for her invaluable insights and reading numerous early drafts of each essay in the dissertation. In addition, I would like to thank Professor Conway, Reagan Baughman and Robert Mohr for preparing me for the job market. I am grateful for their advice, encouragement and support.

Finally I would like to thank my husband and my son for their understanding and support throughout this working process. Without their love and support, this dissertation can not be finished.

This dissertation is partly funded by the Annie E. Casey Foundation through the NSAF Small Research Grants Program, and by the University of New Hampshire graduate school through Summer TA fellowship and Dissertation fellowship.

TABLE OF CONTENTS

DEDICATION	iii
ACKNOWLEDGEMENTS	iv
TABLE OF CONTENTS	v
LIST OF TABLES	viii
LIST OF FIGURES	x
ABSTRACT	xi
INTRODUCTION	1
PART I: A MORE COMPLETE PICTURE OF FAMILY STRUCTURE AND ITS EFFECTS ON CHILD OUTCOMES	4
CHAPTER 1. INTRODUCTION	5
CHAPTER 2. LITERATURE REVIEW	9
2.1 Family Structure Revisited	9
2.2 The Window Problem	15
2.3 The Endogeneity of Family Structure	18
2.4 How Gender Matters	22
2.5 The Importance of Race/Ethnicity in the Context of Grandparent Caregiving ..	29
2.6 Contributions of This Essay	35
CHAPTER 3. THEORETICAL FRAMEWORK	38
3.1 A Review of the Household Production Function Model (Becker-Grossman- Rosenzweig and Schultz)	38
3.2 Single-parent Households Model	41
3.3 Other Extending Issues	48
CHAPTER 4. EMPIRICAL STRATEGIES	51
4.1 Data and Variables	51
4.2 Estimation Strategies	65
CHAPTER 5. EMPIRICAL RESULTS	70
5.1 Descriptive Results	71
5.2 Regression Results	79
CHAPTER 6. DISCUSSION	101
REFERENCES	154
PART II: SCHIP, MEDICAL CARE UTILIZATION AND CHILD HEALTH OUTCOMES	170
CHAPTER 1. INTRODUCTION	171
CHAPTER 2. BACKGROUND — MEDICAID EXPANSIONS AND SCHIP	174
CHAPTER 3. LITERATURE REVIEW	179

3.1 Eligibility	179
3.2 Coverage	180
3.3 Utilization	184
3.4 Outcomes	186
CHAPTER 4. METHODOLOGY	188
4.1 Theoretical Framework	188
4.2 Data	191
4.3 Empirical Strategies	196
CHAPTER 5. EMPIRICAL RESULTS	204
5.1 Descriptive Statistics.....	204
5.2 Regression Results.....	205
5.3 Sensitivity Check	211
CHAPTER 6. CONCLUDING REMARKS.....	214
REFERENCES	231
APPENDICES	239
APPENDIX A. Data Source for the State Level Variables	240
APPENDIX B. SCHIP Eligibility and Health Insurance Coverage, Medical Care Utilization and Health Outcomes (Age DID for Whole Sample with All Independent Variables Reported).....	241
APPENDIX C. SCHIP Eligibility, Health Insurance Coverage and Health Outcomes: Marginal Effects from Logit Models	242
APPENDIX D. The Impact of the SCHIP Expansions on Health Outcomes: Ordered Logit Model	243
APPENDIX E. The Impact of the SCHIP Expansions on Coverage, Medical Care Utilization Health Outcomes: Triple Difference-in-Difference from OLS Model	244
PART III: GRANDPARENTS RAISING GRANDCHILDREN: THEORY, REALITY AND PUBLIC POLICY	245
CHAPTER 1. INTRODUCTION	246
CHAPTER 2. LITERATURE REVIEW	249
CHAPTER 3. PUBLIC POLICY RELATED TO GRANDPARENT HOUSEHOLDS	253
3.1 Informal Kinship Care, TANF and Its Implication for Grandparent Household Formation	255
3.2 Formal Kinship Care, State Kinship Care Policy and Its Implication for Grandparent Household Formation.....	258
CHAPTER 4. CONCEPTUAL THEORETICAL FRAMEWORK	261
4.1 Grandparent Caregiving Motivations	261
4.2 Grandparent Household Formation.....	265
CHAPTER 5. EMPIRICAL STRATEGIES.....	269
5.1 Estimation Strategies	269
5.2 Data and Variables.....	269
CHAPTER 6. EMPIRICAL RESULTS	277

6.1 Descriptive Statistics.....	277
6.2 Regression Results.....	278
6.3 Sensitivity Checks.....	280
CHAPTER 7. DISCUSSION.....	282
REFERENCES	290
APPENDIX.....	296
APPENDIX A. Data Source for State Level Variables	297
CONCLUSION.....	299

LIST OF TABLES

PART I

Table 1. Prevalence of Different Family Structures	109
Table 2. Descriptive Statistics (Full Sample)	110
Table 3. Descriptive Statistics by Family Structure.....	111
Table 4. Descriptive Statistics by Race/Ethnicity.....	112
Table 5. Descriptive Statistics by Gender.....	114
Table 6. Ordered Probit Models Predicting Child's Current Health Status (Age 6-17)..	116
Table 7. Ordered Probit Models Predicting School Engagement (Age 6-17)	118
Table 8. Ordered Probit Models Predicting Behavioral Problems (age 6-11 and 12-17)	120
Table 9. Non-Traditional vs. Traditional Families (Descriptive Statistics for Full Sample)	122
Table 10. The Gender of the Parent (Descriptive Statistics for Full Sample)	123
Table 11. The Presence of a Stepfather (Descriptive Statistics for Full Sample).....	124
Table 12. The Presence of a Stepmother (Descriptive Statistics for Full Sample).....	125
Table 13. Grandparent vs. Other Non-parental Families (Descriptive Statistics for Full Sample)	126
Table 14. Non-Traditional vs. Traditional Families (Regression for Full Sample).....	127
Table 15. The Gender of the Biological Parent in Single Parent and Stepparent Families (Regression Results for Full Sample)	130
Table 16. The Presence of a Stepfather (Regression Results for Full Sample)	131
Table 17. The Presence of a Stepmother (Regression Results for Full Sample)	132
Table 18. Grandparent vs. Other Non-parental Families (Regression Results for Full Sample)	133
Table 19. Non-Traditional vs. Traditional Families (Regression Results Stratified by Race)	134
Table 20. The Gender of the Biological Parent in Single Parent and Stepparent Families (Regression Results Stratified by Race)	137
Table 21. The Presence of a Stepfather (Regression Results Stratified by Race)	139
Table 22. The Presence of a Stepmother (Regression Results Stratified by Race)	141
Table 23. Grandparent vs. Other Non-parental Families (Regression Results Stratified by Race)	143
Table 24. Non-Traditional vs. Traditional (Regression Results Stratified by Child Gender)	144
Table 25. The Gender of the Biological Parent in Single Parent and Stepparent Families (Regression Results Stratified by Child Gender).....	147
Table 26. The Presence of a Stepfather (Regression Results Stratified by Child Gender)	149
Table 27. The Presence of a Stepmother (Regression Results Stratified by Child Gender)	151

Table 28. Grandparent vs. Other Non-parental Families (Regression Results Stratified by Child Gender).....	153
--	-----

PART II

Table 29. Children's Medicaid (SCHIP) Eligibility Changes (1986-1997).....	217
Table 30. Summary of SCHIP Program by State for 1997 and 2002.....	218
Table 31. Medicaid Eligibility Changes as a Fraction of the Federal Poverty Line 1997-2002.....	220
Table 32. Descriptive Statistics of Key Variables for 1997 and 2002.....	221
Table 33. Descriptive Income DID Analysis for SCHIP's Impact on the Probability of Being SCHIP/Medicaid Insured.....	222
Table 34. The Impact of the SCHIP Expansions on Insurance Coverage.....	223
Table 35. The Impact of the SCHIP Expansions on Medical Care Utilization.....	225
Table 36. The Impact of the SCHIP Expansions on Health Outcomes.....	228

PART III

Table 37. Descriptive Statistics for Grandparent Households, Other Kin Households and the Whole Sample.....	285
Table 38. Logit Model Predicting the Probability of Being in Grandparent Kinship Care for the Whole Sample: Using Kinship Care Policy Index.....	286
Table 39. Alternative Specifications of State Kinship Care Policies.....	288
Table 40. Other Sensitivity Checks.....	289

LIST OF FIGURES

PART I

- Figure 1. The Diversity of Family Structures 107
Figure 2. A Simplification of the Diverse Family Structures 108

PART II

- Figure 3. Medicaid/SCHIP Income Eligibility Change (as Percentage of Federal Poverty Line) for Different Age Groups, 1997-2002..... 216

PART III

- Figure 4. Public Assistance Available to Grandparent Households 284

ABSTRACT

FAMILY STRUCTURE, STATE CHILDREN'S HEALTH INSURANCE PROGRAM (SCHIP) AND CHILD OUTCOMES

By

Minghua Li

University of New Hampshire, September, 2006

This dissertation consists of three separate but interrelated essays that investigate how family structure and public policy are linked to children's health and developmental outcomes. Each essay employs two or three waves of the National Survey of America's Families (NSAF) as the primary data source. The first essay broadly investigates how family structure, including the less typical non-traditional families such as single father and grandparent households, are related to a wide array of child outcomes with a focus on the interplay of parent-child gender. The results from this study show that children in single-father families have better health status than children living in all other non-traditional families. Adding economic resources and inputs appears to mitigate the adverse effect of poverty associated with non-traditional families, but does not eliminate such negative impact.

The second essay investigates how the State Children's Health Insurance Programs (SCHIP), which are designed to provide coverage for uninsured children with family income too high to qualify for Medicaid but not high enough to secure private

insurance, affect coverage, medical care utilization and child health outcomes. I find strong and consistent evidence that the number of publicly insured children increases; however, the number of privately insured children also declines suggesting significant crowd-out. As a result, there are no consistent findings that SCHIP increased the overall number of insured children. The results also indicate that SCHIP programs encourage medical care utilization such as well-child care visits and doctor visits. Nevertheless, there is little evidence on the effectiveness of SCHIP with respect to improving children's health outcomes.

The third essay contributes to the sparse existing literature on two different fronts. First, it empirically investigates the impact of welfare reform on the formation of grandparent-headed households, while at the same time taking into account the interplay of other contemporary public programs such as state kinship care policies and SCHIP. Second, this essay explores the motivations underlying grandparent caregiving behaviors and offers insights to such behaviors from an economist's perspective. I do not find evidence that welfare reform encourages grandparent household formation. However, there is strong evidence that kinship care policies encourage grandparent caregiving behaviors.

INTRODUCTION

There was early and widespread interest in the well-being of children, as children are viewed as America's most valuable resource for the future. *The Children's Charter*, as one of the first explicit statements of the national goals for children and youth, was provided in 1930, at the onset of the Great Depression. The Children's Charter lays out the national goals for the children of America:¹

- I. For every child spiritual and moral training to help him to stand firm under the pressure of life
- II. For every child understanding and guarding of his personality as his most precious right
- III. For every child a home and that love and security which a home provides; and for that child who must receive foster care, the nearest substitutes for his own home
- IV. For every child full preparation for his birth, his mother receiving prenatal, natal, and postnatal care, and the establishment of such protective measures as will make childbearing safer
- V. For every child health protection from birth through adolescence, including: periodical health examinations and, where needed, care of specialists and hospital treatments; regular dental examination and care of the teeth; protective and preventive measures against communicable diseases; the insuring of pure food, milk and pure water
- VI. For every child from birth through adolescence, promotion of health, including health instruction and a health program, wholesome physical and mental creation, with teachers and leaders adequately trained

The well-being of American children is also essential to the pursuit of happiness by many American families. Most families strive to raise their children in a secure and stimulating environment by providing economic and social resources needed for their

¹ U.S. Department of Health and Human Services (1991), *Child Health USA 91*.

children's success. However, changing demographics and social trends have reshaped American families so that they differ not only from the traditional families, but also from each other. Along with the decline of traditional families, new types of families and living arrangements have become more prominent, including one-parent families, cohabiting couples with children, and grandparent maintained families.

Changing family structure and children's current and future economic well-being are inextricably connected. Greater diversity has meant greater economic inequality across households. While the overall U.S child poverty rate is 17 percent, the poverty rate is 46 percent for children in no-parent families and 38 percent for children in one-parent families.² Therefore, children in single-parent families and no-parent-present families have unusually high poverty rates compared to children in other families. Although the exceptionally high poverty rates observed in such households can not be simply reduced to a family question especially among the historically disadvantaged groups, the link between children's living arrangements and poverty is strong.

The new and changing American family life coupled with economic deprivation, has greatly affected the experience of childhood and young adulthood for many children over the past four decades. To understand the interplay of these changes on child outcomes, it is thus essential to look at the population of children with a focus on family structure and the effectiveness of government programs designed to help children. That is the main purpose of this dissertation.

² Children's Living Arrangements and Characteristics: March 2002, Current Population Reports, 2003, by Jason Fields.

The debate over who and what are responsible for the current situation and controversy over policy response must not obscure the basic national goal outlined in the Children's Charter. In the midst of the complicated research challenges, complex theories of family economics, and wide policy disagreements, I am attempting to address these pressing issues.

**PART I: A MORE COMPLETE PICTURE OF FAMILY
STRUCTURE AND ITS EFFECTS ON CHILD OUTCOMES**

CHAPTER 1

INTRODUCTION

One out of every six children in the United States is growing up in a household where the family income is at or below the poverty threshold (2002 U.S. Census Bureau, March Current Population Survey). This may be in part due to the dramatic increase in births to unmarried women as well as the high divorce rate in the United States, which are among the many factors that have changed family structure and affected the economic security of children in the country. The rates of divorce and single parenthood are higher in the United States than in any other part of the world, with one out of every three births occurring outside of marriage (National Center for Health Statistics, 1995); and four out of every ten American children are not living with both biological parents. Each year more than 1.5 million children under 18 (about 2.5 percent) experience the divorce of their parents, about half of all children live with only one parent, and two fifths of all children live in a cohabiting family at some point.

Much research has demonstrated that children of unmarried mothers, especially teenagers, are at a higher risk of having negative birth outcomes, such as low birth weight and infant mortality, and are more likely to live in poverty than children of married mothers.³ Growth in female-headed households has been implicated as a major source of poverty, in part because many fathers fail to pay child support. Since children can be

³ See Hayes (1987) and Prater (1995) for reviews of the literature.

thought of as collective consumption goods from the point of view of the father and mother, within marriage, proximity and altruism help to relieve the free-rider problem associated with the provision of public goods. Upon separation or divorce, however, it may not be feasible for the parents to realize a Pareto-optimal allocation of their joint resources as the noncustodial parent loses the control to the allocation decisions of the custodial parent (Weiss and Willis 1985).

Single-parent families and blended families have received the most attention from researchers. Some but not all research finds that children who grow up in single-parent or stepparent families usually fare worse than those who grow up with both biological parents. Almost all of these studies either treat single-parent families as one category, without differentiating between single-father headed and single-mother headed, and without identifying whether the single parent is in a cohabiting relationship or alone, or these studies simply compare single-mother families to blended families or to intact families, leaving out single-father families completely. The gender of the single parent may have different intonations for children in the household, and boys and girls are different in many aspects; even fewer studies have addressed the gender difference and parent-child gender interaction when studying family structures' impact on child outcomes. In addition, few studies have paid attention to outcomes for children living in no-parent families, in particular grandparent households.

Furthermore, earlier studies, with a few exceptions such as Brown (2004), usually investigate one aspect of child outcomes. In many cases, these studies either investigate educational achievement and/or labor force attachment, or outcomes such as early childbearing and marriage for adolescents or adults (Manski et al. 1992, Ginther and

Pollak 2000, Ginther and Pollak 2004, Biblarz and Gottainer 2000, Havemen and Wolfe, 1995). All these studies only provide one angle to assess how the well-being of children is affected, not a complete picture. However, educational achievements such as high school grades and graduations, college attendance and graduation, although serving as a good indicator of a child's chances of economic success in adulthood, do not cover all aspects of well-being. First, economic independence and security are not the only measures of success, as a person also needs to achieve high self-esteem or a sense of control over his/her life (psychological success) and receive the respect of his/her peers (social success), which are other indicators of success. Second, the vital importance of the early school years has been demonstrated by research in psychology and cognition when human abilities and behaviors are mainly cultivated by families and non-institutional environments (Chase-Lansdale 1998). Therefore, this essay will analyze the relationship between household characteristics and children's well-being, with a focus on three aspects of child outcomes: children's school engagement, behavior problems and health status.

The majority of studies investigate the issue by using the National Longitudinal Survey of Youth (NLSY) data or data from the National Education Longitudinal Study (NELS) which are not up-to-date and are also not big enough to allow for stratifying the sample or investigating less common family structures. By using data from the National Survey of American Families, it is possible to explore the relationship between family structure, or more broadly, family environment and the different aspects of child outcomes. This essay comprehensively investigates ten types of family structures: grandparent family, other non-parental family, single-mother family, single-father family,

cohabiting stepfather family, cohabiting stepmother family,⁴ two biological/adoptive parent cohabiting family, married stepfather family, married stepmother family, married two biological/adoptive parents family. These detailed definitions facilitate our exploration of how the gender of single parents and stepparents may interact with the gender of their children and how race/ethnicity interplay with grandparent caregiving in the case where neither parent of the child is present.

⁴ The use of the terms stepmother and stepfather in this essay does not necessarily imply marriage. Cohabiting stepmother families are defined as those in which the focal child is living with his or her biological/adoptive father and his unmarried female partner. Cohabiting stepfather families are defined as those in which the focal child is living with his or her biological/adoptive mother and her unmarried male partner.

CHAPTER 2

LITERATURE REVIEW

In this section, we will first survey how past studies define family structure, then we will discuss the major challenges encountered by researchers when investigating family structure's impact on child outcomes. Afterwards, we review why gender and race/ethnicity may interplay with family structure to have different impacts on child outcomes. Finally we discuss how this essay can contribute to the literature.

2.1 Family Structure Revisited

Non-marital fertility and single-parent families have been concerns for policy makers since the 1960s. But economists often ignore the diversification of family structures by assuming intact families implicitly or explicitly. For example, the theoretical and much of the empirical analysis in Becker (1981, 1991) are based on the assumption that children are born to two parents who are married and remain married to each other. Behrman, Pollak and Taubman (1995), and Mulligan (1997) also make the same assumption. Not surprisingly, there are no consistent classification schemes regarding family structure.

Despite the lack of theoretical models and consistent measures of family structure in economics, researchers from other disciplines have investigated correlations between

family structure and children's outcomes empirically, especially between family structure and children's educational and behavioral outcomes. Much of this research uses a dichotomous variable to indicate simply whether or not a child lives with a single-parent (usually the mother) or whether or not a child lives in an intact family, ignoring the diversity of living arrangements. For example, Manski et al. (1992) simply classify family structures as intact vs. non intact families, with a non-intact family defined as a family that does not have both biological/adoptive parents, such as a family with one parent, with a parent and stepparent, or with no parents. Similarly, Lang and Zagorsky (2001) roughly divide families into two groups for a simple comparison: two biological parents vs. other parental structure.

2.1.1 Cohabitation. One complexity that is just beginning to be explored is cohabitation. Cohabitation has expanded the definition of family structure and family process in recent decades. Although dramatic increases in unmarried cohabitation began in the late 1970's, it was still considered as a deviant form from the traditional family process at that time (only about two percent of all couples living together were unmarried) (Glick and Spanier 1980). Currently cohabitation among unmarried couples is so prevalent that cohabitation is increasingly becoming an alternative to marriage (Bumpass and Lu 2000, Manning and Bulanda 2003, Smock and Manning 2004).

Cohabitation has critical implications for child well-being. The birth of a child during cohabitation is much more common as cohabitation is more accepted. Children are increasingly likely to begin life with cohabiting parents. A recent study reports that approximately half of nonmarital births are to mothers in cohabiting relationships (Osborne 2005). Bumpass and Lu (2000) find that the dramatic increase in nonmarital

childbearing between periods 1980-1984 and 1990-1994 was completely associated with the increase of births to cohabiting mothers since the births to single mothers remained constant during those periods.

A child can also enter into a cohabiting family when the custodial parent establishes a cohabiting relationship with her/his partner. This living arrangement is similar to the traditional stepfamily but is formed out of cohabitation instead of marriage. As a matter of fact, if cohabitation is taken into account, then in addition to marriage approximately one-half of all stepfamilies in the U.S. are now formed through cohabitation rather than through marriage (Smock and Manning, 2004). Manning and Lichter (1996) estimate that 3.5 percent of children in the U.S. live with a parent and their unmarried partner (approximately 2.2 million), with a significant proportion (roughly 13 percent of 2.2 million) living with two cohabiting biological parents instead of one.

Consequently living in a cohabiting family is a common experience for many children. Based on data from the 1979-1992 National Longitudinal Survey of Youth mother-child files, Graefe and Lichter (1999) estimate that one in four children will live in a cohabiting family sometime during childhood. Estimates from Bumpass and Lu (2000) show the trend continues: 40 percent of all children are likely to experience a cohabiting household at some point.⁵ Acs and Nelson (2002) vividly reflect this fast change regarding cohabiting households as “inferences drawn from data collected even five years ago may present a dated picture of the status and outcomes of children in such families.”

⁵ Their estimates are based on data from the 1987-1988 National Survey of Families and Households and from the 1995 National Survey of Family Growth Cycle 5.

Due to the ever rising prevalence of cohabitation and its inextricable implication for child well-being, research studying the impact of cohabitation on child outcomes burgeons (Raley, Frisco, Wildsmith 2005, Acs and Nelson 2002, Dunifon and Kowaleski-Jones 2002, Manning and Lamb 2003, Nelson, Clark, and Acs 2001, Manning and Bulanda 2003, Brown 2004). Studies examining how children fare in cohabiting families usually make comparison to other living arrangements such as married and single families. Though various studies use different methodologies and have different focuses, one theme that does stand out is that parental cohabitation is associated with less favorable outcomes for children living in such families compared to their counterparts living with two married biological parent families, and children living in cohabiting families fare no better than children living with single parents.

2.1.2 Single Fathers. A second trend has been the growing complexity of single-parent households. As one of the most influential works on the correlation between family structure and children's outcomes, McLanahan and Sandefur (1994) examine and compare outcomes of children who grow up in single-parent or stepparent families to those growing up with both biological parents. In particular, they find that high school graduation rates, college enrollment, and college graduation rates for children in single-parent families are lower than those of children in two-parent families. Many other studies also either use "single-parent" without specifying whether it is single father or single-mother, or include only single-mother families in their investigation (Ginther and Pollark 2000, Corman and Kaestner 1992, McLanahan and Sandefur 1994, Painter and Levine 2000).

However, there is a large and increasing population of American men confronted with single parenthood, and single fathers are one of the fastest-growing demographic groups in the U.S. The 2000 Census data shows that there were 2.2 million households across the country in which single men were raising children, a 62 percent increase since 1990. Despite these statistics, research geared specifically to single fathers has been limited, although a growing number of studies are coming to recognize and incorporate the fact that not all single-parent families are alike and there exist many other different family structures as society becomes more diverse. For example, Biblarz and Raftery (1999)'s family structure is relatively complete. It consists of: (1) two-biological-parent family; (2) alternative mother-headed families (composed almost fully of single-mother families); (3) alternative father-headed families (including both single-father and father-stepmother families); (4) mother-stepfather families. They conduct a multivariate study and find that children from single-father families and stepfamilies had lower educational achievement than children from both two-biological parent and single-mother families. Nevertheless, children living in no-parent families such as grandparent-maintained families are considered irrelevant and therefore completely left out of their study. Painter and Levine (2000) focus on three family structures: 1) Intact family (with both biological parents), 2) Mother and stepfather, 3) Single mother. They also look at several other non-traditional family structures such as father and stepmother, father alone, mother and live-in companion, and no biological parents. But the sample sizes are either too small, or because the authors focus on parent involvement, they find it difficult to characterize in the case of living without a biological parent. Therefore these family structures are subsequently dropped from their main results. While focusing on parental cohabitation,

Brown (2004) explores seven different family structures using NSAF data such as two-biological married family, two-biological cohabiting family, married step family, cohabiting stepfamily, single-mother family, single-father family and no-parent family, but her study does not use all measures to investigate various aspects of child outcomes as we proposed, nor does her study consider inputs. In addition, her study does not separate and investigate grandparent-maintained families, or consider differences in stepparent families.

2.1.3. Grandparent Households. Grandparent households are also too often forgotten when it comes to defining or measuring family structure. Even fewer studies focus their attention on child outcomes when investigating grandparent caregiving. Dubowitz et al. (1994) is the first comprehensive assessment of the physical and mental health and educational status of children in kinship care. It also compares children in kinship with children in foster care, children in poverty and children from the general population respectively. The study finds that children in kinship care have substantial health care needs. Many of those children's health problems have not been identified, and even when they have been, follow-up care was often lacking. In most age categories boys were reported to have more health problems than girls. Many children also have substantial school-related problems. However, their sample consists of 524 children in kinship care under the supervision of the Baltimore City Department of Social Services in 1989, where 47 percent of caregivers are grandmothers, and therefore their results can not be generalized to grandparent caregiving. In addition, this study is simply a descriptive analysis and not a multivariate study.

An important recent exception that investigates child outcomes in grandparent households is a study by Casper and Bryson (1998) which focuses on grandparent-maintained families. Using 1997 CPS data, they find that children living with grandparents do not fare as well economically as their counterparts living in their parents' homes. In particular, they find that grandchildren in both grandparents, no parent present families are much more likely to be uninsured. Grandchildren in grandmother-only, no-parent present families are more likely to be poor and get public receipts.

The NSAF data are ideal for investigating single-father families as well as grandparent families because it is the largest and most recent nationally representative survey of U.S. children and their families. For example, the 1999 wave alone reveals 771 grandparent families and 931 single-father families. It also has rich information regarding child outcomes and household inputs. However, its cross-sectional nature does greatly limit the extent to which we can address two issues that have plagued this literature – the so-called ‘window problem’ and the endogeneity of family structure.

2.2 The Window Problem

A challenge encountered by many studies investigating the relationship between child outcomes and family structure, including the current study is the so-called “window” problem. Although child outcomes are the “end product” of many years of a cumulative household production process, many surveys, including NSAF, measure living arrangements at a single point in time. These snapshot measures, i.e. ‘window’ variables, overlook the dynamic nature of family structure and the many changes in living situations that occur during a child’s life. For example, the snapshot will obscure the

effect of divorce on child outcomes and attribute the impact to family structure. In order to overcome the window problem, panel data have to be employed, or information such as “how long the child has been living in the household” has to be available.

Wolfe et al. (1996) examine the reliability of estimated results from studies using such "window" variables. They first examine an omitted variables model to diagnose the "window" problem technically. Then they study the potential problems associated with the use of window variables empirically. Their conclusion is that window variables “serve as weak proxies for information describing the entire childhood experience, and often lead to inferences of effects that may be misleading....”

Among the studies on child outcome and development studies that follow parents and their children over time, most focus on a narrow comparison of different family structures. Wojtkiewicz (1993) estimates the effect of having a stepfather on children’s schooling outcomes by using the National Longitudinal Survey of Youth. The finding indicates that duration of exposure to stepfather families is negatively related to the probability of high school graduation. In more recent work, Wojtkiewicz (1998) uses data from the National Educational Longitudinal Survey to examine the effect on college entry of family structure and changes in family structure. He defines stable family structures as those that do not change between 1988 and 1992 and finds that children from stable single-parent families are more likely to attend college than those from unstable single-parent families or stepchildren from blended families. Controlling for duration in a single-parent family and economic resources and using the Panel Study of Income Dynamics, Boggess (1998) finds that stepchildren from stepfather families have lower rates of high school graduation than children growing up in biological-parents families.

In particular, he finds a negative and significant effect of living with a stepfather on high school graduation rates for white males and females, and black females. Painter and Levine (2000) use the National Educational Longitudinal Survey of 1988 (NELS) with a focus on the effect of divorce on teenager behaviors. But due to the small sample size, other non-traditional family structures such as single-father families have to be left out of their analysis.

As discussed earlier, one of our primary interests is to investigate the less typical family structures such as single-father families and grandparent families. However, as far as we know, there are no data available that would allow us to include such households in our study and at the same time to tackle the window problem. Therefore our study is subject to the same limitation as many other studies are. Nevertheless using NSAF allows us to present a fuller picture of family structure and its association with a wide array of child outcomes instead. Given the large sample size of NSAF data and its rich information on child outcomes and household inputs, we are able to investigate a complete list of family structures (refer to Figure 1 for family structures investigated by the current study), a wide array of child outcomes and inputs and the direct impact of household inputs on child outcomes. NSAF data also allow us to stratify the sample to investigate whether racial and gender differences are related to the observed differentials in child outcomes associated with different family structures. Therefore we are able to investigate several pathways that may contribute to the disparity in child outcomes linked with different family structures.

2.3 The Endogeneity of Family Structure

Despite the prevalence of these family structures and the increasing recognition of the dynamic nature of family structure, practically no consensus exists about how and why they might be associated with child development outcomes, especially within non-traditional families. Previous research examining why children from single-parent families fare less well, in general, than children from two-parent families have been guided by five theoretical explanations: economic theory, evolutionary psychology, socialization, stress and selection bias (Biblarz and Raftery 1999, McLanahan and Sandefur 1994). First, the economic perspective proposes that socioeconomic success is partly a function of human capital. A household acts as a unit to maximize collective utility. The substantial economic difference between single-parent and two-parent families produces differences in child outcomes.

Second, the evolutionary perspective on the family gives more weight to the role of the mother than that of the father in determining children's outcomes, and it particularly emphasizes biological relationships. The evolutionary view assumes that mothers invest more of their resources in children than fathers do and the well-being of a given child is of greater interest to the mother than to the father. This theory predicts that children from two-biological-parent families will have an advantage over those from other kinds of families. In contrast to the economic model, the evolutionary view would predict that children from alternative families will fare better raised by a single mother than by a single father. Children from single-mother families will also have better outcomes over those from biological mother/stepfather families since the stepfather will compete with the stepchildren for the mother's resources. Case, Lin, and McLanahan

(1999) provide some strong evidence for this argument. They find that the number of children in a household with a non-biological parent significantly reduces expenditure on food consumed at home. In general, the effects are stronger when the non-biological parent is the mother rather than the father. In particular, they find that the presence of stepchildren is associated with lower food expenditure for home consumption when those children are stepchildren of the mother. In contrast, spending on home food consumption does not change depending on the father's relationship to children (i.e. biological vs. step- or adoptive children.) However, food expenditure is lower when a man reports he is not married to the child's mother but raises the child.

Third, the socialization perspective argues that two parents are crucial for providing important parenting behavior such as monitoring and supervision; it also argues that children simply benefit from the presence of a male role model in two parent families. In contrast with the evolutionary view, the socialization view predicts that the two-adult structure of a coresidential or cohabiting arrangement might benefit children given more adults to supervise and monitor. The fourth explanation for observed differences among children from different family structures is selection bias. For example, people who divorce are less stable or less competent at family life; parents who choose different living arrangements might have different characteristics that affect child outcomes. To put it another way, there are unobservable processes that jointly determined family structure and children's outcomes, which is known as the endogeneity of family structure.

Finally, stress is another variant of the selection hypothesis which argues that the main detrimental effect on children is not divorce but family conflict. Divorce is often

preceded by and sometimes followed by high levels of domestic conflict. Both parental death and divorce created sorrow and distress for children in the short run. Changes in family structure are hypothesized to increase disequilibrium in family relations and disrupt changes in relationships outside the family as well. The accumulation of these changes produces poor developmental outcomes among children.

The selection perspective and stress view both suggest that family structure is endogenous in the sense it is determined by various factors such as parents' characteristics and family conflicts, which in turn influence child outcomes. Therefore, family structure per se might not be the source of differences in child outcomes but a consequence of the influences of the underlying determining factors. There have been several strategies for dealing with this endogeneity problem in the economics literature. One frequently adopted strategy is to use fixed effects estimates (e.g., Case et al. 1999, Painter and Levine 2000, Ginther and Pollak 2002, Ermisch and Francesconi 2001). By utilizing longitudinal data one can include child-level or family-level 'fixed effects' in the regression to capture any unobservable characteristics. Therefore, the endogeneity of family structure is controlled for if the unobservable characteristics are stable over time.

Lang and Zagorsky (2001) choose a different strategy to deal with the endogeneity of family structure by using the impact of parental death as a natural experiment. After controlling for a variety of background variables their results show little evidence that a parent's presence during childhood affects economic well-being in adulthood; using parental death as an exogenous cause of absence provides similar results. The two exceptions are that living without a mother adversely affects girls' cognitive performance while having a father die decreases sons' chances of marriage.

Similarly, Biblarz and Gottainer (2000) compare the attainments of children from widowed single-mother families to those from two-biological-parent families. Their results show that the children are roughly the same, and the attainments of children from widowed single-mother families are substantially higher than those of children from divorced single-mother families. The family structure model--that the same structure should lead to the same outcome regardless of cause--is rejected by the evidence presented by Biblarz and Gottainer.

Also adopting the natural experiment approach to deal with endogeneity of family structures, Ginther and Pollak (2000) examine the effect of family structure on children's educational outcomes by exploiting the sibling structure in the NLSY and NLSY-Child to control for unobserved heterogeneity across families and individuals. They compare outcomes for children within the same family—stepchildren with their half-siblings in the same blended family who are the biological children of both parents. Controlling for unobserved heterogeneity across families by using panel data, they find that family structure effects are statistically insignificant. Finally, comparing half-siblings in the data, they find no difference in educational outcomes as a function of family structure. Ginther and Pollak (2004) adopt a similar approach and find stepchildren and their half-siblings, who are the biological children of both parents, have similar educational outcomes to each other, but are considerably worse off than their counterparts from traditional two parent families.

Some research involves using instrumental variables to control for the endogeneity of family structure. For example, Gruber (2000) uses changes in divorce law as an exogenous source of variation in family structure. He finds that family structure has

a negative and significant effect on socio-economic outcomes. However, the validity and reliability of such instrumental variables are questioned by others.

Manski et al. (1992) use a trivariate probit model with structural shift assuming that family structure and children's outcomes may be jointly determined by unobservable processes. They also employ a nonparametric model estimating bounds on the high school graduation probabilities. They find no evidence to reject that family structure is exogenous, and they find that living with intact families increases the probability of graduating from high school.

2.4 How Gender Matters

Gender pervades all levels of society, and it plays a key role in many dimensions of family life such as marital relationships, child development, parenting and intergenerational relationships (Warner and Steel 1999). Economic models, however, are typically used to analyze the household as one unit, rather than treating the individuals within a household separately. However, new theoretical work is currently underway. Willis (2000) outlines some ways in which individuals within a household are treated as separate economic actors, each with their own interests and resources, particularly in the context of fathers' involvement in their children's lives. Research on gender effects within family life is relatively replete in the sociological and psychological literatures.

Much research focuses on how the effects of having children on parents vary for mothers and fathers. For example, there is some evidence that marital satisfaction is more strongly related to fathers' reports of parental satisfaction than to mothers' (Rogers and White 1998). Fine et al. (1992) detect a gender difference in depression: women report

higher levels of depression than men. (But this effect is no longer present when demographic controls are included, suggesting that the depression in gender difference is partly accounted for by demographic factors such as women's younger age.) As a commonsense understanding, having children is more demanding for women's lives-- what is referred to as "asymmetrically permeable boundaries" (Bielby and Bielby 1989).

On the other hand, in the child development literature much research emphasizes that parent gender has a great influence on child outcomes, which, more often than not, is also contingent upon the sex of children. Much of this research has focused on how fathers affect child outcomes in the context of diversified family structures due to ever increasing divorce rates and childbirth out of marriage. One branch investigates the influence of fathers' involvement on child outcomes (Salem, Zimmerman and Notaro 1998, Blair, Wenk and Hardesty 1994, Nord, Brimhall and West 1997, King 1994, Cooksey and Fondell 1996); the other explores the effect of father absence on child outcomes (Mott 1990, Mott 1993, Mott, Kowaleski-Jones and Menaghan 1997).

The importance of fathers' involvement is expressed in a 1997 Current Population Report:

It is undisputed among researchers and policy pundits alike that fathers' involvement is extremely important for children's proper social and emotional development. Furthermore, fathers interact differently with their children than do mothers, and it is fathers' unique interaction that is said to help promote specifically children's emotional development. (Casper, 1997, p.1)

In line with this claim, a study by Cooksey et al. (1996) concludes that fathers in different family settings spend differing amounts of time with their children: single fathers are very involved in their children's lives and are more likely to engage in a

variety of activities (not related to sharing meals) than fathers in more traditional family settings; their results also show that stepfathers are significantly less likely to participate in activities with their stepchildren than biological fathers do with theirs, while stepfathers with both biological children and stepchildren are more likely than stepfathers with just stepchildren to behave as other biological fathers.

Also studying paternal involvement, Salem et al. (1998) find that fathers appear to have distinct influences on the development of their sons and daughters. In particular, they conclude that father involvement may be most relevant for helping sons avoid problem behaviors, whereas for daughters it may be more influential in preventing psychological distress.

Within the context of studying the effect of paternal absence, Mott et al. (1997)'s study discovers that the effects of a father's absence are generally found to be more modest for girls than for boys. In particular, for boys, they have found "clear, systematic evidence of associations between a father's absence from the home and less satisfactory behavior paths; for girls, the effects of a father's absence appear to be far less pronounced and less robust." However, they further suggest that the notion that boys are at greater risk when a father leaves the home than girls are is modest and not always systematic. Also, they find modest support for the view that short-term behavioral consequences for boys exceed those evidenced by girls.

Distinct from studies mentioned above, Downey et al. (1998) argue against the claim that women and men promote different components of children's well-being and suggests that "theorists have overemphasized the role of parent's sex in youths' development at the expense of understanding more structural explanations for the

association between family structure and well-being". Their investigation yields little evidence that offspring are better off or develop particular characteristics in one household versus the other. According to Downey et al. (1998) and Risman and Park (1988), there are two perspectives on gender-typed parental behaviors: one is individualist, the other is structuralist. The individualist perspective of gender views preference for gendered parental roles as internalized as personality traits or personalities. That is, due to cultural influence on family patterns, parents develop gendered personalities for performing gendered roles. Alternatively, the structuralist theory suggests that the sources of many sex differences are contextual factors in the everyday environment, and sex roles are not internalized as personal traits. Men and women behave differently because they encounter different social conditions. To put it another way, the structuralist view argues that when necessary men can perform responsibilities that are usually conducted by women. Risman and Park (1988) compare the relative strength of two different theoretical explanations by comparing children from single-father families to children from single-mother families. Their findings also support the structuralist theory: "sex of the custodial parent per se is not significant in explaining parental attachment, household organization, or child's development". Instead, socially structured role demands of single parenthood, the change in family structure following divorce, and the socioeconomic status of parents are better explanations for male or female parenting behavior.

In addition to the group of studies investigating the effect of parents' gender on child outcomes, there is another body of research exploring how child gender in turn could influence their own outcomes, parenting, family life, marital status and parental

attitudes about policy regarding gender equity. There are strong gender differences in child outcomes, suggesting that the effects of living in a non-traditional household may be very different for preadolescent girls and boys (Bronstein, Clauson, Stoll and Abrams 1993). Girls in single-mother households showed poorer social, psychological and academic adjustment in comparison with girls in both traditional and father-surrogate households. In contrast, boys in father-surrogate households demonstrate significantly poor social, psychological and academic adjustment, and ineffective parenting is significantly higher than with boys from traditional households. However, boys in single-mother households are essentially not different from boys from either father-surrogate households or traditional households.⁶

Elder and Bowerman (1963) find that paternal involvement is most frequent when all children are boys, and that family size affects paternal involvement most strongly among middle-class boys and lower-class girls. In particular, sex composition effects are greatest in the rearing of girls in large lower-class families. For example, girls in large families are more likely to perceive their fathers as the prominent figure in making child-rearing decisions, less communicative and more controlling, and more likely to report that parents use physical punishment occasionally and praise infrequently. Looking through the lens of economists, although the study does not address family structure specifically, Conway and Houtenville (2002) provide a household production framework that clarifies several avenues by which girls may be treated differently and achieve different outcomes from boys. For example, parents may input more efforts in their

⁶ Their study is based on data with a small sample size of 136 observations which are almost entirely Caucasian children aged 9-12 years old. Among these children 79 are from traditional families and only 57 come from non-traditional families. In addition, their study does not control basic demographic characteristics and most of the results are based on t-tests of means of boys and girls across different family structures, and some are based on multivariate analysis of variance.

daughters' schooling because (1) the marginal productivity for girls may be higher; (2) parents want to compensate for the lower inputs their daughters received from school, or (3) parents derive higher utility from their daughters' achievements.

There is also evidence about the effects of child gender on marital dissolution coming from couples who have experienced divorce. A greater proportion of couples with only daughters are found among those who had already divorced (Morgan, Lye and Condra 1988). Katzev, Warner and Acock (1994) attempt to isolate its influences before divorce occurs. They focus on the pre-divorce process and evaluate the effects of the child gender on maternal perceptions of the likelihood that the marriage will end in divorce. Their finding is that mothers with at least one boy reported a significantly lower propensity to divorce compared to mothers with only girls. They suggest that the mechanism may lie in the fact that fathers in families with boys were more involved with their children, which was associated with mothers perceiving less disadvantage in the marital relationship and a lower likelihood of separation. In economic terms, this may suggest fathers may derive higher utility from the well-being of their sons than from their daughters, therefore they are more devoted to the involvement with their children when they have sons vs. daughters. In addition, as Conway and Houtenville (2002) suggest, fathers could view their involvements as more productive inputs for their sons vs. their daughters.

Evidence is also found regarding the effect of child gender on parents' gender attitudes. Warner and Steel (1999) discover that both fathers' and mothers' support for public policies designed to address gender equity increases when parents have daughters

only. The findings are even stronger for men. When men have sons only, they show the least support for public policies promoting gender equity.

Another group of research explores how parent and child gender interact. Some child developmental research suggests that fathers are more important in the development of sons than daughters (Lamb 1987). However, Amato (1994) finds no evidence to support this notion among young adult offspring when comparing children from divorced families to those from intact ones. On the contrary, he finds some evidence that closeness to mothers was more strongly related to psychological well-being among sons than daughters, and that father-child relationships appear to be as closely bound up with the well-being of daughters as that of sons. Downey and Powell (1993) and Powell and Downey (1997) also do not find evidence of a benefit from living with a same-sex parent. Studying children in step-households, Downey (1995) finds that although both boys and girls appear to fare better in mother/stepfather families than in father/stepmother households, children do not seem to be more disturbed by the entrance of an opposite-sex than of a same-sex stepparent.

To sum up, given the extensive literature that studies how both parental and child gender may influence the parental styles, practice and child outcomes, and how parental gender and child gender may interact, it is imperative for economists to take into account the mechanism underpinning the household production function from the gender angle. Studies ignoring gender difference may eliminate one possible avenue that could explain how dissimilar family structures are associated with different child outcomes. As the majority of the reviewed studies are by and large descriptive analysis, we will apply econometric analysis to get crisper gender comparisons. Specifically, non-traditional

families may have different demographic characteristics, fewer economic resources and lower levels of inputs. We will first control the basic child, Most Knowledgeable Adult (MKA) and family characteristics including family structure, then add economic resources and finally further add inputs to see how much the observed difference in child outcomes across gender can be explained away by each tier of independent variables. In doing so we can differentiate the gender disparities in child outcomes caused by other factors from those purely associated with family structure.

2.5 The Importance of Race/Ethnicity in the Context of Grandparent Caregiving

Grandparent caregivers have increased rapidly since 1990. Census 2000 estimated that 2.4 million people (or 1.5 percent) aged 30 and over are grandparent caregivers, defined in Simmons and Dye (2003) as “people who have primary responsibility for their co-resident grandchildren younger than 18.” The percentage of grandparents caregivers considerably varies by race and ethnicity: grandparent caregivers account for approximately one percent of non-Hispanic whites, 4.3 percent of people who are African American, 4.5 percent of people who are American Indian and Alaska Native, 3 percent of people who are Hispanic and 1.3 percent of people who are Asian (U.S. Census Bureau, Census 2000).

These numbers reveal that while the majority of grandparent caregivers are white, proportionately, however, African American grandchildren are more likely to live with their grandparents without either parent present than children of any other ethnic group in the United States (Fields 2003, Fuller-Thomson et al. 1997, Pebley and Rudkin 1999, Chalfie 1994, Joslin and Brouard 1995). For instance, Fuller-Thomson, Minkler, and

Driver (1997) show that blacks are three times and Latinos almost twice as likely as their non-Latino white counterparts to be a primary grandparent caregiver.

Not only does the prevalence of performing the role of grandparent caregiver differ considerably across race and ethnicity, prior research in sociology, psychology, social work and education also found that parenting praxis and cultural norms of parenting behaviors vary notably across race and ethnic groups. Studies have determined that a person's ethnicity has implications for their parenting styles (MacPhee et al. 1996, Tucker et al. 1996, Fagan 2000, Osborne et al.2003, Osborne et al.2004, Hofferth 2003). Fagan (2000) predicts how parenting actions affect children's behavioral outcomes. Osborne et al. (2003) find great differences in mothering behaviors across race and ethnic groups. Osborne et al. (2004) find mothering behaviors are linked to family structure for white mothers but not for black and Hispanic mothers. Hofferth (2003) examines how cultural factors can contribute to explaining racial/ethnic *differences* in fathering in two-parent families. It reports that black children's fathers show less warmth but supervise their children more, Hispanic fathers monitor their children less, and both minority groups take more responsibility for child rearing than white fathers.

Differences in parenting styles suggest that there may also be variance in grandparenting behaviors. Considerable research has reported that African-Americans have a long history of caregiving across the generations, and cultural context has historically caused the frequent assumption of parenting responsibilities by African-American grandparents (Scott 1991, Stack and Burton1993, Burton and Dilworth-Anderson1991, Burton, Dilworth-Anderson and Merriwether-deVries 1995, Thomas, Sperry and Yarbrough 2000). As a result, it is not surprising that African-American

grandparents have been the focus of research studying grandparents raising grandchildren (Strom et al. 1996, Minkler and Fuller-Thomson 2005, Whitley et al. 2001, Brown et al. 2000, Fuller-Thomson and Minkler 2000, Dilworth-Anderson 1994, Caliandro and Hughes 1998, Burton 1992).

Although surrogate parenting by African-American grandparents has received the most attention from researchers, it should not be viewed as the normative grandparental role only among African-Americans. In the existing ethnographic literature the issue of grandparents acting as surrogate parents is discussed in the context of cultural family norms. For example, among the Navajo and Apache (tribes), the grandmother is the central figure of the family and performs the tasks that modern Americans associate with the mother. In such a society the performance of parenting and child care are respected. This pattern has been observed for several decades of reservation resident Native-Americans (Burton, Dilworth-Anderson and Merriwether-deVries 1995). While little research has been done to explore urban resident Native-American family patterns, Fuller-Thomson and Minkler (2005) document the prevalence and national profile of American Indian/Alaskan Native grandparents who are raising their grandchildren, based on data from the American Community Survey/Census 2000 Supplementary Survey, which may suggest that these patterns are still valued and practiced to a certain extent.

Like African-American grandmothers, Hispanic grandparents also play important roles in rearing their grandchildren by passing along family history and ethnic heritage and by providing support of various kinds in times of crisis. In other research, acculturation has been identified as an important factor that impacts Hispanic grandparents' relationships with younger family members. Within Hispanic groups,

Mexican-American grandparents are most likely to be involved with grandchildren in their daily life; Cuban-American grandparents are least likely to have such involvement (Bengtson 1985). Surrogate parenting by grandparents is also culturally prescribed for Puerto Rican-American families. Family interdependence and reciprocity are aspects of the Puerto Rican-American communities, and strong kinship bonds are clearly articulated as normative values and practices (Burton, Dilworth-Anderson and Merriwether-deVries 1995). Others have identified similar impacts of acculturation among Asian-American samples (Kamo 1998, Tam and Detzner 1998). Study by Merle et al. (2004) explores grandparent caregiving role in Filipino-American families. They suggest that Filipino-American grandparents view the grandparent caregiving role as a normative process rather than a burden in which families take on responsibilities as part of cultural beliefs and norms such as family unity and closeness, authoritarianism, and mutual reciprocity and obligation in relationships.

Within studies of Americans, although there is some work on Native Americans, Hispanics and Asians, the strand that links much of the literature is that race and ethnicity shape the individual and family lives of African-Americans disproportionately. Besides studies that solely focus on African-Americans, most analyses employ a comparative framework in which whites are the norm against which blacks and other minorities are measured (Goodman and Silverstein 2002, Watson and Koblinsky 1997, Pruchno 1999, Pruchno and McKenney 2002, Strom et al. 1996). Thomas et al. (2000) note that African-American grandmothers more often act as surrogating parents for grandchildren than do non-Hispanic Caucasian grandmothers. As a result, African-American grandparents in some research report higher levels of both satisfaction and frustration in relationships

with grandchildren than do their Caucasian counterparts. Watson and Koblinsky (1997) find African-American grandparents perceived themselves to be significantly more involved in teaching their grandchildren than Anglo-American grandparents, but were also significantly more likely than their Anglo-American counterparts to express frustration and need for information about the grandparenting role. Other researchers report that African-American grandmothers raising their grandchildren report more peer support, and less burden, than do Caucasian grandmothers (Pruchno 1999, Pruchno and McKenney 2002). For example, Pruchno's study (1999) contrasts the experiences of 398 white and 319 black grandmothers raising their grandchildren without either parent present. They found that the two groups shared many similarities such as age, education, familial relationship to the grandchild, age of the grandchild being raised, reasons that grandmothers are raising their grandchildren, behaviors characteristic of the grandchildren, and impacts on the grandmother's work life. Black grandmothers are more likely to have peers who also live with their grandchildren, more likely to come from families in which multiple generations lived in a household and are more likely to be receiving support from formal sources than white grandmothers. White grandmothers experienced more burden from their caregiving role than their black counterparts. Strom et al. (1997) identify specific issues for consideration in building differentiated education programs to support the learning needs of African-American, Caucasian and Hispanic grandparents. Comparison of grandparents, parents and grandchildren for the different cultures regarding behaviors of grandparents shows that Caucasians spent the least time with grandchildren. African-American grandparents who lived with grandchildren were viewed as more successful teachers of grandchildren than their counterparts living apart

from their grandchildren.⁷ Hispanic grandparents whose grandchildren lived with them received lower scores for managing difficulties, coping with frustration, and meeting information needs. Caucasians who lived with their grandchildren were observed as having greater frustration than grandparents who lived apart (Strom et al. 1997).

Most of the studies described in this review share some common features: First, of all the ethnic groups studied, surrogate parenting among non-Hispanic whites has been the least discussed and studied. Many studies implement a comparative model in which the white group is used as the norm against which the minority is compared. Second, there is a theme running through the existing literature that grandparents often step in to help in crisis times. Third, grandparents contribute in meaningful ways to their grandchildren's upbringing that are affected by differences in cultural norms. The cultural lens through which grandparenthood is viewed has a marked effect on grandparents' congenital impact of its contributions. Fourth, the grandparents have been the focus so the outcomes of grandchildren raised by grandparents have received little attention. This paper seeks to identify whether the consequences and costs of living in a grandparent family differ by race and ethnicity. We examine grandparenthood not only in highly dependent, at risk households, but also in families whose conditions offer alternative options for grandparental behaviors. In doing so, we try to uncover some pathways to the disparities in child outcomes associated with family structure, especially between grandparent and other non-parental families.

⁷ Their study is based on a sample of 626 non-consanguineous subjects including 204 grandparents, 128 parents, and 294 grandchildren. Each generation group completed a separate version of the Grandparent Strengths and Needs Inventory survey to identify the favorable qualities of grandparents and aspects of their relationships in which further improvement was necessary. Each group reports aspects of grandparents' success and identifies specific aspects of learning that grandparents should acquire in order to become more effective.

2.6 Contributions of This Essay

The review presented above helps clarify a number of research gaps and issues existing in the literature. This essay attempts to fill in such gaps and address those issues identified as much as possible. First, the number of single-father households and households headed by grandparents have both grown enormously, especially since 1990. The Census 2000 data shows that more than 2.4 million grandparents are primary caregivers to a grandchild; there are 2.2 million households across the country in which single men are raising children. While there is extensive research on the effects of family structure on child outcomes, relatively little attention has been paid to these relatively uncommon households. In many cases the paucity of research is due to the limitations of data available to investigate such households. This essay investigates ten different family structures, as aforementioned, and tries to answer the question: how do children in these types of households fare in comparison to children in other ‘nontraditional’ but extensively investigated households, e.g., single-mother households, as well as to ‘traditional’ households? This essay contributes to the economic literature theoretically by extending the current theoretical framework on households to encompass single-father households and also by dealing with gender differences and gender interactions in single-parent and stepparent households.

Second, even less investigated by economists is how the effects of these family structures differ by gender. Research by sociologists and psychologists undoubtedly expands our knowledge about the role of gender and gender interaction within households, but most of the research is limited to simple categorical analysis or bivariate

analysis, or using data sets that are not up to date or data with very small sample sizes. For example, Downey et al. (1998) compare outcomes of 15-16-year-old children (such as deviance and behavior in school, self-concept and relationships with others) in single-mother households vs. single-father households using data from the 1990 National Education Longitudinal Study. Unlike many other sociological studies, it controls for a variety of variables such as family incomes, parents' education, etc. Their final sample consists of 3039 15-16-year-old children, including 456 who lived in single-father households and 2583 who lived in single-mother households. But the data set is relatively outdated given the surge of single-father households since 1990, and the outcomes considered are only behavioral. In addition, stratifying the analyses by gender, this essay addresses such questions as: does living with a single father differentially affect sons as opposed to daughters regarding their behavioral, developmental and health outcomes? Moreover, stratifying the sample by race, we investigate how parenting may differ across race/ethnicity paying particular attention to grandparent-caregiver households.

Third, as mentioned above, this essay analyzes the relationship between family structure and children's well-being by considering a wide array of child outcomes. In particular, it focuses on three aspects of child outcomes by including health-related outcomes as well as the typical behavioral and school outcomes with a view to depict a more complete picture of children's well-being. The closest research to ours is Brown (2004) which also uses NSAF data. Two child outcome measures employed by Brown (2004) are the same as ours, and as discussed earlier, single-father parent households are also examined in her study. However, it does not include health outcomes nor does it include grandparent caregiving, and its focus is on parental cohabitation.

Last but not least, past research tells us little about why living in non-traditional families affects children negatively, or what might be done to reverse these patterns. This essay investigates the association between family structure and several ‘inputs’ which help ‘produce’ child outcomes, such as well-child care visits or parental mental health. In so doing, it attempts to answer the question: is the observed lesser well-being of children in ‘nontraditional’ families at least in part due to fewer ‘inputs’? This is a critical question as many public programs designed to improve child outcomes such as food stamps, SCHIP and TANF, are, in practice, designed to improve access to critical inputs. Clarifying the differences between ‘inputs’ and ‘outcomes’ in the production of child well-being helps investigate how much the difference in child outcomes is due to differences in inputs, and how much is due to the underlying production process.

CHAPTER 3

THEORETICAL FRAMEWORK

In this section we first review the general theoretical framework employed in family economics and health economics. Then within that general framework a theoretical model that represents a single-parent household is set up to help understand and tackle the issues the essay attempts to address. It is the simplest case, but it eases the investigation of parental and child gender interaction. Then we talk about the complications pertaining to other family structures such as two-parent families.

3.1 A Review of the Household Production Function Model (Becker-Grossman-Rosenzweig and Schultz)

The household production function model pioneered by Gary Becker (1965, 1981), treats a family as a quasi-firm engaging in the production of household commodities. The household combines its time and market purchased commodities to produce household commodities that ultimately enter its utility function. In Becker's model, consumers often gain utility not only directly from the goods that they purchase, but also they transform the market purchased into commodities goods via a household production function that cannot be directly purchased from the market. Such commodities include "children, prestige and esteem, health, altruism, envy and pleasure of the sense."(p24, Becker 1981).

The household production model has been used to analyze a variety of household issues, and it lends itself well to the field of health economics. Grossman (1972) first develops a health production model investigating how individuals allocate their resources to produce health. According to Grossman, demand for health care is derived from a demand for health, and demand for health is also a derived demand from the demand for utility. Individuals are not passive consumers of health but active producers who combine time and money to produce health. Health demand consists of two elements: consumption effects (health yields direct utility, i.e. you are more energetic when you are healthier) and investment effects (health increases the number of days available to participate in market and non-market activities – the novel part of the model). Therefore, in Grossman’s model health is also a capital good. A person is born with an initial endowment of H, which they add to by investment. The rate of H production will depend on the efficiency of investment in H. There will be depreciation in the value of the stock of H through age, accident, carelessness, sudden disease, etc.

The health production function in Grossman’s original notation is written as

$$I_i = I_i(M_i, TH_i; E_i)$$

The consumption good is produced according to

$$Z_i = Z_i(X_i, T_i; E_i)$$

where I_i = investment in health

M_i = market health care inputs

TH_i = time spent on improving health

Z_i = composite consumption goods

X_i = market produced goods

T_i = time spent on composite consumption good

E_i = stock of human capital

Just like a firm using inputs to produce goods, the individual makes decisions according to production functions. He allocates time subject to total time available among labor time, leisure time and ill time. Within leisure time, he allocates health producing time vs. non-health producing time. He also allocates resources between health care inputs and other consumption, subject to a budget constraint.

The model goes beyond traditional demand analysis and has been extremely influential in health economics. Rosenzweig and Schultz (1983) can be viewed as an application and extension of Grossman's model. In their model the household has the following utility function:

$$U = U (X_i, Y_j, H), \quad i=1, \dots, n; \quad j=n+1, \dots, m$$

where H = child health;

X_i = market-purchased goods (not health related);

Y_j = market-purchased goods that affect child health.

Child health can not be purchased directly from the market but is produced by the household by the production function:

$$H = f(Y_j, I_k, \mu);$$

where I_k = health inputs that do not affect utility other than indirectly through their effects on H , such as medical care, $k = m+1, \dots, r$;

μ = family specific health endowments such as genetic traits or environmental factors.

The household's reduced-form demand function for the market-purchased goods is derived from maximizing its utility function subject to the child health production function and budget constraint. Rosenzweig and Schultz's household model is characterized by joint production since a subset of goods Y both influences child health and affects utility directly. In their model child health is produced and valued by the household in a process in which the household as one identity makes the choice. The household only faces resource allocation. Time allocation is not considered explicitly.

The household production function models reviewed above especially the model provided by Rosenzweig and Schultz, furnish the cornerstone for the theoretical framework developed in this analysis, because one measure adopted by this study for child quality is child health status, and also because time is not available in the data set used. I set up the next theoretical model to facilitate investigating the issues of interest described earlier and will discuss other complications afterwards.

3.2 Single-parent Households Model

Since a single-parent household consists of one parent and one child, it represents the simplest scenario among all parent-child families. This framework is particularly appropriate for better understanding the possible role that gender plays in a family, and, as discussed later, this setup is also consistent with information available from the data for empirical investigation because the NSAF only has information on the MKAs (Most Knowledgeable Adult). However, in most cases the MKAs are the focal children's parents.

In this economic model of the household, the objective of the household is assumed to be maximizing the utility that it derives from consuming the various commodities that it produces using inputs of market-purchased goods. Child Quality is one particular good from which the parent derives utility. Greater investment in children is expected to be associated with higher achievement, which is represented by the child quality. Our interest, therefore, is on understanding the factors that affect the family's production of child quality, denoted as **CQ**, and why CQ may differ by gender. Therefore, the family's utility function is defined as

$$U(C, CQ_{ij}) \quad (1)$$

where CQ_{ij} is child quality and C is composite market-purchased goods.

Households derive utility directly from Child Quality, which cannot be purchased in the marketplace but is produced using market purchased commodities and various environmental inputs.

Child Quality is produced according to the production function

$$CQ_{ij} = f_{ij}(x, G, E, NF) \quad i = b, g; j = m, f \quad (2)$$

where x = market purchased inputs;

G = child's genetic endowment;

E = household's efficiency of combining x , other family environmental variables, proxied by parental education, etc;

NF = nonfamilial influences such as social climate on **CQ**.

The subindex m stands for the mother and f stands for the father, subindex b stands for boy (son), g stands for girl (daughter).

Self-produced commodities like Child Quality do not have market prices, but each does have a shadow price equal to the cost of production:

$$P_{CQ} = P_x x / CQ \quad (3)$$

Given market prices for x and C , parent utility is maximized subject to the income constraint:

$$P_x x + P_C C = I \quad (4)$$

where P_x is the price for good x , P_C is the market price for consumption good C , I is the household income. Normalizing the price of the market purchased consumption goods C to 1, the budget constraint can be expressed as

$$P_x x + C = I \quad (5)$$

The parent's problem becomes

$$\max U(f_{ij}(x; G, E, NF), C)$$

subject to the income constraint (Eq. (5)).

The parent chooses the level of consumption C for herself/himself, and the level of consumption x to produce the desired level of child quality subject to the income budget.

$$L = U(f_{ij}(x; G, E, NF), C) - \lambda(P_x x + C - I)$$

$$\text{FOCs:} \quad \begin{aligned} \frac{\partial L}{\partial C} &= \frac{\partial U_{ij}}{\partial C} - \lambda = 0; \\ \frac{\partial L}{\partial x} &= \frac{\partial U_{ij}}{\partial f_{ij}} \frac{\partial f_{ij}}{\partial x} - \lambda P_x = 0; \end{aligned}$$

The equilibrium condition from maximizing the utility function therefore yields the following equation (suppressing the subscripts for simplicity)

$$\frac{MU_x}{MU_C} = P_x \quad (6)$$

In equilibrium, the marginal rate of substitution between x and C equals P_x . The first order condition reveals that C affects the parental utility directly, while x only contributes to utility indirectly through Child Quality.

The parent optimal demand for his/her own consumption is

$$C^* = C (P_x, I, G, E, NF) \quad (7)$$

And the optimal level of x to produce the optimal level of Child Quality is

$$x^* = x (P_x, I, G, E, NF) \quad (8)$$

A parental demand function for **Child Quality**, the optimal level of **Child Quality**, denoted as CQ^* , can be written analogously as:

$$CQ^* = f_{ij} \{x^* (P_x, I, G, E, NF), G, E, NF\} \quad (9)$$

What factors contribute to the observed difference in Child Quality in single-parent household, such as boys in single-father households vs. boys in single-mother households? A general analysis of Child Quality demand equation (9) offers a few possible explanations. First, input x may be different due to different budget constraints, which can produce different child outcomes. For example, single-father households may have more income than single-mother households. This possibility can be easily checked by comparing resources of these two households and by controlling for family incomes when regressions are estimated. Moreover, inputs (x) are not exogenous to the model,

but are an ensuing result of parental choices of their own consumption and child quality subject to the family budget constraint. Higher investment in the child leads to higher child quality, therefore families valuing child quality more dearly may invest more. Second, even with the same preferences and inputs, different families could produce divergent CQ due to the underlying production process (f_{ij}) because of gender differences. For example, a single father may have a comparative advantage in raising a son than a single mother, as a father may serve as a role model more easily. The third avenue could be traced to the difference in factors which are exogenous to the model, such as E, G and NF. For example, E indicates parental efficiency of combining all other factors. This effect is subtly different from the aforementioned production efficiency. Its overall effect on CQ can be expressed as:

$$\frac{dCQ_{ij}}{dE_{ij}} = \frac{\partial f_{ij}}{\partial x} \cdot \frac{\partial x}{\partial E_{ij}} + \frac{\partial f_{ij}}{\partial E_{ij}} \quad (10)$$

What Equation (10) demonstrates is that E can affect the whole production process directly ($\frac{\partial f_{ij}}{\partial E_{ij}}$) as well as indirectly through the selected inputs ($\frac{\partial f_{ij}}{\partial x} \cdot \frac{\partial x}{\partial E_{ij}}$). In practice, E refers to parental education level, age and experience in childbearing. Child genetic traits (G) and non-familial factors (NF) can similarly affect CQ. For example, the gender difference could be traced to social environment (NF). There are many sociological studies documenting that society still values males more than it values females. Therefore, for example, it is possible that a single father-son pair has some advantage over a single mother-daughter combination, or mother-son single-parent households may be less disadvantaged than mother-daughter single-parent families. We use regional indicators to roughly proxy for those societal inputs.

Last but not least, following the point mentioned above, the parent may have a different preference (U) for CQ contingent on the gender of the child as well as the gender of the parent. For example, a father could value the quality of a son more than that of a daughter, or a mother may value the quality of a daughter more than that of a son. In other words, following the first point, all else being equal, different inputs may be due to parental preference for CQ. In addition, the parent may determine the level of inputs according to the inputs' productivity in producing CQ. In other words, he/she may choose to provide fewer of certain inputs when they are not very productive in producing CQ and allocate resources to where they could be more productive. In practices, we need to hold the coefficients constant, which is hard to do. Therefore it is difficult to isolate this effect directly. Hence, differences in CQ could be attributed indirectly to variation in parental preference for CQ. This possibility can be tested by looking at whether there is a difference in inputs across different family structures when family income is held constant.

All in all, the issue this essay attempts to address is more empirical than theoretical. Therefore, empirical evidence is provided that helps tease out which factor(s) is(are) accountable for the observed difference in child quality. Three groups of child quality measures will be used here: health outcomes, school engagement index, and behavior problem index. The first argument in the CQ demand function in equation (9) is family inputs into the production of CQ. The difference in CQ that can be attributed to family inputs is evaluated in a *structural form* equation.

Unlike *reduced form* equations, which only contain exogenous variables, *structural form* equations include variables that are endogenous such as inputs, which are

determined by various other factors. Although we encounter the endogeneity issue when estimating *structural form* equations, the advantage of using them is that we can know immediately whether family structures are associated with the same child outcomes once inputs are controlled for. For example, if it is found that boys fare better with single fathers than boys with single mothers, then the difference could be attributed either to family resources, preference or production process, or any combination of these factors. Since data on family incomes are available, it can be more evident whether there is a difference in the earning power between fathers and mothers by comparing incomes between single-father households vs. single-mother households. The budget constraint can be easily controlled for in estimation. On the other hand, if it is found that boys and girls fare equally well within the same type of family structure once inputs are controlled for, then the difference in observable child outcomes can be due to preference and production process.

The single-parent household model could be easily adapted to analyzing other households. For example, for grandparent households and other non-parental households, the utility function still is $U(C, CQ_{ij})$, but the Child Quality production becomes

$$CQ_{ij} = f_{ij}(x, G, E, NF) \quad i = Gd, Np ; j = w, b, h, o$$

where the subindex *Gd* stands for the grandparent household and *Np* stands for all other non-parental households, subindex *w* stands for non-Hispanic white, *b* stands for non-Hispanic black, *h* for Hispanic and *o* for all other race/ethnicity. In this case, different cultures associated with different ethnicities could be another source of differences observed in child outcomes.

3.3 Other Extending Issues

3.3.1 The Role of Family Structure When Two Parents are Present. It is much more complicated to construct a universal framework for a two-parent household since there are many different types of two-parent households such as two-biological parent families, two-adoptive parent families, step-father families and step-mother families and cohabiting partnership families. Moreover, a division of labor within the family makes it more important to bring in time allocation. We review some theories to show why two-parent households may perform better for producing child outcomes as well as present some complexities in modeling two-parent families. As there is much literature devoted to each of the cases, we only summarize the findings here.

1) Division of Labor within the Family

Consider a household consisting of two persons, say the husband and the wife. The objective of the partnership is to increase utility by producing children and by increasing total resources by division of labor and coordination of investments in human capital (Becker 1981). Division of labor and allocation of time is critical in modeling a two-parent household. Therefore, time is added and plays an essential role in such framework.

Suppose the wife has a comparative advantage in household production, while the husband has a comparative advantage in market work. If they do not cooperate, the husband and the wife individually choose consumption and time allocated between market work and household work. But the household will be better off if the wife

specializes in household production while the husband specializes in market work. By division of labor, productivity and total resources available to the household are increased through specialization as well as through economies of scale.

2) Children as a Public Good within the Family

The household can also be modeled⁸ as such that one parent, for example the husband, dominates the household production and utility maximizing process in which the fact that child quality is essentially a public good in a two-parent household is emphasized. This framework is especially useful for analyzing the effect of divorce on children and marriage. Within marriage, both child quality and the wife's utility, which also includes child quality as a parameter, enter into the husband utility function. Therefore the husband is altruistic to both the child and the wife, and vice versa. Under such circumstances, children are a collective consumption good from the point of view of the father and mother. Proximity and altruism help to relieve the free-rider problem associated with the provision of public goods. Upon divorce, however, it is not feasible for the former couple to realize a Pareto-optimal allocation of their joint resources as the noncustodial parent loses the control over the allocation decision of the custodial parent (Weiss and Willis 1985). The child is still a public good to the mother and the father. However, like all other public goods, the free rider problem arises, and the noncustodial parent may invest much less. For the custodial parent, as fewer resources are available to the household, the investment by the custodial parent into child quality production will also decrease.

⁸ This analysis is conducted in line with the framework developed by Weiss and Willis (1985).

In addition, fertility decisions (Becker 1960, Ben-Porath 1973, Schultz 1973, Willis 1973 or see Robsinson 1997 for a recent review), the trade-off between quantity and quality of children (Becker 1965, Becker and Lewis 1973, Becker and Tomes 1976, Willis 1973) and bargaining in marriage (Manser and Brown 1980, Chiappori 1991, Lundberg and Pollak 1996, Lundberg and Pollak 1994, Marchant 1997) are other important issues in the economics of families. Given the focus of this study and the existing extensive literature for each issue, I will not discuss them here.

CHAPTER 4

EMPIRICAL STRATEGIES

In this chapter we first discuss the data and variables used in the study. In particular we explain why we choose the data sets and discuss why we select the measures of child outcomes to proxy for child quality and well-being. Then we explain the empirical strategies for testing the hypothesis with a view to provide possible causes of disparities in observable child outcomes across family structures.

4.1 Data and Variables

This essay investigates a number of child outcomes across a complete spectrum of family structures using the 1999 and 2002 waves of the National Survey of American Families (NSAF). Despite its cross-sectional nature, the NSAF provides the best opportunity to undertake this analysis with its large sample size (over 30,000 sampled children in each wave), its over-sampling of low income households, its rich set of child outcomes and ‘inputs’, and its detailed information of child living arrangements. For example, the data from the 1999 NSAF provides information on all 35,938 sampled children under 18 years old, as well as information relating to their family settings and the adults who care for them. Although the survey provides estimates for targeted states as well as for the nation as a whole, it focuses on the experiences of low-income families (about \$33,000 in 1998 currency for a family of two parents and two children). The

survey was carried out from February 1999 through October 1999 and from February 2002 through November 2002 for the Urban Institute and Child Trends by Westat. Some questions covered the families' circumstances at the time of the survey; others refer to the previous 12 months prior to the interview (Abi-Habib et al. 2004).

This analysis uses only a subset of data including children between 6 and 17 years old because developmental child outcomes such as school engagement and behavioral problems are inapplicable to children aged 0-5 years. In doing so, this also eliminates the possible correlation when two children come from the same households because NSAF samples only up to two children from the same household to reduce respondent burden: one randomly from the age 0-5 group, the other from the age 6-17 group if there is more than one child in each age group in the household.⁹ Once focal children are selected, the NASF questionnaire asks for the name of the parent or guardian who knows the most about the selected child's health and education, and this person is referred to as the Most Knowledgeable Adult or MKA. The MKA is the selected respondent who answers questions about his or her focal child(ren), his or her spouse/partner (if there is one), and the family and household. In almost all cases, the MKA is a parent of the selected child.¹⁰ The data used are created by combining (1) the Focal Child data set with (2) the Person data set, which includes all adults covered in the survey, (3) Family Respondent and (4) Household data sets to obtain additional information on the MKA and the household so that the analyses on the individual child can be conducted in the context of intra-household resource allocation.

⁹ When a household contained exactly one child, that child was always selected.

¹⁰ See Wang et al. 1999 for the actual questionnaire: question SC7, and Cunningham et al. for a in-depth discussion of in-person survey methods.

The analysis uses information about the MKA to proxy parents' characteristics for the following reasons: First, if we use parents' characteristics, which are not directly available in the Focal Child data set, then a greater proportion of observations will be dropped due to missing values, especially for nonparent households. Second, in most cases, the MKA is the child's parent. Third, the MKA's information may shed more light for the purpose of the current study in the case that the MKA is not a parent. This is because the current study is exploring how child outcomes are associated with different types of family structures. For example, if a child has never lived with his/her parents after he/she was born, then information about his/her biological parents should have a different effect. Instead, using information on the MKA can capture household dynamics and should be more appropriate for predicting the child's outcomes for the purpose of this study. In addition, using the information on the MKA allows us to measure the characteristics of the adult with the greatest influence on the child. Last but not least, because of the diversity of family structures examined in the study, not all children have two co-resident parents. That makes it impossible to include the characteristics of each parent separately in a regression model directly comparing single parent, cohabiting and married two-parent families, cohabiting and married two-parent families, and non-parental families in particular. Although this measure may not fully reflect the potential benefit associated with having two parents instead of one, by using the characteristics of the MKA, it does allow for a comparison across the complete spectrum of family structures.

In the current study, family structure is determined according to a detailed variable "ULIVARR" provided by NSAF. It describes the type of parents/caretakers that

each focal child is living with. All of the possible combinations of caretakers are coded, and 45 different living arrangements are available in the data sets. The variable identifies whether the focal child is living with married, unmarried but cohabiting, or unmarried and not cohabiting caretakers and whether the caretakers are single parents, stepparents, non-parents or adoptive/biological parents. In addition, the relationship of each focal child to the MKA with whom he/she was living is used when determining a grandparent household.

Married two-parent families¹¹ are married couple families in which the focal child is the biological or adoptive child of both parents. Married stepmother families are married couple families in which the father is the biological father and the mother is the stepmother. Married stepfather families are defined in a parallel manner. Cohabiting two-parent families are non-married couple families in which both parents are biological or adoptive parents. Cohabiting stepmother families are those non-married couple families in which the focal child is living with biological/adoptive father and his female partner. Again, cohabiting stepfather families are defined in a parallel manner. Single-father families and single-mother families are those single parents living without partners. Grandparent families are defined as children living with grandparent(s) who are the MKAs and without either parent present. To complete the universe, any other living arrangements are classified as other, which includes households in which uncles, aunts or siblings are the MKAs. Ginther and Pollak (2004) argue against using a child-based classification scheme in which the same family could be classified as a stepfamily for the

¹¹ Because we can not separate married two-biological parent families from married two-adoptive parent families in the data, the traditional families therefore include married two-biological parent families as well as married two-adoptive parent families. For the rest of the paper we use married two-parent families and traditional families interchangeably, referring to both married two-biological parent families and married two-adoptive parent families.

stepchild but as a two-biological-parent family for the joint child. Instead, Ginther and Pollak propose using a family based scheme so that children raised in traditional nuclear families will be distinguished from joint children in blended families. However, the NSAF data is not well-suited to address this issue. In order to identify the children living in blended families according to the classification scheme proposed by Ginther and Pollak (2004), we first choose households with two sampled children. (10,962 observations are retained for both years). Second, one child's relationship to one of the MKAs has to be a biological child and the other child has to be a step child. We have only 35 observations that fall into this subgroup. Third, the child has to be 6-17 years old, and only 28 observations qualify for the child-based definition of blended family. But it is likely to underestimate the children living in such households for the following reasons:

- 1) It is possible that both sampled focal children are joint biological children of the parents and the step child is not sampled.

- 2) It is also likely that in some stepparent households the stepparent is not the MKA but the biological parent is the MKA.

Hence the number of observations is so small that it is not suitable for comparison with biological children defined as family-based.

As discussed above, in order to incorporate the dynamic nature of family structure as well as to employ the fixed-effect strategy to deal with the endogenous nature of family structure, longitudinal data is essential. At the present time, however, there is no longitudinal data set available that is large enough to provide the opportunity to closely examine children from all family structures over time. As discussed earlier, this essay

uses data from the 1999 and 2002 waves of the National Survey of American Families (NSAF). The 1997 wave of NSAF data is also available, and it contains partial overlaps of sampling units used on the 1999 NSAF (there is no overlap with the 2002 wave of data). However, a flag to identify matched persons in NSAF 1997 and 1999 is not provided on the public use files for confidentiality reasons (Safir et al. 2000). Thus we could not identify the overlaps and could not use it as panel data. Most importantly, the key information on the focal child's detailed living arrangement, which is used to classify different family structures, is not available in the 1997 data. Therefore, only the 1999 and 2002 waves of NSAF data are used in the current study.

4.1.1 Dependent Outcomes Variables. There is one caveat about the outcomes measures. As all outcome measures are reported by the MKA, it may be subject to self-reporting errors, and such errors may be associated with income and family structure. For example, some studies find evidence of self-reported health outcomes measurement errors (Butler et al. 1987, Bound 1991) and such measurement errors are correlated with family income (Marra et al. 2004). With respect to academic performance, Bird and Berman (1985) found that mothers' perceptions of their children's performance on a new task are more accurate than fathers' are. Nevertheless, it is much more difficult to obtain objective measures, and most surveys use self-reported measures.

The primary health outcome is the focal child's current health status reported by the MKA. It is similar to the measures of overall health used in many studies that correlate to mortality, morbidity, physical fitness, and health care utilization (Ren and Amick 1996, Denton and Walters 1999, Idler and Benyamini 1997, Matthews et al. 1999). Compared health status and physical and mental functionality of the focal child

are also included to supplement the analysis. The importance of health is well-documented in the vast literature examining the linkage between health and economic status, labor market outcomes and educational attainment.¹² A life course perspective was employed by the medical, sociological and economic literatures to address occurrence of events across entire life spans as well as to explain intergenerational influences. The importance of health status in one's early life was highlighted. For example, studying health with the life course approach sheds light on the existence of wide disparities in adult morbidity and mortality rates across socio-economic classes (Bartley and Blane 1997, Blane et al. 1999, Davey Smith et al. 1997, Kuh and Ben-Shlomo 1997, Mare 1990, Martyn 1991, Van de Mheen 1998, Wadsworth 1997, Wunsch et al. 1996). Case et al. (2002) suggest that the well-known positive association between health and income in adulthood is anteceded by a similar association in childhood. They found that children from lower-income households with chronic conditions are less healthy than those from higher-income households. Moreover, the adverse effects of lower income on health accumulate over children's lives. They further suggest that the impact of parents' income on children's health may be a pathway through which the intergenerational transmission of socioeconomic status takes place. Case et al. (2005) also find that childhood health and economic circumstances have a long-lasting effect on health status, educational attainment and social status into adulthood. Specifically, they suggest that health may be a potential mechanism through which intergenerational transmission of economic status occurs. Given the enduring impact of childhood health, it is important for studies to include health outcomes in addition to educational and behavioral outcomes when investigating child well-being.

¹² See Currie and Madrian (1999) and Currie and Hyson (1999) for an extensive review.

Current Health Status

This variable concerns the MKA's perception about the current health status of the children. The MKA is asked:

In general, would you say the child's health is:

5= Excellent

4 =Very good

3 =Good

2=Fair

1 =Poor

This question applies to all children. There were no special interviewer instructions for this question. Basically, the MKA's answer to this question is used. For example, if the answer is excellent, than the variable is assigned a value of 5, etc.

Current Health Status Compared to 12 months ago – Health Getting Worse

Similarly, this variable also concerns the MKA's perception about the current health status of the children compared to 12 months ago. The MKA is asked:

How is your child's health in general compared to 12 months ago? Is it:

5 = Much better

4 = Somewhat better

3 = About the same

2 = Somewhat worse

1 = Much worse

This question applied to children two years old or older. One difficulty with this variable is that no information is available regarding the child's past health status, and

there is an upper limit towards which a child's health could improve. Therefore this variable is dichotomized to a new variable indicating whether the child has experienced deterioration in his/her health status in the past 12 months, with 1 corresponding to the values of 1 and 2, and 0 equals to the values of 3, 4, 5.

Having a Health Condition that Limits Activity

This variable was created by asking the MKA whether the child has a physical, learning, or mental health condition that limits (his/her) participation in the usual kinds of activities done by most children (his/her) age and/or limits (his/her) ability to do regular school work. If needed, the interviewer is to elaborate on the question by defining what is meant by a physical learning or mental health condition. For children six years old and older, an ongoing or chronic impairment or condition is one that limits the child's ability to participate in routine physical education and learning activities at public, private, vocational, or parochial schools. The interviewer is to record 'YES' if the child is enrolled in a special school for children with physical or mental disabilities (such as a school for the hearing-impaired or blind, or children with learning disabilities). It also records 'YES' if the child is enrolled in a regular school but spends most of the day in special education classes. 5318 children or 12.16 percent of the whole sample used in this study fall into this category.

School Engagement Scale

A child's future economic status and work productivity as an adult are determined in part by his performance in school and ultimate educational degree obtained (Kuh and Wadsworth 1991, Bruno 1995, Bauman and Ryan 2001). Daily participation in school such as attending class, making an effort to learn, and completing homework are the

fabric of the learning process. Due to the tendency of researchers to focus on the educational achievement and attainment of children, such non-achievement aspects of the educational experience warrant better understanding. School engagement is an appropriate measure to use also because for some children in the sample, it is too early to measure achievement yet.

Research has documented that school engagement is associated with positive academic outcomes including achievement and persistence in school.¹³ A key outcome of engagement is higher achievement. Children who are highly engaged in school perform better in terms of grades, test scores, and grade advancement, although the operationalizations¹⁴ of engagement may differ from one study to another.¹⁵ Another body of research finds that academically engaged students are less likely to drop out of high school and less likely to engage in delinquency (Bryk and Thum 1989, Crosnoe 2002, Farkas et al. 1990, Jenkins 1995).

The NSAF includes a scale measure of school engagement created by Jim Connell and Lisa Bridges at the Institute for Research and Reform in Education in California. This scale is used to assess the degree to which children aged 6 to 17 are interested in doing and willing to do school work.

MKAs are asked:

How often

- Does the child care about doing well in school?

¹³ See Fredricks et al. (2004) for a review of the growing research literature that addresses school engagement.

¹⁴ Operationalization refers to the process of converting concepts into specific observable behaviors that a researcher can measure.

¹⁵ See Connell et al. (1994), Finn and Rock (1997), Finn and Voelkl (1993), Lamborn et al. (1992), Lee and Smith (1995), Roscigno and Ainsworth-Darnell (1999), Skinner et al. (1990), Steinberg et al. (1992); in contrast, Newmann et al. (1992) and Smerdo (1999) fail to find such a connection.

- Does the child only work on schoolwork when forced to?
- Does the child just do enough schoolwork to get by?
- Does the child always do homework?

The response set contains: all of the time (assigned a value of 4), most of the time (assigned a value of 3), some of the time (assigned a value of 2), and none of the time (assigned a value of 1). Responses to questions about how often the child only works on schoolwork when forced to and does just enough schoolwork to get by are reverse coded. Responses to the above four questions are coded and then totaled to create a scale score ranging from 4 to 16 with a higher score indicating greater school engagement.

Behavioral Problems Index Score

Psychological development and social development are also essential aspects of child well-being. Even though family environments and experiences influence these developments at all stages, those early in life are thought to have a particularly powerful impact, largely because life is a process of cumulative effect, beginning with social and family circumstances in early life. Behaviors and attributes that are acquired early in life may have a compounding effect into late adolescence and adulthood (Wadsworth 1999, Caspi et al. 1995, Pulkkinen and Hamalainen 1995, Friedman et al. 1993, Friedman et al. 1995).

Two separate scores are used to assess behavior and emotional problems for children aged 6 to 11 and children aged 12-17 due to the distinct characteristics of children in each age group. The MKA's responses to the following questions are used to create the scale for age group 6-11:

In the past month,

- Does she/he feel worthless or inferior
- Has she/he been nervous or tense
- Does she/he act too young for her/his age
- Does she/he have trouble sleeping
- Does she/he lie or cheat
- Does she/he do poorly at school work

The responses to those questions reflect the MKA's perceptions about the child's behavior in the past month. The response categories include often true (assigned a value of 3), sometimes true (assigned a value of 2), and never true (assigned a value of 1). Scores for respondents who answered at least five out of the six questions are totaled and then standardized to the 18-point scale ranging from 6 to 18. A higher score indicates more behavior problems.

Similar to the behavior problem index score for children aged 6-11, the index for children aged 12-17 is created by asking the MKA the following six questions:

In the past month,

- Does she/he not get along with other kids?
- Can she/he not concentrate for long?
- Has she/he been sad or depressed?
- Does she/he have trouble sleeping?
- Does she/he lie or cheat?
- Does she/he do poorly at school work?

4.1.2 Control and Production Function Input Variables. The set of control and production function input variables used in the estimations include (1) basic demographic characteristics of the child and the household: child's age, race and gender, MKA's age, family structure as discussed earlier, number of children under age 6, number of children between 12 and 17, region; (2) household socioeconomic status such as MKA's highest education level, MKA's labor force status and family social income level; (3) inputs which include health specific inputs, educational and developmental inputs and psychological inputs which indicate parental resources:

- Health specific inputs include: whether the child has health insurance at the time of the survey, child's number of dental visits in the past 12 months, whether the household has a usual source for health care other than the emergency room, whether the child received well child care visits in the past 12 months;
- Educational and developmental inputs consist of whether the child has changed schools in the past 12 months (school stability); whether the MKA worries that food would run out (food insecurity), whether the household has no phone service, whether the child took lessons (computer, music, dance, etc.) after school last year, whether the child was on a sports team last year.
- Parental resources: the MKA's aggravation scale score and MKA's mental health scale score, which are discussed below.

MKA's Aggravation Scale Score

This variable is derived by summing the MKA's responses to four questions—how often in the past month the MKA felt the child was much harder to care for than most, felt the child did things that really bothered the MKA a lot, felt he or she was giving up more of his or her life to meet the child's needs than he or she ever expected, and felt angry with the child. The response categories include all of the time (coded 4), most of the time (coded 3), some of the time (coded 2), and none of the time (coded 1). Responses are totaled creating a parent aggravation index--a scale score ranging from 4 to 16. A higher score indicates more aggravation.

MKA's Mental Health Scale Score

The mental health scale is created by summing the MKA's responses to five questions that ask how often in the past month the respondent had been a very nervous person, felt calm or peaceful, felt downhearted and blue, had been a happy person, and felt so down in the dumps that nothing could cheer him or her up. The response categories include all of the time (coded 1), most of the time (coded 2), some of the time (coded 3), and none of the time (coded 4). Responses to the questions about feeling calm or peaceful and being a happy person are reverse coded. Responses are totaled, creating a scale score ranging from 5 to 20, then all scores are rescaled to 100 by multiplying by 5. A higher score indicates better mental health.

There is a caveat with the measures of parental resources in particular and with the measures of all inputs in general. Inputs, similar to family structure, are potentially endogenous and could be affected by a variety of factors. For parental resources, reverse

causality is especially relevant. For instance, a parent caring for a problematic child may experience more stress and aggravation than one who is raising a well-behaved child, which could in turn adversely affect the child's outcomes. Nevertheless, controlling for the inputs could shed light on such questions as whether differences in inputs lead to the disparity in child outcomes across family structures and how much the difference in child outcomes persists after inputs are controlled for.

4.2 Estimation Strategies

The theoretical model of a single-parent household and its extension to a grandparent household suggests several possible explanations for differences in child quality varying by gender and by race. We follow the standard household production theory approach in the economics literature to motivate the empirical study. Clarifying the differences between 'inputs' and 'outcomes' in the production of child well-being helps investigate how much the difference in child outcomes is due to differences in inputs, and how much is due to the underlying production process. We also employ and extend the theoretical framework of Conway and Houtenville (2002) to clarify the possible role of gender and gender interaction within households.

To investigate empirically, the equations to be estimated will be the inputs equation corresponding to equation (8) and a child quality production function corresponding to equation (9) as follows:

$$X_i = \alpha' I_i + \beta_i' G_i + \gamma' E + \eta' NF_i + \nu_i$$

$$CQ_i = \xi' X_i + \vartheta_i' I_i + \psi_i' G_i + \delta' E + \tau' NF_i + \varepsilon_i$$

where I represents economic resources such as family income and the MKA's education, etc., G contains child characteristics such as age, gender and race, E includes parental and family characteristics such as parents' age, number of children in the households and a vector of ten family structure dummy variables: (0) married two-parent biological or adoptive family (the omitted category), (1) married mother-stepfather family, (2) married father-stepmother family, (3) single mother, (4) single father, (5) cohabiting two-parent biological or adoptive family, (6) cohabiting mother-stepfather family, (7) cohabiting father-stepmother family, (8) grandparent caregiver family and (9) other non-parental caregiver family; NF denotes factors such as living in the south, etc.

The *developmental inputs* (x) include 1) the parental aggravation and mental health status of the 'most knowledgeable adult' (assumed to be the primary caregiver), 2) how many times the child has changed schools in the past 12 months, 3) taking after-school lessons, and 4) being on a sports team. The *developmental outcomes* (CQ) include 1) the child's reported engagement in school, and 2) the Behavioral Problems Index score. The *health inputs* (X) include 1) whether the child has health insurance, 2) number of dental visits during the last 12 months, 3) number of well child care visits during the last 12 months, 4) whether the child has a usual source for care. The *health outcomes* (CQ) include 1) child's current health status, 2) child's current health compared to 12 months ago (whether the child has experienced deterioration in health status), and 3) whether the child has a mental, physical or learning condition limiting activity participated in by most children in his/her age group. In addition, we include two general inputs that might contribute to both developmental and health outcomes such as food

insecurity and interrupted phone services in the households. These two measures can capture general aspects of the home environment.

First, we perform a descriptive analysis on these various measures to make simple comparisons of the various child inputs and outcomes across the different types of family structures by gender and by race, as well as to investigate the relative prevalence of these family structures.

Second, in order to better identify the associations between family structure and child outcomes, the basic demographic characteristics must be controlled for. We therefore estimate the following child input and outcome equations:

$$1a) \text{Input}_k = \Phi(G, E, NF);$$

$$2a) \text{Outcome}_q = g(G, E, NF);$$

These equations contain those variables most likely to be considered exogenous (the child and MKA's characteristics), with the exception of family structure itself.

Next, the household's socioeconomic status is controlled. This helps identify to what extent economic resources matter and also test the economic theory regarding family structure and child outcomes:

$$1b) \text{Input}_k = \Phi(G, E, NF, I);$$

$$2b) \text{Outcome}_q = g(G, E, NF, I)$$

Finally, the outcome equations will also be estimated including the full vector of input variables as explanatory variables:

$$2c) \text{Outcome}_q = g(G, E, NF, I, \text{Input})$$

This exercise helps clarify whether the lesser outcomes of children in 'nontraditional' families is due at least in part to receipt of fewer observable 'inputs', and,

if so, whether the lesser inputs vary within the different nontraditional family structures and whether they vary by the child's gender. Despite the likely endogeneity of these inputs, including them in the regressions enables us to investigate how much of the outcome differential is due to an observed difference in inputs across family structures. For instance, if children in single-mother families receive less medical care than children living in other families, then once medical care is controlled for the impact of living in a single-mother family on the child's health may be reduced or even eliminated. We are not trying to instrument these inputs because 1) there is the usual difficulty in finding valid instruments, and 2) the possible endogeneity of family structure already renders the exercise a 'descriptive regression'.

These equations are first estimated on the entire sample. By providing estimates of the overall differences in child well-being across the different family structures, the results provide information on how the well-being of children living in single-father and grandparent caregiver families differs from children living in other 'nontraditional' families or in 'traditional' families.

Each equation is then estimated on each gender sub-sample and each race sub-sample separately. These results help to illustrate the difference between the well-being of children living in single-father families in comparison to other family structures, especially single-mother families and grandparent families, contingent upon the child's gender and race. Specifically, the equality of the estimated coefficients on family structure is tested across structures for each sub-sample (e.g., the effects on a girl of living with a single father versus a single mother, or the effects on a non-Hispanic white

child of living with in a grandparent household versus living in an other non-parental household).

Results would be biased without adjustments for oversampling, undercoverage and nonresponse. Child Weights from the NSAF survey and Stata survey commands are used to produce approximately unbiased and representative estimates for the nation (see Brick et al. 1999 for a more complete discussion of weights in the NSAF).

CHAPTER 5

EMPIRICAL RESULTS

We first perform a descriptive analysis, investigating the relative prevalence of various family structures and making simple comparisons of the various child inputs and outcomes across these different family structures. However, to get a crisper measure of the associations between family structure and child outcomes, we must control for the household's socioeconomic status and relevant child characteristics. Furthermore, we further control for specific inputs in order to answer the question of how much the differences in child outcomes between 'non-traditional' families and 'traditional' families could be explained by differences in the receipt of critical inputs.

Due to the completeness of types of family structures we examine, various and numerous comparisons can be made when reporting the empirical results. For both descriptive and empirical results, we emphasize four major comparisons to keep the discussion tractable. First, we make comparisons between traditional and all other families to investigate how children from different non-traditional families fare compared to traditional families. Second, we make comparisons within single-parent families, within married stepparent families and within cohabiting stepfamilies to study how child outcomes differ by the gender of the biological parent in these non-traditional families. Third, we make comparisons between single mother, married stepfather and cohabiting stepfather families as well as between single father, married stepmother and cohabiting

stepmother families to investigate how the presence of a married or cohabiting stepparent may affect child outcomes. Finally, comparisons are made between grandparent families and other non-parental families to investigate whether living with grandparent(s) is associated with more desirable outcomes for children than other non-parental alternatives when living with their parent(s) is not possible (comparison results are listed in Table 18).

5.1 Descriptive Results

5.1.1 Full Sample. Table 1 delineates the diversity and relative prevalence of different family structures investigated by this study (Percentage for each family structure is calculated by using the survey weights). Although the traditional family is still the majority among family types (56.4 percent), its dominance becomes less prominent when compared to the combination of all other family structures. While single-father families (3.2 percent) are much less common than single-mother families, which is the second dominant family structure (19.8 percent), it is still noteworthy since researchers tend to ignore this family type when investigating single-parent households. Grandparent headed households with neither parent present (2.0 percent) is another family type that is under-investigated in studies examining family structure. Finally, cohabiting families are another form that emerged as an alternative to families formed by traditional marriage, and they together represent 4.8 percent of the whole sample. Among cohabiting couples, a mother cohabiting with her partner is the most common arrangement (3.0 percent). This group may be otherwise categorized as single-mother households due to the survey design or strategies utilized by researchers.

Table 2 presents the weighted means and adjusted standard deviations for all variables used in the current study for the full sample, and Table 3 stratifies the sample across ten family structures. The summary statistics show wide variation in child outcomes among different family structures. As discussed earlier, comparisons are made to test the different hypotheses regarding the relationship between family structure and child outcomes. Simple comparisons based on mean values can be misleading sometimes. Nevertheless, they can highlight the crude differences of child outcomes and variations in inputs associated with various child outcomes.

Several salient results emerge from the descriptive analysis. First, children in married two-parent families have more desirable outcomes than children from alternative types of families. Married two-parent families also have more inputs in general than any other types of families (Table 9 summarizes the comparison between traditional families and all other families). However, for current health status, children raised in single-father families have the highest mean value (4.397), while children in married two-parent families have an average score of 4.391, and the difference is statistically significant ($t = 7.62$).

Second, comparisons are made within single-parent families, within married stepfamilies and within cohabiting stepfamilies to investigate how child outcomes differ contingent on parent gender (comparison results are presented in Table 10). Within single-parent families, children in single-mother families fare worse in terms of all five outcomes investigated in the current study than children in single-father families. The differences in child outcomes may not be surprising as substantial differences in economic resources and inputs within single-parent families exist. In general, Table 3

suggests that single-mother families have fewer economic resources and fewer inputs than single-father families do, with only two exceptions: children from single-mother families are more likely to have a usual source for health care and are more likely to receive well-child care than children from single-father families. The difference in child health outcomes and health related inputs, such as having a usual source of care and receiving well-child care, could also be due to selection. In other words, sick children might be more likely to be living with their biological single mothers than living with their biological single fathers.

When comparisons are made within married stepfamilies, children in married stepfather families fare better in terms of current health status, school engagement, and behavioral outcomes. Regarding economic resources, married stepfather families have fewer economic resources than married stepmother families do. But married stepfather families have more developmental inputs than married stepmother families do, such as school stability, taking after-school lessons, being on a sports team and having a lower parent aggravation scale.

When it comes to comparisons within cohabiting stepfamilies, children in cohabiting stepfather families perform worse than their peers from cohabiting stepmother families for all outcomes examined except for the behavioral problem index for 12-17 year olds. Cohabiting stepfather families also tend to have fewer economic resources. With respect to inputs, cohabiting stepfather families have much fewer inputs than cohabiting stepmother families as well, with a few exceptions: their children have more dental visits, have usual source of care and are more likely to receive well-child care.

Therefore, the simple statistical comparisons reveal that children living in single mother and cohabiting stepfather families tend to fare worse and their families tend to have fewer economic resources and have fewer inputs than their peers from single father and cohabiting stepmother families respectively. However, children from married stepfather families tend to have better outcomes than their peers from married stepmother families although their families tend to have fewer economic resources and have no obvious advantage over married stepmother families.

The third set of comparisons is to compare single-mother families, cohabiting stepfather families and married stepfather families to gauge the impact of having a male present in the household, who is not biologically related to the child, on child outcomes as well as on the levels of the inputs invested to produce such outcomes. (Table 11 summarizes the differences between these three family structures.) It is an informative exercise because such comparisons can be used to evaluate whether the relationship constructed on the basis of marriage is equivalent to the relationship formed upon cohabitation in terms of producing desirable child outcomes. Table 3 shows that children living in married stepfather families have the best outcomes, while children in cohabiting stepfather families fare worse than children in single-mother families with respect to all outcomes except for current health status. Regarding economic resources and inputs, married stepfather families have more economic resources and inputs than the other two alternative family types. Single-mother families have a higher level of investment than cohabiting stepfather families do for many health inputs and for all developmental inputs investigated in the current study.

These comparisons seem to suggest that living in married stepfather families or in single-father families might be linked to more desirable child outcomes than living in cohabiting stepfather families. But can such differences in child outcomes be attributed to the differences in economic resources and inputs? It is interesting to see that simple descriptive statistics suggest that a cohabiting stepfather is associated with worse child outcomes than being absent. Differences in economic resources and inputs between these types of families also highlight the need to control for economic resources and inputs in order to get incisive comparisons among these family structures.

Parallel, simple comparisons are also made among single father, cohabiting stepmother families and married stepmother families. (Table 12 summarizes the results of these comparisons.) It turns out that children from single-father households in general have the highest school engagement level, best current health status, and lowest frequency of morbidity and lowest level of behavior problems (both 6-11 and 12-17 age groups). No clear pattern emerges when comparing economic resources and inputs. Single fathers seem to invest more in developmental resources such as taking after-school lessons, MKAs have lower parental aggravation, and the households have higher school stability than the other two family types. It is surprising that children from single-father families, which do not seem to have the most economic resources and inputs among the three family types, tend to fare best in general. The presence of a stepmother, no matter in the form of marriage or cohabitation, is not associated with better child outcomes than being absent. Again, we need to control for both economic resources and inputs in order to gauge to what extent such differences in child outcomes are due to differences in economic resources and inputs, and to what extent these differences in child outcomes are

associated purely with particular family structures. In addition, these comparisons are hindered by the smaller number of observations for these household types.

Finally, grandparent families are compared with other non-parental families. Table 13 outlines the differences between these two family types. Children in grandparent families are less likely to have health conditions that limit children's activities, are more likely to have a higher school engagement scale and to have fewer behavioral problems for children aged 12-17. Grandparent households tend to have fewer economic resources but have more health and developmental inputs than other non-parental families do. However, grandparent caregivers tend to have higher aggravation and lower mental health than other non-parental caregivers. This corroborates what is found in the grandparent literature that grandparents in the skipped generation households tend to live isolated and stressful lives.

5.1.2 Stratifying the Sample by Race and Gender. Now we examine how the distribution of family structures and child outcomes may differ across race and child gender. Table 4 reports the descriptive statistics by stratifying the sample across race/ethnicity. The relative prevalence of different family structures varies considerably across race/ethnicity. It shows that the single-mother family is the most typical family structure among non-Hispanic blacks, and the grandparent family is also common among non-Hispanic blacks when compared to other racial and ethnic groups. Single-father families are highly concentrated in the non-Hispanic white group. Except for non-Hispanic blacks, married two-parent families are still the dominant family structure. Hispanics have the highest percentage of cohabiting two-parent families among all racial groups (2.8 percent).

Child outcomes also differ by race and ethnicity (refer to Table 4). Non-Hispanic black children have the highest percentage of morbidity, highest level of behavior problems (for both age groups of 6-11 and 12-17 years old) and have the lowest level of school engagement (although the school engagement scores between non-Hispanic black and Hispanic children are not statistically different). In contrast, non-Hispanic white children have the highest level of school engagement, lowest level of behavior problems for age group 6-11, and highest level of current health status. Hispanic children are reported to have the lowest level of current health status and most likely to report health status has deteriorated in the past 12 months. Children in the “Other” racial/ethnic groups, which includes all races/ethnicities except Hispanics, non-Hispanic blacks and non-Hispanic whites, have the lowest occurrence of morbidity, lowest probability of having deteriorated health status and lowest level of behavior problems for age group 12-17. A similar pattern of differences is also found for inputs. Generally speaking, non-Hispanic whites and other racial/ethnic group have more economic resources and inputs than non-Hispanic blacks and Hispanics. In particular, Hispanics tends to have the least health inputs such as health insurance, dental visits, a usual source for health care and well-child care visits, and least developmental inputs such as taking after-school lessons and being on a sports team. In contrast, non-Hispanic whites have the highest level of inputs such as health insurance, dental visits, usual source for health care, the highest frequency of school stability and being on a sports team, the lowest level of food insecurity and the lowest percentage of no phone service.

When it comes to gender, girls are more likely to live with single mothers than live with single fathers. Conditional upon living with a single parent, a greater fraction of

boys live with a single father compared to girls. This can be verified from Table 5. Differences in child outcomes are quite pronounced by gender. Girls have better outcomes across all measures used in this study. However, differences in inputs are not as conspicuous and consistent as differences in outcomes by gender. For example, girls are found to have higher levels of inputs such as number of dental visits, staying in the same school last year, taking lessons after school and lower probability of food insecurity, the MKA having lower level of aggravation and a higher level of mental health scale. In contrast, boys tend to have more inputs in terms of having health insurance, having a usual source for health care and being on a sports team last year than girls do. All the aforementioned differences in means are statistically significant.

Therefore, there are differences in child outcomes by race as well as by gender. Next we will also control for economic resources and inputs to examine whether the association between family structure and child outcomes differs by race and by gender. We will also investigate how inputs are linked to different family structures contingent on race and gender. In doing so, we can explore whether (1) racial and gender differences observed in child outcomes across family structures can be explained by controlling for differences in resources, and (2) different types of families may allocate resources differently depending on race and child gender. If so, then channeling more resources and/or changing the way resources are utilized for the less advantaged children could be an effective solution to eliminate or reduce racial and gender disparities in child outcomes.

5.2 Regression Results

Results presented for outcome equations are estimated by ordered probit models and probit models (for dichotomous variables). Ordinary Least Square (OLS) is also applied to each of the outcome equations and the results are similar. Because four out of six outcomes are measured with indexes, for which 5 to 6 is not necessarily the same as 6 to 7, ordered probit models are more appropriate for these variables than OLS models. We present only Tables 6-9 as examples of a typical regression model due to space limitation. Given the large number of results, we instead report summaries of the four major comparisons outlined above in Tables 14-18 for the entire sample, Tables 19-23 and Tables 24-28 are for the sample stratified by race and gender, respectively.

5.2.1. Full sample. When reporting the regression results, we repeat the same comparisons as we present the descriptive results. The results obtained from regressions are more informative as we now control for child, the MKA and family characteristics as well as control for economic resources and inputs. To keep the discussion focused we again emphasize four main comparisons. We first make comparisons between traditional and all other types of families to investigate how children from traditional families fare compared to other types of families (comparison results are summarized in Table 14). We then make comparisons within single-parent families, within married stepparent families and within cohabiting stepfamilies to study how parent gender may influence child outcomes (comparison results are tabulated in Table 15). Next, in order to see how the presence of a stepparent may affect child outcomes, we make comparisons between single mother, married stepfather and cohabiting stepfather families as well as between

single father, married stepmother and cohabiting stepmother families (results from such comparisons are reported in Table 16 and Table 17 respectively). Finally, comparisons are made between grandparent families and other non-parental families to investigate whether living with grandparent(s) is associated with more desirable outcomes for children than other non-parental alternatives when living with their parent(s) is not possible (comparison results are listed in Table 18).

1) Traditional vs. Non-Traditional Families

Generally speaking, results generated from regressions are similar to results obtained from simple descriptive statistics. Children from married two-parent families have better outcomes than children from all other family types, by and large. This is especially true for outcomes such as current health status, school engagement and behavioral outcomes. Adding economic resources only mitigates the adverse effect of poverty associated with cohabiting two-parent families with respect to children's current health status. Once inputs are controlled for, the negative effect of living with cohabiting two-parent families is eliminated for children in those families regarding school and behavioral outcomes.

It is notable that children living with single fathers have better health status and are less likely to report that their health status is getting worse in the past 12 months after inputs are controlled for, which are similar to the descriptive statistics comparisons. Children's morbidity is associated with certain types of family structure. Again, moving from model A to model B reduces the magnitude of the coefficients but in general does not change the sign or significance of the coefficients, which suggests that the effect of adding economic resources is mitigating but not eliminating the differences. When inputs

are added in addition to controlling for economic resources, coefficients on married stepfather, single mother and cohabiting stepfather families retain their statistical significance, which suggests that the causation could also go the other way: children with morbidity are more likely to live with a biological mother after some family transition. Therefore, we observe that children in these three family types are more likely to have morbidity. In addition, estimates on inputs such as having health insurance and received well-child care are positive, which also suggests self-selection and possible adverse selection. On one hand, if children in these families are healthy and do not have those health conditions that limit their normal activities, then obtaining health insurance and receiving well-child care should help to produce better health outcomes. On the other hand, if sick children tend to live with their biological mother such as living in single-mother, cohabiting stepfather and married stepfather families (self-selection), they may have more health care needs, and we observe they are more likely to have health insurance and more likely to seek well-child care (adverse selection).

As for school engagement, children living outside married two-parent families are less engaged in school than their peers from married two-parent families, as shown in Table 9. Again, economic resources and inputs mediate but do not eliminate the adverse effect associated with other family structures except for cohabiting two-parent families. Once both economic resources and inputs are controlled for, children living in such families are not statistically different from their counterparts in married two-parent families. In terms of magnitude, children from other non-parental families, cohabiting stepmother families and married stepmother families tend to have less desirable outcomes

than others; single-mother families tend to be associated with better child outcomes than most other non-traditional families.

An overview of regression results for input equations yields the following synthesis:

- The raw statistics results show that some families may have more inputs than married two-parent families. But almost none is associated with better child outcomes than married two-parent families once the basic child, MKA and family characteristics are controlled for (the only exception is well-child care for grandparent families). By and large, further controlling for economic resources reduces the negative effect associated with non-traditional families in determining input levels except for MKA aggravation. Moving from *Model A* to *Model B* does not mitigate the aggravation level at all: the coefficients are almost the same. Therefore parenting is more difficult for non-traditional families, and the difficulty can not be reduced or eliminated by increasing economic resources.
- Many observed disadvantages in inputs associated with grandparent families and single-mother families compared to married two-parent families, especially health inputs, can be explained by the difference in economic resources.
- In contrast, controlling for economic resources has little or no impact on stepfamilies, both married and cohabiting.

2) Gender of the Biological Parent in Single Parent and Stepparent Families

Similar to the descriptive statistics comparisons, children living in single-mother families tend to have worse health outcomes across all three health measures than children living in single-father families. However, the adverse effects on school engagement and behavioral outcomes associated with living with single mothers disappear. Once inputs are controlled for, living with a single mother is associated with less behavioral problems for 12-17 year-old children than living with a single father. Single-mother families also tend to have more health-related inputs but have less parental resources than single fathers do. Therefore the results suggest that adverse selection may contribute to the adverse health outcomes associated with living in single-mother households. In addition, fewer economic resources and a lower level of inputs might explain the disparity in child school and behavioral outcomes between single mother and single-father households. The receipt of lesser inputs by children from single-mother families could be due to fewer economic resources available to single-mother families. Once basic demographic characteristics and economic resources are controlled for, single-mother families tend to have more or no less inputs than single-father families do with a few exceptions such as parental resources: single mothers still tend to have more aggravation and lower mental health score.

Within married stepfamilies, in contrast to descriptive results, children from both types of families appear to have similar outcomes except for compared health status: children from married stepmother families are still less likely to have deterioration in their health status in the past 12 months. In addition, married stepmother families tend to

have more inputs regarding food security, having phone service in the household, being on a sports team and their MKA having better mental health. There are no statistical differences between the two types of stepparent families regarding other inputs.

Within cohabiting stepparent families, similarly, children in cohabiting stepmother families are also less likely to report deterioration in their health status in the past 12 months. Otherwise, children from both types of families appear to have similar outcomes. Regarding inputs, cohabiting stepmother families seem to have more inputs than cohabiting stepfather families except for dental visits and having a usual source of care. These two additional comparisons provide further evidence that children with significant health conditions are less likely to reside with their biological fathers.

3) *The Presence of a Stepparent*

First, comparing single-mother families with cohabiting stepfather families reveals that children from the two family types have similar outcomes, especially after controlling for inputs: there are no statistical differences between the two family structures. Regarding inputs, these two family types are also similar with a few exceptions: single-mother families tend to have more health inputs than cohabiting stepfather families do, which is similar to the descriptive comparisons.

Next, when comparing single-mother families to married stepfather families, the results are mixed. But once inputs are controlled for, children from both types of families exhibit similar outcomes. Not surprisingly, married stepfather families tend to have more inputs than single-mother families in general.

Finally, between married and cohabiting stepfather families, children living in married stepfather families are associated with better outcomes than children living in

cohabiting stepfather families for all measures examined except for compared health status. But once inputs are controlled for such distinctions are no longer statistically significant. Married stepfather families also tend to have more inputs than cohabiting stepfather families such as health insurance, food security, after-school lessons, sports, and parental resources, even after economic resources are controlled for. Hence, the differences in child outcomes associated with living in married and cohabiting stepfather families seem to be explained by differences in inputs. The findings regarding differences in inputs between these two types of families reinforce such a conclusion.

Examining the presence of a stepmother in a parallel way reveals several findings. First, there are no statistically significant differences between living in single-father families and living in cohabiting stepmother families regarding child outcomes examined, and there are very few differences regarding the receipt of inputs.

When comparing single-father families with married stepmother families, in contrast to the descriptive comparisons, children from both types of families have similar outcomes except for current health status: children from single-father families have better current health status than their peers from married stepmother families, which could again be due to selection. Examining the level of inputs indicates that children from married stepmother families tend to receive more health related inputs than children from single-father families. This evidence also supports the selection hypothesis.

Comparing married stepmother families to cohabiting stepmother families demonstrates no statistical difference in all outcomes investigated between children living in these two types of families although there is some evidence that married stepmother

families tend to have more health inputs such as having dental visits and having a usual source for care.

4) *Grandparent vs. Other Non-parental Families*

Many differences between grandparents and other non-parental households disappear in a regression framework, and for those that remain, the results are the same as simple descriptive comparisons. For instance, grandparents and other non-parental families have similar results for most child outcomes examined except for morbidity and current health status. On one hand, children living in grandparent households are associated with a lower possibility of morbidity than children living in other non-parental families, after controlling for economic resources and inputs. On the other hand, children living in other non-parental families tend to have better current health status, but this distinction vanishes after economic resources and inputs are controlled for. With respect to inputs, grandparent households tend to have more health inputs after economic resources are controlled for, such as having insurance and having a usual source of health care. This could be due to the availability of Medicaid or SCHIP programs. Children in grandparent households are also more likely to be on a sports team, but grandparents have lower mental health scores than other non-parental MKAs. In contrast to descriptive comparisons, children from grandparent families are more likely to experience food insecurity and are less likely to take after-school lessons, which could be due to a lack of economic resources: after economic resources are controlling for, these two types of families have similar results with respect to both inputs.

To sum up, some regression results reinforce those obtained from simple descriptive statistics comparisons and others do not. Results from regression analyses

help us not only better understand the existence of differences in child outcomes and inputs associated with different family structures, but also help us better understand where these differences come from. Again, traditional families are associated with better child outcomes and more inputs than most non-traditional families. Within non-traditional families, living with the biological father is associated with better health outcomes than living with the biological mother. The results also suggest that living in married stepfather families is usually associated with better child outcomes than living with single mothers. In contrast, children living in cohabiting stepfather families fare no better than those living in single-mother families. Economic resources and inputs contribute to the differences observed in child outcomes associated with family structures: once they are controlled for, non-traditional families are usually less different from each other and less different from traditional families as well.

5.2.2. Stratifying the whole sample by race/ethnicity. Space limitations dictate that for outcomes equations, we only estimate model 2b) and 2c) when stratifying the sample by race/ethnicity as well as by gender. There is one caveat before going on to discuss the results: because non-Hispanic whites are the dominant majority, attempts were made to draw a random sample from this group so that its sample size is comparable to the Hispanics and non-Hispanic blacks. However, estimates from sample to sample vary substantially, with including more non-traditional families yielding more similar estimates to the results obtained from the entire non-Hispanic whites sample. This may be due to the fact that although non-Hispanic whites dominate in absolute number of observations, non-traditional families are relatively rare among this group. Given the volatile nature of estimates from random sample to random sample, the full sample of

non-Hispanic whites is retained for stratifying estimation by race/ethnicity. As in the previous section that discusses the results for the full sample, here we will also focus on the four major comparisons among different family structures.

1) Traditional vs. Non-Traditional Families

Generally speaking, the differences in child outcomes associated with living in non-traditional families and living in traditional families are biggest for non-Hispanic whites, and smallest for Hispanics (refer to Table 19). The same pattern follows regarding inputs.

It is notable that living with single fathers is associated with better current health status than living in traditional families only for Hispanic children, not for children from other racial groups. For compared health status, living with a single father is associated with a less likely deterioration in health status only for Hispanic and non-Hispanic white children, but not for non-Hispanic black children.

2) Gender of the Biological Parent in Single-Parent and Stepparent Families

There are racial differences associated with single-parent families with respect to child developmental outcomes but not so much with respect to health outcomes, as shown in Table 20. For instance, in contrast to the results for the full sample, 12-17 year old Hispanic children living with single fathers tend to have fewer behavioral problems than their peers living with single mothers; but for 12-17 year old non-Hispanic black children, living with single mothers is not statistically different from living with single fathers regarding behavioral problems. There are also racial differences regarding certain inputs between single-parent households. Non-Hispanic black children living with single

mothers tend to receive more health inputs than living with single fathers, which is similar to the results obtained from the full sample.

Between the two types of married stepparent families, fewer differences exist between these two types of families within each racial group and relatively less dissimilarity is found across different racial groups. Although it is hard to detect any patterns, generally speaking, stepmother families and stepfather families vary least for non-Hispanic black children but vary most for non-Hispanic white children regarding both outcomes and inputs.

Comparing cohabiting stepfather with cohabiting stepmother families, the distinction between these two family structures is negligible for Hispanics and non-Hispanic blacks but is significant for non-Hispanic whites, particularly regarding inputs.

Once all three pairs of comparisons are taken into account, it is noticeable that there are no differences in children's morbidity between the two types of single-parent families as well as between the two types of cohabiting stepparent families for non-Hispanic whites, but such distinctions exist for both non-Hispanic blacks and Hispanics. If the selection hypothesis we proposed earlier is true, then this finding suggests that such selection primarily exists for certain non-Hispanic black and Hispanic households. Another observation is about 6-11 year old non-Hispanic white children. It seems that if there is a stepparent present, no matter in the form of marriage or cohabitation, then the company of a biological mother is associated with better behavioral outcomes than that of a biological father. This pertains to neither non-Hispanic blacks nor Hispanics.

3) The Presence of a Stepparent

Between single-mother families and cohabiting stepfather families, once inputs are controlled for, there is no distinction for non-Hispanic blacks with respect to all child outcomes (see Table 21), which is the same as for the full sample. For Hispanics, however, living in cohabiting stepfather families are associated with better health outcomes than living in single-mother families.

Comparing single-mother families with married stepfather families shows that non-Hispanic whites and Hispanics have similar results to those obtained for the full sample, but the results are different for non-Hispanic blacks. For instance, after inputs are controlled for, living with single mothers is associated with higher school engagement than living in married stepfather families for non-Hispanic black children. With respect to inputs, once economic resources are controlled for, living in married stepfather families tends to have more inputs than living in single-mother families for Hispanics and non-Hispanic whites, which is similar to the whole sample results. But the inputs level between single mother and married stepmother families are less different for non-Hispanic blacks than for the other two racial groups.

When comparing cohabiting stepfather with married stepfather families, the distinction between these two family structures are greatest for non-Hispanic whites, which is similar to the full sample results. In contrast, for Hispanics, these two family structures are similar except that living in cohabiting stepfather families is associated with lower likelihood of experiencing deterioration in health status.

Therefore, the results suggest that single-mother families are associated with child outcomes that are better than or similar to those of married or cohabiting stepfather families for non-Hispanic blacks. This finding is of interest given the prevalence of single-mother families within this racial group. Married and cohabiting stepfather families are very similar to each other for both Hispanics and non-Hispanic blacks.

Comparing single-father and cohabiting stepmother families, the two living arrangements are not statistically different with respect to child outcomes for non-Hispanic black children, which is similar to the comparison results obtained from full sample comparisons (refer to Table 22). However, for Hispanic children, living with cohabiting stepmother families is associated with lower likelihood of morbidity than living with single-father families. When it comes to inputs, these two family structures do not make any difference for Hispanics regarding all inputs considered, but they differ regarding some inputs for both non-Hispanic blacks and non-Hispanic whites.

Comparing single-father families with married stepmother families reveals some racial differences in child outcomes associated with living in these two family structures. In contrast to the results for the full sample, living in married stepmother families seems to be associated with better current health status than living with single fathers for non-Hispanic white children. However, no differences in current health status associated with these two living arrangements are found for children from the other two racial groups.

No differences exist between living in cohabiting stepmother and living with married stepmother families regarding all child outcomes examined, which is similar to the full sample comparisons with one exception for non-Hispanic black children. It is found that non-Hispanic black children living in cohabiting stepmother families tend to

have lower probability of morbidity than those living in married stepmother families. The causality could go the other way: a biological father with a child having serious health problems may be less likely to find a partner and get married again. Few differences between living with married stepmother and cohabiting stepmother families are found for all racial groups regarding inputs.

There is one caveat about this comparison as well as any comparison involving cohabiting stepmother families: the small number of cohabiting stepmother families in the sample suggests that the estimates are not as accurate as for other household types, especially after stratifying the sample by race. Therefore we are hesitant to give any further interpretation or conclusion based on such results.

4) Grandparent vs. Other Non-parental Families

Stratified results show that living in grandparent families is occasionally associated with better child outcomes for different racial groups than living in other non-parental families (see Table 23), but that the improvements involve different kinds of outcomes. For example, children living in grandparent households tend to have lower likelihood of morbidity than children living in other non-parental households for non-Hispanic blacks, which is the same as that for the full sample, but this finding is no longer relevant to either non-Hispanic whites or Hispanics. In contrast, living in grandparent households is associated with fewer behavioral problems than living in other non-parental households for 6-11 year old Hispanic children as well as for 12-17 year old non-Hispanic white children.

In terms of inputs, both non-Hispanic black and Hispanic grandparents are more likely to have a usual source of care than other non-parental caregivers do, which is the

same as the result for the full sample. However, no such difference exists between grandparent and other non-parental households for non-Hispanic whites. For all other inputs, the two living arrangements are similar to each other for both non-Hispanic blacks and Hispanics. The results regarding other input differentials obtained from full sample comparisons apply only to non-Hispanic whites.

Prior research in sociology, psychology, social work and education has found that parenting practices and cultural norms of parenting behaviors vary considerably across race and ethnic groups. We stratify the sample to see whether there is disparity in child outcomes associated with living in different family structures. The results show that the differences in child outcomes associated with living in non-traditional families and living in traditional families are greatest for non-Hispanic whites, and smallest for Hispanics. Within non-traditional families, if the selection theory we proposed is true, then the findings suggest that healthy children are more likely to reside in a biological father headed household for Hispanics and non-Hispanic blacks, but not necessarily for non-Hispanic whites. Moreover, given the prevalence of single-mother families within non-Hispanic blacks, it is interesting to see that single-mother families are associated with child outcomes that are better than or similar to those of married or cohabiting stepfather families for non-Hispanic black children. Finally, despite the large literature from other disciplines that describes the differences in grandparent households across racial groups, our stratified results show less dissimilarities across race.

5.2.3. Stratifying the whole sample by gender. Here we again focus on the four types of comparisons to investigate how the results may differ contingent on the child gender, reported in Tables 24-28.

1) Traditional vs. Non-Traditional Families

Although no obvious pattern arises for the outcome equations, boys' outcomes are generally more adversely associated with living outside married two-parent families compared to living in married two-parent families than girls are, with a few exceptions (refer to Table 24). It is noteworthy that with respect to current health status and compared health status, boys living with single fathers tend to have better current health status and lower likelihood of health status getting worse in the past 12 months than their peers living in traditional families, which is similar to the full sample comparison results. However, such a distinction does not exist for girls. If selection into single-father families exists, then these findings suggest that selection pertains particularly to boys but not for girls: healthy boys are more likely than healthy girls to be living with single fathers.

2) Gender of the Biological Parent in Single-Parent and Stepparent Families

First, comparisons are made between single-parent households (see Table 25). For girls, there are no differences between living with single fathers and living with single mothers regarding all outcomes examined. In contrast, for boys, generally speaking, living with single fathers is associated with better outcomes than living with single mothers except for 12-17 year old behavioral outcomes. Differences in inputs also exist between these two living arrangements when comparing boys with girls. For example, boys living with single mothers tend to receive more health inputs such as dental visits and well-child care visits than boys living with single fathers. In contrast, we do not find such a distinction for girls. These findings together could suggest selection depending on the child's health: healthy boys are more likely to live with single fathers

than to live with single mothers; single mothers tend to take care of less healthy boys and therefore are more likely to invest more health-related inputs for those boys.

When comparing married stepmother to married stepfather families, girls living with married stepfather families are more school engaged than those living with married stepmother families. For boys, once inputs are controlled for, living in married stepfather families is associated with fewer behavioral problems (12-17 year old only) than living in stepmother families.

There are no gender differences in boys' and girls' outcomes between living in cohabiting stepmother and living in cohabiting stepfather families. However, gender differences exist with respect to inputs: by and large, girls living in cohabiting stepmother families tend to receive more inputs than living in cohabiting stepfather families, which does not pertain to boys.

Overall, adolescent boys living in single-mother families tend to have fewer behavioral problems than their counterparts living in single-father families, and adolescent boys living in married stepfather families are associated with fewer behavioral problems than their counterparts living in married stepmother families. These results seem suggesting that the presence of the biological mother is associated with better behavioral outcomes than the presence of the biological father for adolescent boys. Again, this could be due to reverse causality; adolescent boys with behavioral problems may be more likely to live with their fathers.

3) The Presence of a Stepparent

Again, we first make comparisons between single-mother families and cohabiting stepfather families. The results obtained from the full sample do not apply equally to

boys and girls. Living in single-mother families vs. living in cohabiting stepfather families are not statistically different from each other for girls with respect to all outcomes, but girls living in single-mother families tend to receive more inputs than girls living in cohabiting stepfather families. In contrast, boys living in single-mother families tend to have better outcomes such as higher school engagement and lower probability of morbidity than living in cohabiting stepfather families. Therefore, adding a cohabiting stepfather is not associated with better outcomes for girls, and it is associated with worse outcomes for boys.

Second, single-mother families are compared with married stepfather families, and subtle differences by gender again appear. The comparison shows that living in married stepfather families is associated with better child outcomes such as current health status and behavioral outcomes for 12-17 year-old girls than living in single-mother families. But such differences could be explained by differences in inputs, as girls from married stepfather families receive more inputs than girls from single-mother families. Once inputs are controlled for, the two family structures are no longer statistically different from each other for girls. In contrast, for boys, once inputs are controlled for, boys from single-mother families tend to be more school engaged and have fewer behavioral problems (12-17 years old) than boys from married stepfather families do. Again, adding a married stepfather is not associated with better child outcomes for boys, at least once inputs are controlled for.

Third, comparing cohabiting stepfather families with married stepfather families shows that married stepfather families are associated with fewer behavioral problems for 12-17 year old girls than living with cohabiting stepfather families, which could be

explained by differences in inputs between those two types of families (see Table 26). In contrast, these two family structures are not statistically different from each other with respect to all outcomes considered for boys. To sum up, for girls, having a married stepfather in the household is associated with better child outcomes than without a stepfather, probably by improving the inputs available to the household. For boys, single-mother families are associated with better school and behavioral outcomes than married and cohabiting stepfather families, although adding a male role into the household also improves the level of inputs for boys such as lower probability of food insecurity and higher likelihood of sports participation. However, the results show that boys from both married stepfather families and single-mother families tend to receive more well-child care than boys from cohabiting stepfather families. Between married stepfather and cohabiting stepfather families, girls living in married stepfather families fare better than those living in cohabiting stepfather families. In contrast, comparisons between these two family types show no difference in boys' outcomes.

Turning now to the presence of a stepmother, we compare single-father and cohabiting stepmother families. Boys living in single-father families tend to have better outcomes, such as being more school engaged (which could be due to differences in inputs) and better health status, than boys living in cohabiting stepmother families (comparison results are summarized in Table 27). In contrast, these two family structures are associated with statistically similar outcomes for girls, which is the same as the results from the full sample comparisons. Next, in contrast to the results of full sample comparisons between single-father families and married stepmother families, boys living in single-father families tend to have better health and behavioral outcomes than those

living in married stepmother families. Again, no such distinction regarding any child outcome investigated exists for girls between these two types of families.

Finally, comparing married stepmother families to cohabiting stepmother families shows no differences between these two family structures for either boys or girls regarding outcomes, which is the same as the result from full sample comparisons. However, boys from married stepmother families tend to receive more of certain inputs than those from cohabiting stepmother families do.

Therefore, the presence of a stepmother, no matter through formal marriage or informal cohabitation, is associated with no statistically significant differences for girls with respect to child outcomes investigated by the current study. For boys, the presence of a stepmother, including both cohabiting and married (which are essentially similar to each other) is associated with worse child outcomes than simply living with their single fathers. This combined with the results for the presence of a stepfather suggests that boys' outcomes are more strongly associated (negatively) with the presence of a stepparent of either gender.

4) Grandparent vs. Other Non-parental Families

Again, unlike the results from the full sample comparisons, living in grandparent families is not statistically different from living in other non-parental families for girls (summarized in Table 28). However, for boys, in addition to the results shown by the full sample comparisons, boys living with grandparents have better other outcomes, such as higher school engagement and fewer behavioral problems (12-17 years old), than boys living in other non-parental families. Regarding inputs, girls from grandparent

households receive more inputs than their peers from other non-parental households. In contrast, for boys the results are mixed.

Hence, these findings add further evidence to literature reviewed earlier that documents gender differences in child outcomes. Generally speaking, boys have more adverse outcomes when living outside married two-parent families than girls do. Within non-traditional families, boys living with single fathers are associated with better school and health outcomes than living with single mothers. If selection of healthy children into single-father families exists, then our findings suggest that such selection pertains particularly to boys and not to girls. However, we find that adolescent boys from single-mother families tend to have fewer behavioral problems than their counterparts from single-father families, and adolescent boys from married stepfather families are associated with fewer behavioral problems than their counterparts from married stepmother families. These findings seem to suggest that the presence of the biological mother is associated with better behavioral outcomes than the presence of the biological father for adolescent boys.

As for adding a male role into a single-mother family, having a married stepfather in the household is associated with better child outcomes than without a stepfather for girls, probably by improving the inputs available to the household. Nevertheless, for boys, single-mother families are associated with better school and behavioral outcomes than both married and cohabiting stepfather families, although adding a male role into the household also improves the level of certain inputs. By the same token, adding a female role into a single-father family, no matter through formal marriage or informal cohabitation, makes no difference for girls' outcomes. In contrast, for boys, the presence

of a stepmother, including both cohabiting and married, is associated with worse child outcomes than simply living with their single fathers.

Overall, these results suggest that the outcomes for boys are much more strongly associated with the specific composition of a nontraditional household – e.g., whether there is a stepparent present, whether they live with their biological mother or father, or whether they live with their grandparents as opposed to living in some other nonparent household. Whether these differences are due to differing causal effects or selection/endogeneity mechanisms remains to be seen.

CHAPTER 6

DISCUSSION

A rise in the U.S. child poverty rate took place over the same period as an increase in divorce rates, an increased rate of single-mother families and other dramatic changes to family structure. In this paper, we have examined family structure's effect on child outcomes by controlling for income and education level as well as controlling for some inputs' levels. This analysis is conducted in a theoretical framework that assumes parents or caregivers are concerned about the welfare of their children and try to produce children's well-being so as to maximize their own utility. Children's well-being is therefore determined by the interaction of this utility-maximizing behavior with investment and consumption opportunities in different family environments subject to budget and time constraints. This paper is the first that consolidates data on children and their families into a single study and presents a broad picture of different family structures in relation to several measures of child well-being.

Given the limited information available in the data sets and the problems encountered such as the window problem and the endogeneity of family structure, it is hard for us to draw causal conclusions. Our goal is therefore to introduce some potential mechanisms that may help explain why children born into some types of families fare worse than others. Given the difficulty of drawing causal inferences, we proceed in two ways. Using data from the NSAF, we first present reduced form models that reveal the

associations between child outcomes and family environments including family structures. We then present more speculative estimates of the pathways through which family structure and other family resources affect child health and developmental outcomes by adding inputs to the models as well as by stratifying the sample by gender and by race. This can help to attribute causal effects to different pathways.

The questions raised in the introduction about the effects of family background on child development outcomes are difficult to answer for several reasons. First, there is the question of the long-term effect of family life and economic environments to which children are exposed. Second, child development is a complex process, where family environment is only one element, though likely quite important, of influencing how children learn, grow and develop. Genetic factors, given at birth, vary from child to child. The nature of family life and environment to which children are exposed vary substantially even within the same family structure. Third, family structures are often the results of selective decisions. It is likely that unobserved personality traits affect both parenting skills and marital status. Moreover, several studies have demonstrated that child development can affect marital status and adverse child development outcome can cause family disruption (Corman and Kaestner 1992). Empirically, it is difficult to control for the unobservable selection factors and for unobserved aspects of the home environment and parental traits. Despite the aforementioned challenges, some illustrative findings are in order.

First, traditional families are associated with better child outcomes than any non-traditional families. Children from married two-parent families are doing better than those from cohabiting two-parent families regarding all outcomes examined in the current

study, although differences in observed inputs could explain many of the observed differences in child outcomes. This suggests that marriage may be a stronger institution for raising children than cohabitation to the extent that it helps increase input levels available to children living in the households, when everything else is equal. It also lends support to the economic view discussed earlier.

Second, some marriages are not necessarily associated with better child outcomes than cohabitation, as the findings suggest that in general cohabiting two-parent families are the closest family type to married two-parent families in producing desirable child outcomes and are associated with better child outcomes than all other non-traditional families including married stepfamilies. Cohabiting two-parent families are also associated with better child outcomes than cohabiting stepfamilies. These findings support the evolutionary view discussed earlier. Moreover, cohabiting two-biological-parent families are also associated with more advantageous child outcomes than single-parent families. The results support the socialization arguments that two-parent families provide more supervision for the children. Nevertheless, cohabiting stepfamilies in many cases do not outperform single-parent families. This again supports the evolutionary theory.

Third, both parental gender and child gender make a difference. Boys generally have more adverse outcomes by living outside married two-parent families than girls do. Moreover, their outcomes are more strongly associated with the specific form that the nontraditional household takes. Their outcomes differ more depending on whether there is a stepparent (married or cohabiting, of either gender), whether they live with their biological mother or father, and whether they live with their grandparents as opposed to

another nonparent caregiver. For example, boys from single-father families enjoy a better health status than children from single-mother families. In contrast, boys from single-father families have worse developmental outcomes than boys from single-mother families. For girls, there is no difference between living with a single father or a single mother. As discussed earlier in the paper, the evolutionary perspective argues that mothers invest more of their resources in children than fathers do and the well-being of a given child is of greater interest to the mother than to the father. According to this theory, children from two-biological-parent families will have an advantage over those from other kinds of families, and children from single-mother families will fare better than children from single-father families. The evolutionary theory also predicts that children from single-mother families will do better over those from biological mother/stepfather families since the stepfather will compete with the stepchildren for the mother's resources. Data from the current study show that boys living with single fathers have better current health status than boys living with single mothers, which could not be explained by difference in health-related inputs. This could be suggesting that single fathers might be more likely to obtain the custody of healthy boys. Similarly, it is possible that they are more likely to obtain custody of adolescent boys with behavioral problems.

Just as the evolutionary theory predicts, health and school engagement outcomes of boys from cohabiting stepmother families are statistically worse than the outcomes of boys from single-father families (which could be due to differences in inputs), and cohabiting stepfather families are statistically associated with worse school engagement

outcomes than single-mother families are. All of these results provide evidence supporting the evolutionary perspective.

Fourth, race/ethnicity could matter, too. Hispanic children are least affected and non-Hispanic white children are most affected by living outside traditional families. Hispanic children living in grandparent families do not fare differently from their peers living in other non-parental families. In contrast, for non-Hispanic black children, living in grandparent families is associated with higher odds of morbidity than living in other non-parental families. Non-Hispanic white children living in grandparent families have fewer behavioral problems (for children aged 12-17) than those living with non-parental families do.

Fifth, as expected, adding inputs helps reduce the unfavorable effect of living in non-traditional families, but it does not eliminate them. Therefore, from a policy-maker's point of view, subsidizing these families, especially single-mother families and grandparent families, can assist such less advantaged families, but subsidizing alone may not solve the problems fundamentally.

This paper therefore paints a fuller picture of the relationship between family structure and child outcomes. The results presented here add to our understanding of the least common nontraditional households. In particular, they reveal differences in child outcomes associated with more subtle differences across nontraditional families such as the gender of the biological parent, stepparent and child, the strength of the presence of stepparent (absent, cohabiting or married) and the ability to live with one's grandparents as opposed to some other nonparent caregiver. A worthwhile direction for future

research is to determine if these differences are causal or due to selection mechanisms and other unobservable factors.

Last but not least, our study represents the first effort that investigates a complete array of family structures and its association with different aspects of child outcomes. The empirical results suggest that some family structures are more similar to each other, but others are so distinct from the rest of the non-traditional families that they warrant individual investigation. For example, as shown in Figure 2, single-father and single-mother families are so dissimilar in terms of their association with child outcomes that research ignores single-father families completely, or classifying these two family structures as one category when studying single-parent households may be misleading. Therefore, the current study may inform future research by helping to simplify the classification or aggregation of diverse family structures in an efficient and meaningful way.

Figure 1. The Diversity of Family Structures

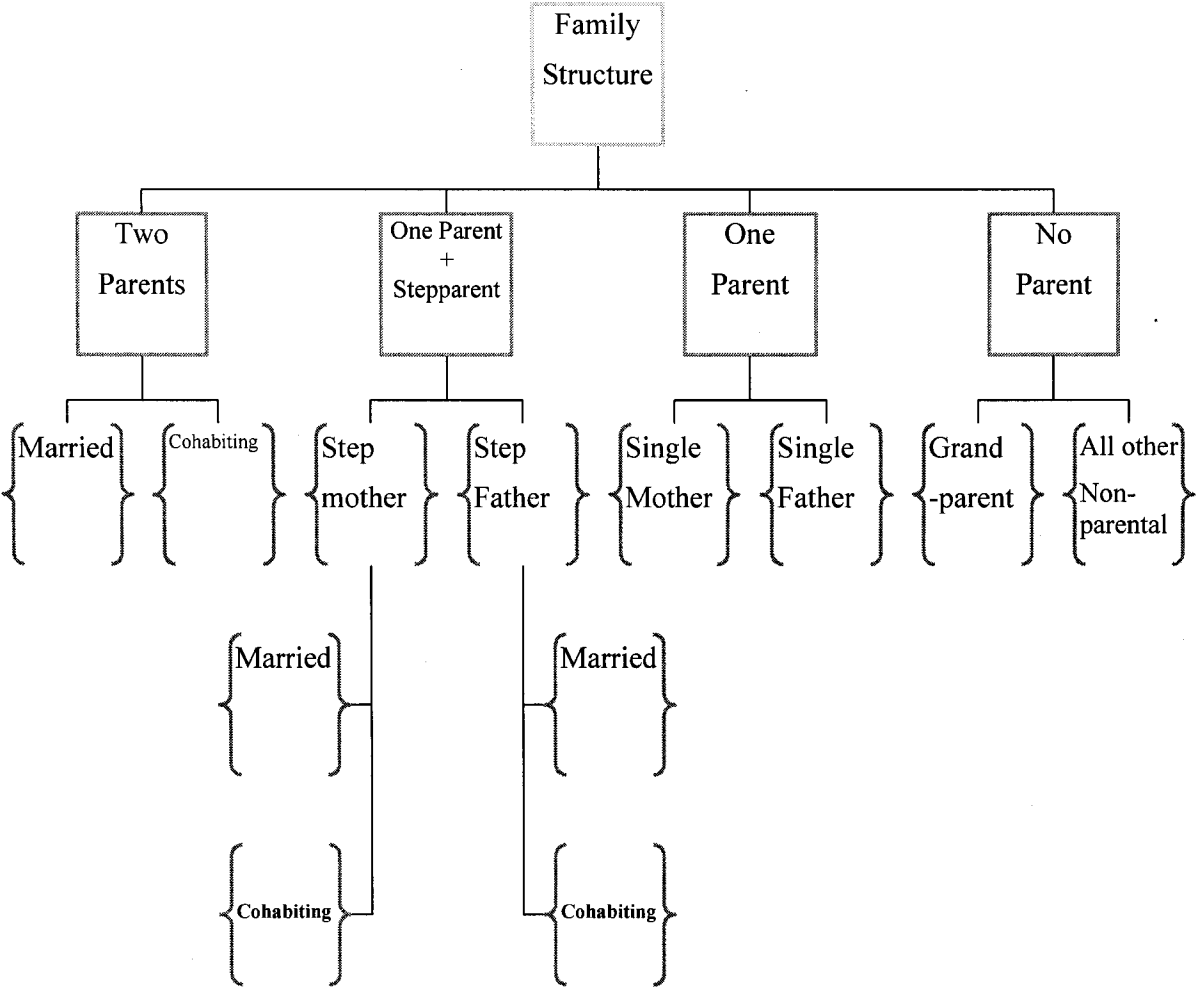


Figure 2. A Simplification of the Diverse Family Structures

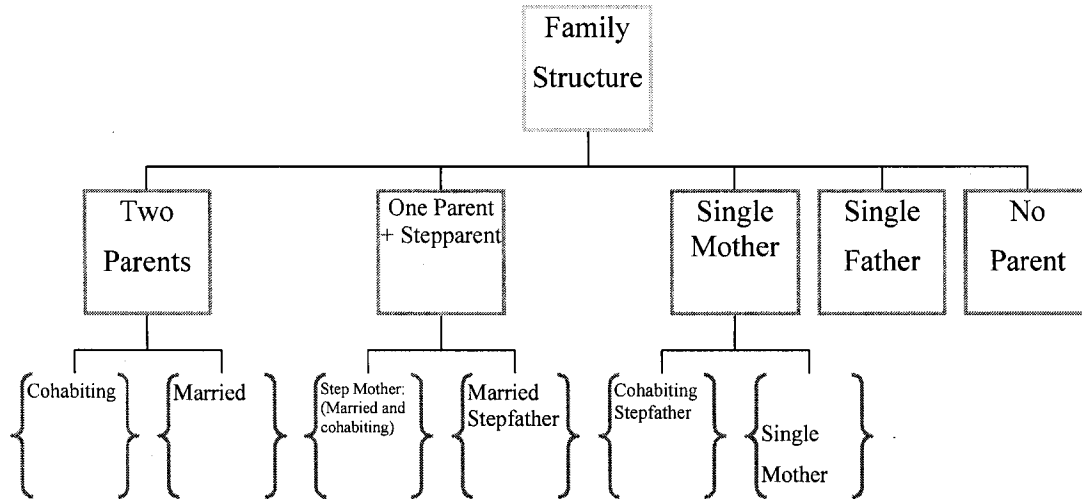


Table 1. Prevalence of Different Family Structures

Family Structure (10)	N	Percentage
Two parents—married	24120	56.4%
Single mother	9101	19.8%
Stepfather—married	3840	8.7%
Single father	1554	3.2%
Stepfather—cohabiting	1304	3.0%
Grandparents	1049	2.0%
Stepmother—married	986	2.5%
Others	952	2.5%
Two parents—cohabiting	623	1.3%
Stepmother—cohabiting	215	0.5%
Total	43744	100%

Note: Percentages are calculated by using weights.

Table 2. Descriptive Statistics (Full Sample)

Outcome	Estimate	(Std. Err.)
Current health status	4.285	0.008
Health status getting worse	0.023	0.001
Has health condition that limits activity	0.119	0.002
School engagement	12.893	0.027
Behavioral problems (6-11 years old)	7.962	0.027
Behavioral problems (12-17 years old)	8.091	0.033
Child, MKA and Household Characteristics		
Age	11.454	0.032
Girl	0.489	0.005
Non-Hispanic White	0.638	0.004
Non-Hispanic Black	0.158	0.004
Hispanic	0.156	0.003
Any other ethnicity	0.047	0.002
MKA's age	39.455	0.058
Number of children under five years old	0.335	0.006
Number of children 6-17 years old	2.126	0.013
Northeast	0.182	0.003
West	0.234	0.004
Midwest	0.238	0.004
South	0.346	0.004
MKA has no High School diploma	0.161	0.004
MKA has High School diploma	0.251	0.005
MKA has somecollege education	0.318	0.004
MKA has a bachelor's or higher degree	0.271	0.004
MKA is working	0.726	0.004
Family income below 100% FPL	0.146	0.004
100%=<Family income< 200%	0.213	0.004
Family income above 200% FPL	0.641	0.005
Input		
Child has health insurance	0.888	0.003
Number of dental visits last year	2.022	0.019
Has usual source for health care	0.926	0.002
Child received well care last year	0.592	0.005
Worried whether food would run out	0.256	0.003
Household doesn't have phone	0.029	0.002
Child in the Same School last year	0.822	0.004
Child took lessons after school last year	0.332	0.004
Child on sports team last year	0.536	0.005
MKA aggravation scale score	6.221	0.020
MKA 100 mental health scale	79.517	0.114
Number of observations	43744	
Population size	93699279	

Table 3. Descriptive Statistics by Family Structure

	Two parents-married	Step father-married	Step mother-married	Single mother	Single father	Two parent-cohabiting	Step father-cohabiting	Step mother-cohabiting	Grand parent	Other-non parental
Outcome										
Current health status	4.391	4.279	4.257	4.063	4.397	4.124	4.109	4.360	3.870	4.149
Health status getting worse	0.018	0.028	0.012	0.032	0.010	0.023	0.048	0.006	0.029	0.024
Has health condition that limits activity	0.091	0.148	0.122	0.161	0.102	0.079	0.196	0.139	0.175	0.213
School Engagement	13.283	12.532	12.166	12.410	12.590	12.720	12.108	12.150	12.328	11.904
Behavioral Problems (6-11 years old)	7.684	8.199	8.264	8.321	8.092	8.029	8.765	8.398	8.909	8.653
Behavioral Problems (12-17 years old)	7.664	8.433	8.655	8.652	8.395	8.509	8.809	8.844	8.482	8.937
Child, MKA and Household Characteristics										
Age	11.344	11.953	12.487	11.446	11.508	9.532	11.286	11.223	11.348	12.516
Girl	0.489	0.471	0.469	0.511	0.413	0.487	0.486	0.478	0.508	0.469
Non-Hispanic White	0.732	0.671	0.709	0.408	0.719	0.427	0.572	0.724	0.365	0.463
Non-Hispanic Black	0.069	0.135	0.140	0.369	0.142	0.194	0.176	0.177	0.465	0.330
Hispanic	0.142	0.160	0.117	0.188	0.101	0.336	0.220	0.084	0.164	0.151
Any other ethnicity	0.057	0.034	0.034	0.035	0.038	0.044	0.033	0.016	0.006	0.056
MKA's age	40.227	36.060	37.734	37.797	42.164	35.894	34.845	37.504	56.814	39.002
Number of children under five years old	0.318	0.470	0.468	0.314	0.113	0.454	0.401	0.382	0.255	0.480
Number of children 6-17 years old	2.122	2.151	2.428	2.093	1.839	1.970	2.258	2.394	1.951	2.464
Northeast	0.196	0.128	0.125	0.180	0.170	0.212	0.187	0.090	0.150	0.169
West	0.238	0.222	0.216	0.217	0.274	0.320	0.264	0.270	0.188	0.221
Midwest	0.255	0.233	0.286	0.199	0.206	0.179	0.258	0.227	0.162	0.245
South	0.311	0.417	0.373	0.404	0.351	0.289	0.291	0.413	0.501	0.365
MKA has no High School diploma	0.116	0.164	0.140	0.230	0.155	0.370	0.311	0.152	0.380	0.183
MKA has High School diploma	0.237	0.267	0.294	0.262	0.267	0.278	0.285	0.257	0.216	0.322
MKA has some college education	0.299	0.400	0.296	0.351	0.305	0.263	0.303	0.450	0.252	0.308
MKA has a bachelor's or higher degree	0.348	0.170	0.271	0.157	0.273	0.089	0.101	0.140	0.152	0.188
MKA is working	0.727	0.713	0.801	0.745	0.842	0.648	0.670	0.905	0.401	0.699
Family income below 100% FPL	0.071	0.080	0.075	0.376	0.107	0.216	0.169	0.062	0.323	0.188
100% < Family income < 200%	0.174	0.213	0.153	0.298	0.211	0.338	0.256	0.258	0.259	0.320
Family income above 200% FPL	0.756	0.707	0.772	0.326	0.682	0.446	0.575	0.680	0.418	0.492
Input										
Child has health insurance	0.907	0.885	0.911	0.863	0.873	0.788	0.824	0.917	0.861	0.819
Number of dental visits last year	2.109	2.118	2.150	1.829	1.964	1.583	1.988	1.389	1.755	1.848
Has usual source for health care	0.944	0.919	0.918	0.900	0.886	0.896	0.908	0.849	0.912	0.858
Child received well care last year	0.586	0.581	0.533	0.623	0.537	0.608	0.573	0.550	0.637	0.635
Worried whether food would run out	0.159	0.267	0.192	0.494	0.201	0.414	0.442	0.202	0.310	0.334
Household doesn't have phone	0.020	0.035	0.007	0.046	0.037	0.038	0.061	0.011	0.041	0.047
Child in the Same School last year	0.860	0.785	0.780	0.771	0.825	0.811	0.744	0.799	0.756	0.713
Child took lessons after school last year	0.371	0.307	0.295	0.279	0.299	0.251	0.232	0.253	0.286	0.250
Child on sports team last year	0.593	0.526	0.471	0.443	0.524	0.368	0.402	0.564	0.474	0.400
MKA aggravation scale score	5.990	6.189	6.215	6.706	5.922	6.347	6.738	6.286	7.005	6.754
MKA 100 mental health scale	81.540	79.129	81.119	74.828	80.439	77.675	73.665	79.727	77.232	79.359
Number of observations	24120	3840	986	9101	1554	623	1304	215	1049	952

Table 4. Descriptive Statistics by Race/Ethnicity

	Non-Hispanic White	Non-Hispanic Black	Hispanic	Other
Outcome				
Current health status	4.435	4.058	3.924	4.210
Health status getting worse	0.023	0.022	0.024	0.018
Has health condition that limits activity	0.115	0.145	0.116	0.089
School Engagement	13.094	12.496	12.499	12.799
Behavioral Problems (6-11 years old)	7.888	8.226	7.979	7.946
Behavioral Problems (12-17 years old)	7.990	8.435	8.277	7.809
Family Structure				
Two parents--married	0.647	0.246	0.514	0.680
Stepfather--married	0.091	0.074	0.089	0.063
Stepmother--married	0.028	0.022	0.019	0.018
Single mother	0.126	0.461	0.239	0.147
Single father	0.036	0.029	0.021	0.026
Two parents--cohabiting	0.009	0.016	0.028	0.012
Stepfather--cohabiting	0.027	0.033	0.042	0.021
Stepmother--cohabiting	0.006	0.006	0.003	0.002
Grandparents	0.012	0.059	0.021	0.003
Others	0.018	0.052	0.024	0.030
Child, MKA and Household Characteristics				
Age	11.542	11.333	11.222	11.449
Girl	0.488	0.496	0.486	0.484
MKA's age	39.914	38.870	37.732	40.902
Number of children under five years old	0.287	0.382	0.493	0.308
Number of children 6-17 years old	2.073	2.243	2.273	1.971
Northeast	0.203	0.152	0.137	0.144
West	0.195	0.087	0.466	0.482
Midwest	0.289	0.208	0.082	0.158
South	0.313	0.553	0.314	0.216
MKA has no High School diploma	0.100	0.194	0.396	0.086
MKA has High School diploma	0.259	0.284	0.217	0.138
MKA has some college education	0.322	0.359	0.267	0.295
MKA has a bachelor's or higher degree	0.319	0.162	0.119	0.482
MKA is working	0.745	0.710	0.652	0.763
Family income below 100% FPL	0.081	0.301	0.267	0.114
100%=<Family income< 200%	0.174	0.276	0.324	0.161
Family income above 200% FPL	0.746	0.423	0.409	0.725

Table 4.(continued)

Input	Non-Hispanic White	Non-Hispanic Black	Hispanic	Other
Child has health insurance	0.922	0.873	0.760	0.906
Number of dental visits last year	2.185	1.694	1.646	2.173
Has usual source for health care	0.958	0.894	0.839	0.890
Child received well care last year	0.575	0.700	0.553	0.586
Worried whether food would run out	0.178	0.433	0.404	0.229
Household doesn't have phone	0.023	0.049	0.034	0.032
Child in the Same School last year	0.846	0.752	0.799	0.814
Child took lessons after school last year	0.339	0.331	0.263	0.468
Child on sports team last year	0.590	0.441	0.438	0.453
MKA aggravation scale score	6.054	6.766	6.272	6.485
MKA 100 mental health scale	80.061	78.253	78.388	80.138
Observations	30214	5703	6321	1506

Table 5. Descriptive Statistics by Gender

Outcome	Girls		Boys	
	Mean	Std. Err.	Mean	Std. Err.
Current health status	4.296	0.009	4.273	0.013
Health status getting worse	0.021	0.001	0.024	0.002
Has health condition that limits activity	0.087	0.004	0.149	0.004
School engagement	13.535	0.030	12.279	0.041
Behavioral problems (6-11 years old)	7.738	0.034	8.175	0.039
Behavioral problems (12-17 years old)	7.891	0.037	8.283	0.045
Family Structure				
Two parents--married	0.565	0.007	0.563	0.006
Stepfather--married	0.084	0.003	0.090	0.004
Stepmother--married	0.024	0.002	0.026	0.002
Single mother	0.207	0.005	0.189	0.004
Single father	0.027	0.002	0.037	0.002
Two parents--cohabiting	0.013	0.001	0.013	0.001
Stepfather--cohabiting	0.030	0.002	0.030	0.002
Stepmother--cohabiting	0.005	0.001	0.005	0.001
Grandparents	0.021	0.002	0.019	0.001
Others	0.024	0.002	0.026	0.002
Child, MKA and Household Characteristics				
Age	11.467	0.042	11.442	0.044
Non-Hispanic White	0.637	0.005	0.639	0.006
Non-Hispanic Black	0.160	0.006	0.156	0.005
Hispanic	0.155	0.004	0.157	0.005
Any other ethnicity	0.047	0.003	0.048	0.003
MKA's age	39.499	0.093	39.413	0.083
Number of children under five years old	0.340	0.009	0.331	0.007
Number of children 6-17 years old	2.139	0.019	2.114	0.016
Northeast	0.180	0.004	0.184	0.003
West	0.236	0.006	0.232	0.005
Midwest	0.238	0.005	0.238	0.006
South	0.346	0.005	0.347	0.006
MKA has no High School diploma	0.163	0.005	0.158	0.005
MKA has High School diploma	0.248	0.005	0.254	0.007
MKA has some college education	0.318	0.006	0.317	0.006
MKA has a bachelor's or higher degree	0.271	0.006	0.270	0.005
MKA is working	0.724	0.005	0.727	0.005
Family income below 100% FPL	0.150	0.005	0.142	0.004
100%=<Family income< 200%	0.209	0.005	0.217	0.005
Family income above 200% FPL	0.641	0.007	0.642	0.006

Table 5. (continued)

Input	Girls		Boys	
	Mean	Std Err	Mean	Std Err
Child has health insurance	0.884	0.004	0.892	0.004
Number of dental visits last year	2.060	0.024	1.987	0.025
Has usual source for health care	0.925	0.003	0.927	0.003
Child received well care last year	0.591	0.006	0.593	0.006
Worried whether food would run out	0.253	0.005	0.260	0.005
Household doesn't have phone	0.031	0.003	0.028	0.003
Child in the Same School last year	0.829	0.004	0.816	0.005
Child took lessons after school last year	0.408	0.006	0.259	0.006
Child on sports team last year	0.462	0.006	0.607	0.006
MKA aggravation scale score	6.183	0.026	6.257	0.023
MKA 100 mental health scale	79.585	0.167	79.453	0.168
Observations	21392		22352	

Table 6. Ordered Probit Models Predicting Child's Current Health Status (Age 6-17)

	A	B	C
Married stepfather	-0.12	-0.12	-0.07
	(0.03)***	(0.03)***	(0.03)*
Married stepmother	-0.16	-0.18	-0.15
	(0.08)**	(0.08)**	(0.09)*
Single mother	-0.29	-0.18	-0.06
	(0.03)***	(0.03)***	(0.03)**
Single father	-0.02	0.04	0.07
	(0.04)	(0.04)	(0.04)*
Cohabiting two parents	-0.23	-0.11	-0.02
	(0.10)**	(0.10)	(0.10)
Cohabiting stepfather	-0.27	-0.19	-0.03
	(0.08)**	(0.08)**	(0.08)
Cohabiting stepmother	-0.06	-0.04	0.01
	(0.14)	(0.14)	(0.14)
Grandparent	-0.49	-0.27	-0.2
	(0.07)***	(0.07)***	(0.07)***
Other non-parental	-0.2	-0.16	-0.08
	(0.07)***	(0.07)**	(0.07)
Child's age	-0.02	-0.01	-0.01
	(0.00)***	(0.00)***	(0.00)***
Child's gender, equals 1 for girls	0.03	0.03	0.04
	(0.02)*	(0.02)	(0.02)**
Non-Hispanic black	-0.34	-0.31	-0.29
	(0.03)***	(0.03)***	(0.03)***
Hispanic	-0.55	-0.41	-0.4
	(0.03)***	(0.03)***	(0.03)***
Other race/ethnicity	-0.30	-0.33	-0.27
	(0.05)***	(0.05)***	(0.05)***
MKA's age	0.00	0.00	-0.01
	(0.00)	(0.00)***	(0.00)***
Number of children aged 0-5	-0.04	0.00	0.00
	(0.02)**	(0.02)	(0.02)
Number of children aged 6-17	-0.03	0.01	0.02
	(0.01)*	(0.01)	(0.01)
West	-0.03	-0.03	-0.03
	(0.03)	(0.03)	(0.03)
Midwest	-0.01	0.00	0.00
	(0.02)	(0.02)	(0.03)
South	-0.02	0.01	0.02
	(0.03)	(0.03)	(0.03)

Table 6. (continued)

	A	B	C
MKA has a high school diploma		0.26 (0.03)***	0.21 (0.03)***
MKA has some college		0.34 (0.03)***	0.26 (0.03)***
MKA has a bachelor's or higher degree		0.46 (0.04)***	0.33 (0.04)***
MKA is working		0.02 (0.03)	-0.01 (0.03)
Family income below 100% of FPL		-0.21 (0.04)***	-0.08 (0.04)**
Family income below 200% of FPL		-0.12 (0.03)***	-0.05 (0.03)*
Have health insurance			0.09 (0.03)***
Number of dental visits			0.01 (0.00)**
Have a usual place for care			0.01 (0.03)
Number of well-child care visits during last 12			0.01 (0.03)
Worry food would run out			-0.17 (0.02)***
No phone service at home			0.03 (0.08)
Stay in the same school during last 12 months			0.04 (0.02)*
Take after-school lessons			0.06 (0.02)***
On a sports team			0.2 (0.02)***
MKA aggravation score			-0.04 (0.01)***
MKA 100 point mental health score			0.01 (0.00)***
Number of observations		43744	

Note: 1. Coefficients and standard errors (in parentheses) are reported.

2. *** indicates significant at 0.01 level, ** at 0.05 level and * at 0.1 level

Table 7. Ordered Probit Models Predicting School Engagement (Age 6-17)

	A	B	C
Married stepfather	-0.21	-0.21	-0.16
	(0.03)***	(0.03)***	(0.03)***
Married stepmother	-0.34	-0.34	-0.30
	(0.09)***	(0.09)***	(0.09)***
Single mother	-0.29	-0.23	-0.11
	(0.03)***	(0.03)***	(0.03)***
Single father	-0.24	-0.21	-0.18
	(0.06)***	(0.06)***	(0.06)***
Cohabiting two parents	-0.22	-0.15	-0.06
	(0.07)***	(0.08)*	(0.08)
Cohabiting stepfather	-0.38	-0.34	-0.19
	(0.07)***	(0.07)***	(0.07)***
Cohabiting stepmother	-0.40	-0.38	-0.32
	(0.13)***	(0.13)***	(0.13)**
Grandparent	-0.42	-0.31	-0.21
	(0.06)***	(0.06)***	(0.07)***
Other non-parental	-0.41	-0.38	-0.27
	(0.06)***	(0.07)***	(0.07)***
Child's age	-0.03	-0.03	-0.03
	(0.00)***	(0.00)***	(0.00)***
Child's gender, equals 1 for girls	0.50	0.51	0.52
	(0.02)***	(0.02)***	(0.02)***
Non-Hispanic black	-0.10	-0.07	-0.02
	(0.03)***	(0.03)**	(0.03)
Hispanic	-0.18	-0.12	-0.10
	(0.03)***	(0.03)***	(0.03)***
Other race/ethnicity	-0.14	-0.16	-0.08
	(0.05)***	(0.05)***	(0.05)**
MKA's age	0.01	0.00	0.00
	(0.00)***	(0.00)	(0.00)**
Number of children aged 0-5	-0.01	0.00	0.01
	(0.01)	(0.01)	(0.01)
Number of children aged 6-17	-0.01	0.00	0.02
	(0.02)	(0.01)	(0.01)
West	-0.05	-0.05	-0.06
	(0.03)*	(0.03)*	(0.02)**
Midwest	-0.05	-0.03	-0.04
	(0.03)	(0.03)	(0.03)
South	-0.06	-0.05	-0.04
	(0.03)**	(0.03)*	(0.03)*

Table 7. (continued)

	A	B	C
MKA has a high school diploma		0.08	0.02
		(0.02)***	(0.03)
MKA has some college		0.15	0.07
		(0.03)***	(0.03)**
MKA has a bachelor's or higher degree		0.26	0.14
		(0.03)***	(0.03)***
MKA is working		-0.02	-0.05
		(0.02)	(0.02)**
Family income below 100% of FPL		-0.07	0.03
		(0.04)*	(0.03)
Family income below 200% of FPL		-0.06	-0.02
		(0.03)**	(0.03)
Have health insurance			-0.03
			(0.04)
Number of dental visits			0.01
			(0.01)**
Have a usual place for care			0.08
			(0.04)*
Number of well-child care visits during last			0.05
			(0.02)**
Worry food would run out			-0.11
			(0.03)***
No phone service at home			0.01
			(0.08)
Stay in the same school during last 12			0.05
			(0.02)**
Take after-school lessons			0.13
			(0.02)***
On a sports team			0.19
			(0.02)***
MKA aggravation score			-0.11
			(0.01)***
MKA 100 point mental health score			0.01
			(0.00)***
Number of observations		43329	

Note: 1. Coefficients and standard errors (in parentheses) are reported.

2.*** indicates significant at 0.01 level, ** at 0.05 level and * at 0.1 level

Table 8. Ordered Probit Models Predicting Behavioral Problems (age 6-11 and 12-17)

	Age 6-11			Age 12-17		
Married stepfather	0.23 (0.05)***	0.23 (0.05)***	0.17 (0.06)***	0.33 (0.04)***	0.32 (0.04)***	0.25 (0.05)***
Married stepmother	0.29 (0.13)**	0.30 (0.14)**	0.38 (0.14)***	0.44 (0.09)***	0.46 (0.09)***	0.37 (0.10)***
Single mother	0.32 (0.04)***	0.26 (0.04)***	0.09 (0.04)**	0.47 (0.03)***	0.43 (0.04)***	0.18 (0.04)***
Single father	0.20 (0.07)***	0.17 (0.07)***	0.17 (0.08)**	0.39 (0.06)***	0.37 (0.06)***	0.39 (0.07)***
Cohabiting two parents	0.19 (0.08)**	0.14 (0.08)*	0.03 (0.08)	0.44 (0.12)***	0.38 (0.13)***	0.18 (0.17)
Cohabiting stepfather	0.50 (0.10)***	0.46 (0.10)***	0.16 (0.08)**	0.53 (0.08)***	0.49 (0.09)***	0.28 (0.08)***
Cohabiting stepmother	0.41 (0.20)**	0.40 (0.21)*	0.46 (0.21)**	0.50 (0.17)***	0.52 (0.17)***	0.38 (0.18)**
Grandparent	0.66 (0.07)***	0.56 (0.08)***	0.40 (0.09)***	0.51 (0.11)***	0.39 (0.10)***	0.24 (0.10)**
Other non-parental	0.48 (0.09)***	0.46 (0.09)***	0.39 (0.09)***	0.56 (0.07)***	0.54 (0.07)***	0.37 (0.10)***
Child's age	0.05 (0.01)***	0.05 (0.01)***	0.06 (0.01)***	0.00 (0.01)	0.00 (0.01)	-0.01 (0.01)*
Child's gender, =1 for girls	-0.23 (0.02)***	-0.24 (0.02)***	-0.26 (0.03)***	-0.18 (0.03)	-0.18 (0.03)	-0.21 (0.03)
Non-Hispanic black	0.00 (0.06)	-0.02 (0.06)	-0.12 (0.05)**	0.04 (0.04)	0.02 (0.04)	-0.04 (0.04)
Hispanic	-0.02 (0.03)	-0.08 (0.03)**	-0.08 (0.04)**	0.04 (0.04)	-0.03 (0.04)	-0.06 (0.05)
Other race/ethnicity	0.01 (0.08)	0.01 (0.08)	-0.11 (0.07)	-0.07 (0.07)	-0.07 (0.07)	-0.22 (0.07)***
MKA's age	0.01 (0.01)*	0.00 (0.00)	0.00 (0.00)	-0.01 (0.01)***	0.00 (0.00)**	0.00 (0.00)*
Number of children aged 0-5	0.03 (0.02)	0.01 (0.02)	0.00 (0.02)	0.03 (0.03)	0.01 (0.03)	0.02 (0.03)
Number of children aged 6-17	-0.02 (0.02)	-0.04 (0.02)**	-0.08 (0.01)***	0.01 (0.01)	-0.01 (0.01)	-0.04 (0.01)***
West	0.00 (0.00)	0.00 (0.04)	0.05 (0.03)	0.05 (0.04)	0.05 (0.04)	0.12 (0.04)***
Midwest	0.00 (0.04)	-0.01 (0.04)	0.03 (0.04)	0.03 (0.04)	0.02 (0.04)	0.09 (0.04)**
South	0.01 (0.03)	0.00 (0.03)	0.06 (0.04)*	0.04 (0.03)	0.02 (0.03)	0.06 (0.04)

Table 8. (continued)

	A	B	C	A	B	C
MKA has a high school diploma		-0.13	0.00		-0.13	-0.12
		(0.05)***	(0.04)		(0.04)***	(0.05)**
MKA has some college		-0.15	0.00		-0.13	-0.07
		(0.04)***	(0.04)		(0.04)***	(0.04)*
MKA has a bachelor's or higher		-0.18	-0.01		-0.21	-0.12
		(0.04)***	(0.04)		(0.04)***	(0.04)***
MKA is working		-0.01	0.05		-0.07	0.00
		(0.03)	(0.03)		(0.04)*	(0.04)
Family income below 100% of		0.12	-0.03		0.07	-0.10
		(0.05)**	(0.05)		(0.06)	(0.05)*
Family income below 200% of		0.03	0.01		0.04	-0.03
		(0.04)	(0.04)		(0.03)	(0.04)
Have health insurance			0.01			0.07
			(0.05)			(0.05)
Number of dental visits			0.01			0.00
			(0.01)			(0.00)
Have a usual place for care			0.01			0.02
			(0.07)			(0.04)
Number of well-child care visits			0.07			0.03
			(0.03)**			(0.03)
Worry food would run out			0.12			0.15
			(0.04)**			(0.04)***
No phone service at home			0.09			-0.25
			(0.09)			(0.15)
Stay in the same school during			-0.09			-0.18
			(0.04)**			(0.03)***
Take after-school lessons			-0.01			-0.12
			(0.03)			(0.02)***
On a sports team			-0.15			-0.27
			(0.03)***			(0.02)***
MKA aggravation score			0.20			0.21
			(0.01)***			(0.01)***
MKA 100 point mental health			-0.02			-0.02
			(0.00)***			(0.00)***
Number of observations	21613			21950		

Notes: 1. Coefficients and standard errors (in parentheses) are reported.

2. *** indicates significant at 0.01 level, ** at 0.05 level and * at 0.1 level

Table 9. Non-Traditional vs. Traditional Families (Descriptive Statistics for Full Sample)

Outcomes	
Current health	Only single father families are better
Health getting worse	Only married stepmother, single father, and cohabiting stepmother families are better
Morbidity	Only cohabiting two parent families are better
School	None is better than traditional
Behavior 6-11	None is better than traditional
Behavior 12-17	None is better than traditional
Economic Resources	
MKA college & above	None is better than traditional
MKA working	cohabiting stepmother, single father, married stepmother, single mother families are better
Family income below 100% of FPL	Only cohabiting stepmother families are better
Family income above 200% of FPL	Only married stepmother families are better
Inputs	
1. Health insurance	cohabiting stepmother, married stepmother are better
2. Dental visit	married stepmother, married stepfather are better
3. Usual source of care	None is better than traditional
4. Well-child care	grandparent, other non-parental, single mother, cohabiting two-parent are better
5. Food insecurity	None is better than traditional
6. No phone	cohabiting stepmother, married stepmother families are better
7. School stability	None is better than traditional
8. After-school lessons	None is better than traditional
9. On sports team	None is better than traditional
10. MKA aggravation	Only single father families are better
11. MKA mental health	None is better than traditional

Note: "better" means that the non-traditional family structure(s) reported is(are) associated with more desirable outcomes or higher level of inputs than the traditional families regardless of whether the outcomes/inputs are positive or negative. All the relationships reported are statistically significant.

Table 10. The Gender of the Parent (Descriptive Statistics for Full Sample)

	singledad vs. singlemom	stepmommar vs. stepdadmar	stepdadcoh vs. stepmomcoh
Outcomes			
Current health	singledad>singlemom	stepdadmar>stepmommar	stepmomcoh>stepdadcoh
Health getting worse	singledad>singlemom	stepmommar>stepdadmar	stepmomcoh>stepdadcoh
Morbidity	singledad>singlemom	stepmommar>stepdadmar	stepmomcoh>stepdadcoh
School	singledad>singlemom	stepdadmar>stepmommar	stepmomcoh>stepdadcoh
Behavior 6-11	singledad>singlemom	stepdadmar>stepmommar	stepmomcoh>stepdadcoh
Behavior 12-17	singledad>singlemom	stepdadmar>stepmommar	stepdadcoh>stepmomcoh
Economic resources			
MKA college & above	singledad>singlemom	stepmommar>stepdadmar	stepmomcoh>stepdadcoh
MKA working	singledad>singlemom	stepmommar>stepdadmar	stepmomcoh>stepdadcoh
Family income below 100% of FPL	singledad>singlemom	stepmommar>stepdadmar	stepmomcoh>stepdadcoh
Family income above 200% of FPL	singledad>singlemom	stepmommar>stepdadmar	stepmomcoh>stepdadcoh
Inputs			
1. Health insurance	singledad>singlemom	stepmommar>stepdadmar	stepmomcoh>stepdadcoh
2. Dental visit	singledad>singlemom	stepmommar>stepdadmar	stepdadcoh>stepmomcoh
3. Usual source of care	singlemom>singledad	stepdadmar>stepmommar	stepdadcoh>stepmomcoh
4. Well-child care	singlemom>singledad	stepdadmar>stepmommar	stepdadcoh>stepmomcoh
5. Food insecurity	singledad>singlemom	stepmommar>stepdadmar	stepmomcoh>stepdadcoh
6. No phone	singledad>singlemom	stepmommar>stepdadmar	stepmomcoh>stepdadcoh
7. School stability	singledad>singlemom	stepdadmar>stepmommar	stepmomcoh>stepdadcoh
8. After-school lessons	singledad>singlemom	stepdadmar>stepmommar	stepmomcoh>stepdadcoh
9. On sports team	singledad>singlemom	stepdadmar>stepmommar	stepmomcoh>stepdadcoh
10. MKA aggravation	singledad>singlemom	stepdadmar>stepmommar	stepmomcoh>stepdadcoh
11. MKA mental health	singledad>singlemom	stepmommar>stepdadmar	stepmomcoh>stepdadcoh

Note: ">" indicates the family structure before the sign is associated with more desirable outcomes or higher level of inputs than the family structure after the sign, regardless of whether the outcomes/inputs are positive or negative.

Table 11. The Presence of a Stepfather (Descriptive Statistics for Full Sample)

Outcomes	
Current health	stepdadmar>stepdadcoh>singlemom
Health getting worse	stepdadmar>singlemom>stepdadcoh
Morbidity	stepdadmar>singlemom>stepdadcoh
School	stepdadmar>singlemom>stepdadcoh
Behavior 6-11	stepdadmar>singlemom>stepdadcoh
Behavior 12-17	stepdadmar>singlemom>stepdadcoh
Economic Resources	
MKA college & above	stepdadmar>singlemom>stepdadcoh
MKA working	singlemom>stepdadmar>stepdadcoh
Family income below 100% of FPL	stepdadmar>stepdadcoh>singlemom
Family income above 200% of FPL	stepdadmar>stepdadcoh>singlemom
Inputs	
1. Health insurance	stepdadmar>stepdadcoh>singlemom
2. Dental visit	stepdadmar>singlemom>stepdadcoh
3. Usual source of care	stepdadmar>singlemom>stepdadcoh
4. Well-child care	singlemom>stepdadmar>stepdadcoh
5. Food insecurity	stepdadmar>stepdadcoh>singlemom
6. No phone	stepdadmar>singlemom>stepdadcoh
7. School stability	stepdadmar>singlemom>stepdadcoh
8. After-school lessons	stepdadmar>singlemom>stepdadcoh
9. On sports team	stepdadmar>singlemom>stepdadcoh
10. MKA aggravation	stepdadmar>singlemom>stepdadcoh
11. MKA mental health	stepdadmar>singlemom>stepdadcoh

Note: ">" indicates the family structure before the sign is associated with more desirable outcomes or higher level of inputs than the family structure after the sign, regardless of whether the outcomes/inputs are positive or negative.

Table 12. The Presence of a Stepmother (Descriptive Statistics for Full Sample)

	singledad vs. stepmomcoh vs. stepmommar
Outcomes	
Current health	singledad>stepmomcoh>stepmommar
Health getting worse	stepmomcoh>singledad>stepmommar
Morbidity	singledad>stepmommar>stepmomcoh
School	singledad>stepmommar>stepmomcoh
Behavior 6-11	singledad>stepmommar>stepmomcoh
Behavior12-17	singledad>stepmommar>stepmomcoh
Economic Resources	
MKA college & above	singledad>stepmommar>stepmomcoh
MKA working	stepmomcoh>singledad>stepmommar
Family income below 100% of FPL	stepmomcoh>stepmommar>singledad
Family income above 200% of FPL	stepmommar>singlefather=stepmomcoh
Inputs	
1.Health insurance	stepmomcoh>stepmommar>singledad
2.Dental visit	stepmommar>singlefather>stepmomcoh
3.Usual source of care	stepmommar>singlefather>stepmomcoh
4.Well-child care	stepmomcoh>singledad>stepmommar
5.Food insecurity	stepmommar>singlefather=stepmomcoh
6.No phone	stepmommar>stepmomcoh>singldad
7.School stability	singledad>stepmomcoh>stepmommar
8.After-school lessons	singledad>stepmommar>stepmomcoh
9.On sports team	stepmomcoh>singledad>stepmommar
10.MKA aggravation	singledad>stepmommar>stepmomcoh
11.MKA mental health	stepmommar>singlefather>stepmomcoh

Note: ">" indicates the family structure before the sign is associated with more desirable outcomes or higher level of inputs than the family structure after the sign, regardless of whether the outcomes/inputs are positive or negative.

Table 13. Grandparent vs. Other Non-parental Families (Descriptive Statistics for Full Sample)

Outcomes	
Current health	other>grandparent
Health getting worse	other>grandparent
Morbidity	grandparent>other
School	grandparent>other
Behavior 6-11	other>grandparent
Behavior 12-17	grandparent>other
Economic Resources	
MKA college & above	other>grandparent
MKA working	other>grandparent
Family income below 100% of FPL	other>grandparent
Family income above 200% of FPL	other>grandparent
Inputs	
1.Health insurance	grandparent>other
2.Dental visit	other>grandparent
3.Usual source of care	grandparent>other
4.Well-child care	grandparent>other
5.Food insecurity	grandparent>other
6.No phone	grandparent>other
7.School stability	grandparent>other
8.After-school lessons	grandparent>other
9.On sports team	grandparent>other
10.MKA aggravation	other>grandparent
11.MKA mental health	other>grandparent

Note: ">" indicates the family structure before the sign is associated with more desirable outcomes or higher level of inputs than the family structure after the sign, regardless of whether the outcomes/inputs are positive or negative.

Table 14. Non-Traditional vs. Traditional Families (Regression for Full Sample)

Outcomes	
Current health	twomar>stepdadmar ^{a,b,c} ; twomar>stepmommar ^{a,b,c} ; twomar>singlemom ^{a,b,c} ; singledad>twomar ^c ; twomar>twocoh ^a twomar>stepdadcoh ^{a,b} ; twomar>grand ^{a,b,c} ; twomar>others ^{a,b}
Health getting worse	twomar>stepdadmar ^b ; twomar>singlemom ^{a,b} ; singledad>twomar ^c ;; twomar>stepdadcoh ^{a,b} ; stepmomcoh>twomar ^{a,b,c} ; twomar>grand ^{a,b} ;
Morbidity	twomar>stepdadmar ^{a,b,c} ; twomar>singlemom ^{a,b,c} ; twocoh>twomar ^c ; twomar>stepdadcoh ^{a,b,c} ; twomar>grand ^{a,b} ; twomar>others ^{a,b,c}
School	twomar>stepdadmar ^{a,b,c} ; twomar>stepmommar ^{a,b,c} ; twomar>singlemom ^{a,b,c} ; twomar>singledad ^{a,b,c} ; twomar>twocoh ^{a,b} ; twomar>stepdadcoh ^{a,b,c} ; twomar>stepmomcoh ^{a,b,c} ; twomar>grand ^{a,b,c} ; twomar>others ^{a,b,c}
Behavior 6-11	twomar>stepdadmar ^{a,b,c} ; twomar>stepmommar ^{a,b,c} ; twomar>singlemom ^{a,b,c} ; twomar>singledad ^{a,b,c} ; twomar>twocoh ^{a,b} ; twomar>stepdadcoh ^{a,b,c} ; twomar>stepmomcoh ^{a,b,c} ; twomar>grand ^{a,b,c} ; twomar>others ^{a,b,c}
Behavior 12-17	twomar>stepdadmar ^{a,b,c} ; twomar>stepmommar ^{a,b,c} ; twomar>singlemom ^{a,b,c} ; twomar>singledad ^{a,b,c} ; twomar>twocoh ^{a,b} ; twomar>stepdadcoh ^{a,b,c} ; twomar>stepmomcoh ^{a,b,c} ; twomar>grand ^{a,b,c} ; twomar>others ^{a,b,c}

Table 14. (continued)

Inputs	
1. Health insurance	twomar>singlemom ^a ; twomar>singledad ^{a,b} ; twomar>twocoh ^{a,b} ; twomar>stepdadcoh ^{a,b} ; twomar>grand ^a ; twomar>others ^{a,b}
2. Dental visit	twomar>singlemom ^a ; twomar>singledad ^a ; twomar>twocoh ^a ; twomar>stepmomcoh ^{a,b} ; twomar>grand ^a
3. Usual source of care	twomar>stepdadmar ^{a,b} ; twomar>singlemom ^a ; twomar>singledad ^{a,b} ; twomar>twocoh ^a ; twomar>stepdadmom ^{a,b} ; twomar>grand ^a ; twomar>others ^{a,b}
4. Well-child care	singlemom>twomar ^b ; twomar>singledad ^a ; grand>twomar ^a ; others>twomar ^b
5. Food insecurity	twomar>stepdadmar ^a ; twomar>singlemom ^{a,b} ; twomar>singledad ^{a,b} ; twomar>twocoh ^{a,b} ; twomar>stepdadcoh ^{a,b} ; twomar>grand ^{a,b} ; twomar>others ^{a,b}
6. No phone	twomar>stepmommar ^{a,b} ; twomar>singlemom ^a ; twomar>singledad ^{a,b} ; twomar>twocoh ^{a,b} ; twomar>stepdadcoh ^{a,b}
7. School stability	twomar>stepdadmar ^{a,b} ; twomar>stepmommar ^{a,b} ; twomar>singlemom ^{a,b} ; twomar>singledad ^{a,b} ; twomar>stepdadcoh ^{a,b} ; twomar>grand ^{a,b} ; twomar>others ^{a,b}

Table 14. (continued)

Inputs	
8. After-school lessons	twomar>stepdadmar ^a ; twomar>singlemom ^{a,b} ; twomar>singledad ^{a,b} ; twomar>twocoh ^{a,b} ; twomar>stepdadcoh ^{a,b} ; twomar>stepmomcoh ^a ; twomar>grand ^{a,b} ; twomar>others ^{a,b}
9. On sports team	twomar>stepdadmar ^{a,b} ; twomar>stepmommar ^{a,b} ; twomar>singlemom ^{a,b} ; twomar>singledad ^{a,b} ; twomar>twocoh ^{a,b} ; twomar>stepdadcoh ^{a,b} ; twomar>grand ^a ; twomar>others ^{a,b}
10. MKA aggravation	twomar>stepdadmar ^{a,b} ; twomar>singlemom ^{a,b} ; twomar>twocoh ^a ; twomar>stepdadcoh ^{a,b} ; twomar>grand ^{a,b} ; twomar>others ^{a,b}
11. MKA mental health	twomar>stepdadmar ^{a,b} ; twomar>singlemom ^{a,b} ; twomar>singledad ^{a,b} ; twomar>twocoh ^{a,b} ; twomar>stepdadcoh ^{a,b} ; twomar>grand ^{a,b} ; twomar>others ^{a,b}

Note:(1) ">" indicates the family structure before the sign is associated with more desirable outcomes or higher level of inputs than the family structure after the sign, regardless of whether the outcomes/inputs are positive or negative.

(2) Subscript "a" indicates dependant variables include basic child, MKA and family characteristics, "b" indicates that economic resources are added, and "c" indicates that both economic resources and inputs are added.

Table 15. The Gender of the Biological Parent in Single-Parent and Stepparent Families (Regression Results for Full Sample)

	singledad vs. singlemom	stepmommar vs. stepdadmar	stepdadcoh vs. stepmomcoh
Outcomes			
Current health	singledad>singlemom ^{a,b,c}		
Health getting worse	singledad>singlemom ^{a,b,c}	stepmommar>stepdadmar ^{a,b}	stepmomcoh>stepdadcoh ^{a,b,c}
Morbidity	singledad>singlemom ^{a,b}		
School			
Behavior 6-11			
Behavior 12-17	singlemom>singledad ^c		
Inputs			
1.Health insurance	singlemom>singledad ^{a,b}		stepmomcoh>stepdadcoh ^a
2.Dental visit	singlemom>singledad ^b		stepdadcoh>stepmomcoh ^{a,b}
3.Usual source of care	singlemom>singledad ^{a,b}		stepdadcoh>stepmomcoh ^{a,b}
4.Well-child care	singlemom>singledad ^{a,b}		
5.Food insecurity	singledad>singlemom ^{a,b}	stepmommar>stepdadmar ^{a,b}	stepmomcoh>stepdadcoh ^{a,b}
6.No phone	singlemom>singledad ^b	stepmommar>stepdadmar ^{a,b}	
7.School stability			
8.After-school lessons			
9.On sports team		stepmommar>stepdadmar ^{a,b}	stepmomcoh>stepdadcoh ^{a,b}
10.MKA aggravation	singledad>singlemom ^{a,b}		stepmomcoh>stepdadcoh ^a
11.MKA mental health	singledad>singlemom ^{a,b}	stepmommar>stepdadmar ^{a,b}	stepmomcoh>stepdadcoh ^{a,b}

Note: (1) ">" indicates the family structure before the sign is associated with more desirable outcomes or higher level of inputs than the family structure after the sign, regardless of whether the outcomes/inputs are positive or negative.

(2) Subscript "a" indicates dependant variables include basic child, MKA and family characteristics, "b" indicates that economic resources are added, and "c" indicates that both economic resources and inputs are added.

Table 16. The Presence of a Stepfather (Regression Results for Full Sample)

	stepdadcoh vs. singlemom	stepdadmar vs. singlemom	stepdadcoh vs stepdadmar
Outcomes			
Current health		singlemom>stepdadmar ^{a,b}	stepdadmar>stepdadcoh ^a
Health getting worse			
Morbidity			stepdadmar>stepdadcoh ^{a,b}
School		stepdadmar>singlemom ^a	stepdadmar>stepdadcoh ^{a,b}
Behavior 6-11	singlemom>stepdadcoh ^b		stepdadmar>stepdadcoh ^{a,b}
Behavior 12-17		stepdadmar>singlemom ^{a,b}	stepdadmar>stepdadcoh ^{a,b}
Inputs			
1. Health insurance	singlemom>stepdadcoh ^{a,b}	stepdadmar>singlemom ^a	stepdadmar>stepdadcoh ^{a,b}
2. Dental visit		stepdadmar>singlemom ^a	
3. Usual source of care			
4. Well-child care			
5. Food insecurity	stepdadcoh>singlemom ^a	stepdadmar>singlemom ^{a,b}	stepdadmar>stepdadcoh ^{a,b}
6. No phone			
7. School stability			
8. After-school lessons		stepdadmar>singlemom ^a	stepdadmar>stepdadcoh ^{a,b}
9. On sports team	singlemom>stepdadcoh ^{a,b}	stepdadmar>singlemom ^a	stepdadmar>stepdadcoh ^{a,b}
10. MKA aggravation		stepdadmar>singlemom ^{a,b}	stepdadmar>stepdadcoh ^{a,b}
11. MKA mental health		stepdadmar>singlemom ^{a,b}	stepdadmar>stepdadcoh ^{a,b}

Note: (1) ">" indicates the family structure before the sign is associated with more desirable outcomes or higher level of inputs than the family structure after the sign, regardless of whether the outcomes/inputs are positive or negative.

(2) Subscript "a" indicates dependant variables include basic child, MKA and family characteristics, "b" indicates that economic resources are added, and "c" indicates that both economic resources and inputs are added.

Table 17. The Presence of a Stepmother (Regression Results for Full Sample)

	stepmomcoh vs. singledad	stepmommar vs. singledad	stepmomcoh vs. stepmommar
Outcomes			
Current health		singledad>stepmommar ^{b,c}	
Health getting worse			
Morbidity			
School			
Behavior 6-11			
Behavior 12-17			
Inputs			
1.Health insurance	stepmomcoh>singledad ^{a,b}	stepmommar>singledad ^{a,b}	
2.Dental visit	singledad>stepmomcoh ^{a,b}	stepmommar>singledad ^a	stepmommar>stepmomcoh ^{a,b}
3.Usual source of care		stepmommar>singledad ^a	stepmommar>stepmomcoh ^{a,b}
4.Well-child care			
5.Food insecurity		stepmommar>singledad ^a	
6.No phone		stepmommar>singledad ^{a,b}	
7.School stability			
8.After-school lessons			
9.On sports team		singledad>stepmommar ^b	stepmomcoh>stepmommar ^b
10.MKA aggravation	singledad>stepmomcoh ^b	singledad>stepmommar ^b	
11.MKA mental health			

Note: (1) ">" indicates the family structure before the sign is associated with more desirable outcomes or higher level of inputs than the family structure after the sign, regardless of whether the outcomes/inputs are positive or negative.

(2) Subscript "a" indicates dependant variables include basic child, MKA and family characteristics, "b" indicates that economic resources are added, and "c" indicates that both economic resources and inputs are added.

Table 18. Grandparent vs. Other Non-parental Families (Regression Results for Full Sample)

Outcomes	
Current health	others>grand ^a
Health getting worse	
Morbidity	grand>others ^{b,c}
School	
Behavior 6-11	
Behavior 12-17	
Inputs	
1.Health insurance	grand>others ^b
2.Dental visit	
3.Usual source of care	grand>others ^b
4.Well-child care	
5.Food insecurity	others>grand ^a
6.No phone	
7.School stability	
8.After-school lessons	others>grand ^a
9.On sports team	grand>others ^b
10.MKA aggravation	
11.MKA mental health	others>grand ^a

Note: (1) ">" indicates the family structure before the sign is associated with more desirable outcomes or higher level of inputs than the family structure after the sign, regardless of whether the outcomes/inputs are positive or negative.

(2) Subscript "a" indicates dependant variables include basic child, MKA and family characteristics, "b" indicates that economic resources are added, and "c" indicates that both economic resources and inputs are added.

Table 19. Non-Traditional vs. Traditional Families (Regression Results Stratified by Race)

Outcomes	Hispanic	Black	White
Current health	stepmommar>twomar ^{b,c} singledad>twomar ^{b,c}	twomar>stepdadmar ^{b,c} twomar>singlemom ^{b,c} twomar>stepdadcoh ^b	twomar>stepdadmar ^{b,c} twomar>stepmommar ^{b,c} twomar>singlemom ^b twomar>stepdadcoh ^b twomar>grand ^{b,c} twomar>others ^{b,c}
Health getting worse	twomar>singlemom ^b singledad>twomar ^{b,c} stepdadcoh>twomar ^c	twomar>stepdadmar ^{b,c} stepmommar>twomar ^{b,c} twomar>singlemom ^b twomar>stepdadcoh ^b others>twomar ^{b,c}	twomar>singlemom ^b singledad>twomar ^c twomar>stepdadcoh ^{b,c} stepmomcoh>twomar ^c twomar>grand ^{b,c}
Morbidity	stepmommar>twomar ^c twomar>singlemom ^b twocoh>twomar ^c stepmomcoh>twomar ^{b,c} twomar>grand ^{b,c} twomar>others ^b	twomar>singlemom ^b singledad>twomar ^{b,c} twocoh>twomar ^{b,c} twomar>stepdadcoh ^b stepmomcoh>twomar ^{b,c} twomar>others ^{b,c}	twomar>stepdadmar ^{b,c} twomar>singlemom ^{b,c} twomar>stepdadcoh ^{b,c} twomar>grand ^b twomar>others ^{b,c}
School	twomar>stepdadmar ^{b,c} twomar>singlemom ^{b,c} twomar>grand ^b twomar>others ^{b,c}	twomar>stepdadmar ^{b,c} stepmommar>twomar ^{b,c} twomar>singlemom ^{b,c} twomar>singledad ^{b,c} twomar>stepdadcoh ^b twomar>grand ^{b,c} twomar>others ^{b,c}	twomar>stepdadmar ^{b,c} stepmommar>twomar ^{b,c} twomar>singlemom ^{b,c} twomar>singledad ^{b,c} twomar>twocoh ^b twomar>stepdadcoh ^{b,c} twomar>stepmomcoh ^{b,c} twomar>grand ^{b,c} twomar>others ^{b,c}
Behavioral problems (6-11)	twomar>stepdadmar ^b twomar>stepmommar ^{b,c} twomar>singlemom ^b twomar>stepdadcoh ^b twomar>grand ^b twomar>others ^{b,c}	twomar>singlemom ^b twomar>singledad ^b twomar>twocoh ^{b,c} twomar>stepdadcoh ^{b,c} twomar>grand ^{b,c} twomar>others ^{b,c}	twomar>stepdadmar ^{b,c} twomar>stepmommar ^{b,c} twomar>singlemom ^{b,c} twomar>stepdadcoh ^b twomar>stepmomcoh ^{b,c} twomar>grand ^{b,c} twomar>others ^{b,c}
Behavioral problems (12-17)	twomar>stepdadmar ^{b,c} twomar>singlemom ^{b,c} twomar>grand ^{b,c} twomar>others ^{b,c}	twomar>stepdadmar ^{b,c} twomar>stepmommar ^{b,c} twomar>singlemom ^{b,c} twomar>stepdadcoh ^{b,c} twomar>grand ^c twomar>others ^{b,c}	twomar>stepdadmar ^{b,c} twomar>stepmommar ^{b,c} twomar>singlemom ^{b,c} twomar>singledad ^{b,c} twomar>twocoh ^b twomar>stepdadcoh ^{b,c} twomar>stepmomcoh ^{b,c} twomar>grand ^b twomar>others ^{b,c}

Table 19. (continued)

Inputs	Hispanic	Black	White
1. Health insurance	stepdadmar>twomar ^a stepmommar>twomar ^{a,b} singlemom>twomar ^{a,b}	twomar>stepdadmar ^{a,b} twomar>singlemom ^{a,b}	twomar>singlemom ^a twomar>singledad ^{a,b} twomar>twocoh ^{a,b} twomar>stepdadcoh ^{a,b} twomar>grand ^a
2. Dental visit	stepdadmar>twomar ^a stepmommar>twomar ^{a,b} singlemom>twomar ^b stepdadcoh>twomar ^{a,b}	twomar>singlemom ^a twomar>singledad ^{a,b} twomar>stepmomcoh ^{a,b} twomar>grand ^{a,b} twomar>others ^{a,b}	twomar>singlemom ^a twomar>singledad ^a twomar>twocoh ^{a,b} twomar>stepmomcoh ^{a,b}
3. Usual source of care	twomar>twocoh ^a grand>twomar ^b	twomar>singledad ^{a,b} twomar>others ^a	twomar>stepdadmar ^{a,b} twomar>stepmommar ^{a,b} twomar>singlemom ^{a,b} twomar>singledad ^{a,b} twomar>twocoh ^a twomar>stepmomcoh ^{a,b} twomar>grand ^{a,b} twomar>others ^{a,b}
4. Well-child care	singlemom>twomar ^{a,b} singledad>twomar ^{a,b} twomar>stepdadcoh ^{a,b}	others>twomar ^b	twomar>singlemom ^a twomar>singledad ^{a,b} twomar>twocoh ^a twomar>grand ^b
5. Food insecurity	twomar>singlemom ^{a,b} twomar>twocoh ^a twomar>stepdadcoh ^{a,b} twomar>others ^{a,b}	twomar>singlemom ^{a,b} twomar>stepdadcoh ^{a,b} twomar>grand ^a	twomar>stepdadmar ^{a,b} twomar>singlemom ^{a,b} twomar>singledad ^{a,b} twomar>twocoh ^{a,b} twomar>stepdadcoh ^{a,b} twomar>grand ^{a,b} twomar>others ^{a,b}
6. No phone	stepdadmar>twomar ^{a,b} stepmommar>twomar ^{a,b} twomar>singlemom ^{a,b} twomar>twocoh ^{a,b} twomar>stepdadcoh ^{a,b}	twomar>stepdadmar ^{a,b} twomar>singlemom ^a twomar>singledad ^{a,b} twomar>twocoh ^{a,b} twomar>stepdadcoh ^{a,b}	twomar>twocoh ^{a,b} others>twomar ^{a,b}
7. School stability	twomar>stepdadmar ^{a,b} twomar>stepmommar ^{a,b} twomar>singlemom ^{a,b} twomar>grand ^b	twomar>stepmommar ^{a,b} twomar>singledad ^{a,b} twocoh>twomar ^{a,b} twomar>stepdadcoh ^a twomar>others ^b	twomar>stepdadmar ^{a,b} twomar>singlemom ^{a,b} twomar>twocoh ^{a,b} twomar>stepdadcoh ^{a,b} twomar>grand ^b twomar>others ^b

Table 19. (Continued)

Inputs	Hispanic	Black	White
8. After-school lessons	twomar>singlemom ^{a,b} twomar>twocoh ^{a,b} twomar>stepdadcoh ^{a,b}	twomar>stepmommar ^{a,b} twomar>singlemom ^{a,b} twomar>stepdadcoh ^a twomar>stepmomcoh ^{a,b}	twomar>singlemom ^{a,b} twomar>singledad ^{a,b} twomar>twocoh ^a twomar>stepdadcoh ^{a,b} twomar>grand ^{a,b} twomar>others ^{a,b}
9. On sports team	stepdadmar>twomar ^a twomar>twocoh ^a twomar>stepdadcoh ^{a,b} stepmomcoh>twomar ^b	twomar>singlemom ^a twomar>singledad ^{a,b} twomar>others ^a	twomar>stepdadmar ^{a,b} twomar>stepmommar ^{a,b} twomar>singlemom ^{a,b} twomar>singledad ^{a,b} twomar>twocoh ^{a,b} twomar>stepdadcoh ^{a,b} twomar>grand ^a twomar>others ^{a,b}
10. MKA aggravation	twomar>singlemom ^{a,b} twomar>stepmomcoh ^{a,b} twomar>grand ^{a,b}	twomar>singlemom ^{a,b} twomar>twocoh ^{a,b} twomar>stepdadcoha,b twomar>grand ^a	twomar>stepdadmar ^{a,b} twomar>singlemom ^{a,b} twomar>stepdadcoha,b twomar>grand ^{a,b} twomar>others ^{a,b}
11. MKA mental health	twomar>stepdadmar ^{a,b} twomar>singlemom ^{a,b} twomar>stepdadcoha,b	stepmommar>twomar ^{a,b} twomar>singlemom ^a twomar>stepdadcoha,b twomar>stepmomcoh ^a	twomar>stepdadmar ^{a,b} twomar>singlemom ^{a,b} twomar>singledad ^{a,b} twomar>twocoh ^{a,b} twomar>stepdadcoha,b twomar>stepmomcoh ^a twomar>grand ^b

Note:

(1) ">" indicates the family structure before the sign is associated with more desirable outcomes or higher level of inputs than the family structure after the sign, regardless of whether the outcomes/inputs are positive or negative.

(2) Subscript "a" indicates dependant variables include basic child, MKA and family characteristics, "b" indicates that economic resources are added and, "c" indicates that both economic resources and inputs are added.

Table 20. The Gender of the Biological Parent in Single-Parent and Stepparent Families (Regression Results Stratified by Race)

Single-mother vs. single-father families			
Outcomes	Hispanic	Black	White
Current health	singledad>singlemom ^{b,c}	singledad>singlemom ^{b,c}	singledad>singlemom ^b
Health getting worse	singledad>singlemom ^{b,c}		singledad>singlemom ^{b,c}
Morbidity	singledad>singlemom ^b	singledad>singlemom ^{b,c}	
School			
Behavior 6-11			singledad>singlemom ^b
Behavior 12-17	singledad>singlemom ^b		singlemom>singledad ^c
Inputs			
1.Health insurance			singlemom>singledad ^{a,b}
2.Dental visit		singlemom>singledad ^b	
3.Usual source of care		singlemom>singledad ^{a,b}	singlemom>singledad ^{a,b}
4.Well-child care		singlemom>singledad ^b	
5.Food insecurity	singledad>singlemom ^{a,b}	singledad>singlemom ^{a,b}	singledad>singlemom ^{a,b}
6.No phone	singledad>singlemom ^{a,b}		singlemom>singledad ^b
7.School stability			singledad>singlemom ^{a,b}
8.After-school lessons	singledad>singlemom ^a		
9.On sports team		singlemom>singledad ^{a,b}	
10.MKA aggravation	singledad>singlemom ^{a,b}	singledad>singlemom ^{a,b}	singledad>singlemom ^{a,b}
11.MKA mental health	singledad>singlemom ^{a,b}	singledad>singlemom ^{a,b}	singledad>singlemom ^{a,b}
Married stepfather vs. married stepmother families			
Outcomes	Hispanic	Black	White
Current health	stepmommar>stepdadmar ^b		
Health getting worse		stepmommar>stepdadmar ^{b,c}	
Morbidity			
School		stepdadmar>stepmommar ^{b,c}	
Behavior 6-11			stepdadmar>stepmommar ^c
Behavior 12-17			
Inputs			
1.Health insurance	stepmommar>stepdadmar ^{a,b}		
2.Dental visit			
3.Usual source of care			
4.Well-child care			
5.Food insecurity		stepmommar>stepdadmar ^{a,b}	
6.No phone	stepmommar>stepdadmar ^a		
7.School stability		stepdadmar>stepmommar ^{a,b}	
8.After-school lessons			
9.On sports team			stepdadmar>stepmommar ^b
10.MKA aggravation			
11.MKA mental health		stepmommar>stepdadmar ^a , stepdadmar>stepmommar ^b	

Table 20.(continued)

Cohabiting stepfather vs. cohabiting stepmother families			
Outcomes	Hispanic	Black	White
Current health			
Health getting worse			stepmomcoh>stepdadcoh ^{b,c}
Morbidity	stepmomcoh>stepdadcoh ^{b,c}	stepmomcoh>stepdadcoh ^{b,c}	
School			
Behavior 6-11		stepmomcoh>stepdadcoh ^b	stepdadcoh>stepmomcoh ^c
Behavior 12-17			
Inputs			
1.Health insurance			stepmomcoh>stepdadcoh ^{a,b}
2.Dental visit	stepdadcoh>stepmomcoh ^{a,b}	stepdadcoh>stepmomcoh ^{a,b}	stepdadcoh>stepmomcoh ^{a,b}
3.Usual source of care			stepdadcoh>stepmomcoh ^{a,b}
4.Well-child care			
5.Food insecurity			stepdadcoh>stepmomcoh ^{a,b}
6.No phone			stepmomcoh>stepdadcoh ^a
7.School stability			
8.After-school lessons		stepdadcoh>stepmomcoh ^{a,b}	
9.On sports team	stepmomcoh>stepdadcoh ^{a,b}		
10.MKA aggravation			stepmomcoh>stepdadcoh ^{a,b}
11.MKA mental health			stepmomcoh>stepdadcoh ^{a,b}

Note: (1) ">" indicates the family structure before the sign is associated with more desirable outcomes or higher level of inputs than the family structure after the sign, regardless of whether the outcomes/inputs are positive or negative.

(2) Subscript "a" indicates dependant variables include basic child, MKA and family characteristics, "b" indicates that economic resources are added, and "c" indicates that both economic resources and inputs are added.

Table 21. The Presence of a Stepfather (Regression Results Stratified by Race)

<i>Cohabiting stepfather vs. single-mother families</i>			
Outcomes	Hispanic	Black	White
Current health			
Health getting worse	stepdadcoh>singlemom ^{b,c}		
Morbidity	stepdadcoh>singlemom ^{b,c}		stepdadcoh>singlemom ^b
School			
Behavior 6-11		singlemom>stepdadcoh ^b	
Behavior 12-17			singlemom>stepdadcoh ^{b,c}
Inputs			
1.Health insurance			singlemom>stepdadcoh ^{a,b}
2.Dental visit	stepdadcoh>singlemom ^a		
3.Usual source of care	singlemom>stepdadcoh ^b		stepdadcoh>singlemom ^a
4.Well-child care	singlemom>stepdadcoh ^{a,b}		
5.Food insecurity	stepdadcoh>singlemom ^a	singlemom>stepdadcoh ^b	stepdadcoh>singlemom ^a
6.No phone			
7.School stability			
8.After-school lessons			
9.On sports team	stepdadcoh>singlemom ^a singlemom>stepdadcoh ^b		singlemom>stepdadcoh ^b
10.MKA aggravation		singlemom>stepdadcoh ^b	
11.MKA mental health			
<i>Married stepfather vs. single-mother families</i>			
Outcomes	Hispanic	Black	White
Current health			
Health getting worse			
Morbidity	stepdadmar>singlemom ^b		
School		singlemom>stepdadmar ^c	
Behavior 6-11			
Behavior 12-17	stepdadmar>singlemom ^b		stepdadmar>singlemom ^b
Inputs			
1.Health insurance			stepdadmar>singlemom ^a
2.Dental visit			stepdadmar>singlemom ^a
3.Usual source of care			
4.Well-child care	singlemom>stepdadmar ^b		
5.Food insecurity	stepdadmar>singlemom ^{a,b}	stepdadmar>singlemom ^{a,b}	stepdadmar>singlemom ^{a,b}
6.No phone	stepdadmar>singlemom ^a		
7.School stability			
8.After-school lessons	stepdadmar>singlemom ^a		stepdadmar>singlemom ^a
9.On sports team	stepdadmar>singlemom ^a		stepdadmar>singlemom ^a
10.MKA aggravation	stepdadmar>singlemom ^{a,b}		stepdadmar>singlemom ^{a,b}
11.MKA mental health	stepdadmar>singlemom ^{a,b}	stepdadmar>singlemom ^{a,b}	stepdadmar>singlemom ^{a,b}

Table 22. The Presence of a Stepmother (Regression Results Stratified by Race)

<i>Cohabiting stepmother vs. single-father families</i>			
Outcomes	Hispanic	Black	White
Current health			
Health getting worse			
Morbidity	stepmomcoh>singledad ^{b,c}		
School			
Behavior 6-11			singledad>stepmomcoh ^c
Behavior 12-17			
Inputs			
1. Health insurance			stepmomcoh>singledad ^{a,b}
2. Dental visit		singledad>stepmomcoh ^{a,b}	singledad>stepmomcoh ^{a,b}
3. Usual source of care			
4. Well-child care			
5. Food insecurity			stepmomcoh>singledad ^a
6. No phone			stepmomcoh>singledad ^a
7. School stability			
8. After-school lessons		singledad>stepmomcoh ^{a,b}	
9. On sports team		stepmomcoh>singledad ^{a,b}	
10. MKA aggravation			
11. MKA mental health		singledad>stepmomcoh ^a	
<i>Married stepmother vs. single-father families</i>			
Outcomes	Hispanic	Black	White
Current health			stepmommar>singledad ^c
Health getting worse	stepmommar>singledad ^{b,c}		
Morbidity		singledad>stepmommar ^b , stepmommar>singledad ^c	
School		singledad>stepmommar ^c	
Behavior 6-11			stepmommar>singledad ^c
Behavior 12-17			
Inputs			
1. Health insurance	stepmommar>singledad ^{a,b}		
2. Dental visit		stepmommar>singledad ^{a,b}	
3. Usual source of care		stepmommar>singledad ^a	
4. Well-child care	stepmommar>singledad ^b		
5. Food insecurity			stepmommar>singledad ^a
6. No phone			singledad>stepmommar ^a
7. School stability			
8. After-school lessons			
9. On sports team			singledad>stepmommar ^b
10. MKA aggravation			
11. MKA mental health		stepmommar>singledad ^a	

Table 22. (continued)

<i>Cohabiting stepmother vs. married stepmother families</i>			
Outcomes	Hispanic	Black	White
Current health			
Health getting worse			
Morbidity		stepmomcoh>stepmommar ^{b,c}	
School			
Behavior 6-11			
Behavior 12-17			
Inputs			
1. Health insurance	stepmommar>stepmomcoh ^a , stepmomcoh>stepmommar ^b		
2. Dental visit	stepmommar>stepmomcoh ^a	stepmommar>stepmomcoh ^{a,b}	stepmommar>stepmomcoh ^{a,b}
3. Usual source of care	stepmommar>stepmomcoh ^a		
4. Well-child care			
5. Food insecurity			
6. No phone			
7. School stability			
8. After-school lessons		stepmommar>stepmomcoh ^{a,b}	
9. On sports team			
10. MKA aggravation			
11. MKA mental health			

Note: (1) ">" indicates the family structure before the sign is associated with more desirable outcomes or higher level of inputs than the family structure after the sign, regardless of whether the outcomes/inputs are positive or negative.

(2) Subscript "a" indicates dependant variables include basic child, MKA and family characteristics, "b" indicates that economic resources are added, and "c" indicates that both economic resources and inputs are added.

Table 23. Grandparent vs. Other Non-parental Families (Regression Results Stratified by Race)

Outcomes	Hispanic	Black	White
Current health			
Health getting worse			
Morbidity		grand>others ^{b,c}	
School			
Behavior 6-11	grand>others ^c		
Behavior 12-17			grand>others ^{b,c}
Inputs	Hispanic	Black	White
1.Health insurance			
2.Dental visit			
3.Usual source of care	grand>others ^{a,b}	grand>others ^b	
4.Well-child care			
5.Food insecurity			others>grand ^a
6.No phone			
7.School stability			
8.After-school lessons			others>grand ^a
9.On sports team			grand>others ^b
10.MKA aggravation			
11.MKA mental health			others>grand ^a

Note: (1) ">" indicates the family structure before the sign is associated with more desirable outcomes or higher level of inputs than the family structure after the sign, regardless of whether the outcomes/inputs are positive or negative.

(2) Subscript "a" indicates dependant variables include basic child, MKA and family characteristics, "b" indicates that economic resources are added, and "c" indicates that both economic resources and inputs are added.

Table 24. Non-Traditional vs. Traditional (Regression Results Stratified by Child Gender)

Outcomes	Girls	Boys
Current health	twomar>singlemom ^{b,c} twomar>stedadcoh ^b twomar>grand ^{b,c} twomar>others ^{b,c}	twomar>stepdadmar ^{b,c} twomar>stepmommar ^{b,c} twomar>singlemom ^b singledad>twomar ^{b,c} twomar>grand ^{b,c}
Health getting worse	twomar>stepdadmar ^b twomar>singlemom ^b twomar>stedadcoh ^b stepmomcoh>twomar ^{b,c}	twomar>singlemom ^b singledad>twomar ^{b,c} twomar>stedadcoh ^b stepmomcoh>twomar ^c twomar>grand ^b
Morbidity	twomar>stepdadmar ^{b,c} twomar>singlemom ^{b,c} twomar>stedadcoh ^b twomar>grand ^{b,c} twomar>others ^{b,c}	twomar>stepdadmar ^{b,c} twomar>stepmommar ^b twomar>singlemom ^b twocoh>twomar ^{b,c} twomar>stedadcoh ^{b,c} twomar>grand ^b twomar>others ^{b,c}
School	twomar>stepdadmar ^{b,c} twomar>stepmommar ^{b,c} twomar>singlemom ^{b,c} twomar>singledad ^{b,c} twomar>stedadcoh ^b twomar>stepmomcoh ^b twomar>grand ^{b,c} twomar>others ^b	twomar>stepdadmar ^{b,c} twomar>stepmommar ^{b,c} twomar>singlemom ^{b,c} twomar>singledad ^b twomar>twocoh ^b twomar>stedadcoh ^{b,c} twomar>stepmomcoh ^{b,c} twomar>grand ^{b,c} twomar>others ^{b,c}
Behavior 6-11	twomar>stepdadmar ^b twomar>stepmommar ^c twomar>singlemom ^b twomar>stedadcoh ^b twomar>stepmomcoh ^c twomar>grand ^{b,c} twomar>others ^{b,c}	twomar>stepdadmar ^{b,c} twomar>stepmommar ^{b,c} twomar>singlemom ^{b,c} twomar>stedadcoh ^{b,c} twomar>stepmomcoh ^{b,c} twomar>grand ^{b,c} twomar>others ^{b,c}
Behavior 12-17	twomar>stepdadmar ^{b,c} twomar>stepmommar ^b twomar>singlemom ^{b,c} twomar>singledad ^{b,c} twomar>twocoh ^b twomar>stedadcoh ^{b,c} twomar>stepmomcoh ^c twomar>others ^b	twomar>stepdadmar ^{b,c} twomar>stepmommar ^{b,c} twomar>singlemom ^{b,c} twomar>singledad ^{b,c} twomar>twocoh ^b twomar>stedadcoh ^{b,c} twomar>stepmomcoh ^{b,c} twomar>grand ^{b,c} twomar>others ^{b,c}

Table 24. (continued)

Input	Girls	Boys
1, Health insurance	twomar>singlemom ^a twomar>singledad ^{a,b} twomar>twocoh ^{a,b} twomar>stedadcoh ^{a,b} twomar>grand ^a twomar>others ^{a,b}	twomar>singlemom ^a twomar>singledad ^a twomar>grand ^a twomar>others ^{a,b}
2. Dental visit	twomar>singlemom ^a twomar>stepmomcoh ^{a,b} twomar>grand ^a	twomar>singlemom ^a twomar>singledad ^{a,b} twomar>stepmomcoh ^{a,b}
3. usual source of care	twomar>singlemom ^a twomar>singledad ^{a,b} twomar>stepmomcoh ^{a,b} twomar>grand ^a twomar>others ^{a,b}	twomar>singlemom ^a twomar>singledad ^{a,b} twomar>twocoh ^{a,b} twomar>stepmomcoh ^{a,b} twomar>others ^{a,b}
4. Well-child care	 others>twomar ^{a,b}	stepdadmar>twomar ^{a,b} singlemom>twomar ^b twomar>singledad ^a twomar>stedadcoh ^a grand>twomar ^b
5. Food insecurity	twomar>stepdadmar ^{a,b} twomar>singlemom ^{a,b} twomar>singledad ^{a,b} twomar>twocoh ^{a,b} twomar>stedadcoh ^{a,b} twomar>grand ^a twomar>others ^{a,b}	twomar>stepdadmar ^{a,b} twomar>singlemom ^{a,b} twomar>singledad ^a twomar>twocoh ^{a,b} twomar>stedadcoh ^{a,b} twomar>grand ^a twomar>others ^a
6. No phone	twomar>singlemom ^a twomar>singledad ^{a,b} twomar>twocoh ^{a,b} twomar>stedadcoh ^{a,b} twomar>grand ^b	twomar>stepmommar ^{a,b} twomar>singledad ^a twomar>twocoh ^{a,b} twomar>grand ^a
7. School stability	twomar>stepdadmar ^{a,b} twomar>stepmommar ^{a,b} twomar>singlemom ^{a,b} twomar>singledad ^{a,b} twomar>stedadcoh ^{a,b} twomar>grand ^{a,b} twomar>others ^{a,b}	twomar>stepdadmar ^{a,b} twomar>stepmommar ^b twomar>singlemom ^{a,b} twomar>singledad ^{a,b} twomar>stedadcoh ^{a,b} twomar>stepmomcoh ^{a,b} twomar>grand ^{a,b} twomar>others ^{a,b}

Table 24. (continued)

8. After-school lessons	twomar>stepdadmar ^a twomar>stepmommar ^{a,b} twomar>singlemom ^a twomar>singledad ^{a,b} twomar>twocoh ^a twomar>stedadcoh ^{a,b} twomar>grand ^{a,b} twomar>others ^{a,b}	twomar>singlemom ^{a,b} twomar>singledad ^a twomar>twocoh ^a twomar>stedadcoh ^{a,b} twomar>stepmomcoh ^{a,b} twomar>grand ^a twomar>others ^a
9. On sports team	twomar>stepmommar ^{a,b} twomar>singlemom ^{a,b} twomar>twocoh ^{a,b} twomar>stedadcoh ^{a,b} twomar>grand ^a	twomar>stepdadmar ^{a,b} twomar>stepmommar ^{a,b} twomar>singlemom ^{a,b} twomar>singledad ^{a,b} twomar>twocoh ^{a,b} twomar>stedadcoh ^{a,b} twomar>grand ^a
10. MKA aggravation	twomar>singlemom ^{a,b} singledad>twomar ^{a,b} twomar>stedadcoh ^{a,b} twomar>others ^{a,b}	twomar>stepdadmar ^{a,b} twomar>singlemom ^{a,b} twomar>twocoh ^{a,b} twomar>stedadcoh ^{a,b} twomar>stepmomcoh ^{a,b} twomar>grand ^{a,b} twomar>others ^{a,b}
11. MKA mental health	twomar>stepdadmar ^{a,b} twomar>singlemom ^{a,b} twomar>twocoh ^a twomar>stedadcoh ^{a,b} twomar>grand ^{a,b} twomar>others ^a	twomar>stepdadmar ^{a,b} twomar>singlemom ^{a,b} twomar>singledad ^{a,b} twomar>twocoh ^{a,b} twomar>stedadcoh ^{a,b} twomar>stepmomcoh ^{a,b} twomar>grand ^{a,b}

Note: ">" indicates the family structure before the sign is associated with more desirable outcomes or higher level of inputs than the family structure after the sign, regardless of whether the outcomes/inputs are positive or negative.

Table 25. The Gender of the Biological Parent in Single-Parent and Stepparent Families (Regression Results Stratified by Child Gender)

<i>Single-father vs. single-mother families</i>		
Outcomes	Girls	Boys
Current health		singledad>singlemom ^{b,c}
Health getting worse		singledad>singlemom ^{b,c}
Morbidity		singledad>singlemom ^b
School		
Behavior 6-11		singledad>singlemom ^b
Behavior 12-17		singlemom>singledad ^c
Inputs		
1.Health insurance	singlemom>singledad ^b	singlemom>singledad ^b
2.Dental visit		singlemom>singledad ^{a,b}
3.Usual source of care	singlemom>singledad ^b	singlemom>singledad ^{a,b}
4.Well-child care		singlemom>singledad ^{a,b}
5.Food insecurity	singledad>singlemom ^{a,b}	singledad>singlemom ^{a,b}
6.No phone	singlemom>singledad ^b	
7.School stability		
8.After-school lessons		
9.On sports team		
10.MKA aggravation	singledad>singlemom ^{a,b}	singledad>singlemom ^{a,b}
11.MKA mental health	singledad>singlemom ^{a,b}	singledad>singlemom ^{a,b}
<i>Married stepfather vs. married stepmother families</i>		
	stepmommar vs. stepdadmar	stepmommar vs. stepdadmar
Outcomes	Girls	Boys
Current health		stepdadmar>stepmommar ^c
Health getting worse		stepmommar>stepdadmar ^b
Morbidity	stepdadmar>stepmommar ^{b,c}	
School	stepdadmar>stepmommar ^c	
Behavior 6-11		
Behavior 12-17		stepdadmar>stepmommar ^{b,c}
Inputs		
1.Health insurance		
2.Dental visit		stepdadmar>stepmommar ^b
3.Usual source of care		
4. Well-child care		
5.Food insecurity	stepmommar>stepdadmar ^{a,b}	
6.No phone		stepmommar>stepdadmar ^{a,b}
7.School stability		
8.After-school lessons		
9.On sports team	stepdadmar>stepmommar ^{a,b}	
10.MKA aggravation		
11.MKA mental health	stepmommar>stepdadmar ^{a,b}	

Table 25. (continued)

<i>Cohabiting stepfather vs. cohabiting stepmother families</i>		
	stepdadcoh vs. stepmomcoh	stepdadcoh vs. stepmomcoh
Outcomes	Girls	Boys
Current health		
Health getting worse	stepmomcoh>stepdadcoh ^{b,c}	stepmomcoh>stepdadcoh ^{b,c}
Morbidity		
School		
Behavior 6-11		
Behavior 12-17		
Inputs		
1.Health insurance	stepmomcoh>stepdadcoh ^{a,b}	
2.Dental visit	stepdadcoh>stepmomcoh ^{a,b}	stepdadcoh>stepmomcoh ^{a,b}
3.Usual source of care		stepdadcoh>stepmomcoh ^{a,b}
4.Well-child care		
5.Food insecurity	stepmomcoh>stepdadcoh ^{a,b}	
6.No phone		
7.School stability	stepmomcoh>stepdadcoh ^{a,b}	
8.After-school lessons		
9.On sports team		stepmomcoh>stepdadcoh ^{a,b}
10.MKA aggravation	stepmomcoh>stepdadcoh ^{a,b}	
11.MKA mental health	stepmomcoh>stepdadcoh ^{a,b}	

Note: (1) ">" indicates the family structure before the sign is associated with more desirable outcomes or higher level of inputs than the family structure after the sign, regardless of whether the outcomes/inputs are positive or negative.

(2) Subscript "a" indicates dependant variables include basic child, MKA and family characteristics, "b" indicates that economic resources are added, and "c" indicates that both economic resources and inputs are added.

Table 26. The Presence of a Stepfather (Regression Results Stratified by Child Gender)

<i>Cohabiting stepfather vs. single-mother families</i>		
Outcomes	Girls	Boys
Current health		
Health getting worse		
Morbidity		singlemom>stepdadcoh ^c
School		singlemom>stepdadcoh ^{b,c}
Behavior 6-11		
Behavior 12-17		
Inputs		
1.Health insurance	singlemom>stepdadcoh ^{a,b}	
2.Dental visit		
3.Usual source of care		
4.Well-child care		singlemom>stepdadcoh ^{a,b}
5.Food insecurity		stepdadcoh>singlemom ^a
6.No phone		
7.School stability		
8.After-school lessons	singlemom>stepdadcoh ^b	
9.On sports team		stepdadcoh>singlemom ^b
10.MKA aggravation	singlemom>stepdadcoh ^{a,b}	
11.MKA mental health		
<i>Married stepfather vs. single-mother families</i>		
Outcomes	Girls	Boys
Current health	stepdadmar>singlemom ^b	
Health getting worse		
Morbidity		
School		singlemom>stepdadmar ^c
Behavior 6-11		
Behavior 12-17	stepdadmar>singlemom ^b	singlemom>stepdadmar ^c
Inputs		
1.Health insurance	stepdadmar>singlemom ^a	
2.Dental visit		stepdadmar>singlemom ^a
3.Usual source of care	stepdadmar>singlemom ^a	singlemom>stepdadmar ^b
4.Well-child care		
5.Food insecurity	stepdadmar>singlemom ^{a,b}	stepdadmar>singlemom ^{a,b}
6.No phone		
7.School stability		
8.After-school lessons	stepdadmar>singlemom ^a	stepdadmar>singlemom ^{a,b}
9.On sports team	stepdadmar>singlemom ^a	stepdadmar>singlemom ^a
10.MKA aggravation		
11.MKA mental health	stepdadmar>singlemom ^{a,b}	stepdadmar>singlemom ^{a,b}

Table 26. (continued)

<i>Married stepfather vs. Cohabiting stepfather families</i>		
Outcomes	Girls	Boys
Current health		
Health getting worse		
Morbidity		
School		
Behavior 6-11		
Behavior 12-17	stepdadmar>stepdadcoh ^b	
Inputs		
1.Health insurance	stepdadmar>stepdadcoh ^{a,b}	
2.Dental visit		
3.Usual source of care		
4.Well-child care		stepdadmar>stepdadcoh ^{a,b}
5.Food insecurity	stepdadmar>stepdadcoh ^{a,b}	stepdadmar>stepdadcoh ^{a,b}
6.No phone		
7.School stability		
8.After-school lessons	stepdadmar>stepdadcoh ^{a,b}	stepdadmar>stepdadcoh ^{a,b}
9.On sports team	stepdadmar>stepdadcoh ^{a,b}	stepdadmar>stepdadcoh ^{a,b}
10.MKA aggravation	stepdadcoh>stepdadmar ^{a,b}	
11.MKA mental health	stepdadmar>stepdadcoh ^{a,b}	stepdadmar>stepdadcoh ^{a,b}

Note: (1)">" indicates the family structure before the sign is associated with more desirable outcomes or higher level of inputs than the family structure after the sign, regardless of whether the outcomes/inputs are positive or negative.

(2) Subscript "a" indicates dependant variables include basic child, MKA and family characteristics, "b" indicates that economic resources are added, and "c" indicates that both economic resources and inputs are added.

Table 27. The Presence of a Stepmother (Regression Results Stratified by Child Gender)

<i>Cohabiting stepmother vs. single-father families</i>		
Outcomes	Girls	Boys
Current health		singledad>stepmomcoh ^{b,c}
Health getting worse		
Morbidity		
School		singledad>stepmomcoh ^b
Behavior 6-11		
Behavior 12-17		
Inputs		
1.Health insurance	stepmomcoh>singledad ^{a,b}	
2.Dental visit	singledad>stepmomcoh ^{a,b}	singledad>stepmomcoh ^b
3.Usual source of care		
4.Well-child care		
5.Food insecurity	stepmomcoh>singledad ^{a,b}	
6.No phone		
7.School stability		
8.After-school lessons		singledad>stepmomcoh ^{a,b}
9.On sports team		stepmomcoh>singledad ^{a,b}
10.MKA aggravation		singledad>stepmomcoh ^{a,b}
11.MKA mental health		stepmomcoh>singledad ^b
<i>Married stepmother vs. single-father families</i>		
Outcomes	girls	Boys
Current health		singledad>stepmommar ^{b,c}
Health getting worse		
Morbidity		singledad>stepmommar ^{b,c}
School		
Behavior6-11		singledad>stepmommar ^c
Bhavior12-17		singledad>stepmommar ^b
Inputs		
1.Health insurance	stepmommar>singledad ^{a,b}	stepmommar>singledad ^a
2.Dental visit		
3.Usual source of care		stepmommar>singledad ^a
4.Well-child care		
5.Food insecurity	stepmommar>singledad ^a	
6.No phone		
7.School stability		
8.After-school lessons		
9.On sports team		
10.MKA aggravation	stepmommar>singledad ^{a,b}	stepmommar>singledad ^{a,b}
11.MKA mental health		

Table 27. (continued)

<i>Married stepmother vs. cohabiting stepmother families</i>		
Outcomes	girls	Boys
Current health		
Health getting worse		
Morbidity		
School		
Behavior 6-11		
Behavior 12-17		
Inputs		
1.Health insurance		
2.Dental visit	stepmommar>stepmomcoh ^{a,b}	stepmommar>stepmomcoh ^{a,b}
3.Usual source of care		
4.Well-child care		
5.Food insecurity		
6.No phone		
7.School stability		
8.After-school lessons		stepmommar>stepmomcoh ^{a,b}
9.On sports team		stepmomcoh>stepmommar ^{a,b}
10.MKA aggravation		stepmommar>stepmomcoh ^{a,b}
11.MKA mental health		stepmommar>stepmomcoh ^{a,b}

Note: (1) ">" indicates the family structure before the sign is associated with more desirable outcomes or higher level of inputs than the family structure after the sign, regardless of whether the outcomes/inputs are positive or negative.

(2) Subscript "a" indicates dependant variables include basic child, MKA and family characteristics, "b" indicates that economic resources are added, and "c" indicates that both economic resources and inputs are added.

Table 28. Grandparent vs. Other Non-parental Families (Regression Results Stratified by Child Gender)

Outcomes	Girls	Boys
Current health		others>grand ^{b,c}
Health getting worse		
Morbidity		grand>others ^c
School		grand>others ^{b,c}
Behavior 6-11		
Behavior 12-17		grand>others ^{b,c}
Inputs		
1.Health insurance	grand>others ^b	
2.Dental visit		
3.Usual source of care		grand>others ^b
4.Well-child care	grand>others ^a	
5.Food insecurity		others>grand ^a
6.No phone		
7.School stability		
8.After-school lessons		
9.On sports team	grand>others ^b	grand>others ^b
10.MKA aggravation		others>grand ^{a,b}
11.MKA mental health		others>grand ^{a,b}

Note: (1) ">" indicates the family structure before the sign is associated with more desirable outcomes or higher level of inputs than the family structure after the sign, regardless of whether the outcomes/inputs are positive or negative.

(2) Subscript "a" indicates dependant variables include basic child, MKA and family characteristics, "b" indicates that economic resources are added, and "c" indicates that both economic resources and inputs are added.

REFERENCES

- Abi-Habib, Natalie, Adam Safir and Timothy Triplett. 2004. "NSAF 2002 Methodology Series Report No. 1: Survey Methods and Data Reliability." Washington D.C.: Urban Institute.
- Acs, Gregory and Sandra Nelson. 2002. "The Kids Are Alright? Children's Well-Being and the Rise in Cohabitation." New Federalism National Survey of America's Families B-48. Washington, D.C.: Urban Institute.
- Amato, Paul R. 1994. "Father-Child Relations, Mother-Child Relations, and Offspring Psychological Well-Being in Early Adulthood." *Journal of Marriage and the Family*, Vol. 56, Issue 4, pp. 1031-1042.
- Bartley, Mel, David Blane and Scott Montgomery. 1997. "Health and the Life-course: Why Safety Nets Matter." *British Medical Journal*, Vol. 314, Issue 7088, pp. 1194-1196.
- Bauman, Kurt J. and Camille L. Ryan. 2001. "What's It Worth?" Field of Training and Economic Status: 1996. Current Population Reports, pp. 70-72. Washington, D.C.: U.S. Census Bureau.
- Becker, Gary S. 1965. "A Theory of the Allocation of Time." *Economics Journal*, Vol. 75, Issue 299, pp. 493-517.
- Becker, Gary S. 1981. *A Treatise on the Family*. Cambridge: Harvard University Press.
- Becker, Gary S. 1993. "Nobel Lecture: The Economic Way of Looking at Behavior." *The Journal of Political Economy*, Vol. 101, Issue 3, pp. 385-409.
- Becker Gary S. and H. Gregg Lewis. 1973. "On the Interaction between the Quantity and Quality of Children." *The Journal of Political Economy*, Vol. 81, Issue 2, Part 2: New Economic Approaches to Fertility, pp. S279-S288.
- Becker, Gary S. and Nigel Tomes. 1976. "Child Endowments and the Quantity and Quality of Children." *The Journal of Political Economy*, Vol. 84, Issue 4, Part 2: Essays in Labor Economics in Honor of H. Gregg Lewis, pp. S143-S162.
- Behrman, Jere R., Robert A. Pollak and Paul Taubman. 1989. "Family Resources, Family Size, and Access to Financing for College Education." *The Journal of Political Economy*, Vol. 97, Issue 2, pp. 398-419.
- Bengtson, Vern L. 1985. "Diversity and Symbolism in Grandparental Roles." In *Grandparenthood*, ed. Vern L. Bengtson, Joan F. Robertson. Beverly Hills: Sage Publications.

- Bertrand, Marianne, Sendhil Mullainathan. 2004. "Are Emily and Greg More Employable Than Lakisha and Jamal? A Field Experiment on Labor Market Discrimination." *American Economic Review*, Vol. 94, Issue 4, pp. 991-1013.
- Biblarz, Timothy J. and Adrian E Raftery. 1999. "Family Structure, Educational Attainment, and Socioeconomic Success: Rethinking the Pathology of Matriarchy." *The American Journal of Sociology*, Vol. 105, Issue 2, pp. 321-365.
- Biblarz, Timothy J. and Gottainer Greg. 2000. "Family Structure and Children's Success: A Comparison of Windowed and Divorced Single-Mother Families." *Journal of Marriage and Family*, Vol. 62, Issue 2, pp. 533-548.
- Bielby, William T and Denise D. Bielby. 1989. "Family Ties: Balancing Commitments to Work and Family in Dual Earner Households." *American Sociological Review*, Vol. 54, Issue 5, pp. 775-789.
- Bird, J. Elisabeth and Linda S. Berman. 1985. "Differing Perceptions of Mothers, Fathers, and Children Concerning Children's Academic Performance." *The Journal of Psychology*, Vol. 119, Issue 2, pp. 113-124.
- Blair, Sampson Lee, DeeAnn Wenk and Constance Hardesty. 1994. "Marital Quality and Paternal Involvement: Interconnections of Men's Spousal and Parental Roles." *The Journal of Men's Studies*, Vol. 2, Issue 3, pp. 221-238.
- Blane, David, Lee Berney, George Davey Smith, David J. Gunnell and Paula Holland. 1999. "Reconstructing the Life-course: Health during Early Old Age in a Follow-up Study Based on the Boyd Orr cohort." *Public Health*, Vol. 113, Issue 3, pp. 117-124.
- Blau, Francine D. and Adam J. Grossberg. 1992. "Maternal Labor Supply and Children's Cognitive Development." *The Review of Economics and Statistics*, Vol. 74, Issue 3, pp. 474-481.
- Bluestone, Cheryl and Catherine S. Tamis-LeMonda. 1999. "Correlates of Parenting Styles in Predominantly Working and Middle-class African American Mothers." *Journal of Marriage and the Family*, Vol. 61, Issue 4, pp. 881-893.
- Bogges, Scott. 1998. "Family Structure, Economic Status, and Educational Attainment." *The Journal of Population Economics*, Vol. 11, Issue 2, pp. 205-222.
- Bound, John. 1991. "Self-Reported Versus Objective Measures of Health in Retirement Models." *The Journal of Human Resources*, Vol. 26, Issue 1, pp. 106-138.
- Bradley, Robert H., Stephen L. Rock, Bettye M. Caldwell, Pandia T. Harris and Holly M. Hamrick. 1987. "Home Environment and School Performance among Black Elementary School Children." *Journal of Negro Education*, Vol. 56, Issue 4, pp. 499-509.
- Brick, J. Michael, Ismael Flores-Cervantes and David Cantor. 1997. *NSAF Response Rates and Methods. Methodology Report 8*. The Urban Institute: Washington, DC.

- Brown EJ, Jemmott LS, Outlaw FH, Wilson G, Howard M and Curtis S. 2000. "African American Grandmothers' Perceptions of Caregiver Concerns Associated with Rearing Adolescent Grandchildren." *Archives of Psychiatric Nursing*, Vol. 14, Issue 2, pp. 73-80.
- Brown, Susan. 2004. "Family Structure and Child Well-Being: The Significance of Parental Cohabitation." *Journal of Marriage and Family*, Vol. 66, Issue 2, pp. 351-367.
- Bruno, Rosalind R. 1995. "What's It Worth?" Field of Training and Economic Status: 1993. Current Population Reports, pp. 70-51. Washington, D.C.: U.S. Census Bureau.
- Bryk, Anthony S. and Yeow Meng Thum. 1989. "The Effects of High School Organization on Dropping Out: An Exploratory Investigation." *American Educational Research Journal*, Vol. 26, Issue 3, pp. 353-383.
- Bumpass, Larry and Hsien-Hen Lu. 2000. "Trends in Cohabitation and Implications for Children's Family Contexts in the United States." *Population Studies*, Vol. 54, Issue 1, pp. 29-41.
- Burton, Linda.M. and Peggye Dilworth-Anderson. 1991. "The Intergenerational Roles of Aged Black Americans." *Marriage and Family Review*, Vol. 16, Issue 3/4, pp. 311-330.
- Burton, Linda M. 1992. "Black Grandparents Rearing Children of Drug-Addicted Parents: Stressors, Outcomes, and Social Service Needs." *Gerontologist*, Vol. 32, Issue 6, pp. 744-751.
- Burton, Linda. M., Peggye Dilworth-Anderson and Cynthia Merriwether-deVries. 1995. "Context and Surrogate Parenting Among Contemporary Grandparents." *Marriage and Family Review*, Vol. 20, Issue 3, pp. 349-366.
- Butler J. S., Richard V. Burkhauser, Jean M. Mitchell and Theodore P. Pincus. 1987. "Measurement Error in Self-Reported Health Variables." *The Review of Economics and Statistics*, Vol. 69, Issue 4, pp. 644-650.
- Bronstein, Phyllis, JoAnn Clauson, Miriam Frankel Stoll and Craig L. Abrams. 1993. "Parenting Behavior and Children's Social, Psychological, and Academic Adjustment in Diverse Family Structures." *Family Relations*, Vol. 42, Issue 3, Family Diversity, pp. 268-276.
- Caliandro, Gloria and Cynthia B. Hughes. 1998. "The Experience of Being a Grandmother Who is the Primary Caregiver for Her HIV-positive Grandchildren." *Nursing Research*, Vol. 47, Issue 2, pp. 107-113.
- Case, Anne, I-Fen Lin and Sara McLanahan. 1999. "Household Resource Allocation in Stepfamilies: Darwin Reflects on the Plight of Cinderella." *American Economic Review*, Vol. 89, Issue 2, pp. 234-238.

- Case, Anne, Darren Lubotsky and Christina Paxson. 2002. "Economic Status and Health in Childhood: The Origins of the Gradient." *American Economic Review*, Vol. 92, Issue 5, pp. 1308-1334.
- Case, Anne, Angela Fertig and Christina Paxson. 2005. "The Lasting Impact of Childhood Health and Circumstance." *Journal of Health Economics*, Vol. 24, Issue 2, pp. 365-389.
- Casper, Lynne.M. 1997. "My Daddy Takes Care of Me! Fathers as Care Providers." *Current Population Reports: Household Economic Studies*. Washington D. C.: Census Bureau, U.S. Department of Commerce.
- Casper, Lynne M. and Kenneth R. Bryson. 1998. "Co-resident Grandparents and Their Grandchildren: Grandparent Maintained Families." Population Division, U.S. Bureau of the Census, Working Paper No. 26
- Caspi, A., Begg, D., Dickson, N., Langley, J., Moffitt, T.E., McGee, R. and Silva, P.A. 1995. "Identification of Personality Types at Risk for Health and Injury Outcomes in Late Adolescence." *Criminal Behaviour and Mental Health*, Vol. 5, pp. 330-350.
- Chalfie, Deborah. 1994. "Going It Alone: A Closer Look at Grandparents Rearing Grandchildren." Washington, D.C.: American Association of Retired Persons.
- Chase-Lansdale, Lindsay P. 1998. "How Developmental Psychologists Think About Family Process and Child Development in Low Income Family." Northwestern/University of Chicago Joint Poverty Research Center, Chicago. (<http://www.jcpr.org/>)
- Chiappori, Pierre-Andre. 1991. "Nash-Bargained Household Decisions: A Rejoinder." *International Economic Review*, Vol. 32, Issue 3, pp. 761-762.
- Chirikos, Thomas N. and Gilbert Nestel. 1985. "Further Evidence on the Economic Effects of Poor Health." *The Review of Economics and Statistics*, Vol. 67, Issue 1, pp. 61-69.
- Chu, Susan Y, Lawrence E. Barker, Philip J. Smith. 2004. "Racial/Ethnic Disparities in Preschool Immunizations: United States. 1996—2001." *American Journal of Public Health*, Vol. 94, Issue 6, pp. 973-978.
- Connell, James Patrick, Margaret Beale Spencer and J. Lawrence Aber. 1994. "Educational Risk and Resilience in African-America Youth: Context, Self, Action, and Outcomes in School." *Child Development*, Vol. 65, Issue 2, pp. 493-506.
- Converse, Nate, Adam Safir, Fritz Scheuren, Rebecca Steinbach and Kevin Wang. 2001. *1999 NSAF Public Use File Data Documentation, No 11*. Washing D.C.: Urban Institute
- Conway, Karen and Andrew Houtenville. 2002. "Allocating Resources to Student Achievement -- Home versus School, Boys versus Girls." Working paper.

- Conway, Karen S. and Lisa D. Kennedy. 2004. "Maternal Depression and the Production of Infant Health." *Southern Economic Journal*, Vol. 71, Issue 2, pp. 260-286.
- Cooksey, Elizabeth C. and Michelle M. Fondell. 1996. "Spending Time with His Kids: Effects of Family Structure on Fathers' and Children's Lives." *Journal of Marriage and the Family*, Vol. 58, Issue3, pp. 693-707.
- Cooksey, Elizabeth C. 1997. "Consequences of Young Mothers' Marital Histories for Children's Cognitive Development." *Journal of Marriage and the Family*, Vol. 59, Issue 2, pp. 245-261.
- Corman, Hope and Robert Kaestner. 1992. "The Effects of Child Health on Marital Status and Family Structure." *Demography*, Vol. 29, Issue3, pp. 389-408.
- Crosnoe, Robert. 2002. "High School Curriculum Track and Adolescent Association with Delinquent Friends." *Journal of Research on Adolescence*, Vol. 17, Issue 2, pp. 143-168.
- Cunningham, Pat, Gary Shapiro and J. Michael Brick. 1999. *No. 5: 1997 NSAF In-Person Survey Methods*. Washington, D.C.: The Urban Institute.
- Currie, Janet and Rosemary Hyson. 1999. "Is the Impact of Health Shocks Cushioned by Socio-economic Status? The Case of Low Birthweight." *American Economic Review (Papers and Proceeding)*, Vol. 89, Issue 2, pp. 245-250.
- Currie, Janet and Brigitte Madrian. 1999. "Health, Health Insurance and the Labor Market." In: O. Ashenfelter and D. Card, Editors, *Handbook of Labor Economics*, North Holland, Amsterdam, pp. 3309-3407 (Chapter 50).
- Datcher-Loury, Lind. 1988. "Effects of Mother's Home Time on Children's Schooling." *The Review of Economics and Statistics*, Vol. 70, Issue 3, pp. 367-373.
- Davey Smith, George, Carole Hart, David Blane, Charles Gillis and Victor Hawthorne. 1997. "Lifetime Socio-economic Position and Mortality: Prospective Observational Study." *British Medical Journal*, Vol. 314, Issue 7080, pp. 547-552.
- Deliere, Thomas and Ariel Kalil. 2002. "Good Things Come in Threes: Single-Parent Multigenerational Family Structure and Adolescent Adjustments." *Demography*, Vol. 39, Issue3, pp. 393-413.
- Demuth, Stephen and Susan Brown. 2004. "Family Structure, Family Process, and Adolescent Delinquency: The Significance of Parental Absence Versus Parental Gender." *Journal of Research in Crime and Delinquency*, Vol. 41, Issue 1, pp. 58-81.
- Denton, Margaret and Vivienne Walters. 1999. "Gender Differences in Structural and Behavioral Determinants of Health: an Analysis of the Social Production of Health." *Social Science and Medicine*, Vol. 48, Issue 9, pp. 1221-1235.

- Dilworth-Anderson, Peggye. 1994. "The Importance of Grandparents in Extended-kin Caregiving to Black Children with Sickle Cell Disease." *Journal of Health and Social Policy*, Vol. 5, Issue 3-4, pp. 185-202.
- Donohue, John J III, James Heckman. 1991. "Continuous Versus Episodic Change: The Impact of Civil Rights Policy on the Economic Status of Blacks." *Journal of Economic Literature*, Vol. 29, Issue 4, pp. 1603-1643.
- Downey, Douglas B., James W. Ainsworth-Darnell and Mikaela J. Dufur. 1998. "Sex of Parent and Children's Well-Being in Single-Parent Households." *Journal of Marriage and the Family*, Vol. 60, Issue 4, pp. 878-893.
- Downey, Douglas B. and Brian Powell. 1993. "Do Children in Single-Parent Households Fare Better Living with Same-Sex Parents?" *Journal of Marriage and the Family*, Vol. 55, Issue 1, pp. 55-71.
- Downey, Douglas B. 1995. "Understanding Academic Achievement among Children in Stepparent Households: The Role of Parental Resources, Sex of Stepparent, and Sex of Child." *Social Forces*, Vol. 73, Issue 3, pp. 875-894.
- Dressel, Paula L and Sandra K Barnhill. 1994. "Reframing Gerontological Thought and Practice: the Case of Grandmothers with Daughters in Prison." *The Gerontologist*, Vol. 34, Issue 5, pp. 685-690.
- Dubowitz, Howard, Susan Feigelman, Donna Harrington, Raymond Starr, Susan Zuravin and Richard Sawyer. 1994. "Children in Kinship Care: How Do They Fare?" *Children and Youth Services Review*, Vol. 16, Issue 1-2, pp. 85-106.
- Dunifon, Rachel and Lori Kowaleski-Jones. 2002. "Who's in the House? Race Differences in Cohabitation, Single Parenthood, and Child Development." *Child Development*, Vol. 73, Issue 4, pp. 1249-1264.
- Elder, Glen H. Jr. and Charles E. Bowerman. 1963. "Family Structure and Child-Rearing Patterns: The Effect of Family Size and Sex Composition." *American Sociological Review*, Vol. 28, Issue 6, pp. 891-905.
- Ermisch, John F. and Marco Francesconi. 2001. "Family Structure and Children's Achievements." *Journal of Population Economics*, Vol. 14, Issue 2, pp. 249-270.
- Fagan, Jay. 2000. "African American and Puerto Rican American Parenting Styles, Paternal Involvement, and Head Start's Children's Social Competence." *Merrill-Palmer Quarterly*, Vol. 46, pp. 592-612.
- Falbo, Tony. 1991. "The Impact of Grandparents on Children's Outcomes in China." *Marriage and Family Review*, Vol. 16, Issue 3-4, pp. 369-376.
- Farkas, George, Robert P. Grobe, Daniel Sheehan and Yuan Shuan. 1990. "Cultural Resources and School Success: Gender, Ethnicity, and Poverty Groups within an Urban School District." *American Sociological Review*, Vol. 55, Issue 1, pp. 127-142.

- Fields, Jason. 2003. "Children's Living Arrangements and Characteristics: March 2002." Current Population Reports P20-547, Washington, DC: US Census Bureau.
- Figlio, David N. 2005. "Names, Expectations and the Black-White Test Score Gap." NBER Working Paper No.11195
- Fine, Mark A, Patrick C. McKenry, Brenda W. Donnelly and Patricia Voydanoff. 1992. "Perceived Adjustment of Parents and Children: Variations by Family Structure, Race, and Gender." *Journal of Marriage and the Family*, Vol. 54, Issue 1, pp. 118-127.
- Finn, Jeremy D. and Kristin E. Voelkl. 1993. "School Characteristics Related to Student Engagement." *Journal of Negro Education*, Vol. 62, Issue 3, pp. 249-268.
- Finn Jeremy D. and Donald A. Rock. 1997. "Academic Success among Students at Risk for School Failure." *Journal of Applied Psychology*, Vol. 82, Issue 2, pp. 221-234.
- Fredricks, Jennifer A., Phyllis C. Blumenfeld and Alison H. Paris. 2004. "School Engagement: Potential of the Concept, State of the Evidence." *Review of Educational Research*, Vol. 74, Issue 1, pp. 59-109.
- Friedman, Howard S., Joan S. Tucker, Carol Tomlinson-Keasey, Joseph E. Schwartz, Deborah L. Wingard and Michael H. Criqui. 1993. "Does Childhood Personality Predict Longevity?" *Journal of Personality and Social Psychology*, Vol. 65, Issue 1, pp. 176-185.
- Friedman, Howard S., Joan S. Tucker, Joseph E. Schwartz, Leslie R. Martin, Carol Tomlinson-Keasey, Deborah L. Wingard and Michael H. Criqui. 1995. "Childhood Conscientiousness and Longevity: Health Behaviors and Cause of Death." *Journal of Personality and Social Psychology*, Vol. 68, Issue 4, pp. 696-703.
- Fuller-Thomson, Esme, Meredith Minkler and Diane Driver. 1997. "A profile of Grandparents Raising Grandchildren in the United States." *The Gerontologist*, Vol. 37, Issue 3, pp. 406-411.
- Fuller-Thomson, Esme and Meredith Minkler. 2000. "African American Grandparents Raising Grandchildren: A National Profile of Demographic and Health Characteristics." *Health and Social Work*, Vol. 25, Issue 2, pp. 109-119.
- Fuller-Thomson, Esme and Meredith Minkler. 2005. "American Indian/Alaskan Native Grandparents Raising Grandchildren: Findings from the Census 2000 Supplementary Survey." *Social Work*, Vol. 50, Issue 2, pp. 131-139.
- Gardner, J. Emmett, Avraham Scherman, Maria S. Efthimiadis and Shelli K. Shultz. 2004. "Panamanian Grandmothers' Family Relationships and Adjustment to Having a Grandchild with a Disability." *The International Journal of Aging and Human Development*, Vol. 59, Issue4, pp. 305-320.

- Gennetian, Lisa. 2005. "One or Two Parents? Half or Step Siblings? The Effect of Family Composition on Young Children." *Journal of Population Economics*, Vol. 18, Issue 3, pp. 415-436.
- Ginther, Donna K. and Robert A. Pollak. 2000. "Does Family Structure Affect Children's Educational Outcomes?" Working paper.
- Ginther, Donna K. and Robert A. Pollak. 2004. "Does Family Structure Affect Children's Educational Outcomes?" *Demography*, Vol. 41, Issue 4, pp. 671-696.
- Gittleman, Maury and Edward N. Wolff. 2004. "Racial Differences in Patterns of Wealth Accumulation." *Journal of Human Resources*, Vol. 39, Issue 1, pp. 193-228.
- Glick, Paul C. and Graham B. Spanier. 1980. "Married and Unmarried Cohabitation in the United States." *Journal of Marriage and the Family*, Vol. 42, Issue 1, pp. 19-30.
- Goodman, Catherine and Merrill Silverstein. 2002. "Grandmothers Raising Grandchildren: Family Structure and Well-Being in Culturally Diverse Families." *Gerontologist*, Vol. 42, Issue 5, pp. 676-689.
- Graefe, Deborah Roempke and Daniel T. Lichter. 1999. "Life Course Transitions of American Children: Parental Cohabitation, Marriage, and Single Motherhood." *Demography*, Vol. 36, Issue 2, pp. 205-217.
- Grossman, Michael. 1972. "On the Concept of Health Capital and the Demand for Health." *Journal of Political Economy*, Vol. 80, Issue 2, pp. 223-255.
- Gruber, Jonathan. 1997. "Policy Watch: Medicaid and Uninsured Women and Children." *The Journal of Economic Perspectives*, Vol. 11, Issue 4, pp. 199-208.
- Gruber, Jonathan. 2004. "Is Making Divorce Easier Bad for Children? The Long Run Implications of Unilateral Divorce." *Journal of Labor Economics*, Vol. 22, Issue 4, pp. 799-833.
- Hanson, Shirley M. H. and Frederick W. Bozett. 1987. "Fatherhood: A Review and Resources." *Family Relations*, Vol. 36, Issue 3, pp. 333-340.
- Havemen, Robert and Barbara Wolfe. 1995. "The Determinants of Children's Attainments: A Review of Methods and Findings." *Journal of Economic Literature*, Vol. 33, Issue 4, pp. 1829-1879.
- Hayes, Cheryl D (Ed.). 1987. *Risking the Future: Adolescent Sexuality, Pregnancy and Childbearing*. Washington, D.C.: National Academy Press.
- Hofferth, Sandra L. 2003. "Race/Ethnic Differences in Father Involvement in Two-Parent Families." *Journal of Family Issues*, Vol. 24, Issue 2, pp185-217.
- Hrdy, Sarah Blaffer. 1999. *Mother Nature: A History of Mothers, Infants, and Natural Selection*, New York: Pantheon Books.

- Idler Ellen L and Yael Benyamini. 1997. "Self-rated Health and Mortality: a Review of Twenty-seven Community Studies." *Journal of Health and Social Behavior*, Vol. 38, Issue 1, pp. 21-37.
- Jarrett, Robin L. 1990. "A Comparative Examination of Socialization Patterns among Low Income African Americans, Chicanos, Puerto Ricans, and Whites: A Review of the Ethnographic Literature." *Report to the Social Science Research Council*.
- Jenkins, Patricia. 1995. "School Delinquency and School Commitment." *Sociology of Education*, Vol. 68, Issue 3, pp. 221-239.
- Joslin, Daphne and Anne Brouard. 1995. "The Prevalence of Grandmothers as Primary Caregivers in a Poor Pediatric Population." *Journal of Community Health*, Vol. 20, Issue 5, pp. 383-401.
- Kamo, Yoshinori. 1998. "Asian Grandparents." In *Handbook on grandparenthood*, ed Szinovacz, ME. Westport, CT: Greenwood Press.
- Kamo, Yoshinori. 2000. "Racial and Ethnic Differences in Extended Family Households." *Sociological Perspectives*, Vol. 43, Issue 2, pp. 211-229.
- Katzev, Aphra R., Rebecca L. Warner and Alan C. Acock. 1994. "Girls or Boys? Relationship of Child Gender to Marital Instability." *Journal of Marriage and the Family*, Vol. 56, Issue 1, pp. 89-100.
- Kelleher, Maureen. 2002. "Grandparent Guardians on the Rise." *Catalyst*. (available online at <http://www.catalyst-chicago.org/11-02/1102brown.htm>).
- Ketsetzis, Maria, Bruce A. Ryan and Gerald R. Adams. 1998. "Family Processes, Parent-Child Interactions, and Child Characteristics Influencing School-Based Social Adjustment." *Journal of Marriage and the Family*, Vol. 60, Issue 2, pp. 374-387.
- King, Valerie. 1994. "Variation in the Consequences of Nonresident Father Involvement for Children's Well-Being." *Journal of Marriage and the Family*, Vol. 56, Issue 4, pp 963-972.
- Kuh, Diana and Michael. Wadsworth. 1991. "Childhood Influences on Adult Male Earnings in a Longitudinal Study." *British Journal of Sociology*, Vol. 42, Issue 4, pp. 537-555.
- Kuh, Diana and Yoav Ben-Shlomo. 1997. "Introduction: a Life-course Approach to the Aetiology of Adult Chronic Disease." In: Kuh, Diana, Yoav Ben-Shlomo (Eds.), *A Life-course Approach to Chronic Disease Epidemiology*. Oxford University Press, Oxford, pp. 3-14.
- Lamb, Michael E. 1987. "Introduction: The Emergent American Father." In M. Lamb (Ed.), *The Father's Role: Cross-cultural Perspectives*, pp. 3-25. Hillsdale, New Jersey: Lawrence Erlbaum Associates.
- Lamborn, Susie, B., Bradford Brown, Nina Mounts and Laurence Steinberg. 1992. "Putting School in Perspective: The Influence of Family, Peers, Extracurricular

- Participation, and Part-Time Work on Academic Engagement.” pp. 153-181 in *Student Engagement and Achievement in American Secondary Schools*, (ed) Fred M Newmann, New York: Teachers College Press.
- Lang, Kevin and Jay L Zagorsky. 2001. „Does Growing Up With A Parent Absent Really Hurt?” *Journal of Human Resources*, Vol. 36, Issue 2, pp. 253-273.
- Lee, Valerie E. and Julia B. Smith. 1995. “Effects of High School Restructuring and Size on Early Gains in Achievement and Engagement.” *Sociology of Education*, Vol. 68, Issue 4, pp. 241-270.
- Lugaila, Terry A. 1998. “Marital Status and Living Arrangements: March 1997.” Bureau of the Census, Current Population Reports.
- Lundberg, Shelly and Robert A. Pollak. 1996. “Bargaining and Distribution in Marriage.” *The Journal of Economic Perspectives*, Vol. 10, Issue 4, pp. 139-158.
- Lundberg, Shelly and Robert A. Pollak. 1994. “Noncooperative Bargaining Models of Marriage.” *The American Economic Review*, Vol. 84, Issue 2, Papers and Proceedings of the Hundred and Sixth Annual Meeting of the American Economic Association, pp. 132-137.
- MacPhee, David, Janet Fritz and Jan Miller-Heyl. 1996. “Ethnic Variations in Personal Social Networks and Parenting.” *Child Development*, Vol. 67, Issue 6, pp. 3278-3295.
- Manning, Wendy D. 2001. “Childbearing in Cohabiting Unions: Racial and Ethnic Differences.” *Family Planning Perspectives*, Vol. 33, Issue 5, pp. 217-223.
- Manning, Wendy D. 2002. “The Implications of Cohabitation for Children’s Well-Being”, In *Just Living Together: Implications for Children, Families, and Public Policy*, edited by A. Booth and A.C. Crouter. Mahwah, N.J.: Erlbaum.
- Manning, Wendy D. and Kathleen Lamb. 2003. “Adolescent Well-Being in Cohabiting, Married, and Single-parent families.” *Journal of Marriage and the Family*, Vol. 65, Issue 4, pp. 876–893.
- Manning, Wendy D. and Daniel Lichter, 1996. “Parental Cohabitation and Children’s Economic Well-Being.” *Journal of Marriage and the Family*, Vol. 58, Issue 4, pp. 998-1010.
- Manning, Wendy D. and Ronald Bulanda. 2003. “Parental Cohabitation Experience and Adolescent Behavioral Outcomes.” Working Paper 03-03. Bowling Green, Ohio: Center for Family and Demographic Research.
- Manser Marilyn and Murray Brown. 1980. “Marriage and Household Decision-Making: A Bargaining Analysis.” *International Economic Review*, Vol. 21, Issue 1, pp. 31-44.
- Manski, Charles F., Gary D. Sandefur, Sara McLanahan and Daniel A. Powers. 1992. “Alternative Estimates of the Effect of Family Structure During Adolescence on

- High School Graduation.” *Journal of the American Statistical Association*, Vol. 87, Issue 417, pp. 25-37.
- Marchant, Mary A. 1997. “Bargaining Models for Farm Household Decision Making: Discussion.” *American Journal of Agricultural Economics*, Vol. 79, Issue 2, pp. 602-604.
- Mare, Robert D. 1990. “Socio-economic Careers and Differential Mortality among Older Men in the United States.” In: Vallin, Jacques, Stan D'Souza, Alberto Palloni (Eds.), *Measurement and Analysis of Mortality: New Approaches*. Oxford: Clarendon Press.
- Margo, Robert A. 2004. “Historical Perspectives on Racial Economic Differences: A Summary of Recent Research.” NBER Reporter, pp. 18-22.
- Marra, C. A., L. D. Lynd, J. M. Esdaile, J. Kopec1 and A. H. Anis1. 2004. “The Impact of Low Family Income on Self-Reported Health Outcomes in Patients with Rheumatoid Arthritis within a Publicly Funded Health-Care Environment.” *Rheumatology*, Vol. 43, Issue 11, pp. 1390-1397.
- Martyn, Christopher N. 1991. “Childhood Infection and Adult Disease.” In: *The Childhood Environment and Adult Disease, Ciba Foundation Symposium*. Chichester: Wiley, pp. 93-108.
- Matthewsa, Sharon, Orly Manorb and Chris Power. 1999. “Social Inequalities in Health: Are There Gender Differences?” *Social Science and Medicine*, Vol. 48, Issue 1, pp. 49-60.
- Mauldon, Jane. 1990. “The Effect of Marital Disruption on Children’s Health.” *Demography*, Vol. 27, Issue3, pp. 431-446.
- McLanahan, Sara and Gary Sandefur. 1994. *Growing Up with a Single Parent: What Hurts, What Helps*. Cambridge: Harvard University Press.
- McNulty, Thomas L. and Paul E. Bellair. 2003. “Explaining Racial and Ethnic Differences in Serious Adolescent Violent Behavior.” *Criminology*, Vol. 41, Issue 3, pp.709-749.
- Merle R, Kataoka-Yahiro, Clementina Ceria and Marian Yoder. 2004. “Grandparent Caregiving Role in Filipino American Families.” *Journal of Culture Diversity*, Vol. 11, Issue 3, pp. 110-117.
- Minkler, Meredith and Esme Fuller-Thomson. 2005. “African American Grandparents Raising Grandchildren: A National Study Using the Census 2000 American Community Survey.” *Journals of Gerontology: Series B: Psychological Sciences and Social Sciences*, 60B, pp. S82-S92.
- Morgan, S.P., Lye, D.N., and Condran, G.A. 1988. “Sons, Daughters, and the Risk of Marital Disruption.” *American Journal of Sociology*, Vol. 94, Issue 1, pp. 110-129.

- Mott, Frank L. 1990. "When is a Father Really Gone? Parental-child Contact in Father-Absent Homes." *Demography*, Vol. 27, Issue 4, pp. 499-517.
- Mott, Frank L. 1993. "Sons, Daughters, and Father's Absence: Differentials in Father-Leaving Probabilities and in Home Environments." *Journal of Family Issues*, Vol. 15, Issue 1, pp. 97-128.
- Mott, Frank L., Lori Kowaleski-Jones and Elizabeth G. Menaghan. 1997. "Paternal Absence and Child Behavior: Does a Child's Gender Make a Difference?" *Journal of Marriage and the Family*, Vol. 59, Issue 1, pp. 103-118.
- Mulligan, Casey B. 1997. *Parental Priorities and Economic Inequality*, Chicago: University of Chicago Press.
- Mushkin, Selma J. 1962. "Health as an Investment." *The Journal of Political Economy*, Vol. 70, Issue 5, Part 2: Investment in Human Beings, pp. 129-157.
- Nasuti, John P., Reginald York and Karen Sandell. 2004. "Comparison of Role Perceptions of White and African American Foster Parents." *Child Welfare*, Vol. 83, Issue 1, pp. 49-68.
- National Center for Health Statistics. 1995. *Report to Congress on Out-of-wedlock Childbearing*. Hyattsville, MD: National Center for Health Statistics.
- Neal, Derek. 2001. "The Economics of Family Structure." NBER Working Papers No. 8519.
- Nelson, Sandi, Rebecca L. Clark and Gregory Acs. 2001. "Beyond the Two-Parent Family: How Teenagers Fare in Cohabiting Couple and Blended Families." Series B, No. B-31. Washington, D.C.: Urban Institute.
- Newmann, Fred, Gary Wehlage and Susie Lamborn. 1992. "The Significance and Sources of Student Engagement." pp. 11-39. in *Student Engagement and Achievement in American Secondary Schools*, edited by Fred Newmann. New York: Teachers College Press.
- Nord, Christine Winquis, DeeAnn Brimhall and Jerry West. 1997. *Father's Involvement in Schools*. Washington D. C.: U.S. Department of Education.
- Osborne, Cynthia, Sara McLanahan and Jeanne Brooks-Gunn. 2003. "Young Children's Behavioral Problems in Married and Cohabiting Families." Center for Research on Child Well-Being Working Paper No. 03-09-FF
- Osborne, Cynthia, Wendy Manning and Pamela Smock. 2004. "Instability in Fragile Families: The Role of Race-Ethnicity, Economics, and Relationship Quality." Working Paper.
- Osborne, Cynthia and Sara McLanahan. 2004. "The Effects of Partnership Instability on Parenting and Young Children's Health and Behavior." Center for Research on Child Well-Being Working Paper No. 04-16-FF.

- Osborne, Cynthia. 2005. "Marriage following the Birth of a Child of Cohabiting and Visiting Parents." *Journal of Marriage and the Family*, Vol. 67, Issue 1, pp. 14-26.
- Painter, Gary and David I. Levine. 2000. "Family Structure and Youths' Outcomes." *Journal of Human Resources*, Vol. 35, Issue 3, pp. 524-549.
- Pebbley, Anne R., Laura L. Rudkin. 1999. "Grandparents Caring for Grandchildren: What Do We Know?" *Journal of Family Issues*, Vol. 20, Issue 2, pp. 218-242.
- Pitt, Mark M. and Mark R. Rosenzweig. 1990. "Estimating the Intrahousehold Incidence of Illness: Child Health and Gender-Inequality in the Allocation of Time." *International Economic Review*, Vol. 31, Issue 4, pp. 969-989.
- Powell, Brian and Douglas B. Downey. 1997. "Living in Single-Parent Households: An Investigation of the Same-Sex Hypothesis." *American Sociological Review*, Vol. 62, Issue 4, pp. 521-539.
- Prater, Loretta Pinkard. 1995. "Never Married. Biological Teen Mother Headed Household." In: *Marriage and Family Review*, Vol. 20, Issue 3/4, pp. 305-324.
- Pruchno, Rachel A. 1999. "Raising Grandchildren: the Experiences of Black and White Grandmothers." *The Gerontologist*, Vol. 39, Issue 2, pp. 209-221.
- Pruchno, Rachel A and Dorothy McKenney. 2002. "Psychological Well-Being of Black and White Grandmothers Raising Grandchildren: Examination of a Two-Factor Model." *The Journals of Gerontology Series B: Psychological Sciences and Social Sciences*, Vol. 57B, Issue 5, pp. 444-452.
- Pulkkinen L and Hamalainen M. 1995. "Low Self-control as a Precursor to Crime and Accidents in a Finnish Longitudinal Study." *Criminal Behaviour and Mental Health*, Vol. 5, pp. 424-438.
- Ren, Xinhua and Benjamin C Amick. 1996. "Racial and Ethnic Disparities in Self-assessed Health Status: Evidence from the National Survey of Families and Households." *Ethnicity and Health*, Vol. 1, Issue 3, pp. 293-303.
- Risman, Barbara J. and Kyung Park. 1988. "Just the Two of Us: Parent-Child Relationships in Single-Parent Homes." *Journal of Marriage and the Family*, Vol. 50, Issue 4, pp. 1049-1062.
- Robinson, Warren C. 1997. "The Economic Theory of Fertility Over Three Decades." *Population Studies*, Vol. 51, Issue 1, pp. 63-74.
- Rogers, Stacy J. and Lynn K. White. 1998. "Satisfaction with Parenting: The Role of Marital Happiness, Family Structure, and Parents' Gender." *Journal of Marriage and the Family*, Vol. 60, Issue 2, pp. 293-308.
- Roscigno, Vincent J. and James W. Ainsworth-Darnell. 1999. "Race, Culture Capital, and Educational Resources: Persistent Inequalities and Achievement Returns." *Sociology of Education*, Vol. 72, Issue 3, pp. 158-178.

- Rosenzweig, Mark R and T. Paul Schultz. 1983. "Estimating a Household Production Function: Heterogeneity, the Demand for Health Inputs, and Their Effects on Birth Weight." *The Journal of Political Economy*, Vol. 91, Issue 5, pp. 723-746.
- Salem, Deborah A., Marc A. Zimmerman and Paul C. Notaro. 1998. "Effects of Family Structure, Family Process, and Father Involvement on Psychosocial Outcomes among African American Adolescents." *Family Relations*, Vol. 47, Issue 4, The Family as a Context for Health and Well-Being. pp. 331-341.
- Safir, Adam, Fritz Scheuren and Kevin Wang. 2000. "Survey Methods and Data Reliability. 1997 and 1999." Washington, DC: The Urban Institute Press.
- Seltzer, Mildred. 1976. "Suggestions for the Examination of Time-Disordered Relationships." In Jaber F Gubrium (Ed.), *Time, Roles and Self in Old Age*. New York: Human Sciences Press.
- Schultz, Theodore W. 1973. "The Value of Children: An Economic Perspective." *The Journal of Political Economy*, Vol. 81, Issue 2, Part 2: New Economic Approaches to Fertility. pp. S2-S13.
- Scott, Y. Kesho. 1991. *The Habit of Surviving*. New York: Ballantine Books.
- Simmons, Tavia and Jane Lawler Dye. 2003. "Grandparents Living With Grandchildren: 2000." Census 2000 Brief. <http://www.census.gov/prod/2003pubs/c2kbr-31.pdf>.
- Skinner, Ellen A, James G. Wellborn and James P. Connell. 1990. "What It Takes to Do Well in School and Whether I've Got it: A Process Model of Perceived Control and Children's Engagement and Achievement in School." *Journal of Educational Psychology*, Vol. 82, Issue 1, pp. 22-32.
- Smerdo, Becky A. 1999. "Engagement and Achievement: Differences between African-American and White High School Students." *Research in Sociology of Education and Socialization*, Vol. 12, pp. 103-134.
- Smock, Pamela and Wendy Manning. 2004. "Living Together Unmarried in the United States: Demographic Perspectives and Implications for Family Policy." *Law and Policy*, Vol. 26, Issue 1, pp. 87-117.
- Stack, Carol B. and Linda M. Burton. 1993. "Kinscripts." *Journal of Comparative Family Studies*, Vol. 24, Issue 2, pp. 157-170.
- Steinberg, Laurence, Susie D. Lamborn, Sanford M. Dornbusch and Nancy Darling. 1992. "Impact of Parenting Practices on Adolescent Achievement: Authoritative Parenting." *Child Development*, Vol. 63, Issue 5, pp. 1266-1281.
- Strom R, Strom S, Collinsworth P, Strom P and Griswold D. 1996. "Black Grandparents: Curriculum Development." *The International Journal of Aging and Human Development*, Vol. 43, Issue 2, pp. 119-134.

- Szinovacz, Maximiliane. 1996. "Living with Grandparents: Variations by Cohort, Race, and Family Structure." *International Journal of Sociology and Social Policy*, Vol. 16, Issue 12, pp. 89-123.
- Tam, Vicky Chiu-wan and Daniel F Detzner. 1998. "Grandparents as a Family Resource in Chinese-American Families: Perceptions of the Middle Generation." In *Resiliency in Native American and Immigrant families*, ed Hamilton I. McCubbin, Anne I. Thompson, Elizabeth A. Thompson, Julie E. Fromer, Thousand Oaks, CA: Sage Publications.
- Thomas, Jeanne L., Len Sperry and M. Sue Yarbrough. 2000. "Grandparents as Parents: Research Findings and Policy Recommendations." *Child Psychiatry and Human Development*, Vol. 31, Issue 1, pp. 3-22.
- Thomson, Elizabeth, Sara S. McLanahan, Robert Braun Curtin. 1992. Family Structure, Gender, and Parental Socialization. *Journal of Marriage and the Family*, Vol. 54, Issue 2, pp. 368-378.
- Thomson, Elizabeth, Thomas L. Hanson and Sara S. McLanahan. 1994. "Family Structure and Child Well-Being: Economic Resources vs. Parental Behaviors." *Social Forces*, Vol. 73, Issue 1, pp. 221-242.
- Thomson, Elizabeth, Jane Mosley, Thomas Hanson and Sara McLanahan. 2001. "Remarriage, Cohabitation, and Changes in Mothering Behavior." *Journal of Marriage and the Family*, Vol. 63, Issue 2, pp. 370-380.
- Tucker, Carolyn M., Yvette R. Harris, Beverly A. Brady and Keith C. Herman. 1996. "The Association of Selected Parent Behaviors with the Academic Achievement of African American Children and European Children." *Child Study Journal*, Vol. 26, Issue 4, pp. 253-277.
- Van de Mheen, H. Dike, Karien Stronks and Johann P. Mackenbach. 1998. "A Life-course Perspective on Socio-economic Inequalities in Health: the Influence of Childhood Socio-economic Conditions and Selection Processes." *Sociology of Health and Illness*, Vol. 20, Issue 5, pp. 754-777.
- Wang, Kevin, Sarah Dipko and Nancy Vaden-Kiernan. 1999. *No. 12: 1997 NSAF Questionnaire*, Washington, D.C.: The Urban Institute.
- Wadsworth, Michael E.J. 1997. "Health Inequalities in the Life-course Perspective." *Social Science and Medicine*, Vol. 44, Issue 6, pp. 859-869.
- Wadsworth, Michael E.J. 1999. "Early Life." In *Social Determinants of Health*, edited by M. Marmot and R.G. Wilkinson, pp. 44-63. New York: Oxford University Press.
- Warner, Rebecca L. and Brent S. Steel. 1999. "Child Rearing as a Mechanism for Social Change: The Relationship of Child Gender to Parents' Commitment to Gender Equity." *Gender and Society*, Vol. 13, Issue 4, pp. 503-517.

- Watson, Jeffrey A. and Sally A Koblinsky. 1997. "Strengths and Needs of Working-Class African-American and Anglo-American Grandparents." *The International Journal of Aging and Human Development*, Vol. 44, Issue 2, pp. 149-165.
- Weiss, Yoram and Robert J. Willis. 1985. "Children as Collective Goods and Divorce Settlements." *Journal of Labor Economics*, Vol. 3, Issue 3, pp. 268-292.
- Whitley, Deborah M., Susan J. Kelley and Theresa Ann Sipe. 2001. "Grandmothers Raising Grandchildren: Are they at Increased Risk of Health Problems?" *Health and Social Work*, Vol. 26, Issue 2, pp. 105-114.
- Willis, Robert J. 1973. "A New Approach to the Economic Theory of Fertility Behavior." *The Journal of Political Economy*, Vol. 81, No. 2, Part 2: New Economic Approaches to Fertility, pp. S14-S64.
- Wilcox-Gok, Virginia L. 1983. "The Determination of Child Health: an Application of Sibling and Adoption Data." *The Review of Economics and Statistics*, Vol. 65, Issue 2, pp. 266-273.
- Willis, Robert J. 1987. "What Have We Learned from the Economics of the Family?" *The American Economic Review*, Vol. 77, Issue 2, *Papers and Proceedings of the Ninety-Ninth Annual Meeting of the American Economic Association*, pp. 68-81.
- Willis, Robert J. 2000. "The Economics of Fatherhood." *The American Economic Review*, Vol. 90, Issue 2, *Papers and Proceedings of the One Hundred Twelfth Annual Meeting of the American Economic Association*, pp. 378-382.
- Wojtkiewicz, Roger A. 1993. "Simplicity and Complexity in the Effects of Parental Structure on High School Graduation." *Demography*, Vol. 30, Issue 4, pp. 701-717.
- Wojtkiewicz, Roger A. 1998. "The Effects of Single and Stepparent Families on College Entry: Who Gets Hurt the Most?" *mimeo*, Louisiana State University.
- Wolfe, Barbara, Robert Haveman. 1996. "The 'Window Problem' in Studies of Children's Attainments: a Methodological Exploration." *Journal of the American Statistical Association*, Vol. 91 Issue 435, pp. 970-983.
- Wunsch, G., Duchene, J., Thiltges, E. and Salhi, M. 1996. "Socio-Economic Differences in Mortality: a Lifecourse Approach." *European Journal of Population*, Vol. 12, Issue 2, pp. 167-185.

**PART II: SCHIP, MEDICAL CARE UTILIZATION AND CHILD
HEALTH OUTCOMES**

CHAPTER 1

INTRODUCTION

Recent economic research has indicated that childhood health not only affects early human capital acquisition, but also has a lasting impact on adulthood health and economic status (Case et al. 2002, Case et al. 2003). A life-course developmental model further broadens the perspective; it suggests that a complex interplay of factors such as socioeconomic status and health care contributes to health outcomes during a person's lifetime. Disparities in adult health outcomes begin early in life and are displayed and compounded across the span of a person's life (Bartley et al. 1997, Keating and Hertzman 1999, Wadsworth 1999, Halfon and Hochstein 2002, Forrest and Riley 2004, Singh-Manoux et al. 2004). At the same time, the Census Bureau reported that 11.4 percent of children—8.4 million—had no health insurance in 2003. It has been argued that lack of insurance not only compromises the health of the uninsured¹⁶, but also has serious economic implications for individuals, families and the nation.¹⁷

Given the concern over child health outcomes and the potentially detrimental effect of being uninsured, the federal government bolstered its commitment to public health insurance for children in the past 10 years. The State Children's Health Insurance Program (SCHIP) was created through Title XXI of the Social Security Act in 1997 to

¹⁶ See Center on Budget and Policy Priorities (2004), the Henry J. Kaiser Family Foundation (2004), Institute of Medicine (2004), Institute of Medicine (2002) and the Urban Institute (2004).

¹⁷ See Smith (1999), Center on Budget and Policy Priorities (2004), Institute of Medicine (2002), the Henry J. Kaiser Family Foundation (2003) and Institute of Medicine (2003).

further expand public insurance eligibility for children in working poor families beyond Medicaid levels. SCHIP has now been in force for eight years, and reauthorization of the program in 2007 requires a thorough understanding of the effects of expanded coverage on care utilization and health outcomes.

In this paper I examine the impact of SCHIP on health insurance, medical care utilization and health outcomes for targeted children using data from the National Survey of America's Families (NSAF). This study represents an advance on a number of fronts. First, the burgeoning literature on SCHIP focuses on eligibility and coverage. Research on utilization is relatively sparse, and research on health outcomes is even more limited. Despite new published studies investigating the impact of SCHIP on care utilization at the state level, these results are hard to generalize to all SCHIP programs given the diversity among SCHIP programs across states. However, a complete understanding of SCHIP requires knowledge of its effects on coverage, medical care utilization and health outcomes for targeted children. This study comprehensively assesses the overall effectiveness of SCHIP by utilizing two waves of NSAF data before and after the enactment of the program. When combined with sample weights, the NSAF is designed to yield nationally representative estimates of insurance coverage, medical care utilization and a wide range of other health-related and socioeconomic characteristics for the civilian, non-institutionalized population. Additionally, adopting various estimation strategies, I make full use of all sources of variation in eligibility, age, income, state and time introduced by the inception of SCHIP to identify the effects on coverage, care utilization and health outcomes. Finally with a thorough review and empirical investigation of how legislative rules can be translated into coverage, medical care

utilization and health outcomes in a sequential order, this study attempts to inform policy making in terms of where the links are broken if the means (SCHIP legislative rules) and various ends are disjointed. Public policies such as SCHIP legislative rules are designed to increase the number of children covered by health insurance through public health insurance expansion, and ideally such an expansion can further lead to increase in medical care utilization and finally translate into improvement in child health outcomes. Therefore, there are several “steps” linking the legislative rules and improvement in child outcomes. My empirical results highlight the relationship between coverage, utilization and health outcomes as well as the reliance on each step to improve health outcomes.

The paper proceeds as follows: after presenting background on the Medicaid expansions and initiation of SCHIP (Chapter 2), I review previous research on each step in the path leading to improved health in a sequential order Chapter 3). In Chapter 4, I describe the conceptual framework, data and empirical strategies used in this study. In Chapter 5, I summarize and analyze the empirical results. Finally, Chapter 6 concludes.

CHAPTER 2

BACKGROUND — MEDICAID EXPANSIONS AND SCHIP

In recent years there has been an increase in public commitment to promote public health insurance coverage for children, mainly through the expansion of the Medicaid program. Medicaid has been the primary means of financing health care services for poor and near poor children in the United States since its inception in 1965. At first, Medicaid covered only children in families meeting the eligibility requirements of the Aid to Families with Dependent Children (AFDC) program. Beginning in the mid-1980's, a series of federal laws began to delink Medicaid eligibility from eligibility for the AFDC program. (Table 29 summarizes the legislation enacted since 1986.) The expansions substantially increased children's eligibility for Medicaid. Following the federal expansions, many states expanded their Medicaid programs further to include children not covered by the federal mandates.

The Personal Responsibility and Work Opportunity Reconciliation Act of 1996 (PRWORA) completely severed the link between welfare and Medicaid. Under the new law, regardless of their welfare status, eligible families have to apply for Medicaid separately. For those families that still received public assistance, a great number of families failed to enroll their children in Medicaid due to the separate and complex application procedure. Therefore, as an unintended consequence of breaking the link of

Medicaid and welfare, many families and children lost their Medicaid coverage. Additionally, many parents have to accept low-paid jobs in order to satisfy the work requirement under the Temporary Assistance for Needy Families (TANF) program. As a result their family incomes were too high to qualify for Medicaid benefits but too low to obtain private insurance for their children. All these factors contributed to the decline in Medicaid enrollment and the increase in the number of uninsured children between 1996 and 1997.¹⁸

In response to declining Medicaid enrollment and the increasing number of uninsured children in working poor families, the Balanced Budget Act (BBA) of 1997 was signed into law in August 1997. The BBA of 1997, as part of title XXI of the Social Security Act, provided states with \$40 billion over ten years in block grant funding to further expand public-provided health insurance for children. The BBA of 1997 gives states a great deal of flexibility in how far and how fast they expand coverage. For example, states can use the new grant money to expand Medicaid, develop a new program or expand an existing state program that provides health insurance for children, or use a combination of the two approaches as long as the funds are used to serve children below age nineteen who are living in families with incomes at or below 200 percent of the federal poverty level or 50 percentage points above the Medicaid income eligibility in effect in March 1997. Consequently, there exists wide variation in states' responses to the changes enacted by the BBA of 1997 both in terms of magnitude, timing and form.

¹⁸ For example, Joyce and Racine (2005) find some evidence that TANF resulted in a loss of Medicaid coverage for women and children whose cash assistance ended.

Each of the 50 states and the District of Columbia had an approved SCHIP plan in place by 2000. Eleven states enacted their program in 1997, the majority (33 states and the District of Columbia) did so in 1998, and the remaining 6 states implemented it in 1999 or 2000. States also vary in the implementation of their SCHIP programs. Sixteen states expanded Medicaid, 14 states and the District of Columbia created a separate SCHIP program, and 20 states developed a combination program in 2002. Table 30 summarizes the timing of SCHIP implementation, types of SCHIP programs, and income eligibility variation across states and age groups.

As shown in Table 31 and Figure 3, eligibility levels for children have increased through SCHIP for every age group since 1997. In many states, prior to SCHIP income eligibility limits were substantially higher for younger children than for older children. Given the fact that the previous series of Medicaid expansions had targeted younger children, generally speaking, the magnitude of income eligibility increases under SCHIP is much bigger for older children than for younger children. By increasing income limits for older children more than for younger children, the SCHIP expansions largely eliminated this within-state variation in eligibility. For example, over the period from 1997 to 2002, the average income eligibility for infants increased by 27 percentage points. In contrast, the average income eligibility increases by 115 percentage points for children aged 14 or older.

There is an extensive literature suggesting low take-up (i.e. low enrollment among eligible population) during the Medicaid expansions of the late 1980s and early 1990s (Cutler and Gruber 1996, Dubay and Kenney 1996, Dubay and Kenney 1997, Shore-

Sheppard 1997, Yazici and Kaestner 2000, Blumberg et al. 2000, Card and Shore-Sheppard 2004, Ham and Shore-Sheppard 2005, Shore-Sheppard 2005). Transaction costs¹⁹, stigma, ignorance about the program and eligibility status, and difficulty in finding providers willing to accept Medicaid are often cited as significant barriers to enrollment among those who are Medicaid eligible (e.g. Currie and Grogger 2002, Currie and Gruber 1996b, Aizer 2003a, 2003b, Currie and Fahr 2005).

Concerns about the Medicaid take-up rate can spill over into concerns about enrollment in SCHIP. Low take-up might be an even greater problem for SCHIP compared to Medicaid as many newly eligible families typically have no experience of participating in public programs. As a result, the law creating SCHIP included specific provisions that mandated states to include outreach efforts as a part of their expansion. States are using a variety of approaches to reduce the stigma associated with SCHIP and Medicaid.²⁰

As private insurance coverage increases with family income, and SCHIP income eligibility levels are higher than those of Medicaid, crowd-out is potentially a bigger problem for SCHIP than for prior Medicaid expansions. In response to previous studies suggesting large crowd-out effects for Medicaid, SCHIP programs were specifically designed with “anti-crowd-out” provisions to prevent newly eligible families from dropping private coverage. The most common requirements across states to reduce

¹⁹ Transaction costs refer to the administrative burden of establishing and maintaining Medicaid coverage include requirements to document residency, income, and citizenship, several meetings with a caseworker, and requirements that Medicaid eligibility be re-established at least yearly.

²⁰ For example, Arkansas decided to name its Medicaid-SCHIP program ARKids Plus to take advantage of the outreach efforts and positive name recognition associated with its ARKids First 1115 demonstration. In Vermont and several other states, families that apply only for health care benefits mail their applications to a centralized processing unit, which has no overt connection to the state’s welfare department.

crowd-out was that children must be without insurance for some period (typically 3–6 months) prior to enrollment. In addition, a few states used sliding-scale premium contributions for families with incomes above 150% of the FPL and subsidies to encourage parents to take-up employer-based coverage when available. Title XXI specifically states that any already-insured children, including those insured under Medicaid, are not eligible to enroll in SCHIP.

CHAPTER 3

LITERATURE REVIEW

There are some essential issues researchers must address before they study the effects of public health insurance on coverage, medical care utilization and health outcomes. Most importantly, expanded health insurance eligibility does not guarantee improved health outcomes. Several studies trace through the channels by which the legislative rules of public insurance expansion are translated into actual improved health outcomes (Eisenberg and Power 2000, Gruber 2002, Chung and Schuster 2004). These studies either review the literature or explain the rationale, but none of them provide empirical evidence. A growing literature documents the effects of SCHIP on eligibility, take-up and crowd out, but relatively few studies examine its impact on medical care utilization, and even less research investigates its effects on health outcomes. I am going to address each channel individually so that the link between SCHIP legislative rules and health outcomes can be tracked incrementally, from the transformative means to the ultimate ends.

3.1 Eligibility

The starting point is to examine the effects of SCHIP on eligibility. How legislative rules affect eligibility is a function of child age, family income, parents' marital status, family structure, and state of residence. Studies using data from various

sources all indicate that SCHIP legislative rules have effectively increased the proportion of children who are eligible for public insurance (Cunningham 2003, Selden et al. 2004, Bansak and Raphael 2004). These studies track changes in the eligibility of children over the 1996-2002 period and find that the percentage of U.S. children eligible for public health insurance has increased roughly from 30 percent to 50 percent.

3.2 Coverage

The next step is to translate eligibility into actual Medicaid or SCHIP coverage. Low take-up is one big problem. As a matter of fact, low take-up is not a problem unique to SCHIP programs, but is common among many public programs (see Remler et al. 2003). Low take-up might be an even greater problem for SCHIP as many newly eligible families typically have no experience of participating in public programs and, therefore, may lack good information about the program (LoSasso and Buchmueller 2004, Selden et al. 2004). Moreover, evidence from the Medicaid expansions suggests that take-up falls as coverage is extended to relatively higher income families (Currie and Gruber 1996b, Card and Shore-Sheppard 2004). This could also lead to a lower take-up rate of SCHIP since SCHIP extends eligibility to relatively higher income families. Furthermore, lower SCHIP enrollment rates may be due to the fact that enrollment rates decline with age and SCHIP-eligible children are older on average than Medicaid-eligible children.

A large number of studies have examined the impact of SCHIP on public health insurance coverage (Guendelman and Pearl 2004, Selden, Hudson and Banthin 2004, LoSasso and Buchmueller 2004, Zuckerman et al. 2001, Cunningham et al. 2002, Bansak and Raphael 2004, Davidoff et al. 2005, Cullen et al. 2005). The estimated marginal take-up rate among newly eligible children ranges from 5 percent to 11 percent among studies

calculating take-up rate (i.e. Rosenbach et al. 2001, LoSasso and Buchmueller 2004, Bansak and Raphael 2004, Cullen et al. 2005).

Rosenbach et al. (2001) create a measure of the effect of the SCHIP program by dividing the number of children enrolled in SCHIP by the number of children enrolled in the traditional Medicaid program for a state. Their approach tends to underestimate the effect of SCHIP, since outreach efforts for SCHIP may have spill-over effects on Medicaid enrollment.²¹ They find that for fiscal year 1999 SCHIP extended federally financed child health insurance coverage beyond traditional Medicaid by 10 percent nationally. Using March CPS data from 1997 to 2001, LoSasso and Buchmueller (2004) first compute a child's public insurance eligibility based on the child's age, family income and the income eligibility standards effective in the child's state of residence at that time, a similar approach to the one used by Cutler and Gruber (1996). Then they regress the child public health insurance status on this computed eligibility indicator while controlling for demographic characteristics, a full set of year dummies, state dummies and health care market characteristics. For their baseline model, they find the take-up rate (the estimates of coefficient on public insurance eligibility) is 7.8 percent for whole sample, and 7.3 percent for the lower family income group (family income below 300% of FPL subsample). Also using data from the CPS (1998 and 2002), Bansak and Raphael (2004) first identify children that are income eligible for SCHIP benefits in 2001 as well as children that would have been eligible in 1997 (under 2001 income criteria)

²¹ In order to prevent states from shifting enrollees from Medicaid to SCHIP to take advantage of more generous Federal matching rates, the legislation requires that children who apply for SCHIP be screened for Medicaid eligibility, and those found eligible can enroll only in Medicaid. Because of this rule, it is possible that SCHIP "marketing" may have indirectly increased the Medicaid enrollment of children who were already eligible for but not covered by that program (US GAO, 2000, Selden et al. 2004, Kenney and Chang 2004.)

assuming the program had been in existence. The effect of SCHIP on public insurance is estimated by calculating the change over time in the proportion of eligible children receiving public health insurance benefits. In doing so, they find that the program marginal take up rates range from 10.1 to 10.5 percent.

Using panel data from the Early Childhood Longitudinal Study, Kindergarten Cohort (ECLS-K), Cullen et al. (2005) adopt several different approaches. Their first method is a first-difference model regressing changes in coverage on changes in a child's eligibility status between any two years. In the second approach, the primary independent variable of interest is defined as the share of months eligible for the program since the beginning of either the kindergarten academic year (July 1998) or the pre-kindergarten academic year (July 1997). Due to the endogeneity of eligibility they also simulate eligibility which is similar to the one used by Cutler and Gruber (1996) and LoSasso and Buchmueller (2004). Depending on what specification and what methods are used, their estimation varies. But the authors emphasize the estimates for transitions between first and third grades, since for these grades they can analyze transitions by type of insurance. The coefficient on changes of eligibility is 0.114 for Medicaid/CHIP coverage, which implies a marginal take-up rate of 11.4 percent.

Furthermore, previously uninsured persons are not the only group taking up the new available benefits; substitution from private to public coverage may occur, which is known as the crowding out of public insurance on private insurance. This results in less net increase in coverage. Considerable research has been carried out assessing the effect of public coverage on private coverage. Cutler and Gruber (1996) demonstrate that although the expansions increased the fraction of low-income children enrolled in

Medicaid, they also led to significant reductions in the fraction covered by private health insurance, compounding the effect of low take-up rates. Subsequent research finds less consistent evidence of crowd-out (Dubay and Kenney 1996, Dubay and Kenney 1997, Shore-Sheppard 2000, Yazici and Kaestner 2000, Blumberg et al. 2000, Kenney, Genevieve and Holahan 2003, Card and Shore-Sheppard 2004, Ham and Shore-Sheppard 2005, Shore-Sheppard 2005).

Research based on different national surveys and different estimation strategies has produced a broad range of estimates of crowd-out under SCHIP from essentially no crowd-out to 30-50 percent crowd-out (Cunningham et al. 2002, Bansak and Raphael 2004, Cullen et al. 2005). However, Kenney and Chang (2004) review several state surveys of SCHIP enrollees and find little evidence that enrollees transfer directly from employer coverage to SCHIP. Although there is no clear consensus about the precise amount of substitution between private and public coverage among researchers, various sources indicate that SCHIP is crowding out private coverage to a certain degree. Even when low income families substitute SCHIP coverage for private coverage, children and their families may enjoy a number of benefits such as more comprehensive coverage, reduced disparity in access to care and lower financial burdens (Kenney, Genevieve and Holahan 2003, Kenney and Chang 2004).

Given the flexibility of SCHIP programs, wide variations exist across states in terms of how the program is implemented, its ease of enrollment, outreach efforts and anti-crowd-out provisions. Wolfe and Scrivner (2005) find that such variations have an impact on both take-up and crowd-out. For example, they find that outreach efforts such

as having a phone line and websites providing information on SCHIP are significantly associated with lower possibility of a child being uninsured and higher take-up among eligible children.

3.3 Utilization

Once covered by public insurance, coverage will not automatically increase children's utilization of medical care due to both financial and non-financial barriers to care. Since most research examining SCHIP has concentrated on its impact on eligibility, take-up and crowd-out, there is a scant but growing literature examining SCHIP's impact on medical care utilization. As many states implemented SCHIP through expanding their existing Medicaid program, studies on Medicaid are also reviewed when appropriate. Generally speaking, research that investigates the impact of public insurance expansions on medical care utilization for children falls into three distinct groups. The first strand of the literature approaches the problem by examining the connection between eligibility expansions and utilization. It either investigates one single measure of utilization, such as immunization (Joyce and Racine 2005), or examines one group of children (e.g. children with special needs such as in Davidoff et al. 2005; elementary school students in Cullen et al. 2005). There are no consistent findings among this group of research. A major shortcoming of this approach is that investigating the link between eligibility expansions and utilization might overestimate the program's effect. Public insurance expansions avail only those who enroll. Children who are eligible but fail to participate in these programs will not benefit.

The second body of research compares utilization measures for publicly insured children to those for uninsured or privately insured children. This method could be more informative about measuring the efficiency of public health insurance expansions. Guendelman and Pearl (2004) conclude that insurance coverage increases access to and use of care by insured children of the working poor families in comparison to children without health insurance.²² More specifically, Currie and Thomas (1995) find that Medicaid children are significantly more likely to have preventative care than either those with private insurance or no coverage at all. The methods used in these studies, however, suffer from several drawbacks. First, inferences drawn from the difference observed between insured and uninsured children and/or between publicly insured and privately insured children may be subject to adverse selection bias, i.e., families with sick children are more likely to seek coverage. Second, parents who secure health insurance for their children may be fundamentally different from parents who do not make an effort or are unable to obtain coverage.

The third group of research focuses on the experience of enrollees and compares their utilization before and after enrollment in SCHIP programs. These studies adopt a pre-post design in which a single cohort of SCHIP enrollees is surveyed at two points in time, one carried out soon after SCHIP enrollment, the other usually one year after the first survey.²³ This thread of research generally indicates that children who enroll in

²² Since under new regulations for Medicaid and the SCHIP programs, states have the discretion to extend coverage to enrollees' uninsured parents, Guendelman and Pearl (2004) evaluate the potential impact of such extension on health care utilization. They find extending insurance to enrollees' uninsured parents seems to have little marginal effect in terms of promoting children's access and use of care.

²³ These studies are Dick et al. (2004) for Florida, Kansas, and New York., Szilagyi et al. (2004) for New York, Eisert and Gabow (2002) and Kempe et al. (2005) for Colorado, Damiano et al. (2001), Damiano et al. (2002) a, b, Damiano et al. 2003, Damiano et al. (2005) and McBroome et al. (2005) for Iowa, Slifkin et al. (2002) and Mofidi et al. (2002) for North Carolina, Fox et al. (2003) for Kansas, Hughes et al. (2005)

SCHIP have improved access to care. The obvious drawback with this approach is that it is difficult to differentiate the effect of other coexisting policies or secular trends from the impact of SCHIP.²⁴ In addition, this strand of literature surveys SCHIP impact on health care utilization for only a relatively small number of children in one or several states. Given the diversity of the SCHIP programs, it is difficult to generalize the results to national estimates.

3.4 Outcomes

Finally, increases in medical care utilization do not guarantee improved health outcomes. There are a number of studies suggesting that much of the medical care received by both adults and children is inappropriate and may have little beneficial effect on health.²⁵ In line with this argument, Kaestner, Joyce and Racine (1999) insist that effectiveness of Medicaid should be evaluated not only by its effect on utilization, but also by its effect on children's health. However, research investigating the impact of public insurance on child health outcomes, including earlier Medicaid expansions, is limited relative to the literature on coverage.²⁶ Studies focusing on eligibility either adopt a difference-in-difference approach (Kaestner, Joyce and Racine 1999) or use simulated eligibility as an instrument for actual eligibility (Currie and Gruber 1996a, Cullen et al. 2005). But Lykens and Jargowsky (2002) directly use estimated actual eligibility which fails to take into account the endogenous nature of eligibility.

for Indiana, Lave et al. (2002) for Pennsylvania. Two exceptions are Brach et al. (2003) and Shenkman et al. (2003) which study the experience of enrollees only before enrollment so that their needs can be better addressed. Brach et al. (2003) survey SCHIP programs in Alabama, Florida, Kansas, Indiana, and New York; Shenkman et al. (2003) survey SCHIP in Florida for adolescents.

²⁴ Szilagyi et al. (2004) do use a comparison group to detect secular trends but do not find any.

²⁵ See Chung and Schuster (2004) for a recent review.

²⁶ These studies are Currie and Gruber (1996a), Kaestner, Joyce and Racine (1999) and Lykens and Jargowsky (2002) for Medicaid, Damiano et al. (2003), and Cullen et. al (2005) for SCHIP.

Damiano et al. (2003) focus on children enrolled in Iowa's S-SCHIP program and find that overall health status was rated significantly better (i.e. excellent: 37 percent before, 42 percent after) and worry about the ability to pay for a child's health care was substantially reduced (92 percent before, 57 percent after). In addition, ninety-five percent of families reported a reduction in family stress. Therefore, evidence indicates that Iowa's S-SCHIP program not only improved health status but also improved the family environment for children enrolled during the first year.

In sum, the answer to whether or not an increase in eligibility would lead to improved health outcomes is inconclusive. While SCHIP represents a significant and dramatic change to child public insurance programs, to date, to my best knowledge, there is no research focusing on the effect of SCHIP on health outcomes for children of all ages at the national level. The current study contributes to the literature on several fronts. First, this analysis not only investigates the effect of SCHIP on coverage related issues such as crowd-out, but also addresses its impact on medical care utilization and health outcomes individually. It therefore contributes to our knowledge of why SCHIP expansions may or may not achieve the ultimate goal of improving child health outcomes, and the results can inform policy making. Second, with its unique survey design and ideal time span, NSAF data enables the current analysis to measure the policy impact at the national level for children of all ages. Third, given that no single technique can perfectly address these issues of interest, I make full use of exogenous variation of the SCHIP programs and develop various empirical strategies to tackle these problems so that crisp and robust results can be obtained.

CHAPTER 4

METHODOLOGY

4.1 Theoretical Framework

The theoretical framework follows Currie and Grogger (2000)'s model of Medicaid participation and the demand for health. The health production function relates health inputs and health output:

$$H = f(M)$$

This suggests that health (H) as a special commodity can be produced by using inputs such as medical care M but can not be purchased directly from the market. In particular, H is a "stock" that takes time to change with medical care M. In case of children, child health outcomes are determined mainly by the decisions of their parents. Given market price p for medical care, family utility, which is a function of market purchased numeraire commodity (C) and child health (H), is maximized subject to the income constraint:

$$\max_{C,M} U = U(C, H; X) \quad (1)$$

subject to

$$C + M.p = I \quad (2)$$

$$H = f(M), \quad f' > 0, f'' < 0 \quad (3)$$

where I is family income, X is a set of exogenous demographic characteristics that influence family tastes.

Solving for this maximum problem yields the optimal demands for medical care and consumption goods:

$$M^* = M^*(p, I; X) \quad (4)$$

$$C^* = C^*(p, I; X) \quad (5)$$

The associated optimal parental demand for H is given by:

$$H^* = f'(p, I; X) \quad (6)$$

Plugging the demands into the utility function yields the family maximized utility before SCHIP was introduced:

$$V^* = V(p, I; X) = U(C^*(p, I; X), M^*(p, I; X)) \quad (7)$$

Upon the introduction of SCHIP, participation in this program can reduce the price of medical care by s , which is equivalent to a subsidy to medical care. But participation in a public insurance program also involves transaction costs and stigma, which decrease total utility by Φ . Conditional on participating in this public insurance program, now the family utility becomes

$$\max_{C, M} U_{SCHIP} = U(C, H; X) - \Phi \quad (8)$$

subject to

$$C + M \cdot (p - s) = I \quad (9)$$

$$H = f(M) \quad f' > 0, f'' < 0 \quad (10)$$

Again, solving for this maximizing problem yields demands for C and M and associated demands function for H :

$$M^* = M^*(p, s, I; X, \Phi) \quad (11)$$

$$C^* = C^*(p, s, I; X, \Phi) \quad (12)$$

$$H^* = H^*(p, s, I; X, \Phi) \quad (13)$$

The corresponding indirect utility becomes:

$$V_{SCHIP}^* = V(p, s, I; X, \Phi) = U(C^*(p, s, I; X, \Phi), M^*(p, s, I; X, \Phi)) - \Phi \quad (14)$$

The family would enroll the child into the SCHIP program only when utility shown in equation (14) exceeds that shown in equation (7). This model about participation and demand for medical care and child health yields several implications. Theoretically speaking, health insurance coverage under SCHIP can have an income effect by shifting the budget constraint outward for previously uninsured families. Families that have already been covered by private health insurance may take advantage of the availability of public insurance and drop their private health insurance. In this case public health insurance crowds out private health insurance. It can also have a substitution effect on the demand for medical care and demand for child health by reducing the relative cost of medical care if the child used to be uninsured before the enactment of SCHIP. In line with this argument, Medicaid/SCHIP coverage is expected to be positively associated with increase in medical care utilization and improvement in child health outcomes for uninsured children. However, this may not be the case if transaction costs or stigma associated with participating in SCHIP programs are taken into account. The disutility caused by transaction costs and stigma may be sufficiently high to offset the marginal benefit. Therefore families may not enroll their children in SCHIP despite becoming newly eligible. This possibility might in part explain low take-up rates and reduced crowd-out for SCHIP programs. Furthermore, among SCHIP enrollees, increase in medical care utilization and improvement in health outcomes may

not happen either because of crowd-out or because of the delivery of service under Medicaid/SCHIP. For example, the opportunity cost of seeing a participating physician, again, may be sufficiently high to countervail the marginal benefit. Even if there is an increase in utilization of medical care (M), the quality of the received service may be too low to have any positive effect on health outcome, or it may take longer for medical care to be translated into an improvement of health outcome, which is a stock.

4.2 Data

The primary sources of data are the 1997, 1999 and 2002 National Survey of America's Families, which provide detailed information on health insurance coverage, health status and medical care utilization for children under 18 years old, as well as information relating to their family settings and the adults who care for them. The survey was carried out from February to October/November in 1997, 1999 and 2002, and the full sample for children is composed of 34,399, 35,897 and 34,292 observations for each round, respectively. Round 1997 and 2002 correspond roughly to the pre- and post-year of the implementation of SCHIP programs for all 50 states plus the District of Columbia. Although SCHIP funding became available on October 1, 1997, as mentioned previously, only eleven states started their program in 1997; the majority (39 states and the District of Columbia) did so between 1998 and 2000. There is a partial overlap between 1997 and 1999 samples of NSAF, so that the data is neither a panel nor completely independent cross-sectional. According to Abi-Habib et al. (2004), the correlation between 1997 and 1999 data is so small that it can be ignored and used as cross-sectional data. Therefore, although I am using three waves of NSAF data, the analysis is cross-sectional and not a

panel study. Adding data from the 1999 NSAF allows for examining the phase-in of SCHIP programs across states over time.²⁷

Although the survey focuses on a target group of states²⁸ as well as the experiences of low-income families (about \$33,000 annually in 1998 currency for a family of two parents and two children), it strives to provide reliable estimates for the nation as a whole with appropriate sample design. Some questions cover the family's circumstances at the time of the survey; others are about the previous 12 months or about that calendar year. The weights are used to adjust for design features of the survey, including oversampling, nonresponse and undercoverage to yield national estimates.²⁹ Child and family demographic and socioeconomic characteristics, such as family structure and the Most Knowledgeable Adult's (MKA) education, are included to measure parental human capital and family income, when appropriate, to isolate the impact of health insurance from income. In addition, the state level control variables include state TANF participation rate (i.e. ratio of state TANF recipients to state estimated population), TANF maximum benefit for a family of three, unemployment rate, monthly CCDF expenditure per child served and SCHIP/Medicaid eligibility as a percentage of FPL. Sources for the state level data are summarized in Appendix A.

The primary outcomes studied are health insurance coverage, medical care utilization, and health outcomes. Since SCHIP can improve medical care utilization only

²⁷ The results from including all 3 waves of data are very similar to those obtained from using only the 1997 and 2002 waves.

²⁸ These target states include three eastern states (Massachusetts, New Jersey, and New York), four southern states (Alabama, Florida, Mississippi, and Texas), three western states (California, Colorado, and Washington) and three mid-western states (Michigan, Minnesota, and Wisconsin). The 13 target states represent 51% of the U.S population. Without weights, the 13 states from NSAF data represent 87% of the whole sample. There is substantial variation in Medicaid and SCHIP income eligibility within the 13 states (please refer to Table 30).

²⁹ See Brick et al. (1999) for a detailed description of NSAF weights.

for those who are enrolled, coverage measures are examined which can shed light on issues of low take-up and crowd-out of public health insurance programs before estimating medical care utilization and health outcomes. Three measures of coverage are included: covered by public insurance³⁰, covered by private insurance, and covered by any health insurance.

As for measures of health services utilization, I include number of doctor visits (not including dental, emergency or mental health visits) during the last 12 months, number of dentist or dental hygienist visits during the last 12 months (for children age 3 and up), number of well-child care visits during the past 12 months, and number of mental health visits during the past 12 months including mental health services received from a doctor, mental health counselor, or therapist (for children age 3 and up).

Well-child care is defined as visits for shots or immunizations, annual and other periodic check ups, hearing exams, physical and other visits for preventive care. It is delivered mostly through pediatricians and family practitioners and is considered the foundation of child health services. National guidelines recommend at least twenty-six well-child visits by age twenty one (Green and Palfrey 2002, Committee on Practice and Ambulatory Medicine 2000). Having health insurance should encourage more utilization of preventive care, such as well-child care, and protect children from many preventive diseases and hospitalization. Children without access to well-child care often seek care in emergency departments. Although emergency departments serve as a safety net for vulnerable populations, they do so inefficiently (Luo et al. 2003). Therefore, both dental

³⁰ I examine overall public insurance coverage instead of SCHIP coverage status for three reasons. First some states take the option to expand Medicaid as a way to implement their SCHIP programs. Second, for those states initiating a stand-alone SCHIP program or choosing the combination approach, SCHIP may have a spillover effect on Medicaid. Third, NSAF does not differentiate between Medicaid and SCHIP participation status, but classifies both as being publicly insured.

and well-child care visits are considered as active utilization of preventive health care which can lead to more efficient allocation of medical care resources. A doctor visit, on the other hand, could be either due to preventative care needs or due to the fact that sick children have to be seen by the doctor more often.

Mental health is also an integral and critical component of children's learning and general health. A report by U.S. Public Health Service (2000) states that the nation is facing a public crisis in mental health for infants, children and adolescents: in the United States, one in ten children and adolescents suffer from mental illness severe enough to interfere with normal development and functioning. Estimates indicate about one in five children receive mental health services in any given year. Yet, unmet need for mental health services remains as high now as it was 20 years ago (Department of Health and Human Services, 2000). In addition, poor children are found to have more mental health problems than other children (Costello et al. 2003, Howell 2004). Since more low-income children are now eligible for public health insurance through the new SCHIP programs, consequently, such programs play a critical role in ensuring access to child mental health services.³¹

A key difficulty in evaluating the effect of Medicaid on health outcomes for children as opposed to utilization of medical care, is the challenge of measuring health outcomes for children. The ideal instruments should be the objective physician assessment of child physical health status. Yet, social science, health, and epidemiological surveys have asked people to describe their health for decades. Although self-reported physical health might be subject to reporting bias, it has

³¹ See Lowell and Buck (2000) for a review of mental health benefits under SCHIP in the United States.

nonetheless been shown to be predictive of both mortality and the onset of several serious health conditions, even after controlling for various socio-demographic conditions (Hurd and McGarry 1995, Idler and Benyamini 1997, Knäuper and Turner 2000). In many of the studies, subjective health was found to be a better predictor of survival than objective health measures.

The primary health outcomes measure adopted in this study is the focal child's current health status, reported by the MKA on a 5-point scale (1 = poor, 5 = excellent). The scale is dichotomized to excellent/very good versus good/fair/poor health; the latter category is used as the reference group. This variable concerns MKA's perception about the current health status of the children. Although it is potentially subject to the whims of all subjective measures, it is attractive as a global measure of health status and widely used in social science and health literature. Two other MKA reported measures are also included to supplement the analysis. One is the focal child's health status compared to 12 months ago (for children age 1 and up), reported by the MKA on a 5-point scale (1 = much worse, 2=worse, 3= the same, 4=better, 5 = much better). The scale is also dichotomized to a dummy variable (1 = worse, much worse; 0 = the same, better, much better). The other is the physical and mental functionality of the focal child (i.e. whether or not the child has a physical, learning, or mental health condition that limits his/her participation in the usual kinds of activity done by most children).³² These three variables are the most suitable measures available from the NSAF data for health outcomes.

³² A disability, especially one that meets the criteria for SSI benefits, virtually guarantees access to Medicaid for the individual with disability.

4.3 Empirical Strategies

Different estimation strategies might lead to quite different results. Remler et al. (2004) review the common estimation methods in modeling health insurance expansions and explain the relationship between different approaches. I am trying to use various approaches in order to demonstrate the robustness of my empirical results.

4.3.1 Accounting for Difference Across Income/Age Groups and Over Time -- Difference-In-Difference Approach. It is obvious from Table 31 that within each state the pre-SCHIP income eligibility cutoff was more generous for younger children than for older children. As discussed earlier, prior to SCHIP, states were mandated to cover children under 6 years old up to 133 percent of the FPL. States had the option to expand coverage up to 185 percent and still receive federal matching funds. As of 1997, several states had used their own funds to expand eligibility beyond 185 percent of the FPL. Consequently income eligibility limits pre-SCHIP were substantially higher for younger children than for older children in many states.

Therefore, the marginal expansions induced by SCHIP programs are much bigger for older children than for younger children. To explore the expansion variation across age groups over time, the following difference-in-difference (DID) reduced form demand function is specified:

$$Y_{oi} = \beta_0 + \beta_1 \text{olderkid}_i + \beta_{12} * \text{yr99}_i + \beta_{13} * \text{yr02}_i + \beta_{14} * (\text{olderkid}_i * \text{yr99}_i) + \beta_{15} * (\text{olderkid}_i * \text{yr02}_i) + \beta_2 * X_i + \varepsilon_{ci} \quad (15)$$

where the dependent variables Y_{oi} represents the three categories of outcomes for the child (o=health insurance coverage, medical care utilization, or child health outcomes).

The estimates of β_{14} and β_{15} will yield the bigger marginal expansion effect of SCHIP/Medicaid on coverage, medical care utilization and health outcomes for older children in comparison to younger children. It is a difference-in-difference estimator to obtain the effect of the bigger increase of SCHIP/Medicaid income eligibility for older children than for younger children. An important empirical issue arises regarding the selection of control group and treatment group. Since Medicaid eligibility increased much more for older children (age 6-17) than it did for younger children (age 0-5), children aged 0-5 are selected as the control group and children aged 6-17 as treatment group for studying the effect of SCHIP eligibility differentiated expansions across age groups. Therefore, the control group is also “treated”, i.e. experienced an increase in benefits, but the increase is much smaller compared to the treatment group. In this sense, this is a pseudo difference-in-difference approach which should bias my results downward.

One approach to further refine the estimates is to stratify the whole sample into two sub-samples according to family income, one of which consists of children who are believed not to be affected by the SCHIP expansions and using their age-income-eligibility patterns as a baseline to which the effects on the other targeted group can be compared. Since most states set their income eligibility below 300% of the FPL³³, children in families with income above or equal to 300% of the FPL are proposed as a reference group to which children from income below 300% of the FPL are compared. Each model therefore is estimated for the whole sample, for children with family income

³³ As of 2002, only 5 states set their income eligibility above or equal to 300 percent of FPL. These states are CT, MD, MS, NE, NH. A more accurate way to classify treatment and control groups is to use actual state cutoffs, i.e. define children whose family income is between the 1997 and 2002 cutoffs as the treatment group and children whose family income is below the 1997 SCHIP cutoff as the control group. However, again, NSAF does not contain such detailed information on family income.

below 300% of the FPL, and for children with family income above or equal to 300% of the FPL, respectively.

Given the fact that older children may use medical care differently from younger children, especially regarding dental or mental care visits, this method may not capture the policy impact as it is designed to. Therefore it is necessary to look for other testing strategies to which we now turn.

As just discussed, SCHIP is projected to provide health insurance coverage to targeted low-income children, namely children who reside in families with income below 200% of the Federal Poverty Level (FPL) or whose families have an income 50 percent higher than the state's Medicaid eligibility threshold. However, many states have chosen to expand SCHIP eligibility beyond 200% of the FPL limit. Therefore a similar DID approach can be employed to explore differences in eligibility status across income groups. As many states increased insurance eligibility up to 300% of the FPL (some even increased eligibility up to 350 percent of the FPL), ideally the upper limit of SCHIP income eligibility rules is used to classify treatment and control groups. However, NSAF data includes income levels above or equal to 300% of the FPL as one single category. It is therefore impossible to distinguish income groups beyond 300% of the FPL in NSAF data. Consequently, the treatment group is defined as children with family income between 150% and 300% of the FPL (including 150%), and the control group consists of children in families with income below 150% of the FPL (dubbed the “near poor” and “poor” families respectively hereafter³⁴). In parallel: the equation to be estimated is:

$$Y_{oi} = \gamma_0 + \gamma_{11} * nearpoor_i + \gamma_{12} * yr99 + \gamma_{13} * yr02 + \gamma_{14} * (nearpoor_i * yr99_i) + \gamma_{15} * (nearpoor_i * yr02_i) + \gamma_2 * X_i + \nu_{oi}$$

³⁴ These are different from the standard definitions used by the Census, and are employed only for brevity.

While children with family incomes above or equal to 300% of the FPL (i.e. “non-poor” families) can also be included in the control group, poor and near poor families are known to access the health coverage and delivery system differently from more affluent families. Given the heterogeneous nature of the two control group candidates, I feel it is more appropriate to separate these two groups instead of lumping them together. Therefore when applying the income DID approach, I drop the high income group from the control group, and the following equation is proposed to obtain the difference-in-difference estimate of SCHIP on health care utilization.

In doing so, this analysis is confined to the sub-sample of children in families with income below 300% of the FPL only.³⁵ Within the low income sub-sample, parallel to the practice of the age DID approach, I first estimate this income DID model using the complete sub sample. Then I stratify this sub-sample into preschool children (age 0-5) and school aged children (age 6-17), with the preschool group serving as a baseline to which the school aged can be contrasted.

The DID approach is appropriate as long as time-varying factors affecting health outcome/utilizations have the same effect on treatment and control group members. If there is other ongoing policy variation affecting the treatment and control group unequally, then DID estimates are biased. When SCHIP was first implemented, the economy experienced considerable expansion as well, and there were fundamental changes to the welfare program (the TANF program replaced the AFDC program), both of which would affect low income families more significantly as opposed to relatively high income families. For example, the unemployment rate for a given state and year

³⁵ Regression results with high family income children serving as the control group confirm results obtained from using low-income children as the control group.

could affect the availability of private insurance coverage and would further impact child Medicaid eligibility and utilization of care independently.³⁶ In particular, this presents a problem if treatment and control groups are categorized according to family income.

Furthermore, employment growth increases the demand for preschool-aged child care. There has been a significant increase in federal and state funds for child care since the 1996 welfare reform legislation was enacted. Child Care and Development Block Grant (CCDBG) / Child Care and Development Fund (CCDF), created in 1990 and amended in PRWORA in 1996, is the primary federal child care program. It is aimed to assist low-income families, families receiving temporary public assistance, and those transitioning from public assistance with obtaining child care for children up to 13 years old so parents can work or train. All age groups of needy children below age 13 are aided by this program but younger children benefit more than older ones. But as far as I am aware, no study in the literature has controlled for this policy variable yet. However, this policy can directly affect utilization of health care, especially well child visits, because many states require that children be up to date for numerous vaccines before enrollment in child care. Hence, without controlling for these trends the results are likely to be biased. Thus, instead of estimating the basic function specified in equation (15), I estimate the following equations to purge such trends by controlling for the unemployment rate (*UNEM*), TANF maximum benefits for a family of three (*TANFMAX*), TANF participation rate (*TANFRATE*), i.e. TANF caseload divided by population, and child care expenditure per recipient (CCDF). All are state level data (*s* is an index for each of the 50 states plus the District of Columbia):

³⁶ Cawley and Simon (2005) find that macroeconomy, measured by state unemployment rate and real gross state product affects men's health insurance coverage but has little impact on the health insurance coverage of women and children due to Medicaid and SCHIP.

$$Y_{oi} = \beta_0 + \beta_{11} * olderkid_i + \beta_{12} * yr99 + \beta_{13} * yr02 + \beta_{14} * (olderkid_i * yr99) + \beta_{15} * (olderkid_i * yr02) + \beta_2 * X_i + \beta_3 * UNEM_{st} + \beta_4 * TANFMAX_{st} + \beta_5 * TANFRATE_{st} + \beta_6 * CCDF_{st} + \beta_7 * STATE + \varepsilon_{oi} \quad (16)$$

$$Y_{oi} = \gamma_0 + \gamma_{11} * nearpoor_i + \gamma_{12} * yr99 + \gamma_{13} * yr02 + \gamma_{14} * (nearpoor_i * yr99_i) + \gamma_{15} * (nearpoor_i * yr02_i) + \gamma_2 * X_i + \gamma_3 * UNEM_{st} + \gamma_4 * TANFMAX_{st} + \gamma_5 * TANFRATE_{st} + \gamma_6 * CCDF_{st} + \gamma_7 * STATE + \nu_{oi} \quad (17)$$

where X is the set of control variables used in the estimations including child's age and gender, MKA's age, MKA's education level, family structure. When appropriate, family income levels are also included. State dummy variables are included in the regressions to control for local environmental characteristics and local differences in medical care delivery systems. In doing so, the net effect of state level characteristics such as state level policies that were unchanged between 1997 and 2002 are also controlled implicitly. Time is also controlled in the form of two dummy variables which are assigned a value of 1 if the observation is from the 1999 or 2002 sample (*yr99* and *yr02*).

4.3.2 Accounting for Differences Across State Programs and Over Time:

Reduced Form Model. SCHIP policy contains arbitrary age-eligibility cutoffs that are exogenous to potential beneficiaries. These eligibility thresholds measure changes in the relative generosity of the SCHIP program across states. There is a great deal of variation in the magnitude of SCHIP policy treatment across states which the two DID approaches do not exploit. In order to make use of the variation in SCHIP/Medicaid eligibility across states, SCHIP/Medicaid income eligibility cutoffs (as a percentage of the federal poverty line) based on age are used to characterize SCHIP. It varies for the following four age groups over the period 1997-2002: infant, age 1-5, age 6-14 and age 15-17. As before, I

also use dichotomous indicators for all 50 states and the District of Columbia to capture time-invariant differences between states in medical care utilization and health outcomes that may be related to SCHIP policies. Again, I include the annual state unemployment rate, state maximum TANF benefit for a family of three, state TANF participation rate and annual state CCDF expenditure per recipient to control for business cycle effects on public assistance participation. Finally, I include an indicator for year 1999 and year 2002 respectively, with 1997 as the reference year to capture national trends in medical care utilization and health outcomes. The equation to be estimated is:

$$Y_{oi} = \alpha_0 + \alpha_1 * CUTOFF_{stj} + \alpha_2 * X_i + \alpha_3 * UNEM_{st} + \alpha_4 * TANFMAX_{st} + \alpha_5 * TANF_{st} + \alpha_6 * CCDF_{st} + \alpha_7 * STATE + \alpha_8 * yr99 + \alpha_9 * yr02 + \omega_{oi} \quad (18)$$

where $CUTOFF_{stj}$ = income eligibility for a child in age group j at state s at time t , and subscript “ o ” indexes outcome.

I estimate the above equations for the whole sample as well as for age-income sub-samples. That is, I stratify the whole sample according to both age (preschool versus school aged) and income (poor, near poor and non-poor). As a result I have six groups ranging from the most likely treated group, (school aged and near poor children), to the most unlikely treated group (preschool and non-poor children).

4.3.3 Accounting for Difference Across State Programs and Over Time: 2SLS Model. It is informative to use actual insurance coverage to assess the effectiveness of SCHIP programs. However, insurance coverage status is endogenous in the sense that it depends on family income, parental preference for health insurance coverage, etc. To deal with the endogenous nature of insurance coverage, a 2SLS model is adopted to directly estimate the effect of SCHIP/Medicaid participation on medical care

utilization/health outcomes. Some research has used simulated eligibility (e.g. Currie and Gruber 1996a, Currie and Gruber 1996b, Lykens and Jargowsky 2002) as a proxy for enrollment to sidestep the endogeneity problem. It is a clever way to deal with endogeneity, however, as discussed earlier, for the program to be effective, enrollment must also increase in response to an increase in eligibility. Therefore I use eligibility cutoffs as the instrument for insurance coverage³⁷ and estimate the following equation:

$$Y_{oi} = \lambda_0 + \lambda_1 * \overline{insured}_i + \lambda_2 * X_i + \lambda_3 * UNEM_{st} + \lambda_4 * TANFMAX_{st} + \lambda_5 * TANF_{st} + \lambda_6 * CCDF_{st} + \lambda_7 * STATE + \lambda_8 * yr99 + \lambda_9 * yr02 + \tau_{oi} \quad (19)$$

Therefore, this study uses various approaches to tackle each issue with a view to obtain robust results.

³⁷ Since considerable evidence exists regarding the crowd-out of public insurance for private insurance, I use overall insurance coverage status as opposed to public insurance coverage status.

CHAPTER 5

EMPIRICAL RESULTS

5.1 Descriptive Statistics

Table 32 presents means and standard deviations for variables used in the analysis. There was a statistically significant increase in the number of publicly insured children and a large and statistically significant decrease in the number of privately insured children between 1997 and 2002, although there is a slight decrease in the percentage of publicly insured children in 1999. Consequently there is a modest increase in the overall percentage of insured children over the 1997-2002 period. The results are mixed for medical care utilization. For example, the average number of doctor and dentist visits decreased, but the average mental visits and well child visits increased. For all three measures of health outcome, the simple descriptive statistics show that child health outcomes deteriorated over this period. By and large, the table indicates similarity of child, MKA and family characteristics between 1997 and 2002. Substantial differences for state level variables such as unemployment rate, TANF participation rate and CCDF over this period confirm the necessity of including these state level data in all specifications.

Descriptive DID estimates, which are equivalent to regression DID estimates without control variables, are presented in Table 33. The fraction of children with public

insurance increased both for school aged children (age 6-17) and preschool children (age 0-5) between 1997 and 2002. However, the descriptive DID estimate for public insurance is a statistically significant 3.1 percentage point increase for older children over this period. Therefore, the simple DID descriptive analysis shows the positive effect of SCHIP on increasing eligible children's enrollment into public health insurance. However, in order to get an incisive assessment of the overall effectiveness of SCHIP on coverage, as well as on medical care utilization and health outcomes, more rigorous estimations that isolate the effects of demographic and economic factors as well as the impact of other concurrent policies are warranted.

5.2 Regression Results

5.2.1 Effects of SCHIP/Medicaid on Children's Insurance Coverage. Table 34 presents the estimated impact of the SCHIP expansions on insurance coverage for children with all estimates obtained via the Linear Probability model.³⁸ The first panel of Table 34 shows estimates of β_{14} and β_{15} in equation (16), which are the coefficients on the interaction terms of time and age-based treatment group dummy variables.³⁹ The likelihood of being publicly insured increased and the likelihood of being privately insured decreased significantly more for older children than for younger children over this period for children of family income below 300% of FPL. For example, over the 1997-2002 period, a school aged child will be more likely to have gained public insurance compared to a preschool aged child by 4 percentage points, but at the same time will be less likely to have private insurance by 4 percentage points. In contrast, for

³⁸ Results from the Logit model are generally even stronger. Marginal effects from the Logit model are reported in Appendix C.

³⁹ Results for the control variables are reported in Appendix B.

children whose family income is above 300% of FPL, most should not be eligible for this program. The likelihood of a child in the 6-17 age group having public insurance is lower by 1 percentage point than that of a child in the 0-5 age group. This further strengthens the results for the children with family incomes below 300% of FPL. The results also suggest that the impact of SCHIP programs started since 1999 and become stronger in 2002: both coefficient estimates of the interaction terms with year dummies usually have the same sign but the coefficient estimate of the interaction term with the later year is bigger. This generally applies to other outcomes such as care utilization and health outcomes as well as to the results obtained from income DID approaches.

Estimates of γ_{14} and γ_{15} in equation (17), which are the coefficients on the interaction terms of time and income-based treatment group dummy variables, are summarized in the second panel of Table 34. Results from the income DID approach reinforce those from the age DID approach regarding private insurance coverage. The likelihood of being covered by any insurance decreased for all children with family incomes below 300% of FPL as well for school aged children within this sub-sample. But given the treatment and control group, it can be interpreted literally as “near poor children (the treatment group) are less likely to be insured than poor children (the control group)” for these groups of children. This confounding result could result from the anti-crowd-out provisions requiring a waiting period, which could lead privately insured children to drop their health insurance plans and become temporarily uninsured in order to enroll in SCHIP. Wolfe and Scrivner (2005) find evidence that longer waiting

periods⁴⁰ are related to the possibility of a child being uninsured. In addition, given the possible spill-over effect of the SCHIP expansions on Medicaid, this result also makes sense. Poor families may become aware of this program due to SCHIP outreach efforts and, therefore, enroll their children into Medicaid. Consequently there is a greater increase in the number of insured children from poor families (with more previously uninsured children than near-poor and non-poor families) than from near poor families (many with children who already have coverage and are just switching from private to public insurance). In addition, within the income below 300% of FPL sub-sample, near-poor children in the 0-5 age group are 7 percent more likely than poor children to have public insurance over the study period compared to, but this finding does not apply to children in the 6-17 age group. These results are not surprising given the difference in health insurance rates between older and younger children.⁴¹

These findings together suggest significant crowd-out of private insurance despite the explicit provisions of the SCHIP programs to prevent the substitution of public insurance for private insurance. However, this may not be viewed as evidence that the anti-crowd-out provisions are ineffective. As private insurance coverage increases with family income, crowd-out is a potentially bigger problem for SCHIP than for earlier Medicaid. Hence, it is plausible that the magnitude of crowd-out could be larger in the absence of the anti-crowd-out provisions.

The last panel of Table 34 reports the estimates for α_1 in equation (18), which is the coefficient on state income eligibility level as a percentage of FPL. Results for the whole sample show that SCHIP eligibility expansions effectively increased the

⁴⁰ “Waiting period” refers to SCHIP regulations that require that a child must have been uninsured for a certain period, usually 6 months, before they are eligible for SCHIP.

⁴¹ Wolfe and Scrivner (2005) also find older children are less likely to have insurance coverage.

probability of having public insurance as well as being insured. Additionally, there is no evidence of crowd-out. Once the sample is stratified, results for school aged children in near poor families, i.e. the most likely targeted population of SCHIP programs, follow the same pattern as results obtained from the whole sample. As hypothesized, they are most likely to be affected and, by contrast, preschool children from non-poor families were least likely to be affected. It is also worth noting that the likelihood of having private insurance is only negatively associated with SCHIP eligibility expansions for children in families with income below 300% of FPL. This suggests that substitution of public insurance for private insurance occurs for this particular income group.

5.2.2 Effects of SCHIP/Medicaid on Medical Care Utilization. Corresponding results for medical care utilization are summarized in Table 35. All except 2SLS estimates are obtained by Ordinary Least Square (OLS) estimation. Overall, they suggest that SCHIP does seem to increase utilization in general. However, morbidity may confound access and utilization. For example, an increase in the number of doctor visits may suggest deterioration in health status, although it could also reflect proper utilization of medical care due to improved access. Nevertheless, utilization of preventative care is a strong indicator for improved access. With respect to well-child care, younger children are in general more likely to be taken to receive well-child care such as shots, immunizations and periodic check-ups for preventive care, while older children may need only annual check-ups as long as they stay healthy.

The age DID estimate of β_{13} in equation (16), reported in the first panel of Table 35, indicates that the introduction of SCHIP led to a 0.18-visit increase in the number of well-child care visits in 2002 for school aged children in poor and near poor families

which therefore presents some evidence that SCHIP improved medical care utilization. The average well-child care visits for all children in 1997 are 1.197 visits per year as reported in Table 32. But the average is 0.78 visits per year for a school aged child. An increase of 0.18 visits per year is a 23% increase. The income DID estimates (i.e. estimates for γ_{13} in equation (17) reported in the second panel of Table 35) fails to find such an impact for well-child care visits, which may not be unexpected once the spill-over effect of SCHIP on Medicaid enrollment is taken into account.

Estimates from reduced form equations (estimates for α_1 in equation (18) summarized in the third panel of Table 35) suggest that income eligibility thresholds are positively associated with the number of well-child care visits, doctor visits and dental visits for the whole sample. In addition, it is noticeable that increased income eligibility was positively associated with the number of dental visits for school-aged children in near poor families as well as with well-child visits for school aged children in poor families. For example, increasing the income eligibility by 100 percent would increase the number of dental visits for a school-aged child in near poor families by 0.28 visits per year, which represents a 15% increase compared to the average 1.85 visits per year for this group of children in 1997.

Results obtained from 2SLS models (shown as λ_1 in equation (19) in the last panel of Table 35) are similar to those found from the reduced form equation models: being insured is significantly associated with the increase in number of doctor visits and well-child care visits.

5.2.2 Effects of SCHIP/Medicaid on Child health outcomes. Estimates for health outcomes are shown in Table 36. By and large, the results present mixed evidence

regarding the effect of SCHIP expansions on child health outcomes. For example, estimates from the age DID model seem to suggest that SCHIP has a detrimental effect on children's current health status, but estimates from income DID indicate that SCHIP improves children's current health status. With respect to the reduced form models, it is noticeable that SCHIP is positively associated with the likelihood of having excellent/very good health status for school aged children in non poor families (i.e. treatment 3). In addition, the SCHIP expansions are significantly associated with lower possibility of health status getting worse for school aged children in near poor families.

A somewhat counterintuitive but common finding in the literature is that there is no clear link between public insurance expansions and improved health outcomes (Kaestner, Joyce and Racine 1999, Lykens and Jargowsky 2002, Cullen et. al 2005). Of course, there is always the possibility that other factors not accounted for by the empirical approaches obscure the effects of policy on health reporting. In sum, the findings from this study provide weak evidence that SCHIP expansions improve health outcomes for those children that had not been reached by earlier Medicaid expansions.

Finally, the appendix tables present results for other concurrent state policy control variables. Generally speaking, the results show that the unemployment rate tends to be significantly and positively associated with number of well-child visits and current health status. Unemployment rates are found to be negatively associated with the likelihood of being privately insured or having any health insurance for low income children as well as for school aged children. Child Care and Development Fund (CCDF) expenditure per child is found to be positively associated with current health status. By contrast, the Temporary Assistance for Needy Families (TANF) participation rate seems

to have little or no impact. Thus, these findings suggest that studies without controlling for these policies, especially unemployment rate and CCDF, which has been overlooked by the literature, might yield biased estimates.

5.3 Sensitivity Check

For coverage and other outcome measures which are dummy variables, logit models are also used. The results are similar and slightly stronger than those obtained from OLS models. Marginal effects from logit models are reported in Appendix C. For current health status and compared health status, since the original values have a 5-point scale, estimates from the ordered logit model are generally consistent with OLS and logit estimates, which are reported in Appendix D.

In regard to the income-based DID approach, I use the experience of children from families with income below or equal to 150% of the FPL (i.e. the poor families) as a counterfactual for the experience of children in families with income between 150% and 300% of the FPL (i.e. the near poor families). However, the near poor, defined as families with income between 150% and 300% of the FPL, may include too many children who were already enrolled in public insurance before SCHIP to serve as an appropriate comparison group. As an alternative, I redefine the poor families as those whose family income is below or equal to 200% of the FPL, and non poor families as those with income between 200% and 300% of the FPL. The results are similar. In addition, I use the experience of children from non poor families (income above 300% of the FPL) as a counterfactual instead of using the experience of children from poor families. The results support previous findings.

Moreover, Cullen et al. (2005) find evidence that eligible families in states that enacted their program via Medicaid expansions appear to be less likely to participate in SCHIP programs, possibly because of stigma associated with participation in the pre-existing public insurance program. Wolfe and Scrivner (2005) also find that a separate SCHIP seems to be more successful in reducing the probability of being uninsured. They suggest that this could be due to parents' preference, physician and providers acceptance or difference in administration. In contrast, LoSasso and Buchmueller (2004) find no differences between expanding eligibility through Medicaid or through a separate program. I explore whether expanded eligibility has different effects depending on how states implemented SCHIP by including a set of dummies indicating the type of SCHIP programs. I find no difference between different types of SCHIP programs. As an alternative, I add the interaction terms of SCHIP type dummy variables with key SCHIP variables. I do not find evidence of differentiated effects of SCHIP depending on the state's option of implementing SCHIP, either.

Finally, since there are three dimensions of classifying treatment and control groups: near poor children vs. poor children, older children (6-17 years old) vs. younger children (0-5 years old), and before (1997) vs. after SCHIP implementation (1999 and 2002), I adopt the triple Difference-in-Difference approach using OLS models. The results are reported in Appendix E. They suggest that SCHIP eligibility expansions lead to a decrease in public health insurance which is contrary to general findings in the literature. Almost every study examining SCHIP and its impact on take-up finds public health insurance coverage increased due to the implementation of SCHIP programs.

Therefore, the results from triple DID should be interpreted with caution. I also use logit models, and the results there are similar.

CHAPTER 6

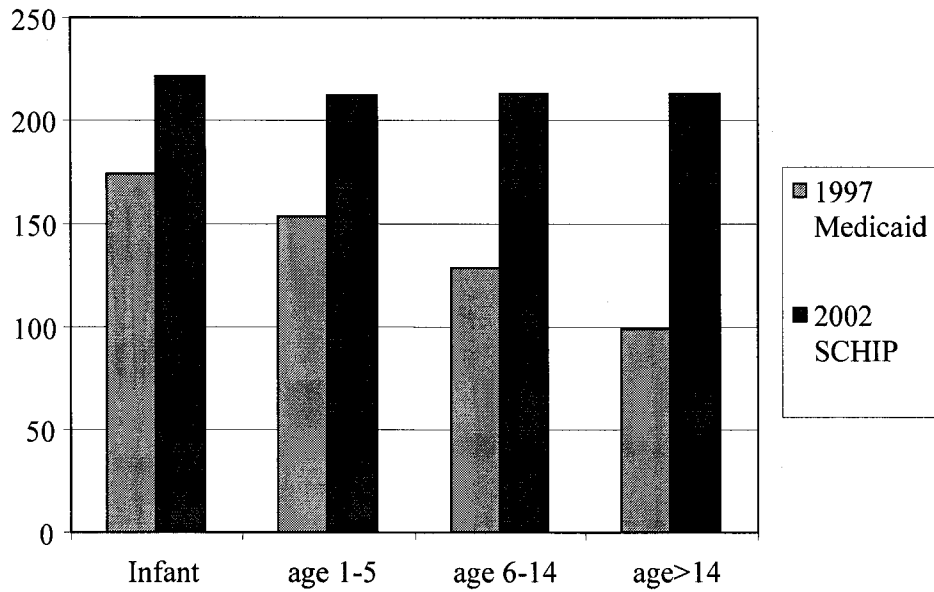
CONCLUDING REMARKS

To my knowledge, this is the first national study investigating the impact of SCHIP on health outcomes for children of all ages. I examine (1) SCHIP's impact on child health outcomes and (2) each step in the pathway to improved health outcomes individually and incrementally. The results can inform policy makers about the potential broken link(s) in the chain connecting the SCHIP eligibility expansions and the ultimate objective of improved health. With any link broken, this objective of improving child health outcomes can not be fully achieved.

Nonetheless, I do not find consistent evidence that SCHIP programs increased health outcomes for eligible children. However, the programs were successful in increasing enrollment in public health insurance, and this increased enrollment did lead to higher utilization of preventive care. Taken together, the "broken link" in this case appears to be between utilization of care and health outcomes. I can offer several possible explanations for such findings. First, the medical care utilization received may be inappropriate or the quality of care may not be high enough to have any observable positive effect on health. Second, coverage and care utilization are more like flow variables which can be changed instantaneously compared to health, which is more like a stock variable and needs a much longer period to adjust. Hence, more time may be

needed for the health outcome measures to reflect the health benefits of increased medical care utilization. Finally, all measures are self-reported by the MKA (Most Knowledgeable Adult) of the focal child, and measures of health outcome are more likely to contain reporting errors compared to measures of coverage and care utilization.

Figure 3. Medicaid/SCHIP Income Eligibility (as Percentage of Federal Poverty Line) for Different Age Groups, 1997-2002



Source: MCH Update Jan 20, 2000 and MCH Update, 2002. "Data collected by the NGA Center for Best Practices"

Table 29. Children's Medicaid (SCHIP) Eligibility Changes (1986-1997)

OBRA 1986 (Effective April 1987)

Option to states to raise the income eligibility thresholds up to 100 percent of the federal poverty level for children up to age 5.

OBRA 1987 (Effective July 1988)

Option to states to raise the income eligibility thresholds up to 185 percent of the federal poverty level for pregnant women and infants up to age one.

Option to states to extend the income eligibility thresholds up to 100 percent of the federal poverty level for children up to age 8.

Medicare Catastrophic Care Amendments of 1988

Mandated states to extend the income eligibility thresholds for pregnant women and infants up to age 1 to 75 percent of the federal poverty level by July , 1989 and to 100 percent of the federal poverty level by July 1990.

OBRA 1989 (Effective April 1990)

Mandated states to extend the income eligibility threshold up to 133 percent of the federal poverty level for pregnant women and children up to age 6.

OBRA 1990 (Effective July 1991)

Mandated states to extend the income eligibility threshold up to 133 percent of the federal level for pregnant women and children up to age 8 and adding 1 year to the age cap, per year, up to 2002 when all such children up to age 18 will be covered. (Note that the options still exist for states to cover pregnant women and children up to 185 percent of the federal poverty level.)

Balanced Budget Act (BBA) 1997 (Effective October 1997)

Option to state to extend the income eligibility thresholds up to 200 percent of the federal poverty level for children up to age 19.

Source: Hill 1990 and MCH Update 2000 from NGA

Table 30. Summary of SCHIP Program by State for 1997 and 2002

State	Expansion type as of 2002	Date implemented	% FPL Eligibility Cutoff (age 1-5)		% FPL eligibility cutoff, (age 15 and older)	
			1997	2002	1997	2002
AK	COMB	Mar-99	133	200%	15	200%
AL	M	Feb-98	133	200	76	200
AR	S	Oct-98	133	200	32	200
AZ	M	Oct-97	200	200	200	200
CA	COMB	Mar-98	133	250	82	250
CO	S	Apr-98	133	185	39	185
CT	COMB	Jul-97	185	300	185	300
DC	S	Oct-98	133	200	100	200
DE	M	Oct-98	133	200	50	200
FL	COMB	Apr-98	133	200	28	200
GA	S	Sep-98	133	235	0	235
HI	M	Jan-00	133	200	100	200
IA	M	Sep-98	133	150	29	150
ID	COMB	Oct-97	133	185	46	185
IL	COMB	Jan-98	133	200	100	200
IN	COMB	Oct-97	133	200	39	200
KS	S	Jul-98	133	200	100	200
KY	M	Jul-98	133	200	30	200
LA	COMB	Nov-98	133	200	100	200
MA	COMB	Oct-97	133	200	125	200
MD	COMB	Jul-98	185	300	34	300
ME	COMB	Aug-98	133	200	133	200
MI	COMB	May-98	150	200	150	200
MN	M	Sep-98	275	280	275	275
MO	COMB	Oct-97	133	200	34	200
MS	M	Mar-97	133	300	100	300
MT	S	Jan-98	133	150	41	150
NC	M	Oct-98	133	185	34	185
ND	S	Oct-98	133	200	45	200
NE	COMB	May-98	185	300	185	300
NH	COMB	May-98	133	350	41	350
NJ	M	Feb-98	185	235	185	235
NM	COMB	Mar-99	133	250	87	250
NV	S	Oct-98	133	200	100	200
NY	COMB	Apr-98	133	140	100	140
OH	M	Jan-98	133	200	32	200
OK	M	Dec-97	133	185	48	185
OR	S	Sep-98	133	170	100	170
PA	S	Jun-98	133	235	100	235

Table 30. (continued)

State	Expansion	Date implemented	% FPL eligibility cutoff, 1-5 year olds		% FPL eligibility cutoff, 15 year olds	
			1997	2002	1997	2002
RI	M	Oct-97	250	250	250	250
SC	M	Aug-97	150	150	150	150
SD	COMB	Jul-98	133	200	100	200
TN	M	Oct-97	400	200	400	200
TX	COMB	Jul-98	133	200	17	200
UT	S	Aug-98	133	200	100	200
VA	S	Oct-98	225	300	225	300
VT	COMB	Oct-98	133	200	100	200
WA	S	Jan-00	200	250	200	250
WI	S	Apr-99	133	200	100	200
WV	M	Jul-98	185	200	62	200
WY	S	Apr-99	133	133	55	133

*Note: M = Medicaid expansion only, S = separate new insurance program, COMB = combination program.

Source: <http://www.cms.hhs.gov/> , <http://www.nga.org/portal/site/nga>

Table 31. Medicaid Eligibility Changes as a Fraction of the Federal Poverty Line 1997-2002

	1997 Medicaid Eligibility	2002 Medicaid Eligibility	2002 SCHIP Eligibility	Percentage Points Change of SCHIP Medicaid Expansion	Percentage Points Change due to SCHIP
Infant	174	177	221	3	47
age[1,5]	154	150	212	-4	58
age [6, 14]	129	123	213	-6	84
age>14	99	115	213	16	114

Source: MCH Update Jan 20, 2000 and MCH Update, 2002. "Data collected by the NGA Center for Best Practices"

Table 32. Descriptive Statistics of Key Variables for 1997 and 2002

Variables	Meaning	Mean	Std. Err.	Mean	Std. Err.	Mean	Std. Err.
Health Insurance Coverage							
public	Has public insurance	0.174	0.006	0.168	0.005	0.232	0.005
private	Has private insurance	0.709	0.007	0.709	0.007	0.674	0.006
insured	Has health insurance coverage	0.882	0.004	0.877	0.005	0.906	0.004
Medical Care Utilization							
fdoct	Number of doctor visits last year (excluding any dental, emergency room, or mental health visits)	2.561	0.040	2.412	0.028	2.438	0.028
fdent	No. of dental visits last year (for children aged 3 and up)	1.802	0.028	1.831	0.024	1.748	0.019
fment	Number of mental health visits last year (for children aged 3 and up)	0.478	0.042	0.536	0.027	0.647	0.036
uwelchd	No. of well child visits past 12 months	1.197	0.021	1.228	0.019	1.249	0.014
Health Outcome							
disbl	Whether has health conditions that limit activity. Dummy variable. =1 if yes; =0 if no	0.082	0.003	0.089	0.003	0.101	0.003
health	Current health status: 1=very good/excellent; 0=poor, fair, good	0.954	0.002	0.876	0.003	0.868	0.003
worse	Current health compared to 12 months ago: 1=much worse, somewhat worse; 0=about the same, somewhat better, much	0.020	0.002	0.020	0.002	0.023	0.001
Child Characteristics							
girl	Dummy variable.	0.488	0.006	0.488	0.005	0.488	0.004
uage	child's age	8.444	0.062	8.522	0.056	8.603	0.049
black	Black	0.156	0.005	0.153	0.005	0.159	0.005
hispanic	Hispanic	0.148	0.004	0.158	0.004	0.178	0.004
other	Other race/ethnicity	0.047	0.003	0.048	0.003	0.052	0.002
age617	child between 6-17 years old	0.664	0.005	0.671	0.004	0.678	0.004
MKA and Household Characteristics							
mkafem	MKA is female	0.808	0.004	0.799	0.005	0.820	0.004
umkaage	MKA's age	36.295	0.106	36.600	0.084	37.213	0.091
mkahs	MKA has high school diploma	0.278	0.007	0.254	0.005	0.244	0.004
mkasc	MKA has some college education	0.316	0.006	0.315	0.005	0.303	0.004
mkabd	MKA has bachelor or higher degree	0.248	0.006	0.262	0.005	0.287	0.005
working	MKA is working	0.684	0.006	0.697	0.005	0.667	0.005
parent1	Living in single parent family	0.267	0.006	0.247	0.005	0.250	0.004
pov300b	Family income below 300% FPL	0.616	0.007	0.594	0.006	0.560	0.005
chld0_5	Number of children aged 0-5 years old in the household	0.765	0.013	0.751	0.012	0.752	0.011
chld6_17	Number of children aged 6-17 years old in the household	1.658	0.018	1.679	0.023	1.670	0.017
west	West	0.224	0.006	0.239	0.005	0.236	0.004
midwest	Midwest	0.237	0.005	0.241	0.005	0.229	0.005
south	South	0.352	0.006	0.337	0.005	0.356	0.005
Policy and Trend Variables							
cutoff	SCHIP income eligibility cutoff	1.247	0.007	2.111	0.006	2.199	0.003
tanfnax	Maximum TANF benefit for family of 3	4.015	0.018	4.069	0.015	4.221	0.014
tanf	TANF caseload	0.042	0.000	0.027	0.000	0.018	0.000
unem	Unemployment rate	4.979	0.014	4.250	0.009	5.808	0.009
ccdf	CCDF average expenditure per recipient	3.564	0.016	4.208	0.021	5.200	0.013
Sample size		34,399		35,897		34,292	
Weighted sample size		71,121,695		71,890,999		72,543,589	

Table 33. Descriptive Income DID Analysis for SCHIP's Impact on the Probability of Being SCHIP/Medicaid Insured

	Before Expansion of SCHIP/Medicaid Eligibility (1997)	After Expansion of SCHIP/Medicaid Eligibility (2002)	Difference
Treatment Group (age 6-17) (any family income)	14.1% (0.006)	21.0% (0.004)	7.0% (0.007)*
Control Group (age 0-5) (any family income)	23.8% (0.010)	27.7% (0.008)	3.9% (0.014)*
Difference in Differences			3.1% (0.012)*

Notes:

1. Numbers are Means and standard errors (in paratheses);
- 2 " *" indicates significance at 0.05 [test of last column].

Table 34. The Impact of the SCHIP Expansions on Insurance Coverage

Approach I: Age DID			
	Public	Private	Insured
Whole Sample			
age617*yr99	0.02	-0.02	0
	(0.01)	(0.01)*	(0.01)
age617*yr02	0.02	-0.02	0
	(0.01)	(0.01)*	(0.01)
Income < 300% FPL			
age617*yr99	0.03	-0.04	-0.01
	(0.02)	(0.01)**	(0.01)
age617*yr02	0.04	-0.04	0
	(0.02)**	(0.01)**	(0.01)
Income >= 300% FPL			
age617*yr99	-0.01	0.01	0
	(0.01)	(0.01)	(0.01)
age617*yr02	-0.01	0.01	-0.01
	(0.01)*	(0.01)	(0.01)
Approach II: Income DID(for income < 300% FPL sub-sample)			
	Public	Private	Insured
Income < 300% FPL sub-sample			
pov150p*yr99	0.03	-0.06	-0.03
	(0.02)*	(0.02)**	(0.02)*
pov150p*yr02	0.02	-0.07	-0.05
	(0.02)	(0.02)**	(0.01)**
Age group 6-17			
pov150p*yr99	0.02	-0.05	-0.03
	(0.02)	(0.02)**	(0.02)*
pov150p*yr02	-0.01	-0.07	-0.08
	(0.02)	(0.02)**	(0.02)**
Age group 0-5			
pov150p*yr99	0.05	-0.07	-0.02
	(0.02)*	(0.03)**	(0.02)
pov150p*yr02	0.07	-0.08	-0.01
	(0.03)**	(0.02)**	(0.02)

Table 34. (Continued)			
Approach III: Reduced form equations			
	Public	Private	Insured
Whole sample	0.03 (0.01)**	-0.01 (0.01)	0.02 (0.00)**
Treatment1: Income 150%-299% FPL, age 6-17	0.04 (0.01)**	0 (0.02)	0.04 (0.01)**
Treatment2: Income <150% FPL, age 6~17	0.05 (0.02)*	-0.03 (0.02)	0.02 (0.02)
Treatment3: Income >=300% FPL, age 6-17	0.00 (0.01)	0.01 (0.01)	0.01 (0.01)*
Treatment4:Income 150%-299% FPL, age 0-5	0.02 (0.03)	-0.03 (0.03)	-0.01 (0.02)
Treatment5:Income < 150% FPL, age 0-5	0.05 (0.03)*	-0.03 (0.03)	0.03 (0.03)
Control group:Income >=300% FPL, age 0-5	-0.01 (0.01)	0.01 (0.01)	0.00 (0.01)
Stratifying the whole sample by income			
Income below 300%			
	0.05 (0.01)**	-0.03 (0.01)*	0.02 (0.01)**
Income above 300%			
	0.00 (0.01)	0.01 (0.01)	0.01 (0.00)
Stratifying the whole sample by age			
6-17 age group			
	0.02 (0.01)**	0.00 (0.01)	0.02 (0.01)**
0-5 age group			
	0.01 (0.02)	-0.01 (0.01)	0.00 (0.01)

Notes:

1. Standard errors in parentheses, ** indicates significance at 0.05 level, * at 0.1 level.
2. Coefficients of β_{14} , β_{15} in Eq. (16), γ_{14} , γ_{15} in Eq. (17), α_1 in Eq. (18) are reported.
3. Estimates are obtained from OLS models, marginal effect of logit models are reported in Appendix C.
4. All regressions include control variables such as child and family characteristics, state dummies and state level variables listed in Table 32.

Table 35. The Impact of the SCHIP Expansions on Medical Care Utilization

Approach I: Age DID				
	Doctor	Dental	Mental	Well-child
Whole Sample				
age617*yr99	0.19	-0.01	-0.03	0.03
	(0.10)*	(0.07)	(0.09)	(0.06)
age617*yr02	0.22	0.26	0.11	0.06
	(0.12)*	(0.06)**	(0.08)	(0.06)
Income < 300% FPL				
age617*yr99	0.06	-0.03	-0.06	0.07
	(0.13)	(0.09)	(0.11)	(0.08)
age617*yr02	0.27	0.23	0.2	0.18
	(0.14)*	(0.09)**	(0.11)*	(0.09)*
Income >= 300% FPL				
age617*yr99	0.37	-0.03	0.05	-0.03
	(0.15)**	(0.09)	(0.1)	(0.08)
age617*yr02	0.2	0.25	0.06	-0.12
	(0.16)	(0.08)**	(0.09)	(0.09)
Approach II: Income DID(for income< 300% FPL sub-sample)				
	Doctor	Dental	Mental	Well-child
Income < 300% FPL sub-sample				
pov150p*yr99	0.07	-0.13	-0.13	0.08
	(0.13)	(0.09)	(0.12)	(0.08)
pov150p*yr02	0.10	-0.13	0.01	0.06
	(0.12)	(0.08)*	(0.12)	(0.08)
Age group 6-17				
pov150p*yr99	0.08	-0.08	-0.13	0.07
	(0.13)	(0.10)	(0.14)	(0.09)
pov150p*yr02	0.08	-0.09	0.05	-0.01
	(0.12)	(0.09)	(0.15)	(0.07)
Age group 0-5				
pov150p*yr99	0.05	-0.31	-0.15	0.13
	(0.22)	(0.11)**	(0.14)	(0.14)
pov150p*yr02	0.12	-0.21	-0.17	0.19
	(0.22)	(0.09)*	(0.12)	(0.15)

Table 35. (Continued)

Approach III: Reduced form equations				
	Doctor	Dental	Mental	Well-child
Whole sample	0.19	0.07	0.04	0.15
	(0.06)**	(0.04)*	(0.07)	(0.03)**
Treatment1: Income 150% - 299% FPL, Age 6-17	(0.02	0.28	0.07	0.05
	(0.09)	(0.10)**	(0.11)	(0.03)
Treatment2: Income <150% FPL, Age 6-17	0.34	0.03	0.37	0.23
	(0.15)*	(0.07)	(0.23)	(0.08)**
Treatment3: income >=300% FPL, Age 6-17	0.04	0.05	-0.16	0.04
	(0.1)	(0.07)	(0.11)	(0.03)
Treatment4: Income 150%-299% FPL, Age 0-5	0.01	0.1	0.05	0.21
	(0.27)	(0.12)	(0.07)	(0.12)*
Treatment5: Income < 150% FPL, Age 0-5	-0.32	-0.01	0.23	-0.08
	(0.23)	(0.14)	(0.18)	(0.18)
Control group: Income >=300% FPL, Age 0-5	-0.08	0.02	-0.12	0.00
	(0.19)	(0.08)	(0.10)	(0.10)
Stratifying whole sample by income				
Income below 300% FPL				
	0.23	0.09	0.18	0.23
	(0.08)**	(0.06)*	(0.11)*	(0.04)**
Income above 300% FPL				
	0.14	0.01	-0.15	0.06
	(0.08)*	(0.06)	(0.10)	(0.03)*
Stratifying whole sample by age				
Age group 6-17				
	0.11	0.12	0.06	0.09
	(0.07)	(0.05)**	(0.09)	(0.03)**
Age group 0-5				
	-0.14	0.04	0.05	0.02
	(0.14)	(0.07)	(0.06)	(0.09)

Table 35. (Continued)

Approach IV: 2SLS				
	Doctor	Dental	Mental	Well-child
Whole sample	11.86 (4.72)*	3.84 (2.43)	2.42 (4.31)	9.45 (2.99)**
Treatment1: Income 150%-299% FPL, Age 6-17	(2.50) (13.70)	(3.70)* (3.48)	(3.20) (17.99)	(1.10) (9.74)
Treatment3: Income >=300% FPL, Age 6-17	3.61 (10.24)	5.26 (7.83)	-15.95 (15.08)	4.1 (4.23)
Treatment4: Income 150%-299% FPL, Age 0-5	-2.04 (51.13)	-16.58 (75.18)	-5.02 (15.66)	-36.78 (128.76)
Treatment5: Income < 150% FPL, Age 0-5	-12.4 (17.24)	0.2 (4.30)	-14.01 (38.63)	-3.01 (8.08)
Control group: Income >=300% FPL, Age 0-5	-475.93 (20912.63)	1.65 (6.71)	-12.83 (20.35)	-2.66 (671.14)
Stratifying whole sample by income				
Income below 300%	9.95 (4.05)*	4.24 (2.77)	7.7 (5.87)	9.93 (3.40)**
Income above 300%	20.59 (19.16)	1.33 (5.99)	-14.32 (12.21)	8.82 (7.58)
Stratifying whole sample by age				
6-17 age group	4.85 (3.62)	5.44 (2.45)*	2.75 (4.31)	3.98 (1.79)*
0-5 age group	-33.81	-4.21	-8.09	5.17

Notes:

1. Standard errors in parentheses, ** indicates significance at 0.05 level, * at 0.1 level.
2. Coefficients of β_{14} and β_{15} in Eq. (16), γ_{14} and γ_{15} in Eq. (17), α_1 in Eq. (18) and λ_1 in Eq.(19) are reported.
3. Except for the two-stage least squares models, estimates are obtained from OLS models. Marginal effect of logit models are reported in Appendix C.
4. All regression included control variables such as child and family characteristics, state dummies and state level variables listed in Table 32.
5. The instruments for the two-stage least squares models include all dependent variables listed in Table 32.

Table 36. The Impact of the SCHIP Expansions on Health Outcomes

Approach I: Age DID			
	Morbidity	Good health	Worse Health
Whole Sample			
age617*yr99	0.01	-0.03	-0.01
	(0.01)	(0.01)**	(0.00)
age617*yr02	0.01	-0.04	-0.01
	(0.01)	(0.01)**	(0.00)
Income < 300% FPL			
age617*yr99	0.02	-0.04	-0.01
	(0.01)*	(0.01)**	(0.01)
age617*yr02	0.02	-0.06	-0.01
	(0.01)*	(0.01)**	(0.01)
Income >=300% FPL			
age617*yr99	-0.01	-0.03	0.00
	(0.01)	(0.01)**	(0.01)
age617*yr02	-0.01	-0.02	0.00
	(0.01)	(0.01)**	(0.01)
Approach II: Income DID(for income < 300% FPL sub-sample)			
	Morbidity	Good health	Worse Health
Income <300% FPL sub-sample			
pov150p*yr99	-0.01	0.10	0.00
	(0.01)	(0.02)**	(0.01)
pov150p*yr02	0.02	0.07	0.00
	(0.01)	(0.01)**	(0.01)
Age group 6-17			
pov150p*yr99	-0.02	0.11	0.00
	(0.02)	(0.02)**	(0.01)
pov150p*yr02	0.02	0.08	0.01
	(0.02)	(0.02)**	(0.01)
Age group 0-5			
pov150p*yr99	0.01	0.07	0.00
	(0.01)	(0.02)**	(0.01)
pov150p*yr02	0.00	0.05	-0.01
	(0.01)	(0.01)**	(0.01)

Table 36. (continued)

Approach III: Reduced form equations			
Cohort	Morbidity	Good health	Worse Health
Whole sample	0.00	0.00	0.00
	(0.01)	(0.01)	(0.00)
Treatment1: Income 150%-299% FPL, Age 6-17	-0.02	0.00	-0.01
	(0.01)	(0.01)	(0.01)*
Treatment2: Income <150% FPL, Age 6-17	0.02	0.01	0.01
	(0.02)	(0.02)	(0.01)
Treatment3: income >=300% FPL, Age 6-17	0.00	0.01	0.00
	(0.01)	(0.01)*	(0.01)
Treatment4: Income 150%-299% FPL, Age 0-5	0.01	-0.02	0.00
	(0.01)	(0.02)	(0.01)
Treatment5: Income < 150% FPL, Age 0-5	-0.01	0.02	0.00
	(0.02)	(0.02)	(0.00)
Control group: Income >=300% FPL, Age 0-5	-0.01	0.00	0.00
	(0.01)*	(0.01)	(0.01)
Stratifying whole sample by income			
Income below 300%	0.00	-0.01	0.00
	(0.01)	(0.01)	(0.00)
Income above 300%	0.00	0.00	0.00
	(0.01)	(0.00)	(0.00)
Stratifying whole sample by age			
6-17 age group	0.00	0.01	0.00
	(0.01)	(0.01)	(0.00)
0-5 age group	-0.01	0.00	0.00
	(0.01)	(0.01)	(0.00)

Table 36. (continued)

Approach IV: 2SLS			
Cohort	Morbidity	Good Health	Worse Health
Whole sample	-0.18	-0.10	-0.10
	(0.36)	(0.31)	(0.18)
Treatment1: Income 150%-299% FPL, Age 6-17	-0.44	-0.00	-0.36
	(0.40)	(0.27)	(0.22)
Treatment2: Income <150% FPL, Age 6-17	1.12	0.51	0.69
	(1.12)	(1.23)	(0.64)
Treatment3: Income >=300% FPL, Age 6-17	0.50	0.92	-0.04
	(1.26)	(0.73)	(0.55)
Treatment4: Income 150%-299% FPL, Age 0-5	-1.37	3.02	0.57
	(4.94)	(11.23)	(2.11)
Treatment5: Income < 150% FPL, Age 0-5	-0.49	0.72	0.04
	(1.05)	(1.30)	(0.19)
Control group: Income >=300% FPL, Age 0-5	-72.53	-27.86	6.37
	(3210.45)	(1233.80)	(284.86)
Stratifying whole sample by income			
Income below 300% of FPL	-0.11	-0.33	-0.10
	(0.34)	(0.34)	(0.17)
Income above 300% of FPL	-0.49	0.28	-0.16
	(1.04)	(0.68)	(0.58)
Stratifying whole sample by age			
6-17 age group	0.21	0.35	-0.01
	(0.38)	(0.33)	(0.18)
0-5 age group	-1.38	-0.02	-0.10
	(4.12)	(2.42)	(0.89)

Notes:

1. Standard errors in parentheses, ** indicates significance at 0.05 level, * at 0.1 level.
2. Coefficients of β_{14} , β_{15} in Eq. (16), γ_{14} , γ_{15} in Eq. (17), α_1 in Eq. (18), λ_1 in Eq. (19) are reported.
3. Except for the two-stage least squares models, estimates are obtained from OLS models, marginal effect of logit models are reported in Appendix C.
4. All regressions include control variables such as child and family characteristics, state dummies and state level variables listed in Table 32.
5. The instruments for the two-stage least squares models include all dependent variables listed in Table 32.

REFERENCES

- Abi-Habib, Natalie, Adam Safir and Timothy Triplett. 2004. "Report No. 11: NSAF Public Use File User's Guide." Urban Institute: Washington .D.C. (Citation URL: <http://www.urban.org/url.cfm?ID=900760>)
- Administration for Children and Families. 2001. "Child Care and Development (CCDF) Report to Congress 2001 Fiscal Year."
- Aizer, Anna. 2003a. "Low Take-up in Medicaid: Does Outreach Matter and For Whom." *American Economic Review*, Vol. 93, Issue 2, pp. 238-241.
- Aizer, Anna. 2003b. "Got Health? Advertising, Medicaid and Child Health." Unpublished manuscript, Brown University.
- Bansak, Cynthia and Steven Raphael. 2004. "The Effects of State Policy Design Features on Take-up and Crowd Out Rates for the State Children's Health Insurance Program." Economic Research Initiative on the Uninsured, University of Michigan, ERIU Working Paper 36.
- Bartley, Mel, David Blane and Scott Montgomery. 1997. "Health and the Life-course: Why Safety Nets Matter." *British Medical Journal*, Vol. 314, Issue 7088, pp. 1194-1196.
- Blumberg, Linda J., Lisa Dubay and Stephen A. Norton. 2000. "Did the Medicaid Expansions for Children Displace Private Insurance? An Analysis Using the SIPP." *Journal of Health Economics*, Vol. 19, Issue 1, pp. 33-60.
- Brach, Cindy, Eugene M. Lewit, Karen VanLandeghem, Janet Bronstein, Andrew W. Dick, Kim S. Kimminau, Barbara LaClair, Elizabeth Shenkman, Laura P. Shone, Nancy Swigonski, Brick, J. Michael, Gary Shapiro, Ismael Flores-Cervantes, David Ferraro and Teresa Strickler. 1999. "1997 NSAF Snapshot Survey Weights. National Survey of America's Families Methodology Series Report no. 3." Washington, DC: Urban Institute.
- Brick, J. Michael, Gary Shapiro, Ismael Flores-Cervantes, David Ferraro and Teresa Strickler. 1999. "1997 NSAF Snapshot Survey Weights. Report No. 3, NSAF Methodology Reports." The Urban Institute: Washington, D.C.
- Card, David and Lara Shore-Shepard. 2004. "Using Discontinuous Eligibility Rules to Identify the Effects of the Federal Medicaid Expansion on Low Income Children." *Review of Economics and Statistics*, Vol. 86, Issue 3, pp. 752-766.

- Case, Anne, Darren Lubotsky and Christina Paxson. 2002. "Economic Status and Health in Childhood: The Origins of the Gradient." *American Economic Review*, Vol. 92, Issue 5, pp. 1308-1334.
- Case, Anne, Angela Fertig and Christina Paxson. 2003. "From Cradle to Grave? The Lasting Impact of Childhood Health and Circumstance." *NBER Working Paper* No. 9788.
- Cawley, John and Kosali I. Simon. 2005. "Health Insurance Coverage and the Macroeconomy." *Journal of Health Economics*, Vol. 24, Issue 2, pp. 299-315.
- Center on Budget and Policy Priorities. 2004. "Number of Americans without Health Insurance Reaches Highest Level on Record." 26 August 2004, available at <http://www.cbpp.org/8-26-04health.htm>.
- Chung, Paul J. and Mark A. Schuster. 2004. "Access and Quality in Child Health Services: Voltage Drops." *Health Affairs*, Vol. 23, Issue 5, pp. 77-87.
- Committee on Practice and Ambulatory Medicine. 2000. "Recommendations for Preventative Pediatric Health Care." *Pediatrics*, Vol. 105, Issue 3, pp. 645-646.
- Costello, E. Jane, Scott N. Compton, Gordon Keeler and Adrian Angold. 2003. "Relationships Between Poverty and Psychopathology." *Journal of the American Medical Association*, Vol. 290, Issue 15, pp. 2023-2064.
- Cullen, Julianne B., Philip P. DeCicca and Craig Volden. 2005. "The Impact of State CHIP programs on Early Childhood Health Insurance Coverage, Utilization and Outcomes." Economic Research Initiative on the Uninsured (Conference Draft), University of Michigan.
- Cunningham, Peter, Jack Hadley and James Reschovsky. 2002. "The Effects of SCHIP on Children's Health Insurance Coverage." *Medical Care Research and Review*, Vol. 59, Issue 4, pp. 359-383.
- Cunningham, Peter J. 2003. "SCHIP Making Progress: Increased Take-up Contributes to Coverage Gains." *Health Affairs*, Vol. 22, Issue 4, pp. 163-172.
- Currie, Janet, Jonathan Gruber and Michael Fischer. 1995. "Physician Payments and Infant Mortality: Evidence from Medicaid Fee Policy (in Incentives and the Demand for Health Services)." *American Economic Review*, Vol. 85, Issue 2, Papers and Proceedings of the Hundredth and Seventh Annual Meeting of the American Economic Association Washington, DC, January 6-8, pp. 106-111.
- Currie, Janet and Duncan Thomas. 1995. "Medical Care for Children: Public Insurance, Private Insurance and Racial Differences in Utilization." *The Journal of Human Resources*, Vol. 30, Issue 1, pp. 135-162.

- Currie, Janet and Jeffrey Grogger. 2002. "Medicaid Expansions and Welfare Contractions: Offsetting Effects on Prenatal Care and Infant Health?" *Journal of Health Economics*, Vol. 21, Issue 2, pp. 313-335.
- Currie, Janet and Jonathan Gruber. 1996a. "Health Insurance Eligibility, Utilization of Medical Care, and Child Health." *The Quarterly Journal of Economics*, Vol. 111, Issue 2, pp. 431-466.
- Currie, Janet and Jonathan Gruber. 1996b, "Saving Babies: The Efficacy and Cost of Recent Changes in the Medicaid Eligibility of Pregnant Women." *The Journal of Political Economy*, Vol. 104, Issue 6, pp. 1263-1296.
- Currie, Janet and Jonathan Gruber. 2001. "Public Health Insurance and Medical Treatment: the Equalizing Impact of the Medicaid Expansions." *Journal of Public Economics*, Vol. 82, Issue 1, pp. 63-89.
- Currie, Janet and John Fahr. 2004. "Medicaid Managed Care: Effects on Children's Medicaid Coverage and Utilization." *Journal of Public Economics*, Vol. 89, Issue 1, pp. 85-108.
- Cutler, David M. and Jonathan Gruber. 1996. "Does Public Insurance Crowd Out Private Insurance?" *Quarterly Journal of Economics*, Vol. 111, Issue 2, pp. 431-66.
- Dick, Andrew W., Cindy Brach, R. Andrew Allison, Elizabeth Shenkman, Laura P. Shone, Peter G. Szilagyi, Jonathan D. Klein and Eugene M. Lewit. 2004. "SCHIP's Impact In Three States: How Do The Most Vulnerable Children Fare?" *Health Affairs*, Vol. 23, Issue 5, pp. 63-76.
- Damiano, Peter C., Jean C. Willard, Elizabeth T. Momany and Jyoti Chowdhury. 2003. "The Impact of the Iowa S-SCHIP Program on Access, Health Status, and the Family Environment." *Ambulatory Pediatrics*, Vol. 3, Issue 5, pp. 263-269.
- Dafny, Leemore and Jonathan Gruber. 2000. "Does Public Insurance Improve the Efficiency of Medical Care? Medicaid Expansions and Child Hospitalizations." *NBER Working Paper* No. 7555.
- Davidoff, Amy, Genevieve Kenney and Lisa Dubay. 2005. "Effects of the State Children's Health Insurance Program Expansions on Children with Chronic Health Conditions." *Pediatrics*, Vol. 116, Issue 1, pp. 34-42.
- Dubay, Lisa C. and Genevieve Kenney. 1997. "Did Medicaid Expansion for Pregnant Women Crowd Out Private Coverage." *Health Affairs*, Vol. 16, Issue 1, pp. 185-193.
- Dubay, Lisa and Genevieve Kenney. 2004. "Addressing Coverage Gaps for Low Income Parents." *Health Affairs*, Vol. 25, Issue 2, pp. 225-234.

- Eisenberg, John and Elaine Power. 2000. "Transforming Insurance Coverage into Quality Health Care: Voltage Drops from Potential to Delivered Quality." *Journal of the American Medical Association*, Vol. 284, Issue 16, pp. 2100-2107.
- Eisert, Sheri and Patricia Gabow. 2002. "Effect of Child Health Insurance Plan Enrollment on the Utilization of Health Care Services by Children Using a Public Safety Net System." *Pediatrics*, Vol. 110, Issue 5, pp. 940-945.
- Forrest, Christopher B. and Anne W. Riley. 2004. "Childhood Origins of Adult Health: A Basis for Life-Course Health Policy." *Health Affairs*, Vol. 23, Issue 5, pp. 155-164.
- Fox, Michael H., Janice Moore, Raymond Davis and Robert Heintzelman. 2003. "Changes in Reported Health Status and Unmet Need for Children Enrolling in the Kansas Children's Health Insurance Program." *American Journal of Public Health*, Vol. 93, Issue 4, pp. 579-582.
- Green, Morris and Judith S. Palfrey. 2002. *Bright Futures: Guidelines for Health Supervision of Infants, Children, and Adolescents*, 2d rev. ed. Arlington, VA.: National Center for Education in Maternal and Child Health, Georgetown University.
- Grossman, Michael. 1972. "On the Concept of Health Capital and the Demand for Health", *Journal of Political Economy*, Vol. 80, Issue 2, pp. 223-255.
- Gruber, Jonathan. 1997. "Policy Watch: Medicaid and Uninsured Women and Children." *Journal of Economic Perspectives*, Vol. 11, Issue 4, pp. 199-208.
- Gruber, Jonathan. 2000, "Medicaid." *NBER Working Paper* No. 7829.
- Guendelman, Sylvia and Michelle Pearl. 2004. "Children's Ability to Access and Use Health Care." *Health Affairs*, Vol. 23, Issue 2, pp. 235-244.
- Halfon, Neal and Miles Hochstein. 2002. "Life Course Health Development: An Integrated Framework for Developing Health, Policy, and Research." *Milbank Quarterly*, Vol. 80, Issue 3, pp. 433-479.
- Ham, John C. and Lara Shore-Shepard. 2005. "The Effect of Medicaid Expansion for Low-Income Children on Medicaid Participation and Insurance Coverage: Evidence from the SIPP." *Journal of Public Economics*, Vol. 89, Issue 1, pp. 57-83.
- Henry J. Kaiser Family Foundation. 2003. "Access to Care for the Uninsured: An Update." 29 September 2003. Available at <http://www.kff.org/uninsured/4142.cfm>.
- Henry J. Kaiser Family Foundation. 2004. "The Uninsured: A Primer, Key Facts about Americans without Health Insurance." 10 November 2004. Available at <http://www.kff.org/uninsured/4085.cfm>

- Howell, Embry M. 2004. "Access to Children's Mental Health Services under Medicaid and SCHIP." No. B-60 in Series "New Federalism: National Survey of America's Families." Washington, DC: Urban Institute. Available at <http://www.urban.org/url.cfm?ID=311053>.
- Hughes, Ryan J., Peter C Damiano, Michael J. Kanellis, Raymond Kuthy and Rebecca Slayton. 2005. "Dentists' Participation and Children's Use of Services in the Indiana Dental Medicaid Program and SCHIP: Assessing the Impact of Increased Fees and Administrative Changes." *The Journal of the American Dental Association*, Vol. 136, Issue 4, pp. 517-523.
- Hurd, Michael and K. McGarry. 1995. "Evaluation of the Subjective Probabilities of Survival in the Health and Retirement Survey." *Journal of Human Resources*, Vol. 30, Issue 5, pp. S268-292.
- Idler, Ellenk and Yael Benyamini. 1997. "Self-Related Health and Mortality: A Review of Twenty-Seven Community Studies." *Journal of Health and Social Behavior*, Vol. 38, Issue 1, pp. 21-37.
- Institute of Medicine. 2004. *Insuring America's Health - Principles and Recommendations*. Washington, DC: The National Academies Press.
- Institute of Medicine. 2002. *Care Without Coverage - Too Little, Too Late*. Washington, DC: The National Academies Press.
- Institute of Medicine. 2003. *Hidden Costs, Values Lost: Uninsurance in America*. Washington, DC: The National Academies Press.
- Joyce, Ted and Andrew Racine. 2005. "CHIP Shots: Association Between the State Children's Health Insurance Programs and Immunization Rates." *Pediatrics*, Vol. 115, Issue 5, pe.526-534.
- Kaestner, Robert, Theodore Joyce and Andrew Racine. 1999. "Does Publicly Provided Health Insurance Improve the Health of Low-Income Children in The United States." *NBER Working Paper* No. 6887.
- Kaiser Commission on Medicaid and the Uninsured. 2005. "Enrolling Uninsured Low-income Children in Medicaid and SCHIP." Medicaid Facts. Available at <http://www.kff.org/medicaid/upload/Enrolling-Uninsured-Low-Income-Children-in-Medicaid-and-SCHIP-Fact-Sheet-UPDATE.pdf>
- Keating, Dan P and Clyde Hertzman. *Developmental health and the wealth of nations: Social, Biological, and Educational Dynamics*. New York: Guilford Press.
- Kempe, Allison, Brenda L. Beaty, Lori A. Crane, Johan Stokstad, Jennifer Barrow, Shira Belman and John F. Steiner. 2005. "Changes in Access, Utilization, and Quality of Care after Enrollment into a State Child Health Insurance Plan." *Pediatrics*, Vol. 115, Issue 2, pp. 364-371.

- Kenney, Genevieve, Jennifer Haley and Alexandra Tebay. 2003. "Children's Insurance Coverage and Service Use Improve." No. 1 in Series, "Snapshots of America's Families III, Washington, DC: Urban Institute.
- Kenney, Genevieve and John Holahan. 2003. "Public Insurance Expansion and Crowd-Out of Private Coverage." *Medical Care*, Vol. 41, Issue 3, pp. 337-340.
- Kenney, Genevieve and Debbie I. Chang. 2004. "The State Children's Health Insurance Program: Successes, Shortcomings, and Challenges." *Health Affairs*, Vol. 23, Issue 5, pp. 51-62.
- Knäuper, Bärbel and Patricia A. Turner. 2000. "Measuring Health: Improving the Validity of Health Assessments." J. Dunbar-Jacob (Ed.), *Quality of Life: In the Eye of the Beholder*. Pittsburgh, PA: University of Pittsburgh: Center for Research in Chronic Disorders.
- Lave, Judy, Christopher Keane, Chyongchiou J. Lin, and Edmund M. Ricci. 2002. "The Impact of Dental Benefits in a Children's Health Insurance Program on the Use of Dental Services in Western Pennsylvania." *Pediatric Dentistry*, Vol. 24, Issue 3, pp. 234-240.
- LoSasso, Anthony T. and Thomas C. Buchmueller. 2004. "The Effect of the State Children's Health Insurance Program on Health Insurance Coverage." *Journal of Health Economics*, Vol. 23, Issue 5, pp. 1059-1082.
- Luo, Xuemei, Gordon Liu, Karen Frush and Lloyd A. Hey. 2003. "Children's Health Insurance Status and Emergency Department Utilization in the United States." *Pediatrics*, Vol. 112, Issue 2, pp. 314-319.
- Lykens, Kristine A. and Paul A. Jargowsky. 2002. "Medicaid Matters: Children's Health and Medicaid Eligibility Expansion." *Journal of Policy Analysis and Management*, Vol. 21, Issue 2, pp. 219-238.
- McBroome, Kimberly, Peter C. Damiano and Jean C. Willard. 2005. "Impact of the Iowa S-SCHIP Program on Access to Dental Care for Adolescents." *Pediatric Dentistry*, Vol. 27, Issue 1, pp. 47-53.
- Mofidi, Mahyar, Rebecca Slifkin, Victoria Freeman and Pam Silberman. 2002. "The Impact of a State Children's Health Insurance Program on Access to Dental Care." *Journal of American Dental Association*, Vol. 133, Issue 6, pp. 707-714.
- National Governors' Association Center for Policy Research. 1988-1996. "State Coverage of Pregnant Women and Children." Washington, DC: National Governors' Association.
- Remler, Dahlia, Joshua Graff Zivin and Sherry A. Glied. 2004. "Modeling Health Insurance Expansions: Effect of Alternate Approaches." *Journal of Policy Analysis and Management*, Vol. 23, Issue 2, pp. 291-314.

- Rosenbach, Margo, Marilyn Ellwood, John Czajka, Carol Irvin, Wendy Coupé, Brian Quinn. 2001. Implementation of the State Children's Health Insurance Program: Momentum is Increasing after a Modest Start. Mathematica Policy Research, Inc.
- Selden, Thomas M., Julie L. Hudson, and Jessica S. Banthin. 2004. "Tracking Changes in Eligibility and Coverage among Children. 1996–2002." *Health Affairs*, Vol. 23, Issue 5, pp. 39-50.
- Shenkman, Elizabeth, Lise Youngblade and John Nackashi. 2003. "Adolescents' Preventive Care Experiences before Entry into the State Children's Health Insurance Program (SCHIP)." *Pediatrics*, Vol. 112, Issue 6, Supplement 2, pe533-541.
- Shore-Shepard, Lara. 2005. "Stemming the Tide? The Effect of Expanding Medicaid Eligibility on Health Insurance." *NBER Working Paper* No. 11091.
- Singh-Manoux, Archana, Jane E. Ferrie, Tarani Chandola and Michael Marmot. 2004. "Socioeconomic Trajectories across the Life Course and Health Outcomes in Midlife: Evidence for the Accumulation Hypothesis?" *International Journal of Epidemiology*, Vol. 33, Issue 5, pp. 1072-1079.
- Slifkin RT, Freeman VA and Silberman P. 2002. "Effect of the North Carolina State Children's Health Insurance Program on Beneficiary Access to Care." *Archives of Pediatric Adolescent Medicine*, 156, pp. 1223-1229.
- Szilagy, Peter G. 2003. "Who's Enrolled in the State Children's Health Insurance Program (SCHIP)? An Overview of Findings from the Child Health Insurance Research Initiative (CHIRI)." *Pediatrics*, Vol. 112, Supplement 2, pe499-507.
- Szilagy, Peter G., Andrew W. Dick, Jonathan D. Klein, Laura P. Shone, Jack Zwanziger and Thomas McInerney. 2004. "Improved Access and Quality of Care after Enrollment in the New York State Children's Health Insurance Program (SCHIP)." *Pediatrics*, Vol. 113, Issue 5, pe395-404.
- Ullman, Frank and Ian Hill. 2001. "Eligibility under State Children's Health Insurance Programs." *American Journal of Public Health*, Vol. 91, Issue 9, pp. 1449–1451.
- Urban Institute. 2004. "Key Findings from the 2002 National Health Interview Survey." 9 August 2004. Available at <http://www.rwjf.org/research/researchdetail.jsp?id=1413&ia=132>
- U. S. House of Representatives Committee on Ways and Means. 1986-1991. 1993. *Green Book: Background Material and Data on Programs within the Jurisdiction of the Committee on Ways and Means*. Washington, DC: U.S. Government Printing Office.
- U.S. Public Health Service. 2000. "Report of the Surgeon General's Conference on Children's Mental Health: A National Action Agenda." Washington, DC: Department of Health and Human Services.

- Wadsworth, M.E.J. 1999. "Early Life." In *Social Determinants of Health*, edited by M. Marmot and R.G. Wilkinson, pp. 44–63. New York: Oxford University Press.
- Wolfe, Barbara and Scott Scrivner. 2005. "The Devil May Be in the Details: How the Characteristics of SCHIP programs Affect Take-up." *Journal of Policy Analysis and Management*, Vol. 24, Issue 3, pp. 499 – 522.
- Yazici, Esel Y. and Robert Kaestner. 2000. "Medicaid Expansions and the Crowding Out of Private Health Insurance among Children." *Inquiry*, Vol. 37, Issue 1, pp. 23–33.
- Zuckerman, Stephen, Genevieve M. Kenney, Lisa Dubay, Jennifer Haley and John Holahan. 2001. "Shifting Health Insurance Coverage. 1997–1999." *Health Affairs*, Vol. 20, Issue 1, pp. 169–177.
- Zuckerman, Stephen, Niall Brennan and Alshadye Yemane. 2003. "Has Medicaid Managed Care Affected Beneficiary Access and Use?" *Inquiry*, Vol. 39, Issue 3, pp. 221-242.

APPENDICES

APPENDIX A. Data Source for the State Level Variables

Data of TANF caseloads for each state come from Department of Health and Human Services, Administration for Children and Families. Data on estimated population of each state is obtained from the U.S. Bureau of the Census. Data on TANF maximum benefit for a family of three is taken from table prepared by the Congressional Research Service on the basis of CRS surveys of state benefit levels. Ratios of state TANF recipients to state estimated population in 1997 and 2002 are derived and included in all regressions. Unemployment rates for each state come from the Bureau of Labor Statistics (BLS), U.S. Department of Labor. Data on overall CCDF expenditure and the average monthly number of children served by CCDF in each state in 1997 and 2002 are obtained from the U.S. Department of Health and Human Services, Child Care Bureau. Data on SCHIP/Medicaid eligibility rules come from Maternal and Child Health (MCH) Update Jan 20, 2000 and Update 2002 collected by the National Governor’s Association (NGA) Center for Best Practices. Sources for the state level data are summarized as follows:

State level data	Source
TANF caseloads	Department of Health and Human Services, Administration for Children and Families
Estimated population	U.S. Bureau of the Census
TANF maximum benefit	From table prepared by the Congressional Research Service on the basis of CRS surveys of state benefit levels.
Unemployment rate	Bureau of Labor Statistics
CCDF expenditure and number of recipients	U.S. Department of Health and Human Services, Child Care Bureau
SCHIP/Medicaid eligibility rules	Maternal and Child Health (MCH) Update Jan 20, 2000 and Update 2002 collected by the National Governor’s Association (NGA) Center for Best Practices.

APPENDIX B. SCHIP Eligibility and Health Insurance Coverage, Medical Care Utilization and Health Outcomes (Age DID for Whole Sample with All Independent Variables Reported)

	Public	Private	Insured	Doctor	Dental	Mental	Well-child	Morbidity	Good health	Worse health
age617	-0.06 (0.01)**	0.07 (0.01)**	0.00 (0.01)	-1.63 (0.12)**	0.75 (0.05)**	0.24 (0.11)*	-1.02 (0.06)**	0.06 (0.01)**	0.02 (0.01)**	0.01 (0.01)
yr99	-0.02 (0.01)	0.00 (0.01)	-0.02 (0.01)*	-0.21 (0.11)*	-0.04 (0.06)	0.04 (0.08)	0.03 (0.06)	0.00 (0.01)	-0.04 (0.01)**	0.00 (0.00)
yr02	0.05 (0.02)**	-0.03 (0.02)	0.02 (0.02)	-0.15 (0.13)	-0.23 (0.10)*	0.02 (0.13)	0.15 (0.07)*	0.01 (0.01)	-0.06 (0.01)**	0.00 (0.00)
age617yr99	0.02 (0.01)	-0.02 (0.01)*	0.00 (0.01)	0.19 (0.10)*	-0.01 (0.07)	-0.03 (0.09)	0.03 (0.06)	0.01 (0.01)	-0.03 (0.01)**	-0.01 (0.00)
age617yr02	0.02 (0.01)	-0.02 (0.01)*	0.00 (0.01)	0.22 (0.12)*	0.26 (0.06)**	0.11 (0.08)	0.06 (0.06)	0.01 (0.01)	-0.04 (0.01)**	-0.01 (0.00)
girl	0.00 (0.00)	0.00 (0.00)	-0.01 (0.00)	-0.01 (0.03)	0.08 (0.02)**	-0.16 (0.04)**	0.01 (0.02)	-0.05 (0.00)**	0.00 (0.00)	0.00 (0.00)
black	0.15 (0.01)**	-0.16 (0.01)**	-0.01 (0.01)*	-0.49 (0.06)**	-0.27 (0.04)**	-0.26 (0.07)**	0.32 (0.04)**	0.00 (0.01)	-0.05 (0.01)**	0.00 (0.00)
hispanic	0.08 (0.01)**	-0.17 (0.01)**	-0.09 (0.01)**	-0.46 (0.05)**	-0.27 (0.04)**	-0.20 (0.05)**	0.01 (0.03)	-0.02 (0.01)**	-0.09 (0.01)**	0.00 (0.00)
other	0.04 (0.01)**	-0.08 (0.01)**	-0.03 (0.01)**	-0.35 (0.11)**	-0.03 (0.07)	-0.19 (0.07)**	0.14 (0.08)*	0.00 (0.01)	-0.02 (0.01)*	0.00 (0.00)
parent1	0.18 (0.01)**	-0.18 (0.01)**	0.00 (0.00)	0.18 (0.05)**	-0.02 (0.03)	0.51 (0.05)**	0.10 (0.03)**	0.04 (0.00)**	-0.05 (0.00)**	0.01 (0.00)**
mka_female	0.05 (0.00)**	-0.05 (0.01)**	0.00 (0.00)	0.51 (0.04)**	-0.08 (0.04)*	0.21 (0.04)**	-0.04 (0.02)*	0.03 (0.00)**	-0.03 (0.00)**	0.01 (0.00)**
mka_age	0.00 (0.00)**	0.00 (0.00)**	0.00 (0.00)	-0.02 (0.00)**	0.01 (0.00)**	0.02 (0.00)**	-0.02 (0.00)**	0.00 (0.00)**	0.00 (0.00)**	0.00 (0.00)*
mka_HS	-0.16 (0.01)**	0.27 (0.01)**	0.11 (0.01)**	0.09 (0.06)	0.14 (0.05)**	-0.05 (0.05)	-0.07 (0.04)*	-0.04 (0.01)**	0.11 (0.01)**	0.00 (0.00)*
mka_SC	-0.21 (0.01)**	0.34 (0.01)**	0.13 (0.01)**	0.25 (0.06)**	0.25 (0.04)**	0.11 (0.06)*	-0.07 (0.04)*	-0.05 (0.01)**	0.13 (0.01)**	0.00 (0.00)
mka_college	-0.27 (0.01)**	0.44 (0.01)**	0.17 (0.01)**	0.45 (0.06)**	0.41 (0.05)**	-0.06 (0.06)	0.03 (0.04)	-0.07 (0.01)**	0.17 (0.01)**	0.00 (0.00)
chlld0_5	0.06 (0.01)**	-0.06 (0.00)**	0.00 (0.00)	-0.17 (0.03)**	-0.13 (0.02)**	0.03 (0.02)	-0.07 (0.02)**	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)
chlld6_17	0.02 (0.00)**	-0.03 (0.00)**	-0.01 (0.00)**	-0.15 (0.02)**	-0.01 (0.01)	0.04 (0.02)*	-0.09 (0.01)**	0.01 (0.00)**	0.00 (0.00)	0.00 (0.00)
west	0.03 (0.06)	-0.06 (0.08)	-0.03 (0.05)	0.78 (0.72)	0.10 (0.93)	-0.83 (0.82)	-0.27 (0.19)	-0.05 (0.06)	0.10 (0.05)*	-0.03 (0.02)
midwest	-0.05 (0.05)	0.00 (0.07)	-0.05 (0.06)	-0.23 (0.39)	-0.79 (0.42)*	-1.14 (0.74)	-0.57 (0.19)**	-0.14 (0.04)**	0.12 (0.04)**	-0.01 (0.02)
south	-0.01 (0.07)	0.05 (0.08)	0.03 (0.04)	0.92 (0.42)*	-0.34 (0.53)	-1.03 (0.75)	0.00 (0.24)	-0.10 (0.04)**	-0.03 (0.07)	0.02 (0.03)
TANFmax	-0.02 (0.01)	0.00 (0.02)	-0.01 (0.01)	0.10 (0.10)	0.03 (0.09)	0.03 (0.12)	0.08 (0.06)	0.00 (0.01)	0.02 (0.01)	0.00 (0.00)
TANFrate	-0.21 (0.55)	-0.33 (0.64)	-0.54 (0.48)	4.79 (4.10)	-3.85 (3.54)	-3.32 (4.59)	3.23 (2.37)	-0.18 (0.34)	0.86 (0.45)*	-0.07 (0.16)
Unem_rate	0.00 (0.01)	-0.01 (0.01)	-0.01 (0.00)**	-0.02 (0.04)	-0.04 (0.04)	-0.01 (0.05)	-0.05 (0.02)*	0.00 (0.00)	0.01 (0.00)*	0.00 (0.00)
CCDF	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.03)	-0.01 (0.02)	-0.02 (0.03)	0.00 (0.02)	0.00 (0.00)	0.01 (0.00)**	0.00 (0.00)
age617ccdf	0.00 (0.00)*	-0.01 (0.00)**	0.00 (0.00)	0.03 (0.03)	-0.02 (0.01)*	0.01 (0.02)	-0.01 (0.02)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)
Observations	103860	103860	103860	103860	89069	86978	103860	103860	103860	103860

Notes: 1. Standard errors in parentheses, ** indicate significance at 0.01 level, * at 0.05 level.
2. All coefficients in Eq. (16), Eq. (17) and Eq. (18) except those on State dummies are reported.
3. Estimates are obtained from OLS models.

APPENDIX C. SCHIP Eligibility, Health Insurance Coverage and Health Outcomes: Marginal Effects from Logit Models

Approach I: Age Difference-In-Difference						
	Public	Private	Insured	Morbidity	Good health	Worse health
Whole sample						
age617*yr99	0.013	-0.024*	-0.003	0.004	-0.022**	-0.005
age617*yr02	0.029**	-0.028*	-0.005	-0.007	-0.026**	-0.006*
Income below 300% FPL						
age617*yr99	0.025	-0.043**	-0.009	0.012	-0.023	-0.007*
age617*yr02	0.049**	-0.043**	-0.004	0.006	-0.033	-0.006
Income above 300% FPL						
age617*yr99	-0.005	0.014	0.006	-0.011	-0.029*	0.001
age617*yr02	-0.001	0.004	-0.008	-0.028*	-0.019	-0.002
Approach II: Income Difference-In-Difference (for income < 300% FPL sub-sample)						
	Public	Private	Insured	Morbidity	Good health	Worse health
pov150p*yr99	0.066**	-0.090**	-0.032*	-0.001	0.007	0.004
pov150p*yr02	0.139**	-0.105**	-0.042**	0.021*	-0.017	0.003
Age6-17						
pov150p*yr99	0.067**	-0.085**	-0.041*	-0.007	0.012	0.001
pov150p*yr02	0.142**	-0.107**	-0.067**	0.025	-0.015	0.005
Age0-5						
pov150p*yr99	0.067*	-0.099**	-0.019	0.008	-0.001	0.002
pov150p*yr02	0.144**	-0.105**	0.002	0.005	-0.012	-0.003
Approach III: Reduced Form Equations						
	Public	Private	Insured	Morbidity	Good health	Worse health
Whole sample	0.027**	-0.013	0.014**	-0.004	0.006	-0.002
Treatment1:						
Income 150%-299% FPL, Age 6-17	0.040**	0.001	0.035**	-0.014	0.012	-0.004
Treatment2:						
Income <150% FPL, Age 6-17	0.051	-0.035	0.014	0.0197	0.0118	0.003
Treatment3:						
Income >300% FPL, Age 6-17	-0.0012	0.017	0.018**	0.004	0.017**	-0.000
Treatment4:						
Income 150%-299% FPL, Age 0-5	0.017	-0.027	0.002	0.007	-0.005	-0.003
Treatment5:						
Income < 150% FPL, Age 0-5	0.062*	-0.039	0.025	-0.007	0.028	-0.000
Control group:						
Income >300% FPL, Age 0-5	-0.006	0.01	0	-0.011*	-0.001	0.000
Stratifying whole sample by income						
Below 300% FPL	0.050**	-0.032**	-0.019**	-0.004	0.004	-0.002
Above 300% FPL	0	0.015	0.012*	-0.003	0.008*	-0.001
Stratifying whole sample by age						
6-17 age group	0.023**	0.001	0.029**	0.004	0.012*	-0.000
0-5 age group	0.013	-0.014	0.006	-0.004	-0.009	0.001

APPENDIX D. The Impact of the SCHIP Expansions on Health Outcomes: Ordered Logit Model

Approach I: Age Difference-In-Difference		
	Current Health Status	Compared Health Status
Whole Sample		
age617*yr99	-0.15 (0.06)*	-0.09 (0.08)
age617*yr02	-0.25 (0.05)**	0.01 (0.07)
Income < 300% FPL		
age617*yr99	-0.05 (0.08)	-0.15 (0.09)*
age617*yr02	-0.27 (0.07)**	0.02 (0.10)
Income >= 300% FPL		
age617*yr99	-0.35 (0.10)**	0.03 (0.14)
age617*yr02	-0.22 (0.11)**	-0.02 (0.13)
Approach II: Income Difference-In-Difference (for income < 300% FPL sub-sample)		
	Current Health Status	Compared Health Status
Income < 300% FPL sub-sample		
pov150p*yr99	-0.15 (0.08)*	0.03 (0.12)
pov150p*yr02	-0.17 (0.08)*	0.10 (0.09)
Age group 6-17		
pov150p*yr99	-0.20 (0.10)*	0.03 (0.16)
pov150p*yr02	-0.21 (0.10)*	0.12 (0.13)
Age group 0-5		
pov150p*yr99	-0.04 (0.13)	0.07 (0.13)
pov150p*yr02	-0.08 (0.12)	0.09 (0.13)

APPENDIX E. The Impact of the SCHIP Expansions on Coverage, Medical Care Utilization and Health Outcomes: Triple Difference-in-Difference from OLS Model

	Public	Private	Insured	Doctor	Dental	Mental	Well-child	Morbidity	Good health	Worse health
pov150p_age617_yr9902	-0.06 (0.02)**	0.02 (0.02)	-0.04 (0.02)*	-0.01 (0.23)	0.13 (0.12)	0.09 (0.16)	-0.13 (0.15)	-0.01 (0.02)	0.04 (0.02)**	0.01 (0.01)
pov150p	-0.34 (0.02)**	0.39 (0.02)**	0.05 (0.01)**	-0.08 (0.18)	-0.01 (0.08)	-0.02 (0.08)	-0.18 (0.11)	-0.02 (0.01)*	0.00 (0.01)	0.01 (0.00)
yr9902	-0.02 (0.02)	0.01 (0.02)	-0.01 (0.02)	-0.13 (0.18)	0.03 (0.08)	0.06 (0.14)	-0.08 (0.12)	0.00 (0.01)	-0.09 (0.02)**	0.01 (0.00)
age617	-0.14 (0.02)**	0.10 (0.02)**	-0.04 (0.02)*	-1.53 (0.18)**	0.43 (0.09)**	0.24 (0.15)	-1.02 (0.10)**	0.07 (0.02)**	0.03 (0.01)*	0.01 (0.01)
pov150p_yr9902	0.06 (0.02)**	-0.08 (0.02)**	-0.01 (0.02)	0.09 (0.22)	-0.23 (0.09)**	-0.14 (0.11)	0.16 (0.14)	0.01 (0.01)	0.06 (0.01)**	0.00 (0.00)
pov150p_age	0.10 (0.02)**	-0.03 (0.02)	0.06 (0.02)**	-0.03 (0.20)	0.30 (0.10)**	-0.06 (0.12)	0.02 (0.12)	-0.01 (0.02)	0.02 (0.01)	-0.02 (0.01)*
age_yr9902	0.06 (0.02)**	-0.04 (0.02)**	0.02 (0.02)	0.15 (0.19)	0.01 (0.10)	0.00 (0.14)	0.18 (0.13)	0.02 (0.02)	-0.08 (0.01)**	-0.01 (0.01)
Observations	103860	103860	103860	103860	89069	86978	103860	103860	103860	103860

Note:

1. Standard errors in parentheses, ** indicates significance at 0.01 level, * at 0.05 level.
2. Estimates are obtained from OLS models.

PART III: GRANDPARENTS RAISING GRANDCHILDREN:
THEORY, REALITY AND PUBLIC POLICY

CHAPTER 1

INTRODUCTION

The most recent estimate by the U.S. Census Bureau (2004) shows that nationally there are 5.76 million children under the age of 18 living in households with a grandparent present (7.8 percent of all children).⁴² This represents a 50 percent increase since 1990. The Census estimates that the percentage of children under 18 living in a grandparent-headed home was 6.3 percent in 2000, compared with 5.5 percent in 1990, 3.6 percent in 1980 and 3.2 percent in 1970.

About 1.5 million of these children nationwide are living in grandparent headed households with neither parent present, which represents 2.05 percent of all children. This family form occurs in all racial groups: 40% of these grandparents are white, 39 % are African American, 16% are Hispanic and 1% are Asian. However, this living arrangement is least common among Asian Americans and most common among African Americans: only 0.5% of all Asian American children were living in grandparent households with neither parent present, while 5.1 percent of African American children are living in such households. The corresponding estimates are 1.5 percent for non-Hispanic white and 1.8 percent for Hispanics. In addition, children living in grandparent

⁴² Data are retrieved online at <http://www.census.gov/population/www/socdemo/hh-fam/cps2004.html>. The percentage is calculated by the author.

households with neither parent present are more likely to live in poverty compared to all US children (61 percent vs. 40 percent) (2004 U.S. Census Bureau).⁴³

The public policy significance of the rapid growth in grandparent households can be fully understood in the context of underlying factors contributing to the ongoing trend. Substance abuse is one of the most common reasons for the increased number of children living with grandparents. A number of studies have shown that the crack-cocaine epidemic has increased the number of African-American grandparents caring for their grandchildren (Minkler et al. 1992, Minkler et al. 1993, Minkler et al. 1994, Roe et al. 1994). An increase in the incarceration rate of women over the past three decades has also contributed to this trend (Acoca 1998, Barnhill 1996, Dressel and Barnhill 1994, Kurshan 1999, Ruiz 2002). In addition, the AIDS epidemic also plays a role in this increasing shift of responsibility for child rearing to grandparents (Levine 1995, Joslin and Brouard 1995).

Finally, divorce and abuse or neglect of children are also among the most cited reasons for grandparents to become primary caregivers for grandchildren (Minkler and Roe 1993, Chalfie 1994, Dressel and Barnhill 1994, Minkler and Roe 1996, Minkler and Fuller-Thomson 1999, Pebley and Rudkin 1999). Given the risk factors associated with these social issues and the vulnerability of those families, a number of public policies may target these households or might have consequential implications for them.

A pragmatic and philosophical shift in public policy is also likely to have contributed to the increase in the number of grandparent caregivers (Ingram 1996, Berrick et al. 1998). Child welfare policy makers began to view grandparents as a safety

⁴³ Again, raw data are retrieved online at <http://www.census.gov/population/www/socdemo/hh-fam/cps2004.html> and all percentages are calculated by the author.

net for grandchildren in the early 1980s. Consequently, several policy changes during the 1990s, including welfare reform, led the government to shift the burden of family problems to family members, mainly to grandparents (Mullen 1996, Bonecutter and Gleeson 1997, Pebley and Rudkin 1999). These federal policies influence both state policies and the practice of local welfare agencies. They also create specific incentives for grandparent household formation.

In sum, concurrent demographic changes and public policy shifts have led to an increase in the number of grandparent headed households in the United States. However, a careful examination of the literature reveals that there are no economic studies that investigate how public policies have influenced the number of grandparents caring for their grandchildren. This study specifically examines the impact of welfare reform on grandparent household formation. I use data from the 1997, 1999 and 2002 waves of the National Survey of America's Families (NSAF), in conjunction with other state level data, to empirically investigate how state TANF choices have influenced the formation of grandparent headed households while controlling for other related contemporary public policies, such as state kinship care policies and the State Children Health Insurance Programs (SCHIP).

CHAPTER 2

LITERATURE REVIEW

To my knowledge, although there are many existing studies on grandparent households, none are designed to examine effects of welfare reform and other public policies on grandparent household formation. Thus, to a large extent I must look at more general studies of grandparent households and examine what gaps remain in the literature.

Most of the existing research on grandparent households focuses on documenting the socio-demographic characteristics of grandparents raising grandchildren in the United States (Chalfie 1994, Fuller-Thomson et al. 1997, Fuller-Thomson and Minkler, 2000) and problems faced by grandparent caregivers (Minkler and Roe 1996, Minkler, Berrick and Needell 1999, Fuller-Thomson and Minkler, 2000). For example, Chalfie (1994) finds that the vast majority (68%) of grandparent caregivers are white, but grandparent caregivers are disproportionately represented by African Americans (29%); grandmothers are more likely than grandfathers to be parenting their grandchildren (60% are grandmothers and 40% are grandfathers). Even when both grandparents are present, grandmothers usually assume the lion's share of caregiving duties. Grandparent caregivers are heavily (57%) concentrated in the South. According to Fuller-Thomson et al. (1997) custodial grandparents in the 1990s were less likely to be married, to be non-

Hispanic whites, to be male, and to have completed high school than noncaregiving grandparents.

Health problems, economic hardships, lack of government support, social isolation and problems of raising children with special needs are among the problems faced by grandparents who are parenting their grandchildren (Burton 1992, Minkler and Roe 1996, Casper and Bryson 1998, Scarcella et al. 2003, Fuller-Thomson et al. 1997, Dressel and Barnhill 1994). It is possible that grandparents in these households already faced these problems before caring for their grandchildren. But taking in and caring for a dependent child (or many dependent children) exacerbates the hardship. These findings reinforce the significance of public policies addressing the needs of these most vulnerable families.

Relatively fewer studies focus on the *child* outcomes when investigating grandparent caregiving. Dubowitz et al. (1994) is the first comprehensive assessment of the physical and mental health and educational status of children in kinship care; it also compares children in informal kinship care⁴⁴ with children in foster care⁴⁵, children in poverty and children from the general population. The study finds that children in kinship care have substantial health care needs relative to children living with their parents. Many of the children's health problems had not been identified by their caregivers, and even when they had been, follow-up care was often lacking; many children also had substantial school-related problems. However, this study consists of a sample of 524 kinship care

⁴⁴ Kinship care generally refers to the provision of full-time nurturing and protection of children by persons who have a family relationship bond with the children (other than their own parents).

⁴⁵ Foster care involves services from child welfare agencies where the child is placed in the custody of the state by a court. Foster care refers to the care of children on a full-time, temporary basis by persons other than their own parents. Foster care is intended to offer a supportive family environment to children whose natural parents cannot raise them because of the parents' physical or mental illness, the child's behavioral difficulties, or problems within the family environment, e.g., child abuse, alcoholism, extreme poverty, or crime.

giving households under the supervision of the Baltimore City Department of Social Services in 1989, where 47 percent of caregivers are grandmothers. Therefore their results cannot be generalized to all grandparent caregiving. In addition, this study is a simple descriptive analysis and is not a multivariate study.

Casper and Bryson (1998) conduct a multivariate analysis which focuses on comparing different family structures within grandparent maintained families. Using 1997 Current Population Survey (CPS) data, they find that children living in grandparent households without either parent present do not fare as well economically as their counterparts living in their parents' homes. In particular, they find that grandchildren in both-grandparents, no-parents-present families are much more likely to be lack health insurance than grandchildren living in grandmother only, no parent present households or grandchildren living in grandfather only, no parent present households. Casper and Bryson also find that grandchildren in grandmother only, no parents present families are more likely to be poor and receive public assistance. Their analysis is the only multivariate analysis on this topic to the best of my knowledge.

As noted by Scarcella et al. (2003), children cared for by grandparents may already have a variety of behavioral and emotional problems due to the trauma of being separated from a parent as well as the experience of abuse or neglect. This study reports that about one-fifth of children cared for by their grandparents and other relatives have either a health condition that limited their activities or are in fair or poor health. Roughly one-tenth of 6-17 year-old children living with grandparents or other relatives have elevated levels of behavioral or emotional problems. Twenty-six percent of children living with their grandparents have low levels of school engagement. This study also uses

data from NSAF, but only from the 1999 round. In addition, the study presents only bivariate comparisons of characteristics of grandparent households with no parent present versus households headed by other relatives, as well as the characteristics of children living in them. Lack of multivariate analysis limits our ability to assess the relative importance of various factors contributing to the disadvantage of different groups of grandchildren.

No studies in the literature have empirically investigated why and how grandparent households form. By using 1997, 1999, 2002 data from the National Survey of America's Families, this preliminary study represents the first effort in the literature that investigates the factors influencing grandparent household formation, with a focus on TANF related policies. Next I am going to discuss these policies, with a focus on their implications for grandparent household formation.

CHAPTER 3

PUBLIC POLICY RELATED TO GRANDPARENT HOUSEHOLDS

Public policies usually target relative caregivers as one group instead of aiming specifically at grandparent caregivers. This is despite the fact that many studies have found that a majority of kin caregivers are grandparents (Berrick et al. 1994, Burnette 1997, Chalfie 1994, Harden et al. 1997, LeProhn 1994, Macomber and Geen, 2002, Jones 2003). In this section I will discuss the primary public assistance programs available to kinship care families. Then I will explain the major policy implications in the context of grandparent caregiving, depending on the type of kinship care arrangements. For the purpose of this study, I will focus on the impact of the 1996 welfare reform on grandparent household formation while at the same time discussing other relevant policies, such as state kinship care policies and SCHIP programs.

There are many different ways to categorize kinship care. One common way is to divide it roughly into informal kinship care and formal kinship care. Most kinship care is private and informal: the decision that a child lives with a relative is made within a family and no child welfare agency is involved. In contrast, when a child is placed in the custody of a child welfare agency by a court, and then the child is arranged to be cared for by a relative by the child welfare agency—this is foster care. Such an arrangement is public and formal. Hence, the decision to become a grandparent caregiver and therefore

to form a grandparent household is indeed a multinomial choice model, i.e. to choose between informal versus formal kinship care. In this essay, empirically, I am primarily interested in examining whether or not a grandparent household is formed, instead of investigating what type of grandparent household is formed. The relatively small sample size of grandparent households limits the feasibility of further classifying grandparent households into different family structures.

Although I will not empirically differentiate various types of grandparent households, it is important to distinguish between formal and informal kinship care since public assistance eligibility and receipt vary for the different kinship arrangements (refer to Figure 4). Generally, income assistance from Temporary Assistance for Needy Families (TANF) is the most common and important public assistance received by informal kinship care families. All kin who are not receiving foster care payment or Supplemental Security Income (SSI)⁴⁶ for the child in care are eligible to receive TANF cash assistance. In contrast, only kin caring for a child who is in state custody (foster kinship care or formal kinship care) are eligible to receive child welfare services including foster care payments. Foster care payments are generally more generous than TANF cash assistance. I will discuss the details later.⁴⁷

⁴⁶ If the relative child in their care meets disability guidelines such as blindness, relative families are eligible to receive supplemental security payments, unless they are already receiving foster care payments or AFDC payments.

⁴⁷ Children in kinship care may receive Food Stamps (if the family is income-eligible) and the Earned Income Tax Credit (EITC), which will not be discussed here given the focus of the current study.

3.1 Informal Kinship Care, TANF and Its Implication for Grandparent Household Formation

Now I will discuss TANF and its implications for informal kinship care. Between 1950⁴⁸ and 1996, Title IV of the Social Security Act and its regulations authorized relative caregivers to receive the Aid to Families with Dependent Children (AFDC) grants for taking care of dependent children in their extended families. Eligible relative caregivers could apply and receive payment as a family unit if they themselves met income and assets eligibility guidelines, or they could apply to receive welfare benefits for only the related child regardless of their own income (i.e. an AFDC child-only grant). The 1996 welfare reform act officially encouraged states to give relatives first priority in providing care for foster children. Under the Personal Responsibility and Work Opportunity Reconciliation Act (PRWORA) of 1996, states are required to “consider giving preference to an adult relative over a non-related caregiver when determining a placement for a child, provided that the relative caregiver meets all relevant state child protection standards” (Leos-Urbel et al. 2000). After the TANF program replaced the AFDC program in 1996, states were given the option to continue providing child-only grants to non-needy relatives.⁴⁹

Although welfare reform was expected to primarily impact the lives of children living in single-parent households, a growing number of children residing with relatives

⁴⁸ A 1950 Social Security Act amendment offered eligible relative caregivers financial assistance for children in their care through the Aid to Dependent Children (ADC) program, which was renamed the Aid to Families with Dependant Children (AFDC) program in the 1960s.

⁴⁹ All states except Wisconsin have continued this benefit. In Wisconsin, the child must be at risk of harm if living with biological parents in order for the relative caregivers to be eligible for a TANF child-only payment.

were also likely to have been affected due to the new features of the welfare program such as time limits and work requirements. For example, Berrick, Needle and Minkler (1999) offer an overview of welfare reform legislation in California and its implications for elder caregivers; Mullen and Einhorn (2000) elaborate the policy implications of welfare reform on grandparent headed households specifically. Like Mullen and Einhorn (2000), my study also focuses exclusively on grandparent-headed households where neither parent is present. This is an important definition of grandparent household with regards to TANF. The presence of a parent in the grandparent household (whether the parent is a teenager or an adult) triggers different eligibility standards under TANF, and thus presents different policy implications (Mullen and Einhorn 2000).

In households with parents present, it is the parents' circumstances that determine eligibility, not the circumstances of the grandparents. A grandparent can, and may wish to, decline to be part of the assistance unit, or may even be ineligible to be part of it, and still obtain benefits on behalf of a grandchild. That option—to obtain a grant on behalf of the child only—is not available to parents. For example, grandparent-headed households can have income and resources that exceed eligibility standards and still receive TANF on behalf of a grandchild, while parent-headed households with identical income and resources would not qualify for TANF.⁵⁰

TANF is different from the previous AFDC program due to several features including time limits on aid and work requirements. These changes may create incentives

⁵⁰ The limited circumstances where a parent receives a child-only grant on behalf of a child include families where the parent is disabled and receives SSI benefits, families where the parent is an ineligible immigrant, and families where a parent has been removed from the grant due to a sanction. In such cases, the time limits do not apply either. What distinguishes parents who receive the child-only grant from grandparents is that parents cannot elect to be removed from the grant.

for forming grandparent households. For example, a grandparent may have an incentive to apply for a TANF child-only grant even if she/he is eligible due to two important conditions of program participation: time limits and work requirements. The PRWORA prohibits the use of any federal TANF dollars in a household where an adult has received benefits for more than 60 months, and allows states to impose even shorter time limits. States may exempt up to 20 percent of their TANF recipients from this time limit on the basis of hardship.⁵¹ In every state, grandparents who are part of the assistance unit can avoid the lifetime loss of benefits for their grandchildren by removing themselves from the TANF grant anytime up to receiving 59 months of benefits. Parents do not have this option. Once grandparents exhausted their 60-month lifetime limits, nine states explicitly do not allow them to convert to a child-only grant. Another 33 states permit grandparents to withdraw from the assistance unit and continue to receive benefits on behalf of their grandchildren even after reaching 60-month time limits. Some of those states choose to provide benefits for the grandchildren using state dollars or funds available under a pre-TANF AFDC waiver (Mullen and Einhorn 2000).

In addition, absent an exemption for good cause, PRWORA requires any grandparent who receives TANF assistance for him/herself to participate in work programs. However, work requirements do not apply when grandparents are not part of the assistance unit. More specifically, states are allowed to exempt grandparents who receive child-only grants from the work requirements and to exclude those cases in calculating their work participation rates. All states that offer child-only grants take advantage of this exemption.

⁵¹ Some states exempt caretakers who are over age 60.

Therefore, both time limits and work requirements do not apply to grandparents who elect not to be part of the TANF assistance unit. In every state, a grandchild who receives aid for 60 months at a parent's home and then goes to live with a grandparent is able to obtain additional benefits. Grandparents in the assistance unit who leave the TANF grant before the 60th month themselves, can continue to receive benefits for their grandchildren until the grandchildren reach age 18 or 19, depending on state law. This policy creates an incentive for grandparents to care for their grandchildren due to the TANF child-only grant.⁵²

3.2 Formal Kinship Care, State Kinship Care Policy and Its Implication for Grandparent Household Formation

Formal kinship care is also called foster kinship care. Foster care payments are usually available to kin who are caring for children in state custody and who become licensed by the state. In general the requirements of licensed foster homes include parent training, medical exams and background checks, standards for physical space in the house, caregiver age, family income, length of marriage and total number of children in home. With limited federal guidance, the licensing requirements for kin differ from state to state. But most states either modify or waive certain licensing requirements for kin.⁵³ According to Boots and Geen (1999), kinship families in most states (40 plus the District

⁵² However, the child support enforcements by states may substantially reduce the possibility of such fraud. States are required to try to recover the costs associated with their cash assistance programs by collecting child support from non-custodial parents. All states imposed cooperation requirements on grandparents who are part of the assistance unit. With regard to a grandparent receiving child-only grant, 3 states do not impose a cooperation requirement, and 13 states impose one but did not sanction the child for the grandparents' failure to cooperate. Cooperation meant providing information about the identity and location of the absent parent or parents, making the child available for blood tests, and appearing at interviews and court hearings (Mullen and Einhorn 2000).

⁵³ See Leos-Urbel, Bess and Geen (2000) for a detailed discussion of state licensing requirements for kin.

of Columbia) are held to a less stringent standard⁵⁴ for foster family eligibility than non-relative foster families.⁵⁵

As welfare reform takes shape in states across the U.S., state kinship care policies continue evolving in terms of identifying, licensing, and financially supporting kinship care families as well as moving kinship care families to permanency. Federal policies allow states great discretion in determining how to license and support kinship foster parents. When the Adoption and Child Welfare Act of 1980 was passed, forming the basis of U.S. federal foster care law, it was rare for a child's relative to act as a foster parent. Available evidence suggests that rates of formal kinship care increased substantially during the late 1980s and 1990s. In 1997, approximately 200,000 children were in formal kinship care (foster kinship care), which represent 29 percent of all foster children and about 10 percent of all children living in kinship care arrangements (U.S. Department of Health and Human Services, 2000).

As mentioned earlier, the average foster care payment is notably higher than the average TANF payment, especially if there are multiple children in care. This is because the marginal foster care payment rate does not decline as the number of children in care increases, and foster care payment rates also depend on the age of the child. For example, although foster care payments differ from state to state, foster care payments averaged \$356 per month for a 2-year-old, \$373 per month for a 9-year-old, and \$431 per month for a 16-year-old child in 1996. In contrast, in 1996, TANF payment amounts averaged

⁵⁴ The least stringent states have few or no requirements for kin caregivers. In contrast, the most stringent states require full standards for licensing--the same as non-kin. In between the two extremes there are states that have a separate approval process for kin or waive some of the full standards' requirements.

⁵⁵ However, about half of these states do not provide foster care payments to the kinship families meeting a lower standard. Those families, if seeking financial help, have to apply for welfare or other government assistance, which typically provides lower payments.

\$207 per month, with a range from \$60 to \$452 for one child per month. Moreover, TANF payment amounts increase at a declining rate for each additional child and do not vary depending on the age of the child. These payment differences result in sharp differences in the assistance provided to kinship care families within and across states.⁵⁶ All else equal, the higher foster care payments compared with TANF provide an incentive for informal kinship care givers to become part of the child welfare system.

In sum, variations in TANF programs and state kinship care policies may create certain incentives for grandparents or other relatives to care for dependent children, either by encouraging them to enter the formal kinship care system (i.e. child welfare system in the form of foster care arrangement) or choosing an informal kinship care arrangement. As welfare reform continues, parents are increasingly likely to exceed time limits, be subjected to sanctions and suffer welfare income loss, creating an incentive to shift their children to the grandparents' homes. State kinship care policies are also continuing to evolve. Using data from the NSAF in conjunction with other state level data, the goal of this paper is to empirically examine how welfare reform affects grandparent household formation. Next I will analyze grandparent households' decisions in an economic theoretical framework, with a view to gaining insights into motivations underlying grandparent caregiving behaviors.

⁵⁶ See Boots and Geen (1999) for a detailed discussion.

CHAPTER 4

CONCEPTUAL THEORETICAL FRAMEWORK

In this section, I set up a theoretical framework for analyzing grandparent caregiving behaviors. I consider a society in which a grandparent⁵⁷ is confronted with the decision of whether or not to take in a grandchild. The discussion will start with analyzing different motives of grandparent caregivers. This is because the primary goal of the current study is to investigate whether public programs, such as TANF, may influence grandparent household formation. The decision to form a grandparent household may indeed depend on the motivation underlying grandparent caregiving behaviors.⁵⁸

4.1 Grandparent Caregiving Motivations

In the studies of both inter-vivos transfers and bequests, *altruism* and *exchange* are the two commonly explored competing hypotheses for private intergenerational transfers (Bernheim, Shleifer and Summers 1985, Wilhelm 1996, McGarry 1999, Cox 1987, Cox and Rank 1992, Cox and Jakubson 1995). This study applies the theories explaining private intergenerational transfers to discuss motivations of grandparent caregiving behaviors. In addition to *altruism* and *exchange*, there may be another distinctive motive that sets

⁵⁷ It is likely that many households have both grandparents. But I will assume only one grandparent in my model in order to simplify the analysis.

⁵⁸ Thomas (2000) discusses theories contributing to understanding of the grandparenting role from other disciplines.

grandparents apart from other non-parental caregivers: the legacy effect.⁵⁹ A grandparent chooses to take care of the grandchild so that the “family values” or heritage can be carried on. This motive is more similar to the altruism motive than to the exchange motive because the older the grandparent, the higher the likelihood that the grandparent may pass away in the near future and, therefore, the stronger his/her motive of helping the grandchild out so that family values can be preserved.⁶⁰ Thus, next I will elaborate the altruism and exchange motives without discussing the legacy effect separately. In addition, even for a grandparent who cares for the grandchild because she/he mainly expects future service from the child (the exchange motive), she/he may still have some altruism towards the grandchild. But for the sake of simplicity, I just consider two extreme cases: one is pure altruism and the other is pure exchange motive.

While evolutionary biology can explain the altruistic behavior of grandparents, there are no specific economic theories tailored to explain the reasons why grandparents take care of their grandchildren. Since different methods and focuses of different fields lead to different perspectives on altruism which can arise from using narrow or broad definitions of self-interest (at one extreme, self-interest is limited to material benefits for the altruist, while at the other extreme, self-interest includes only psychological rewards), it is imperative to define altruism in this analysis.

"Imagine a world where people give of themselves simply because they want to. Not out of a sense of debt. Or because they want something in return. No ulterior motives. No guilt feelings. Just a desire to give for the sake of giving. Now instead of imagining this kind of

⁵⁹ I would like to thank David Mitch for suggesting this effect and for his other valuable comments.

⁶⁰ However, the legacy effect may be different from the altruism motives. Altruism might lead to a different distribution of resources across grandchildren (to maximize the sum of the individual grandchild utilities so that the least successful grandchild gets most) whereas the legacy effect might encourage investment in the grandchild most likely to succeed in the future). It's not very relevant for the purpose of the current study, but with the right data sets, one might be able to empirically differentiate these two motives.

world, do your part in making it happen. Make a charitable donation. Volunteer your time to improve your community. Give back to the world that gives so much to you. And if it happens to make you feel good, that's all right. Feeling good is the one ulterior motive that's acceptable." --Bill Daniels⁶¹

That is what I mean by referring to altruism in this analysis, which is so-called 'real altruism' or 'psychological altruism'. In contrast, "if parents anticipate that children will help out in old age—perhaps because of guilt or related motivations, —even parents who are not very loving toward their children would invest more in the children's human capital, and save less to provide for their old age" (see Becker 1992, p50). The parental behaviors Becker described could again apply to grandparent caregiving. The reason that a selfish grandparent who purely expects returns from the grandchild is willing to care for the grandchild is that the return from investing in the grandchild is higher than the returns from her/his other available options.

In fact, no matter what the underlying goal motivating the grandparent to care for the grandchild is, the observed behaviors of the grandparent may be similar. This is due to the fact that she always wants the grandchild to be better off in order for her/his own utility to be maximized. For example, if the grandparent is altruistic, then her/his utility is higher when the child fares better. If the grandparent is motivated instead by the exchange motive, she/he still wishes that the grandchild accumulates enough human capital so that the grandchild can help her/him out later.

⁶¹ Bill Daniels (1920-2000) is the "Father of Cable Television" and a philanthropist who formed the "Daniels Fund", a foundation that supports issues relating to aging, alcoholism and substance abuse, amateur sports, disabilities, education (early childhood, K-12 reform, and ethics and integrity) homelessness and disadvantaged, and youth development. (Source of quote: http://www.danielsfund.org/PDFs/2005_Grant_Guidelines.pdf)

However, there are a few subtle ways that the altruistic grandparent may be different from other grandparents. Within the utility maximizing framework of resource allocation, the difference between different motivations may originate in at least three distinct ways. First, the grandparent may respond differently to the age difference between her/himself and the grandchild. For an altruistic grandparent, the greater the age difference between her/him and the grandchild, the more resources may be allocated to the grandchild. This is because due to altruism, the grandparent realizes that she/he should invest more in the grandchild so that the grandchild should be independent in case she/he passes away in the near future (although the ability to leave bequests should mitigate this somewhat.) In contrast, for a grandparent who expects returns from the grandchild, the opposite may be true; that is, the bigger the age difference between her/him and the grandchild, the fewer resources will be allocated to the grandchild because she/he anticipates that she/he will receive less return from the child before she/he dies, as services do not begin until the child reaches a certain age. For instance, an 80-year old grandparent may receive less service from a 1-year-old grandchild than she/he could get from a 15-year-old grandchild, all other things being equal. In addition, services from young children would be discounted by the amount of time until they would be actually provided.

Second, the grandparent may respond to the grandchild's capacity differently under different motives. The initial grandchild quality may be used as an indicator of child capacity. For the altruistic grandparent, the lower the initial child quality, the more resources may be invested in the grandchild so that the grandchild can catch up to his peers more quickly. This also follows the "equalizing" hypothesis of bequests and intergenerational transfers (Tomes 1981). But for a grandparent who is selfish in the sense that she/he cares

about the grandchild mainly because she/he expects to be helped out by the grandchild in the future, then the less lower the initial child quality, the less may be invested in the grandchild or the less likely the grandparent would be to care for the child in the first place. This happens because the child might be viewed as a less promising and profitable investment option compared to other available investment alternatives to an exchange oriented grandparent.

Third, the grandparent may treat the grandchild quality and her/his adult child quality differently if the underlying motives differ. For an altruistic grandparent, she may treat the grandchild quality and the adult child quality as complements. In contrast, an exchange motivated grandparent may view grandchild quality and the adult child quality as substitutes. If her/his own adult child is a failure, she/he anticipates the grandchild will help out in old age instead. Therefore, how grandparents change the resources allocated to their grandchildren in response to changes in the age differential, changes in the grandchild quality and changes in adult child quality may shed light on the underlying motivation of grandparent caregiving behaviors. With the right data, it might be possible to identify empirically which motivation the grandparent has when taking the primary responsibility of raising their grandchildren.

4.2 Grandparent Household Formation

The decision is a binary choice where a grandparent compares the utilities between taking care of the grandchild (U_g) and not stepping forward for such a commitment (U_s). To become a grandparent caregiver, the grandparent must derive greater utility from doing so than from not being a caregiver. This decision is similar to,

yet different from a parent's fertility decision. (For economic analyses of fertility, see, for example, Becker 1960, Ben-Porath 1973, Schultz 1973, Willis 1973.) For example, for both grandparents and parents, they decide to "have" children either because they derive utility from doing so (children are compared to durable goods) or because they expect services from the children in the future (children are compared to investment goods). There are also some differences. For a parent's fertility decision, the choice is made between having the child (born) vs. not having the child (unborn). In contrast, for a grandparent, since the child is already born and she/he knows the child, the choice is either she/he cares for the child, or the child is living in an alternative arrangement such as a foster home. Another difference between a grandparent's decision of caring for a grandchild and a parent's fertility decision is *age*. For most grandparents, it is unusual for them to have the primary responsibility of parenting a child at their age. In contrast, it is normal for most parents to raise children at their age. In line with this argument, the age differential between the child and grandparent may matter more for a grandparent's decision than for a parent's decision.

Without taking care of the child, grandparent utility is a function of market purchased numeraire commodity (C),⁶² which is maximized subject to the income constraint:

$$\max_C U_S = U(C) \quad (1)$$

subject to

$$C = Y \quad (2)$$

where Y is family wealth/endowment.⁶³

⁶² Even without taking care of the child, the grandparent can still derive some utility from having a grandchild. But this utility is assumed to be exogenous, and I assume it is zero to simplify the analysis.

Solving this optimization problem yields the optimal demands for consumption goods:

$$C^* = C^*(Y) \quad (3)$$

Plugging the demand into the utility function yields the grandparent's maximized utility before taking in grandchildren:

$$V_s^* = V(Y) = U_s(C^*(Y))^{64} \quad (4)$$

Upon the formation of a household with the grandchild, the caregiving commitment can reduce resources available to the grandparent and therefore decrease her/his total utility. However, it also improves grandparent utility by producing $H(x)$,⁶⁵ which is a special commodity that is available only through grandparent caregiving. It must be produced by market goods x purchased at price p . Public programs can increase resources available to the grandparent household with a cash transfer W or by reducing the price of some commodities like health care. Conditional on taking care of the child, now the grandparent utility maximizing problem becomes

$$\max_C U_g = U(C, H(x)) \quad (5)$$

subject to

$$C + px = Y + W \quad (6)$$

Solving this maximizing problem yields demands for C and x :

⁶³ In order to simplify the analysis, I do not include time allocation in the model. This is a reasonable assumption as time can also be viewed as an endowment.

⁶⁴ For the purpose of simplicity, and given that the ultimate choice is between two utility levels, this is a deterministic model – C must equal Y – and there is no real choice at this level.

⁶⁵ $H(x)$ represents different things under different motives. For example, for altruistic grandparents it means child quality, but for exchange motivated grandparents, it means expected future service from their grandchildren.

$$C^* = C^*(p, W, Y) \quad (7)$$

$$x^* = x^*(p, W, Y) \quad (8)$$

The corresponding indirect utility is:

$$V_g^* = V(p, W, Y) = U_g(C^*(p, W, Y), H^*(x^*(p, W, Y))) \quad (9)$$

The grandparent will take care of the child only when the utility shown in equation (9) exceeds that shown in equation (4). This can be written as

$$V = V_g^* - V_s^* = U_g(C^*(p, W, Y), H^*(x^*(p, W, Y))) - U_s(C^*(Y)) > 0. \quad (10)$$

This model regarding grandparent household formation and demand for the special commodity H yields some implications regarding the impact of public policies on grandparent household formation. According to Gary Becker, “Parents help determine the values of children—including their feelings of obligation, duty, and love—but what parents try to do can be greatly affected by public policies and changes in economic and social conditions.” (Becker 1992 p. 51) In the case of grandparents serving as surrogate parents, grandparents’ behaviors can also be influenced by public policies. Theoretically speaking, government programs such as TANF can have an income effect by shifting the budget constraint outward. In line with this argument, TANF programs are expected to be positively associated with grandparent household formation and child investment x as well.⁶⁶

⁶⁶ However, regarding x , some complication may arise if the impact of public assistance on grandparent consumption is taken into account as well. For example, if the grandparent increases her own consumption in response to a receipt of public assistance, then the actual child investment by the household may decrease instead. In other words, public assistance may have a crowd-out effect on private child investment.

CHAPTER 5

EMPIRICAL STRATEGIES

5.1 Estimation Strategies

As discussed in the theoretical framework, a grandparent decides whether or not to care for the grandchild by comparing utilities in caregiving and non-caregiving scenarios. To empirically examine what factors, especially public policies, influence grandparent household formation, the following decision equation corresponding to equations (4) and (9) is estimated:

$$F_{ijs} = \alpha Y_{ijs} + \beta G_{ijs} + \gamma E_{ijs} + \eta NF_{ijs} + \Gamma W_s + \nu_{ijs} \quad (10)$$

where F is a dichotomous variable indicating whether the child is living in a grandparent maintained household without either parent present. Y represents family income, G contains child characteristics such as gender of child and race, E includes the Most Knowledgeable Adult's (MKA) characteristics such as the MKA's age and education, NF denotes household characteristics such as living in the South, and W includes the vector of policy variables. Subscript i indicates for individual i , and j indicates for outcomes j and s for state s .

5.2 Data and Variables

The primary sources of data are the 1997, 1999 and 2002 waves of the National Survey of American Families (NSAF). The three rounds of the survey were carried out

from February to November of 1997, February to October of 1999, and February to October of 2002 respectively. The NSAF provides information on the economic, health, and social characteristics of children, adults caring for the children, and their families. In each round, interviews were conducted with over 40,000 families, yielding a sample size of 2241 grandparent households.

There is one caveat about the data. Since the child is the unit of observation, both the household and the MKA are linked to the child by a household identification number. Therefore, I do not have information on grandparents who are not the MKAs of the children. Or to put it another way, a grandparent's characteristics are obtained only if the grandparent is the Most Knowledgeable Adult (MKA) of the child, so I do not have information on grandparents who are not the MKAs. As a result, I have to use the MKA's characteristics to proxy for the grandparent's information in such a case. This approach might not be ideal but could roughly represent grandparent characteristics. In most cases, the MKA is the child's parent. Numerous studies show intergenerational correlation and transmission regarding behaviors, parenting, earnings, wealth, labor market status, and welfare receipt (Serbin and Karp 2003, Thornberry et al. 2003, Saltaris et al. 2004, Grawe and Mulligan 2002, Couch and Dunn 1997, Goldberger 1989, Behrman and Taubman 1990, Antel 1992). In addition, these variables are control variables – not the variables of interest. Next I will discuss the primary measures used for grandparent household status, public policies, and basic demographic characteristics.

5.2.1 Grandparent Households Defined. There is a lack of consensus on how to classify grandparent households, and various approaches have been used by previous researchers. This study focuses exclusively on grandparent-headed households with

neither parent present. Although this definition excludes almost two-thirds of the grandparent-headed households as defined by the Census Bureau⁶⁷, it is a crucial definition of grandparent household in relationship to TANF. As noted by Mullen and Einhorn (2000), the presence of a parent in the household triggers different eligibility standards under TANF, and thus raises different policy considerations. In the current study, grandparent households are identified by two variables jointly: 1) the child is in a kinship care arrangement (i.e. neither parent is present in the household) and 2) the relationship of the MKA to the focal child is grandparent. If the grandparent is the MKA but the child is not in kinship care, then the household where the focal child lives will be not classified as a grandparent household by this study because at least one parent is present in such a household.

5.2.2 Measures of Public Policies and Public Assistance. As suggested by the theoretical model, public assistance can influence grandparent household formation by increasing family income or by reducing the relative prices of inputs and consumption goods. I consider three key public policies/programs that could have a significant impact on grandparent households: TANF, kinship care policy and SCHIP.

As discussed earlier, after the 1996 federal welfare reform law replaced the AFDC entitlement program with the TANF block grant program, a distinctive feature of TANF is the time limit. Under TANF, families that include an adult are generally limited to 60 months of lifetime assistance. States may impose a shorter limit. The 5-year time limit on TANF benefits may prompt some parents to turn over custody of their children

⁶⁷ The Census Bureau defines grandparent households as households headed by a grandparent (grandparents) with at least one co-resident grandchild. Therefore, such households may include only the child's mother, only the child's father, both the child's parents, or neither parent.

to grandparents. It is unclear whether there is increase in the number of grandparent-headed households after parents exhaust their eligibility for benefits. In order to test this possibility, it is hypothesized that the closer the family is to approaching the time limit, the more likely that a grandparent household might be formed, *ceteris paribus*.

Because all three rounds of the NSAF survey started in February, I calculate the time difference between February and the date that families in each state first could exceed the time limit for each survey year for states that impose time limits. The welfare reform law also allows states to choose not to impose time limits at all by using state funds to pay for assistance beyond 60 months. In such cases I just put in an arbitrary large number (1000 months). A difference with a positive value indicates the months left before the family would exceed its lifetime limit if it has been continuously on TANF since 1996. A difference with a negative value indicates the number of months since such a family would have exceeded its lifetime limit.⁶⁸ The smaller the value, therefore, the more potentially binding is the state's time constraint. Here I am not trying to actually calculate whether a family has exceeded its time limit. Instead I am trying to capture TANF time limit policy variation across states and the fact that the time limit is likely becoming more binding over time.

As discussed earlier, children living with grandparents with neither parent present can receive TANF child-only grants, and the grandparents are not subject to work requirements and time limits for these child-only grants since they are not in the assistance unit. Therefore, this aspect of TANF has an unintended consequence of

⁶⁸ For example, families from Florida first exceeded their time limit on 10/1/1998. The 1997 NSAF survey began as early as February, 1997. Therefore I calculated the month difference for Florida families in the 1997 NSAF as the difference between 10/1/1998 and 02/01/1997, which is 20.2 months.

creating a welfare loophole by encouraging children to live with their relatives after their families exceed state time limits. In order to test this possibility, it is hypothesized that the bigger the TANF cash assistance, the more likely that grandparents may take in their children and form grandparent households. The maximum TANF benefit varies dramatically from state to state. In addition to the basic choices states make with regard to benefit levels, the other factor that determines the maximum benefit amount a grandparent can receive is the number of people in the TANF assistance unit. With the exception of Idaho, states base the amount of cash assistance on the number of people in the assistance unit; the presence of more people in the assistance unit results in more cash assistance.

The monthly payment of TANF cash assistance could therefore be an important factor when creating such incentives. Here I create a measure of TANF cash assistance by taking the difference of the state TANF maximum benefit⁶⁹ for a family of two (*Cash2*), and state TANF maximum benefits for a family of one (*Cash1*), divided by the sum of the two amounts, i.e.:

$$\text{TANF Benefit Ratio} = \frac{\text{Cash}_2 - \text{Cash}_1}{\text{Cash}_2 + \text{Cash}_1}$$

In this case, *Cash1* represents the maximum benefit for a TANF child-only grant⁷⁰. Intuitively, the bigger the TANF Benefit Ratio, the less the cash assistance a grandparent would receive from a TANF child-only grant compared to the amount a family assistance unit of two persons would receive. Therefore, this ratio measures the

⁶⁹ There are some variations over time on TANF maximum benefits.

⁷⁰ As a sensitivity check, I also use *Cash1* instead of this TANF benefit ratio measure. The results are similar.

financial incentive for a grandparent to care for his/her grandchild and is hypothesized to be negatively associated with grandparent household formation decision.

Because families in formal kinship can receive foster care payments, which are higher than TANF payments, it is important to control for state foster care payments. Foster care basic monthly maintenance payment rates vary by a child's age in care, so the ideal variable would be actual state basic monthly maintenance payment for children at their age. As I could not find the foster care payment rates data for all age groups for all three years, I use state foster care basic monthly maintenance payment rates for children age 2 to proxy for children from 0-5 age group and the average of state foster care basic monthly maintenance payment rates for children age 9 and 16 to proxy for the 6-17 age group. It is hypothesized that the higher the basic monthly maintenance payment rate, the more likely a grandparent is to care for his/her grandchild, all other things being equal.

In addition, kinship care has been viewed more favorably than non-kin placement by state child welfare agencies since the 1980s, and state kinship care policies have also changed over time. In order to capture state kinship care policies, I adopt the five-point scale developed by Jantz, Geen, Bess, Andrews and Russell (2002) to measure states' flexibility in terms of working with kinship foster parents. This index contains one variable early in the service process (definition), two in the middle (options and payment) and two at the end (long-term foster care and subsidized guardianship). The flexibility criteria, reported in this order, are as follows:

- (1) Definition of kin is broad — beyond those related by blood, marriage, or adoption (i.e. to include family friends, neighbors);
- (2) Waived or separate assessment standard of licensing is offered for kin;

(3) Foster care payment is provided to kin who meet a waived or separate standard;

(4) Children are permitted to remain in long-term foster care with kin;

(5) Subsidized guardianship is offered to kin.

On one extreme, if a state implements all five policies, the index score for that state is five; on the other extreme, if a state has none of the above policies, the index score for such a state is zero. Therefore, the index score ranges from zero to five, with higher scores indicating more generous states in terms of treating kinship care families. It is hypothesized the higher the score is for a state, the more likely the residents in that state are to form grandparent households. In a secondary specification, I also use the five individual measures instead of the index score to better understand the effect of each individual kinship care policy on grandparent household formation.

Children in most states are eligible for Medicaid or SCHIP if their family income is at or below the minimum income eligibility level defined by the state. The eligibility process and types of coverage vary among states. Children in formal kinship care are categorically eligible to receive Medicaid assistance regardless of family income or TANF/SSI receipt. For children in informal kinship care, if the family is receiving a child-only TANF payment for that child, then the child is also eligible for Medicaid/SCHIP. As for Medicaid/SCHIP programs, I use state minimum income eligibility as a percentage of the Federal Poverty Line (FPL) for different age groups as a measure of Medicaid/SCHIP programs. It is hypothesized that Medicaid/SCHIP income eligibility is negatively associated with grandparent household formation by reducing the cost of raising a child from the parents' perspective.

Moreover, in order to control the business cycle impact on family income and earnings, I also include state unemployment rates. Finally, two dummy variables indicating year 1999 and 2002 are also included. Details on sources of state level variables are discussed in Appendix A.

5.2.3 Other Control Variables. The set of control variables used in the estimations include the child's characteristics such as gender and race, the MKA's characteristics such as age, marital status, education, and labor force status, and household characteristics such as family income level compared to the official poverty level, number of children under age 6, number of children between age 6 and 17, and region.

CHAPTER 6

EMPIRICAL RESULTS

The complex sampling design of the NSAF involves clustering, multistage sampling, and stratification. All means and regression results presented have been adjusted for the complex sampling design of NSAF, as well as adjusted for non-response and over-sampling, by using proper weights, Primary Sampling Unit (PSU) and Strata to ensure that the estimates are representative of the US population in general and that the standard errors are correctly calculated. (See Brick et al. 1999 for a more complete discussion of weights in the NSAF.)

6.1 Descriptive Statistics

Before reporting the regression results, I first present some basic descriptive statistics (refer to Table 37). According to the classification discussed earlier, there are 2,241 children (2.15 percent of the total sample) living in grandparent households, and 1,530 children (1.46 percent of the total sample) living in other kin households which include all other relative caregiver families.

Comparing grandparent-headed households to the whole sample reveals that grandparents are much more likely to be non-Hispanic black (47.5% vs. 15.6%), which is consistent with the estimates by the Census Bureau; children in their care are relatively younger (9.4 vs. 10.6 years old), and grandparents are older than the average MKA of the

sample (54.9 vs. 36.7 years old), which is not surprising given the fact that most MKAs in the NSAF data are children's parents. Compared to the average MKA of the whole sample, grandparent caregivers are also more likely to be female (89.2% vs. 80.9%), are less likely to be married (47.3% vs. 71.1%), and are less likely to be working (46% vs. 68.3%). In addition, grandparent caregivers are less likely to have a degree of Bachelor or higher (12.9% vs. 26.6%) and are more likely to live in poverty (61.3% vs. 56.7%). Therefore, it is likely that grandparents may apply for a TANF child-only grant to support the child. Furthermore, grandparent caregivers are also more likely to concentrate in the South (52.6% vs. 34.8%), a finding which is consistent with Chalfie (1994).

Comparing grandparent-headed households and other kin households shows similar patterns: grandparents are more likely to be non-Hispanic black (47.5% vs. 39.0%), children in their care are relatively younger (9.4 vs. 10.6 years old), and grandparents are older than other kin caregivers (54.9 vs. 39.2 years old). Compared to other relative caregivers, grandparents are less educated, are less likely to work (46% vs. 61.7%), and are more likely to live in poverty (61.3% vs. 56.7%). In addition, grandparent caregivers are also more likely to concentrate in the South (52.6% vs. 37%). All the differences discussed are statistically significant.

6.2 Regression Results

The first column in Table 38 presents the results based on estimating the decision equation (10) on the entire sample. The dependent variable measures whether the child is living in a grandparent maintained household without either parent present. The estimates on both TANF related variables (i.e. "number of months before/after the family exceeds TANF time limit" and "TANF maximum benefit ratio") do not yield the expected sign,

and neither is significant at the 10 percent level. Therefore, I do not find evidence that welfare reform has influenced grandparent household formation.

As for the kinship care policy index, the estimate of the coefficient on this index variable is 0.10 and the associated odds ratio, as reported in Table 38, is 1.109, which is statistically significant at the 5 percent level. That is, if a state increases the kinship care generosity index by 1 point, for example, by introducing a new kinship care policy, the likelihood of forming a grandparent household is increased by 10.9% on the margin. This finding presents some evidence that the generosity of state kinship care policies may encourage grandparent kinship household formation. However, the sign of the estimate on foster care payment is negative, yielding an odds ratio that is less than one. But it is not statistically significant. Likewise, the estimate on state SCHIP income eligibility also does not have the expected sign and it is not statistically significant either. Therefore, I do not find evidence that policy variables, other than state foster kinship care policies, have an influential impact on grandparent household formation.

Turning to the coefficients on control variables, the results are consistent with the findings from the descriptive statistics in general. For example, the results from regression show that non-Hispanic blacks are more likely than non-Hispanic whites (the reference group) to form a grandparent household. Grandmothers, older grandparents and grandparents living in the south are more likely to care for their grandchildren independently compared to grandfathers, younger grandparents and people living in other regions. Grandparents' education also makes a difference: more educated people are less likely to serve as surrogate parents for their grandchildren.

6.3 Sensitivity Checks

State kinship care policies do not target grandparents but apply to all kin, although grandparents are more likely than other kin to take care of those children. Therefore, I repeat the estimation for the decision to be a kin caregiver in general, instead of being a grandparent caregiver only, for the whole sample. (Results are reported in the third column of Table 38.) The results are generally consistent with those obtained from predicting the possibility of being a grandparent household. This exercise serves as a robust check and provides further evidence that state kinship care policies may encourage children to be in kinship care. Although still statistically insignificant, the sign of the time limit coefficient estimate now becomes positive.

For kinship care policies, instead of using the index measure, I also include all five individual state kinship care policy variables in one specification and each of the five individual variables separately in five different specifications. Subsidized guardianship kin is found to be positively associated with grandparent household formation in particular, regardless of whether this policy variable is used along with the other four kinship care policies or is the only kinship care policy in the model. However, the policy that permits children to remain in long-term foster care with kin is positively associated with the general kinship care arrangement when only this policy variable is used. (Refer to Table 39 for a summary of the results.) All other public policy variables, such as TANF and SCHIP variables, once again do not have any statistically significant effect.

As I assign an arbitrary large number (1000 months) as the time limit for states that do not impose time limits on their TANF cash assistance, I also test the sensitivity of

this assumption by using two other arbitrary numbers (800 months and 1200 months). The results (see the second and the third columns of Table 40) are similar to each other and are also similar to those reported in Table 38.

I use the number of months left before a family exceeds the time limit as a measure of how binding the time limit is for a family that have not exceeded its time limit. A negative value of this variable indicates the number of months after a family has exceeded its TANF time limit. However, it might make no or little difference once a family exceeds its lifetime limit. Therefore, I replace negative values of this measure with zero. The results are, as reported in the fourth column of Table 40, similar to those presented in Table 38.

In order to check the collinearity between the kinship care index and foster care payments, I also include only one of these two variables one at time. There is no evidence of collinearity between these two policy variables. The results are reported in the last two columns of Table 40.

Finally, as another sensitivity check, I also add state dummy variables. This exercise renders all of the policy variables insignificant on grandparent household formation as well as on general kinship care arrangements. This might be due to the fact that the time period examined is short and too few changes took place within states and over time to allow for a fixed-effects specification.

CHAPTER 7

DISCUSSION

The 1996 welfare reform raised concerns about potential unintended consequences of the welfare reform legislation that could influence kinship care. Specifically, child welfare advocates pointed out that one particular type of welfare payment for which kinship care families were eligible, i.e. TANF child-only grants, would not necessarily be subject to the new work requirements and time limits. There is an incentive for parents to leave their children with relatives including grandparents to avoid the new welfare requirements but still receive assistance in the form of child-only grants. There was also concern that kinship care providers, who used to care for children informally and receive cash assistance through welfare, would seek assistance from the child welfare system due to the generous foster care payment compared to TANF cash assistance. Especially if they are forced to meet welfare requirements, kin caregivers may switch to the formal kinship care arrangement.

Households made up of grandparents and their grandchildren are just one of the new diverse family structures with which welfare administrators learn to work. Welfare reform must be understood not only in the context of grandparenthood, but also in the context of the interplay between kinship care policies and welfare reform. A cautious examination of such interplay on grandparent household formation is warranted as

welfare reform unfolds and state kinship care policies evolve. This study seeks to understand how welfare reform impacts grandparent household formation, and at the same time takes into account the interplay of other concurrent public policies such as state kinship care policies and SCHIP programs. In contrast to the widespread concerns about potential unintended consequences of welfare reform, this study does not find convincing evidence that welfare reform leads to more children living with their grandparents. Nevertheless, I find that generosity of state kinship care policies is positively related to grandparent household formation specifically and kinship care arrangements in general.

Figure 4. Public Assistance Available to Grandparent Households

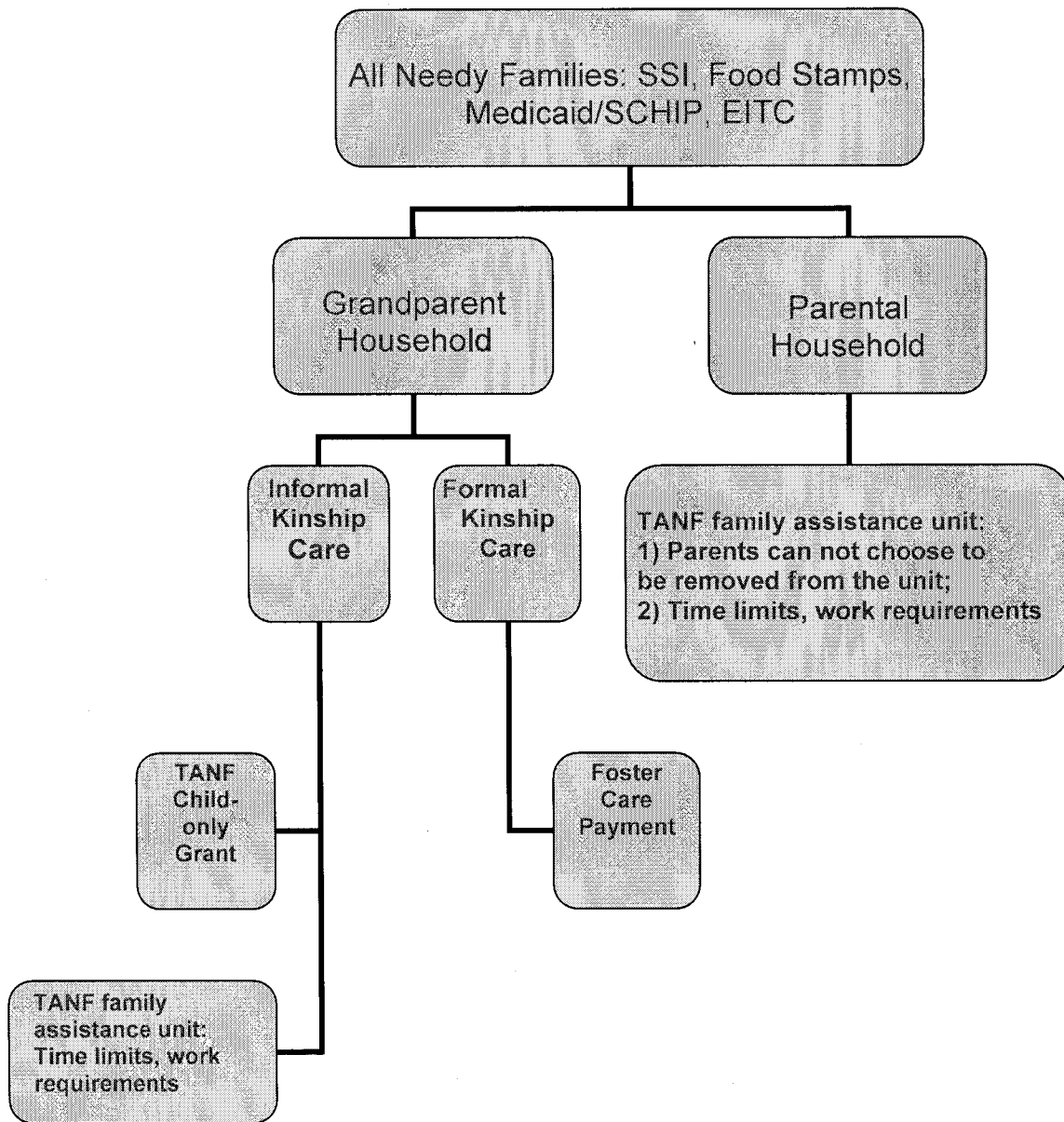


Table 37. Descriptive Statistics for Grandparent Households, Other Kin Households and the Whole Sample

	Grandparent		Other kin		Whole sample	
	Mean	Std. Err.	Mean	Std. Err.	Mean	Std. Err.
Child's gender, equal to 1 if the child is a girl	0.492	0.019	0.484	0.025	0.488	0.003
Black	0.475	0.023	0.390	0.026	0.156	0.003
Hispanic	0.150	0.015	0.158	0.020	0.161	0.002
Other race/ethnicity	0.021	0.004	0.056	0.012	0.049	0.002
Child's age	9.413	0.192	10.635	0.299	8.523	0.026
MKA is female	0.892	0.012	0.862	0.015	0.809	0.002
MKA's age	54.920	0.377	39.194	0.581	36.706	0.049
MKA is married	0.473	0.021	0.499	0.027	0.711	0.003
MKA has HS diploma	0.212	0.016	0.296	0.024	0.258	0.004
MKA has some college	0.253	0.015	0.284	0.020	0.311	0.003
MKA has a Bachelor's degree or above	0.129	0.014	0.182	0.022	0.266	0.003
MKA is working	0.460	0.020	0.617	0.024	0.683	0.003
Family is below 200% of FPL	0.613	0.021	0.567	0.028	0.392	0.004
Number of children 0-5 years old	0.640	0.060	0.852	0.080	0.756	0.006
Number of children 6-17 years old	1.676	0.060	2.194	0.098	1.669	0.011
West	0.181	0.016	0.225	0.025	0.233	0.003
Mid-west	0.154	0.015	0.219	0.022	0.235	0.003
South	0.526	0.020	0.370	0.022	0.348	0.003
Year dummy, equals 1 if year=1999	0.336	0.020	0.371	0.025	0.334	0.003
Year dummy, equals 1 if year=2002	0.352	0.023	0.366	0.024	0.337	0.003
Months after/before exceeding TANF time limit	0.996	0.108	1.192	0.116	1.309	0.016
TANF monthly maximum benefits of one and two persons ratio	0.214	0.005	0.210	0.004	0.208	0.001
Foster policy generosity index	3.012	0.032	2.996	0.053	2.931	0.007
Definition of kin is broad	0.396	0.026	0.350	0.028	0.382	0.004
Waived or separate assessment standard is offered for kin	0.748	0.021	0.782	0.023	0.729	0.003
Foster care payment is provided to kin who meet a waived or separate standard	0.551	0.023	0.571	0.025	0.524	0.004
Children are permitted to remain in long-term foster care with kin	0.710	0.021	0.703	0.025	0.678	0.003
Subsidized guardianship is offered to kin	0.540	0.016	0.527	0.021	0.552	0.003
Monthly basic foster payments	4.118	0.032	4.189	0.059	4.074	0.006
SCHIP income eligibility as percentage of FPL	1.845	0.028	1.894	0.032	1.860	0.004
State unemployment rate	5.078	0.053	5.080	0.057	5.016	0.008
Number of Observations	2241		1530		104588	

Table 38. Logit Model Predicting the Probability of Being in Grandparent Kinship Care for the Whole Sample: Using Kinship Care Policy Index

	Grandparent	All Kin
Number of Months before/after Exceeding TANF Time Limit	1.001	0.991
	(0.07)	(0.72)
TANF Maximum TANF Benefit Ratio	1.214	1.151
	(0.33)	(0.42)
Kinship Care Policy Index	1.109	1.073
	(2.07)*	(1.88)*
Monthly Foster Care Payment	0.974	1.011
	(0.42)	(0.20)
SCHIP Income Eligibility as Percentage of FPL	1.061	1.018
	(0.44)	(0.19)
Gender of The Child, Equals to One for Girls	0.979	0.984
	(0.20)	(0.25)
Non-Hispanic Black	2.773	3.066
	(6.03)**	(10.58)**
Hispanics	1.191	1.215
	(1.05)	(1.54)
Other Race/Ethnicity	0.500	1.210
	(2.24)*	(0.99)
Child's Age	0.867	0.980
	(9.45)**	(1.99)*
MKA is Female	4.336	2.170
	(7.90)**	(7.74)**
MKA's Age	1.286	1.171
	(28.68)**	(25.91)**
MKA is Married	0.765	0.600
	(1.63)	(5.61)**
MKA has a High School Diploma	0.516	0.766
	(4.24)**	(2.03)*
MKA has Some College	0.528	0.631
	(3.97)**	(3.70)**
MKA has a Bachelor Degree or Above	0.300	0.432
	(6.13)**	(5.83)**
Family Income is Below 200% of FPL	1.191	1.183
	(0.93)	(1.64)
MKA is Working	1.052	0.900
	(0.40)	(1.34)

Table 38. (continued)

Number of Children Aged 0-5	1.055	1.537
	(0.58)	(7.15)**
Number of Children Aged 6-17	0.971	1.104
	(0.47)	(2.42)**
West	1.350	1.081
	(1.64)	(0.61)
Mid-West	1.152	1.049
	(0.68)	(0.36)
South	1.903	1.286
	(4.22)**	(2.41)**
Year=1999	0.972	1.196
	(0.14)	(1.24)
Year=2002	0.800	1.032
	(0.94)	(0.23)
Unemployment Rate	0.991	1.029
	(0.10)	(0.51)
Number of Observations	103860	103860

Note:

1. Odds ratios and t-statistics (in parentheses) are reported.
2. * indicates significance at 0.1 level, ** at 0.05 level and *** at 0.01 level.

Table 39. Alternative Specifications of State Kinship Care Policies

	All Five Policies together in one specification		Each of the Five Policies in 5 individual specifications	
	Grandparent	All kin	Grandparent	All kin
Broad Definition of Kin	1.075	0.989	1.075	0.972
	(0.48)	(0.16)	(0.46)	(0.24)
Waive/Separate Assessment for Kin	0.848	1.163	0.953	1.120
	(0.80)	(0.72)	(0.35)	(1.15)
Foster Payment for Kin	1.224	0.981	1.075	1.213
	(1.13)	(0.45)	(0.59)	(1.22)
Long Term Foster Care for Kin	1.143	1.101	1.104	1.140
	(0.93)	(1.63)	(0.70)	(1.71)*
Subsidized Guardianship for Kin	1.441	1.054	1.376	1.027
	(3.04)**	(0.67)	(2.84)**	(0.37)

Notes:

1. Odds ratios and t-statistics (in parentheses) are reported.
2. * indicates significance at 0.1 level, ** at 0.05 level and *** at 0.01 level.
3. These specifications include the same other control variables as regressions in Table 38.

Table 40. Other Sensitivity Checks

Key policy variables	TANF time limit policies			Kinship care policies	
	A	B	C	D	E
Number of Months before/after Exceeding TANF Time Limit	1.002 (0.06)	1.001 (0.07)	1.002 (0.07)	1.001 (0.07)	1.010 (0.50)
TANF Maximum Benefit Ratio	1.213 (0.32)	1.215 (0.33)	1.215 (0.33)	1.196 (0.30)	1.340 (0.50)
Kinship Care Policy Index	1.109 (2.08)*	1.108 (2.07)*	1.108 (2.06)*	1.108 (2.04)*	
Monthly Foster Care Payment	0.974 (0.42)	0.974 (0.42)	0.974 (0.42)		0.979 (0.34)
SCHIP Income Eligibility as Percentage of FPL	1.061 (0.44)	1.061 (0.44)	1.061 (0.44)	1.062 (0.44)	1.061 (0.43)

Notes:

1. Odds ratios and t-statistics (in parentheses) are reported.
2. * indicates significance at 0.1 level, ** at 0.05 level and *** at 0.01 level.
3. Specifications **A** and **B** use 800 months and 1200 months respectively as time limits for states that do not impose time limits. Specification **C** replaces negative values of number of months left before exceeding TANF time limits (i.e. families have exceeded their lifetime time limits) with 0.
4. Specification **D** drops the foster care payment variable and **E** drops the kinship care policy index variables to check collinearity of these two variables.
5. All these specifications include the same other control variables as regressions in Table 38.

REFERENCES

- Acoca, Leslie. 1998. "Defusing the Bomb: Understanding and Meeting the Growing Health Care Needs of Incarcerated Women in America." *Crime and Delinquency*, Vol. 44, Issue 1, pp. 49-69.
- Antel, John J. 1992. "The intergenerational Transfer of Welfare Dependency: Some Statistical Evidence." *Review of Economics and Statistics*. Vol. 74, Issue 3, pp. 467-473.
- Barnhill, Sandra K. 1996. "Three Generations at Risk: Imprisoned Women, Their Children, and the Grandmother Caregiver." *Generations*, Vol. 20, Issue 1, pp. 39-40.
- Barro, Robert J. 1974 "Are Government Bonds Net Wealth?" *Journal of Political Economy*, Vol. 82, Issue 6, pp. 1095-1117.
- Becker, Gary S. 1960. "An Economic Analysis of Fertility." In Universities-National Bureau Committee for Economic Research, *Demographic and Economic Change in Developed Countries*. Princeton, NJ: Princeton University Press.
- Ben-Porath, Yoram. 1973. "Economic Analysis of Fertility in Israel: Point and Counterpoint." *The Journal of Political Economy*, Vol. 81, Issue 2, Part 2: New Economic Approaches to Fertility, pp. S202-S233.
- Becker, Gary S. 1992. "The Economic Way of Looking at Life." Nobel Lecture in Economic Sciences.
- Behrman, Jere R. and Paul Taubman. 1990. "The Intergenerational Correlation Between Children's Adult Earnings and Their Parents' Income: Results from the Michigan Panel Survey of Income Dynamics." *Review of Income and Wealth*, Vol. 36, Issue 2, pp. 115-127.
- Bernheim, B. Douglas, Andrei Shleifer and Lawrence H. Summers. 1985. "The Strategic Bequest Motive." *The Journal of Political Economy*, Vol. 93, Issue 6, pp. 1045-1076.
- Berrick, Jill Duerr, Richard P. Barth and Barbara Needle. 1994. "A Comparison of Kinship Foster Homes and Foster Family Homes: Implications for Kinship Foster Care as Family Preservation." *Children and Youth Services Review*, Vol. 16, Issue 1-2, pp. 33-63.
- Berrick, Jill .D., Barbara Needell and Richard P. Barth. 1998. "Kin as a Family and Child Welfare Resource: The Child Welfare Worker's Perspective." *In Kinship Foster Care: Practice, Policy, and Research*. R.L. Hegar and M. Scannapieco, eds. New York: Oxford University Press.

- Berrick, Jill Duerr, Barbara Needall and Meredith Minkler. 1999. "The Policy Implications of Welfare Reform for Older Caregivers, Kinship Care, and Family Configuration." *Children and Youth Services Review*, Vol. 21 Issue 9-10, pp. 843-864.
- Bonecutter, Faith Johnson and James P. Gleeson. 1997. *Achieving Permanency for Children in Kinship Foster Care: A Training Manual*, Chicago, IL: Jane Addams College of Social Work, University of Illinois at Chicago.
- Boots, Shelley Waters and Rob Geen. 1999. "Family Care or Foster Care? How State Policies Affect Kinship Caregivers." Washington DC: The Urban Institute.
- Brick, J. Michael, Ismael Flores-Cervantes and David Cantor. 1999. "1997 NSAF Response Rates and Methods." Methodology Report 8. The Urban Institute: Washington, DC.
- Burnette, Denise. 1997. "Grandparents Raising Grandchildren in the Inner City." *Families in Society*, Vol. 78, Issue 5, pp. 489-499.
- Burton, Linda M. 1992. "Black Grandparents Rearing Children of Drug-addicted Parents: Stressor, Outcomes, and Social Service Needs." *The Gerontologist*, Vol. 32, Issue 6, pp. 744-751.
- Casper, Lynne M. and Kenneth R. Bryson. 1998. "Co-resident Grandparents and Their Grandchildren: Grandparent Maintained Families." Population Division Working Paper Issue 26. Washington, D.C.: U.S. Bureau of the Census.
- Chalfie, Deborah. 1994. *Going It Alone: A Closer Look at Grandparents Rearing Grandchildren*. Washington, D.C.: American Association of Retired Persons.
- Couch, Kenneth A. and Thomas A Dunn. 1997. "Intergenerational Correlations in Labor Market Status: A Comparison of the United States and Germany." *Journal of Human Resources*, Vol. 32, Issue 1, pp. 210-232.
- Cox, Donald. 1987. "Motives for Private Income Transfers." *Journal of Political Economy*, Vol. 95, Issue 3, pp. 508-546.
- Cox, Donald and Mark R. Rank. 1992. "Inter-Vivos Transfers and Intergenerational Exchange." *The Review of Economics and Statistics*, Vol. 74, Issue 2, pp. 305-314.
- Cox, Donald and George Jakubson. 1995. "The Connection between Public Transfers and Private Interfamily Transfers." *Journal of Public Economics*, Vol. 57, Issue 1, pp. 305-314.
- Dressel, Paula L and Sandra K Barnhill. 1994. "Reframing Gerontological Thought and Practice: the Case of Grandmothers with Daughters in Prison." *The Gerontologist*, Vol. 34, Issue 5, pp. 685-690.
- Dubowitz, Howard, Susan Feigelman, Donna Harrington, Raymond Starr, Susan Zuravin and Richard Sawyer. 1994. "Children in Kinship Care: How Do They Fare?" *Children and Youth Services Review*, Vol. 16, Issue 1-2, pp. 85-106.
- Financial Assistance for Grandparent Caregivers: TANF,
(<http://www.aarp.org/contacts/money/tanf.html#know>)

- Fuller-Thomson, Esme, Meredith Minkler and Diane Driver. 1997. "A Profile of Grandparents Raising Grandchildren in the United States." *The Gerontologist*, Vol. 37, Issue 3, pp. 406-411.
- Fuller-Thomson Esme and Meredith Minkler. 2000. "American's Grandparents Caregivers: Who are they?" in Bert Hayslip Jr. and Robin Goldberg-Glen (Eds.), *Grandparents raising grandchildren: Theoretical, Empirical, Clinical Perspectives* (pp. 3-21). New York: Springer Company.
- Geen, Rob, Lynn Fender, Jacob Leos-Urbel and Teresa Markowitz. 2001. *Welfare Reform's Effect on Child Welfare Caseloads*. Washington, D.C.: The Urban Institute.
- Geen, Rob. 2003. *Kinship Care: Making the Most of a Valuable Resource*. Washington, D.C.: Urban Institute Press.
- Goldberger, Arthur S. 1989. "Economic and Mechanical Models of Intergenerational Transmission." *American Economic Review*, Vol. 79, Issue 3, pp. 504-513.
- Grawe, Nathan D. and Casey B. Mulligan. 2002. "Economic Interpretations of Intergenerational Correlations." *The Journal of Economic Perspectives*, Vol. 16, Issue 3, pp. 45-58.
- Hamilton, W. D. 1964. "The Genetical Evolution of Social Behaviour I and II." *Journal of Theoretical Biology*, Vol. 7, Issue 1-16, pp. 17-32.
- Harden, Allen W., Rebecca L. Clark and Karen Maguire. 1997. *Informal and Formal Kinship Care*. Washington, DC: U.S. Department of Health and Human Services.
- Ingram, Charlene. 1996. "Kinship care: From Last Resort to First Choice." *Child Welfare*, Vol. 75, Issue 5, pp. 550-566.
- Jantz, Amy, Rob Geen, Roseana Bess, Cynthia Andrews Scarcella and Victoria Russell. 2002. "The Continuing Evolution of State Kinship Care Policies." Washington D.C.: The Urban Institute.
- Jendrek, Margaret Platt. 1994. "Grandparents Who Parent Their Grandchildren: Circumstances and Decisions." *The Gerontologist*, Vol. 34, Issue 2, pp. 206-216.
- Jones, Ernestine F. 2003. "The Kinship Report: Assessing the Needs of Relative Caregivers and the Children in Their Care." Seattle, WA: Casey Family Programs.
- Joslin, Daphne and Anne Brouard. 1995. "The Prevalence of Grandmothers as Primary Caregivers in a Poor Pediatric Population." *Journal of Community Health*, Vol. 20, Issue 5, pp. 383-401.
- Kurshan, Nancy. 1999. "Women and Imprisonment in the U.S.: History and Current Reality." Available online at <http://prisonactivist.org/women/women-and-imprisonment.html>
- Lee, Bong Joo and Robert M. Goerge. 1999. "Poverty, Early Childbearing, and Child Maltreatment: A Multinomial Analysis." *Children and Youth Services Review*, Vol. 21 Issue 9-10, pp. 755-780.

- Leos-Urbel, Jacob Roseana Bess and Rob Geen. 2000. "State Policies for Assessing and Supporting Kinship Foster Parents." Assessing the New Federalism Discussion Paper 00-05. Washington, DC: The Urban Institute.
- LeProhn, Nicole S. 1994. "The Role of the Kinship Foster Parent: A Comparison of the Role Conceptions of Relative and Non-relative Foster Parents." *Children and Youth Services Review*, Vol. 16, Issue 1-2, pp. 107-122.
- Levine, Carol. 1995. "In whose care and custody? Orphans of the HIV epidemic." *AIDS Clinical Care*, Vol. 7, Issue 10, pp. 85-88.
- Macomber, Jennifer Ehrle and Rob Geen. 2002. "Children Cared for by Relatives: What Services Do They Need?" Number B-47 in Series, "New Federalism: National Survey of America's Families", Washington DC: The Urban Institute.
- McGarry, Kathleen. 1999. "Inter vivos Transfers and Intended Bequests." *Journal of Public Economics*, Vol. 73, Issue 3, pp. 321-351.
- Minkler, Meredith, Kathleen M. Roe and Marilyn Price. 1992. "The Physical and Emotional Health of Grandmothers Raising Grandchildren in the Crack Cocaine Epidemic." *The Gerontologist*, Vol. 32, Issue 6, pp. 752-761.
- Minkler, Meredith, Kathleen M. Roe and Robertson-Beckley. 1994. "Raising Grandchildren from Crack-cocaine Households: Effects on Family and Friendship ties of African American Women." *American Journal of Orthopsychiatry*, Vol. 64, Issue 1, pp. 20-29.
- Minkler, Meredith and Kathleen M. Roe. 1993. *Grandmothers as Caregivers: Raising Children of the Crack Cocaine Epidemic*. Newbury Park, CA: Sage.
- Minkler, Meredith and Kathleen M. Roe. 1996. "Grandparents as Surrogate Parents." *Generations*, Vol. 20, Issue 1, pp. 34-38.
- Minkler, Meredith and Esme Fuller-Thomson. 1999. "Health of Grandparents Raising Grandchildren: Results of a National Study." *American Journal of Public Health*, Vol. 89, Issue 9, pp. 1384-89.
- Minkler, Meredith, Jill Duerr Berrick and Barbara Needell. 1999. "Impacts of Welfare Reform on California Grandparents Raising Grandchildren: Reflections from the Field." *Journal of Aging and Social Policy*, Vol. 10, Issue 3, pp. 45-63.
- Mullen, Faith. 1996. "Public Benefits: Grandparents, Grandchildren, and Welfare Reform." *Generations*, Vol. 20, Issue 1, pp. 61-64.
- Mullen, Faith and Monique Einhorn. 2000. *The Effect of State TANF Choices on Grandparent-Headed Households*. Washington, D.C.: Public Policy Institute.
- Paxson, Christina and Jane Waldfogel. 2003. "Welfare Reforms, Family Resources, and Child Maltreatment." *Journal of Policy Analysis and Management*, Vol. 22, Issue 1, pp. 85-113.
- Pebley, Anne R. and Laura L. Rudkin. 1999. "Grandparents Caring for Grandchildren: What Do We Know?" *Journal of Family Issues*, Vol. 20, Issue 2, pp. 218-242.

- Roe, K., Minkler, M., and Barnwell, R. 1994. "The Assumption of Caregiving: Grandmothers Raising the Children of the Crack-cocaine Epidemic." *Qualitative Health Research*, Vol. 4, Issue 3, pp. 281-303.
- Ruiz, Dorothy S. 2002. "The Increase in Incarcerations among Women and its Impact on the Grandmother Caregiver: Some Racial Considerations." *Journal of Sociology and Social Welfare*, Vol. 29, Issue 3, pp. 79-197.
- Saltaris, Christina, Lisa A. Serbin, Dale M. Stack, Jennifer A. Karp, Alex E. Schwartzman and Jane E. Ledingham. 2004. "Nurturing Cognitive Competence in Preschoolers: A longitudinal Study of Intergenerational Continuity and Risk." *International Journal of Behavioral Development*, Vol. 28, Issue 2, pp. 105-115.
- Scarcella, Cynthia Andrews, Jennifer Ehrle and Rob Geen. 2003. "Identifying and Addressing the Needs of Children in Grandparent Care." Washington, DC: The Urban Institute.
- Schultz, T. Paul. 1973. "A Preliminary Survey of Economic Analysis of Fertility." *American Economic Review*, Vol. 63, Issue 2, pp. 71-78.
- Serbin, Lisa and Jennifer Karp. 2003. "Intergenerational Studies of Parenting and the Transfer of Risk from Parent to Child." *Current Directions in Psychological Science*, Vol. 12, Issue 4, pp. 138-142.
- Shook, Kristen. 1999. "Does the Loss of Welfare Income Increase the Risk of Involvement with the Child Welfare System?" *Children and Youth Services Review*, Vol. 21, Issue 9-10, pp. 781-813.
- Simmons, Tavia and Jane Lawler Dye. 2003. "Grandparents Living With Grandchildren: 2000." Census 2000 Brief. <http://www.census.gov/prod/2003pubs/c2kbr-31.pdf>.
- Slack, Kristen Shook; Jane L. Holl; Marla McDaniel, Joan Yoo and Kerry Bolger. 2004. "Understanding the Risks of Child Neglect: An Exploration of Poverty and Parenting Characteristics." *Child Maltreatment*, Vol. 9, Issue 4, pp. 395-408.
- Thomas, Jeanne L., Len Sperry and M. Sue Yarbrough. 2000. "Grandparents as Parents: Research Findings and Policy Recommendations." *Child Psychiatry and Human Development*, Vol. 31, Issue 1, pp. 3-22.
- Thornberry, Terence P., Adrienne Freeman-Gallant, Alan J. Lizotte, Marvin D. Krohn and Carolyn A. Smith. 2003. "Linked Lives: The Intergenerational Transmission of Antisocial Behavior." *Journal of Abnormal Child Psychology*, Vol. 31, Issue 2, pp. 171-184.
- Tomes, Nigel. 1981. "The Family, Inheritance, and the Intergenerational Transmission of Inequality." *Journal of Political Economy*, Vol. 89, Issue 5, pp. 928-958.
- Trivers, Robert L. 1971. "The Evolution of Reciprocal Altruism." *Quarterly Review of Biology*, Vol. 46, Issue 4, pp. 35-57.
- U.S. House of Representatives. 1996. *The 1996 Green Book: Background Material and Data on Programs within the Jurisdiction of the Committee on Ways and Means*, Washington, DC: U.S. GPO.

- U.S. House of Representatives. 1998. *The 1998 Green Book: Background Material and Data on Programs within the Jurisdiction of the Committee on Ways and Means*, Washington, DC: U.S. GPO.
- U.S. House of Representatives. 2000. *The 2000 Green Book: Background Material and Data on Programs within the Jurisdiction of the Committee on Ways and Means*, Washington, DC: U.S. GPO.
- Waldfogel, Jane. 2005. "Income and Child Maltreatment." *Child Abuse and Neglect*, Vol. 29, Issue 2, pp. 101-102.
- Wilhelm, Mark O, 1996. "Bequest Behavior and the Effect of Heirs' Earnings: Testing the Altruistic Model of Bequests." *American Economic Review*, Vol. 86, Issue 4, pp. 874-892.
- Willis, Robert J. 1973. "A New Approach to the Economic Theory of Fertility Behavior." *The Journal of Political Economy*, Vol. 81, Issue 2, Part 2: New Economic Approaches to Fertility, pp. S14-S64.

APPENDIX

APPENDIX A. Data Source for State Level Variables

Three surveys on state kinship care policies were conducted in 1997, 1999 and 2001 by the Urban Institute (Jantz et al. 2002). It is hard to find data with similar information for the year 2002. Therefore, the 2001 index measuring the generosity of state kinship care, taken from Jantz et al. (2002), is used directly to proxy data for 2002. For 1997 and 1999, I combined data taken from Jantz et al. (2002) and from Leos-Urbel et al. (2000), which summarize state kinship care policy changes between 1999 and 2001, and between 1997 and 1999 respectively, to create a similar index for 1997 and 1999.

I was able to find data on foster care basic monthly maintenance payment rates only for children ages 2, 9 and 16 for 1996, 1998 and 2000 from the 1996, 1998 and 2000 Greenbook. Since it may take some time for the targeted population to learn and respond to any new policies or changes in public programs, it is reasonable to use the available three year data to proxy for 1997, 1999 and 2002.

Likewise, data on TANF maximum benefits as of January 1996, as of January 1997 and as of January 2000 are therefore used as a proxy for 1997, 1999 and 2002 respectively, so that data on foster payments and TANF cash assistance will be roughly consistent. Data on TANF maximum benefits for a family of one and two persons are also taken from 1996, 1998 and 2000 Greenbook.

As various sources of data on time limits reveal discrepancies⁷¹, data on time limits such as lifetime time limits (months) and dates families first exceeded time-limits

⁷¹ For example, data from the Urban Institute's Welfare Rules Database (2002) show there are no life limits for New York, Maine and Washington D.C. In contrast, data from Administration of Children and Families, Department of Health and Human Services and data from the State Policy Documentation Project show 60-month lifetime limits for all three states. Again data from the SPDP shows families in Texas first exceeded time limits in January 1998. However, the date shown by data from Administration of Children and Families, DHHS, is June 1997.

are obtained by referring to several data sources from the Department of Health and Human Services, the Urban Institute's 1999 and 2002 Welfare Rules Database and State Policy Documentation Project (SPDP). Since no data on time limits for the year 1997 is found and there is little variation in time limits during this time, I use data for 1999 to proxy that of 1997.

The unemployment rate for each state comes from the Bureau of Labor Statistics (BLS), U.S. Dept. of Labor. Data on SCHIP/Medicaid eligibility rules come from Maternal and Child Health (MCH) Update Jan 20, 2000 and Update 2002 collected by the National Governor's Association (NGA) Center for Best Practices.

CONCLUSION

This dissertation consists of three separate essays. *Essay One* (Part I) investigates broadly how family environment, especially family structure, affects child outcomes, with a focus on less typical family structures and the interplay of parent-child gender. While extensive research exists about the effects of family structure on child outcomes, this study contributes to the literature on several fronts. Foremost, this essay presents a more complete picture of the diversity of family structures and its association with child outcomes. For example, this study includes single-father households and households headed by grandparents, both of which have grown tremendously since 1990, and yet relatively little is known about them. Second, with a clear distinction between “inputs,” such as well child care visits, and “outputs,” i.e. child outcomes, this study isolates the role that critical ‘inputs’ play in producing child well-being after controlling for demographic and socioeconomic characteristics. Third, this study examines a wide array of child outcomes including both developmental and health outcomes. Fourth, the careful examination of gender/race interactions sheds light on the underlying mechanisms that lead to disparities in child outcomes.

Although state and federal governments leave the responsibility of raising children primarily to families, they intervene in a variety of ways to ensure favorable outcomes for the national future. The Balanced Budget Act (BBA) of 1997 was signed into law in August 1997, creating the State Children’s Health Insurance Program

(SCHIP) to help reduce the number of children without any health insurance. A burgeoning literature documents the effect of SCHIP with respect to eligibility, take-up and crowd-out. However, research investigating the impact of SCHIP programs on improving medical care utilization and health outcomes of children is relatively sparse, especially at the national level. In *Essay Two* (Part Two) I rigorously examine how SCHIP programs affect insurance coverage, health care utilization and health outcomes by employing four different estimation strategies including the difference-in-difference approaches, reduced form estimation and 2SLS. This study represents the first effort that examines how SCHIP programs affect medical care utilization and child outcomes for children in all age groups at the national level.

The TANF program is another government program that may have significant impact on many lower income households. Although the welfare reform primarily affects single-parent households, it has important implications for grandparent households. The Census Bureau (2002) estimates that the percentage of children under 18 living in a grandparent-headed home has nearly doubled since 1970. Despite the ongoing trend, no economic studies have examined how public policies influence grandparent household formation. The third essay contributes to the sparse existing economic literature in three different ways. First, this study thoroughly reviews the literature and provides an overview of different public policies related to grandparent households. Second, it empirically addresses the potential impacts of welfare reform on grandparent household formation while at the same time controlling for other contemporary public policies such as state kinship care policies and SCHIP. Third, the third essay builds a theoretical

framework that explores the motivations underlying grandparent household formation and caregiving behaviors through the lens of an economist.