March 2005

Assessing the Economic Determinants of Violence in Youth and Young Adults

Final Report

Prepared for

Xiangming Fang
Phaedra S. Corso
Cindi Melanson
National Center for Injury Prevention and Control
Centers for Disease Control and Prevention
4770 Buford Highway
Mail Stop K-60
Atlanta, GA 30341

Prepared by

James Nonnemaker
Derek Brown
Kathleen Wirth
Phillip Graham
Eric Finkelstein
Health, Social, and Economics Research
Research Triangle Park, NC 27709

RTI Project Number 08654.008

RTI Project Number
08654.008

Assessing the Economic Determinants of Violence in Youth and Young Adults

Final Report

March 2005

Prepared for

Xiangming Fang
Phaedra S. Corso
Cindi Melanson
National Center for Injury Prevention and Control
Centers for Disease Control and Prevention
4770 Buford Highway
Mail Stop K-60
Atlanta, GA 30341

Prepared by

James Nonnemaker
Derek Brown
Kathleen Wirth
Phillip Graham
Eric Finkelstein
RTI International*
Health, Social, and Economics Research
Research Triangle Park, NC 27709

---

*RTI International is a trade name of Research Triangle Institute.

Contents

Exhibits

Number **Page**

1. INTRODUCTION

1.1 Youth Violence as a Public Health Problem

Despite recent declines in violence in general and among youth and young adults in particular, violence still remains a serious public health issue, in part because both fatal and nonfatal injury exact a tremendous toll on our public health system and on the social fabric of communities and families. Practitioners, researchers, and policy makers have each proposed or hypothesized myriad solutions to this ongoing problem that is complicated by the complex interaction of factors that either increase risk (i.e., risk factors) or buffer against it (i.e., protective factors).

Violence has a profound impact on today's youth and affects their chances of maturing into healthy functioning adults. It is defined as the intentional use of physical force or power, threatened or actual, against oneself, another person, or a community that either results in or has a high likelihood of resulting in injury, death, psychological harm, maldevelopment, or deprivation (Krug et al., 2002). Although the majority of the U.S. adolescent population is healthy, hopeful, and able to meet the challenges of adult life, approximately one-quarter of the 31 million children aged 10 to 17 are in dire need of intervention, because they are at risk of engaging in multiple problem behaviors, including violence (Dryfoos, 1990; USDHHS, 2001). Homicide is the thirteenth leading cause of death in the United States across all ages and the second leading cause of death for 15- to 24-year-olds (CDC, 2001). Violence is particularly acute for African American males and people living in poverty. In 2001, African American males between the ages of 15 and 24 were homicide victims at an annual rate of 85.7 per 100,000, compared with a rate of 5.7 per 100,000 for their White male counterparts (NCHS, 2004). Also important to consider are the injuries associated with nonfatal youth violence. In 2000, more than 400,000 youth aged 10 to 19 were injured as a result of violence (CDC, 2001). In 1998, firearm-related injuries were the second leading cause of death for persons aged 15 to 19 and were the leading cause of death for African American and Hispanic youth (NICHHD, 2001). The extent of these problems suggests a critical need for preventive intervention.

Recent empirical findings (Dryfoos, 1990; NICHHD, 2001; USDHHS, 2001; CDC, 2001; NCHS, 2004) suggest that youth and young adults are faced with risk factors across the ecological spectrum that must be understood individually and collectively if effective prevention interventions are to be developed. Such factors include individual (e.g., biological, psychological, and behavior), relational (e.g., family and peer influences), community (e.g., gangs and social integration), and societal (e.g., demographic and social changes, income inequality, political structure, cultural influences) factors. Within this context, it is also important to better understand the extent to which social settings have differential effects on violence-related risk factors and outcomes. This report focuses on social capital and economic determinants as correlates of violence among youth and young adults.

1.2 Description of Project

This project is in response to the National Center for Injury Prevention and Control, Division of Violence Prevention's commitment to preventing youth violence through research on risk and protective factors for violence, program development, program evaluation, economic evaluation, and information dissemination. To that end, we (1) conducted a comprehensive review of community-level economic and social capital indicators that have been shown to statistically influence violent behavior in youth and young adults, (2) developed a conceptual framework that guides development of an empirical model to explain/predict violent behavior or exposure to violence in youth and young adults, and (3) empirically estimated a model to explore the association between economic determinants and youth violence (using the National Longitudinal Survey of Adolescent Health [Add Health]).

1.3 Report Purpose and Organization

The purpose of this report is to present results from an empirical model specification examining the economic determinants of youth violence. The conceptual model, literature review, and empirical specification are discussed in Section 2. Section 3 discusses the data, measures, and methods used in this study. Results of the empirical model specifications are presented in Section 4. The final section, Section 5, discusses the results and limitations of the report.

2. CONCEPTUAL MODEL

2.1 Summary of Findings from Literature Review

The purpose of the literature review was to synthesize the extant literature on the role of economic and social capital determinants in explaining violence among youth and young adults. It is important to note that this study, by design, focused on social capital and economic determinants of youth violence. For the purpose of conducting the literature review, these constructs were discussed separately to better define the most salient terms underlying each concept. However, findings within each domain/construct clearly demonstrate commonalities or overlap of these constructs. Given the overlap, the literature review argued that it is more appropriate to discuss these concepts in an integrative schema that conceptualizes social capital as a social process that occurs within the structural characteristics (i.e., economic determinants) of a well-defined community. However, given data limitations (specifically measures of social capital) and the scope of work specified for this project, the empirical model excluded social capital and focused on the effects of economic factors associated with young adult violence.

2.2 Theoretical Underpinning

Numerous theories have attempted to explain violent behavior (e.g., economic theory of crime, strain theory, theories on stressors). The evidence supporting any single theory is mixed; no single theory dominates others in explaining violent behavior. For this reason, in the literature review and in developing the conceptual model, we preferred a general framework (social ecological framework). This framework (in common with aspects of many of the specific theories) emphasizes the importance of multiple domains of influence on individual behavior.

Neighborhoods become settings that promote critical developmental processes that shape a child's sense of well-being through the provision of role models, rewards for pro-social actions, and control for unruly behavior (Fraser, 1996). A growing body of research suggests that the roots of violence may be embedded, in part, in the structural disadvantages that adolescents and their families experience in their neighborhoods (Sampson et al., 1997; Shihadeh and Steffensmeier, 1994; Cao et al., 1997; Bennett and Fraser, 2000).

2.2.1 Social Capital

The literature review identified and discussed the measurement of multiple indicators of social capital: mutual trust, social cohesion, group membership, informal social control, collective efficacy, social support, and religiosity. Researchers from several fields, such as criminology, sociology, economics, and public health, have taken a renewed interest in social capital as it pertains to violence and communities at risk during the past 20 years

(Sampson and Morenoff, 2000). Empirical findings are as diverse as the theoretical models that support such empirical evidence. The variations lie in the different constructs and measures used in the research of social capital and youth violence. However, most researchers agree that delinquency is more likely to occur in neighborhoods that are socially disorganized where residents report a lower sense of community, high population turnover, lower levels of informal social control of youth, and lack of civic engagement and neighborhood trust, among other factors.

The broad application of social capital across multiple disciplines has created a plethora of measures and indicators. Recent studies and writings have expanded the concept of social capital from an individual component to a feature of communities and nations (Portes, 1998). The prevalence of such measures is in fact based on the concept gradually moving further away from its original theoretical origins to embrace a broad and varied interpretation. Of the methodological and analytic challenges that exist, several are more salient to our application of social capital to violence among youth and young adults.

The continued and future use of social capital as a predictor or marker for youth violence is predicated on the development of measures that receive unified agreement of their validity within the context of violent behavior. Although the development of universally accepted measures of social capital represents the most desired outcome, researchers must first begin with agreed upon measures for individual and community/collective social capital. Development of these measures would greatly improve progress to better understanding how social processes operate within varying structural conditions.

Durlauf (2002) provides a critique of empirical work examining social capital and concludes that “the concept itself has proven too vague to permit analysis whose clarity and precision matches the standard of the field” (p. F477). In that critique, Durlauf focuses on econometric difficulties with empirical studies of social capital. He suggests that to adequately investigate the effects of social capital on behavioral outcomes will require explicit models of the codetermination of individual outcomes and social capital as well as new directions in data collection.

Given the lack of consensus as to how to measure social capital and the limited availability of items for measuring social capital in Add Health (not to mention additional difficulties of defining/measuring social capital at the individual level for adolescents—in combination with or distinct from family social capital—which brings up issues of social networks, peer groups, gangs, and others that have not been adequately explored), we do not attempt to empirically estimate associations between social capital and youth violence (or social capital and economic determinants).

2.2.2 Economic Determinants

The literature review identified a number of economic factors investigated as determinants/correlates of youth and young adult violent behavior, including socioeconomic status (SES), poverty, concentrated disadvantage, blocked opportunity, and unemployment.

Socioeconomic status has been used in research to assess the economic placement of families. This class indicator has often been measured at the individual level by parental income level (Simons et al., 1996), parental educational attainment (Mocan and Rees, forthcoming; Pagani et al., 1999), and homeownership (Sampson et al., 1997). Existing research generally suggests that the SES of the family influences the quality of parenting and both directly and indirectly influences a youth's association with other delinquent peers. However, the particular findings are inconsistent across studies. For example, there is no direct evidence to suggest that parents' failing to own a home directly impacts adolescent involvement in violent or other serious criminal behavior. Sampson et al. (1997) suggest that because the rate of homeownership is lower in more disadvantaged areas, it more closely captures economic disadvantage in a given area. They further contend that the use of homeownership also captures the amount of residential stability. Residents who own their homes are more likely to take care of the property and to stay in the dwelling for longer periods of time.

Although some empirical evidence suggests that parental income and educational attainment do predict certain types of youth maladjustment, the general findings are inconsistent when applied to youth violence (Mocan and Rees, forthcoming; Simons et al., 1996). There seems to be two main concerns about using these measures to predict youth violence. First, the direction of the relationship between youth violence and parental income is generally negative. However, some researchers have found it to be positive or insignificant. Second, parental educational attainment is often inconsistent when predicting more aggressive criminal acts. For example, Mocan and Rees (forthcoming) found that parental educational attainment significantly predicted petty theft but not burglary and drug selling. These findings suggest two things. First, there needs to be more consistent use of measures to fully capture the importance of SES and its effects on youth violence. Second, there are potentially other mediating factors that condition the relationship between youth violence and SES.

Poverty remains a serious problem in most nations. Much of the research examines the role that poverty plays in children's development. It has been shown to increase the risk of infant mortality as well as childhood injury. Many researchers have also noted that poverty can increase the risk of underachievement in school and the development of antisocial behavior, such as violence (Pagani et al., 1999). Several indicators have been used in past research to distinguish between low and very low SES; examples include not having enough money to meet the basic needs of the family, and family income in reference to the federal poverty threshold (Duncan, 1984). More recent research has defined poverty as the ratio of household income to income at the poverty threshold according to family composition. This approach more accurately assesses how financially disadvantaged people may be relative to the poverty line.

Concentrated disadvantage is another important class-based variable that has been shown to significantly impact adolescent violence. The idea of concentrated disadvantage more recently comes out of Wilson (1987) but is influenced by early work of Shaw and McKay (1942). Wilson maintains that increasing class segregation has created a concentration of affluence while also creating a concentration of poverty. The communities that have the highest disadvantage are generally located in inner cities with a high proportion of minority citizens. These communities also have significantly higher rates of poverty and violence (Bursik, 1988). The main focus of this idea is to incorporate the importance of place in explaining adolescent violence. For example, Shaw and McKay (1942) found that neighborhoods with higher rates of single-parent families and higher rates of population turnover were significantly more likely to have higher crime rates. This was one of the first theories to suggest that neighborhood characteristics can have profound effects on youth violence.

Like poverty, concentrated disadvantage has been measured in a variety of ways. First, Massey and Eggers (1990) suggest that using the "isolation index" popularized by Lieberson (1980) is an accurate measure. Researchers such as Karsada (1993) suggest that computing the percentages of poor persons living in poor and very poor neighborhoods are sufficient measures. Karsada defines a poor neighborhood as one with a tract poverty rate between 20 percent and 40 percent, and a very poor neighborhood as one with a tract poverty rate below 20 percent. Concentrated disadvantage is also measured by the percentage of female-headed households and the percentage on public assistance (Sampson et al., 1997).

Research assessing blocked opportunities has been less consistent than the other measures discussed in this section. The biggest challenge presented here is defining exactly what researchers mean by "blocked opportunity" and then finding measures that more accurately capture blocked opportunities. Most of the research has used perceived access to legitimate goals as their indicator of blocked opportunity. These researchers suggest that the extent to which they view their opportunity structure as available will affect their overall perceptions of whether they can achieve their goals (Simons et al., 1980). Baron and Hartnagel (1997) suggest that youth rejecting the idea that anyone can work and achieve their dreams are more likely to engage in violence than those who do not.

Several measures have been used to capture blocked opportunities. Two of the most consistent have been used by Vowell and May (2000). In their analysis, blocked opportunities represent a composite measure derived from survey responses to the following indicators:

- Laws are passed to keep people like me from succeeding.
- I believe people like me are treated unfairly when it comes to getting a good job.
- Society is against people like me.
- No matter how hard I work, I will never be given the same opportunities as other kids.
- Even with a good education, people like me will have to work harder to make a good living.

In earlier research, Farnworth and Leiber (1989) constructed two different measures for blocked opportunities. First, they measured opportunity blockage between economic goals and educational means by creating a measure of whether there is a high commitment to financial goals but no expectation to attend college. Next, they measured educational aspiration and whether there are expectations to achieve such aspirations. Again, the idea is that youth who feel that they will be unable to achieve their goals become frustrated or feel the pressure associated with such failure and could potentially use violence or crime as a mechanism to deal with the failure.

Unemployment is another important factor in predicting youth violence. Unemployment has been used as both an aggregated characteristic of places and an individual-level predictor. At the aggregate, this indicator has often been measured as the percentage of people unemployed between the ages of 16 and 19 (Britt, 1994). At the individual level, researchers such as Crutchfield and Pitchford (1997) use the number of consecutive months unemployed as a measure of unemployment. The problem with using aggregate-level measures of unemployment is not taking into account changes in employment status over time. For example, at the aggregate, there might be changes in employment from one time period and failing to account for changes in employment can either over- or under-estimate the effects of unemployment on youth violence.

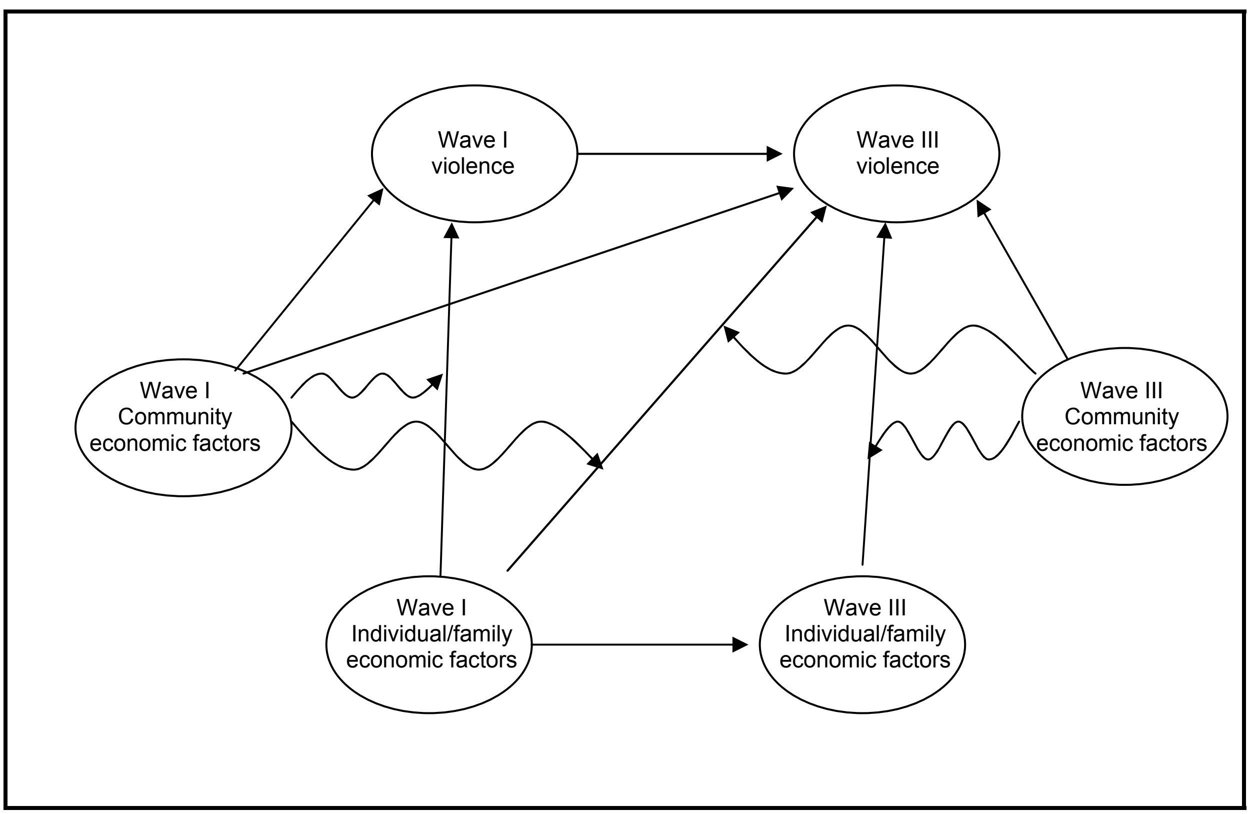
Although unemployment is one of the more consistent findings of all the economic variables, the problem has been estimating whether parental or youth unemployment is most significant in predicting youth violence. Britt (1994) contends that youth unemployment becomes important particularly among lower-class or impoverished youth because their income is a means of subsistence for the family. As a result, longer durations of unemployment increase the proportion of youth who could potentially become motivated to engage in various types of violence.

The general findings suggest that economic factors of both individuals and neighborhoods affect youth violence. At the individual level, poverty, blocked opportunities, and unemployment all increase the risk of adolescents' engaging in delinquent activity. At the neighborhood level, concentrated disadvantage interacts with individual-level correlates to produce higher rates of overall and youth violence within these places.

2.3 Implications for Empirical Model

Based on the findings of the literature review, we suggested a conceptual model to guide the development of research questions and an empirical model. ***Exhibit 2-1*** presents the conceptual model that we investigate in this report. According to this model, economic determinants at Wave I (including individual, family, and community) have a direct effect on Wave I violence as well as an effect on Wave III violence. Wave III economic determinants (including individual, family, and community) are also hypothesized to have an effect on Wave III violence outcomes. We also hypothesize that it is possible that community economic factors moderate the relationship between individual and family economic factors and youth violence outcomes. This model also suggests that Wave I violence outcomes are related to Wave III violence outcomes. Thus, the Wave I economic determinants of youth violence will have an effect on Wave III outcomes indirectly via the relationship between Wave I violence outcomes and Wave III violence outcomes, in addition to the hypothesized direct effect. (These aspects of the conceptual model will be captured in our empirical specifications.)

Exhibit 2-1. Conceptual Model



2.4 Research Questions

1. To what extent do community and individual/family economic factors explain violence concurrently?

2. To what extent do community and individual/family economic factors predict future violence and/or changes in violence from Wave I to Wave III?

3. To what extent do community economic factors moderate the relationship between individual/family economic factors and violence (e.g., is low income related more strongly to violence in more advantaged neighborhoods than in less advantaged neighborhoods)?

3. DATA AND MEASURES

3.1 National Longitudinal Study of Adolescent Health (Add Health)

The present analyses are based on Add Health, a nationally representative study examining the health-related behaviors and outcomes of adolescents in grades 7 through 12 and their outcomes in young adulthood (Udry, 2003). Individual, family, school, and community-level information was collected in two waves between 1994 and 1996. A third wave was conducted among Add Health respondents in 2001 and 2002 to examine the effects of adolescence on young adulthood.

Add Health was collected using a two-stage cluster sampling design method, incorporating systematic sampling methods and implicit stratification to ensure a nationally representative sample of U.S. schools (Harris et al., 2003). The first stage involved selecting 80 high schools with respect to geographic region, urbanicity, school size, school type, and ethnicity. Eligible high schools—defined as schools with an 11th grade and enrollment of at least 30 students—were then used to identify and recruit the feeder schools (junior high or middle schools). Eligible feeder schools—defined as schools with a 7th grade sending at least five students to the associated high school—were selected randomly with probability proportional to the number of students it sent to the high school. The recruitment effort resulted in 52 eligible feeder schools for a total of 132 schools. An in-school survey was then completed by approximately 90,000 students from these schools. The second stage of the sampling method involved selecting a random sample of students who completed the in-school questionnaire or were listed on the school rooster for incorporation into the core sample.

In-home interviews were conducted in 1995 (Wave I) and 2001 to 2002 (Wave III) using laptop computers in order to protect confidentiality and prevent interviewer or parental influence. Sample weights were computed for 18,924 respondents at Wave I, which adjust for stratification, oversampling, and other sampling issues to produce a nationally representative sample. Wave III data collection involved those Wave I respondents, aged 18 to 26 years, who could be relocated and reinterviewed (15,170). Two additional sample weights were computed at Wave III for use in cross-sectional and longitudinal analyses.

3.2 Variable Construction

3.2.1 Violence Outcomes

Multiple items are available for measuring violence in the Add Health data set. We started with those measures that were common to Waves I and III. The results of exploratory and confirmatory factor analyses suggested that these items measure two distinct constructs: weapon use and fighting.

For both weapon use and fighting, we created an additive scale (simple linear sum of items). In both cases, the distribution of the scale was skewed with a substantial number of zeroes; as a result, we dichotomized both measures.

Two additional measures—arrests and convictions—were only available at Wave III. We do not report results for these outcomes in the main body of the report but do present information pertaining to variable construction and results for these outcomes in Appendixes A and B.

3.2.2 Weapon Use

Weapon use (weap_d1, weap_d3) was constructed based on the responses to three questions asked in the Wave I in-home survey and three questions asked in the Wave III in-home survey.

The Wave I measure was constructed using the following three questions:

- You pulled a knife or gun on someone.
- You shot or stabbed someone.
- How often did you use or threaten to use a weapon to get something from someone?

All three questions began with "During the past 12 months, how often did each of the following things happen . . ." or "In the past 12 months, how often did you . . ." The possible response categories for the first two questions were "never," "once," and "more than once." The possible response categories for the third question were "never," "1 or 2 times," "3 or 4 times," and "5 or more times."

The Wave III measure was constructed using the following three questions:

- You pulled a knife or gun on someone.
- You shot or stabbed someone.
- How often did you use or threaten to use a weapon to get something from someone?

The first two questions began with "Which of the following things happened in the past 12 months?" The third question began with "During the past 12 months . . ." Possible response categories for the first two questions were "marked" and "not marked." Possible response categories for the third question were "never," "1 or 2 times," "3 or 4 times," and "5 or more times."

For both the Wave I and III measures, the overall indicator was constructed as a dichotomous variable such that a value of one indicated any level of reported weapon use on at least one question and zero otherwise.

3.2.3 Fighting

Participation in fights (fight_d1, fight_d3) was created based on the responses to the same three questions asked at the Wave I and Wave III in-home surveys (negligible differences in wording between waves existed).

The overall measure at Waves I and III used the following questions:

- How often did you take part in a fight where a group of your friends was against another group?
- How often did you hurt someone badly enough to need bandages or care from a doctor or nurse?
- How many times were you in a physical fight in which you were injured and had to be treated by a doctor or nurse?

Each of these questions, when asked at Waves I and III, began with "In the past 12 months . . ." Possible response categories for the first question were the same at Waves I and III and consisted of "never," "1 or 2 times," "3 or 4 times," and "5 or more times." Possible response categories for the second question differed between waves. At Wave I, the response categories were "never," "1 or 2 times," "3 or 4 times," and "5 or more times"; at Wave III, responses ranged from 0 to 67 times. Responses for the third question ranged from 0 to 365 times at Wave I and 0 to 56 times at Wave III.

For both the Wave I and Wave III measures, the overall indicator was constructed as a dichotomous variable such that a value of one indicated any level of reported fighting on at least one question and zero otherwise.

3.2.4 Explanatory Variables

The variables of primary interest for this report are economic factors measured at different contextual levels (individual, family, community), and these measures (the variables included in our base model specification) are described in detail in this section.

All of our models control for the following demographic variables—age, gender, race, and school enrollment—as well as family structure. Detailed information on the demographic control variables is presented in Appendix A.

We also estimated models that incorporated additional explanatory variables (pay_b, welf_ad, edu_p, ownh_c1, ownh_c3, exp_p1, exp_p3, church_c1, church_c3, crime_vc1, crime_vc3, arjv_vc1, arjv_vc3). Detailed information on definitions and measurement of these other variables is presented in Appendix A.

3.2.5 Family Structure

Family structure for the Wave I in-home survey was defined by two variables: household size (hhsize_1) and a two-parent family indicator (hhsize_1, twopar1). Household size was computed by summing the number of persons who live at the adolescent's residence and adding one to include the adolescent.

A dichotomous two-parent household indicator was created such that a value of one indicated the presence of both a residential father and a residential mother and zero otherwise. Dichotomous indicators for residential father and residential mother were constructed using the question, "What is {NAME}'s relationship to you?"

Family structure at the Wave III in-home survey consisted of two measures: marital status and financial support of at least one child (married, kid_suppt). Marital status was determined using the following question with legitimate skips (indicating the respondent had never been married) recoded to zero: "Are you still married?"

A dichotomous indicator of financial support of a child was constructed using the following three questions (and corresponding response categories):

- Does *<CHILD>* live with you?
- Are you legally required to pay *<CPARTNER>* child support for *<CHILD>*?
- In the past 12 months, how many child support payments have you missed?
    - None
    - 1 or 2
    - 3 to 5
    - 6 to 8
    - 9 to 11
    - All
- Not including child support, which of the following things have you done during the past year?
    - Bought *<CHILD>* clothes, toys, or presents
    - Paid for *<CHILD>*'s dental or medical expenses
    - Given extra money to *<CPARTNER>* to help out with *<CHILD>*
    - Helped pay for *<CHILD>*'s child care expenses

We assumed the respondent was financially supporting a child if the child lived with the respondent, the respondent was required to pay child support and had not missed more than 11 payments during the previous 12 months, or the respondent answered affirmatively in at least one response category for the third question listed above (i.e., support other than mandatory child support).

3.2.6 Individual Economic Factors

Individual-level economic status at Waves I and III was defined by two indicators: personal income from all sources and employment status (inc_ad100, inc_ya100, emp_ad, emp_ya).

Personal income at Wave I was constructed using the following three questions:

- How much money do you earn in a typical non-summer week from all your jobs combined?
- How much money do you earn in a typical summer week from all your jobs combined?
- How much is your allowance each week?

Responses ranged from $0 to $990 for the first two questions and $0 to $95 for the third question. Total yearly income (in hundreds of dollars) was created by calculating a weighted average of weekly summer/non-summer income and allowance, rounding to the nearest whole dollar, and dividing by 100.

Personal income at Wave III was constructed using the following two questions:

- Including all the income sources you reported above, what was your total personal income before taxes in {2000/ 2001}?
- What is your best guess of your total personal income before taxes?

Responses ranged from $0 to $500,909 for the first question. Only those respondents answering "don't know" were asked the second question. Possible response categories for the second question were "less than $10,000," "10,000 to $14,999," "$15,000 to $19,999," "$20,000 to $29,999," "$30,000 to $39,999," "$40,000 to $49,999," "$50,000 to $74,999," and "$75,000 or more."

Total yearly income (in hundreds of dollars) was constructed based on the first question rounded to the nearest dollar and divided by 100, with missing values ("don't know" responses only) supplemented by the second question. For the second question, we assumed the median value for each response category, with the exception of "$75,000 or more." For this category, we assumed a value of "$113,500," the median income of all respondents reporting $75,000 or greater in the first question.

Employment status at Waves I and III was created such that a value of one indicated current employment for pay and zero otherwise. The Wave I measure was based on the following question:

- In the last 4 weeks, did you work—for pay—for anyone outside your home? This includes both regular jobs and things like baby-sitting or yard work.

The Wave III measure was based on the following question, with legitimate skips (indicating the respondent had never held a job) coded to 0:

- Are you currently working for pay for at least 10 hours a week?

3.2.7 Family Economic Factors

Family economic status was represented by total household income and a corresponding dichotomous poverty status variable constructed based on household income (inc6_i, inc2_i).

The household income variable was constructed primarily using the following question taken from the Wave I parent questionnaire:

- About how much total income, before taxes did your family receive in 1994? Include your own income, the income of everyone else in your household, and income from welfare benefits, dividends, and all other sources.

Responses ranged from $0 to $999,000. We then coded the responses into six categories (coded 1 to 6): "$0 to $10,000," "$11,000 to 20,000," "$21,000 to $40,000," "$41,000 to $60,000," "$61,000 to $80,000" and "$81,000 or more."

To supplement missing values, we used an income imputation strategy based on combinations of the following six characteristics:

- Race/Ethnicity
  - Used dichotomous indicators for Black or African American, Hispanic, and White.
- Socioeconomic status
  - Measure based on adolescent self-report of resident mother/father welfare participation taken from the Wave I in-home survey.
- One-parent household
  - Dichotomous indicator based on adolescent self-report of living with a resident mother (a member of the adolescent's household defined as "mother" or "father's wife") or resident father (a member of the adolescent's household defined as "father" or "mother's husband").
- Condition of dwelling
  - Measure based on interviewer's remarks regarding the condition of the building in which the respondent lived at the time of the Wave I in-home interview. Possible response categories (coded 1 to 4) were "very well kept," "fairly well kept (needs cosmetic work)," "poorly kept (needs minor repairs)," and "very poorly kept (needs major repairs)."
- Urbanicity
  - Measure taken from the Wave I school administrator survey indicating if the respondent's school was located in an "urban," "suburban," or "rural" area.

- Geographic location
  - Measure taken from the Wave I school administrator survey indicating the geographic region where the respondent's school was located: "West," "Midwest," "South," or "Northeast."

A dichotomous family poverty indicator was constructed using the imputed six-category household income measure such that a value of one represented annual household income of $20,000 or less and zero otherwise.

3.2.8 Community Economic Disadvantage Index

A number of community-level economic factors are available that correspond to Waves I and III. These variables are highly correlated, suggesting the potential to create a single index variable (a data reduction strategy that eliminates the problem of collinearity among items). Guided in part by similar measures created by other researchers (Sampson et al., 1997; Lee et al., 2003; Lochner et al., 2003), we conducted a factor analysis and reliability analysis of linear combinations of the following items, all collected at the county-level:

- Proportion of family with income below poverty
- Proportion aged 25+ without high school diploma or equivalency
- Unemployment rate
- Proportion of female head of household, with children aged <18, no husband
- Proportion of occupied housing units that are owner-occupied
- Proportion of local government direct expenditures for public welfare

The results suggested an index created from a subset of these items (listed below). These items loaded on a single factor and had relatively high reliability (alpha = 0.89).

An index of total economic disadvantage was constructed using county-level contextual information at the time of the Wave I and III in-home interviews (disadv_1, disadv_3). The index at Waves I and III used the following county-level items drawn from the U.S. Census (1990 census for Wave I and 2000 Census for Wave III):

- Proportion of family with income below poverty in 1989 (Wave I) and 1999 (Wave III)—county
- Proportion aged 25+ without high school diploma or equivalency—county
- Unemployment rate—county
- Proportion of female head of household, with children aged <18, no husband

We standardized (re-centered the mean at 0 with a standard deviation of 1) each item individually and took the mean, producing a reliability coefficient of 0.87. Only those respondents with missing values on all four items were coded to missing.

3.2.9 Community and Individual Poverty Interactions

To allow us to test the hypothesis that community economic factors moderate the relationship between individual and family economic factors and violence, we created several interaction variables. There were created using the community and individual poverty measures described earlier. Specifically, we combined the following indicators:

- Family poverty (Wave I) and community economic disadvantage index (Wave I and III) (fpov_dis1, fpov_dis3)
- Community economic disadvantage index (Wave III) and poverty status (Wave III) (dis3_welf)
- Community economic disadvantage index (Wave III) and persistent poverty status (Wave III, retrospective) (dis3_ppov)

3.3 Methods

We estimated all equations using a recursive bivariate model in which Wave I violence outcome enters the Wave III violence outcome equation using the "biprobit" command in Stata 8.2 (StataCorp, 2003). The outcomes are (1) a dichotomous indicator of weapon use and (2) a dichotomous indicator of fighting. These outcomes are modeled separately. When using the "biprobit" command in Stata, we applied the weight provided by Add Health computed specifically for analyses of Waves I and III. We also used the "robust cluster" option to produce standard errors that are robust to heteroskedasticity and sample clustering. Together with the weights, this accounts for all components of the complex Add Health sample design except for sample stratification. (There are several "clusters" or primary sampling units [PSUs] within a strata. Unfortunately, there is no survey "biprobit" estimator available in Stata.) This affects only the standard errors of the estimates; it does not affect the coefficients or marginal effects. Not controlling for stratification typically increases the standard errors, which may make our results conservative.

The individual-level economic variables we use are income reported by the respondent at Wave III (inc_ya), employment status at Wave III, and corresponding measures reported at Wave I (inc_ad, emp_ad). We created a measure of "family poverty" by dichotomizing a categorical imputed income variable from the parent survey (parents of Wave I respondents). This variable is coded as a one if family income was below $20,000 and zero otherwise. This variable is only available at Wave I.[1]

Community economic disadvantage is measured by an index created by "scaling" four variables. (This scale/index is based on the literature review and measurement properties. Factor analyses and reliability analysis underlying the index are not presented but are available upon request.) This scale/index is calculated for Waves I and III based on four indicators that are in both waves and are measured at the county-level.

The first model specification (1) does not include an interaction between the family poverty variable (inc2_i) and community disadvantage (disadv_3). The second model specification (2) adds the interaction term between family income and community economic disadvantage.

(1)

$$W3 = \gamma * w1 + \beta_1 * age3 + \beta_2 * bio\_sex + \beta_3 * black + \beta_4 * asian + \beta_5 * native + \beta_6 * other + \beta_7 * Hispanic + \beta_8 * school\_3 + \beta_9 * married + \beta_{10} * kid\_suppt + \beta_{11} * twopar1 + \beta_{12} * inc\_ya + \beta_{13} * emp\_ya + \beta_{14} * inc2\_i + \beta_{15} * disadv\_3$$

$$W1 = \alpha_1 * age3 + \alpha_2 * bio\_sex + \alpha_3 * black + \alpha_4 * asian + \alpha_5 * native + \alpha_6 * other + \alpha_7 * Hispanic + \alpha_8 * school\_3 + \alpha_9 * twopar1 + \alpha_{10} * hhsize + \alpha_{11} * inc\_ya + \alpha_{12} * emp\_ya + \alpha_{13} * inc2\_i + \alpha_{14} * disadv\_1$$

(2)

$$W3 = \gamma * w1 + \beta_1 * age3 + \beta_2 * bio\_sex + \beta_3 * black + \beta_4 * asian + \beta_5 * native + \beta_6 * other + \beta_7 * Hispanic + \beta_8 * school\_3 + \beta_9 * married + \beta_{10} * kid\_suppt + \beta_{11} * twopar1 + \beta_{12} * inc\_ya + \beta_{13} * emp\_ya + \beta_{14} * inc2\_i + \beta_{15} * disadv\_3 + \beta_{16} * (inc2\_i * disadv\_3)$$

$$W1 = \alpha_1 * age3 + \alpha_2 * bio\_sex + \alpha_3 * black + \alpha_4 * asian + \alpha_5 * native + \alpha_6 * other + \alpha_7 * Hispanic + \alpha_8 * school\_3 + \alpha_9 * twopar1 + \alpha_{10} * hhsize + \alpha_{11} * inc\_ya + \alpha_{12} * emp\_ya + \alpha_{13} * inc2\_i + \alpha_{14} * disadv\_3 + \alpha_{15} * (inc2\_i * disadv\_1)$$

The first research question listed above is addressed by examining the coefficient and corresponding marginal effects of the economic variables on the outcomes in the Wave III and Wave I equations in specification (1) (i.e., the direct effect of Wave III variables on

[1] We also created several measures of poverty at Wave III: (1) a measure of poverty at Wave III based on a report by the respondent of having received income from welfare in the past year; (2) using reports of welfare receipt for each year between Wave I and Wave III, we created indicators of welfare receipt at each year and then created a measure of persistent poverty from these indicators—a dichotomous indicator equal to one if poor for more than 3 years. We re-estimated models 1 and 2 using these measures at Wave III. In addition, we estimated separate models that included each of these variables interacted with Wave III community disadvantage index. Estimates from these alternative model specifications are presented in Appendix B.

Wave III outcomes and the direct effect of Wave I variables on Wave I outcomes). These are measured by the coefficients for $\beta 12$, $\beta 13$, $\beta 14$, and $\beta 15$ (and in particular $\beta 14$ and $\beta 15$—indicators of economic disadvantage) in the Wave III outcome equation. Similarly, in the Wave I outcome equation, we focus on $\alpha 11$, $\alpha 12$, $\alpha 13$, and $\alpha 14$ (and in particular $\alpha 13$ and $\alpha 14$—indicators of economic disadvantage).

The second research question is addressed by examining the coefficient and marginal effect of the family poverty variable on Wave III outcomes in specification (1). In this case, given our model specification, the family poverty variables have a direct effect on the Wave III violence outcome but also an indirect effect on the Wave III outcome via its effect (direct) on Wave I violence. The focus here is on $\beta 14$ (and the total effect of family poverty—direct plus indirect effect). We also examine the indirect effect of disadv_1 on the Wave III outcome.[2]

The third research question is addressed by examining the interaction between family poverty (individual economic disadvantage at Wave I) and the community disadvantage index at Wave III in the Wave III outcome equation, and an interaction term between the Wave I disadvantage index and family poverty in the Wave I equation.[3]

Estimation/calculation of the marginal effect for an interaction term in a nonlinear model is not straightforward (Ai and Norton, 2003) so we have also estimated a model specification including the interaction term (option 2 above) using "svyregress" in Stata to test for a significant interaction (i.e., using a linear probability model specification with full accounting for the Add Health survey design and weighting).

For the variables of interest, the estimated marginal effects for the recursive bivariate probit model are calculated using Stata to manually compute the required derivatives (for continuous variables) or differences (for dichotomous variables). Marginal effects are calculated assuming rho, correlation between equations, is zero. Our code is based on equations for these effects appearing in Greene (1998). The marginal effects for a given

[2]Another possible model specification includes disadv_1 in the Wave III equation. A potential problem with this specification is that disadv_1 and disadv_3 are highly correlated (.73). We estimated this model, and results are presented in Appendix B. Again, we include a model specification that includes an indicator of receipt of welfare at Wave III (in year prior) in the Wave III equation as well as a specification that includes a measure of persistent poverty. We do not include the Wave I measures of adolescent income and employment status in the Wave III equation as these seem unlikely to be related to the violence outcomes at Wave III. However, we do allow for these variables to have indirect effects on the Wave III outcomes via their effects on the Wave I outcomes.

[3]We also included a Wave III measure of individual economic disadvantage—as an alternative to using Wave I indicator of family poverty—a self-report measure of receiving income from welfare in the past year. To test moderation of the effect of individual economic factors by community economic factors in this alternative model specification, we include an interaction term between Wave III community disadvantage index and the indicator of welfare receipt. Similarly, we test for an interaction between the Wave III community disadvantage index and our measure of persistent poverty.

variable are evaluated at the means of all of the other variables. We computed bootstrap confidence intervals for the marginal effects. Bootstrapping is the current preferred method for nonlinear estimators and has largely replaced the delta method.

4. RESULTS

4.1 Weapon Use

The biprobit model suggests that several features of demographic variation and family structure are significantly related to weapon use in Wave I and Wave III, occurring through contemporaneous effects and lagged and indirect effects (***Exhibit 4-1***). Economic variables measuring Wave I attributes are related to Wave I weapon use, but neither current period nor lagged economic variables are significantly associated with Wave III weapon use. Weapon use at Wave I is not a significant predictor for weapon use at Wave III after controlling for all other factors in the model. Additionally, the interaction term between individual and family economic factors and the community disadvantage index is not significant when testing our third hypothesis. In this section, we only discuss marginal effects of individual economic factors, community economic factors, and family structure when the marginal effects are significant (see ***Exhibit 4-2)***.

Males report higher levels of weapon use than females at Waves I and III. Age of adolescents is associated with lower reported levels of weapon use at Wave III but not at Wave I. At Wave III, an indicator for school enrollment is associated with lower levels of reported weapon use; school enrollment was not significantly related at Wave I. Compared to Whites, Blacks report higher levels of weapon use at Wave I and Wave III. Native Americans and Hispanics also report higher levels of weapon use at Wave I but not Wave III. One hypothesis for the difference between waves is that fewer Blacks may transition out of poverty or disadvantaged circumstances than Whites, Hispanics, or Native Americans.

Among the measures of family structure at Wave III, financially supporting a child and being married are both significantly associated with lower Wave III weapon use. Supporting a child had a marginal effect of just over 1.0 percentage point lower likelihood of weapon use. Marital status was only marginally significant (p = .085), with an associated marginal effect of 0.7 percentage point lower likelihood of weapon use. Although these variables are perhaps not direct determinants of weapon use, it is likely that these measurable characteristics of individuals influence individual economic circumstances and proxy for non-economic factors that give rise to the observed association with weapon use. For example, these variables could capture aspects of an individual's maturity, such as a greater sense of purpose and responsibility in life, or other unobserved aspects of individuals correlated both with being married or supporting children and the likelihood of weapon use.

Exhibit 4-1. Results from Bivariate Probit Models—Weapon Use

	Variable	Coefficient (Robust Std. Error) Model 1	Model 2
Wave III equation	Age (Wave III)	–0.071 (0.022)***	–0.071 (0.022)***
	Sex (male=1)	0.496 (0.101)***	0.492 (0.097)***
	Race/Ethnicity		
	White (reference)	—	—
	Black or African American	0.371 (0.090)***	0.367 (0.089)***
	Asian or Pacific Islander	–0.359 (0.186)	–0.360 (0.186)
	American Indian or Native American	–0.234 (0.305)	–0.221 (0.308)
	Other	–0.244 (0.330)	–0.250 (0.330)
	Hispanic	0.064 (0.106)	0.062 (0.105)
	School Enrollment (Wave III)	–0.322 (0.088)***	–0.321 (0.087)***
	Individual Economic		
	Young adult income (Wave III)	0.00003 (0.0002)	0.00003 (0.0002)
	Young adult employment (Wave III)	–0.033 (0.076)	–0.033 (0.076)
	Family poverty status (Wave I)	0.078 (0.081)	0.084 (0.083)
	Community disadvantage index (Wave III)	0.037 (0.047)	0.054 (0.056)
	Family Structure		
	Two-parent household (Wave I)	–0.130 (0.079)	–0.129 (0.079)
	Marital status (Wave III)	–0.180 (0.104)	–0.182 (0.104)
	Children, financial support (Wave III)	–0.253 (0.100)*	–0.254 (0.100)*
	Family Poverty; Community Disadvantage Interaction (Wave III)	—	–0.045 (0.065)
	Weapon Use (Wave I)	0.799 (0.809)	0.831 (0.768)
	Intercept	–0.574 (0.479)	–0.580 (0.476)

(continued)

Exhibit 4-1. Results from Bivariate Probit Models—Weapon Use (continued)

	Variable	Coefficient (Robust Std. Error) Model 1	Model 2
Wave I equation	Age (Wave I)	–0.002 (0.016)	–0.001 (0.016)
	Sex (male=1)	0.412 (0.051)***	0.410 (0.051)***
	Race/Ethnicity		
	White (reference)	—	—
	Black or African American	0.338 (0.062)***	0.335 (0.061)***
	Asian or Pacific Islander	0.234 (0.134)	0.235 (0.134)
	American Indian or Native American	0.571 (0.233)*	0.580 (0.233)*
	Other	0.448 (0.236)	0.440 (0.237)
	Hispanic	0.229 (0.074)**	0.224 (0.075)**
	School Enrollment (Wave I)	–0.053 (0.187)	–0.049 (0.184)
	Individual Economic		
	Adolescent income (Wave I)	0.002 (0.0006)***	0.002 (0.0006)***
	Adolescent employment (Wave I)	–0.125 (0.051)*	–0.127 (0.050)*
	Family Poverty Status (Wave I)	0.116 (0.065)	0.131 (0.066)*
	Community Disadvantage Index (Wave I)	0.006 (0.029)	0.032 (0.037)
	Family Structure		
	Two-parent household (Wave I)	–0.218 (0.059)***	–0.220 (0.059)***
	Household size (Wave I)	–0.006 (0.015)	–0.005 (0.015)
	Family Poverty; Community Disadvantage Interaction (Wave I)	—	–0.080 (0.058)
	Intercept	–1.625 (0.312)	–1.637 (0.311)

*$p < 0.05$
**$p < 0.01$
***$p < 0.001$

Exhibit 4-2. Marginal Effects—Weapon Use (Bootstrapped Standard Errors in Parentheses)

Variable	Wave III Weapon Use Direct	Wave III Weapon Use Indirect	Wave III Weapon Use Total	Wave I Weapon Use Direct (Total)
Individual Economic Factors				
Adolescent income (inc_ad)	—	0.00004 (0.00004)	0.00004	0.00026 (0.00007)*
Adolescent employment (emp_ad)	—	–0.00124 (0.00243)	–0.00124	–0.01449 (0.00605)*
Young adult income (inc_ya)	0.000001 (0.00001)	—	0.000001	—
Young adult employment (emp_ya)	–0.0016 (0.00365)	—	–0.0016	—
Community Disadvantage, Wave I (disadv_1)	—	0.00011 (0.000961)	0.00011	0.00073 (0.00323)
Community Disadvantage, Wave III (disadv_3)	0.00174 (0.00223)	—	0.00174	—
Family Structure				
Household size (hhsize_1)	—	–0.00006 (0.00043)	–0.00006	–0.00065 (0.00168)
Two-parent household (twopar1)	–0.00678 (0.0054)	–0.00407 (0.00654)	–0.01085 (0.00654)	–0.02695 (0.00793)*
Martial status (married)	–0.00744 (0.00384)	—	–0.00744	—
Children, financial support (kid_suppt)	–0.01004 (0.00338)*	—	–0.01004	—
Family Poverty, Wave I (inc2_i)	0.00397 (0.00442)	0.00229 (0.00319)	0.00626 (0.00596)	0.0138

*$p < 0.05$

For family structure at Wave I, a two-parent household, compared to other family structures, is significantly associated with a 2.6 percentage point lower likelihood of Wave I weapon use. This result is probably partly due to the correlation between family structure and individual and family economic circumstances, but other explanations are also plausible. For example, differences in parenting practices, such as parental monitoring, may exist between the two households. Although the Wave I variable has an indirect effect on Wave III outcomes through the Wave I violence variable, the indirect and total effect of a two-parent household on Wave III weapon use was not significant.

Of the economic variables, we found several notable and significant associations between Wave I individual economic variables and Wave I weapon use. However, no Wave III or Wave I individual economic variables are associated with Wave III outcomes. The indirect effect of these Wave I variables on Wave III weapon use (via the Wave I violence variable) was also not significant. Additionally, the community-level economic variables for Wave I and Wave III, captured in the community disadvantage index variable, are not associated with weapon use at either wave.

Adolescent income at Wave I is positively and significantly associated with weapon use at Wave I. However, adolescent employment, which generates this income, is associated with a lower likelihood of weapon use at Wave I. Each additional $100 of adolescent income was associated with a 0.026 percent lower likelihood of Wave I weapon use. Although the explanation for the observed positive association between weapon use and adolescent income is not clear, the observed negative correlation between adolescent employment status and weapon use at Wave I is plausible. Several possible explanations of the result may exist. Being employed as an adolescent implies having less time and opportunity for engaging in violence, or in this case, weapon use. Adolescent employment might also be an indicator for maturity, such as a greater sense of purpose or responsibility, as we hypothesize for certain family structure variables. The family poverty indicator is marginally statistically significantly related (p = .078) to Wave I weapon use, indicating that adolescents from poor households were more likely to report weapon use.

Finally, to test the third research question (the extent to which community economic factors moderate the relationship between individual and family economic factors and violence), we estimated a second equation. This model (2) included an interaction term between family poverty status at Wave I and the community disadvantage index at Wave I (in the Wave I equation) and Wave III (in the Wave III equation) in addition to all of the same independent variables as in model (1). For weapon use, the interaction term was not statistically significant for either Wave I or Wave III, indicating that these economic factors did not have the hypothesized moderating effect.

4.2 Fighting

Results of the biprobit estimation of Wave I and Wave III fighting are similar to those for weapon use (***Exhibit 4-3***). To the extent that these are both forms of violence, this similarity is not surprising. However, the marginal effect of certain variables is different and a few factors are statistically significantly related to fighting and not to violence, and vice versa. As for weapon use, we only discuss marginal effects of individual economic factors, community economic factors, and family structure when the marginal effects are significant. Complete marginal effects are shown in ***Exhibit 4-4***.

One key difference between fighting and weapon use is that we found a significant and large relationship between past fighting measured at Wave I and fighting at Wave III. Although there was a positive association between Wave I and Wave III weapon use, the coefficient on the Wave I variable was not significant. The fighting term was strongly significant, indicating that fighting is more highly correlated over time than weapon use, even after controlling for the other variables.

For the set of demographic and control variables, there are few differences between fighting and weapon use. As for weapon use, we found that males are associated with a significant and substantially larger likelihood of fighting at both Waves I and III. Older adolescents at both Waves I and III are associated with lower levels of reported fighting. Blacks also reported more fighting at Wave III than Whites and all other racial/ethnic groups; for Wave I, both Blacks and Hispanics reported more fighting. Both are consistent with the results for weapon use, with the exception that we do not find significant effects for Native Americans for fighting. School enrollment is also significantly related to a lower likelihood of reporting fighting at Wave III but not Wave I, just as for weapon use.

The relationship between Wave III family structure and Wave III fighting is also similar to that for weapon use. Adolescents who report being married or financially supporting children are significantly less likely to report fighting. Being married was associated with a 5.1 percentage point decrease and supporting children was associated with a 3.5 percentage point decrease in the likelihood of Wave III fighting. Because weapon use and fighting are related measures of violence, we hypothesize that a similar explanation about responsibility, sense of purpose, and maturity (as well as a possible unobserved and endogenous association) may apply to the case for fighting. Although marital status was only marginally significant for weapon use, it was significant at $p < .01$ for fighting.

Exhibit 4-3. Results from Bivariate Probit Models—Fighting

	Variable	Coefficient (Robust Std. Error) Model 1	Model 2
Wave III equation	Age (Wave III)	−0.086 (0.015)***	−0.086 (0.015)***
	Sex (male = 1)	0.665 (0.068)***	0.668 (0.069)***
	Race/Ethnicity		
	White (reference)	—	—
	Black or African American	0.192 (0.071)**	0.193 (0.071)**
	Asian or Pacific Islander	0.032 (0.127)	0.031 (0.127)
	American Indian or Native American	0.191 (0.241)	0.199 (0.242)
	Other	−0.331 (0.280)	−0.333 (0.281)
	Hispanic	0.050 (0.060)	0.051 (0.060)
	School Enrollment (Wave III)	−0.237 (0.053)***	−0.237 (0.052)***
	Individual Economic		
	Young adult income (Wave III)	0.0002 (0.0002)	0.0002 (0.0002)
	Young adult employment (Wave III)	−0.086 (0.054)	−0.087 (0.054)
	Family Poverty Status (Wave I)	0.067 (0.059)	0.084 (0.083)
	Community Disadvantage Index (Wave III)	0.013 (0.028)	0.054 (0.056)
	Family Structure		
	Two-parent household (Wave I)	−0.044 (0.057)	−0.045 (0.057)
	Marital status (Wave III)	−0.361 (0.068)***	−0.363 (0.068)***
	Children, financial support (Wave III)	−0.230 (0.062)***	−0.232 (0.062)***
	Family Poverty; Community Disadvantage Interaction (Wave III)	—	−0.022 (0.054)
	Fighting (Wave I)	1.102 (0.209)***	1.085 (0.215)***
	Intercept	0.105 (0.337)	0.116 (0.338)

(continued)

Exhibit 4-3. Results from Bivariate Probit Models—Fighting (continued)

	Variable	Coefficient (Robust Std. Error)	
		Model 1	**Model 2**
Wave I equation	Age (Wave I)	–0.068 (0.012)***	–0.068 (0.012)***
	Sex (male=1)	0.449 (0.031)***	0.448 (0.031)***
	Race/Ethnicity		
	White (reference)	—	—
	Black or African American	0.200 (0.063)**	0.200 (0.063)***
	Asian or Pacific Islander	–0.020 (0.097)	–0.020 (0.097)
	American Indian or Native American	0.292 (0.171)	0.302 (0.173)
	Other	0.099 (0.156)	0.094 (0.157)
	Hispanic	0.147 (0.050)**	0.144 (0.050)**
	School Enrollment (Wave I)	–0.225 (0.130)	–0.049 (0.184)
	Individual Economic		
	Adolescent income (Wave I)	0.003 (0.0005)***	0.003 (0.0005)***
	Adolescent employment (Wave I)	0.019 (0.039)	0.018 (0.039)
	Family Poverty Status (Wave I)	0.116 (0.065)***	0.186 (0.051)***
	Community Disadvantage Index (Wave I)	0.006 (0.029)	–0.005 (0.023)
	Family Structure		
	Two-parent household (Wave I)	–0.173 (0.048)***	–0.173 (0.048)***
	Household size (Wave I)	0.033 (0.011)**	0.034 (0.011)***
	Family Poverty; Community Disadvantage Interaction (Wave I)	—	–0.061 (0.049)
	Intercept	0.365 (0.228)	0.361 (0.227)

*$p < 0.05$
**$p < 0.01$
***$p < 0.001$

Exhibit 4-4. Marginal Effects—Fighting (Bootstrapped Standard Errors in Parentheses)

Variable	Wave III Fighting			Wave I Fighting
	Direct	Indirect	Total	Direct (Total)
Individual Economic Factors				
Adolescent income (inc_ad)	—	0.00024 (0.00009)*	0.00024	0.00084 (0.00017)*
Adolescent employment (emp_ad)	—	0.00084 (0.00317)	0.00084	0.00833 (0.01356)
Young adult income (inc_ya)	0.00003 (0.00003)	—	0.00003	—
Young adult employment (emp_ya)	−0.01456 (0.00955)	—	−0.01456	—
Community Disadvantage, Wave I (disadv_1)	—	−0.00015 (0.00293)	−0.00015	−0.00052 (0.00796)
Community Disadvantage, Wave III (disadv_3)	0.0018 (0.00493)	—	0.0018	—
Family Structure				
Household size (hhsize_1)	—	0.00109 (0.00107)	0.00109	0.01129 (0.00374)*
Two-parent household (twopar1)	−0.0131 (0.00917)	−0.00706 (0.00502)	−0.02016 (0.00943)*	−0.06143 (0.01758)*
Martial status (married)	−0.05102 (0.00821)*	—	−0.05102	—
Children, financial support (kid_suppt)	−0.03547 (0.00847)*	—	−0.03547	—
Family Poverty, Wave I (inc2_i)	0.01952 (0.0106)	0.00815 (0.00479)	0.02767 (0.01059)*	0.06787

*$p < 0.05$

Both of the family structure measures at Wave I are significantly associated with fighting at Wave I. Adolescents from a two-parent household are significantly less likely to report fighting at Wave I, but an increased household size is associated with greater likelihood of fighting. Being from a two-parent household is associated with a 6.1 percentage point lower likelihood of violence. Additionally, this variable has direct and indirect effects on Wave III violence; the total effect on Wave III violence is significant, suggesting that living in a two-parent family (as measured at Wave I) is associated with a 2.0 percentage point lower likelihood of reporting fighting at Wave III. Each additional member in the household at Wave I is associated with a 1.1 percentage point increase in the likelihood of Wave I fighting. One explanation for the two-parent household relationship is that two-parent households might have a stronger economic position, although this could also be capturing differences in parenting practices. The negative relationship with household size might be capturing features of poverty, not captured in our economic variables, or aspects of stress within the family.

No economic variables at Wave III were significantly associated with Wave III violence. Similarly, none of the community economic variables at either Wave I or Wave III were associated with either Wave I or Wave III fighting. These same results hold true for weapon use. We estimated another model (2) that included an interaction term between the community economic variables and family poverty status at Wave I. The interaction term is not significant, as in the case for weapon use.

On the other hand, several Wave I economic variables are significantly related to Wave I fighting. Greater adolescent income is significantly related to a higher likelihood of fighting. Each additional $100 of income is associated with a 0.08 percentage point increase in the likelihood of fighting at Wave I, a small effect despite the fact that it is nearly three times as large as that for weapon use. We are not certain of the reason for this relationship. The indicator for family poverty is associated with higher levels of Wave I fighting, which also has an indirect effect on Wave III fighting. The direct family poverty association at Wave I is a significant 6.8 percentage point increase in the likelihood of reporting fighting at Wave I. However, we found no evidence for a direct effect of this variable on Wave III fighting.

5. DISCUSSION

In this section, we present results related to the three research questions posed in this study. We set out to examine the following research questions:

1. To what extent do community and individual/family economic factors explain violence concurrently?

2. To what extent do community and individual/family economic factors predict future violence and/or changes in violence from Wave I to Wave III?

3. To what extent do community economic factors moderate the relationship between individual/family economic factors and violence (e.g., is low income related more strongly to violence in more advantaged neighborhoods than in less advantaged neighborhoods)?

5.1 Research Question 1

To address this research question, we focused on the direct effects of Wave III variables on Wave III outcomes and Wave I variables on Wave I outcomes.

5.1.1 Weapon Use

In general (across several model specifications), neither individual/family economic factors nor community economic factors measured at Wave III are determinants of Wave III weapon use. Young adult income (Wave III) is positively associated with weapon use at Wave III, but the effect is very small. The explanation for the positive association is not obvious. One hypothesis is that this measure includes sources of income other than from employment. For example, income from illegal sources might be positively correlated with weapon use. An indicator for supporting a child at Wave III was significantly associated with lower reported weapon use. This variable might be related to the individual's economic position, but there are also alternative explanations. These indicators could also pick up noneconomic factors that give rise to the observed association with weapon use. These could pick up aspects of an individual's maturity (sense of purpose and responsibility) as well as unobserved aspects of individuals correlated with these indicators (with being married and/or supporting children) and likelihood of weapon use.

At Wave I, adolescent income was also positively associated with higher levels of weapon use; again, the explanation for this positive association is not obvious. Adolescent employment status at Wave I was associated with a lower probability of reporting weapon use. This may reflect less opportunity to engage in activities that would be associated with weapon use or may capture some aspect of maturity (or sense of purpose or responsibility). Interpreting such a result is problematic because unobserved factors associated with employment status may also be correlated with the probability of engaging in (or reporting) weapon use. Family poverty status (as measured by our family income based indicator) is marginally associated with weapon use in some, but not all, model specifications.

An indicator for being in a two-parent family living arrangement versus all other living arrangements was associated with a lower probability of reported weapon use at Wave I. This result may to some extent reflect individual/family economic circumstances, but there are again plausible alternative explanations. For example, differences in parenting practices such as parental monitoring could also give rise to this observed result.

Community economic factors (as measured by the community disadvantage index) were not significantly associated with Wave III or Wave I outcomes.

5.1.2 Fighting

As with weapon use, we did not find strong evidence that individual and/or community economic factors influence fighting concurrently. Young adult income (Wave III) had a significant effect on Wave III fighting, and adolescent income (Wave I) had a significant effect on the probability of reporting fighting at Wave I. However, in both cases, the effect is small and the association is positive, indicating that more income is associated with a higher probability of reporting fighting. It is not obvious why this association is positive, although as hypothesized for weapon use, illegal income could be a primary driver. At Wave III, both the marital status indicator and the indicator of financially supporting a child were associated with a lower probability of reporting fighting. These variables might be related to the individual's economic position, but these indicators could also pick up noneconomic factors that give rise to the observed association with fighting. For example, these indicators might be related to an individual's maturity (sense of purpose and responsibility) as well as unobserved aspects of individuals correlated with these indicators (with being married and/or supporting children) and likelihood of fighting.

Young adult employment status, family poverty (Wave I indicator of family poverty based on family income),[4] and community economic factors (as measured by community disadvantage index) were not related to Wave III fighting.

The results when considering Wave I fighting as the outcome are similar (adolescent income positively associated with fighting; community economic factors not associated with fighting; adolescent employment status not associated with fighting) with one exception: the indicator for family poverty was associated with a greater probability of reporting fighting. This result is consistent with evidence from other studies reporting that poverty is positively associated with violent outcomes. However, interpreting this result is not easy. As for most, if not all, of the economic variables, especially those at the individual and family level, the issue of the potential endogeneity of these variables comes into play. What this

---

[4]Similarly, the Wave III welfare indicator and indicator for persistent poverty were not statistically significant.

refers to is the likelihood that there are unobserved factors associated with family poverty that are also associated with violent outcomes. (For example, if stress in adolescents is related to poverty and also related to violence but is not fully captured in the other variables included in the model, then stress will cause endogeneity that biases the econometric estimates.) Based on our model specifications, we simply cannot rule out this possibility; alternative specifications that would rule it out are not feasible. Put another way, we cannot say with statistical confidence that family poverty causes violent outcome, nor can we conclude that alleviating family poverty would necessarily reduce violent outcomes.

Family structure (the two-parent family indicator variable) and household size were significantly negatively related to fighting. Those adolescents living in a two-parent household were less likely to report fighting, and those living in households with more people were more likely to report fighting. Although the association between fighting and family structure might be related to family economics, it might also be related to parenting practices, monitoring, or other noneconomic aspects of family life. Similarly, the observed association between household size and fighting might be related to economic factors but could also be related to noneconomic factors (aspects of family dynamics, interactions, or stress, such as a crowded environment). As for the economic variables, we cannot rule out unobserved factors associated with these variables and fighting.

5.2 Research Question 2

To address this research question, we focused on the association between Wave I economic variables and Wave III outcomes. In particular, we focused on the family poverty indicator and the Wave I community economic disadvantage index. Of particular interest in this research question is the direct effect of Wave I economic factors on Wave III outcomes (and not the indirect effect operating via the relationship between Wave I and Wave III violence).

5.2.1 Weapon Use

We did not observe statistically significant direct effects of the individual (family poverty) or community economic variables on Wave III violence.

5.2.2 Fighting

The results for fighting are similar to those for weapon use. There is no statistically significant evidence that individual or community economic factors are directly associated with Wave III fighting.

5.3 Research Question 3

To address this research question, we investigated several interaction terms (separately): interaction between family poverty indicator and community economic disadvantage index at Wave I (in Wave I equation), interaction between family poverty indicator and community economic disadvantage index at Wave III (in Wave III equation), interaction between Wave III welfare indicator and Wave III community disadvantage index (in Wave III equation), and interaction between persistent poverty indicator and Wave III community disadvantage index (in Wave III equation). Given the difficulty of interpreting and calculating the marginal effects for interaction terms in nonlinear models, we also estimated models including the interaction terms using ordinary least squares (OLS) regression.

5.3.1 Weapon Use

There was no evidence that community economic factors moderated the relationship between individual/family economic factors and weapon use. This question was addressed by including an interaction term between the community disadvantage index and the family poverty indicator (also the Wave III welfare indicator and the measure of persistent poverty). Moderation was tested in both the Wave III and Wave I equations.

Interaction terms are difficult to interpret in nonlinear models such as the bivariate probit (Ai and Norton, 2003), so we also estimated a model using OLS. There was no evidence of moderation using OLS either.[5]

5.3.2 Fighting

As for weapon use, there was no evidence of moderation of the relationship between individual/family economic factors and fighting by community economic factors.[6]

5.4 Limitations

The primary variables of interest in this report are the economic determinants and especially the community economic determinants. Results do not suggest that community economic determinants have a statistically significant effect on youth and young adult violence. There is some evidence that individual and family economic factors are associated with youth and young adult violence. However, in trying to interpret these results for policy implications, it is important to recognize the limitations of the study.

First, the items available for measuring violent behavior in Add Health did not allow for much discrimination beyond a dichotomous categorization of violence/no violence. There

---

[5]In the model specification that included a measure of persistent poverty (included in Wave III equation only as measure is based on reports of welfare receipt in Wave III survey), the interaction term between persistent poverty and the community disadvantage index was significant and the sign of the coefficient was negative. The coefficient on persistent poverty variable was not statistically significant. This result would support the idea that community contextual factors moderate the effects of poverty on self-reported use of weapons.

[6]Similar to what we found for weapon use, in the model specification for fighting that included a measure of persistent poverty (included in Wave III equation only as the measure is based on reports of welfare receipt in Wave III survey), the interaction term between persistent poverty and the community disadvantage index was significant and the sign of the coefficient was negative. The coefficient on persistent poverty variable was not statistically significant. This result would support the idea that community contextual factors moderate the effects of poverty on self-reported fighting.

may be effects of economic factors on the level of violence rather than just a dichotomy of some versus none.

Second, the measures available to characterize the economic conditions of the adolescent's community are limited. A further complication in characterizing the community economic context has to do with defining the relevant level at which to measure community factors. In this study, we used measures at the county-level, which may not be the most relevant geographical level of community economic factors that influences adolescent behavior. For instance, if the neighborhood is the most influential geographical level, and neighborhoods and neighborhood economic factors within cities vary significantly, more localized measures may be required to capture potential community economics. County size also varies considerably by region in the United States, so county-level economic variables may be good measures in some regions and poor measures in other regions. In addition, some of the data available for measuring the community context are based on decennial U.S. Census data and thus might not reflect current conditions of the community for some adolescents. All of these issues suggest that measurement error in community economic data may have affected the results of this research, possibly biasing it toward no statistically significant effect. Although pursuing more localized economic data may be worthwhile in future studies, such data are often costly to obtain and difficult to measure and define. Based on the literature review and the objectives of this research, the use of county-level economic variables seemed reasonable.

Third, we did not account for the potential endogeneity of economic indicators at any level (individual, family, or community). This is a limitation of most work in this area. To properly address this shortcoming would require more detailed information at the individual level related to individual and family economic decisions.

A fourth limitation is related to the calculation of marginal effects for the variables of interest. To simplify calculation of the marginal effects, we constrained the correlation across equations (rho) in the bivariate probit models to be 0. In the case of fighting, the model actually rejects the hypothesis that rho is 0. In the weapon use models, we did not reject the hypothesis that rho is 0, although the magnitude of rho in the weapon use equation is similar to that in the fighting equation. Thus, the magnitude of the marginal effects is potentially in error. This constrains the effects of the Wave III variables on Wave III outcomes and the indirect effects of Wave I variables on Wave III outcomes.

Fifth, a minor limitation is that we used a bootstrap procedure to calculate standard errors for indirect effects. Although this is considered standard practice for nonlinear models now (Horowitz, 2001; Efron and Tibshirani, 1993), bootstrapping is an approximation technique that is not as "efficient" statistically as analytical procedures based on exact formulae. This small loss of efficiency implies that the *t*-statistics (and corresponding *p* values) may be just slightly conservative, although this would affect only a handful of coefficient estimates on the margin of being significant—something we discussed in the results section.

Finally, we did not explore interactions of structural conditions by race/ethnicity. In the models estimated for this report, we controlled for racial/ethnic differences in the level of violence outcomes. However, we did not explore the possibility of differential effects of variables of interest by race/ethnicity.

5.5 Conclusions

The results presented in this report do not provide a clear message regarding policy implications for reducing youth violence. Results for the individual and family economic variables, when significant, are difficult to interpret because we cannot rule out unobserved factors as being responsible for the observed relationship.

On the other hand, given the limitations of the measures available at the community level to measure economic context, and the level at which we had to define community (the county), we cannot conclude from this report that community economic context is *not* an important factor associated with youth and young adult violence. Although we did not find evidence for such an association, this does not necessarily indicate that an association does not exist. We used the best data and methods available to us, but the limitations noted in Section 5.4 may have precluded us from finding these associations.

In short, the results presented in this report should not be used to form policy recommendations, given the limitations of the study design, available data, and methods used. This work should be seen as preliminary and should be used to suggest additional avenues to explore in future research (e.g., addressing the limitations noted for this report).

REFERENCES

Ai, C., and E.C. Norton. 2003. "Interaction Terms in Logit and Probit Models." *Economics Letters* 80:123-129.

Baron, S.W., and T.F. Hartnagel. 1997. "Attributions, Affect and Crime: Street Youths' Reactions to Unemployment." *Criminology* 35:409-434.

Bennett, M.D., and M.W. Fraser. 2000. "Urban Violence Among African American Males: Integrating Family, Neighborhood, and Peer Perspectives." *Journal of Sociology and Social Welfare* 27(3):93-117.

Britt, C.L. 1994. "Crime and Unemployment Among Youths in the United States, 1958-1990: A Time Series Analysis." *American Journal of Economics and Sociology* 53(1):99-109.

Bursik, R.J. 1988. "Social Disorganization and Theories of Crime and Delinquency: Problems and Prospects." *Criminology* 26:519-551.

Cao, L., A. Adams, and V.J. Jensen. 1997. "A Test of the Black Subculture of Violence Thesis: A Research Note." *Criminology* 35(2):367-379.

Centers for Disease Control and Prevention (CDC). 2001. "Temporal Variations in School-Associated Student Homicide and Suicide Events—U.S., 1992-1999." *Morbidity and Mortality Weekly Report* 50:657-660.

Cruthfield, R.D., and S.R. Pitchford. 1997. "Work and Crime: The Effects of Labor Stratification." *Social Forces* 76(1):93-118.

Dryfoos, J.G. 1990. *Adolescent at Risk: Prevalence and Prevention*. New York: Oxford University Press.

Duncan, G.J. 1984. *Years of Poverty, Years of Plenty.* Ann Arbor, MI: Survey Research Center, University of Michigan.

Durlauf, S.N. 2002. "On the Empirics of Social Capital." *The Economic Journal* 112:F459-F479.

Efron, B.J., and R. Tibshirani. 1993. *An Introduction to the Bootstrap.* New York: Chapman and Hall.

Farnworth, M., and M.J. Leiber. 1989. "Strain Theory Revisited: Economic Goals, Educational Means, and Delinquency." *American Sociological Review* 54:263-274.

Fraser, M.W. 1996. "Aggressive Behavior in Childhood and Early Adolescence: An Ecological-Developmental Perspective on Youth Violence." *Social Work* 41(4):347-361.

Greene, W.H. 1998. "Gender Economics Courses in Liberal Arts Colleges: Further Results." *Journal of Economic Education* 29(4):291-300.

Harris, K.M., F. Florey, J. Tabor, P.S. Bearman, J. Jones, and J.R. Udry. 2003. The National Longitudinal Study of Adolescent Health: Research Design [Web site]. Available at: http://www.cpc.unc.edu/projects/addhealth/design.

Horowitz, J.L. 2001. "The Bootstrap." In *Handbook of Econometrics, Vol. 5*, J.J. Heckman and E. Leamer, eds., pp. 3159-3228. Amsterdam: North-Holland.

Karsada, J.D. 1993. "Inner-City Concentrated Poverty and Neighborhood Distress: 1970-1990." *Housing Policy Debate* 4:253-302.

Krug, E.G., L.L. Dahlberg, J.A. Mercy, A.B. Zwi, and R. Lozano. *2002 World Report on Violence and Health*. Geneva: World Health Organization.

Lee, M.R., M.O. Maume, and G.C. Ousey. 2003. "Social Isolation and Lethal Violence Across the Metro/Nonmetro Divide: The Effects of Socioeconomic Disadvantage and Poverty Concentration on Homicide." *Rural Sociology* 68(1):107-131.

Lieberson, S. 1980. *A Piece of the Pie: Blacks and White Immigrants since 1880.* Berkeley: University of California Press.

Lochner, K.A., I. Kawachi, R.T. Brennan, and S.L. Buka. 2003. "Social Capital and Neighborhood Mortality Rates in Chicago." *Social Science and Medicine* 56(8):1797-1805.

Massey, D., and M.L. Eggers. 1990. "The Ecology of Inequality: Minorities and the Concentration of Poverty." *American Journal of Sociology* 95:1153-1189.

Mocan, H.N., and D.I. Rees. Forthcoming. "Economic Conditions, Deterrence and Juvenile Crime: Evidence and Micro Data (NBER Working Paper No: 7405)." *American Law and Economics Review*.

National Center for Health Statistics (NCHS). Health, U.S. CDC. [Web site]. 2004. Available at: www.cdc.gov/nchs/.

National Institute of Child Health and Human Development (NICHHD). 2001. *America's Children: Key National Indicators of Well-Being.* Rockville, MD: NICHHD.

Pagani, L., B. Boulerice, F. Vitaro, and R.E. Tremblay. 1999. "Effects of Poverty on Academic Failure and Delinquency in Boys: A Change and Process Model Approach." *Journal of Child Psychology* 40(8):1209-1219.

Portes, A. 1998. "Social Capital: Its Origins and Applications in Modern Sociology." *Annual Review of Sociology* 24:1-24.

Sampson, R.J., and J.D. Morenoff. 2000. "Public Health and Safety in Context: Lessons from Community-Level Theory on Social Capital." In *Promoting Health: Intervention Strategies from Social and Behavioral Research.* Washington, DC: National Academy Press.

Sampson, R.J., S.W. Raudenbush, and F. Earls. 1997. "Neighborhoods and Violent Crime: A Multilevel Study of Collective Efficacy." *Science* 277:918-924.

Shaw, C., and H. McKay. 1942. *Juvenile Delinquency and Urban Areas.* Chicago: University of Chicago Press.

Shihadeh, E.S., and D.J. Steffensmeier. 1994. "Economic Inequality, Family Disruption, and Urban Black Violence: Cities as Units of Stratification and Social Control." *Social Forces* 73(1):729-751.

Simons, R., C. Johnson, J. Beaman, R.D. Conger, and L.B. Whitbeck. 1996. "Parents and Peer Group as Mediators of the Effect of Community Structure on Adolescent Problem Behavior." *American Journal of Community Psychology* 24(1):145-171.

Simons, R.L., M.G. Miller, and S.M. Aigner. 1980. "Contemporary of Deviance and Female Delinquency: An Empirical Test." *Journal of Research in Crime and Delinquency* 17:42-57.

StataCorp. 2003. Stata Statistical Software: Release 8. College Station, TX: StataCorp LP.

U.S. Department of Health and Human Services (USDHHS). 2001. *Youth Violence: A Report of the Surgeon General*. Rockville, MD: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Injury Prevention and Control; Substance Abuse and Mental Health Services Administration, Center for Mental Health Services; and National Institutes of Health, National Institute of Mental Health.

U.S. Department of Justice, Federal Bureau of Investigation. 2002. Uniform Crime Reporting Program Data (United States): County-level Detailed Arrest and Offense Data, 2000. [Computer files]. 3rd ICPSR ed. Ann Arbor, MI: Inter-university Consortium for Political and Social Research [producer and distributor].

Udry, J.R., ed. 2003. The National Longitudinal Study of Adolescent Health (Add Health), Waves I and II, 1994-1996; Wave III, 2001-2002. Chapel Hill, NC: Carolina Population Center, University of North Carolina at Chapel Hill.

Vowell, P.R., and D.C. May. 2000. "Another Look at Classic Strain Theory: Poverty Status, Perceived Block Opportunity, and Gang Membership as Predictors of Adolescent Violent Behavior." *Sociological Inquiry* 70(1):42-60.

Wilson, W.J. 1987. *The Truly Disadvantaged: The Inner City, the Underclass, and Public Policy*. Chicago: University of Chicago Press.

APPENDIX A:
VARIABLE CONSTRUCTION—ADDITIONAL ITEMS

A.1 Arrests and Convictions

Violent crime arrests and convictions (ar_viol, cv_viol) were represented by two types of illegal activities considered to be violent in nature by law enforcement reporting agencies (U.S. Department of Justice, 2002):

- Assault (battery, rape, aggravated assault, manslaughter)
- Robbery (taking something using a weapon or physical force)

In the Wave III in-home questionnaire, participation in both illegal activities was explored in detail including arrests and convictions occurring when the respondent was a juvenile (defined as less than 18 years of age) and during adulthood (defined as 18 years of age and older).

We constructed two separate dichotomous indicators—violent crime arrests and violent crime convictions—based on information contained in the Wave III in-home survey such that a value of one indicated at least one reported violent crime arrest or conviction (as defined above) up through the Wave III interview. The measure used all reported arrests and convictions including juvenile and adult occurrences. Although we did not include a separate adolescent arrest or conviction indicator in the present analyses, it would be possible to construct such a measure using the retrospectively collected information contained in the Wave III survey.

A.2 Demographic Variables

We created and/or included four basic demographic variables—age (years), gender, race and ethnicity, and school enrollment—assessed at both the Wave I and Wave III in-home survey (age1, age3, White, Black, Hispanic, Asian, other, school_1, school_3).

Age at the time of the Wave I interview was created by subtracting the respondent's self-reported birth date (month and year) from the interview date and rounding to the nearest whole year. Day of birth was assumed to be 15 for all respondents. For the Wave III in-home interview, age was calculated by Add Health prior to data distribution.

At both the Wave I and Wave III in-home surveys, the Add Health interviewer recorded the respondent's biological sex based on observation. A total of 20 discrepancies in responses were identified between Waves and subsequently corrected based on information published on the Add Health Web site.

Race and ethnicity was constructed using the following questions (and corresponding response categories) taken from the Wave I in-home survey:

- What is your race? You may give more than one answer.
  - White
  - Black or African American
  - American Indian or Native American
  - Asian or Pacific Islander
  - Other
- Which one category best describes your racial background? (This question was only asked of those respondents who provided more than once race in the above question.)
  - White
  - Black or African American
  - American Indian or Native American
  - Asian or Pacific Islander
  - Other
- Are you of Hispanic or Latino origin?
  - Yes
  - No

Six separate binary indicators were created such that a value of one indicated the relevant race or ethnicity and zero otherwise. In creating these indicators, we began with the five possible response categories of the first question and supplemented missing or multiple responses with the second question. We then created the "Hispanic or Latino" ethnicity indicator using the third question. Respondents' race or ethnicity status was only included in the Wave I interview and thus it was assumed to be constant across waves.

A dichotomous indicator of school enrollment at Wave I and Wave III was created such that a value of one represented full- or part-time enrollment and zero otherwise. School enrollment at Wave I was based on the following question taken from the in-home survey:

- (If interview was conducted during the school year) Are you presently in school? (If interview was conducted during the summer) Were you in school during this past school year?

School enrollment at Wave III used the following question (legitimate skips recorded for this question were interpreted that the respondent was not enrolled in school):

- Are you going to school full time or part time?

A.3 Other Family Economic Factors

Difficulty paying bills, welfare participation, and parent educational attainment (pay_b, welf_ad, edu_p) were all constructed based on information collected in the Wave I parent questionnaire and in-home survey.

For difficulty paying bills, we used the question "Do you have enough money to pay your bills," reverse coded such that a value of one indicated difficulty and zero otherwise.

Welfare participation was constructed using the following seven questions:

- Supplemental Security Income (SSI)
- Aid to Families with Dependent Children (AFDC)
- Food stamps
- Unemployment or worker's compensations
- Housing subsidy or public housing
- Does he *[resident father]* receive public assistance, such as welfare?
- Does she *[resident mother]* receive public assistance, such as welfare?

The first five questions—taken from the Wave I parent questionnaire—began with "Last month, did you or any member of your household receive. . ." The last two questions were taken from the Wave I in-home survey. We constructed the dichotomous indicator based on at least one affirmative response to any of the first five questions. We used the last two questions to supplement missing values.

Parent education was constructed using the following question (and corresponding response categories) taken from the Wave I parent questionnaire:

- How far did you go in school? [Give R card #1. Mark only the highest level.]
  - 8th grade or less
  - More than 8th grade but did not graduate from high school
  - Went to a business, trade, or vocational school instead of high school
  - High school graduate
  - Completed a GED
  - Went to a business, trade, or vocational school after high school
  - Went to college but did not graduate
  - Graduated from a college or university
  - Professional training beyond a 4-year college or university
  - Never went to school

We then coded the responses into six categories (coded 1 to 6): "8th grade or less *(includes "Never went to school")*," "More than 8th grade but did not graduate from high school," "High school graduate (or equivalent)," "Some post-high school training/college," "College graduate," and "Post-graduate or professional training."

A.4 Poverty

Poverty status comprised two indicators—current and long-term welfare participation—created using information collected at the Wave III in-home interview (welf_w3, pers_pov).

Dichotomous current welfare participation was constructed using the following question and was coded such that a value of one indicated that the respondent was receiving assistance at the time of the Wave III in-home interview:

- Are you currently getting AFDC, public assistance, or welfare?

Long-term or persistent poverty was constructed using retrospectively-collected information regarding yearly welfare participation during the time period of 1995 to 2001. The measure used the following question to determine poverty status at each year:

- At any time during *(1995, 1996, 1997, 1998, 1999, 2000, 2001)*, even for one month, did you receive any public assistance or welfare payments from a state or local welfare office other than food stamps?

We assigned a value of one to the overall measure if the respondent reported receiving some type of welfare for at least three years and zero otherwise.

A.5 Other Community Indicators

The following Wave I and Wave III county-level items drawn from the U.S. Census; the U.S. Department of Justice, Federal Bureau of Investigation, Uniform crime reporting (UCR) program data; and the 1999 and 2000 Religious Congregations and Membership in the United States data file were used:

- Proportion owner occupied housing—county (ownh_c1, ownh_c3)
- Per capita police spending—county (exp_p1, exp_p3)
- Church adherents per capita—county (church_c1, church_c3)
- Violent crimes per 100,000 population in reporting area—county *(violent crimes defined as murder, rape, robbery and aggravated assault)* (crime_vc1, crime_vc3)
- Juvenile violent crime arrests per 100,000 population in reporting area—county *(violent crimes defined as murder, rape, robbery and aggravated assault)* (arjv_vc1, arjv_vc3)

A.6 Social Capital

Social capital factors were represented by four scales: social cohesion, informal social control, social disorganization, and public religiosity (soc_coh, soc_con, soc_dis, rel_pub).

Social cohesion was constructed using the following five questions taken from the Wave I in-home survey:

- You know most of the people in your neighborhood.
- In the past month, you have stopped on the street to talk with someone who lives in your neighborhood.
- People in this neighborhood look out for each other.
- Do you use a physical fitness or recreation center in your neighborhood?
- Do you usually feel safe in your neighborhood?

The possible responses for the first three questions were “true” and “false.” The possible responses for the last two questions were “yes” and “no.” The items were individually dichotomized such that a value of one represented “true” or “yes” responses and zero otherwise. The sum of the responses to these items produced a scale that ranged from 0 to 5. Missing values were assigned only to those respondents with missing information on three or more items.

Informal social control used the following two questions collected during the Wave I parent questionnaire:

- If you saw a neighbor’s child getting into trouble, would you tell your neighbor about it?
- If a neighbor saw your child getting into trouble, would your neighbor tell you about it?

The five possible response categories for both questions ranged from “definitely would” to “definitely would not.” The items were reverse-coded and averaged, producing a scale ranging from 1 to 5 with a reliability coefficient of 0.6. Missing values were assigned to those respondents with missing information on both questions.

The social disorganization scale was also created using information gathered in the Wave I parent questionnaire. Specifically, we averaged the responses to the following two questions, assigning missing values to those respondents with missing information on both questions ($\alpha = 0.62$):

- In this neighborhood, how big a problem is litter or trash on the streets and sidewalks?
- In this neighborhood, how big a problem are drug dealers and drug users?

Possible responses categories were “no problem at all” (coded 1), “a small problem” (coded 2), and “a big problem” (coded 3).

A measure of public display of religiosity was constructed using the following two questions asked during the Wave I in-home survey:

- In the past 12 months, how often did you attend religious services?
- Many churches, synagogues, and other places of worship have special activities for teenagers—such as youth groups, Bible classes, or choir. In the past 12 months, how often did you attend such youth activities?

Possible responses categories for both questions were “once a week or more,” “once a month or more, but less than once a week,” “less than once a month,” and “never”—coded 1 to 4, respectively. The items were reverse coded and averaged, producing a scale ranging from 1 to 4 with a reliability coefficient of 0.69. Missing values were assigned to those respondents with missing information on both questions.

APPENDIX B:
ADDITIONAL ANALYSES

B.1 Weapon Use

B.1.1 Model 1 with Community Disadvantage Index Indicators by Wave (Based on Percentage Quartiles) (dis1-4_1, dis1-4_3; dis4_1 and dis4_3 Reference Groups)

Seemingly unrelated bivariate probit — Number of obs = 12248

Wald chi2(34) = 602.87

Log pseudolikelihood = -6692190 — Prob > chi2 = 0.0000

(standard errors adjusted for clustering on psuscid)

	Coef.	Robust Std. Err.	z	P>|z|	[95% Conf.	Interval]
weap_d3						
age3	-.0757289	.0210492	-3.60	0.000	-.1169846	-.0344732
bio_sex	.5002637	.1016325	4.92	0.000	.3010676	.6994597
black	.357467	.0900573	3.97	0.000	.1809579	.533976
asian	-.3880882	.1883847	-2.06	0.039	-.7573155	-.018861
native	-.2564464	.2988876	-0.86	0.391	-.8422554	.3293625
other	-.2551127	.3348636	-0.76	0.446	-.9114332	.4012078
hispanic	.0588421	.1054906	0.56	0.577	-.1479157	.2656
school_3	-.330277	.0872434	-3.79	0.000	-.5012708	-.1592831
inc_ya100	.000057	.0002224	0.26	0.798	-.0003789	.0004929
emp_ya	-.0311347	.0747211	-0.42	0.677	-.1775855	.115316
inc2_i	.069645	.0798582	0.87	0.383	-.0868742	.2261641
dis1_3	-.1755155	.1175298	-1.49	0.135	-.4058697	.0548386
dis2_3	-.0233765	.1064592	-0.22	0.826	-.2320327	.1852798
dis3_3	-.1562499	.1098206	-1.42	0.155	-.3714943	.0589945
twopar1	-.1254765	.0769602	-1.63	0.103	-.2763157	.0253628
married	-.180929	.1037653	-1.74	0.081	-.3843053	.0224472
kid_suppt	-.2527338	.0992355	-2.55	0.011	-.4472318	-.0582357
weap_d1	.892435	.8276045	1.08	0.281	-.7296399	2.51451
_cons	-.3992527	.4702194	-0.85	0.396	-1.320866	.5223604
weap_d1						
age1	-.001123	.0156515	-0.07	0.943	-.0317994	.0295533
bio_sex	.4101356	.0512578	8.00	0.000	.3096721	.5105991
black	.3668146	.0571606	6.42	0.000	.254782	.4788472
asian	.2299501	.134953	1.70	0.088	-.0345529	.4944532
native	.5604925	.2307112	2.43	0.015	.1083068	1.012678
other	.4573395	.2372077	1.93	0.054	-.0075791	.922258
hispanic	.2232604	.0752196	2.97	0.003	.0758328	.370688
school_1	-.039932	.1858235	-0.21	0.830	-.4041393	.3242753
inc_ad100	.0022726	.0005634	4.03	0.000	.0011683	.0033769
emp_ad	-.1280357	.049889	-2.57	0.010	-.2258164	-.030255
inc2_i	.1204875	.0627421	1.92	0.055	-.0024848	.2434598
dis1_1	-.0155548	.0656033	-0.24	0.813	-.1441349	.1130254
dis2_1	.0256948	.0638599	0.40	0.687	-.0994684	.1508579
dis3_1	.0409922	.0899651	0.46	0.649	-.1353362	.2173206
twopar1	-.2110375	.0574096	-3.68	0.000	-.3235582	-.0985168
hhsize_1	-.0060446	.0148161	-0.41	0.683	-.0350836	.0229943
_cons	-1.670925	.3145099	-5.31	0.000	-2.287353	-1.054497
/athrho	-.1142901	.4125185	-0.28	0.782	-.9228115	.6942313
rho	-.1137951	.4071767			-.7272248	.6006934

Wald test of rho=0: chi2(1) = .076759 Prob > chi2 = 0.7817

B.1.2 Model 1 with Wave I Disadvantage Index (disadv_1) in Wave III Equation

```
Seemingly unrelated bivariate probit              Number of obs   =      11981
                                                  Wald chi2(31)   =     583.48
Log pseudolikelihood = -6523440.9                 Prob > chi2     =     0.0000

                          (standard errors adjusted for clustering on psuscid)
------------------------------------------------------------------------------
             |               Robust
             |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
weap_d3      |
        age3 |   -.071424   .0220964    -3.23   0.001    -.1147322   -.0281158
     bio_sex |   .4964219   .1011986     4.91   0.000     .2980763    .6947674
       black |   .3773249   .0904871     4.17   0.000     .1999734    .5546765
       asian |  -.3692878   .1864791    -1.98   0.048    -.7347802   -.0037954
      native |    -.23237   .3062845    -0.76   0.448    -.8326767    .3679366
       other |  -.2504992   .3309652    -0.76   0.449    -.8991791    .3981807
    hispanic |   .0583943   .1062515     0.55   0.583    -.1498547    .2666434
    school_3 |  -.3226086   .0876753    -3.68   0.000    -.4944489   -.1507682
   inc_ya100 |   .0000281   .0002269     0.12   0.901    -.0004167    .0004729
      emp_ya |  -.0350329   .0763396    -0.46   0.646    -.1846557    .1145899
      inc2_i |   .0814724    .082887     0.98   0.326     -.080983    .2439279
    disadv_1 |  -.0372714   .0784505    -0.48   0.635    -.1910314    .1164887
    disadv_3 |   .0646319   .0648375     1.00   0.319    -.0624473    .1917111
     twopar1 |  -.1303999   .0792401    -1.65   0.100    -.2857077    .0249079
     married |  -.1750196   .1013184    -1.73   0.084    -.3736001    .0235609
   kid_suppt |   -.251432   .1004348    -2.50   0.012    -.4482807   -.0545834
     weap_d1 |   .7968533   .8173624     0.97   0.330    -.8051477    2.398854
       _cons |  -.5668939   .4766903    -1.19   0.234     -1.50119     .367402
-------------+----------------------------------------------------------------
weap_d1      |
        age1 |  -.0020706   .0158483    -0.13   0.896    -.0331326    .0289915
     bio_sex |   .4116807   .0512785     8.03   0.000     .3111766    .5121847
       black |   .3380981   .0621455     5.44   0.000     .2162952    .4599011
       asian |    .233791   .1336238     1.75   0.080    -.0281068    .4956888
      native |   .5706324   .2326835     2.45   0.014     .1145811    1.026684
       other |   .4483901   .2363405     1.90   0.058    -.0148288    .9116089
    hispanic |   .2293771     .07439     3.08   0.002     .0835753    .3751789
    school_1 |  -.0531478   .1870873    -0.28   0.776    -.4198322    .3135367
   inc_ad100 |   .0022497   .0005962     3.77   0.000     .0010812    .0034182
      emp_ad |  -.1247445   .0507126    -2.46   0.014    -.2241394   -.0253496
      inc2_i |   .1159641    .065344     1.77   0.076    -.0121078     .244036
    disadv_1 |   .0063025   .0286945     0.22   0.826    -.0499377    .0625426
     twopar1 |  -.2178433   .0592012    -3.68   0.000    -.3338754   -.1018111
    hhsize_1 |  -.0058543   .0149252    -0.39   0.695     -.035107    .0233985
       _cons |  -1.624628   .3122609    -5.20   0.000    -2.236648   -1.012608
-------------+----------------------------------------------------------------
     /athrho |  -.0717535   .4065301    -0.18   0.860    -.8685378    .7250308
-------------+----------------------------------------------------------------
         rho |  -.0716306   .4044442                     -.7006305    .6200158
------------------------------------------------------------------------------
Wald test of rho=0:                 chi2(1) =  .031153    Prob > chi2 = 0.8599
```

B.1.3 Model 1 with Wave III Welfare Participation Indicator in Wave III Equation

```
Seemingly unrelated bivariate probit              Number of obs   =      11981
                                                  Wald chi2(31)   =     588.52
Log pseudolikelihood = -6523921.7                 Prob > chi2     =     0.0000

                          (standard errors adjusted for clustering on psuscid)
------------------------------------------------------------------------------
             |               Robust
             |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
weap_d3      |
        age3 |  -.0712259   .0221653    -3.21   0.001    -.1146691   -.0277827
     bio_sex |   .4971923   .1008736     4.93   0.000     .2994836     .694901
       black |   .3708171   .0894946     4.14   0.000      .195411    .5462232
       asian |  -.3592089   .1863633    -1.93   0.054    -.7244742    .0060564
      native |  -.2344175   .3043208    -0.77   0.441    -.8308754    .3620403
       other |  -.2445871   .3296183    -0.74   0.458    -.8906272    .4014529
    hispanic |   .0640857   .1057684     0.61   0.545    -.1432165    .2713879
    school_3 |   -.321433   .0879287    -3.66   0.000    -.4937701   -.1490959
   inc_ya100 |   .0000303   .0002266     0.13   0.894    -.0004138    .0004744
      emp_ya |  -.0319006   .0774211    -0.41   0.680    -.1836432     .119842
      inc2_i |   .0774193   .0823235     0.94   0.347    -.0839318    .2387705
     welf_w3 |   .0276916   .1790037     0.15   0.877    -.3231492    .3785324
    disadv_3 |   .0371939   .0473863     0.78   0.433    -.0556816    .1300693
     twopar1 |  -.1294788   .0792114    -1.63   0.102    -.2847302    .0257727
     married |  -.1795575   .1044767    -1.72   0.086     -.384328     .025213
   kid_suppt |    -.25553   .1024031    -2.50   0.013    -.4562364   -.0548237
     weap_d1 |   .8045882   .8132986     0.99   0.323    -.7894478    2.398624
       _cons |  -.5764977   .4782143    -1.21   0.228    -1.513781    .3607852
-------------+----------------------------------------------------------------
weap_d1      |
        age1 |  -.0020655   .0158479    -0.13   0.896    -.0331268    .0289959
     bio_sex |   .4116889    .051279     8.03   0.000      .311184    .5121939
       black |   .3382416   .0621711     5.44   0.000     .2163885    .4600947
       asian |   .2336862   .1337002     1.75   0.080    -.0283613    .4957337
      native |   .5707809   .2329706     2.45   0.014     .1141668    1.027395
       other |   .4482755   .2363729     1.90   0.058    -.0150069    .9115578
    hispanic |   .2293756   .0743809     3.08   0.002     .0835918    .3751594
    school_1 |   -.052868   .1871309    -0.28   0.778    -.4196377    .3139018
   inc_ad100 |     .00225    .000596     3.77   0.000     .0010817    .0034182
      emp_ad |   -.124767   .0507246    -2.46   0.014    -.2241854   -.0253487
      inc2_i |   .1160747   .0653492     1.78   0.076    -.0120073    .2441567
    disadv_1 |   .0060681   .0290956     0.21   0.835    -.0509582    .0630944
     twopar1 |  -.2178121   .0591953    -3.68   0.000    -.3338328   -.1017913
    hhsize_1 |  -.0058618   .0149373    -0.39   0.695    -.0351384    .0234148
       _cons |  -1.625021    .312222    -5.20   0.000    -2.236964   -1.013077
-------------+----------------------------------------------------------------
     /athrho |  -.0747509   .4035411    -0.19   0.853     -.865677    .7161752
-------------+----------------------------------------------------------------
         rho |   -.074612   .4012946                     -.6991711    .6145345
------------------------------------------------------------------------------
Wald test of rho=0:                 chi2(1) =  .034313    Prob > chi2 = 0.8530
```

B.1.4 Model 1 with Wave III Persistent Poverty Status Indicator in Wave III Equation

```
Seemingly unrelated bivariate probit              Number of obs   =      11980
                                                  Wald chi2(31)   =     576.37
Log pseudolikelihood = -6523324.5                 Prob > chi2     =     0.0000

                          (standard errors adjusted for clustering on psuscid)
------------------------------------------------------------------------------
             |               Robust
             |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
weap_d3      |
        age3 |  -.0716407    .022077    -3.25   0.001    -.1149108   -.0283706
     bio_sex |   .5003023   .1011438     4.95   0.000     .3020641    .6985404
       black |   .3692286   .0897482     4.11   0.000     .1933253    .5451319
       asian |  -.3616845   .1866395    -1.94   0.053    -.7274912    .0041223
      native |  -.2334209   .3045172    -0.77   0.443    -.8302636    .3634219
       other |   -.244555   .3298108    -0.74   0.458    -.8909723    .4018623
    hispanic |   .0628025    .105303     0.60   0.551    -.1435876    .2691926
    school_3 |  -.3211941   .0876475    -3.66   0.000      -.49298   -.1494082
   inc_ya100 |   .0000333   .0002238     0.15   0.882    -.0004054    .0004719
      emp_ya |  -.0317595   .0763344    -0.42   0.677    -.1813722    .1178532
      inc2_i |    .076719   .0812085     0.94   0.345    -.0824467    .2358848
    pers_pov |    .133575   .2060068     0.65   0.517    -.2701909    .5373408
    disadv_3 |   .0376274   .0472545     0.80   0.426    -.0549898    .1302446
    twopar1  |   -.126869   .0788535    -1.61   0.108    -.2814189     .027681
     married |  -.1802188   .1043426    -1.73   0.084    -.3847266     .024289
   kid_suppt |  -.2619387   .0988757    -2.65   0.008    -.4557315   -.0681458
     weap_d1 |   .8131212   .8118833     1.00   0.317    -.7781408    2.404383
       _cons |  -.5727715   .4785175    -1.20   0.231    -1.510649    .3651055
-------------+----------------------------------------------------------------
weap_d1      |
        age1 |  -.0020527   .0158478    -0.13   0.897    -.0331138    .0290084
     bio_sex |   .4115767   .0512388     8.03   0.000     .3111504    .5120029
       black |    .337972   .0621639     5.44   0.000      .216133     .459811
       asian |   .2334686   .1336311     1.75   0.081    -.0284435    .4953807
      native |   .5706637   .2328063     2.45   0.014     .1143718    1.026956
       other |   .4480538   .2363745     1.90   0.058    -.0152317    .9113393
    hispanic |   .2291824    .074379     3.08   0.002     .0834023    .3749625
    school_1 |   -.052481   .1870104    -0.28   0.779    -.4190146    .3140527
   inc_ad100 |   .0022495   .0005959     3.78   0.000     .0010816    .0034174
      emp_ad |  -.1248629   .0507272    -2.46   0.014    -.2242864   -.0254395
      inc2_i |   .1163358   .0653702     1.78   0.075    -.0117875    .2444591
    disadv_1 |   .0060109   .0291078     0.21   0.836    -.0510394    .0630612
    twopar1  |  -.2179164   .0591702    -3.68   0.000    -.3338879   -.1019449
    hhsize_1 |  -.0058685   .0149185    -0.39   0.694    -.0351082    .0233711
       _cons |  -1.625279   .3123351    -5.20   0.000    -2.237445   -1.013114
-------------+----------------------------------------------------------------
     /athrho |  -.0793519   .4036917    -0.20   0.844    -.8705732    .7118694
-------------+----------------------------------------------------------------
         rho |  -.0791858   .4011604                     -.7016652    .6118477
------------------------------------------------------------------------------
Wald test of rho=0:                 chi2(1) =  .038638    Prob > chi2 = 0.8442
```

B.1.5 Survey Regression, Model 2 (Family Poverty, Community Disadvantage Interaction)

Survey linear regression

pweight:	gswgt3_2	Number of obs	=	12201
Strata:	region	Number of strata	=	4
PSU:	psuscid	Number of PSUs	=	132
		Population size	=	19147591
		F(17, 112)	=	6.96
		Prob > F	=	0.0000
		R-squared	=	0.0379

weap_d3	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
age3	-.0043878	.0014298	-3.07	0.003	-.007217	-.0015587
bio_sex	.0269102	.0040324	6.67	0.000	.0189315	.0348889
black	.0327069	.0089342	3.66	0.000	.015029	.0503848
asian	-.015994	.0063079	-2.54	0.012	-.0284752	-.0035127
native	-.0131655	.0173053	-0.76	0.448	-.047407	.021076
other	-.0147769	.012221	-1.21	0.229	-.0389583	.0094045
hispanic	.0028646	.006259	0.46	0.648	-.0095199	.015249
school_3	-.020216	.0051066	-3.96	0.000	-.0303203	-.0101118
inc_ya100	3.94e-07	.0000174	0.02	0.982	-.0000341	.0000349
emp_ya	-.0032637	.00476	-0.69	0.494	-.0126821	.0061547
inc2_i	.0053317	.0066337	0.80	0.423	-.0077941	.0184576
disadv_3	.0019885	.0037749	0.53	0.599	-.0054808	.0094578
twopar1	-.0111194	.0053973	-2.06	0.041	-.0217988	-.0004399
married	-.0068745	.004619	-1.49	0.139	-.016014	.002265
kid_suppt	-.0163865	.005334	-3.07	0.003	-.0269407	-.0058323
fpov_dis3	-.0009993	.0054878	-0.18	0.856	-.011858	.0098593
weap_d1	.0777659	.0174808	4.45	0.000	.0431772	.1123545
_cons	.1234363	.0326616	3.78	0.000	.0588097	.1880629

Survey linear regression

pweight:	gswgt1	Number of obs	=	13128
Strata:	region	Number of strata	=	4
PSU:	psuscid	Number of PSUs	=	132
		Population size	=	15540152
		F(15, 114)	=	10.43
		Prob > F	=	0.0000
		R-squared	=	0.0313

weap_d1	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
age1	-.0002815	.0018294	-0.15	0.878	-.0039012	.0033382
bio_sex	.048221	.0054424	8.86	0.000	.0374523	.0589896
black	.053307	.0097012	5.49	0.000	.0341115	.0725025
asian	.0191998	.0171502	1.12	0.265	-.0147348	.0531344
native	.1256232	.0644187	1.95	0.053	-.0018401	.2530865
other	.0453704	.0381367	1.19	0.236	-.0300896	.1208305
hispanic	.0250124	.0108105	2.31	0.022	.0036219	.0464029
school_1	-.0161975	.0270252	-0.60	0.550	-.0696715	.0372764
inc_ad100	.0004408	.0001027	4.29	0.000	.0002376	.0006441
emp_ad	-.0219964	.0062657	-3.51	0.001	-.0343942	-.0095986
inc2_i	.0178674	.008917	2.00	0.047	.0002236	.0355113
disadv_1	.0020343	.0037043	0.55	0.584	-.0052953	.0093639
twopar1	-.0282183	.0080117	-3.52	0.001	-.0440708	-.0123657
hhsize_1	.0000694	.0018116	0.04	0.969	-.0035152	.003654
fpov_dis1	-.008657	.0078448	-1.10	0.272	-.0241793	.0068654
_cons	.06754	.0397405	1.70	0.092	-.0110934	.1461733

B.1.6 Survey Regression, Model 1 (Wave III Equation Only) with Wave III Welfare Participation Status and Welfare Participation, Community Disadvantage Interaction

```
Survey linear regression

pweight:  gswgt1                                   Number of obs    =     12755
Strata:   region                                   Number of strata =         4
PSU:      psuscid                                  Number of PSUs   =       132
                                                   Population size  =  14908417
                                                   F(  17,    112)  =      6.82
                                                   Prob > F         =    0.0000
                                                   R-squared        =    0.0366

------------------------------------------------------------------------------
     weap_d3 |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
        age3 |  -.0042484   .0013224    -3.21   0.002     -.006865   -.0016318
     bio_sex |   .0260839   .0040325     6.47   0.000      .018105    .0340628
       black |   .0321222   .0077033     4.17   0.000     .0168799    .0473645
       asian |  -.0085418   .0068401    -1.25   0.214     -.022076    .0049925
      native |   -.017602   .0154852    -1.14   0.258    -.0482421    .0130381
       other |  -.0140566   .0082573    -1.70   0.091    -.0303951    .0022818
    hispanic |   .0038866   .0061385     0.63   0.528    -.0082595    .0160328
    school_3 |  -.0196796    .004585    -4.29   0.000    -.0287517   -.0106075
   inc_ya100 |  -4.26e-07    .000018    -0.02   0.981    -.0000359    .0000351
      emp_ya |  -.0034228   .0044147    -0.78   0.440    -.0121581    .0053125
     welf_w3 |  -.0032737   .0085481    -0.38   0.702    -.0201876    .0136402
    disadv_3 |   .0013001   .0029925     0.43   0.665    -.0046209    .0072212
     twopar1 |  -.0136159   .0047598    -2.86   0.005    -.0230341   -.0041977
     married |  -.0059481   .0042484    -1.40   0.164    -.0143543    .0024581
   kid_suppt |  -.0143611   .0053926    -2.66   0.009    -.0250313   -.0036908
   dis3_welf |  -.0024317   .0059905    -0.41   0.685    -.0142849    .0094216
     weap_d1 |   .0771952   .0171905     4.49   0.000     .0431809    .1112095
       _cons |   .1226362   .0297216     4.13   0.000     .0638268    .1814455
------------------------------------------------------------------------------
```

B.1.7 Survey Regression, Model 1 (Wave III Equation Only) with Wave III Persistent Poverty Status and Persistent Poverty, Community Disadvantage Interaction

```
Survey linear regression

pweight:  gswgt3_2                                Number of obs    =     12753
Strata:   region                                  Number of strata =         4
PSU:      psuscid                                 Number of PSUs   =       132
                                                  Population size  =  19671216
                                                  F(  17,    112)  =      6.15
                                                  Prob > F         =    0.0000
                                                  R-squared        =    0.0369

------------------------------------------------------------------------------
     weap_d3 |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
        age3 |  -.0045508   .0013873    -3.28   0.001    -.0072958   -.0018058
     bio_sex |   .0268395   .0039592     6.78   0.000     .0190055    .0346735
       black |    .031564   .0084095     3.75   0.000     .0149243    .0482036
       asian |  -.0102502   .0067461    -1.52   0.131    -.0235985    .0030981
      native |  -.0181969   .0145985    -1.25   0.215    -.0470825    .0106887
       other |  -.0158729   .0083085    -1.91   0.058    -.0323127    .0005668
    hispanic |   .0039071    .006399     0.61   0.543    -.0087543    .0165686
    school_3 |  -.0197894   .0048497    -4.08   0.000    -.0293854   -.0101935
   inc_ya100 |   1.55e-06   .0000173     0.09   0.929    -.0000326    .0000357
      emp_ya |  -.0036289    .004651    -0.78   0.437    -.0128317    .0055738
    pers_pov |   .0013432   .0108816     0.12   0.902    -.0201879    .0228743
    disadv_3 |   .0021902    .003335     0.66   0.513    -.0044086    .0087891
     twopar1 |   -.012498   .0049291    -2.54   0.012     -.022251   -.0027449
     married |  -.0059742   .0044374    -1.35   0.181    -.0147543    .0028059
   kid_suppt |  -.0150873   .0051896    -2.91   0.004    -.0253559   -.0048187
   dis3_ppov |  -.0140787   .0065076    -2.16   0.032    -.0269551   -.0012023
     weap_d1 |    .077377   .0171995     4.50   0.000     .0433449    .1114091
       _cons |   .1284004   .0309631     4.15   0.000     .0671346    .1896663
------------------------------------------------------------------------------
```

B.1.8 Model 1 with Wave I Parent Characteristics (edu_p, pay_b, welf_ad) in Wave I Equation

Seemingly unrelated bivariate probit		Number of obs =	10363
		Wald chi2(33) =	487.80
Log pseudolikelihood =	-5583852	Prob > chi2 =	0.0000

(standard errors adjusted for clustering on psuscid)

	Coef.	Robust Std. Err.	z	P>|z|	[95% Conf.	Interval]
weap_d3						
age3	-.0764814	.0238635	-3.20	0.001	-.1232529	-.0297098
bio_sex	.5051702	.0914092	5.53	0.000	.3260115	.684329
black	.3833022	.1053844	3.64	0.000	.1767526	.5898518
asian	-.335296	.1910452	-1.76	0.079	-.7097378	.0391458
native	-.2654823	.3058091	-0.87	0.385	-.8648571	.3338926
other	-.2082204	.3286582	-0.63	0.526	-.8523786	.4359379
hispanic	.0801209	.1176532	0.68	0.496	-.1504751	.3107169
school_3	-.2983208	.0986522	-3.02	0.002	-.4916755	-.104966
inc_ya100	.0001261	.0002227	0.57	0.571	-.0003104	.0005625
emp_ya	.0124779	.0841626	0.15	0.882	-.1524778	.1774337
inc2_i	.0796157	.0813866	0.98	0.328	-.0798991	.2391304
disadv_3	.0285049	.0544176	0.52	0.600	-.0781516	.1351614
twopar1	-.1090652	.0746415	-1.46	0.144	-.2553598	.0372294
married	-.1287307	.1092202	-1.18	0.239	-.3427983	.0853369
kid_suppt	-.1988671	.1081937	-1.84	0.066	-.4109228	.0131886
weap_d1	.598373	.5842585	1.02	0.306	-.5467527	1.743499
_cons	-.5422279	.532339	-1.02	0.308	-1.585593	.5011374
weap_d1						
age1	-.0129334	.0169886	-0.76	0.446	-.0462305	.0203636
bio_sex	.4433365	.0562744	7.88	0.000	.3330406	.5536323
black	.367909	.0678972	5.42	0.000	.2348328	.5009851
asian	.1790568	.1285651	1.39	0.164	-.0729262	.4310399
native	.5522865	.2304597	2.40	0.017	.1005938	1.003979
other	.4874658	.2440966	2.00	0.046	.0090452	.9658864
hispanic	.2505036	.0825539	3.03	0.002	.088701	.4123063
school_1	.1408974	.2079761	0.68	0.498	-.2667284	.5485231
inc_ad100	.0022803	.0006544	3.48	0.000	.0009977	.003563
emp_ad	-.1250343	.0564609	-2.21	0.027	-.2356957	-.0143729
inc2_i	.0409718	.0898441	0.46	0.648	-.1351194	.217063
disadv_1	-.0070648	.0337181	-0.21	0.834	-.073151	.0590214
twopar1	-.191457	.0608247	-3.15	0.002	-.3106712	-.0722428
hhsize_1	-.0135674	.0176533	-0.77	0.442	-.0481671	.0210324
edu_p	-.0262513	.0271873	-0.97	0.334	-.0795373	.0270348
pay_b	.1091082	.0766662	1.42	0.155	-.0411549	.2593713
welf_ad	.0583651	.0585439	1.00	0.319	-.0563787	.173109
_cons	-1.589755	.3639897	-4.37	0.000	-2.303162	-.8763485
/athrho	.0276054	.2982271	0.09	0.926	-.5569089	.6121197
rho	.0275984	.2979999			-.5056803	.5456175

Wald test of rho=0: chi2(1) = .008568 Prob > chi2 = 0.9262

B.1.9 Model 1 with Wave I Parent Characteristics (edu_p, pay_b, welf_ad) in Wave I and III Equations

Seemingly unrelated bivariate probit — Number of obs = 10363
Wald chi2(36) = 492.02
Log pseudolikelihood = -5582051.8 — Prob > chi2 = 0.0000

(standard errors adjusted for clustering on psuscid)

	Coef.	Robust Std. Err.	z	P>|z|	[95% Conf.	Interval]
weap_d3						
age3	-.0770658	.0240528	-3.20	0.001	-.1242085	-.0299231
bio_sex	.5023166	.0913402	5.50	0.000	.323293	.6813401
black	.3791451	.1035531	3.66	0.000	.1761847	.5821055
asian	-.3377534	.1880008	-1.80	0.072	-.7062281	.0307214
native	-.2734782	.3057882	-0.89	0.371	-.8728121	.3258558
other	-.2030511	.325983	-0.62	0.533	-.841966	.4358638
hispanic	.1033578	.1154163	0.90	0.371	-.122854	.3295695
school_3	-.314012	.1026876	-3.06	0.002	-.515276	-.1127479
inc_ya100	.0001224	.0002217	0.55	0.581	-.000312	.0005569
emp_ya	.0137422	.0841059	0.16	0.870	-.1511024	.1785869
inc2_i	.089466	.0933604	0.96	0.338	-.0935171	.272449
disadv_3	.0297922	.0543871	0.55	0.584	-.0768046	.1363889
twopar1	-.0997968	.0756414	-1.32	0.187	-.2480512	.0484575
married	-.1232587	.1095022	-1.13	0.260	-.3378789	.0913616
kid_suppt	-.195579	.1091963	-1.79	0.073	-.4095998	.0184418
edu_p	.0358611	.0295422	1.21	0.225	-.0220405	.0937627
pay_b	.0048133	.10216	0.05	0.962	-.1954166	.2050432
welf_ad	.0403111	.0935781	0.43	0.667	-.1430986	.2237207
weap_d1	.6289348	.5647467	1.11	0.265	-.4779484	1.735818
_cons	-.6787746	.5517683	-1.23	0.219	-1.760221	.4026714
weap_d1						
age1	-.0129251	.0169872	-0.76	0.447	-.0462195	.0203693
bio_sex	.4433335	.0562228	7.89	0.000	.3331387	.5535283
black	.3679148	.0679249	5.42	0.000	.2347844	.5010452
asian	.1788221	.1286674	1.39	0.165	-.0733613	.4310054
native	.5524254	.2301882	2.40	0.016	.1012649	1.003586
other	.4872216	.2441753	2.00	0.046	.0086468	.9657964
hispanic	.2504438	.0826847	3.03	0.002	.0883848	.4125028
school_1	.1416904	.2068141	0.69	0.493	-.2636577	.5470385
inc_ad100	.0022839	.00065	3.51	0.000	.00101	.0035579
emp_ad	-.1250531	.0564531	-2.22	0.027	-.2356992	-.014407
inc2_i	.0412402	.0900602	0.46	0.647	-.1352745	.2177549
disadv_1	-.0070931	.0338221	-0.21	0.834	-.0733832	.059197
twopar1	-.1912974	.0607182	-3.15	0.002	-.3103029	-.0722918
hhsize_1	-.013567	.0176365	-0.77	0.442	-.0481338	.0209999
edu_p	-.0260923	.0271383	-0.96	0.336	-.0792825	.0270979
pay_b	.1089202	.0767521	1.42	0.156	-.041511	.2593515
welf_ad	.0584022	.0590704	0.99	0.323	-.0573737	.1741782
_cons	-1.591459	.361827	-4.40	0.000	-2.300627	-.8822911
/athrho	.0125061	.287836	0.04	0.965	-.551642	.5766542
rho	.0125054	.2877909			-.5017499	.5202294

Wald test of rho=0: chi2(1) = .001888 Prob > chi2 = 0.9653

B.1.10 Model 1 with School Characteristics (smsize, medsize, s_fight, e_weap, penalty, v_prog) in Wave I Equation

Seemingly unrelated bivariate probit — Number of obs = 9222; Wald chi2(36) = 515.54

Log pseudolikelihood = -4367682.7 — Prob > chi2 = 0.0000

(standard errors adjusted for clustering on psuscid)

	Coef.	Robust Std. Err.	z	P>|z|	[95% Conf.	Interval]
weap_d3						
age3	-.1030563	.0260077	-3.96	0.000	-.1540304	-.0520821
bio_sex	.4498868	.1060296	4.24	0.000	.2420726	.657701
black	.2263658	.1244071	1.82	0.069	-.0174676	.4701993
asian	-.3238976	.2019103	-1.60	0.109	-.7196346	.0718394
native	-.1417002	.2019088	-0.70	0.483	-.5374341	.2540337
other	-.2098842	.3908501	-0.54	0.591	-.9759362	.5561679
hispanic	-.0240161	.1239316	-0.19	0.846	-.2669176	.2188854
school_3	-.4300435	.1052187	-4.09	0.000	-.6362683	-.2238186
inc_ya100	.0003761	.0002195	1.71	0.087	-.0000541	.0008063
emp_ya	-.0073121	.092469	-0.08	0.937	-.188548	.1739239
inc2_i	.0227926	.0870551	0.26	0.793	-.1478322	.1934175
disadv_3	.1147038	.0496373	2.31	0.021	.0174165	.2119911
twopar1	-.1590577	.0860246	-1.85	0.064	-.3276627	.0095474
married	-.0849482	.1236176	-0.69	0.492	-.3272342	.1573379
kid_suppt	-.3662509	.1434162	-2.55	0.011	-.6473415	-.0851604
weap_d1	1.346441	1.223233	1.10	0.271	-1.051052	3.743934
_cons	.1546385	.5752441	0.27	0.788	-.9728192	1.282096
weap_d1						
age1	-.0007914	.0197755	-0.04	0.968	-.0395505	.0379678
bio_sex	.4154507	.0667182	6.23	0.000	.2846854	.5462161
black	.364869	.0910523	4.01	0.000	.1864098	.5433283
asian	.2432407	.1770944	1.37	0.170	-.1038579	.5903393
native	.1612495	.3104904	0.52	0.604	-.4473006	.7697995
other	.5898439	.2715965	2.17	0.030	.0575245	1.122163
hispanic	.1546376	.0850976	1.82	0.069	-.0121507	.3214258
school_1	.326672	.2040164	1.60	0.109	-.0731929	.7265368
inc_ad100	.0011775	.0007068	1.67	0.096	-.0002077	.0025628
emp_ad	-.0430941	.0603875	-0.71	0.475	-.1614515	.0752632
inc2_i	.1534679	.0802207	1.91	0.056	-.0037617	.3106975
disadv_1	-.0119672	.0333944	-0.36	0.720	-.0774189	.0534846
twopar1	-.1331194	.081268	-1.64	0.101	-.2924017	.026163
hhsize_1	.0009754	.0202955	0.05	0.962	-.0388031	.040754
smsize	.0303292	.0926209	0.33	0.743	-.1512045	.2118629
medsize	.0458151	.0718774	0.64	0.524	-.0950619	.1866921
s_fight	.0344918	.086888	0.40	0.691	-.1358056	.2047892
e_weap	.0250256	.0787693	0.32	0.751	-.1293594	.1794106
penalty	-.0339179	.1029357	-0.33	0.742	-.2356683	.1678324
v_prog	.011458	.0887248	0.13	0.897	-.1624394	.1853554
_cons	-2.034865	.6849826	-2.97	0.003	-3.377406	-.6923241
/athrho	-.3150989	.6024375	-0.52	0.601	-1.495855	.8656568
rho	-.3050686	.5463705			-.9043963	.6991607

Wald test of rho=0: chi2(1) = .273571 Prob > chi2 = 0.6009

B.1.11 Full Model with Interaction Terms (dis3_ppov, dis3_welf, fpov_dis1, fpov_dis3)

Seemingly unrelated bivariate probit — Number of obs = 8728; Wald chi2(52) = 479.59; Prob > chi2 = 0.0000

Log pseudolikelihood = -4529451.5

(standard errors adjusted for clustering on psuscid)

	Coef.	Robust Std. Err.	z	P>|z|	[95% Conf.	Interval]
weap_d3						
age3	-.0812319	.0286046	-2.84	0.005	-.137296	-.0251679
bio_sex	.5851451	.1098967	5.32	0.000	.3697515	.8005387
black	.4170942	.1206852	3.46	0.001	.1805555	.653633
asian	-.2868348	.237216	-1.21	0.227	-.7517697	.1781001
native	.0798796	.3999284	0.20	0.842	-.7039657	.8637249
other	-.1156687	.3884611	-0.30	0.766	-.8770384	.645701
hispanic	.0862964	.1532101	0.56	0.573	-.2139899	.3865827
school_3	-.3522197	.1090092	-3.23	0.001	-.5658738	-.1385657
inc_ya100	.0001176	.0002358	0.50	0.618	-.0003445	.0005797
emp_ya	.0316396	.0886846	0.36	0.721	-.142179	.2054582
inc2_i	.1401964	.0903134	1.55	0.121	-.0368147	.3172075
disadv_3	.0130738	.0636525	0.21	0.837	-.1116829	.1378304
twopar1	-.1999814	.0973785	-2.05	0.040	-.3908397	-.009123
married	-.1639012	.1087737	-1.51	0.132	-.3770937	.0492913
kid_suppt	-.1444158	.1165245	-1.24	0.215	-.3727995	.083968
ownh_c3	-.3587142	.5084811	-0.71	0.481	-1.355319	.6378905
church_c3	-.5170422	.4334792	-1.19	0.233	-1.366646	.3325614
exp_p3	-.0000155	.0009538	-0.02	0.987	-.0018848	.0018539
welf_c3	.00008	.0003219	0.25	0.804	-.000551	.0007109
crime_vc3	-.0000852	.0001407	-0.61	0.545	-.0003609	.0001905
arjv_vc3	.0022489	.0019323	1.16	0.244	-.0015384	.0060361
pers_pov	.1709278	.224583	0.76	0.447	-.2692467	.6111023
welf_w3	.102564	.2283277	0.45	0.653	-.3449501	.5500781
dis3_ppov	-.212784	.1617045	-1.32	0.188	-.5297189	.1041509
dis3_welf	.1768072	.1179966	1.50	0.134	-.0544619	.4080763
fpov_dis3	-.0592136	.0749542	-0.79	0.430	-.2061211	.0876939
weap_d1	.0418685	1.206546	0.03	0.972	-2.322917	2.406654
_cons	.0686615	.7109016	0.10	0.923	-1.32468	1.462003
weap_d1						
age1	-.0048577	.017572	-0.28	0.782	-.0392982	.0295827
bio_sex	.3927465	.0643891	6.10	0.000	.2665462	.5189469
black	.3166793	.0731778	4.33	0.000	.1732535	.4601051
asian	.4002527	.1537696	2.60	0.009	.0988697	.7016356
native	.7146812	.2961169	2.41	0.016	.1343027	1.29506
other	.4651795	.2740308	1.70	0.090	-.071911	1.00227
hispanic	.265673	.1062729	2.50	0.012	.0573819	.4739641
school_1	.0199954	.2245994	0.09	0.929	-.4202114	.4602022
inc_ad100	.0014001	.0007006	2.00	0.046	.000027	.0027733
emp_ad	-.0941514	.0598749	-1.57	0.116	-.211504	.0232013
inc2_i	.1531287	.0824991	1.86	0.063	-.0085667	.314824
disadv_1	-.0347623	.0587206	-0.59	0.554	-.1498525	.080328
twopar1	-.2513328	.0723953	-3.47	0.001	-.393225	-.1094407
hhsize_1	.0011268	.0203314	0.06	0.956	-.038722	.0409756
soc_coh	-.0206925	.0277086	-0.75	0.455	-.0750004	.0336154
soc_cont	.0051605	.0430895	0.12	0.905	-.0792934	.0896145
soc_dis	.0862999	.0565228	1.53	0.127	-.0244828	.1970825
rel_pub	-.0637999	.0368766	-1.73	0.084	-.1360768	.008477
ownh_c1	.3194804	.5411033	0.59	0.555	-.7410626	1.380023
church_c1	.32876	.2121988	1.55	0.121	-.087142	.7446619
exp_p1	.0008169	.0013255	0.62	0.538	-.0017811	.0034149
welf_c1	-.0004421	.0004411	-1.00	0.316	-.0013066	.0004224
crime_vc1	.0000706	.0001118	0.63	0.528	-.0001486	.0002898
arjv_vc1	.0013553	.0015129	0.90	0.370	-.00161	.0043206
fpov_dis1	-.0457128	.0782478	-0.58	0.559	-.1990758	.1076501
_cons	-2.159673	.7248	-2.98	0.003	-3.580255	-.7390913

```
     /athrho |   .3731119   .7425782     0.50   0.615    -1.082315    1.828538
-------------+----------------------------------------------------------------
         rho |   .3567107   .6480907                     -.7940558    .9496829
------------------------------------------------------------------------------
Wald test of rho=0:                 chi2(1) =  .252461    Prob > chi2 = 0.6153
```

B.1.12 Model 1 Substituting Proportion Family with Income Below Poverty (pov_c1, pov_c3) for the Disadvantage Index (disadv_1, disadv_3) in Both Equations

```
Seemingly unrelated bivariate probit              Number of obs   =      11981
                                                  Wald chi2(30)   =     572.75
Log pseudo-likelihood = -6524627.4                Prob > chi2     =     0.0000

                          (standard errors adjusted for clustering on psuscid)
------------------------------------------------------------------------------
             |               Robust
             |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
weap_d3      |
        age3 |  -.0705652   .0219039    -3.22   0.001    -.1134961   -.0276344
     bio_sex |   .4939659   .0984809     5.02   0.000     .3009469     .686985
       black |   .3865762   .0890706     4.34   0.000     .2120009    .5611514
       asian |  -.3562664   .1873662    -1.90   0.057    -.7234974    .0109646
      native |  -.2090312   .3123214    -0.67   0.503    -.8211699    .4031075
       other |  -.2489645   .3280292    -0.76   0.448      -.89189     .393961
    hispanic |   .0719567   .1042814     0.69   0.490     -.132431    .2763444
    school_3 |  -.3228996   .0874511    -3.69   0.000    -.4943006   -.1514985
   inc_ya100 |   .0000316   .0002282     0.14   0.890    -.0004156    .0004788
      emp_ya |  -.0369203   .0764741    -0.48   0.629    -.1868068    .1129662
      inc2_i |   .0827133   .0810819     1.02   0.308    -.0762043    .2416309
      pov_c3 |   .2086979   .8249858     0.25   0.800    -1.408245     1.82564
     twopar1 |  -.1284703   .0774518    -1.66   0.097     -.280273    .0233324
     married |   -.176186   .1035932    -1.70   0.089    -.3792249     .026853
   kid_suppt |  -.2543941   .0998777    -2.55   0.011    -.4501508   -.0586375
     weap_d1 |   .8236668   .7615514     1.08   0.279    -.6689465     2.31628
       _cons |  -.6147108   .4671192    -1.32   0.188    -1.530248     .300826
-------------+----------------------------------------------------------------
weap_d1      |
        age1 |  -.0012295   .0159203    -0.08   0.938    -.0324326    .0299737
     bio_sex |   .4122788    .051385     8.02   0.000      .311566    .5129915
       black |   .3538267   .0621165     5.70   0.000     .2320806    .4755729
       asian |   .2270655   .1337165     1.70   0.089    -.0350141    .4891451
      native |   .5801764   .2312411     2.51   0.012     .1269522    1.033401
       other |   .4414407   .2370363     1.86   0.063    -.0231418    .9060233
    hispanic |   .2296784   .0745939     3.08   0.002      .083477    .3758797
    school_1 |  -.0504661    .185562    -0.27   0.786    -.4141609    .3132287
   inc_ad100 |   .0022347   .0005958     3.75   0.000     .0010669    .0034024
      emp_ad |  -.1272072   .0507076    -2.51   0.012    -.2265923   -.0278222
      inc2_i |   .1235901    .065906     1.88   0.061    -.0055832    .2527635
      pov_c1 |  -.2262072    .372322    -0.61   0.543     -.955945    .5035306
     twopar1 |   -.215887   .0592754    -3.64   0.000    -.3320646   -.0997094
    hhsize_1 |  -.0064699   .0149242    -0.43   0.665    -.0357209     .022781
       _cons |  -1.610311   .3121293    -5.16   0.000    -2.222073   -.9985487
-------------+----------------------------------------------------------------
     /athrho |  -.0838371   .3801566    -0.22   0.825    -.8289303    .6612562
-------------+----------------------------------------------------------------
         rho |  -.0836412   .3774971                     -.6799012    .5791988
------------------------------------------------------------------------------
Wald test of rho=0:                 chi2(1) =  .048635    Prob > chi2 = 0.8255
```

B.1.13 Model 1 Substituting Unemployment Rate (uemp_c1, uemp_c3) for the Disadvantage Index (disadv_1, disadv_3) in Both Equations

```
Seemingly unrelated bivariate probit              Number of obs   =      11981
                                                  Wald chi2(30)   =     578.85
Log pseudo-likelihood = -6524288.3                Prob > chi2     =     0.0000

                          (standard errors adjusted for clustering on psuscid)
------------------------------------------------------------------------------
             |               Robust
             |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
weap_d3      |
        age3 |  -.0711213    .022138    -3.21   0.001     -.114511   -.0277317
     bio_sex |   .4969083   .1011363     4.91   0.000     .2986849    .6951317
       black |   .3791609   .0909102     4.17   0.000     .2009803    .5573416
       asian |  -.3596759   .1862502    -1.93   0.053    -.7247195    .0053677
      native |  -.2323462   .3056552    -0.76   0.447    -.8314194    .3667271
       other |  -.2449901   .3289729    -0.74   0.456    -.8897652     .399785
    hispanic |   .0667354   .1058506     0.63   0.528     -.140728    .2741988
    school_3 |  -.3250549   .0877459    -3.70   0.000    -.4970336   -.1530762
   inc_ya100 |   .0000309   .0002272     0.14   0.892    -.0004144    .0004763
      emp_ya |   -.034381   .0763889    -0.45   0.653    -.1841005    .1153384
      inc2_i |   .0812906   .0809858     1.00   0.315    -.0774387    .2400199
     uemp_c3 |    1.19755   1.767831     0.68   0.498    -2.267335    4.662434
     twopar1 |  -.1303999   .0790934    -1.65   0.099      -.28542    .0246203
     married |   -.177101   .1051477    -1.68   0.092    -.3831867    .0289848
   kid_suppt |  -.2539844    .100578    -2.53   0.012    -.4511136   -.0568553
     weap_d1 |   .7849527   .8137723     0.96   0.335    -.8100117    2.379917
       _cons |  -.6506464   .4725681    -1.38   0.169    -1.576863    .2755701
-------------+----------------------------------------------------------------
weap_d1      |
        age1 |  -.0021554   .0158405    -0.14   0.892    -.0332022    .0288914
     bio_sex |   .4116051   .0512722     8.03   0.000     .3111133    .5120968
       black |   .3392218   .0591821     5.73   0.000     .2232269    .4552167
       asian |   .2352932   .1342779     1.75   0.080    -.0278865     .498473
      native |   .5667249   .2366036     2.40   0.017     .1029905    1.030459
       other |   .4488439   .2362364     1.90   0.057    -.0141709    .9118588
    hispanic |   .2295213   .0743969     3.09   0.002     .0837061    .3753365
    school_1 |  -.0536411   .1872276    -0.29   0.774    -.4206005    .3133182
   inc_ad100 |   .0022527   .0005958     3.78   0.000     .0010851    .0034204
      emp_ad |  -.1248492   .0506139    -2.47   0.014    -.2240505   -.0256479
      inc2_i |   .1152631   .0653833     1.76   0.078    -.0128859     .243412
     uemp_c1 |   .3174625   1.017763     0.31   0.755    -1.677316    2.312241
     twopar1 |  -.2176552   .0591504    -3.68   0.000    -.3335878   -.1017226
    hhsize_1 |  -.0058165    .014994    -0.39   0.698    -.0352041    .0235711
       _cons |  -1.645091    .316111    -5.20   0.000    -2.264657   -1.025525
-------------+----------------------------------------------------------------
     /athrho |  -.0647704   .4053702    -0.16   0.873    -.8592815    .7297407
-------------+----------------------------------------------------------------
         rho |    -.06468   .4036744                      -.6958873    .6229067
------------------------------------------------------------------------------
Wald test of rho=0:                 chi2(1) =   .02553    Prob > chi2 = 0.8731
```

B.1.14 Model 1 Substituting Proportion Age 25+ without High School Diploma or Equivalency (ledu_c1, ledu_c3) for the Disadvantage Index (disadv_1, disadv_3) in Both Equations

```
Seemingly unrelated bivariate probit              Number of obs   =      11981
                                                  Wald chi2(30)   =     582.99
Log pseudo-likelihood = -6525200.7                Prob > chi2     =     0.0000

                          (standard errors adjusted for clustering on psuscid)
------------------------------------------------------------------------------
             |               Robust
             |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
weap_d3      |
        age3 |  -.0702958   .0218485    -3.22   0.001    -.1131181   -.0274735
     bio_sex |   .4950515   .0988087     5.01   0.000       .30139     .688713
       black |   .3914403    .087522     4.47   0.000     .2199003    .5629802
       asian |  -.3563031   .1866605    -1.91   0.056     -.722151    .0095447
      native |  -.2079072   .3111112    -0.67   0.504     -.817674    .4018596
       other |   -.249259   .3281519    -0.76   0.448    -.8924249    .3939068
    hispanic |   .0722516   .1066641     0.68   0.498    -.1368062    .2813094
    school_3 |  -.3227461   .0874918    -3.69   0.000    -.4942268   -.1512654
   inc_ya100 |    .000032   .0002288     0.14   0.889    -.0004165    .0004805
      emp_ya |  -.0380459   .0774684    -0.49   0.623    -.1898811    .1137892
      inc2_i |   .0840844   .0815948     1.03   0.303    -.0758386    .2440073
     ledu_c3 |   .1049188   .5899079     0.18   0.859    -1.051279    1.261117
    twopar1 |  -.1288222   .0783365    -1.64   0.100     -.282359    .0247146
     married |   -.175793   .1049242    -1.68   0.094    -.3814407    .0298546
   kid_suppt |   -.254993   .1007959    -2.53   0.011    -.4525492   -.0574367
     weap_d1 |   .8075946   .7690945     1.05   0.294     -.699803    2.314992
       _cons |  -.6204666   .4700053    -1.32   0.187     -1.54166    .3007268
-------------+----------------------------------------------------------------
weap_d1      |
        age1 |  -.0018028   .0159005    -0.11   0.910    -.0329672    .0293617
     bio_sex |   .4117919   .0513773     8.02   0.000     .3110942    .5124895
       black |   .3423449    .059925     5.71   0.000      .224894    .4597959
       asian |   .2323882   .1328087     1.75   0.080     -.027912    .4926884
      native |   .5742275   .2346056     2.45   0.014     .1144089    1.034046
       other |   .4467598   .2366751     1.89   0.059     -.017115    .9106346
    hispanic |   .2296051   .0747668     3.07   0.002     .0830648    .3761454
    school_1 |   -.052343   .1864536    -0.28   0.779    -.4177853    .3130993
   inc_ad100 |   .0022461   .0005967     3.76   0.000     .0010767    .0034155
      emp_ad |  -.1254996   .0505511    -2.48   0.013     -.224578   -.0264212
      inc2_i |   .1178878   .0655524     1.80   0.072    -.0105925    .2463681
     ledu_c1 |  -.0018976   .2908187    -0.01   0.995    -.5718918    .5680966
     twopar1 |  -.2175812   .0588189    -3.70   0.000    -.3328642   -.1022983
    hhsize_1 |  -.0060073   .0149098    -0.40   0.687      -.03523    .0232155
       _cons |  -1.629389   .3155301    -5.16   0.000    -2.247817   -1.010962
-------------+----------------------------------------------------------------
     /athrho |  -.0758476   .3828272    -0.20   0.843    -.8261751      .67448
-------------+----------------------------------------------------------------
         rho |  -.0757025   .3806333                     -.6784169    .5879191
------------------------------------------------------------------------------
Wald test of rho=0:              chi2(1) =  .039253    Prob > chi2 = 0.8429
```

B.1.15 Model 1 Substituting Proportion of Female Head of Household, with Children Age <18, no husband (femhh_c1, femhh_c3) for the Disadvantage Index (disadv_1, disadv_3) in Both Equations

```
Seemingly unrelated bivariate probit               Number of obs   =      11981
                                                   Wald chi2(30)   =     576.06
Log pseudo-likelihood = -6518680.6                 Prob > chi2     =     0.0000

                          (standard errors adjusted for clustering on psuscid)
------------------------------------------------------------------------------
             |               Robust
             |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
weap_d3      |
        age3 |  -.0718524   .0222367    -3.23   0.001    -.1154355   -.0282693
     bio_sex |   .4988105   .1022899     4.88   0.000     .2983261     .699295
       black |   .3372875   .0907485     3.72   0.000     .1594236    .5151514
       asian |  -.3578923   .1881565    -1.90   0.057    -.7266723    .0108877
      native |  -.2283073   .3116254    -0.73   0.464    -.8390819    .3824672
       other |  -.2336341   .3313429    -0.71   0.481    -.8830542    .4157861
    hispanic |   .0581735   .1051219     0.55   0.580    -.1478617    .2642086
    school_3 |  -.3183382    .087747    -3.63   0.000    -.4903191   -.1463572
   inc_ya100 |   .0000101   .0002244     0.04   0.964    -.0004297    .0004498
      emp_ya |  -.0303548   .0758744    -0.40   0.689    -.1790659    .1183563
      inc2_i |    .079137   .0809583     0.98   0.328    -.0795383    .2378123
    femhh_c3 |   3.204636   1.686232     1.90   0.057    -.1003183    6.509591
     twopar1 |  -.1273637    .080051    -1.59   0.112    -.2842608    .0295335
     married |    -.17951    .104844    -1.71   0.087    -.3850005    .0259805
   kid_suppt |  -.2550964   .1010171    -2.53   0.012    -.4530863   -.0571066
     weap_d1 |    .745702   .8266257     0.90   0.367    -.8744546    2.365859
       _cons |  -.7948551   .4738201    -1.68   0.093    -1.723525    .1338152
-------------+----------------------------------------------------------------
weap_d1      |
        age1 |  -.0029074   .0157567    -0.18   0.854    -.0337899    .0279752
     bio_sex |   .4121108   .0512682     8.04   0.000     .3116269    .5125946
       black |   .3162211   .0617941     5.12   0.000     .1951069    .4373354
       asian |   .2313593   .1321902     1.75   0.080    -.0277288    .4904474
      native |   .5700387   .2280946     2.50   0.012     .1229815    1.017096
       other |   .4501971   .2360716     1.91   0.057    -.0124948     .912889
    hispanic |    .223437   .0748585     2.98   0.003      .076717    .3701569
    school_1 |   -.052742   .1880982    -0.28   0.779    -.4214076    .3159237
   inc_ad100 |   .0022517   .0005962     3.78   0.000     .0010832    .0034201
      emp_ad |  -.1228531    .050451    -2.44   0.015    -.2217353   -.0239709
      inc2_i |   .1151148   .0645999     1.78   0.075    -.0114987    .2417283
    femhh_c1 |   .3713541   .3727933     1.00   0.319    -.3593073    1.102016
     twopar1 |  -.2156977   .0590212    -3.65   0.000    -.3313771   -.1000183
    hhsize_1 |  -.0054266   .0148483    -0.37   0.715    -.0345288    .0236756
       _cons |  -1.683585   .3174947    -5.30   0.000    -2.305863   -1.061307
-------------+----------------------------------------------------------------
     /athrho |  -.0459163   .4110041    -0.11   0.911    -.8514694    .7596369
-------------+----------------------------------------------------------------
         rho |   -.045884   .4101388                     -.6918364     .640863
------------------------------------------------------------------------------
Wald test of rho=0:                 chi2(1) =  .012481    Prob > chi2 = 0.9110
```

B.1.16 Model 1 Substituting Violent Crime Rate (crime_vc1, crime_vc3) for the Disadvantage Index (disadv_1, disadv_3) in Both Equations

Seemingly unrelated bivariate probit — Number of obs = 11302; Wald chi2(31) = 547.14

Log pseudo-likelihood = -6254444.5 — Prob > chi2 = 0.0000

(standard errors adjusted for clustering on psuscid)

	Coef.	Robust Std. Err.	z	P>|z|	[95% Conf.	Interval]
weap_d3						
age3	-.0691793	.0222717	-3.11	0.002	-.112831	-.0255276
bio_sex	.5097699	.1062678	4.80	0.000	.301489	.7180509
black	.4028099	.0973767	4.14	0.000	.2119551	.5936646
asian	-.3514413	.1824704	-1.93	0.054	-.7090768	.0061942
native	-.1555747	.3246509	-0.48	0.632	-.7918788	.4807295
other	-.2223154	.3284644	-0.68	0.499	-.8660938	.4214629
hispanic	.0883366	.1117677	0.79	0.429	-.1307241	.3073973
school_3	-.3271165	.0889885	-3.68	0.000	-.5015308	-.1527022
inc_ya100	2.76e-06	.0002375	0.01	0.991	-.0004627	.0004682
emp_ya	-.0449177	.0787413	-0.57	0.568	-.1992479	.1094125
inc2_i	.0882865	.0814249	1.08	0.278	-.0713033	.2478764
crime_vc3	.000034	.0000863	0.39	0.693	-.0001351	.0002031
twopar1	-.1341366	.0817419	-1.64	0.101	-.2943477	.0260744
married	-.1762341	.1103167	-1.60	0.110	-.3924509	.0399828
kid_suppt	-.2463592	.1011083	-2.44	0.015	-.4445278	-.0481906
weap_d1	.501812	.7682356	0.65	0.514	-1.003902	2.007526
_cons	-.6138122	.4756402	-1.29	0.197	-1.54605	.3184255
weap_d1						
age1	-.003666	.015693	-0.23	0.815	-.0344238	.0270919
bio_sex	.391352	.0523718	7.47	0.000	.2887051	.4939989
black	.295763	.060347	4.90	0.000	.1774851	.414041
asian	.1917798	.1361694	1.41	0.159	-.0751073	.4586669
native	.5643078	.2278777	2.48	0.013	.1176757	1.01094
other	.4169437	.2403501	1.73	0.083	-.0541338	.8880212
hispanic	.208905	.0823348	2.54	0.011	.0475318	.3702782
school_1	-.08287	.1891312	-0.44	0.661	-.4535603	.2878203
inc_ad100	.0023127	.0006029	3.84	0.000	.001131	.0034945
emp_ad	-.1314328	.0520291	-2.53	0.012	-.2334079	-.0294577
inc2_i	.138003	.0681177	2.03	0.043	.0044947	.2715113
pov_c1	-.3396586	.4081738	-0.83	0.405	-1.139665	.4603474
crime_vc1	.0000949	.0000518	1.83	0.067	-6.62e-06	.0001964
twopar1	-.2151056	.0610838	-3.52	0.000	-.3348277	-.0953836
hhsize_1	-.0041535	.0153834	-0.27	0.787	-.0343045	.0259974
_cons	-1.573915	.3148186	-5.00	0.000	-2.190948	-.9568824
/athrho	.0710506	.4061041	0.17	0.861	-.7248988	.8670001
rho	.0709313	.4040609			-.6199346	.6998468

Wald test of rho=0: chi2(1) = .03061 Prob > chi2 = 0.8611

B.1.17 Model 1 Substituting the Following Items Together for the Disadvantage Index (disadv_1, disadv_3) in Both Equations

- proportion family with income below poverty (pov_c1, pov_c3)
- unemployment rate (uemp_c1, uemp_c3)
- proportion age 25+ without high school diploma or equivalency (ledu_c1, ledu_c3)
- proportion of female head of household, with children age <18, no husband (femhh_c1, femhh_c3) for the disadvantage index
- violent crime rate (crime_vc1, crime_vc3)

```
Seemingly unrelated bivariate probit              Number of obs   =      11302
                                                  Wald chi2(38)   =     582.38
Log pseudo-likelihood = -6238993.8                Prob > chi2     =     0.0000

                          (standard errors adjusted for clustering on psuscid)
------------------------------------------------------------------------------
             |               Robust
             |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
weap_d3      |
        age3 |  -.0695153   .0224364    -3.10   0.002    -.1134899   -.0255407
     bio_sex |   .5157286   .1097032     4.70   0.000     .3007143    .7307429
       black |   .3905132   .0971044     4.02   0.000      .200192    .5808343
       asian |  -.3325559   .1841631    -1.81   0.071    -.6935089    .0283971
      native |  -.2590959   .2851992    -0.91   0.364    -.8180761    .2998842
       other |  -.2061723   .3334391    -0.62   0.536    -.8597009    .4473562
    hispanic |   .0940002   .1135381     0.83   0.408    -.1285303    .3165307
    school_3 |  -.3176586   .0885233    -3.59   0.000    -.4911611   -.1441561
   inc_ya100 |  -.0000306   .0002337    -0.13   0.896    -.0004886    .0004273
      emp_ya |  -.0465229   .0774822    -0.60   0.548    -.1983851    .1053394
      inc2_i |   .0942137   .0822928     1.14   0.252    -.0670772    .2555047
      pov_c3 |  -4.119134   2.111557    -1.95   0.051     -8.25771    .0194418
     uemp_c3 |   3.918881   2.927278     1.34   0.181    -1.818477     9.65624
     ledu_c3 |   .9940027   .8926313     1.11   0.265    -.7555225    2.743528
    femhh_c3 |   8.255886     2.7635     2.99   0.003     2.839526    13.67225
   crime_vc3 |  -.0001808    .000112    -1.62   0.106    -.0004003    .0000386
     twopar1 |  -.1286799   .0844064    -1.52   0.127    -.2941135    .0367536
     married |  -.1682891   .1077134    -1.56   0.118    -.3794034    .0428252
   kid_suppt |  -.2592451   .0994818    -2.61   0.009    -.4542259   -.0642642
     weap_d1 |    .400277   .8324749     0.48   0.631    -1.231344    2.031898
       _cons |  -1.129971   .4964272    -2.28   0.023    -2.102951   -.1569917
-------------+----------------------------------------------------------------
weap_d1      |
        age1 |   -.004436   .0154818    -0.29   0.774    -.0347798    .0259078
     bio_sex |   .3915632   .0524796     7.46   0.000     .2887051    .4944213
       black |   .3057052   .0624842     4.89   0.000     .1832384     .428172
       asian |   .1935891   .1380032     1.40   0.161    -.0768922    .4640704
      native |   .5286624   .2400175     2.20   0.028     .0582368    .9990881
       other |   .4167225    .239666     1.74   0.082    -.0530143    .8864593
    hispanic |    .213946   .0835551     2.56   0.010     .0501809     .377711
    school_1 |  -.0897435   .1896991    -0.47   0.636    -.4615469    .2820599
   inc_ad100 |   .0023154   .0006043     3.83   0.000      .001131    .0034998
      emp_ad |  -.1300422   .0529669    -2.46   0.014    -.2338554    -.026229
      inc2_i |   .1344647   .0686378     1.96   0.050     -.000063    .2689923
      pov_c1 |  -1.085601   .6537509    -1.66   0.097     -2.36693    .1957269
     uemp_c1 |   1.504325   1.561541     0.96   0.335    -1.556239    4.564889
     ledu_c1 |   .3413234   .4014812     0.85   0.395    -.4455652    1.128212
    femhh_c1 |   .0644672   .6715641     0.10   0.924    -1.251774    1.380709
   crime_vc1 |   .0000872   .0000725     1.20   0.229    -.0000548    .0002292
     twopar1 |  -.2133856   .0603002    -3.54   0.000    -.3315717   -.0951994
    hhsize_1 |  -.0044246    .015376    -0.29   0.774    -.0345611    .0257119
       _cons |   -1.64777   .3231898    -5.10   0.000    -2.281211    -1.01433
-------------+----------------------------------------------------------------
     /athrho |   .1256402   .4490982     0.28   0.780    -.7545761    1.005856
-------------+----------------------------------------------------------------
         rho |   .1249832   .4420829                     -.6378711    .7640428
------------------------------------------------------------------------------
Wald test of rho=0:              chi2(1) =  .078266    Prob > chi2 = 0.7797
```

B.2 Fighting

B.2.1 Model 1 with Community Disadvantage Index Indicators by Wave (Based on Percentage Quartiles) (dis1-4_1, dis1-4_3; dis4_1 and dis4_3 reference groups)

```
Seemingly unrelated bivariate probit               Number of obs   =      12246
                                                   Wald chi2(34)   =    1423.47
Log pseudolikelihood =  -17811953                  Prob > chi2     =     0.0000

                          (standard errors adjusted for clustering on psuscid)
------------------------------------------------------------------------------
             |               Robust
             |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
fight_d3     |
        age3 |  -.0846299   .0146755    -5.77   0.000    -.1133934   -.0558664
     bio_sex |   .6685876   .0679182     9.84   0.000     .5354703    .8017049
       black |   .1772834   .0713183     2.49   0.013     .0375021    .3170648
       asian |   .0272976   .1244061     0.22   0.826     -.216534    .2711291
      native |   .1605783   .2424599     0.66   0.508    -.3146343     .635791
       other |  -.3169303   .2805825    -1.13   0.259     -.866862    .2330014
    hispanic |    .048874    .059625     0.82   0.412    -.0679888    .1657369
    school_3 |  -.2423235   .0524812    -4.62   0.000    -.3451847   -.1394623
   inc_ya100 |     .00018   .0001553     1.16   0.246    -.0001243    .0004843
      emp_ya |  -.0939505   .0534996    -1.76   0.079    -.1988078    .0109067
      inc2_i |   .0806337   .0573955     1.40   0.160    -.0318594    .1931267
      dis1_3 |    -.04369    .065569    -0.67   0.505    -.1722029    .0848229
      dis2_3 |  -.0891965   .0669602    -1.33   0.183     -.220436    .0420431
      dis3_3 |  -.0676741   .0679188    -1.00   0.319    -.2007925    .0654442
     twopar1 |  -.0408679   .0568634    -0.72   0.472    -.1523182    .0705824
     married |  -.3512379   .0681009    -5.16   0.000    -.4847132   -.2177626
   kid_suppt |  -.2318974   .0616315    -3.76   0.000    -.3526929   -.1111019
    fight_d1 |   1.078711   .2067314     5.22   0.000     .6735253    1.483897
       _cons |   .1296302    .334968     0.39   0.699    -.5268951    .7861555
-------------+----------------------------------------------------------------
fight_d1     |
        age1 |  -.0673331   .0111563    -6.04   0.000     -.089199   -.0454671
     bio_sex |   .4576468   .0305814    14.96   0.000     .3977083    .5175853
       black |   .2043069   .0645161     3.17   0.002     .0778578    .3307561
       asian |  -.0246762   .0995902    -0.25   0.804    -.2198695    .1705171
      native |   .3336545   .1694376     1.97   0.049     .0015628    .6657461
       other |   .1042689   .1572711     0.66   0.507    -.2039769    .4125146
    hispanic |   .1454932   .0508988     2.86   0.004     .0457334     .245253
    school_1 |  -.2188596   .1304513    -1.68   0.093    -.4745395    .0368203
   inc_ad100 |   .0025199   .0005229     4.82   0.000      .001495    .0035448
      emp_ad |   .0240584   .0380284     0.63   0.527     -.050476    .0985927
      inc2_i |   .1826362   .0493519     3.70   0.000     .0859081    .2793642
      dis1_1 |   .0148628   .0566247     0.26   0.793    -.0961195    .1258451
      dis2_1 |   .0423498   .0597317     0.71   0.478    -.0747221    .1594217
      dis3_1 |   .0648185   .0713352     0.91   0.364     -.074996     .204633
     twopar1 |  -.1723696   .0474379    -3.63   0.000    -.2653462   -.0793931
    hhsize_1 |   .0337428   .0102894     3.28   0.001     .0135759    .0539097
       _cons |   .3046076   .2228688     1.37   0.172    -.1322071    .7414224
-------------+----------------------------------------------------------------
     /athrho |  -.3548806   .1407926    -2.52   0.012     -.630829   -.0789321
-------------+----------------------------------------------------------------
         rho |  -.3406968   .1244502                     -.5586228   -.0787686
------------------------------------------------------------------------------
Wald test of rho=0:                 chi2(1) =  6.35338    Prob > chi2 = 0.0117
```

B.2.2 Model 1 with Wave I Disadvantage Index (disadv_1) in Wave III Equation

Seemingly unrelated bivariate probit — Number of obs = 11982

Wald chi2(31) = 1338.34

Log pseudolikelihood = -17413192 — Prob > chi2 = 0.0000

(standard errors adjusted for clustering on psuscid)

	Coef.	Robust Std. Err.	z	P>|z|	[95% Conf.	Interval]
fight_d3						
age3	-.0864742	.0150183	-5.76	0.000	-.1159096	-.0570388
bio_sex	.6689594	.0688862	9.71	0.000	.533945	.8039738
black	.2006235	.0716417	2.80	0.005	.0602084	.3410386
asian	.0186051	.1274781	0.15	0.884	-.2312475	.2684577
native	.197137	.2453275	0.80	0.422	-.283696	.67797
other	-.340672	.2817552	-1.21	0.227	-.892902	.211558
hispanic	.0421558	.0596783	0.71	0.480	-.0748115	.1591231
school_3	-.2383053	.0527529	-4.52	0.000	-.341699	-.1349115
inc_ya100	.0001859	.0001579	1.18	0.239	-.0001236	.0004954
emp_ya	-.0877642	.0540175	-1.62	0.104	-.1936366	.0181082
inc2_i	.0736153	.0600408	1.23	0.220	-.0440625	.191293
disadv_1	-.0495839	.0413507	-1.20	0.230	-.1306299	.031462
disadv_3	.049748	.0383629	1.30	0.195	-.0254419	.124938
twopar1	-.0452561	.0570371	-0.79	0.428	-.1570468	.0665346
married	-.3563879	.0678542	-5.25	0.000	-.4893796	-.2233961
kid_suppt	-.2285413	.0619643	-3.69	0.000	-.3499892	-.1070935
fight_d1	1.090711	.2132067	5.12	0.000	.6728335	1.508588
_cons	.1187602	.3366549	0.35	0.724	-.5410712	.7785916
fight_d1						
age1	-.0683152	.0117026	-5.84	0.000	-.0912519	-.0453785
bio_sex	.4490525	.0307664	14.60	0.000	.3887515	.5093536
black	.1985552	.0634846	3.13	0.002	.0741277	.3229827
asian	-.0196826	.0969762	-0.20	0.839	-.2097525	.1703873
native	.2903659	.1708815	1.70	0.089	-.0445557	.6252875
other	.0992798	.1562984	0.64	0.525	-.2070595	.405619
hispanic	.1473806	.0502322	2.93	0.003	.0489273	.2458338
school_1	-.2262826	.1307571	-1.73	0.084	-.4825617	.0299966
inc_ad100	.0025751	.0005083	5.07	0.000	.0015789	.0035713
emp_ad	.0192084	.0386788	0.50	0.619	-.0566007	.0950174
inc2_i	.185358	.0505973	3.66	0.000	.0861891	.2845268
disadv_1	-.0019153	.0226715	-0.08	0.933	-.0463507	.04252
twopar1	-.1728594	.0477987	-3.62	0.000	-.2665431	-.0791757
hhsize_1	.0332307	.0105607	3.15	0.002	.0125321	.0539293
_cons	.3674285	.2277027	1.61	0.107	-.0788605	.8137176
/athrho	-.3682258	.1469455	-2.51	0.012	-.6562337	-.0802179
rho	-.3524389	.1286929			-.5758515	-.0800463

Wald test of rho=0: chi2(1) = 6.27937 Prob > chi2 = 0.0122

B.2.3 Model 1 with Wave III Welfare Participation Indicator in Wave III Equation

```
Seemingly unrelated bivariate probit              Number of obs   =      11982
                                                  Wald chi2(31)   =    1350.67
Log pseudolikelihood =  -17414303                 Prob > chi2     =     0.0000

                          (standard errors adjusted for clustering on psuscid)
------------------------------------------------------------------------------
             |               Robust
             |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
fight_d3     |
        age3 |  -.0857049   .0150423    -5.70   0.000    -.1151872   -.0562225
     bio_sex |   .6691132   .0697318     9.60   0.000     .5324413    .8057851
       black |    .189379   .0702858     2.69   0.007     .0516215    .3271366
       asian |   .0319549   .1272417     0.25   0.802    -.2174342    .2813441
      native |   .1912264   .2408394     0.79   0.427    -.2808101    .6632629
       other |  -.3288513   .2796327    -1.18   0.240    -.8769212    .2192186
    hispanic |   .0504501   .0600177     0.84   0.401    -.0671825    .1680826
    school_3 |  -.2340542   .0522646    -4.48   0.000     -.336491   -.1316174
   inc_ya100 |   .0001949   .0001573     1.24   0.215    -.0001135    .0005033
      emp_ya |  -.0822421   .0543532    -1.51   0.130    -.1887723    .0242882
      inc2_i |   .0647216   .0587842     1.10   0.271    -.0504934    .1799366
     welf_w3 |   .0990938   .0939743     1.05   0.292    -.0850924      .28328
    disadv_3 |   .0132675   .0281809     0.47   0.638    -.0419661    .0685011
     twopar1 |  -.0434875   .0568281    -0.77   0.444    -.1548685    .0678934
     married |  -.3581564   .0682267    -5.25   0.000    -.4918782   -.2244345
   kid_suppt |  -.2413972   .0632635    -3.82   0.000    -.3653915    -.117403
    fight_d1 |    1.10937   .2094305     5.30   0.000     .6988936    1.519846
       _cons |   .0885154   .3366845     0.26   0.793    -.5713741    .7484048
-------------+----------------------------------------------------------------
fight_d1     |
        age1 |  -.0682358   .0116994    -5.83   0.000    -.0911663   -.0453053
     bio_sex |   .4489618   .0307658    14.59   0.000     .3886619    .5092616
       black |   .2004912   .0632277     3.17   0.002     .0765671    .3244152
       asian |   -.020434    .096943    -0.21   0.833    -.2104389    .1695708
      native |   .2917573   .1707984     1.71   0.088    -.0430014    .6265159
       other |   .0989175   .1561986     0.63   0.527    -.2072261    .4050611
    hispanic |   .1474667   .0501762     2.94   0.003     .0491232    .2458102
    school_1 |  -.2244631   .1303733    -1.72   0.085    -.4799901    .0310639
   inc_ad100 |   .0025808   .0005066     5.09   0.000     .0015878    .0035738
      emp_ad |    .018577   .0387506     0.48   0.632    -.0573727    .0945267
      inc2_i |   .1862088   .0506203     3.68   0.000     .0869949    .2854228
    disadv_1 |  -.0048162   .0228351    -0.21   0.833    -.0495723    .0399398
     twopar1 |  -.1729255   .0477695    -3.62   0.000     -.266552   -.0792989
    hhsize_1 |   .0332157   .0105489     3.15   0.002     .0125403    .0538912
       _cons |   .3641988   .2279451     1.60   0.110    -.0825653     .810963
-------------+----------------------------------------------------------------
     /athrho |  -.3820023    .146008    -2.62   0.009    -.6681728   -.0958318
-------------+----------------------------------------------------------------
         rho |  -.3644451   .1266152                     -.5837767   -.0955395
------------------------------------------------------------------------------
Wald test of rho=0:                 chi2(1) =  6.84508    Prob > chi2 = 0.0089
```

B.2.4 Model 1 with Wave III Persistent Poverty Status Indicator in Wave III Equation

```
Seemingly unrelated bivariate probit              Number of obs   =      11981
                                                  Wald chi2(31)   =    1353.86
Log pseudolikelihood =  -17411034                 Prob > chi2     =     0.0000

                          (standard errors adjusted for clustering on psuscid)
------------------------------------------------------------------------------
             |               Robust
             |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
fight_d3     |
        age3 |  -.0859111   .0150864    -5.69   0.000    -.1154798   -.0563423
     bio_sex |   .6694995   .0690363     9.70   0.000     .5341909    .8048081
       black |   .1889633   .0698726     2.70   0.007     .0520156     .325911
       asian |   .0297905   .1273678     0.23   0.815    -.2198458    .2794269
      native |   .1922582    .241228     0.80   0.425     -.28054    .6650564
       other |  -.3275707   .2795223    -1.17   0.241    -.8754243     .220283
    hispanic |   .0489096   .0595149     0.82   0.411    -.0677374    .1655566
    school_3 |   -.234498   .0523103    -4.48   0.000    -.3370243   -.1319717
   inc_ya100 |    .000193   .0001575     1.23   0.220    -.0001157    .0005017
      emp_ya |  -.0834045   .0539288    -1.55   0.122     -.189103    .0222939
      inc2_i |   .0632885   .0583469     1.08   0.278    -.0510694    .1776463
    pers_pov |   .2257314   .1407313     1.60   0.109    -.0500968    .5015596
    disadv_3 |   .0140681   .0280025     0.50   0.615    -.0408159    .0689521
     twopar1 |  -.0397605   .0569649    -0.70   0.485    -.1514096    .0718886
     married |  -.3620033   .0681045    -5.32   0.000    -.4954858   -.2285209
   kid_suppt |  -.2430245   .0631926    -3.85   0.000    -.3668797   -.1191692
    fight_d1 |   1.113932   .2079059     5.36   0.000     .7064435     1.52142
       _cons |   .0907967   .3373173     0.27   0.788     -.570333    .7519264
-------------+----------------------------------------------------------------
fight_d1     |
        age1 |  -.0682539   .0116915    -5.84   0.000    -.0911689   -.0453389
     bio_sex |   .4487074   .0307179    14.61   0.000     .3885015    .5089133
       black |   .2000659   .0631795     3.17   0.002     .0762364    .3238954
       asian |  -.0207162   .0969886    -0.21   0.831    -.2108104    .1693779
      native |   .2914784   .1707603     1.71   0.088    -.0432056    .6261624
       other |   .0987608    .156219     0.63   0.527    -.2074227    .4049444
    hispanic |   .1472017   .0501423     2.94   0.003     .0489247    .2454788
    school_1 |  -.2247534   .1301532    -1.73   0.084     -.479849    .0303421
   inc_ad100 |   .0025833   .0005059     5.11   0.000     .0015919    .0035748
      emp_ad |   .0183779   .0387331     0.47   0.635    -.0575375    .0942934
      inc2_i |    .186719   .0506202     3.69   0.000     .0875052    .2859327
    disadv_1 |  -.0049628   .0228271    -0.22   0.828    -.0497031    .0397775
     twopar1 |  -.1732788   .0477439    -3.63   0.000    -.2668552   -.0797024
    hhsize_1 |   .0331956   .0105361     3.15   0.002     .0125451     .053846
       _cons |   .3653982   .2276987     1.60   0.109    -.0808831    .8116794
-------------+----------------------------------------------------------------
     /athrho |  -.3860282   .1454359    -2.65   0.008    -.6710774    -.100979
-------------+----------------------------------------------------------------
         rho |  -.3679311   .1257478                     -.5856882   -.1006372
------------------------------------------------------------------------------
Wald test of rho=0:                 chi2(1) =  7.04522    Prob > chi2 = 0.0079
```

B.2.5 Survey Regression, Model 2 (family poverty, community disadvantage interaction)

```
Survey linear regression

pweight:  gswgt3_2                                  Number of obs    =     12219
Strata:   region                                    Number of strata =         4
PSU:      psuscid                                   Number of PSUs   =       132
                                                    Population size  =  19208205
                                                    F(  17,    112)  =     26.79
                                                    Prob > F         =    0.0000
                                                    R-squared        =    0.1075

------------------------------------------------------------------------------
    fight_d3 |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
        age3 |  -.0173901   .0029103    -5.98   0.000    -.0231486   -.0116316
     bio_sex |   .1320031   .0097741    13.51   0.000     .1126633    .1513429
       black |   .0505528   .0155165     3.26   0.001     .0198508    .0812549
       asian |   .0030796   .0241831     0.13   0.899    -.0447708      .05093
      native |   .0890987   .0698469     1.28   0.204    -.0491053    .2273027
       other |  -.0398129   .0420108    -0.95   0.345    -.1229384    .0433126
    hispanic |   .0117323   .0113196     1.04   0.302    -.0106654      .03413
    school_3 |  -.0472215   .0098309    -4.80   0.000    -.0666737   -.0277693
   inc_ya100 |   .0000407   .0000368     1.11   0.271    -.0000322    .0001135
      emp_ya |  -.0184428    .010079    -1.83   0.070    -.0383858    .0015001
      inc2_i |   .0175932   .0110599     1.59   0.114    -.0042907    .0394771
    disadv_3 |   .0046904   .0058636     0.80   0.425    -.0069118    .0162925
     twopar1 |  -.0204168   .0105294    -1.94   0.055    -.0412511    .0004174
     married |  -.0457458   .0088503    -5.17   0.000    -.0632575    -.028234
   kid_suppt |  -.0443224   .0092225    -4.81   0.000    -.0625706   -.0260741
   fpov_dis3 |  -.0084963    .011274    -0.75   0.452    -.0308039    .0138113
    fight_d1 |   .1087688   .0106052    10.26   0.000     .0877846     .129753
       _cons |    .449001   .0637422     7.04   0.000     .3228762    .5751257
------------------------------------------------------------------------------

Survey linear regression

pweight:  gswgt1                                    Number of obs    =     13159
Strata:   region                                    Number of strata =         4
PSU:      psuscid                                   Number of PSUs   =       132
                                                    Population size  =  15591403
                                                    F(  15,    114)  =     31.88
                                                    Prob > F         =    0.0000
                                                    R-squared        =    0.0541

------------------------------------------------------------------------------
    fight_d1 |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
        age1 |   -.023159   .0033637    -6.88   0.000    -.0298147   -.0165033
     bio_sex |   .1544381   .0096821    15.95   0.000     .1352803    .1735959
       black |   .0672349   .0214362     3.14   0.002     .0248198      .10965
       asian |  -.0118991   .0304925    -0.39   0.697    -.0722338    .0484355
      native |   .1150585   .0668353     1.72   0.088    -.0171866    .2473035
       other |   .0253706   .0561798     0.45   0.652    -.0857906    .1365319
    hispanic |   .0470799   .0166321     2.83   0.005     .0141704    .0799894
    school_1 |  -.0613902   .0470982    -1.30   0.195     -.154582    .0318016
   inc_ad100 |   .0009704   .0001608     6.03   0.000     .0006522    .0012887
      emp_ad |   .0011641   .0119803     0.10   0.923    -.0225411    .0248692
      inc2_i |   .0700856   .0184807     3.79   0.000     .0335184    .1066528
    disadv_1 |   .0064275   .0079929     0.80   0.423    -.0093879    .0222429
     twopar1 |  -.0644619   .0167223    -3.85   0.000    -.0975497   -.0313741
    hhsize_1 |   .0119759   .0035557     3.37   0.001     .0049405    .0190114
   fpov_dis1 |  -.0188059   .0173374    -1.08   0.280     -.053111    .0154991
       _cons |   .5951123    .069251     8.59   0.000     .4580873    .7321373
------------------------------------------------------------------------------
```

B.2.6 Survey Regression, Model 1 (Wave III equation only) with Wave III Welfare Participation Status and Welfare Participation, Community Disadvantage Interaction

```
Survey linear regression

pweight:  gswgt3_2                                  Number of obs    =     12777
Strata:   region                                    Number of strata =         4
PSU:      psuscid                                   Number of PSUs   =       132
                                                    Population size  =  19741644
                                                    F(  17,    112)  =     27.48
                                                    Prob > F         =    0.0000
                                                    R-squared        =    0.1046

------------------------------------------------------------------------------
    fight_d3 |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
        age3 |  -.0173285   .0028443    -6.09   0.000    -.0229564   -.0117005
     bio_sex |    .130916   .0094223    13.89   0.000     .1122722    .1495597
       black |   .0488066   .0161103     3.03   0.003     .0169296    .0806836
       asian |  -.0078066   .0171098    -0.46   0.649    -.0416612     .026048
      native |   .0696796   .0653446     1.07   0.288    -.0596158    .1989751
       other |  -.0245975   .0456751    -0.54   0.591    -.1149735    .0657785
    hispanic |   .0144007   .0112612     1.28   0.203    -.0078814    .0366829
    school_3 |  -.0485218   .0096801    -5.01   0.000    -.0676754   -.0293681
   inc_ya100 |   .0000408   .0000358     1.14   0.256    -.0000299    .0001116
      emp_ya |  -.0202717   .0098468    -2.06   0.042    -.0397553    -.000788
     welf_w3 |    -.00003   .0149282    -0.00   0.998     -.029568    .0295079
    disadv_3 |   .0024408   .0056239     0.43   0.665     -.008687    .0135686
     twopar1 |  -.0250455    .010221    -2.45   0.016    -.0452696   -.0048214
     married |  -.0450755   .0090285    -4.99   0.000    -.0629399   -.0272111
   kid_suppt |  -.0412771   .0093617    -4.41   0.000    -.0598008   -.0227534
   dis3_welf |  -.0003163   .0152829    -0.02   0.984    -.0305562    .0299236
    fight_d1 |   .1085702   .0106533    10.19   0.000     .0874907    .1296496
       _cons |   .4556093   .0626164     7.28   0.000     .3317121    .5795066
------------------------------------------------------------------------------
```

B.2.7 Survey Regression, Model 1 (Wave III equation only) with Wave III Persistent Poverty Status and Persistent Poverty, Community Disadvantage Interaction

```
Survey linear regression

pweight:  gswgt3_2                                  Number of obs    =     12775
Strata:   region                                    Number of strata =         4
PSU:      psuscid                                   Number of PSUs   =       132
                                                    Population size  =  19738379
                                                    F(  17,    112)  =     28.59
                                                    Prob > F         =    0.0000
                                                    R-squared        =    0.1049

------------------------------------------------------------------------------
    fight_d3 |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
        age3 |   -.017359    .002848    -6.10   0.000    -.0229942   -.0117238
     bio_sex |   .1313189   .0094493    13.90   0.000      .112622    .1500159
       black |   .0488099   .0160691     3.04   0.003     .0170144    .0806053
       asian |  -.0078586   .0170499    -0.46   0.646    -.0415946    .0258775
      native |   .0694865   .0652023     1.07   0.289    -.0595274    .1985003
       other |  -.0248969   .0452751    -0.55   0.583    -.1144814    .0646877
    hispanic |   .0144225   .0112972     1.28   0.204     -.007931    .0367761
    school_3 |  -.0483507   .0096548    -5.01   0.000    -.0674543   -.0292471
   inc_ya100 |   .0000412   .0000358     1.15   0.252    -.0000296     .000112
      emp_ya |  -.0200208   .0097872    -2.05   0.043    -.0393864   -.0006551
    pers_pov |   .0200663   .0229977     0.87   0.385    -.0254387    .0655713
    disadv_3 |   .0034481   .0057157     0.60   0.547    -.0078613    .0147575
     twopar1 |  -.0246296    .010269    -2.40   0.018    -.0449486   -.0043106
     married |  -.0451973   .0089901    -5.03   0.000    -.0629858   -.0274088
   kid_suppt |  -.0427349   .0091134    -4.69   0.000    -.0607673   -.0247025
   dis3_ppov |  -.0361663   .0160199    -2.26   0.026    -.0678645   -.0044681
    fight_d1 |   .1082986   .0106747    10.15   0.000      .087177    .1294203
       _cons |   .4555136   .0624823     7.29   0.000     .3318816    .5791456
------------------------------------------------------------------------------
```

B.2.8 Model 1 with Wave I Parent Characteristics (edu_p, pay_b, welf_ad) in Wave I Equation

```
Seemingly unrelated bivariate probit              Number of obs   =      10361
                                                  Wald chi2(33)   =    1176.32
Log pseudolikelihood =  -15023131                 Prob > chi2     =     0.0000

                          (standard errors adjusted for clustering on psuscid)
------------------------------------------------------------------------------
             |               Robust
             |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
fight_d3     |
        age3 |  -.0941034   .0159409    -5.90   0.000    -.1253471   -.0628597
     bio_sex |   .7249839   .0692264    10.47   0.000     .5893027    .8606652
       black |   .2155896   .0696667     3.09   0.002     .0790454    .3521338
       asian |   .0135678   .1244063     0.11   0.913    -.2302641    .2573996
      native |   .1706852   .2360663     0.72   0.470    -.2919962    .6333666
       other |  -.3026606   .2908572    -1.04   0.298    -.8727302     .267409
    hispanic |   .0578327    .072168     0.80   0.423     -.083614    .1992794
    school_3 |  -.2203683   .0567028    -3.89   0.000    -.3315038   -.1092327
   inc_ya100 |   .0001986    .000145     1.37   0.171    -.0000856    .0004828
      emp_ya |  -.0576147   .0538543    -1.07   0.285    -.1631673    .0479379
      inc2_i |   .0709274   .0574497     1.23   0.217    -.0416719    .1835266
    disadv_3 |    .011553   .0275517     0.42   0.675    -.0424473    .0655533
     twopar1 |  -.0741643     .05992    -1.24   0.216    -.1916053    .0432768
     married |  -.3185044   .0733717    -4.34   0.000    -.4623104   -.1746985
   kid_suppt |  -.2546049   .0702434    -3.62   0.000    -.3922794   -.1169304
    fight_d1 |   .9601776   .2316265     4.15   0.000      .506198    1.414157
       _cons |   .2502351   .3626676     0.69   0.490    -.4605804    .9610506
-------------+----------------------------------------------------------------
fight_d1     |
        age1 |   -.073224   .0131479    -5.57   0.000    -.0989935   -.0474545
     bio_sex |   .4750442   .0346155    13.72   0.000     .4071991    .5428893
       black |   .1782195    .062306     2.86   0.004     .0561019    .3003371
       asian |  -.0196176   .0999053    -0.20   0.844    -.2154284    .1761933
      native |   .2701576   .1690765     1.60   0.110    -.0612264    .6015415
       other |   .1271135   .1660291     0.77   0.444    -.1982975    .4525246
    hispanic |   .1069116   .0560466     1.91   0.056    -.0029376    .2167609
    school_1 |  -.2091036   .1362563    -1.53   0.125     -.476161    .0579537
   inc_ad100 |   .0023098   .0005644     4.09   0.000     .0012036    .0034159
      emp_ad |   .0417215   .0415686     1.00   0.316    -.0397514    .1231945
      inc2_i |   .0829756   .0585754     1.42   0.157    -.0318301    .1977812
    disadv_1 |  -.0097714   .0231318    -0.42   0.673    -.0551089    .0355661
     twopar1 |  -.1711414   .0498045    -3.44   0.001    -.2687564   -.0735264
    hhsize_1 |   .0272725   .0121933     2.24   0.025      .003374     .051171
       edu_p |   -.074416   .0167219    -4.45   0.000    -.1071903   -.0416417
       pay_b |   .0700482   .0602642     1.16   0.245    -.0480674    .1881639
     welf_ad |   .0779248   .0472487     1.65   0.099    -.0146809    .1705304
       _cons |   .6980168   .2570167     2.72   0.007     .1942732     1.20176
-------------+----------------------------------------------------------------
     /athrho |  -.2858282   .1455303    -1.96   0.050    -.5710624   -.0005941
-------------+----------------------------------------------------------------
         rho |  -.2782906   .1342596                     -.5161391   -.0005941
------------------------------------------------------------------------------
Wald test of rho=0:                 chi2(1) =  3.85748    Prob > chi2 = 0.0495
```

B.2.9 Model 1 with Wave I Parent Characteristics (edu_p, pay_b, welf_ad) in Wave I and III Equations

Seemingly unrelated bivariate probit — Number of obs = 10361; Wald chi2(36) = 1201.77; Prob > chi2 = 0.0000

Log pseudolikelihood = -15016236

(standard errors adjusted for clustering on psuscid)

	Coef.	Robust Std. Err.	z	P>|z|	[95% Conf.	Interval]
fight_d3						
age3	-.0935598	.0166079	-5.63	0.000	-.1261107	-.0610089
bio_sex	.7274211	.0749746	9.70	0.000	.5804736	.8743685
black	.2085959	.0706128	2.95	0.003	.0701975	.3469944
asian	.0126426	.1252174	0.10	0.920	-.2327791	.2580642
native	.1665099	.2361506	0.71	0.481	-.2963367	.6293566
other	-.2868532	.2876418	-1.00	0.319	-.8506207	.2769143
hispanic	.0763629	.0735778	1.04	0.299	-.0678469	.2205728
school_3	-.2217476	.0574527	-3.86	0.000	-.3343528	-.1091425
inc_ya100	.0001977	.0001457	1.36	0.175	-.0000879	.0004833
emp_ya	-.0527015	.0541819	-0.97	0.331	-.158896	.053493
inc2_i	.0444353	.063689	0.70	0.485	-.0803929	.1692635
disadv_3	.0111095	.028008	0.40	0.692	-.0437853	.0660042
twopar1	-.0669767	.0596152	-1.12	0.261	-.1838203	.0498669
married	-.3204651	.0731933	-4.38	0.000	-.4639213	-.177009
kid_suppt	-.2569524	.0720841	-3.56	0.000	-.3982346	-.1156702
edu_p	.017665	.0215168	0.82	0.412	-.0245071	.0598372
pay_b	-.0434581	.0594905	-0.73	0.465	-.1600573	.0731412
welf_ad	.1274527	.0665476	1.92	0.055	-.0029781	.2578836
fight_d1	.9450119	.2553256	3.70	0.000	.4445828	1.445441
_cons	.151246	.4029112	0.38	0.707	-.6384454	.9409374
fight_d1						
age1	-.0733071	.013151	-5.57	0.000	-.0990826	-.0475315
bio_sex	.4753277	.0346676	13.71	0.000	.4073804	.543275
black	.1791093	.0623545	2.87	0.004	.0568967	.301322
asian	-.0194735	.0998251	-0.20	0.845	-.2151272	.1761801
native	.270506	.1693678	1.60	0.110	-.0614488	.6024608
other	.1257313	.1659964	0.76	0.449	-.1996157	.4510783
hispanic	.1054251	.056423	1.87	0.062	-.005162	.2160122
school_1	-.2099699	.1383444	-1.52	0.129	-.48112	.0611802
inc_ad100	.0023039	.0005767	4.00	0.000	.0011736	.0034341
emp_ad	.0419621	.0417186	1.01	0.314	-.0398048	.1237291
inc2_i	.0858855	.0586122	1.47	0.143	-.0289922	.2007633
disadv_1	-.0096126	.0231395	-0.42	0.678	-.0549653	.03574
twopar1	-.1718371	.0498592	-3.45	0.001	-.2695594	-.0741148
hhsize_1	.0272499	.0122093	2.23	0.026	.0033202	.0511797
edu_p	-.0761187	.0163839	-4.65	0.000	-.1082307	-.0440068
pay_b	.0745604	.0613621	1.22	0.224	-.0457072	.194828
welf_ad	.0648097	.0469407	1.38	0.167	-.0271923	.1568117
_cons	.7082974	.2573593	2.75	0.006	.2038825	1.212712
/athrho	-.2748706	.1598624	-1.72	0.086	-.5881951	.0384539
rho	-.2681511	.1483675			-.5285962	.0384349

Wald test of rho=0: chi2(1) = 2.95641 Prob > chi2 = 0.0855

B.2.10 Model 1 with School Characteristics (smsize, medsize, s_fight, e_weap, penalty, v_prog) in Wave I Equation

Seemingly unrelated bivariate probit — Number of obs = 9220
Wald chi2(36) = 1276.19
Log pseudolikelihood = -11891571 — Prob > chi2 = 0.0000

(standard errors adjusted for clustering on psuscid)

	Coef.	Robust Std. Err.	z	P>|z|	[95% Conf.	Interval]
fight_d3						
age3	-.1135031	.0189961	-5.98	0.000	-.1507348	-.0762714
bio_sex	.720117	.0857093	8.40	0.000	.5521298	.8881041
black	.1662291	.0841914	1.97	0.048	.0012171	.3312412
asian	-.0718802	.1783348	-0.40	0.687	-.4214099	.2776495
native	.2460213	.2824346	0.87	0.384	-.3075402	.7995829
other	-.3968677	.3765671	-1.05	0.292	-1.134926	.3411903
hispanic	.1212906	.0752082	1.61	0.107	-.0261148	.2686959
school_3	-.2821994	.0670586	-4.21	0.000	-.4136318	-.150767
inc_ya100	.0001851	.0001607	1.15	0.249	-.0001299	.0005
emp_ya	-.0862712	.0686552	-1.26	0.209	-.2208329	.0482905
inc2_i	.0549603	.0718754	0.76	0.444	-.0859128	.1958335
disadv_3	.0028638	.0343648	0.08	0.934	-.0644901	.0702176
twopar1	-.0725077	.0695184	-1.04	0.297	-.2087613	.063746
married	-.3437113	.0946576	-3.63	0.000	-.5292367	-.1581858
kid_suppt	-.2986727	.0825945	-3.62	0.000	-.4605548	-.1367905
fight_d1	.9248528	.267982	3.45	0.001	.3996178	1.450088
_cons	.7382258	.4259607	1.73	0.083	-.0966418	1.573093
fight_d1						
age1	-.0743305	.0136336	-5.45	0.000	-.1010519	-.0476092
bio_sex	.4305823	.035392	12.17	0.000	.3612153	.4999492
black	.212836	.062395	3.41	0.001	.0905441	.335128
asian	-.0317155	.0968441	-0.33	0.743	-.2215263	.1580954
native	.1125419	.2275907	0.49	0.621	-.3335277	.5586116
other	.127394	.1846634	0.69	0.490	-.2345395	.4893276
hispanic	.132958	.0714538	1.86	0.063	-.0070889	.273005
school_1	.0054639	.2331331	0.02	0.981	-.4514685	.4623964
inc_ad100	.0019696	.0006896	2.86	0.004	.0006179	.0033213
emp_ad	.0697105	.0469572	1.48	0.138	-.022324	.161745
inc2_i	.2006197	.0557428	3.60	0.000	.0913659	.3098735
disadv_1	.0080134	.0246696	0.32	0.745	-.0403382	.056365
twopar1	-.0921264	.0525403	-1.75	0.080	-.1951035	.0108508
hhsize_1	.0407919	.0136435	2.99	0.003	.0140511	.0675328
smsize	.038497	.0717327	0.54	0.591	-.1020966	.1790905
medsize	.0153709	.0478855	0.32	0.748	-.078483	.1092248
s_fight	.0830429	.0634435	1.31	0.191	-.0413041	.2073898
e_weap	-.0028275	.060688	-0.05	0.963	-.1217738	.1161188
penalty	.0017023	.094904	0.02	0.986	-.184306	.1877106
v_prog	.0368112	.0584276	0.63	0.529	-.0777047	.1513272
_cons	-.0177348	.6561086	-0.03	0.978	-1.303684	1.268215
/athrho	-.2286155	.1703909	-1.34	0.180	-.5625756	.1053446
rho	-.2247142	.1617868			-.5098859	.1049567

Wald test of rho=0: chi2(1) = 1.80019 Prob > chi2 = 0.1797

B.2.11 Full Model with Interaction Terms (dis3_ppov, dis3_welf, fpov_dis1, fpov_dis3)

Seemingly unrelated bivariate probit — Number of obs = 8727

Wald chi2(52) = 1695.33

Log pseudolikelihood = -12414948 — Prob > chi2 = 0.0000

(standard errors adjusted for clustering on psuscid)

	Coef.	Robust Std. Err.	z	P>|z|	[95% Conf.	Interval]
fight_d3						
age3	-.0892178	.0174552	-5.11	0.000	-.1234293	-.0550063
bio_sex	.6799255	.0803299	8.46	0.000	.5224817	.8373692
black	.1417426	.072654	1.95	0.051	-.0006566	.2841418
asian	-.0570995	.1155329	-0.49	0.621	-.2835398	.1693408
native	.2595807	.29967	0.87	0.386	-.3277618	.8469231
other	-.2715335	.2811046	-0.97	0.334	-.8224883	.2794214
hispanic	.0019609	.0802264	0.02	0.981	-.15528	.1592018
school_3	-.2346756	.0586643	-4.00	0.000	-.3496555	-.1196956
inc_ya100	.0001203	.0001517	0.79	0.428	-.0001771	.0004177
emp_ya	-.1061171	.0546841	-1.94	0.052	-.213296	.0010618
inc2_i	.0201769	.0622475	0.32	0.746	-.1018259	.1421797
disadv_3	.0060921	.0377093	0.16	0.872	-.0678167	.080001
twopar1	-.0495191	.0719067	-0.69	0.491	-.1904537	.0914155
married	-.2824206	.0759764	-3.72	0.000	-.4313316	-.1335095
kid_suppt	-.2769284	.0752847	-3.68	0.000	-.4244837	-.1293731
ownh_c3	-.1422042	.2923995	-0.49	0.627	-.7152966	.4308883
church_c3	-.2493206	.1936327	-1.29	0.198	-.6288337	.1301925
exp_p3	.0007187	.000557	1.29	0.197	-.000373	.0018104
welf_c3	-.0001591	.0001848	-0.86	0.389	-.0005212	.0002031
crime_vc3	-.0000423	.0001022	-0.41	0.679	-.0002427	.000158
arjv_vc3	.0005487	.0012857	0.43	0.670	-.0019713	.0030687
pers_pov	.2275196	.186068	1.22	0.221	-.1371669	.5922061
welf_w3	.0028799	.1296427	0.02	0.982	-.2512152	.256975
dis3_ppov	-.318227	.1299784	-2.45	0.014	-.57298	-.0634739
dis3_welf	.0817768	.1284011	0.64	0.524	-.1698848	.3334384
fpov_dis3	.0059076	.0530011	0.11	0.911	-.0979727	.1097879
fight_d1	1.294051	.18134	7.14	0.000	.9386312	1.649471
_cons	.3382648	.4801175	0.70	0.481	-.6027482	1.279278
fight_d1						
age1	-.0665468	.0131284	-5.07	0.000	-.0922779	-.0408157
bio_sex	.4469784	.0390795	11.44	0.000	.3703839	.5235728
black	.1938571	.0571819	3.39	0.001	.0817827	.3059316
asian	.1641852	.1049561	1.56	0.118	-.0415249	.3698953
native	.4640773	.2423508	1.91	0.056	-.0109215	.9390761
other	.1656961	.1728932	0.96	0.338	-.1731684	.5045606
hispanic	.1918411	.0672453	2.85	0.004	.0600427	.3236395
school_1	-.0802704	.1623277	-0.49	0.621	-.3984269	.2378862
inc_ad100	.0024848	.0005911	4.20	0.000	.0013263	.0036433
emp_ad	.0676234	.0465357	1.45	0.146	-.0235848	.1588316
inc2_i	.1675986	.0559517	3.00	0.003	.0579353	.2772619
disadv_1	-.0312552	.0357291	-0.87	0.382	-.1012829	.0387725
twopar1	-.1998414	.0565577	-3.53	0.000	-.3106925	-.0889903
hhsize_1	.0467142	.0119861	3.90	0.000	.0232218	.0702066
soc_coh	.0520394	.0180534	2.88	0.004	.0166553	.0874234
soc_cont	.0119441	.0270126	0.44	0.658	-.0409996	.0648877
soc_dis	.1370013	.0394652	3.47	0.001	.0596511	.2143516
rel_pub	-.0473346	.0187023	-2.53	0.011	-.0839904	-.0106787
ownh_c1	.3342124	.3310933	1.01	0.313	-.3147185	.9831433
church_c1	-.0737711	.1485252	-0.50	0.619	-.3648751	.2173329
exp_p1	-.000239	.0011206	-0.21	0.831	-.0024353	.0019574
welf_c1	-.0002126	.0002959	-0.72	0.472	-.0007927	.0003674
crime_vc1	.0000756	.0000821	0.92	0.357	-.0000853	.0002364
arjv_vc1	.0003739	.0010179	0.37	0.713	-.0016212	.002369
fpov_dis1	-.0332772	.0525054	-0.63	0.526	-.1361859	.0696314
_cons	-.4110518	.4058213	-1.01	0.311	-1.206447	.3843433

	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
/athrho	-.5479384	.1325438	-4.13	0.000	-.8077195	-.2881572
rho	-.4989735	.0995438			-.6683303	-.2804379

Wald test of rho=0: chi2(1) = 17.0901 Prob > chi2 = 0.0000

B.2.12 Model 1 Substituting Proportion Family with Income Below Poverty (pov_c1, pov_c3) for the Disadvantage Index (disadv_1, disadv_3) in Both Equations

Seemingly unrelated bivariate probit

Log pseudo-likelihood = -17415217

Number of obs = 11982

Wald chi2(30) = 1364.36

Prob > chi2 = 0.0000

(standard errors adjusted for clustering on psuscid)

	Coef.	Robust Std. Err.	z	P>|z|	[95% Conf.	Interval]
fight_d3						
age3	-.0856205	.0150857	-5.68	0.000	-.115188	-.056053
bio_sex	.6636474	.0689081	9.63	0.000	.5285901	.7987047
black	.1996912	.0698676	2.86	0.004	.0627533	.3366291
asian	.0337348	.1272243	0.27	0.791	-.2156202	.2830899
native	.19993	.2436254	0.82	0.412	-.2775671	.6774271
other	-.3314668	.2800267	-1.18	0.237	-.8803091	.2173755
hispanic	.0535127	.0597981	0.89	0.371	-.0636894	.1707148
school_3	-.2377341	.0525154	-4.53	0.000	-.3406623	-.1348058
inc_ya100	.0001908	.000158	1.21	0.227	-.0001188	.0005003
emp_ya	-.0879376	.0539222	-1.63	0.103	-.1936232	.017748
inc2_i	.0694375	.0587196	1.18	0.237	-.0456507	.1845258
pov_c3	.0126155	.4696057	0.03	0.979	-.9077947	.9330258
twopar1	-.0435514	.0566248	-0.77	0.442	-.154534	.0674312
married	-.3587566	.0681422	-5.26	0.000	-.4923129	-.2252003
kid_suppt	-.2307529	.0620489	-3.72	0.000	-.3523664	-.1091393
fight_d1	1.105409	.2106403	5.25	0.000	.6925613	1.518256
_cons	.0933863	.3373996	0.28	0.782	-.5679048	.7546773
fight_d1						
age1	-.068127	.0117336	-5.81	0.000	-.0911245	-.0451295
bio_sex	.4491341	.0307739	14.59	0.000	.3888183	.50945
black	.2054098	.0625021	3.29	0.001	.0829079	.3279117
asian	-.0234857	.097119	-0.24	0.809	-.2138355	.1668641
native	.2934287	.1696097	1.73	0.084	-.0390002	.6258575
other	.0960697	.1564572	0.61	0.539	-.2105809	.4027203
hispanic	.1471093	.049935	2.95	0.003	.0492385	.2449801
school_1	-.2242502	.1303187	-1.72	0.085	-.4796701	.0311697
inc_ad100	.0025723	.0005051	5.09	0.000	.0015822	.0035623
emp_ad	.0174982	.0389433	0.45	0.653	-.0588292	.0938256
inc2_i	.1891222	.0511628	3.70	0.000	.0888449	.2893995
pov_c1	-.159382	.2494958	-0.64	0.523	-.6483847	.3296207
twopar1	-.171999	.0479436	-3.59	0.000	-.2659666	-.0780313
hhsize_1	.032977	.0106247	3.10	0.002	.0121531	.053801
_cons	.3844999	.2300266	1.67	0.095	-.066344	.8353439
/athrho	-.3787231	.146448	-2.59	0.010	-.665756	-.0916902
rho	-.361598	.1272995			-.5821812	-.0914341

Wald test of rho=0: chi2(1) = 6.68769 Prob > chi2 = 0.0097

B.2.13 Model 1 Substituting Unemployment Rate (uemp_c1, uemp_c3) for the Disadvantage Index (disadv_1, disadv_3) in Both Equations

```
Seemingly unrelated bivariate probit              Number of obs   =      11982
                                                  Wald chi2(30)   =    1352.80
Log pseudo-likelihood =  -17414635                Prob > chi2     =     0.0000

                          (standard errors adjusted for clustering on psuscid)
------------------------------------------------------------------------------
             |               Robust
             |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
fight_d3     |
        age3 |  -.0858719   .0149582    -5.74   0.000    -.1151895   -.0565543
     bio_sex |    .668811   .0692007     9.66   0.000     .5331801     .804442
       black |   .2092244   .0687689     3.04   0.002     .0744398    .3440091
       asian |   .0354833   .1275408     0.28   0.781    -.2144921    .2854587
      native |   .2129455   .2449456     0.87   0.385     -.267139    .6930301
       other |  -.3319241   .2815737    -1.18   0.238    -.8837984    .2199503
    hispanic |    .058455   .0599766     0.97   0.330    -.0590969    .1760069
    school_3 |  -.2379844    .052551    -4.53   0.000    -.3409825   -.1349863
   inc_ya100 |   .0001919   .0001583     1.21   0.225    -.0001183    .0005021
      emp_ya |  -.0890537   .0542715    -1.64   0.101    -.1954239    .0173165
      inc2_i |   .0739991   .0592743     1.25   0.212    -.0421764    .1901746
     uemp_c3 |  -.4493935   1.047829    -0.43   0.668      -2.5031    1.604313
     twopar1 |   -.044626   .0570091    -0.78   0.434    -.1563618    .0671097
     married |  -.3601628   .0685983    -5.25   0.000    -.4946129   -.2257127
   kid_suppt |  -.2322724   .0620989    -3.74   0.000    -.3539841   -.1105608
    fight_d1 |   1.083942   .2155763     5.03   0.000     .6614205    1.506464
       _cons |   .1260696    .343791     0.37   0.714    -.5477484    .7998876
-------------+----------------------------------------------------------------
fight_d1     |
        age1 |  -.0688588   .0116801    -5.90   0.000    -.0917514   -.0459661
     bio_sex |   .4492904   .0308072    14.58   0.000     .3889094    .5096713
       black |   .1914546   .0625453     3.06   0.002     .0688682    .3140411
       asian |  -.0142097   .0982515    -0.14   0.885     -.206779    .1783597
      native |   .2769905   .1720662     1.61   0.107    -.0602531     .614234
       other |   .1036041   .1564444     0.66   0.508    -.2030213    .4102295
    hispanic |   .1471264   .0499456     2.95   0.003     .0492349     .245018
    school_1 |  -.2281034    .131223    -1.74   0.082    -.4852957     .029089
   inc_ad100 |   .0025894   .0005093     5.08   0.000     .0015912    .0035876
      emp_ad |    .020739    .038637     0.54   0.591    -.0549881    .0964662
      inc2_i |   .1792715   .0506881     3.54   0.000     .0799246    .2786184
     uemp_c1 |   .5810013   .8468143     0.69   0.493    -1.078724    2.240727
     twopar1 |    -.17302   .0477091    -3.63   0.000    -.2665282   -.0795119
    hhsize_1 |   .0337776   .0104927     3.22   0.001     .0132123    .0543428
       _cons |   .3365637   .2325873     1.45   0.148    -.1192991    .7924265
-------------+----------------------------------------------------------------
     /athrho |  -.3633548   .1482241    -2.45   0.014    -.6538688   -.0728409
-------------+----------------------------------------------------------------
         rho |  -.3481656   .1302565                     -.5742687   -.0727123
------------------------------------------------------------------------------
Wald test of rho=0:              chi2(1) =   6.0093    Prob > chi2 = 0.0142
```

B.2.14 Model 1 Substituting Proportion Age 25+ without High School Diploma or Equivalency (ledu_c1, ledu_c3) for the Disadvantage Index (disadv_1, disadv_3) in Both Equations

```
Seemingly unrelated bivariate probit              Number of obs   =      11982
                                                  Wald chi2(30)   =    1403.64
Log pseudo-likelihood =  -17412423                Prob > chi2     =     0.0000

                          (standard errors adjusted for clustering on psuscid)
```

	Coef.	Robust Std. Err.	z	P>|z|	[95% Conf.	Interval]
fight_d3						
age3	-.0849098	.0150241	-5.65	0.000	-.1143565	-.0554631
bio_sex	.6565609	.0674643	9.73	0.000	.5243333	.7887885
black	.1926076	.0680084	2.83	0.005	.0593136	.3259016
asian	.0323766	.1270898	0.25	0.799	-.2167148	.281468
native	.186565	.2428462	0.77	0.442	-.2894049	.6625349
other	-.3309565	.2777728	-1.19	0.233	-.8753812	.2134682
hispanic	.0475853	.0604524	0.79	0.431	-.0708992	.1660698
school_3	-.2355201	.0526701	-4.47	0.000	-.3387515	-.1322887
inc_ya100	.0001897	.0001568	1.21	0.226	-.0001177	.0004972
emp_ya	-.0867017	.0536576	-1.62	0.106	-.1918685	.0184652
inc2_i	.0640672	.058184	1.10	0.271	-.0499713	.1781057
ledu_c3	.1570235	.3629649	0.43	0.665	-.5543746	.8684216
twopar1	-.0424253	.0565217	-0.75	0.453	-.1532057	.0683551
married	-.3591907	.0682976	-5.26	0.000	-.4930515	-.2253298
kid_suppt	-.2289527	.0620203	-3.69	0.000	-.3505103	-.1073951
fight_d1	1.133052	.2012528	5.63	0.000	.7386033	1.5275
_cons	.0489924	.3380561	0.14	0.885	-.6135854	.7115702
fight_d1						
age1	-.0678327	.0117736	-5.76	0.000	-.0909086	-.0447568
bio_sex	.4492688	.0308553	14.56	0.000	.3887935	.509744
black	.2075704	.059791	3.47	0.001	.0903822	.3247585
asian	-.0235797	.098538	-0.24	0.811	-.2167106	.1695513
native	.306252	.1723162	1.78	0.076	-.0314815	.6439855
other	.0928368	.1573666	0.59	0.555	-.215596	.4012697
hispanic	.1441599	.0494885	2.91	0.004	.0471642	.2411557
school_1	-.2188831	.1291614	-1.69	0.090	-.4720347	.0342686
inc_ad100	.0025803	.0005021	5.14	0.000	.0015963	.0035643
emp_ad	.0151884	.0387616	0.39	0.695	-.0607829	.0911597
inc2_i	.194607	.0509982	3.82	0.000	.0946522	.2945617
ledu_c1	-.2821166	.1902429	-1.48	0.138	-.6549859	.0907527
twopar1	-.1700738	.0477319	-3.56	0.000	-.2636266	-.0765211
hhsize_1	.0327887	.0106886	3.07	0.002	.0118394	.0537381
_cons	.4220785	.2330678	1.81	0.070	-.034726	.878883
/athrho	-.3987003	.1410718	-2.83	0.005	-.675196	-.1222046
rho	-.3788363	.1208256			-.5883874	-.1215999

```
Wald test of rho=0:              chi2(1) =  7.98753    Prob > chi2 = 0.0047
```

B.2.15 Model 1 Substituting Proportion of Female Head of Household, with Children Age <18, No Husband (femhh_c1, femhh_c3) for the Disadvantage Index (disadv_1, disadv_3) in Both Equations

```
Seemingly unrelated bivariate probit              Number of obs   =      11982
                                                  Wald chi2(30)   =    1342.59
Log pseudo-likelihood =  -17411240                Prob > chi2     =     0.0000

                          (standard errors adjusted for clustering on psuscid)
------------------------------------------------------------------------------
             |               Robust
             |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
fight_d3     |
        age3 |  -.0865626   .0149589    -5.79   0.000    -.1158815   -.0572438
     bio_sex |   .6631607   .0681857     9.73   0.000     .5295192    .7968022
       black |   .1656575   .0682794     2.43   0.015     .0318324    .2994825
       asian |   .0284599     .12644     0.23   0.822    -.219358     .2762779
      native |   .1839522   .2392405     0.77   0.442    -.2849506     .652855
       other |  -.3268938   .2812941    -1.16   0.245     -.87822     .2244324
    hispanic |   .0442099   .0586189     0.75   0.451    -.0706811    .1591009
    school_3 |  -.2341998   .0526591    -4.45   0.000    -.3374098   -.1309898
   inc_ya100 |   .0001824    .000159     1.15   0.251    -.0001292     .000494
      emp_ya |  -.0842592   .0536805    -1.57   0.116    -.1894711    .0209526
      inc2_i |   .0647542   .0590407     1.10   0.273    -.0509634    .1804719
    femhh_c3 |   1.763486   1.076976     1.64   0.102    -.3473471    3.874319
     twopar1 |  -.0412685   .0568911    -0.73   0.468     -.152773    .0702359
     married |  -.3616422   .0681865    -5.30   0.000    -.4952853    -.227999
   kid_suppt |  -.2314563   .0623123    -3.71   0.000    -.3535862   -.1093265
    fight_d1 |   1.105661   .2074581     5.33   0.000     .6990508    1.512272
       _cons |   -.009224   .3389214    -0.03   0.978    -.6734977    .6550497
-------------+----------------------------------------------------------------
fight_d1     |
        age1 |  -.0687358   .0117083    -5.87   0.000    -.0916837   -.0457878
     bio_sex |   .4490672    .030768    14.60   0.000     .3887631    .5093713
       black |   .1877782   .0643054     2.92   0.003     .0617419    .3138146
       asian |  -.0194458   .0979368    -0.20   0.843    -.2113985    .1725069
      native |   .2884703   .1690281     1.71   0.088    -.0428187    .6197592
       other |   .1015341   .1564123     0.65   0.516    -.2050284    .4080966
    hispanic |   .1449618   .0518611     2.80   0.005     .0433158    .2466078
    school_1 |  -.2247252   .1305116    -1.72   0.085    -.4805232    .0310728
   inc_ad100 |   .0025845   .0005083     5.08   0.000     .0015882    .0035807
      emp_ad |   .0207108   .0384971     0.54   0.591    -.0547421    .0961638
      inc2_i |   .1835729   .0498787     3.68   0.000     .0858125    .2813333
    femhh_c1 |   .1377326   .4037404     0.34   0.733     -.653584    .9290493
     twopar1 |  -.1722859   .0476946    -3.61   0.000    -.2657656   -.0788063
    hhsize_1 |   .0336664   .0105509     3.19   0.001     .0129869    .0543458
       _cons |   .3452003   .2362557     1.46   0.144    -.1178523    .8082529
-------------+----------------------------------------------------------------
     /athrho |  -.3784854   .1440852    -2.63   0.009    -.6608872   -.0960836
-------------+----------------------------------------------------------------
         rho |  -.3613914   .1252671                     -.5789535    -.095789
------------------------------------------------------------------------------
Wald test of rho=0:              chi2(1) =  6.90017    Prob > chi2 = 0.0086
```

B.2.16 Model 1 Substituting Violent Crime Rate (crime_vc1, crime_vc3) for the Disadvantage Index (disadv_1, disadv_3) in Both Equations

```
Seemingly unrelated bivariate probit              Number of obs   =      11303
                                                  Wald chi2(30)   =    1402.75
Log pseudo-likelihood =  -16494546                Prob > chi2     =     0.0000

                          (standard errors adjusted for clustering on psuscid)
------------------------------------------------------------------------------
             |               Robust
             |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
fight_d3     |
        age3 |  -.0849272    .015211    -5.58   0.000    -.1147403   -.0551141
     bio_sex |   .6733757   .0733242     9.18   0.000     .5296628    .8170886
       black |    .189926   .0752616     2.52   0.012     .0424161    .3374359
       asian |   .0202935   .1264324     0.16   0.872    -.2275095    .2680964
      native |   .1961736   .2446024     0.80   0.423    -.2832384    .6755855
       other |  -.3378257   .2786419    -1.21   0.225    -.8839537    .2083023
    hispanic |   .0333079   .0631589     0.53   0.598    -.0904812     .157097
    school_3 |    -.23196   .0536957    -4.32   0.000    -.3372018   -.1267183
   inc_ya100 |   .0001801   .0001609     1.12   0.263    -.0001353    .0004956
      emp_ya |  -.0893787   .0546573    -1.64   0.102     -.196505    .0177476
      inc2_i |   .0594947   .0618549     0.96   0.336    -.0617388    .1807281
   crime_vc3 |   .0000473   .0000647     0.73   0.464    -.0000795    .0001742
     twopar1 |  -.0337929   .0598792    -0.56   0.573    -.1511541    .0835682
     married |  -.3622381   .0722329    -5.01   0.000     -.503812   -.2206642
   kid_suppt |  -.2515192   .0639578    -3.93   0.000    -.3768743   -.1261642
    fight_d1 |   1.136119   .2166614     5.24   0.000     .7114707    1.560768
       _cons |    .049186   .3369915     0.15   0.884    -.6113052    .7096771
-------------+----------------------------------------------------------------
fight_d1     |
        age1 |  -.0704395   .0120879    -5.83   0.000    -.0941314   -.0467476
     bio_sex |   .4561837     .03166    14.41   0.000     .3941311    .5182362
       black |   .1608348   .0585994     2.74   0.006      .045982    .2756876
       asian |  -.0355995   .1015584    -0.35   0.726    -.2346503    .1634514
      native |   .2838839   .1700656     1.67   0.095    -.0494385    .6172063
       other |   .0928392    .157561     0.59   0.556    -.2159747     .401653
    hispanic |   .1232438   .0599643     2.06   0.040      .005716    .2407715
    school_1 |  -.2554088   .1344171    -1.90   0.057    -.5188616    .0080439
   inc_ad100 |   .0025829   .0005253     4.92   0.000     .0015534    .0036125
      emp_ad |   .0325427    .038855     0.84   0.402    -.0436117    .1086971
      inc2_i |   .1947908   .0524658     3.71   0.000     .0919597    .2976218
   crime_vc1 |   .0000482   .0000466     1.03   0.301    -.0000432    .0001396
     twopar1 |  -.1746045   .0502647    -3.47   0.001    -.2731215   -.0760875
    hhsize_1 |   .0359143   .0109699     3.27   0.001     .0144138    .0574149
       _cons |   .3840852    .236151     1.63   0.104    -.0787623    .8469326
-------------+----------------------------------------------------------------
     /athrho |  -.4022061   .1519283    -2.65   0.008      -.69998   -.1044322
-------------+----------------------------------------------------------------
         rho |   -.381835   .1297774                     -.6043551   -.1040542
------------------------------------------------------------------------------
Wald test of rho=0:              chi2(1) =  7.00842    Prob > chi2 = 0.0081
```

B.2.17 Model 1 Substituting the Following Items Together for the Disadvantage Index (disadv_1, disadv_3) in Both Equations

- proportion family with income below poverty (pov_c1, pov_c3)
- unemployment rate (uemp_c1, uemp_c3)
- proportion age 25+ without high school diploma or equivalency (ledu_c1, ledu_c3)
- proportion of female head of household, with children age <18, no husband (femhh_c1, femhh_c3) for the disadvantage index
- violent crime rate (crime_vc1, crime_vc3)

Seemingly unrelated bivariate probit — Number of obs = 11303

Wald chi2(38) = 1631.84

Log pseudo-likelihood = -16471900 — Prob > chi2 = 0.0000

(standard errors adjusted for clustering on psuscid)

	Coef.	Robust Std. Err.	z	P>|z|	[95% Conf. Interval]	
fight_d3						
age3	-.0834439	.0151927	-5.49	0.000	-.1132209	-.0536668
bio_sex	.6619067	.0741583	8.93	0.000	.5165591	.8072544
black	.1834611	.0721595	2.54	0.011	.0420311	.3248911
asian	.026076	.1275675	0.20	0.838	-.2239517	.2761036
native	.1914929	.2411634	0.79	0.427	-.2811787	.6641645
other	-.3357876	.2801639	-1.20	0.231	-.8848989	.2133236
hispanic	.0317209	.0636898	0.50	0.618	-.0931089	.1565507
school_3	-.2221325	.0543663	-4.09	0.000	-.3286885	-.1155764
inc_ya100	.0001634	.0001608	1.02	0.310	-.0001518	.0004786
emp_ya	-.0936151	.0550257	-1.70	0.089	-.2014636	.0142333
inc2_i	.0590755	.0611369	0.97	0.334	-.0607507	.1789017
pov_c3	-1.21908	1.365185	-0.89	0.372	-3.894795	1.456634
uemp_c3	-1.780349	1.746965	-1.02	0.308	-5.204337	1.643639
ledu_c3	.7066367	.6772031	1.04	0.297	-.6206571	2.03393
femhh_c3	3.738191	1.930888	1.94	0.053	-.0462805	7.522663
crime_vc3	-.0000132	.0000797	-0.17	0.868	-.0001695	.0001431
twopar1	-.0272235	.0594057	-0.46	0.647	-.1436565	.0892095
married	-.3584414	.0728359	-4.92	0.000	-.5011972	-.2156856
kid_suppt	-.2578136	.0641194	-4.02	0.000	-.3834852	-.132142
fight_d1	1.17329	.2142231	5.48	0.000	.7534199	1.593159
_cons	-.1404328	.3808901	-0.37	0.712	-.8869637	.606098
fight_d1						
age1	-.0702197	.0119577	-5.87	0.000	-.0936563	-.0467831
bio_sex	.458876	.032022	14.33	0.000	.396114	.5216379
black	.1845496	.0551006	3.35	0.001	.0765544	.2925448
asian	-.0320139	.1084238	-0.30	0.768	-.2445206	.1804928
native	.2587327	.1745439	1.48	0.138	-.083367	.6008324
other	.0821438	.1590878	0.52	0.606	-.2296625	.3939501
hispanic	.1056888	.0575817	1.84	0.066	-.0071693	.218547
school_1	-.2474353	.1349716	-1.83	0.067	-.5119747	.0171041
inc_ad100	.0026007	.0005183	5.02	0.000	.0015848	.0036165
emp_ad	.029005	.0390309	0.74	0.457	-.0474942	.1055042
inc2_i	.197976	.0536344	3.69	0.000	.0928544	.3030976
pov_c1	-.3211001	.5470281	-0.59	0.557	-1.393255	.7510553
uemp_c1	3.073626	1.544629	1.99	0.047	.0462082	6.101043
ledu_c1	-.569388	.3340174	-1.70	0.088	-1.22405	.0852741
femhh_c1	-.4547593	.6233899	-0.73	0.466	-1.676581	.7670624
crime_vc1	.0000704	.000062	1.14	0.256	-.0000512	.0001921
twopar1	-.1681039	.0502095	-3.35	0.001	-.2665128	-.069695
hhsize_1	.0358463	.0109459	3.27	0.001	.0143928	.0572999
_cons	.413656	.2538546	1.63	0.103	-.0838899	.911202
/athrho	-.4301416	.1518296	-2.83	0.005	-.7277221	-.1325611
rho	-.4054397	.1268716			-.6216698	-.1317901

Wald test of rho=0: chi2(1) = 8.0262 Prob > chi2 = 0.0046

B.3 Arrests and Convictions

B.3.1 Survey Probit, Model 1 (Wave III equation only) with Outcome Variable = Violent Arrests Aand Marginal Effects

```
pweight:  gswgt3_2                                  Number of obs    =     12190
Strata:   region                                    Number of strata =         4
PSU:      psuscid                                   Number of PSUs   =       132
                                                    Population size  =  19171764
                                                    F(  15,    114)  =     21.60
                                                    Prob > F         =    0.0000

------------------------------------------------------------------------------
      arad_v |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
        age3 |   .0415812   .0308946     1.35   0.181    -.0195491    .1027116
     bio_sex |   .5993224    .108684     5.51   0.000     .3842724    .8143723
       black |   .1635277   .1368086     1.20   0.234    -.1071715    .4342269
       asian |  -.2716659   .2508334    -1.08   0.281    -.7679827    .2246508
      native |   .4677154   .2956415     1.58   0.116    -.1172617    1.052693
    hispanic |    .038074   .1341599     0.28   0.777    -.2273842    .3035323
    school_3 |  -.2175697   .1060486    -2.05   0.042    -.4274049   -.0077345
   inc_ya100 |   .0001852   .0002936     0.63   0.529    -.0003957    .0007662
      emp_ya |  -.2296322   .0974944    -2.36   0.020    -.4225415   -.0367228
      inc2_i |  -.0102046   .1276872    -0.08   0.936    -.2628556    .2424463
    disadv_3 |  -.0151091   .0510274    -0.30   0.768    -.1160755    .0858573
     twopar1 |   -.221338   .1215467    -1.82   0.071    -.4618389    .0191629
     married |  -.0781953   .1254354    -0.62   0.534    -.3263907    .1700001
   kid_suppt |  -.0844412    .125274    -0.67   0.501    -.3323173    .1634349
      arjv_v |     1.9883   .1594926    12.47   0.000     1.672717    2.303883
       _cons |  -3.243782   .7499597    -4.33   0.000    -4.727705   -1.759858
------------------------------------------------------------------------------

Marginal effects after svyprobit
      y  = Probability of positive outcome (predict)
         =   .0083198
-------------------------------------------------------------------------------
                       variable |         dy/dx                X
--------------------------------+----------------------------------------------
                           age3 |       .0009434           21.7863
                       bio_sex*|       .0144149           .507265
                         black*|       .0042793           .143814
                         asian*|      -.0045606           .024641
                        native*|         .01856           .006419
                      hispanic*|       .0008943           .121366
                      school_3*|      -.0046474           .366737
                      inc_ya100 |       4.20e-06           137.008
                        emp_ya*|      -.0058883           .706747
                        inc2_i*|      -.0002299            .21787
                       disadv_3 |      -.0003428          -.133685
                       twopar1*|      -.0057386           .737193
                       married*|      -.0016692           .169894
                     kid_suppt*|      -.0017986           .182449
                        arjv_v*|       .3258408           .011874
-------------------------------------------------------------------------------
(*) dy/dx is for discrete change of dummy variable from 0 to 1
```

B.3.2 Survey Probit, Model 1 (Wave III equation only) with Outcome Variable = Violent Convictions and Marginal Effects

pweight:	gswgt3_2	Number of obs =	12196
Strata:	region	Number of strata =	4
PSU:	psuscid	Number of PSUs =	132
		Population size =	19185962
		F(15, 114) =	7.62
		Prob > F =	0.0000

cvad_v	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
age3	.0284831	.0376096	0.76	0.450	-.0459338	.1029
bio_sex	.6396948	.1458869	4.38	0.000	.3510326	.9283571
black	.2516599	.1740077	1.45	0.151	-.092644	.5959638
asian	-1.268859	.4348538	-2.92	0.004	-2.129292	-.4084267
native	.6697441	.3249526	2.06	0.041	.0267699	1.312718
hispanic	.0878475	.1851354	0.47	0.636	-.2784745	.4541695
school_3	-.3137654	.1452929	-2.16	0.033	-.6012522	-.0262785
inc_ya100	.0002525	.0003183	0.79	0.429	-.0003773	.0008823
emp_ya	-.3159483	.1349709	-2.34	0.021	-.5830113	-.0488852
inc2_i	.1531099	.1738058	0.88	0.380	-.1907947	.4970144
disadv_3	-.0897136	.0613479	-1.46	0.146	-.2111009	.0316737
twopar1	.0238743	.1886003	0.13	0.899	-.3493036	.3970521
married	-.077435	.1751921	-0.44	0.659	-.4240824	.2692125
kid_suppt	-.0951102	.1508691	-0.63	0.530	-.3936305	.20341
cvjv_v	1.874435	.273968	6.84	0.000	1.332343	2.416528
_cons	-3.413101	.8515078	-4.01	0.000	-5.097955	-1.728248

Marginal effects after svyprobit
y = Probability of positive outcome (predict)
= .00337025

variable	dy/dx	X
age3	.0002894	21.7868
bio_sex*	.0071175	.507577
black*	.003296	.144164
asian*	-.0036619	.024622
native*	.0171523	.006415
hispanic*	.000978	.121298
school_3*	-.0029204	.366645
inc_ya100	2.57e-06	137
emp_ya*	-.0039192	.706943
inc2_i*	.0017573	.218039
disadv_3	-.0009114	-.133284
twopar1*	.0002389	.737093
married*	-.000735	.169768
kid_suppt*	-.0008921	.182523
cvjv_v*	.1958395	.005247

(*) dy/dx is for discrete change of dummy variable from 0 to 1