THE RUNAWAY YOUTH LONGITUDINAL STUDY

A panel study spanning 15 years which examines the characteristics of kids who run away from home and the long term impacts of run away behavior on key outcomes in adulthood.

Jennifer Benoit-Bryan
PhD Candidate
University of Illinois, Chicago

REPORT RELEASE DATE: SEPTEMBER 2011

EXECUTIVE SUMMARY OF THE RUNAWAY YOUTH LONGITUDINAL STUDY 2011

INTRODUCTION

There are very few research studies to date examining the correlates of run away behavior that have been nationally representative. The studies that are available focus on demographics of runaways or causal correlates of run away behavior. This is the first study to use nationally representative data to examine the consequences of running away as an adolescent on adult outcomes. The goal of this research is twofold, first to identify differences between runaways and non-runaways in terms of demographics and risk factors. The second goal is to understand the association between running away from home as an adolescent and health, economic, and justice system outcomes in adulthood. The results of this study offer compelling evidence that running away from home as an adolescent is correlated with important health, economic and juvenile justice outcomes in adulthood.

DATA SOURCE

The data used in this study are from the National Longitudinal Study of Adolescent Health (Add Health), a nationally representative sample of over 15,000 adolescents who were followed in to adulthood with four longitudinal interview points. The study used a clustered school sampling design of adolescents in grades 7-12 during the 1994-1995 school year. The most recent set of interviews occurred in 2008-2009 with a sample aged 24-32. This data set provides the unique ability to track individuals across 15 years and to examine how behaviors and characteristics of adolescence are connected to the outcomes of health, education, and economics for the same individuals in adulthood. In particular, this analysis uses waves three and four of the dataset, conducted when the respondents were adults, to examine the impacts of run away behavior at waves one and two of the study when respondents were adolescents.

METHODOLOGY

This study examines lifetime runaway behavior by asking survey participants in wave three of the study (aged 18-26) whether or not they had ever run away from home. Chi square analysis was used to measure differences in key characteristics between runaways and non-runaways. Multiple linear regression and multiple logistic regression were used to identify and measure the effects of running away from home as an adolescent on health, economic, and juvenile justice variables in adulthood. A number of demographic variables were controlled for in the regression models including gender, race, whether or not the individual was born in the United States, sexual orientation, and age. In addition, covariates were controlled for in order to isolate the effects of running away on the

outcome variables of interest. The covariates of verbal, physical, and sexual abuse before the age of 18, as well as whether or not the individual has ever been in foster care were controlled in all of the regression models. It is important to keep in mind that these results compare individuals up to and at a specific point in time (wave three or four of the survey) and cannot be generalized beyond that point to all of the respondent's adulthood.

FINDINGS

Differences between runaways and non-runaways

DEMOGRAPHICS

- 10% of girls ran away from home before they turned 18 while only 7% of boys ran away.
- Hispanic respondents are more likely to run away from home at 10.8% of respondents compared to non-Hispanic respondents at 8.2%. African American respondents are less likely to run away at 7.5% compared to 8.2% of non-African Americans. American Indian / Native American respondents were more likely to have run away at 12.9% than non-American Indian / Native Americans at 8.4%. Almost 11% of Asian or Pacific Islanders had run away compared to 8.4% of non-Asian or Pacific Islanders.
- Only 6.2% of individuals who were born outside of the United States ran away from home before turning 18, significantly less than the 9.6% of respondents who were born in the United States.
- In terms of sexual orientation, individuals who described themselves as 100% heterosexual had the lowest run away rate at 7.6%. The highest run away rate was reported by bisexuals at 21.7%, almost three times higher than the rate for 100% heterosexuals.

CORRELATES

- Over 30% of respondents who had been in foster care as an adolescent had also run away from home compared to 8.1% of individuals who have no foster care history.
- Verbal abuse, physical abuse, and sexual abuse before the age of 18 are all correlated with higher run away rates. Individuals who were verbally abused are over twice as likely to run away from home at 11.7% compared to those who were not verbally abused at 5.3%. The likelihood of running away from home is three times higher for respondents who were physically abused as youth at 17.4% than those who were not physically abused at 6.3%. Children who were sexually abused are over twice as likely to have run away from home at 17% as those who were not sexually abused at 7.9%.

Examining Outcomes

HEALTH IMPACTS

- Running away from home as an adolescent increases the odds of having suicidal thoughts as an adult by 51%. An even stronger relationship is found between suicide attempts and previous run away experience, with runaways having over three times higher odds as non-runaways of attempting suicide as adults.
- Someone who ran away from home as an adolescent has odds 44% higher of having health issues that prevent them from doing moderate activities than someone who never ran away from home. They also rate their general health lower than non-runaways.
- The likelihood of an individual being a smoker as an adult are over twice as high (2.4 times) for former runaways than for individuals who never ran away from home. Former runaways are 67% more likely to use marijuana as an adult than non-runaways. Alcohol use as an adult is not associated with former runway status.
- Former runaways are 53% more likely to report having a sexually transmitted disease as an adult than non-runaways.

ECONOMIC IMPACTS

- The annual personal income level of adults who ran away from home as adolescents is $8,823 lower on average compared to adults who never ran away from home.
- The odds of having someone in your household who is a recipient of AFDC, public assistance, or welfare are 76% higher for adults who ran away as an adolescent compared to individuals who never ran away from home.
- The likelihood of not having a high school degree or GED at wave four of the study is 50% higher for former runaways than non-runaways. Adults who ran away from home as adolescents have lower education levels on average than adults who never ran away from home.

JUSTICE SYSTEM IMPACTS

- The odds of former runaways being arrested as adults are over two and a half times higher than individuals who never ran away from home.
- Being a former runaway does not increase the rates of crimes committed in adulthood for damaging private property, stealing, buying, holding, or selling stolen property, committing financial fraud, and shooting or stabbing someone.
- Selling drugs as an adult is positively correlated with running away as an adolescent with a 99% increase in odds over adults who never ran away from home.

ACKNOWLEDGMENTS

This research was supported by a grant from the National Runaway Switchboard, a non-profit agency whose mission is to help keep America's runaway, homeless, and at-risk youth safe and off the streets. For more information about the National Runaway Switchboard please visit www.1800RUNAWAY.org

This research uses data from Add Health, a program project directed by Kathleen Mullan Harris and designed by J. Richard Udry, Peter S. Bearman, and Kathleen Mullan Harris at the University of North Carolina at Chapel Hill, and funded by grant P01-HD31921 from the Eunice Kennedy Shriver National Institute of Child Health and Human Development, with cooperative funding from 23 other federal agencies and foundations. Special acknowledgment is due Ronald R. Rindfuss and Barbara Entwisle for assistance in the original design. Information on how to obtain the Add Health data files is available on the Add Health website (http://www.cpc.unc.edu/addhealth). No direct support was received from grant P01-HD31921 for this analysis.

TABLE OF CONTENTS

INTRODUCTION

There are very few research studies to date examining the correlates of run away behavior that have been nationally representative. The studies that are available focus on demographics of runaways or causal correlates of run away behavior. This is the first study to use nationally representative data to examine the consequences of running away as an adolescent on adult outcomes. The results of this study offer compelling evidence that running away from home as an adolescent is correlated with important health, economic and juvenile justice outcomes in adulthood.

RESEARCH DESIGN

DATA

The National Longitudinal Study of Adolescent Health (Add Health) is a nationally representative sample of adolescents in grades 7-12 during the 1994-1995 school year who have been followed into young adulthood with four waves of interviews. The most recent set of interviews occurred in 2008-2009 with a sample aged 24-32. The Add Health study combines detailed longitudinal survey data on respondents' physical and psychological health, economics, and social variables, with contextual data on friendships, peer groups, parents, siblings, romantic relationships, neighborhood, school, and community. This data set provides the unique ability to examine how social environments and behaviors in adolescence are connected to the outcomes of health, education, and economic outcomes in adulthood.

The Add Health sample design is a school based sampling framework. Using the Quality Education Database a stratified sample of 80 schools (designated as high schools by including an 11th grade and having more than 30 students) was selected with probability of selection relative to size. Schools were stratified according to urbanicity, school type (public, parochial, private), ethnic mix, size, and region. A feeder school (usually a middle school) was selected for each high school resulting in a school pair in each of 80 different communities. Over 70 percent of schools originally included in the sample agreed to participate in the study. To fill out the sample, additional schools were selected within each stratum until a school (or school pair) was found who agreed to participate. If a school spanned grades 7 through 12, no feeder school was selected, resulting in a final sample of 132 schools.

An in school questionnaire was administered to students in these schools in the years 1994-1995. Each school administered the test on a single day within one class period (45 to 60 minutes). The sample for the first wave of 90 minute in home interviews was drawn from a union of all students on school rosters and students not on rosters who completed in school questionnaires. Researchers selected a core sample by stratifying students in each school by grade and gender and randomly chose approximately 17 students from each stratum yielding a total of approximately 200 adolescents from each school (or school pair). Participation in the in school survey was not necessary for a student to be eligible for the in home sample. This core in home sample is essentially self-weighting and consists of a nationally representative sample of 12,105 American adolescents in grades 7 through 12 (Mullan Harris, 2005).

In addition to this core sample, researchers selected an "over sample" of approximately 5,000 adolescents in total based on disability, adoption status, ethnicity, education level of parents, and genetic relatedness to siblings. For sixteen schools all enrolled students were selected for in home survey eligibility increasing the sample for wave one by another 3,702. In total, the core sample plus the special samples resulted in a sample size of 20,745 adolescents in the wave one in home interview. Seventy-nine percent of these students participated in Wave one of the in home survey. Data collection for all four in home waves of the survey were conducted with audio computer assisted technology with sensitive items being self-administered and less sensitive material being interviewer administered. A parent was also asked to complete a separate survey and over 85 percent of the parents (usually the mother) of participating adolescents completed a survey.

The second wave in home interview was completed in 1996 with the adolescents who were in grades 7 through 11 at wave one of the survey (N=14,738). Students who were in grade 12 at wave one of the survey were not included in the sampling frame for wave two, all respondents were under age eighteen at the time of the second wave interview.

The third and fourth waves of the in home interviews used the entire wave one respondent population as their sampling frame. The third wave of in home interviews was conducted between 2001- 2002. Respondents ranged in age from 18-26 at the time of the third wave interview. The third wave survey was completed by 15,197 respondents, resulting in a response rate of 76 percent.

The fourth and final wave of in home interviews was conducted between 2008-2009. Over 90% of the respondents from wave one were located and over 80% of eligible sample members were interviewed resulting in a sample size of 15,701.

The data was weighted using the Add Health design weights designed to ensure that data analysis results will be nationally representative with unbiased estimates.

METHODOLOGY

Chi square analysis was used to measure differences in key characteristics between runaways and non-runaways. Chi squares show the degree of difference between runaways and non-runaways and identify how strong, statistically speaking, that relationship is without controlling for any variables. Survey participants were asked in wave three of the study (aged 18-26) whether or not they had ever run away from home. Runaways and non-runaways were compared for a number of demographic variables and possible correlates of runaway behavior. The demographic variables analyzed include gender, race/ethnicity, born in the United States, and sexual identity. All demographic variables were asked at wave one of the study except sexual identity which was not an available question until wave three of the study (and is measured at wave three).

The correlates of run away behavior are factors that are strongly associated with running away and may in fact be causes of the run away behavior. In this study we examine four run away behavior correlates including foster care history, and history of verbal, physical, and sexual abuse before the age of 18. Statistically significant findings were those at $p<.05$ indicating that the probability of the results occurring by chance is less than 95%. We also report the Phi (for binary variables) or Cramer's V (for categorical variables) and the Pearson Chi Square values which are used to assess the magnitude of the differences between the groups and can be compared across tables.

The second section of analysis drills down in to each outcome of interest with the goal of identifying how much of the difference between runaways and non-runaways is associated with the run away behavior. In order to argue that run away behavior in adolescence affects outcomes later in life, three requirements must be met. First, there must be a significant correlation between the variables. Multiple linear regression and multiple logistic regression were used to identify and measure the correlation between running away from home as an adolescent and health, economic, and juvenile justice outcomes in adulthood. The outcome variable of interest was the dependent variable in each of the models while run away history was included as an independent variable.

Second, the run away behavior must happen before the outcomes of interest. The run away variable in these models asks respondents at wave three whether or not they ever ran away from home. We use wave three because in waves one and two some or all of the respondents are still adolescents and we want to capture all run away episodes throughout a respondent's entire adolescence. The outcome variables of interest are all captured at wave four of the survey; therefore we have a clear time difference between run away behavior and outcomes of interest.

The final requirement for a causal argument is the control of alternative explanations. It is impossible to control for all possible alternative explanations and therefore we cannot prove causality. However, we do control for the most likely alternative explanations in this model by including a number of demographic variables and correlates of run away behavior in the models. A number of demographic variables are in the models including gender, race (Hispanic, African-American, American Indian, and Asian), age, sexual orientation, and whether or not the respondent was born in the United States. The correlates of run away behavior included in the model are foster care history, verbal abuse, physical abuse, and sexual abuse as an adolescent. It is important to keep in mind that these results compare individuals up to and at a specific point in time (wave three or four of the interview) and cannot be generalized beyond that point to all of the respondent's adulthood.

The correlates included in this analysis have been chosen because prior research has consistently linked runaway behavior with each of these variables (foster care and history of abuse).

Studies of the association between foster care and runaway status show a clear connection. An analysis of homeless and runaway youth in shelters found that 12% of homeless youth and 8% of runaways came to shelters from a foster care living situation (*Homeless and Runaway Youth Receiving Services at Federally Funded Shelters*, 1989). A qualitative analysis of foster care youth who have run away from home found that youth in foster care run for two main reasons, wanting to be with friends or family and disliking their placement (Pergamit & Ernst, 2010). A study of foster care youth after discharge found that 25% are homeless for one or more nights after discharge (Cook, 1991).

There is a great deal of evidence linking prior abuse with runaway behavior. A study conducted by Molnar et al of a convenience sample of over 700 street youth in Denver, New York City, and San Francisco found that forty-three percent of runaway youth reported physical abuse before leaving home(Molnar, Shade, Kral, Booth, & Watters, 1998). The Molnar study also found that 34% of runaway youth reported sexual abuse before leaving home. A study by the National Incidence Studies of Missing, Abducted, Runaway, and Throwaway Children using the National Household Survey of Youth found that 21% of

runaways had been physically or sexually abused before leaving home or were afraid of abuse upon return (Hammer, Finkelhor, & Sedlak, 2002). An analysis of youth in shelters found that 30% report previous physical abuse (Thompson & Pollio, 2006). A number of studies have found that abuse rates are higher for runaways than non-runaways (E. Cohen, MacKenzie, & Yates, 1991), (*Homeless and Runaway Youth Receiving Services at Federally Funded Shelters*, 1989), (Powers, Eckenrode, & Jaklitsch, 1990), (K. A. Tyler & Cauce, 2002), (Molnar et al., 1998)

Information is available in the appendix for each variable included in the analysis identifying the wave of the variable, the exact question wording, the original and the recoded (where applicable) response options.

RESEARCH QUESTIONS AND HYPOTHESES

The goal of this research is twofold, first to identify differences between runaways and non-runaways in terms of demographics and risk factors. The second goal is to understand the effects of running away from home as an adolescent on health, economic, and justice system outcomes in adulthood.

No research study that we are aware of uses a nationally representative sample to determine the impact of runaway behavior on long term outcomes. However, a number of studies have highlighted problems faced by adolescents before running, while on the run, and following adolescents up to 36 months after a runaway episode. These studies inform our hypotheses about possible long term impacts of running away from home.

HEALTH

Runaway youth do not have reliable access to health care and are at greater risk of some health problems than non-runaway youth. A survey of youth in shelters and on the street found that half of street youth and 36% of shelter youth had no regular source of health care. In addition, the study found that 25% of street youth and 18% of shelter youth reported having had serious health problems in the past 12 months (Klein et al., 2000). In a study by Yates et al, a convenience sample of 765 visitors to an outpatient clinic in 1985 was analyzed reveling that runaway youth are at greater risk of a number of medical problems and health-compromising behaviors including pneumonia, scabies, depression, prostitution, and drug use(Yates, MacKenzie, Pennbridge, & E. Cohen, 1988). **Therefore, we hypothesize that former runaways will be more likely to report lower general health and higher levels of health problems that limit their ability to do moderate activities than non-runaways.**

In terms of sexual health, a number of studies show that runaways engage in survival sex (J. Greene, Ennett, & Ringwalt, 1999) (J. Greene, Ringwalt, Kelley, Iachan, & Cohen, 1995). In addition, runaways report higher than average levels of pregnancy (J. M. Greene & Ringwalt, 1998). High rates of survival sex and pregnancy may indicate that runaways engage in more sexual activities with more sexual partners than non-runaways. Another study with a convenience sample found that runaways are six to twelve times more likely to become infected with HIV than non-runaways (Rotheram-Borus et al., 2003). **Therefore, we hypothesize that former runaways will have higher rates of sexually transmitted diseases (S.T.D.s) than non-runaways.**

A number of studies show that runaway youth have high rates of suicidal thoughts and suicide attempts. In a study by Yates et al, a convenience sample of 765 visitors to an outpatient clinic in 1985 was analyzed to show that suicide attempts by runaway youth were over four times higher than for non-runaway youth (Yates et al., 1988). An analysis of youth in shelters using data from the Runaway / Homeless Youth Management Information System found that 31% of youth in shelters have had suicidal thoughts (Thompson & Pollio, 2006). A number of additional studies have found that suicidal thoughts and suicide attempts are higher for runaways than non-runaways (E. Cohen, MacKenzie, et al., 1991), (Molnar et al., 1998). **Therefore, we hypothesize that former runaways will be more likely to report suicidal thoughts and suicide attempts than non-runaways.**

We are not aware of any studies that examine the correlation between runaway status and cigarette smoking later in life, however there are studies available that link runaway behavior with substance use in general. In a sample of youth in shelters and on the street, the likelihood of substance abuse was higher among runaway youth than non-runaway youth (J. Greene, Ringwalt, et al., 1995). Another study surveyed adolescents about their drug use and found a correlation between youth who had run away in the past twelve months and the use of alcohol, marijuana, and other illegal substances (*Substance Use Among Youths Who Had Run Away from Home*, 2004). **Therefore, we hypothesize that former runaways will be more likely to report alcohol use, marijuana use, and smoking cigarettes than non-runaways.**

ECONOMICS

An analysis of youth in federally funded shelters found that 20% of runaway youth, 20% of homeless youth under age 16, and 50% of homeless youth age 16 or older reported having dropped out of school, having been expelled, or having been suspended (*Homeless and Runaway Youth Receiving Services at Federally Funded Shelters*, 1989). Another study found that over one quarter of youth interviewed six months after their stay at a runaway

or homeless youth shelter exhibited serious problems in school enrollment. These problems include dropping out of school, being expelled or suspended, and being in jail, and thus, unable to attend school (*National Evaluation of Runaway and Homeless Youth*, 1997). In addition, seven percent of crisis callers to the National Runaway Switchboard in 2011 talked about problems with school (Benoit-Bryan, 2011). **Therefore, we hypothesize that former runaways will have lower education levels than non-runaways.**

There are no studies available that we are aware of that link personal income to runaway status. However, a study by the Federal Youth Services Bureau found that about 40% of youth in shelters and on the street were from families receiving public assistance compared to 22% of youth in the general population (J. Greene, Ringwalt, et al., 1995). Education level and income are correlated, and we expect lower levels of education for runaways than non-runaways. **Therefore, we hypothesize that former runaways will have lower levels of personal income and higher levels of household public assistance use than non-runaways.**

JUSTICE SYSTEM

Most studies that look at criminal behavior and runaways are concurrent; they examine reports of criminal behavior while the adolescent is on the street. The NISMART II study found that 11% of runaways engaged in criminal activities while on the run (Hammer et al., 2002). An analysis of youth in shelters found that almost 16% have committed misdemeanors (Thompson & Pollio, 2006). While a study conducted by the Federal Youth Services Bureau found that 2/3 of shelter youth and 4/5 of street youth had attempted or completed a theft (J. Greene, Ringwalt, et al., 1995). A longitudinal study using a sample of 360 from the National Survey of Child and Adolescent Well-Being found that delinquent behaviors were higher for former runaways than non-runaways (K. Tyler, Johnson, & Brownridge, 2008). We postulate that runaways have a higher rate of involvement in criminal activities than non-runaways and that this involvement may continue after the runaway episode ends. **Therefore, we hypothesize that arrest rates after the age of 18 will be higher for former runaways than non-runaways. In addition, we hypothesize that rates of crimes committed as an adult will be higher for former runaways than non-runaways.**

FINDINGS

DIFFERENCES BETWEEN RUNAWAYS AND NON-RUNAWAYS

The first section of analysis focuses on how individuals who ran away from home during adolescence differ from those who did not in terms of demographics and correlates of run away behavior. These findings show the degree of difference between runaways and non-runaways and identify how strong, statistically speaking, that relationship is without controlling for any variables.

DEMOGRAPHIC VARIABLES

The chi square analyses revealed a number of interesting differences between runaways and non-runaways in terms of gender, race, birthplace, and sexual orientation. There is a difference in runaway rates between adolescent girls and boys. Almost ten percent of girls ran away from home before they turned 18 while fewer than 7% of boys ran away. In order to report that males and females have different rates of runaway behavior, the analysis must be statistically significant ($p<.05$) indicating that there is only a five percent probability that these results would occur by chance. The significance level for this table is very strong $p<.001$, indicating that there is less than a 99.99% probability that these results would occur by chance. We also report the Phi level=.054 and the Pearson Chi Square level of 44.7, both of which are indicators of the magnitude of the difference in the variables and allowing comparisons of effect size with other tables (See Table 1 Below).

This finding is in line with a number of research studies. A study analyzing lifetime runaway prevalence using the 1997 National Longitudinal Survey of Youth found that girls were more likely to ever run way from home at over 20% than boys at 18% (Pergamit, 2010). An analysis of youth in shelters found that more girls ran away from home than boys (*Homeless and Runaway Youth Receiving Services at Federally Funded Shelters*, 1989).

Table 1: Differences in respondents by run away status and by gender in the United States

	Have you ever run away from home?		
What is your gender?		*No*	*Yes*
	Male	93.3% (5,546)	6.7% (397)
	Female	90.1% (6,378)	9.9% (699)
	TOTAL	91.6% (11,924)	8.4% (1,096)

Significance Level p<.001, Phi=.054, Pearson Chi-Square=44.7

Instead of choosing a single race, respondents answered yes or no to six separate race questions (Hispanic, Caucasian, African American, American Indian, Asian or Pacific Islander) allowing respondents to answer yes to as many races as they felt were appropriate in describing themselves. Therefore, the comparisons made in this table are between all respondents who self-identify as that race and all those who do not.

We found that there was no significant difference between Caucasian and non-Caucasian respondents in terms of run away rates, 8.4% of Caucasians ran away compared to 9.0% of non-Caucasians. African Americans were significantly *less likely* to run away (7.5%) than non-African Americans (8.2%). Hispanics, American Indians, and Asians were all more likely to run away than those who were not of those races. Almost 11% of Hispanic respondents had run away from home while 8.2% of non-Hispanic respondents had run away. American Indians had the largest difference in run away rates compared to non-American Indians with 12.9% of American Indians having run away compared to 8.4% of non-American Indians. There is also a strong difference in run away rates between Asian or Pacific Islanders (10.9%) and other races (8.4%) (See table 2 below).

Table 2: Differences in respondents by run away status and by race / ethnicity

	Have you ever run away from home?		
Are you of Hispanic origin?* **		*No*	*Yes*
	No	91.8% (11,629)	8.2% (1,039)
	Yes	89.2% (2,181)	10.8% (264)
Are you Caucasian?	*No*	91.0% (5,176)	9.0% (513)
	Yes	91.6% (8,650)	8.4% (790)
Are you African American?**	*No*	91.8% (10,672)	8.2% (1,048)
	Yes	92.5% (3,154)	7.5% (255)
Are you American Indian or Native American?* **	*No*	91.6% (13,353)	8.4% (1,233)
	Yes	87.1% (473)	12.9% (70)
Are you Asian or Pacific	*No*	91.6% (12,761)	8.4% (1173)

Islander?**	*Yes*	89.1% (1,065)	10.9% (130)

Significant Difference between runaways and non-runaways at **p<.01, ***p<.001

In addition to race, we looked at differences between individuals who were born in the United States and those who were born outside of the United States. Only 6.2% of individuals who were born outside of the United States ran away from home before turning 18, significantly less than the 9.6% of respondents who were born in the United States who ran away. Differences between runaways and non-runaways for the variable born in the United States are statistically significant at p<.001 with a Phi value of .053 and Pearson Chi Square of 42.5 (See table 3 below).

Table 3: Differences in respondents by run away status and by whether or not they were born in the United States

	Have you ever run away from home?		
Were you born in the United States?		*No*	*Yes*
	No	93.8% (4,006)	6.2% (267)
	Yes	90.4% (9,838)	9.6% (1,039)
	TOTAL	91.4% (13,844)	8.6% (1,306)

Significance Level p<.001, Phi=.053, Pearson Chi-Square=42.5

Run away rates vary significantly according to sexual orientation. The response scale for sexual orientation had five points including 100% heterosexual, mostly heterosexual, bisexual, mostly homosexual, and 100% homosexual. Individuals who described themselves as 100% heterosexual had the lowest run away rate at 7.6%. The highest run away rate was reported by bisexuals at 21.7%. The rate for individuals who self-identified as mostly heterosexual was also extremely high at 17.7%, followed by the rate for 100% homosexuals at 13%, individuals who report not being attracted to either sex at 11.8%, and mostly homosexuals at 11.5%. It is important to note that, unlike the other demographic variables which were all measured at wave one, sexual orientation was asked at wave three of the study (See table 4 below).

Table 4: Differences in respondents by run away status and by how they describe their sexual orientation at wave three of the study (respondents aged 18-26)

	Have you ever run away from home?		
How would you describe your sexual orientation?		*No*	*Yes*
	100% Heterosexual	92.4% (12,455)	7.6% (1,025)
	Mostly Heterosexual	82.3% (837)	17.7% (180)
	Bisexual	78.3% (191)	21.7% (53)
	Mostly Homosexual	88.5% (85)	11.5% (11)
	100% Homosexual	87.9% (114)	13.0% (17)
	Not Attracted to Either Sex	88.2% (67)	11.8% (9)
	TOTAL	91.4% (13,749)	8.6% (1,295)

Significance Level p<.001, Cramer's V=.110, Pearson Chi-Square=182.6

CORRELATES

We are also interested in correlates of run away behavior, the factors that are strongly associated with running away and may in fact be causes of the run away behavior. In this study we examine four run away behavior correlates including foster care history, and history of verbal, physical, and sexual abuse before the age of 18.

Youth who have been in foster care are over three times more likely to have run away from home than youth who have never lived in a foster home. Over 30% of respondents who have lived in a foster home ran away from home in comparison to just over 8% for respondents who have never lived in a foster home. This is a highly significant difference at p<.001 and is the strongest association among the chi-squares in this study with an extremely high Pearson Chi Square level of 228.6 and Phi of .123 (See table 5 below).

Table 5: Differences in respondents by run away status and by whether or not they have ever lived in a foster home

	Have you ever run away from home?		
Have you ever lived in a foster home?		*No*	*Yes*
	No	91.9% (13,607)	8.1% (1,197)
	Yes	69.3% (251)	30.7% (111)
	TOTAL	91.4% (13,858)	8.6% (1,308)

Significance Level P<.001, Phi=.123, Pearson Chi Square=228.6

Verbal abuse, physical abuse, and sexual abuse before the age of 18 are all correlated with higher run away rates. Over twice as many individuals who were verbally abused ran away from home at 11.7% than those who were not verbally abused at 5.3%. Almost three times as many respondents who were physically abused ran away from home at 17.4% compared to 6.3% of those who were not physically abused. Children who were sexually abused were over twice as likely to run away from home at 17% as those who were not sexually abused at 7.9%. Not surprisingly, abuse at home is correlated with higher run away rates (See table 6 below).

Table 6: Differences in respondents by run away status and by whether or not they were verbally, physically, or sexually abused before the age of 18

	Have you ever run away from home?		
BEFORE AGE 18…		*No*	*Yes*
Were you verbally abused?	*No*	94.7% (6,410)	5.3% (359)
	Yes	88.3% (5,364)	11.7% (711)
Were you physically abused?	*No*	93.7% (9,881)	6.3% (666)
	Yes	82.6% (1,923)	17.4% (405)
Were you sexually abused?	*No*	92.1% (11,273)	7.9% (966)
	Yes	83.0% (543)	17.0% (111)

Verbal Abuse Significance Level p<.001, Phi=.116, Pearson Chi-Square=171.7
Physical Abuse Significance Level p<.001, Phi=.154, Pearson Chi-Square=307.1
Sexual Abuse Significance Level p<.001, Phi=.072, Pearson Chi-Square=66.9

FOCUSING ON OUTCOME VARIABLES

The second section of analysis focuses on each outcome of interest with the goal of identifying how much of the difference between runaways and non-runaways is associated with the run away behavior. Multiple and logistic regressions are used for data analysis. Variables highlighted in a darker shade of green are significant at $p<.05$. Some notes on interpreting the information in the tables are below.

The significance level is an important statistic in both the logistic and multiple regression models. The significance level tells us how confident we can be that the results would not have happened by chance. Most scholarly literature accepts up to 5% likelihood that the results happened by chance (95% likelihood that the results did not happen by chance) as the cut-off for reporting statistical significance and that standard is applied in this article. In the regression models, variables that are statistically significant are highlighted in a darker shading to make their identification easier for the reader.

In the multiple regression models (general health rating, personal income, education level) the Beta (B) statistic is reported most often. The beta statistic tells us the difference in the dependent variable for every one unit change in the independent variable. For example, in table 7, a change from non-runaway status to runaway status is associated with a difference of 1/5 (.20) change in the level of general health reported.

The statistic most highlighted in the logistic regression models is exp(B). The exp(B) statistic is the change in the odds ratio associated with a 1 unit change in the predictor variable. A 100% increase in likelihood is equivalent to a two-fold increase in the odds of a condition or event.

The demographic and correlate variables include gender, race and ethnicity, age, sexual orientation, birthplace, foster care status, and abuse history. Respondents could choose as many racial or ethnic categories as they felt applied to them. The results show the correlation between all those who identify with the racial group and all those who do not for the independent variable in the model. This is also true for sexual orientation, bisexuals are compared to non-bisexuals and homosexuals are compared to non-homosexuals. A requirement of this model for non-binary categorical data is omission of one group as a reference group. The omitted racial group in this model is Caucasian. The omitted sexual orientation group in this model is heterosexual. These omitted groups become part of the larger reference group for the model.

HEALTH OUTCOMES

A number of health outcomes of run away behavior were examined including three measures of physical health, two measures of mental health, and three measures of substance use. For analysis of physical health, the measures used are a self-report of general health, a self-report of health limitations, and a rating of sexually transmitted disease history.

The first health measure we examined is a general health rating where the respondent is asked to rank their overall health on a five point scale. The multinomial regression model shows a significant correlation between former runaway status and lower self-reported health (.20 levels lower). The effect of being a former runaway was the largest effect among the variables in the model. Other significant predictors of general health include gender (women rate their health .07 levels lower than men) Hispanic ethnicity (.14 levels lower), African American race (.11 levels lower), Native American race (.19 levels lower), Asian race (.12 levels lower), verbal abuse history (.16 levels lower), physical abuse history (.08 levels lower), and sexual abuse history (.13 levels lower).

In addition to a general health rating, respondents were asked whether or not their health limits them in moderate activities (such as moving a table, pushing a vacuum cleaner, bowling, or playing golf). Just over 9% of the entire sample reported having problems with these moderate activities while 13.8% of former runaways reported physical health limits for moderate activities. The logistic regression model shows a significant relationship between health and run away status, confirming our hypothesis. Being a former run away is associated with a 44% increase in the odds of reporting health limits on moderate activities at wave four of the survey. In addition, there are a number of other significant predictors such as gender (being female increases odds by 67%), American Indian race (increases by 74%), verbal, physical, and sexual abuse (increases by 37%, 23%, and 44%, respectively) in predicting this health outcome (See table 8 below).

The third physical health indicator is a measure of whether or not the respondent has been diagnosed with a sexually transmitted disease in the past twelve months. There is a positive correlation between S.T.D. diagnosis rate in adulthood and runaway history. Former runaways are 53% more likely to have had a recent S.T.D. diagnosis than non-runaways. Other significant predictors included being female, African American race, being younger, being a homosexual, and a history of verbal abuse or physical abuse (see table 9 below).

Table 7: Multinomial regression model of respondents who have run away from home by their rating of their general health at wave four of the survey

General Health	Unstandardized Coefficients			Standard Coefficients	Sig.
	B	CI for B (95%)	Standard Error	Beta	
Ever Run away	.204	.132 to .276	.037	.058	.000
Gender (female)	.066	.029 to .103	.019	.036	.001
Hispanic	.135	.082 to .187	.027	.053	.000
African American	.112	.068 to .157	023	.052	.000
American Indian	.198	.097 to .299	.050	.039	.000
Asian	.122	.052 to .191	.036	.035	.001
Age	.007	-.004 to .018	.005	.013	.192
Bisexual Orientation	.056	-.083 to .196	.071	.008	.429
Homosexual Orientation	-.047	-.200 to .107	.078	-.006	.550
Born in the US	-.000	-.007 to .007	.004	.000	.980
Foster care	.017	-.104 to .138	.062	.003	.786
Verbal abuse before age 18	.155	.116 to .195	.020	.085	.000
Physical abuse before age 18	.079	.027 to .131	.027	.033	.003
Sexual abuse before age 18	.133	.047 to .219	.044	.032	.003
Constant	2.003	1.837 to 2.169	.085		.000

Table 8: Logistic regression model of respondents who have run away from home by whether or not their physical health limits their ability to do moderate activities at wave four of the survey

HEALTH LIMITS	Beta	Standard Error	Significance	Exp (B)	95% CI for Exp(B)
Ever Run away	.366	.124	.003	1.442	1.132 - 1.837
Gender (female)	.513	.080	.000	1.670	1.429 - 1.952
Hispanic	-.065	.109	.550	.937	.757 - 1.160
African American	.088	.087	.311	1.093	.920 - 1.297
American Indian	.554	.164	.001	1.740	1.261 - 2.401
Asian	-.201	.154	.191	.818	.605 - 13106
Age	.036	.022	.099	1.037	.993 - 1.082
Bisexual orientation	.303	.229	.186	1.354	.864 - 2.122
Homosexual orientation	-.668	.422	.114	.513	.224 - 1.174
Born in the US	.015	.015	.311	1.015	.986 - 1.045
Foster care	.239	.207	.248	1.270	.847 - 1.904
Verbal abuse before age 18	.317	.081	.000	1.372	1.171 - 1.609
Physical abuse before age 18	.209	.097	.031	1.372	1.019 - 1.490
Sexual abuse before age 18	.363	.140	.010	1.232	1.092 - 1.892
Constant	-3.522	.343	.000	1.437	

Table 9: Logistic regression model of respondents who have run away from home by whether or not they have had a doctor's diagnosis of a sexually transmitted disease in the past 12 months at wave four of the survey

Sexually Transmitted Disease	Beta	Standard Error	Significance	Exp (B)	95% CI for Exp(B)
Ever Run away	.423	.117	.000	1.527	1.213 – 1.923
Gender (female)	1.079	.083	.000	2.943	2.503 - 3.460
Hispanic	-.002	.106	.985	.998	.811 - 1.228
African American	.482	.078	.000	1.619	1.388 - 1.888
American Indian	-.078	.189	.681	.925	.638 - 1.341
Asian	-.204	.153	.184	.816	.604 - 1.101
Age	-.063	.021	.002	.938	.901 - .977
Bisexual orientation	.392	.211	.064	1.479	.978 - 2.239
Homosexual orientation	.659	.260	.011	1.932	1.160 - 3.218
Born in the US	.010	.014	.455	1.011	.983 - 1.039
Foster care	-.394	.245	.107	.674	.417 - 1.089
Verbal abuse before age 18	.166	.077	.031	1.181	1.016 - 1.373
Physical abuse before age 18	.351	.093	.000	1.420	1.184 - 1.704
Sexual abuse before age 18	.104	.140	.458	1.110	.843 - 1.461
Constant	-2.309	.323	.000	.099	

Mental health outcomes are also important; we measure mental health outcomes through recent suicidal thoughts and suicide attempts. As predicted by our hypotheses, both suicidal thoughts and suicide attempts over the past twelve months are higher for former runaways than for the entire sample. Twelve percent of the former runaways had thought about suicide in the past twelve months compared to only 6.6% of the entire sample. Four percent of former runaways had actually attempted suicide in the past twelve months compared to 1.4% of all respondents.

The logistic regression model for suicide attempts shows a very strong correlation between run away behavior and rate of suicide attempt with former runaways having almost four times higher odds (3.85) of having attempted suicide than adults who have never run away from home. The only other significant predictor of suicide attempts is verbal abuse before the age of 18 which increases the odds by over twofold (See table 10 below).

The effect of former run away status on suicidal thoughts is not as pronounced as it is for suicide attempts, but is still a significant predictor with former runaways being 51% more likely to report having suicidal thoughts than non-runaways. The only other significant predictors for suicidal thoughts are bisexual orientation (73% higher), homosexual orientation (169% higher), verbal, physical, and sexual abuse before age 18 (142%, 47%, and 70% higher, respectively) (See table 11 below).

Table 10: Logistic regression model of respondents who have run away from home by whether or not they have attempted suicide in the past 12 months at wave four of the survey

SUICIDE ATTEMPTS	Beta	Standard Error	Significance	Exp (B)	95% CI for Exp(B)
Ever Run away	1.347	.243	.000	3.846	2.388 - 6.193
Gender (female)	.275	.216	.204	1.316	.862 - 2.009
Hispanic	.080	.266	.763	1.084	.644 - 1.824
African American	-.264	.257	.305	.765	.464 - 1.271
American Indian	.537	.404	.184	1.711	.775 - 3.779
Asian	-1.124	.593	.058	.325	.102 - 1.039
Age	.027	.059	.652	1.027	.915 - 1.153
Bisexual orientation	.754	.446	.091	2.125	.887 - 5.093
Homosexual orientation	.713	.602	.236	2.040	.627 - 6.631
Born in the US	-.024	.044	.575	.976	.896 - 1.063
Foster care	-.860	.730	.239	.423	.101 - 1.769
Verbal abuse before age 18	.720	.227	.002	2.055	1.317 - 3.206
Physical abuse before age 18	-.202	.256	.428	.817	.495 - 1.348
Sexual abuse before age 18	.591	.320	.065	1.805	.964 - 3.381
Constant	-5.568	.929	.000	.004	

Table 11: Logistic regression model of respondents who have run away from home by whether or not they have thought about suicide in the past 12 months at wave four of the survey

SUICIDE THOUGHTS	Beta	Standard Error	Significance	Exp (B)	95% CI for Exp(B)
Ever Run away	.410	.135	.002	1.507	1.158 - 1.963
Gender (female)	.167	.090	.064	1.182	.990 - 1.411
Hispanic	-.211	.129	.103	.810	.629 - 1.044
African American	-.156	.107	.144	.855	.694 - 1.055
American Indian	.261	.205	.203	1.299	.868 - 1.943
Asian	-.212	.172	.218	.809	.578 - 1.133
Age	-.036	.025	.151	.964	.917 - 1.013
Bisexual orientation	.547	.237	.021	1.728	1.086 - 2.751
Homosexual orientation	.989	.250	.000	2.688	1.648 - 4.384
Born in the US	-.007	.018	.707	.993	.959 - 1.029
Foster care	.007	.243	.976	1.007	.626 - 1.620
Verbal abuse before age 18	.882	.100	.000	2.416	1.985 - 2.940
Physical abuse before age 18	.382	.102	.000	1.466	1.199 - 1.791
Sexual abuse before age 18	.528	.146	.000	1.696	1.274 - 2.259
Constant	-2.879	.395	.000	.056	

We also examined the health outcomes of drug use including alcohol use, marijuana use, and smoking cigarettes. All of the drug use questions asked respondents how many times they had used the drug in the past 30 days, which was then recoded as used (1) or not used (0). Our hypothesis of higher rates of drug use among former runaways was confirmed for cigarette use. The smoking rate for the average respondent was 35.0% while 55.4% of former runaways reported smoking the last 30 days. In the logistic regression model, run away history had the largest impact of all the variables on cigarette smoking, increasing the odds by 2.44. Almost all of the variables in this model were significant predictors with the exceptions of homosexual orientation and whether or not the respondent was born in the United States (See table 12 below).

Contrary to our hypothesis, alcohol use was not related in a statistically significant way to former runaway status. One possible explanation for this finding is that there is no difference between whether or not the respondent drinks but there may be a difference in the frequency or amount drunk by runaway status. Or it is possible that drinking amounts vary in adolescence due to runaway status (*Substance Use Among Youths Who Had Run Away from Home*, 2004) but that difference disappears over time.

The likelihood of using marijuana as an adult is 67% higher for former runaways than adults who never ran away from home, supporting our hypothesis about drug use (see table 13). Marijuana use is also significantly correlated with being male (46% increase), being Hispanic (77% decrease), being American Indian (59% increase), being Asian (60% decrease), age (9% decrease for every year older), bisexual orientation (127% increase), homosexual orientation (56% increase), verbal abuse history (15% increase), and physical abuse history (36% increase).

Table 12: Logistic regression model of respondents who have run away from home by whether or not they smoke cigarettes at wave four of the survey

CIGARETTE SMOKER	Beta	Standard Error	Significance	Exp (B)	95% CI for Exp(B)
Ever Run away	.891	.084	.000	2.438	2.067 - 2.876
Gender (female)	-.514	.046	.000	.598	.547 - .655
Hispanic	-.506	.068	.000	.603	.528 - .689
African American	-.514	.057	.000	.598	.535 - .669
American Indian	.276	.122	.024	1.318	1.037 - 1.675
Asian	-.515	.090	.000	.598	.501 - .714
Age	-.048	.013	.000	.953	.928 - .978
Bisexual orientation	.420	.166	.011	1.521	1.100 - 2.105
Homosexual orientation	.270	.181	.137	1.310	.918 - 1.869
Born in the US	.001	.009	.882	1.001	.984 - 1.019
Foster care	.381	.144	.008	1.463	1.104 - 1.941
Verbal abuse before age 18	.185	.049	.000	1.203	1.092 - 1.324
Physical abuse before age 18	.220	.063	.000	1.247	1.102 - 1.410
Sexual abuse before age 18	.212	.105	.043	1.237	1.007 - 1.518
Constant	.282	.205	.169	1.326	

Table 13: Logistic regression model of respondents who have run away from home by whether or not they use marijuana at wave four of the survey

MARIJUANA USE	Beta	Standard Error	Significance	Exp (B)	95% CI for Exp(B)
Ever Run away	.511	.101	.000	1.668	1.369 - 2.031
Gender (female)	-.772	.060	.000	.462	.410 - .520
Hispanic	-.268	.090	.003	.765	.642 - .913
African American	.113	.069	.105	1.119	.977 - 1.283
American Indian	.462	.143	.001	1.586	1.200 - 2.098
Asian	-.507	.129	.000	.602	.468 - .775
Age	-.085	.017	.000	.918	.888 - .950
Bisexual orientation	.822	.182	.000	2.274	1.591 - 3.251
Homosexual orientation	.442	.209	.035	1.556	1.033 - 2.345
Born in the US	.013	.012	.273	1.013	.990 - 1.036
Foster care	.187	.175	.286	1.206	.855 - 1.701
Verbal abuse before age 18	.142	.064	.027	1.153	1.016 - 1.307
Physical abuse before age 18	.305	.078	.000	1.356	1.164 - 1.581
Sexual abuse before age 18	.230	.130	.077	1.258	.975 - 1.623
Constant	-.281	.263	.286	.755	

ECONOMIC OUTCOMES

Running away from home as an adolescent is correlated with a number of important economic outcomes such as education level, income level, and the use of public assistance. For education level, we first examined whether or not the respondent had a minimal level of schooling completed, a high school diploma or GED, at the fourth wave of the study. For the entire sample, only 6.2% of respondents did not have this minimal education level, however for the run away sample 12.0% of respondents did not have a high school diploma or GED. In the logistic regression model there are a number of significant predictors of completion of this basic education level including run away status, gender, Hispanic, African American race, Asian race, age, whether the respondent was born in the United States, foster care history, physical and sexual abuse as a child. Being a former run away is associated with a 50% decrease in the odds of having a high school diploma or a GED at wave four of the survey (See table 14 below).

Table 14: Logistic regression model of respondents who have run away from home by whether or not they have a high school diploma or a GED at wave four of the survey

HIGH SCHOOL GRADUATION STATUS	Beta	Standard Error	Significance	Exp (B)	95% CI for Exp(B)
Ever Run away	-.690	.150	.000	.502	.374 - .673
Gender (female)	.421	.102	.000	1.523	1.247 - 1.861
Hispanic	-.458	.130	.000	.633	.490 - .817
African American	-.441	.114	.000	.643	.514 - .805
American Indian	-.352	.223	.115	.703	.454 - 1.090
Asian	.759	.270	.005	2.135	1.259 - 3.623
Age	.066	.029	.024	1.068	1.009 - 1.131
Bisexual orientation	-.554	.292	.058	.575	.324 - 1.018
Homosexual orientation	.641	.514	.212	1.899	.693 - 5.204
Born in the US	.077	.023	.001	1.080	1.032 - 1.130
Foster care	-.794	.225	.000	.452	.291 - .702
Verbal abuse before age 18	.095	.112	.395	1.100	.883 - 1.370
Physical abuse before age 18	-.358	.130	.006	.699	.542 - .902
Sexual abuse before age 18	-.491	.189	.009	.612	.423 - .886
Constant	2.018	.449	.000	7.526	

Identifying gaps between particular groups in having a minimal level of education is helpful, but we are also interested in gaps in average education level. At wave four, respondents were asked to identify the highest level of education they had completed thus far. The average level of completed education for all respondents was 6 (some college), while the average education level of former runaways was 5 (completed vocational / technical training). Chart 1 below shows the percent of runaways and non-runaways in who have completed each level of education. Runaways are more likely than non-runaways to fall in to every education level between the bottom and some college while non-runaways are more likely than runaways to fall in to every category from completed college to the highest education level. The education levels along with their frequencies for the entire sample and for former runaways specifically are in table 15 below.

Chart 1 – A comparison of completed education levels for runaways and non-runaways at wave four

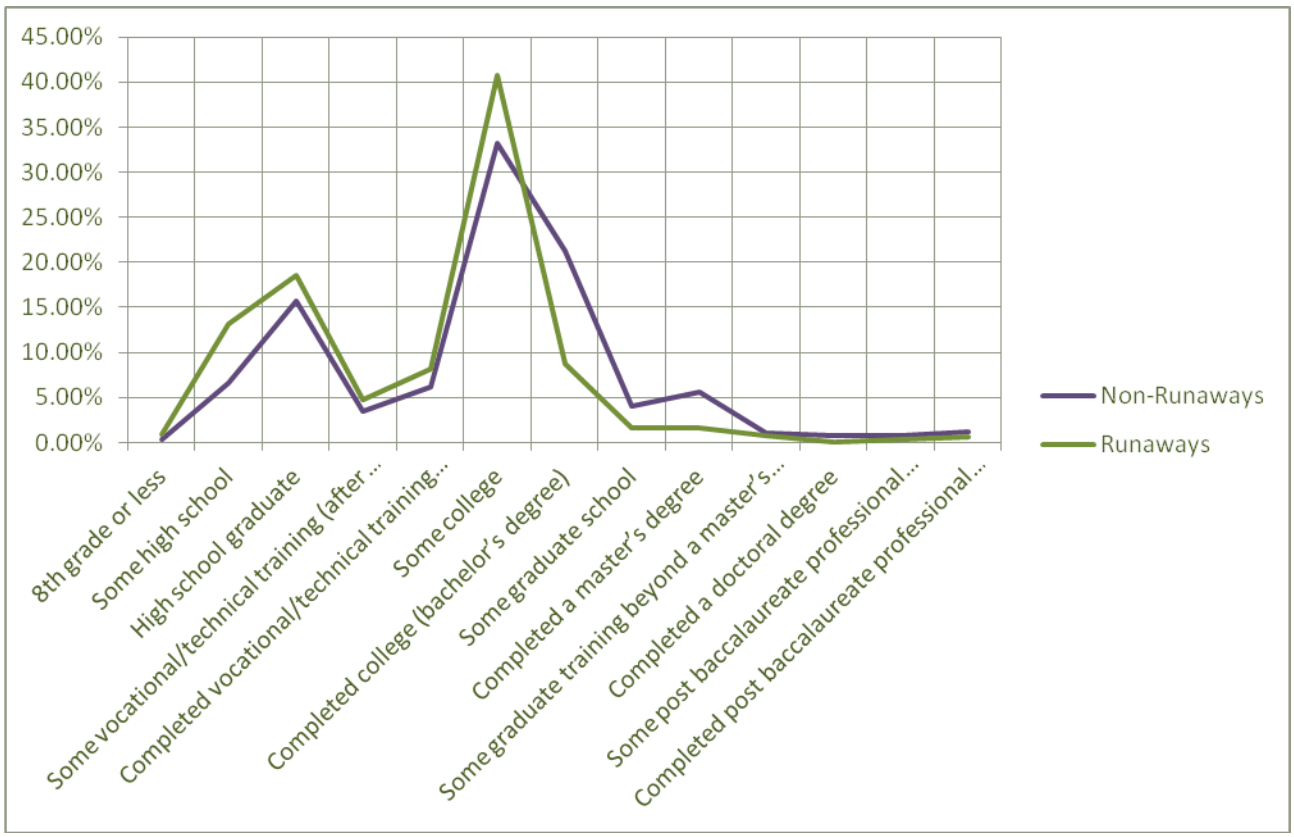

Table 15: Highest education level completed for former runaways and adults who never ran away from home at wave four

Code	Frequency for non-Runaways	Frequency for Former Runaways	Highest Education Level Completed at Wave four
1	0.3%	0.9%	8th grade or less
2	6.6%	13.2%	Some high school
3	15.7%	18.5%	High school graduate
4	3.4%	4.7%	Some vocational/technical training (after high school)
5	6.2%	8.2%	Completed vocational/technical training (after high school)
6	33.2%	40.8%	Some college
7	21.2%	8.7%	Completed college (bachelor's degree)
8	4.0%	1.6%	Some graduate school
9	5.6%	1.6%	Completed a master's degree
10	1.0%	0.7%	Some graduate training beyond a master's degree
11	0.8%	0.1%	Completed a doctoral degree
12	0.8%	0.4%	Some post baccalaureate professional education (e.g., law school, med school, nurse)
13	1.2%	0.6%	Completed post baccalaureate professional education (e.g., law school, med school, nurse)

Because education level is a not a yes/no dichotomous variable, we used multiple linear regression for this analysis. Run away status is an extremely strong predictor, the strongest in this model, of education level, with runaways having .765 less levels of education than adults who never ran away from home. A number of other variables in the model were significantly predictive of education level including gender (females have .521 more levels of education than males), Hispanic (.349 fewer levels), African American (.190 fewer levels), American Indian (.501 fewer levels), Asian (.678 more levels), homosexual orientation (.373 more levels), born in the US (.048 more levels), foster care history (.585 fewer levels), and history of sexual abuse (.354 fewer levels) (See table 16 below).

Table 16: Multiple Linear regression model of respondents who have run away from home by level of education completed at wave four of the survey

HIGHEST DEGREE COMPLETED	**Unstandardized Coefficients**			**Standard Coefficients**	**Sig.**
	B	CI for B (95%)	Standard Error	Beta	
Ever Run away	-.765	-.935 to -.596	.087	-.091	.000
Gender (female)	.521	.433 to .608	.045	.119	.000
Hispanic	-.349	-.473 to -.224	.064	-.057	.000
African American	-.190	-.295 to -.085	.054	-.037	.000
American Indian	-.501	-.740 to -.263	.122	-.042	.000
Asian	.678	.513 to .844	.084	.083	.000
Age	-.004	-.029 to .021	.013	-.003	.754
Bisexual Orientation	-.292	-.623 to .038	.169	-.018	.083
Homosexual Orientation	.373	.010 to .736	.185	.020	.044
Born in the US	.048	.031 to .066	.009	.056	.000
Foster care	-.585	-.872 to -.298	.146	-.041	.000
Verbal abuse before age 18	-.031	-.124 to .063	.048	-.007	.520
Physical abuse before age 18	-.078	-.202 to .045	.063	-.014	.015
Sexual abuse before age 18	-.354	-.559 to -.150	.104	-.035	.001
Constant	5.748	5.355 to 6.141	.201		.000

We examined the effects of run away history on income in two ways: first, we looked at personal income level assessed at wave four of the survey, and second, we analyzed whether or not any member of the respondent's household has been on public assistance,

welfare, or food stamps in the past five years. The average level of personal income across all respondents was $35,215, while the personal income level of former runaways was $28,686. Because personal income level is a continuous variable, we used multiple linear regression for this model. We found that at wave four of the survey, former runaways made $8,823 less than adults who had never run away from home. Of the variables entered in the model, running away had the third largest effect size (beta=-.048) after gender (females make $11,690 less, beta=-.122) and age (with each additional year of age income rises $1,731, beta=.062). Other significant variables in the model include African American race (lowers income $4,557), Asian race (raises income $6,363), verbal, physical, and sexual abuse before age 18 (lowers income $2,122, raises income $2,888, and lowers income $6,833, respectively) (See table 17 below).

Table 17: Multiple Linear regression model of respondents who have run away from home by personal income level at wave four of the survey

Personal Income Level	**Unstandardized Coefficients**			**Standard Coefficients**	**Sig.**
	B	CI for B (95%)	Standard Error	Beta	
Ever Run away	-8823	-12655 to -4991	1955	-.048	.000
Gender (female)	-11690	-13672 to -9708	1011	-.122	.000
Hispanic	1194	-1606 to 3995	1429	.009	.403
African American	-4557	-6954 to -2161	1223	-.040	.000
American Indian	-2621	-8066 to 2824	2778	-.010	.345
Asian	6363	2646 to 10080	1896	.035	.001
Age	1731	1159 to 2304	292	.062	.000
Bisexual Orientation	-5792	-13371 to 1786	3866	-.016	.134
Homosexual Orientation	-4855	-12985 to 3275	4147	-.012	.242
Born in the US	194	-197 to 584	199	.010	.331
Foster care	-2162	-8653 to 4328	3311	-.007	.514
Verbal abuse before age 18	-2122	-4234 to -10	1077	-.022	.049
Physical abuse before age 18	2888	105 to 5671	1420	.023	.042
Sexual abuse before age 18	-6833	-11431 to -2236	2345	-.031	.004
Constant	18484	-603 to 27367	4531		.000

We also analyzed the association between run away history and whether or not anyone in the subject's household has received public assistance, welfare, or food stamps in the past five years, measured at wave four of the survey. A greater percent of former runaways have had a member of their household use some form of public assistance (35%) than the average for all survey participants (22%).

When entered in to a logistic regression model, being a former run away was associated with a 76% increase in the odds of a household member using some kind of public assistance in the past five years. Other significant predictors of the use of public assistance by household members included gender (being female increased the odds by 81%), being Hispanic (decrease of 18%), being African American (increase of 101%), being Asian (decrease of 53%), homosexual orientation (decrease of 62%), being born in the United States (decrease of 3%), having been in foster care as a child (increase of 91%), and having been verbally, physically, or sexually abused before the age of 18 (respective increases of 21%, 32%, and 68%) (See table 18 below).

Table 18: Logistic regression model of respondents who have run away from home by whether or not anyone in their household has received public assistance, welfare, or food stamps in the past five years at wave four of the survey

PUBLIC ASSISTANCE	Beta	Standard Error	Significance	Exp (B)	95% CI for Exp(B)
Ever Run away	.566	.092	.000	1.762	1.472 - 2.109
Gender (female)	.595	.056	.000	1.812	1.624 - 2.022
Hispanic	-.198	.082	.015	.821	.699 - .963
African American	.698	.059	.000	2.010	1.792 - 2.255
American Indian	.248	.134	.064	1.281	.986 - 1.665
Asian	-.749	.130	.000	.473	.366 - .610
Age	-.022	.016	.161	.978	.949 - 1.009
Bisexual orientation	.239	.179	.184	1.269	.893 - 1.804
Homosexual orientation	-.948	.312	.002	.388	.210 - .715
Born in the US	-.028	.011	.012	.973	.952 - .994
Foster care	.646	.150	.000	1.909	1.424 - 2.559
Verbal abuse before age 18	.191	.057	.001	1.210	1.081 - 1.355
Physical abuse before age 18	.274	.071	.000	1.316	1.144 - 1.514
Sexual abuse before age 18	.521	.106	.000	1.684	1.367 - 2.075
Constant	-1.682	.241	.000	.186	

JUSTICE SYSTEM OUTCOMES

Crime and incarceration rates are important outcomes both for individuals and for society as a whole. An important strength of this dataset which is unique among datasets is the researchers were able to conduct prison interviews. Many longitudinal studies do not interview prisoners because of the paperwork and protocols required to access special populations, this can skew results about justice system outcomes if a very important group – incarcerated criminals – is not included in the study.

This analysis examines three indicators of crime and juvenile justice outcomes. The first measure is whether or not the respondent has been arrested after age 18. We are particularly interested in arrests after age 18 instead of lifetime arrests because we need the cause and the consequence to occur at separate times with no overlap. The percent of respondents who have been arrested after age 18 for former runaways is 25.4% while the arrest rate for non-runaways is 11.7%. The logistic regression model shows that run away history is a very strong predictor, the strongest in this model, with former runaways having odds 2.72 times higher of having been arrested after age 18 than adults who never ran away from home. Other significant predictors in this model are gender (being female decreases the odds of arrest by 83%), African American (increases by 54%), Asian (decreases by 37%), verbal and physical abuse history (increases by 26% and 54%, respectively) (See table 19 below).

We also analyzed the association between runaway status and a number of self-reported criminal activities from the past twelve months including selling drugs, damaging private property, stealing, buying, holding, or selling stolen property, committing financial fraud, and shooting or stabbing someone.

There was no association between running away as an adolescent and committing a crime as an adult for damaging private property, stealing, buying, holding, or selling stolen property, committing financial fraud, and shooting or stabbing someone. However, for the crime of selling illegal drugs there was a positive association found with former runaways being 99% higher odds of selling drugs than adults who never ran away from home (see table 20). A possible explanation for this association is that when youth run away from home they are more likely to come in to contact with the drug culture (evidenced by higher rates of drug use by former runaways). Contact with sellers of illegal drugs through drug dependency may increase an individual's likelihood of selling illegal drugs as an adult.

Other significant predictors of selling drugs include being female (75% decrease in likelihood), being Hispanic (7% decrease), being African American (30% increase), being older (11% less likely for each additional year of age), bisexual orientation (105% increase for each unit), verbal abuse (44% increase), physical abuse (41% increase), and sexual abuse (70% increase).

Table 19: Logistic regression model of respondents who have run away from home by whether or not they have been arrested after age 18

ARRESTED	Beta	Standard Error	Significance	Exp (B)	95% CI for Exp(B)
Ever Run away	1.002	.109	.000	2.723	2.199 - 3.371
Gender (female)	-1.755	.079	.000	.173	.148 - .202
Hispanic	-.074	.100	.459	.929	.764 - 1.129
African American	.435	.078	.000	1.545	1.325 - 1.801
American Indian	.267	.175	.126	1.306	.928 - 1.839
Asian	-.995	.174	.000	.370	.263 - .520
Age	-.022	.020	.276	.979	.941 - 1.017
Bisexual orientation	.275	.255	.281	1.317	.799 - 2.170
Homosexual orientation	-.336	.279	.227	.714	.414 - 1.233
Born in the US	-.022	.014	.113	.978	.951 - 1.005
Foster care	.335	.194	.085	1.398	.955 - 2.045
Verbal abuse before age 18	.228	.075	.002	1.256	1.085 - 1.455
Physical abuse before age 18	.431	.088	.000	1.538	1.295 - 1.826
Sexual abuse before age 18	.248	.158	.116	1.252	.940 - 1.747
Constant	-1.326	.306	.000	.266	

Table 20: Logistic regression model of respondents who have run away from home by whether or not they have sold drugs in the past 12 months

SOLD DRUGS	Beta	Standard Error	Significance	Exp (B)	95% CI for Exp(B)
Ever Run away	.689	.166	.000	1.992	1.438 - 2.761
Gender (female)	-1.402	.125	.000	.246	.193 - .314
Hispanic	-.062	.164	.704	.940	.682 - 1.295
African American	.262	.128	.041	1.300	1.011 - 1.671
American Indian	.202	.277	.466	1.224	.712 - 2.104
Asian	-.187	.221	.399	.830	.538 - 1.280
Age	-.120	.032	.000	.887	.833 - .945
Bisexual orientation	.718	.328	.028	2.049	1.079 - 3.894
Homosexual orientation	.162	.377	.668	1.175	.562 - 2.460
Born in the US	-.006	.022	.790	994	.951 - 1.039
Foster care	.210	.302	.487	1.234	.682 - 2.231
Verbal abuse before age 18	.363	.122	.003	1.437	1.132 - 1.824
Physical abuse before age 18	.344	.137	.012	1.411	1.079 - 1.845
Sexual abuse before age 18	.532	.218	.015	1.703	1.111 - 2.611
Constant	-1.304	.488	.008	.271	

CONCLUSIONS

Running away from home as an adolescent has significant effects on future health, economic, and justice system outcomes. In terms of health impacts, running away from home as an adolescent increases the odds of an individual being a smoker, using marijuana, having suicidal thoughts, attempting suicide, rating their general health lower, having a diagnosis of an S.T.D., and having health issues that prevent them from doing moderate activities. The odds of having attempted suicide in the past twelve months are over three times higher for former runaways than non-runaways. Running away from home as an adolescent increases the odds of having suicidal thoughts as an adult by 51% compared to non-runaways. Former runaways are 44% more likely to have health issues that prevent them from doing moderate activities than non-runaways. Former runaways are also 2.4 times more likely to be a smoker as an adult compared to non-runaways. There was no

correlation found between former runaway status and whether or not the respondent drinks alcohol as an adult. Adults who ran away from home as adolescents rate their health .2 levels lower on a five point scale than those who never ran away from home. Finally, former runaways have 53% higher odds of being diagnosed with an S.T.D. as an adult than non-runaways.

Economic and justice system impacts of running away as an adolescent are also significant. The annual personal income level of adults who ran away from home as adolescents is $8,823 lower on average compared to adults who never ran away from home. In addition, the odds of having someone in your household who is a recipient of AFDC, public assistance, or welfare are 76% higher for adults who ran away as an adolescent compared to individuals who never ran away from home. Education outcomes are significantly related to runaway status with non-runaways being 50% more likely to have a high school degree or GED at wave four of the study than former runaways. Adults who ran away from home as adolescents also have lower education levels on average than adults who never ran away from home. The average former runaway has completed a vocational or technical degree while the average non-runaway has completed some college. Respondents who ran away as adolescents are over two and a half times more likely to have been arrested after age 18 than respondents who never ran away from home. However, there was no association found between almost all of the criminal behaviors and running away (with the exception of selling drugs).

This report raises a number of alarm bells about the extreme consequences running away has on adult outcomes. Given the significant effects running away has on important outcomes in adulthood, additional research in to the causes of running away behavior in order to inform prevention efforts is needed. In addition, further research in to the factors that could moderate the impact of running away on outcomes in adulthood such as neighborhood quality, peer networks, school quality, and family networks is recommended. Further research should be used to guide policy makers to the most effective points of intervention to prevent or moderate the immediate and long term impacts of running away from home.

REFERENCES

Benoit-Bryan, J. (2011). *National Runaway Switchborad Crisis Caller Trends*. National Runaway Switchboard.

Cohen, E., MacKenzie, R., & Yates, G. L. (1991). Headss, a Psychosocial Risk Assessment Instrument: Implications for Designing Effective Intervention Programs for Runaway Youth. *Journal of Adolescent Health*, *12*, 539-544.

Cook, R. (1991). *A National Evaluation of Title IV-E Foster Care Independent Living Programs for Youth. Phase 2 Final Report* (No. 105-87-1608). Washington DC: Administration for Children, Youth, and Families (DHHS).

General Accounting Office. (1989). *Homeless and Runaway Youth Receiving Services at Federally Funded Shelters* (No. GAO/HRD 90-45). Washington DC.

Greene, J. M., & Ringwalt, C. D. (1998). Pregnancy Among Three National Samples of Runaway and Homeless Youth. *Journal of Adolescent Health*, *23*(6), 370-377.

Greene, J., Ennett, S., & Ringwalt, C. (1999). Prevalence and Correlates of Survival Sex Among Runaway and Homeless Youth. *American Journal of Public Health*, *89*(9), 1406-1409.

Greene, J., Ringwalt, C., Kelley, J., Iachan, R., & Cohen, Z. (1995). *Youth with Runaway, Throwaway, and Homeless Experiences... Prevalence, Drug Use, and Other At-Risk Behaviors.* Administration for Children and Families. Youth Services Bureau.

Hammer, H., Finkelhor, D., & Sedlak, A. (2002). *Runaway / Thrownaway Children: National Estimates and Characteristics*. National Incidence Studies of Missing, Abducted,

Runaway, and Thrownaway Children. Office of Juvenile Justice and Delinquency Prevention.

Klein, J. D., Hall Woods, A., Wilson, K. M., Prospero, M., Greene, J., & Ringwalt, C. (2000). Homeless and Runaway Youths' Access to Health Care. *Journal of Adolescent Health*, *27*(5), 331-339.

Molnar, B. E., Shade, S. B., Kral, A. H., Booth, R. E., & Watters, J. K. (1998). Suicidal Behavior and Sexual / Physical Abuse Among Street Youth. *Child Abuse & Neglect*, *22*(3), 213-222.

Mullan Harris, K. (2005). *Design Features of Add Health*.

Office of Applied Studies, Substance Abuse and Mental Health Services Administration. (2004). *Substance Use Among Youths Who Had Run Away from Home*. National Survey on Drug Use and Health.

Pergamit, M. (2010). *On the Lifetime Prevalence of Running Away from Home*. The Urban Institute.

Pergamit, M., & Ernst, M. (2010). *Runaway Youth's Knowledge and Access of Services*. The Urban Institute.

Powers, J. L., Eckenrode, J., & Jaklitsch, B. (1990). Maltreatment Among Runaway and Homeless Youth. *Child Abuse & Neglect*, *14*, 87-98.

Rotheram-Borus, M. J., Song, J., Gwadz, M., Lee, M., Van Rossem, R., & Koopman, C. (2003). Reductions in HIV Risk Among Runaway Youth. *Prevention Science*, *4*(3).

Thompson, S. J., & Pollio, D. E. (2006). Adolescent Runaway Episodes: Application of an Estrangement Model of Recidivism. *Social Work Research*, *30*(4).

Tyler, K. A., & Cauce, A. M. (2002). Perpetrators of Early Physical and Sexual Abuse Among Homeless and Runaway Adolescents. *Child Abuse & Neglect*, *26*(12), 1261-1274.

Tyler, K., Johnson, K., & Brownridge, D. (2008). A Longitudinal Study of the Effects of Child Maltreatment on Later Outcomes among High-risk Adolescents. *Journal of Youth Adolescence*, *37*, 506-521.

Westat, Inc. (1997). *National Evaluation of Runaway and Homeless Youth*. Washington DC: U.S. Department of Health and Human Services, Administration on Children, Youth and Families.

Yates, G. L., MacKenzie, R., Pennbridge, J., & Cohen, E. (1988). A Risk Profile Comparison of Runaway and Non-Runaway Youth. *American Journal of Public Health*, *78*, 820-821.

APPENDIX

Variable	Wave	Measure	Original Response Options	Recoded Response Options
Runaway	III	Have you ever run away from home?	Yes No	
Gender	I	Completed by interviewer – interviewer was instructed to ask the respondent if necessary	Male Female	
Age	I	What is your birth date?	Month Year	
Hispanic	I	Are you of Hispanic or Latino origin?	Yes No	
African American	I	What is your race? You may give more than one answer. African American?	Yes No	
American Indian	I	What is your race? You may give more than one answer. American Indian or Native American?	Yes No	
Asian	I	What is your race? You may give more than one answer. Asian or Pacific Islander?	Yes No	
Bisexual Orientation **Homosexual Orientation**	III	Please choose the description that best fits how you think about yourself.	1= 100% heterosexual 2 = Mostly heterosexual 3 = Bisexual 4 = Mostly homosexual 5 = 100% homosexual	Recoded as two binary variables: Bisexual (3) or not and Homosexual (4 or 5) or not
Born in the US	I	Were you born in the United States?	Yes No	
Foster	III	Did you ever live in a foster home?	Yes No	

Variable	Wave	Measure	Original Response Options	Recoded Response Options
Sexual Abuse	IV	How often did a parent or other adult caregiver touch you in a sexual way, force you to touch him or her in a sexual way, or force you to have sexual relations?	1-1000 0	Yes No
Physical Abuse	IV	Before your 18th birthday, how often did a parent or adult caregiver hit you with a fist, kick you, or throw you down on the floor, into a wall, or down stairs?	1-1000 0	Yes No
Verbal Abuse	IV	Before your 18th birthday, how often did a parent or other adult caregiver say things that really hurt your feelings or made you feel like you were not wanted or loved?	1-1000 0	Yes No
Health Limits	IV	How much does your health now limit you in these activities: moderate activities, such as moving a table, pushing a vacuum cleaner, bowling, playing golf?	Limited a little Limited a lot Not limited	Yes Yes No
Suicidal Thoughts	IV	During the past 12 months, have you ever seriously thought about committing suicide?	Yes No	
Suicide Attempts	IV	During the past 12 months, how many times have you actually attempted suicide?	1-100 0	Yes No
Cigarette smoking	IV	During the past 30 days on how many days did you smoke a cigarette?	1-30 0	Yes No
Alcohol Use	IV	During the past 30 days on how many days did you drink alcohol?	1-30 0	Yes No
Marijuana Use	IV	During the past 30 days on how many days did you use marijuana?	1-30 0	Yes No

Variable	Wave	Measure	Original Response Options	Recoded Response Options
High School Diploma/GED	IV	What is your high school graduation status?	1-Finished High School with a diploma 2 – Earned a GED 3 – Earned a Certificate of Attendance 4 – Did not earn any of the above	Yes Yes Yes No
Personal Income	IV	Now think about your personal earnings. In {2006/2007/2008}, how much income did you receive from personal earnings before taxes—that is, wages or salaries, including tips, bonuses, and overtime pay, and income from self-employment?	Continuous variable	
Public Assistance	IV	Between {1995/2002} and {2006/2007/2008}, did you or others in your household receive any public assistance, welfare payments, or food stamps?	Yes No	
Arrests after age 18	IV	How many times have you been arrested since your 18th Birthday?	1-1000 0	Yes No
Selling drugs	IV	In the past 12 months, how often did you sell marijuana or other drugs?	0-Never 1-Once or Twice 2 – Three or Four Times 3 – Five or More Times	No Yes Yes Yes
Damaging private property	IV	In the past 12 months, how often did you deliberately damage property that did not belong to you?	0-Never 1-Once or Twice 2 – Three or Four Times 3 – Five or More Times	No Yes Yes Yes

Variable	Wave	Measure	Original Response Options	Recoded Response Options
Stealing	IV	In the past 12 months, how often did you steal something worth more than 50 dollars? In the past 12 months, how often did you steal something worth less than 50 dollars?	0-Never 1-Once or Twice 2 – Three or Four Times 3 – Five or More Times	No Yes Yes Yes
Buying, holding, or selling stolen property	IV	In the past 12 months, how often did you buy, sell, or hold stolen property?	0-Never 1-Once or Twice 2 – Three or Four Times 3 – Five or More Times	No Yes Yes Yes
Committing financial fraud	IV	In the past 12 months, how often did you use someone else's credit card, bank card, or automatic teller card without their permission or knowledge?	0-Never 1-Once or Twice 2 – Three or Four Times 3 – Five or More Times	No Yes Yes Yes
Shot or stabbed someone	IV	Which of the following things happened in the past 12 months: you shot or stabbed someone?	0-No 1-Yes	
General Health	IV	In general, how is your health?	1 – Excellent 2 – Very good 3 – Good 4 – Fair 5 - Poor	
Sexually Transmitted Disease	IV	In the past 12 months, have you been told by a doctor, nurse, or other health professional that you had any of the following sexually transmitted diseases? Select all of the diseases you have had. Items included were chlamydia, gonorrhea, trichomoniasis, syphilis, genital herpes, genital warts, hepatitis B, Human papilloma virus, pelvic inflammatory disease, cervicitis or mucopurulent cervicitis, urethritis, vaginitis, HIV infection or AIDS, any other sexually transmitted diseases.	0 – No 1 – Yes	