# The Role of Parental Alcohol Consumption on Driving Under the Influence of Alcohol: Results from a Longitudinal, Nationally Representative Sample

**Mildred M. Maldonado-Molina, PhD**[1], **Jennifer M. Reingle, PhD Candidate**[1], **Christopher Delcher, MS**[1], and **Jennifer Branchini, M.S.**[1]

[1]University of Florida, College of Medicine, Department of Health Outcomes and Policy and Institute for Child Health Policy

## Abstract

**Purpose**—Many studies have examined the role of peer and parental alcohol use on drinking behaviors among adolescents. Few studies, however, have examined parental influences on driving under the influence (DUI) of alcohol. The current study uses data from a longitudinal study to examine the role of parental alcohol use during adolescence on the risk for DUI among young adult men and women.

**Methods**—Data were derived from 9,559 adolescents and young adults who participated in the National Longitudinal Study of Adolescent Health (Add Health) Waves I and III. Survey logistic regression was used to examine the relationship between multilevel risk and protective factors and self-reported DUI. Analyses were stratified by gender and frequency of parental alcohol consumption to understand the role of parental alcohol use on risk for DUI among their youth.

**Results**—Risk and protective factors for DUI were very similar among men and women. Parental alcohol use significantly predicted DUI among women (OR = 1.39, p<0.01) and men (OR = 1.33, p<0.05). When parents did not report alcohol use, peer alcohol use significantly increased risk for DUI for both women (OR=1.26, *p*<0.05) and men (OR=1.31, *p*<0.001). When parents reported alcohol use, however, peer alcohol use was not a significant independent predictor.

**Conclusions**—Findings suggest remarkable similarities in risk and protective factors for DUI across gender groups. For men and women, parental alcohol consumption was a risk factor for DUI. Peers' alcohol use predicted DUI only when parents did not use alcohol.

## Keywords

ALCOHOL; GENDER; DRUNK DRIVING; DUI; PARENT

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Corresponding Author: Mildred M. Maldonado-Molina, Ph.D. University of Florida, College of Medicine, Department of Health Outcomes and Policy and Institute for Child Health Policy, 1329 SW 16th St. Room 5130, PO Box 100177, Gainesville, FL 32610-0177 U.S.A., maldonado@ichp.ufl.edu, Tel: (352) 265-0111 ext. 86547, Fax: (352) 265-8047.

## 1. Introduction

In the United States, driving under the influence of alcohol (DUI) is a major public health problem. According to the National Highway Traffic Safety Administration (NHTSA), 37,261 people were killed in motor vehicle traffic crashes in the United States during 2008; and of these fatalities, 32% were passengers in a car with an impaired driver (NHTSA, 2009). Adolescents and young adults are at risk DUI-related mortality, as 28 percent of the alcohol-related motor vehicle fatalities during 2007 were drivers between the ages of 16 and 24 (NHTSA, 2008). Given the high prevalence of youth involved in fatal crashes, it is important to understand the contextual and individual-level factors related to increased risk for DUI during this developmental period.

Several studies have examined risk factors for drinking behaviors among adolescents. Binge drinking (Copeland & Shope, 1996), drug use (Kelly, Darke, & Ross, 2004; Sewell, Poling, & Sofuoglu, 2009), early onset of alcohol use (Hingson, Edwards, Heeren, & Rosenbloom, 2009; Lynskey, Bucholz, Madden, & Heath, 2007), and access to alcohol (Gruenewald, Johnson, & Treno, 2002) have been linked to increased risk of DUI among adolescents and young adults. Research has also shown that peer and parental modeling of DUI is highly correlated with drinking and driving behavior (Chen, Grube, Nygaard, & Miller, 2008; Grube & Voas, 1996; Gulliver & Beggs, 2004; McCarthy & Pedersen, 2009).

Several theoretical frameworks, including social learning theory (Akers, 1973), provide support for the study of peer and parental influences on risky behaviors. Social learning theory posits that individuals learn to engage in deviant behavior by observing those around them. Social learning is comprised of four central components: excess of definitions favorable to deviant behavior, association with peers that engage in deviant behavior, reinforcement of deviance, and imitation (or modeling). For each additional element of social learning that an individual is exposed to, the risk of delinquency and deviance is increased (Akers, 1973).

Support for the social learning influence of peers has been found in research on DUI. For instance, Grube and Voas (1996) surveyed 706 adolescents between the ages of 16 and 20 from seven states in the United States and found that adolescents who reported DUI were more likely to have peers with positive attitudes regarding DUI (Grube & Voas, 1996). Mcarthy & Pedersen (2009) noted similar results, reporting that prior drinking and driving experiences among adolescents are influenced by perceived acceptance by peers (McCarthy & Pedersen, 2009). In another study, authors surveyed 1,534 adolescents and young adults (ages 15–20) to identify mechanisms that prevent youth from DUI and riding with someone who engages in DUI (Chen, et al., 2008). Results indicated that modeling of impaired driving by peers was strongly related to participants' DUI behavior (Chen, et al., 2008).

In addition to peer influences on DUI, Chen and colleagues also noted an association between parental DUI and youth DUI. However, studies examining the relationship between parents' behavior and youth DUI are limited. Specifically, only four studies have evaluated parental influences on DUI (Chen et al., 2008; Christoffersen, Soothill, & Francis, 2008; Gulliver & Beggs, 2004; Woldt & Bradley, 2002). Gulliver & Beggs (2004) investigated the effects of parental and peer DUI in adolescence (ages 15–18) on DUI at age 21. Similar to the results of Chen et al. (2008), findings indicated that among males, exposure to peer modeling of DUI was related to increased risk for DUI, while among females, exposure to parental modeling of DUI was related to increased risk for DUI. In addition to parental modeling of DUI as a risk factor for DUI, studies have also shown that parental alcohol use may influence adolescent and young adult DUI. Christoffersen et al. (2008) conducted a study to identify potential precursors of first-time drinking and driving among young men.

Using a sample of 3,282 men convicted of DUI in Denmark, the authors reported that parental substance abuse was associated with first time drinking and driving conviction. Woldt & Bradley (2002) demonstrated similar results, indicating that parental problem drinking predicted alcohol use and problem outcomes such as DUI among 250 males convicted of DUI.

To our knowledge, no longitudinal studies have examined the effects of parental alcohol use on DUI among adolescents and young adults. Moreover, less is known about the parental influences on DUI specific to young women, as most studies are conducted with all male or combined populations. Although driving fatalities are less prevalent among women compared to men, women are more likely than men to have other passengers in the car at the time of the crash, and three times more likely to have children in the car (Voas, Fisher, & Tippetts, 2002). Women are also likely to have different causes and circumstances for drinking and driving; therefore, their risk factors may be unique (Voas, et al., 2002; Wylie, 1995). To address this gap in the literature, the current study uses data from a longitudinal study (ages 11 to 26) to identify factors associated with drinking and driving within gender groups. Specifically, we hypothesize that: (1) social learning contextual variables (parental and peer alcohol consumption) will increase risk for DUI among young adults; and (2) the effect of parental and peer alcohol use will differ between gender groups.

## 2. Methods

### 2.1. Research Design

Data were obtained from the in-home interviews during Waves I (1994–1995) and III (2001–2002) and the parent survey (Wave I) of the restricted-use sample of the National Longitudinal Study of Adolescent Health (Add Health). The Add Health data is a school-based panel study conducted from 1994 (Wave I) through 2008 (Wave IV), when participant ages ranged from 11 to 32 (Chantala & Tabor, 1999). The data collection for this survey was designed to explore multilevel effects on adolescents' health behaviors. In Wave I, 80 communities were selected to ensure demographic representativeness (ethnic composition, region of the country, urbanicity, school size, and school type) of students in the United States. Schools (n = 132) were eligible if they enrolled more than thirty students and had an eleventh grade. All students who were enrolled in the school and were present on the survey day were eligible for participation in the study. Approximately 200 students were randomly selected from strata of grade and sex, resulting in a final sample of 20,744 adolescents. The restricted-use sample utilized in this study includes the complete sample of adolescents, whereas the public use sample includes only a subset of the adolescents who participated in the survey. Further details of data collection and survey procedures are described elsewhere (Harris, et al., 2003). After excluding cases with missing weights at Wave III (n=9,946) (Chantala & Tabor, 1999) and missing parent surveys (n=1,269), 9,559 participants remained in the dataset. The sample selection process is detailed in Figure 1.

### 2.2. Participants

Table 1 reports demographic and relevant descriptive characteristics of the sample. Briefly, the sample had a mean age of 15.1 (range: 11–19) years at Wave I. Whites comprised 67.5% of the sample, 16.0% were African-American, and 11.2% self-identified as Hispanic. Approximately 5.1% of participants reported ever driving drunk prior to the baseline interview (Table 1). Men were significantly more likely than women to have driven after drinking at baseline, be older, have a driver's license, and reported driving at baseline. Women had significantly higher levels of parental involvement, and were more likely than men to report always using a seatbelt.

### 2.3. Measures

All covariates, including baseline DUI, were measured at Wave I. The dependent variable (DUI) was collected at Wave III.

#### 2.3.1. Dependent variable

**Self-reported Driving Under the Influence:** At the Wave III interview, participants were asked, "Since June 1995, have you driven while drunk?" Responses to these questions were coded "No DUI" and "DUI". Only participants who reported using alcohol at Wave III (i.e., "Since June 1995, have you had a drink of beer, wine, or a liquor more than two or three times? Do not include sips or tastes from someone else's drink."), were asked about DUI. Adolescents who did not report consuming alcohol at Wave III were not asked about their DUI behavior. If respondents reported no use of alcohol, the DUI item was not applicable to the interview and coded as "No DUI" for the purposes of the current study.

#### 2.3.2. Independent variables

**Parental Alcohol Use:** Parental Alcohol use was derived from the Add Health Parent Survey. Parents were asked, "How often do you drink alcohol?". Response options ranged from "Never", to "once a month or less", "two or three days a month", "once or twice a week", "three to five days a week", and "nearly every day". For stratified analyses, parental alcohol use was dichotomized into "drinkers" and "non-drinkers". Drinkers included three groups: Infrequent (one a month or less), monthly (2–3 times a month), and weekly (1–2 a week, 3–5 days, and nearly every day) alcohol use.

**2.3.3. Demographics—**Respondents were asked to self-report their race as "White", "Black or African-American", "American Indian or Native American", and "Asian or Pacific Islander". Ethnicity was recorded using the item: "Are you of Hispanic or Latino background?". Age was recorded using the month and date of birth (calculated from the middle of the month for anonymity purposes).

#### 2.3.4. Contextual Covariates

**Parental Involvement:** Parental influence and involvement was measured using a scale of twenty items (10 for maternal involvement, 10 measuring paternal involvement) (Prado et al., 2009). Each individual item was dichotomized, and the scale is the sum of all twenty items (range: 0–20). The ten items which comprised the scale included whether or not the respondent reported participating in the following activities with their mother and/or father in the past four weeks: 1) going shopping; 2) playing a sport; 3) attending a religious or church-related event; 4) talking about someone they are dating or a party they attended; 5) attending a movie, play, concert, or sporting event; 6) talked about a personal problem they were having; 7) had a serious argument about their behavior; 8) talked about work or grades; 9) worked on a project for school; and 10) talked about other things they are doing in school. Cronbach's coefficient alpha for this scale was 0.74.

**Safe Neighborhood:** Perceived neighborhood safety was measured using one item, "Do you usually feel safe in your neighborhood?". Responses were dichotomized so that values of 1 indicate neighborhood safety, and 0 indicates that the respondent does not usually feel safe in their neighborhood.

**Peer Alcohol and Marijuana Use:** Peer alcohol use was measured using one item: "Of your three best friends, how many drink alcohol at least once a month?" Respondents who reported having one or more friends who use alcohol monthly were coded as "1". Similarly, respondents were asked, "Of your three best friends, how many use marijuana at least once a

month?" Respondents who reported having one or more friends who use marijuana monthly were coded as "1".

### 2.3.5. Individual-Level Covariates

**Drunk in past year:** At Wave I, participants were asked, "During the past 12 months, on how many days have you gotten drunk or "very high" on alcohol?" If respondents reported intoxication more than once in the past year, they were categorized as "drunk in past year".

**Marijuana use:** Marijuana use was measured using the item, "During your life, how many times have you used marijuana?" Responses were categorized into "ever users" and "non-users". *Seatbelt use, miles driven, and driver's license possession.* In order to account for the average car usage, safety while driving, and access to vehicles, miles, seatbelt use, and drivers license possession were included as covariates. Seatbelt use was measured using the item, "How often do you wear a seatbelt when you are riding in or driving a car?" This item ranged from 0 to 4, including "0=Never", "1=Rarely", "2=Sometimes", "3=Most of the time", and "4=Always". Driver's license possession was coded as yes/no based upon the participants response to the item, "Do you have a valid driver's license (not a driver's permit)?". Miles driven was measured using the item, "About how many miles do you drive per week?". This item was coded as "0=None", "1=1–50 miles", "2=51–100 miles", and "3=More than 100 miles". Due to the distribution of this item, participants were categorized as "drivers" versus "non-drivers" at baseline.

## 2.4. Analytical Methods

Analyses were conducted considering the clustered dual-stage sampling design, and observations were weighted due to the unequal probability of selection of each primary sampling unit (Chantala & Tabor, 1999). The survey logistic regression procedure was used to provide weighted effect estimates and confidence intervals, with calculated robust standard errors (to account for the clustering of individuals within schools). All analyses were conducted using STATA version 11 data analysis software (StataCorp, 2009). Three models were used to test the effects of parental alcohol consumption on adolescent DUI. The first model tested the bivariate relationships between demographics and other risk and protective factors on DUI. The second model tested the multivariate effect of parental alcohol consumption on DUI, stratified by gender. Finally, the third model tested the multivariate effect of peer alcohol use, stratified by parental alcohol consumption status and gender.

# 3. Results

## 3.1. Predictors of DUI

Bivariate models show that youth whose parents reported alcohol use were at increased risk for DUI (see Table 2). Having a parent who reported alcohol use was associated with DUI for both women (OR = 1.69, $p<0.001$) and men (OR = 1.53; $p<0.001$). Specifically, parents who reported infrequent alcohol use (OR = 1.84, $p<0.001$ for women, OR=1.37, $p<0.01$ for men), using alcohol 2–3 times per month (OR = 2.17, $p<0.001$ for women, OR = 1.62, $p<0.01$ for men), and weekly alcohol use (OR = 1.45, $p<0.05$ for women, OR = 1.87, $p<0.001$ for men) were associated with DUI among adolescent children at age 21 (results not shown).

Among adolescents who had neither parents nor peers who used alcohol, only 2% reported DUI at age 21. Among adolescents who had either peers or parents who reported alcohol use (single exposure to alcohol), 6% reported DUI. Finally, those who were exposed to both alcohol-using parents and peers were the most likely to engage in DUI at age 21 (11%,

$p<0.001$). In addition, results suggest that most risk and protective factors for DUI were consistent across gender groups (Table 2). Specifically, having friends who use alcohol (OR = 1.27, $p<0.001$ for women, OR = 1.33, $p<0.001$ for men) and marijuana (OR = 1.20, $p<0.01$ for women, OR = 1.24, $p<0.001$ for men), drinking in the past year (OR = 2.62, $p<0.001$ for women, OR = 2.49, $p<0.001$ for men), using marijuana (OR= 1.99, $p<0.001$ for women, OR=1.71, $p<0.001$ for men), drivers license holders (OR = 1.67, $p<0.001$ for women, OR = 1.70, $p<0.001$ for men), those who reported being drivers at baseline (OR = 1.32, $p<0.001$ for women, OR = 1.27, $p<0.001$ for men), and adolescents who have driven after drinking at Wave I (OR = 3.46, $p<0.001$ for women, OR = 2.89, $p<0.001$ for men) were significantly more likely to have participated in DUI at Wave III (average age 21). Only a few risk and protective factors for DUI differed by gender. For instance, perceived neighborhood safety (OR = 1.51, $p<0.05$), and parental involvement (OR = 1.04, $p<0.05$) was associated with DUI among women only. Whites and Hispanics had greater odds of DUI for both men and women compared to African-Americans. Asian women had greater odds of DUI compared to African-Americans; however, this was not observed among Asian men.

Multivariate analyses were conducted to further examine the relationship between parental alcohol consumption and DUI risk by gender (Table 3). Results indicate that parental alcohol use remains a predictor of DUI (OR = 1.39, $p<0.01$ for women, OR = 1.33, $p<0.05$ for men) after accounting for demographic, contextual, and individual-level covariates. Drinking in the past year (OR = 1.88, $p<0.001$ for women, OR = 1.69, $p<0.01$ for men), younger age (OR = 0.80, $p<0.001$ for women, OR = 0.88, $p<0.01$ for men) were also associated with DUI. In addition, White youth had greater odds of DUI compared to Blacks (OR = 2.65, $p<0.01$ for women, OR = 2.12, $p<0.001$ for men). Among women, marijuana use was associated with increased DUI (OR = 1.42, $p<0.05$); for men, peer alcohol use (OR = 1.13, $p<0.05$), and baseline DUI (OR = 1.54, $p<0.05$) was positively associated with DUI six years later.

The effect of peer alcohol use on DUI varied by parental alcohol consumption (Table 4). For instance, when parents did not report using alcohol, peer alcohol use predicted DUI (OR =1.31, p<0.001 for men, OR = 1.26, p<0.05 for women). When parents reported alcohol use, however, peer alcohol consumption did not significantly predict DUI for either gender group.

## 4. Discussion

Our examination of the risk factors for DUI between gender groups identified parental alcohol consumption as a risk factor for DUI among youth. Findings suggest that the effect of peer alcohol use varied by parental alcohol consumption status for both men and women. When parents did not report drinking alcohol, peer alcohol use predicted DUI. When parents reported alcohol use, however, peer alcohol use was not a significant predictor of DUI. These findings suggest remarkable similarities across gender in the predictors of DUI, and that the relationship between parental and peer influences on DUI includes is complex. These findings also indicate that DUI prevention should begin prior to age 15 (especially for men, as DUI appears to continue over time), and may address similar risk factors for both genders.

These findings are consistent with the social learning framework and previous literature on the effects of parents and peers on adolescents' impaired driving. Adolescents who are raised in households where parents consume alcohol may have greater access to alcohol themselves (Hearst, Fulkerson, Maldonado-Molina, Perry, & Komro, 2007; Komro, Maldonado-Molina, Tobler, Bonds, & Muller, 2007), or model parental DUI by travelling

with their parents in a car at young ages (Gulliver & Beggs, 2004; Reeder, Alsop, Begg, Nada-Raja, & McLaren, 1998). The social learning framework also suggests that adolescents exposed to both parents and peers that consume alcohol would be at even higher risk of DUI. This study provides additional support for the "additive effects" of exposures proposed in the social learning framework, as adolescents exposed to both alcohol using parents and peers represented the largest proportion (44%) of adolescents who reported DUI in this sample. When parents do not consume alcohol, peer influences appear to play a more dominant role in access and modeling risk behavior.

Future studies should examine whether adolescents whose parents reported drinking when they are young initiate drinking at younger ages and engage in risky behavior at younger ages and continue that behavior over time. Findings suggest that when youth do not have parents that drink, their peers might be a source of access to alcohol consumption and model risky behavior. Thus, efforts to prevent future risk of DUI should target social sources of access to alcohol (e.g., home, parental, and friends), in addition to commercial sources (Hearst, et al., 2007). Findings also suggest that adolescent DUI prevention strategies should take into account parental alcohol use. For instance, parents who use alcohol may be encouraged to model safe alcohol consumption to their adolescents while non-drinking parents may learn to improve parental monitoring skills with respect to peer alcohol use.

A number of limitations must be acknowledged when interpreting the results of this study. First, the measure of DUI used in this study was self-reported "driving while drunk", rather than a BAC level or number of drinks consumed before driving. This measure has limitations, as the perceived intoxication varies between individuals. However, this measure captures the intended outcome in this study (impaired driving); and the prevalence estimates are consistent with national studies, including the Youth Risk Behavior Surveillance Survey (Child Trends, 2010; Eaton, et al., 2008). Future research should examine this issue in greater depth with alternative measures of impaired driving.

Second, the current study did not evaluate DUI among parents. Because parental DUI behavior was not measured, it is not possible to determine whether the parental alcohol consumption, parental modeling of DUI, or some other influence was responsible for the observed association between parental alcohol use and DUI. Therefore, future studies should examine the role of modeling of parental DUI (rather than alcohol consumption) as predictors of DUI among youth.

In sum, the current study uses a nationally representative, longitudinal study of adolescents and young adults from ages 11–26. This study contributes to the literature in that there are very few studies examining the risk of parental influences on DUI and findings are generalizable to youth across the United States. Findings suggest that parental alcohol consumption is a risk factor for DUI for men and women. Peers' alcohol use predicted DUI when parents do not drink alcohol. In contrast, peer alcohol consumption does not predict DUI when parents use alcohol. Investigating the effects of parental influences on drinking and driving behaviors among their children has not been studied previously using a longitudinal design. These findings suggest that when youth do not have parents that drink, their peers might be a source of access to alcohol consumption and model risky alcohol-related behaviors. The mechanism by which parental and peer alcohol use is related to DUI (e.g., modeling, access, etc.) is a direction for future research. Findings highlight the need for targeted prevention strategies to reduce social sources of alcohol associated with increased risk for drinking and driving behaviors among youth.

## Acknowledgments

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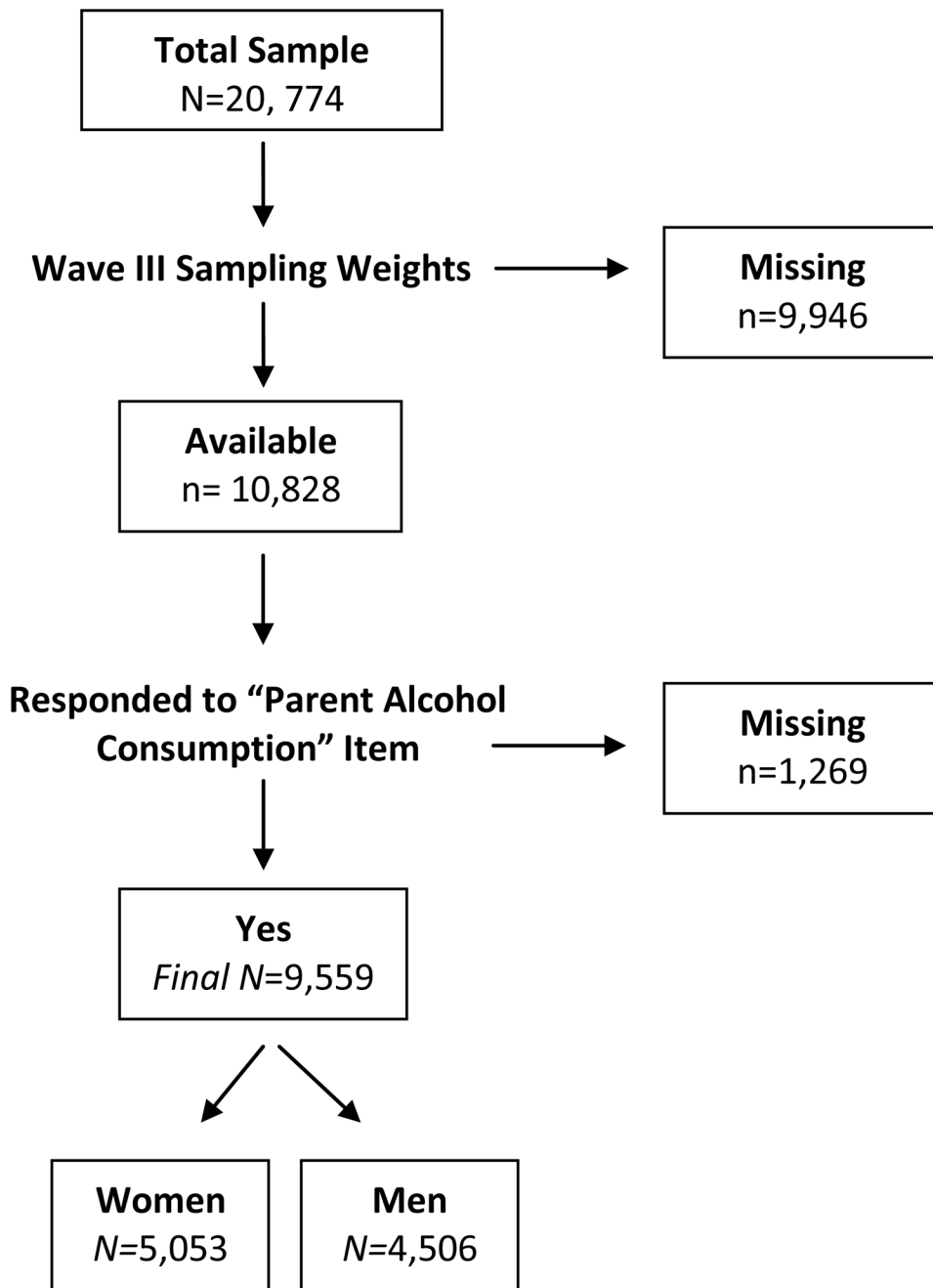
**Figure 1.**
Sample selection, Add Health.

**Table 1**

Description of Sample at Wave I (Ages 11–19), Add Health Study. N = 9,559.

| | % | Men | Women |
|---|---|---|---|
| Ever Driven while Drunk | 5.1[***] | **7.1** | **3.8** |
| Parents Use Alcohol | 58.0 | **58.1** | **57.9** |
| *Demographics* | | | |
| Male | 47.2 | | |
| White | 67.5 | **66.3** | **68.6** |
| Black or African-American | 16.0 | **16.5** | **15.5** |
| Hispanic | 11.2 | **11.9** | **10.6** |
| American Indian or Native American | 2.6 | **2.7** | **2.6** |
| Asian | 2.6 | **2.6** | **2.6** |
| Age (years) **[Mean, SE]** | 15.1 (0.11)[**] | **15.2(0.12)** | **15.0(0.12)** |
| *Contextual Covariates* | | | |
| **Parental involvement (0–20) [Mean, SE]** | 5.9 (0.09)[**] | **5.7(0.12)** | **6.0(0.10)** |
| **Live in safe neighborhood** | 89.3 | **89.7** | **88.9** |
| **One or more peers use alcohol** | 56.1 | **55.9** | **56.2** |
| **One or more peers use marijuana** | 35.3 | **35.0** | **35.6** |
| *Individual-Level Covariates* | | | |
| **Drunk in past year** | 29.1 | **30.1** | **28.3** |
| **Ever used marijuana** | 29.7 | **31.1** | **28.4** |
| **Frequent seatbelt use** | **47.4**[***] | **41.7** | **52.5** |
| **Drivers license possession** | 22.8[***] | **25.5** | **20.3** |
| **Miles Driven/week (0–3) [Mean, SE]** | **1.36 (0.06)**[***] | **1.5(0.06)** | **1.2(0.06)** |

[**] p<0.01,

[***] p<0.001

### Table 2

Bivariate relationship between contextual and individual-level predictors of DUI (Wave III, Mean age 21).

| | Odds Ratio | |
|---|---|---|
| | Women | Men |
| Parents Use Alcohol | 1.69*** | 1.53*** |
| *Contextual Covariates* | | |
| Parental Involvement | 1.04* | 1.02 |
| **Live in safe neighborhood** | 1.51* | 1.32 |
| **One or more peers use alcohol** | 1.27*** | 1.33*** |
| **One or more peers use marijuana** | 1.20** | 1.24*** |
| *Individual-Level Covariates* | | |
| Drunk in past year | 2.62*** | 2.49*** |
| **Ever used marijuana** | 1.99*** | 1.71*** |
| **Frequent seatbelt use** | 1.06 | 1.04 |
| **Drivers license possession** | 1.67*** | 1.70*** |
| **Miles Driven/week** | 1.32*** | 1.27*** |
| *Demographics* | | |
| Black or African-American | -- | -- |
| White | 3.89*** | 2.76*** |
| Hispanic | 2.13* | 1.83* |
| American Indian or Native American | 3.28** | 2.14* |
| Asian | 2.81* | 1.71 |
| Age | 0.99 | 1.04 |
| Baseline DUI | 3.46*** | 2.89*** |

+
 $p<0.1$,

*
 $p<0.05$,

**
 $p<0.01$,

***
 $p<0.001$

## Table 3

Multivariate relationship contextual and individual-level predictors (Wave I, mean age 15) and DUI (Wave III, Mean age 21).

| | Odds Ratio | |
|---|---|---|
| | Women | Men |
| Parents Use Alcohol | 1.39** | 1.33* |
| *Contextual Covariates* | | |
| Parental Involvement | 1.02 | 1.01 |
| **Live in safe neighborhood** | 1.24 | 1.18 |
| **One or more peers use alcohol** | 1.07 | 1.13* |
| **One or more peers use marijuana** | 0.95 | 1.03 |
| *Individual-Level Covariates* | | |
| Drunk in past year | 1.88*** | 1.69** |
| **Ever used marijuana** | 1.42* | 1.18 |
| *Demographics* | | |
| Black or African-American | -- | -- |
| White | 2.65*** | 2.12*** |
| Hispanic | 1.76+ | 1.57+ |
| American Indian or Native American | 2.19* | 1.40 |
| Asian | 2.68* | 1.75+ |
| Age | 0.80*** | 0.88* |
| Baseline DUI | 1.54 | 1.54* |

+ $p < 0.1$,

* $p < 0.05$,

** $p < 0.01$,

*** $p < 0.001$

Note: All multivariate analyses are controlled for miles driven, driver's license status, and seatbelt use.

**Table 4**

Predictors of DUI stratified by parental alcohol use and gender, Add Health Study.

| | Odds Ratio | | | |
| --- | --- | --- | --- | --- |
| | Parents Do Not Use Alcohol | | Parents Use Alcohol | |
| | **Women** | **Men** | **Women** | **Men** |
| *Contextual Covariates* | | | | |
| Parental Involvement | 1.04 | 1.02 | 1.01 | 1.01 |
| **Live in safe neighborhood** | 1.23 | 1.42 | 1.32 | 0.97 |
| **One or more peers use alcohol** | 1.26* | 1.31*** | 0.96 | 1.05 |
| **One or more peers use marijuana** | 1.05 | 1.16 | 0.91 | 0.95 |
| Individual-level Covariates | | | | |
| Drunk in past year | 1.79* | 1.54 | 1.98*** | 1.75** |
| **Ever used marijuana** | 1.11 | 1.03 | 1.62* | 1.24 |
| *Demographics* | | | | |
| Black or African-American | -- | -- | -- | -- |
| White | 1.54 | 2.12** | 4.48*** | 2.18** |
| Hispanic | 1.14 | 1.55 | 2.79** | 1.71 |
| American Indian or Native American | 0.84 | 1.72 | 4.37** | 1.11 |
| Asian | 2.69 | 1.86 | 2.17 | 1.63 |
| Age | 0.81* | 0.81** | 0.80** | 0.92 |
| Baseline DUI | 1.22 | 1.23 | 1.76+ | 1.93* |

+ $p<0.1$

* $p<0.05$

** $p<0.01$

*** $p<0.001$

Note: All multivariate analyses are controlled for miles driven, driver's license status, and seatbelt use.