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SOCIO-DEMOGRAPHIC DETERMINANTS OF PLANNING SUICIDE AND MARIJUANA USE AMONG YOUTHS: ARE THESE PATTERNS OF BEHAVIOUR CAUSALLY RELATED?

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Abstract

We analyse whether there is a causal relationship between planning suicide and marijuana use among US youths. To that end, we specify a simultaneous probability model which is estimated by maximum likelihood using the YRBS (1999 and 2001). We place emphasis on a number of socio-demographic risk determinants (gender, age, ethnicity, environmental and peer group factors). Our results confirm that marijuana use and planning suicide are not the result of a single determinant, but rather emerge from a complex interaction of many socio-demographic factors. Moreover, they suggest the presence of reverse causality, with this implying that marijuana use increases the probability of planning suicide and, similarly, that youths who plan to commit suicide exhibit a higher probability of using marijuana.

Keywords: Socio-Demographic determinants; Planning suicide; Marijuana use; Youths; Causality

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Introduction

Suicide represents a particularly worrying problem among young people, with it being the third ranking cause of death in this age group throughout the 1990's, headed only by accidents and homicide (Freeman, 1998; Cutler et al., 2000). This preoccupation is all the more justified given the well accepted fact that adolescence is a particularly worrying stage of life, bearing in mind the psychologically vulnerable nature of this age group. It is further recognized that this stage of life involves developmental tasks that are particular to it, for example, establishing one's own identity and independence from the family, which may potentially lead the individual to adopt risky patterns of behavior (e.g. Duarte et al., 2006, 2011; Gil and Molina, 2007).

The literature contains a number of articles which analyze different aspects of this topic (Ahlburg and Schapiro, 1984; Pampel, 1996; Mohler and Earls, 2001; Morrell et al., 2001; Thompson et al., 2001; Russell and Joyner, 2001; Mathur and Freeman, 2002; Molina and Duarte, 2006). From among these, one that appears to be particularly significant is the relationship between suicidal behavior and drug use among the youth population and, more especially, whether or not the relationship between these two patterns of behavior is causal in nature.

Against this background, in our paper we apply an advanced statistical method in order to provide an answer to this possible causality question. Specifically, we analyze if there is a causal association between the decision to plan suicide and the use of marijuana among US youths aged between 14 and 18. To that end, we specify a simultaneous

probability model which is estimated by maximum likelihood using recent information provided by the last two waves of the Youth Risk Behavior Survey (YRBS) corresponding to 1999 and 2001. This specification includes two equations, which indicate whether the young person is planning suicide and whether or not he/she uses marijuana, respectively. We concentrate on a number of demographic determinants of suicidal behavior, such as gender, age or ethnicity, as well as other social determinants, including area of residence, education level or young peoples' habits, i.e., if they exercise, wear a seat belt when driving, smoke tobacco or, our focus variable, use marijuana.

Our empirical results will hopefully allow us to obtain a better understanding of the relationship between suicide planning and marijuana consumption among young people, which must be the starting point for any effective policy aimed at reducing these two risky patterns of behavior among this particularly vulnerable age group (see, for the case of tobacco, Escario and Molina 2004a and 2004b).

Method

Model

In order to test if planning suicide and marijuana use are causally related, we use a simultaneous probability model: $MU^* = \gamma_1 SP^* + \beta_1 X_1 + \varepsilon_1$ and $SP^* = \gamma_2 MU^* + \beta_2 X_2 + \varepsilon_2$, where MU^* and SP^* are two non-observable variables whose signs indicate whether the young person uses marijuana and plans suicide, respectively. Additionally, $(\gamma_1, \beta_1, \gamma_2, \beta_2)$ is

the vector of coefficients and, finally, we assume that the error terms, ε_1 and ε_2, are distributed following a bivariate normal distribution. We only observe two binary variables, *MU* and *SP*: $\begin{cases} MU = 1 & if\ MU^* \geq 0 \\ MU = 0 & otherwise \end{cases}$ and $\begin{cases} SP = 1 & if\ SP^* \geq 0 \\ SP = 0 & otherwise \end{cases}$.

Solving the above system for *MU** and *SP**, and modifying slightly the notation in order to distinguish between variables which appear in the *MarijuanaUse* equation, or in the *SuicidePlan* equation, or in both, we obtain the following reduced form:

$$MU^* = [(\gamma_1\beta'_{21} + \beta_{12})X_{12} + \beta'_{11}X_{11} + \gamma_1\beta'_{22}X_{22} + \gamma_1\varepsilon_2 + \varepsilon_1] / (1-\gamma_1\gamma_2) = X\Pi_1 + v_1$$

$$SP^* = [(\gamma_2\beta'_{12} + \beta_{21})X_{12} + \gamma_2\beta'_{11}X_{11} + \beta'_{22}X_{22} + \gamma_2\varepsilon_1 + \varepsilon_2] / (1-\gamma_1\gamma_2) = X\Pi_2 + v_2$$

where X_{12} includes the explanatory variables which affect both equations, X_{11} is the vector of explanatory variables corresponding to the *MarijuanaUse* equation, X_{22} is the vector of explanatory variables solely for the *SuicidePlan* equation, β_{11} is the vector of coefficients associated with X_{11} in the *MarijuanaUse* equation, β_{12} is the vector of coefficients associated with X_{12} in the first equation, β_{21} is the vector of coefficients associated with X_{12} in the *SuicidePlan* equation and, finally, β_{22} is the vector of coefficients associated with X_{22} in the same *SuicidePlan* equation.

Because of the joint normality of v_1 and v_2, we have that $v_2 = \rho\, v_1 + \xi$, where $\rho = \frac{\sigma_{12}}{\sigma_1^2\sigma_2^2} = \sigma_{12}$, which enables us to express the reduced form in the following way: $MU^* = X\Pi_1 + v_1$ and $SP^* = X\Pi + \rho MU^* + \xi$, where $\Pi=\Pi_2-\rho\Pi_1$ (Amemiya, 1978). This

model is estimated by maximum likelihood, with the likelihood function being: $L = \Pi [P(MU^* > 0)^{MU} \; P(MU^* < 0)^{1-MU}] \quad \Pi [P(SP^* > 0)^{SP} \; P(SP^* < 0)^{1-SP}]$.

Data

So as to empirically estimate our simultaneous model, we have drawn on the statistical information coming from the last two available waves of the Youth Risk Behavior Survey (YRBS) corresponding to 1999 and 2001, carried out by the Division of Adolescent and School Health from the National Center for Chronic Disease Prevention and Health Promotion (Centers for Disease Control and Prevention). These surveys contain complete information on both physical variables, such as gender, age or ethnicity, as well as a number of other relevant environmental and peer group factors, i.e., area of residence, education level and youth habits, such as participating in sports, smoking tobacco or wearing a seatbelt when driving. All this information has been obtained directly from the individual youths surveyed, who anonymously answered a complete questionnaire. Their parents were not present during the interviews and were not informed about the responses of their children, in this way limiting any underreporting in their responses. The data set contains 25,452 feasible observations for the two sample years, with all the respondents studying between the 9^{th} and 12^{th} grades. The information was collected in a range of different public and private centers of education.

The dependent variables for the two equations of the simultaneous model are *MarijuanaUse* and *SuicidePlan*, with the first indicating whether the youth has used

marijuana during the last 30 days, and the second reflecting whether he/she has planned suicide during the last 12 months. A short descriptive analysis of the two dependent variables, when they are distinguished by reference to gender, age, ethnicity and area, are shown in Table 1, with the definition of all the variables, both dependent and independent, appearing in Table 2.

With respect to the *MarijuanaUse* variable, Table 1 reveals that a quarter of the young people surveyed had used marijuana during the last month, although we can note important differences between the male and female sub-samples. Thus, the former shows a higher proportion of users, 30.2%, than the latter, 20.4%, with these gender differences being reflected in all ages, ethnic groups and areas of residence. We can also observe that the proportion of young people who use marijuana increases with age, from 20.6% for those younger than 16 to 0.28% for those older than 16. With respect to ethnicity, our descriptive analysis shows that youths from the Native American and OtherRace groups exhibit the highest rates, 35% and 30.3%, respectively, with young people from the Asian group showing the lowest prevalence rate, 17.3%. In the middle range we find that the White, Black and Hispanic groups contain a similar proportion of young marijuana users, with the gender differences again being maintained. Finally, we can note the higher percentage of marijuana users resident in suburban areas, 0.25%, although this is only a little higher than the percentage corresponding to urban and rural areas, 0.24%.

Turning now to the *SuicidePlan* variable, Table 1 confirms that 17.8% of the sample have planned to commit suicide. In this case, it is the female gender group which shows the higher percentage. Moreover, the proportion of young people who have made a suicide plan

increases between 14 and 16 years old, and thereafter decreases. As in the case of marijuana, the highest values correspond to young people coming from the OtherRace and Native American groups, and it is now Black youths which reflect the lowest percentage. Finally, there do not appear to be any significant differences with respect to the area of residence, with the three percentages, corresponding to urban, suburban and rural, all being around 17%.

(Table 1)

With respect to the independent variables, we first include physical characteristics (*Gender, Age, White, Black, Hispanic, Asian, NativeAmerican, OtherRace),* as well as the area of residence *(Urban, Suburban, Rural*). Other factors include the education level (*Grade),* and youth habits, that is to say, the practising of sports (*Sport*), wearing a seatbelt when driving (*Seatbelt*) or smoking tobacco (*Tobacco*). Two final variables are incorporated for the purpose of identifying both equations: *Marijuana%*, which measures the proportion of young people who use this illicit drug in the area where the individual lives, and *Weapon*, which indicates the number of times that the young person has carried a gun or other weapon.

From a reading of this Table 2, we can first appreciate that 25.2% of American youths have used marijuana during the last month, with the percentage being somewhat higher for young males, 30.2%, than for young females, 20.4%. Moreover, 17.8% of the sample individuals have planned suicide at least once during the last year, with the proportion being higher in this case for girls, 22.4%, than for boys, 12.9%. With respect to the

independent variables, 48.7% of the sample is made-up of male adolescents and the average age of the sample is 16.2 years. Additionally, 41% of the sample are White, 24.1% are Black, 23% are Hispanic, 4.6% are Asian, 1.1% are Native American, and the 6.1% come from other races. As regards place of residence, 46.1% of the sample live in urban areas, whereas only 11.3% live in rural areas. The differences by gender with respect to the latter two variables are insignificant The sample youths took exercise on 3.54 days during the last week prior to the survey, with the percentage for young males being somewhat higher, 4.10%, than that corresponding to young females, 3%. Similarly, the sample youths have smoked tobacco on 4.27 days during the last month, more specifically, on 4.81 days in the case of male adolescents and on 3.76 in that of females. Finally, the proportion of marijuana users who live in the same region as the specific sample youth is 23.8%, whereas any sample adolescent has carried a weapon some 66.2 times during the last year, with this number being significantly higher for young males, 1.11, than for young females, 0.23.

(Table 2)

Results

The results of estimating the simultaneous probability model, both for the total sample, as well as when differentiating by gender, are shown in Table 3. Given that the general results are similar to those obtained when so differentiating, we have chosen to place emphasis on the former and only provide a description of the latter when significant differences are detected.

We first describe our identification strategy in the estimation of the simultaneous equation model. Here, we have introduced the instrumental variables *Marijuana%* and *Weapon* in the marijuana and suicide equation, respectively, where both variables must be exogenous.

With respect to the exogeneity of the *Marijuana%* variable, it is reasonable to assume that a youth's individual behaviour does not exert a significant influence on the proportion of marijuana users. Additionally, we can logically suppose that young people who live in regions where there are more adolescents which consume cannabis and, hence, who are surrounded by a bigger proportion of school mates that use marijuana, are subject to more pressure to smoke that substance.

If we focus on the suicide equation, we have selected the *Weapon* variable after testing its exogeneity by means of two different tests. As regards the first, we have initially redefined *Weapon* as a dichotomous variable and estimated the probability of the adolescent carrying a weapon by way of a probit model, with its residuals then being included in the suicide equation (Smith and Blundell, 1986). To estimate weapon use we have used three instrumental variables which indicate the region where the young people live, with all these variables appearing to be statistically significant (Congdom, 1996; Matthew, 1998). Finally, the test, which follows an χ^2 distribution, does not allow us to reject the exogeneity hypothesis.

With respect to the second test, and bearing in mind that the original *Weapon* variable takes the values 0, 1, 2.5, 4.5 and 6, we have employed a two-stage quasi maximum

likelihood technique (Mullahy, 1997). In this second test we have introduced the estimations of *Weapon* as a new variable in the suicide probit equation, with the corrected standard errors being derived by the bootstrap procedure, allowing for 200 reiterations. As before, the instrumental variables were jointly significant, and thus we do not reject the null hypothesis of exogeneity.

Turning now to the estimation results, on the basis of the sign and the individual significance of the parameters γ_1, γ_2 and ρ, we can first note that there are unobservable effects which exert an influence in the same direction over both of the reduced-form equations, that is to say, suicide plan and marijuana use. Likewise, our estimations find evidence that marijuana consumption among US youth increases the probability of planning suicide. At the same time, we have identified a causal relationship in the opposite direction, in the sense that youths who have planned suicide, other things being equal, have a greater probability of consuming marijuana.

(Table 3)

As regards the other individual variables, and in line with the previous descriptive analysis, our estimations reveal that male youths show a greater probability of consuming marijuana than their female counterparts, but a lower probability of planning suicide. Furthermore, we can appreciate a positive relationship between the *Age* variable and the decision to consume marijuana, with this being clearly significant only in the case of the male sub-sample. By contrast, the results do not point to any significant relationship between age and planning suicide. Turning to ethnicity, we can note that, other things being

equal, the Black group, significant for the total sample as well as for both gender sub-samples, and the Hispanic group, only significant at the 10% level for the total sample, show a higher percentage of marijuana users, whilst the Asian group exhibits the lowest percentage. At the same time, the probability of planning suicide is lower among Black, Hispanic and White youths, in that order, with no significant differences being detected among the other ethnic groups.

The subsequent dummy variable reveals that youths who live in suburban areas have a higher probability of being marijuana smokers, with this result being specially significant in the case of the female sub-sample. At the same time, there would appear to be no significant residential area differences in the proportion of young people that have planned suicide. Another important result is that the consumption of marijuana is relatively widespread among young people, independent of the studies level. By contrast, this studies level has a negative and significant impact on the probability of planning suicide, above all in the female sub-sample.

Another group of variables takes into account the habits followed by young people. In this regard, we find that the coefficient of the *Sport* variable in the marijuana equation has a positive sign, which is derived clearly from the significant results that appear in the male sub-sample. At the same time, this habit variable is not significant in the suicide planning equation for the total sample, while it appears positive and negative for the female and male sub-samples, respectively. Additionally, young people who usually adopt the healthy habit of wearing a seatbelt when driving exhibit a lower probability of consuming marijuana. However, they have the same probability of planning suicide, with these results appearing

for the total sample as well as for both sub-samples. The next variable, which reflects whether the young person smoke cigarettes, suggests, as in the previous case, for all three estimations, that there is no relationship between tobacco consumption and planning suicide, although the probability of using marijuana is higher among smokers. The remaining dummy variables reveal that whilst, other things being equal, the proportion of marijuana users has increased between 1999 and 2001, the percentage of youths who have planned suicide has not.

Finally, and with respect to the identification variables, our results indicate that youths take into consideration the habits of their peer group. Thus, young people who live in areas where the proportion of marijuana users is higher and, consequently, where there is a higher proportion of marijuana smokers in their school, have a greater probability of themselves consuming that drug. At the same time, the carrying of weapons appears to exert a positive effect over the probability of planning suicide.

Discussion

In this paper we have set out to analyse whether or not there is a causal relationship between planning suicide and marijuana use among American youths. To that end, we have employed a simultaneous probability model which has been estimated by maximum likelihood using the information provided by the last two waves of the Youth Risk Behavior Survey (YRBS) corresponding to 1999 and 2001.

The main result of this study is the reverse causality that we have detected between both variables, with this implying that marijuana use increases the probability of making a suicide plan and, likewise, that individuals who exhibit a tendency to plan suicide have a higher probability of consuming marijuana.

With respect to the socio-demographic risks determinants, we can summarize the results separately for both equations, *MarijuanaUse* and *Suicide Plan*, as follows. As regards the first, we have found that male youths show a greater probability of consuming marijuana. Similarly, we appreciate a positive relationship between age and the decision to consume marijuana, especially in the case of the male sub-sample. In addition, we can note that the Black ethnic group shows the higher percentage of marijuana users, whilst the Asian group exhibits the lowest rate. The subsequent variable reveals that youths who live in suburban areas have a higher probability of being marijuana smokers. As regards the variables which takes into account the habits followed by young people, we have concluded that sport has a positive sign in the marijuana equation, which is derived clearly from the significant result which appears in the male sub-sample. Additionally, young people who usually adopt the healthy habit of using a seatbelt have a lower probability of consuming marijuana. The next variable, which reflects whether the young person smoke cigarettes, suggests that the probability of using marijuana is higher among smokers. Finally, we have noted the presence of peer pressure, in the sense that youths who live in residential areas where the percentage of marijuana use among their peers is higher themselves have a greater probability of consuming this illicit drug.

As regards the *SuicidePlan* equation, we have found that male youths show a lower probability of planning suicide. Additionally, we can note that the lowest probability of planning suicide appears among Black youths. Another important result is that the studies level has a negative and significant impact on the probability of planning suicide. Finally, we have determined that carrying weapons appears to exert a positive effect on the probability of planning suicide.

In short, our results would appear to confirm that marijuana use and planning suicide is never the result of a single factor, but rather emerges from a complex interaction of many socio-demographic factors. In this line, these results could be used by school managers, community leaders and public policy makers to identify those youths who have the highest risk of both consuming marijuana and planning suicide.

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Table 1

Percentages of marijuana use and suicide plan (means and st. dev.)

Variable	Total Sample	Female Sub-sample	Male Sub-sample
MarijuanaUse	0.252 (0.434)	0.204 (0.403)	0.302 (0.459)
Age			
<16 years old	0.206 (0.405)	0.182 (0.346)	0.235 (0.424)
=16 years old	0.258 (0.438)	0.208 (0.406)	0.313 (0.464)
>16 years old	0.281 (0.449)	0.218 (0.413)	0.338 (0.473)
Ethnicity			
White	0.255 (0.436)	0.220 (0.414)	0.292 (0.455)
Black	0.241 (0.428)	0.173 (0.378)	0.318 (0.466)
Hispanic	0.254 (0.435)	0.202 (0.401)	0.305(0.461)
Asian	0.173 (0.378)	0.139 (0.346)	0.206 (0.405)
NativeAmerican	0.356 (0.480)	0.244 (0.431)	0.438 (0.497)
OtherRace	0.303 (0.460)	0.260 (0.439)	0.355 (0.479)
Area			
Urban	0.248 (0.432)	0.204 (0.403)	0.295 (0.456)
Suburban	0.258 (0.437)	0.208 (0.406)	0.309 (0.462)
Rural	0.247 (0.431)	0.189 (0.392)	0.310 (0.463)
SuicidePlan	0.178 (0.382)	0.224 (0.417)	0.129 (0.335)
Age			
<16 years old	0.185 (0.389)	0.236 (0.424)	0.124 (0.330)
=16 years old	0.188 (0.391)	0.236 (0.425)	0.137 (0.344)
>16 years old	0.166 (0.372)	0.205 (0.404)	0.128 (0.334)
Ethnicity			
White	0.187 (0.390)	0.235 (0.424)	0.138 (0.345)
Black	0.137 (0.344)	0.171 (0.376)	0.100 (0.300)
Hispanic	0.175 (0.380)	0.227 (0.419)	0.123 (0.329)
Asian	0.209 (0.407)	0.276 (0.447)	0.142 (0.349)
NativeAmerican	0.221 (0.415)	0.237 (0.427)	0.203 (0.404)
OtherRace	0.245 (0.430)	0.300 (0.458)	0.177 (0.382)
Area			
Urban	0.177 (0.382)	0.223 (0.416)	0.128 (0.335)
Suburban	0.179 (0.384)	0.223 (0.417)	0.133 (0.340)
Rural	0.174 (0.379)	0.225 (0.418)	0.119 (0.324)

Table 2

Definitions and descriptive analysis (mean and st. dev.)

Variable	Definition	Total Sample	Female Sub-sample	Male Sub-sample
MarijuanaUse	This takes the value 1 if the youth has used marijuana during the last 30 days and 0 otherwise	0.252 (0.434)	0.204 (0.403)	0.302 (0.459)
SuicidePlan	This takes the value 1 if the youth has made a plan about how he/she will attempt suicide during the last 12 months and 0 otherwise	0.178 (0.382)	0.224 (0.417)	0.129 (0.335)
Gender	This takes the value 1 if the youth is male and 0 if female	0.487 (0.500)	0.000 (0.000)	1.000 (0.000)
Age	Age of the youth	16.199 (1.217)	16.123 (1.211)	16.278 (1.218)
White	This takes the value 1 if the youth is White and 0 otherwise	0.410 (0.492)	0.410 (0.492)	0.412 (0.492)
Black	This takes the value 1 if the youth is Black and 0 otherwise	0.241 (0.428)	0.246 (0.431)	0.235 (0.424)
Hispanic	This takes the value 1 if the youth is Hispanic and 0 otherwise	0.230 (0.421)	0.224 (0.417)	0.236 (0.424)
Asian	This takes the value 1 if the youth is Asian or native Hawaiian and 0 otherwise	0.046 (0.210)	0.045 (0.207)	0.048 (0.213)
Native American	This takes the value 1 if the youth is Indian or Alaskan native and 0 otherwise	0.011 (0.104)	0.009 (0.096)	0.013 (0.112)
OtherRace	This takes the value 1 if the youth is not White or Black or Hispanic or Asian or Indian and 0 otherwise	0.061 (0.240)	0.066 (0.248)	0.057 (0.232)
Urban	This takes the value 1 if the youth lives in an urban area and 0 otherwise	0.461 (0.499)	0.464 (0.499)	0.459 (0.498)
Suburban	This takes the value 1 if the youth lives in an suburban area and 0 otherwise	0.426 (0.494)	0.422 (0.494)	0.430 (0.495)
Rural	This takes the value 1 if the youth lives in a rural area and 0 otherwise	0.113 (0.316)	0.114 (0.318)	0.112 (0.315)
Grade	This takes values according to the grade in which the youth is studying (1: 9^{th} grade, 2: 10^{th} grade, 3: 11^{th} grade; 4: 12^{th} grade)	2.501 (1.115)	2.483 (1.112)	2.522 (1.118)
Sport	This takes values according to the number of days on which the youth took exercise during the last 7 days	3.541 (2.528)	3.007 (2.447)	4.106 (2.487)
Seatbelt	This takes values according to the frequency with which the youth wear a seat belt when driving a car	2.872 (1.183)	3.008 (1.089)	2.730 (1.258)
Tobacco	This takes values according to the frequency (measured in days) with which the youth smoked during the last 30 days	4.273 (9.357)	3.763 (8.783)	4.817 (9.906)
Marijuana%	This takes values according to the proportion of marijuana users who live in the same region as the youth: Northeast, Midwest South or West.	0.238 (0.017)	0.238 (0.017)	0.238 (0.017)
Weapon	This takes values according to the number of times the youth has carried a weapon such as a gun, knife or club, during the last 12 months	0.662 (1.708)	0.234 (1.031)	1.119 (2.119)

Table 3

Estimations

Variable	Total Sample		Female Sub-sample		Male Sub-sample	
	Marijuana Use	Suicide Plan	Marijuana Use	Suicide Plan	Marijuana Use	Suicide Plan
SuicidePlan	0.877***	-	0.959***	-	0.846***	-
	(12.304)	-	(9.658)	-	(9.141)	-
MarijuanaUse	-	0.411***	-	0.427***	-	0.365***
	-	(3.659)	-	(2.366)	-	(2.405)
Intercept	-4.523**	-2.030	-0.276	-4.201*	-8.722***	-0.775
	(-2.281)	(-1.091)	(-0.099)	(-1.746)	(-2.859)	(-0.253)
Gender	0.564***	-0.547***	-	-	-	-
	(14.906)	(-21.517)	-	-	-	-
Age	0.411*	0.210	-0.071	0.482*	0.955***	-0.021
	(1.692)	(0.935)	(-0.207)	(1.653)	(2.578)	(-0.057)
AgeSquared	-0.011	-0.007	0.002	-0.015	-0.027***	0.000
	(-1.521)	(-0.996)	(0.232)	(-1.636)	(-2.396)	(-0.014)
White	-0.071	-0.125***	0.009	-0.158**	-0.146**	-0.083
	(-1.433)	(-2.468)	(0.134)	(-2.359)	(-2.009)	(-1.052)
Black	0.237***	-0.334***	0.251***	-0.346***	0.226***	-0.299***
	(4.191)	(-7.493)	(3.202)	(-5.632)	(2.742)	(-4.248)
Hispanic	0.091*	-0.151***	0.107	-0.143***	0.084	-0.156**
	(1.791)	(-3.490)	(1.534)	(-2.586)	(1.097)	(-2.257)
Asian	-0.450***	0.083	-0.419***	0.109	-0.469***	0.032
	(-6.196)	(0.987)	(-4.191)	(0.936)	(-4.276)	(0.251)
NativeAmerican	0.042	-0.144	0.181	-0.231*	-0.085	-0.035
	(0.367)	(-1.473)	(1.129)	(-1.755)	(-0.507)	(-0.240)
Urban	0.057	0.055	0.098*	0.010	0.006	0.115*
	(1.447)	(1.412)	(1.758)	(0.171)	(0.096)	(1.953)
Suburban	0.099***	0.030	0.115**	-0.005	0.079	0.079
	(2.553)	(0.739)	(2.096)	(-0.093)	(1.365)	(1.267)
Grade	0.030	-0.039***	0.057*	-0.066***	0.000	-0.002
	(1.532)	(-2.356)	(1.929)	(-2.885)	(-0.007)	(-0.093)
Sport	0.010**	-0.006	-0.009	0.009*	0.029***	-0.025***
	(2.063)	(-1.456)	(-1.308)	(1.710)	(4.205)	(-3.984)
Seatbelt	-0.076***	-0.013	-0.037**	-0.038	-0.107***	0.011
	(-6.567)	(-0.709)	(-2.085)	(-1.477)	(-7.184)	(0.441)
Tobacco	0.031***	0.005	0.028***	0.006	0.031***	0.006
	(12.396)	(0.872)	(7.804)	(0.578)	(10.083)	(0.755)
T99	-0.045**	0.010	-0.063*	0.029	-0.024	-0.018
	(-1.967)	(0.456)	(-1.939)	(1.020)	-(0.695)	(-0.548)
Marijuana%	3.378***	-	2.521***	-	4.273***	-
	(4.827)	-	(2.580)	-	(4.128)	-
Weapon	-	0.060***	-	0.083***	-	0.059***
	-	(5.520)	-	(3.091)	-	(4.599)
ρ	0.253***		0.250***		0.251***	
	(10.410)		(7.554)		(6.966)	
N. observations	25,452		13,317		12,135	

t-statistics appear in parentheses.
* Significant at the 10% level, ** Significant at the 5% level, *** Significant at the 1% level

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