

Health and Risk Behaviors and Educational Attainment: An Update to Dee and Evans (2003)

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Abstract: Dee and Evans (2003) find that teen drinking does not have a casual impact on educational attainment with regards to high school completion, college attendance, and college persistence rates. In this follow-up study, a larger array of teen health and risk behaviors are examined to determine whether any causal impact can be identified. Moreover, this study updates the instruments to graduated drivers licensing (GDL) provisions that have been shown to reduce teen risky behaviors. The empirical specification is a two-sample two-stage least squares with behavioral data from YRBS and educational attainment data from IPUMS-USA. The health and risk behaviors studied are grouped into vehicular, illegal substances, sexual, and leisure activities.

The results suggest that very few health and risk behaviors appear to influence the likelihood of completing high school or entering college. Of all behaviors analyzed, only having multiple sexual partners reduces the likelihood of completing high school by 11.3% and entering college by 23.0%. Sports participation appears to increase the likelihood of completing high school by 9.9%. These regressions do not account for the endogenous relationship between individuals' behavior and education attainment. Using the two-sample two-stage least squares approach with GDL provisions as instrumental variables to control for the endogenous relationship between teen health and risk behaviors and educational attainment, the estimation results suggest that health and risk behaviors continue to have very little influence on educational attainment.

Keywords: Teens, Risky Behavior, Educational Attainment

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1. Introduction

The last twenty years has been marked by gains in college attendance, compared to the mid-to-late twentieth century when substantial gains in high school completion occurred. For example, the 1974 birth cohort has a high school completion rate of 86.3% and a college entrance rate of 48.4%. This is in comparison to the 1995 birth cohort who has high school completion and college entrance rates of 90.3% and 60.8%, respectively (see Figure 1).¹ Separating individuals by gender indicates that females remain more likely to complete high school and enter college and that educational attainment gains have been approximately equal over this period. More striking is educational attainment across ethnicities. White high school completion and college entrance rates are quite flat over the last twenty years, while blacks and Hispanics have seen substantial gains. For example, the gap in high school completion rates between whites and blacks and whites and Hispanics in the 1974 birth cohort are 19 and 38 percentage points, respectively. In comparison, the gap in the 1995 birth cohort gaps are 7 and 12 percentage points, respectively. Additionally, the college entrance gaps between whites and blacks and whites and Hispanics in the 1974 birth cohort are 14 and 32 percentage points, respectively, compared to the 1995 birth cohort with gaps of 7 and 15 percentage points (see Figure 2).

During this same period there have been substantial changes in health and risk behaviors between birth cohorts (see Figure 2). With regards to vehicular safety, teens are more likely to wear their seatbelts as a passenger and less likely to ride with a drunk driver. With regards to illegal substances, there appears to be a slight inverted-U shape relationship across time. This trend is similar for smoking, ever drinking alcohol, and marijuana use. Sexual behavior has changed substantially between birth cohorts. The percent of 16-year-olds ever having intercourse and having multiple sexual partners have fallen precipitously, especially for blacks and, to a degree, Hispanics. Additionally, birth control has also increased. This may be for medical reasons and may not reflect fully contraceptive use. Lastly, health behaviors, such as tv watching and team sports participation, appear to be somewhat constant, with slight improvements with respect to blacks and Hispanics.

The change in youth risky behavior may, in part, be attributed to the introduction of graduated driver licensing programs that delay teens from obtaining licensure and restricts them once they are licensed. Between 1988 and 2015, all 50 states enacted GDL programs to various degrees. There are four GDL provisions which constraints teens from engaging in risky behavior. These are: a *minimum intermediate licensing of age 16.5 or older*, *nighttime driving restrictions once licensed*, *teen passenger restriction once licensed*, and *teen driver cellphone/texting bans*.² Between 1996 and 2015, vehicular

¹ Author's calculations using IPUMS-USA data. Educational attainment asked at age 20.

² In 1988, of these four GDL provisions, only 4% of states had nighttime driving restrictions. By 2015, almost all states enacted night time driving restrictions, teen passenger restrictions, and teen driver cellphone/text bans.

fatalities per capita involving 16- and 17-year-old drivers declined by 68.7 percent, while driver licensure per capita declined by 33.3 percent. Gilpin (2017) estimates the causal impact of GDL provisions and finds that these GDL provisions explain almost the entire decline in fatalities and licensure.

Several studies exploit the incapacitating aspects of GDL programs to study how they affect youth behavior. Deza and Litwok (2016) use Uniform Crime Reports from 1995 – 2011 and a triple difference approach to estimate a 6 percent decrease in criminal participation following the implementation of these restrictions. Deza (2016) uses similar mythology and shows a decline in teen fertility. Qui (2017) studies the effects of GDL programs on youth smoking and drinking and finds few significant effects.

In this paper, we extend Dee and Evans (2003) that studies the relationship between alcohol consumption and educational attainment by investigating a larger array of youth health and risk behaviors and, additionally, using GDL provisions as instrumental variables that effect teens ability to engage in risky behavior, but unlikely effect educational attainment. We do this using a two-sample two-stage least squares instrumental variables approach. The health and risk behaviors studied are grouped into vehicular, illegal substances, sexual, and leisure activities. Individual-level data are aggregated into cells by state, year, sex, age, and race. The empirical specification controls for a host of unobservable and observable influences to identify the relationship between teen behaviors and educational attainment. Following Dee and Evans (2003), health and risk behaviors are surveyed at age 16 and 17 and educational attainment of these individuals is determined at age 20 (whether they completed high school and entered college).

The results are as follows. First, in the naïve regressions, i.e., fully specified regressions that do not account for the endogenous relationship between teen behavior and educational attainment, very few health and risk behaviors appear to influence the likelihood of completing high school or entering college. Of all behaviors analyzed, only having multiple sexual partners reduces the likelihood of completing high school by 11.3% and entering college by 23.0%. Sports participation appears to increase the likelihood of completing high school by 9.9%. These regressions do not account for the endogenous relationship between individuals' behavior and education attainment. Subsample analysis by gender indicate that males that watch more than 3 hours of TV per day, on average, are 14.9% less likely to complete high school and multiple partners appear to negatively affect males or than females from entering college. Subsample analysis by race indicate that Hispanic teens that engage in risky behavior are substantially less likely to enter college. First, Hispanic teens are less likely to enter college who smoke tobacco or marijuana and who engage in sexual relations.

Using the two-sample two-stage least squares approach with GDL provisions as instrumental variables to control for the endogenous relationship between teen behavior and educational attainment, the estimation results suggest that heath and risk behaviors continue to have very little influence on educational

attainment. The number of statistically significant coefficient appears to be almost equal to the number randomly anticipated at 5% confidence level.

2.0 Data

The two-sample two-stage least squares approach is used when one dataset does not include all variables required (see Inoue and Solon (2010) for a theoretical overview). In this research, we follow Dee and Evans (2003) and aggregate individual-level observations to the cell level to match the samples. The cells are aggregated to state X year X sex X age X race.³ The health and risk behavior indicators are provided by the biennium Youth Risk Behavior Surveillance System (YRBS) data from 1991 to 2011 and includes the responses of those 16 and 17 years of age, the target age for those in high school.⁴ Even though the YRBS is only surveyed every other year, because each YRBS surveys both those age 16 and 17, this provides continuous birth cohorts from 1974 to 1995. There are thirteen health and risk behaviors analyzed are 1) whether the individual never or rarely wear seatbelt as passenger, 2) whether the individual most of the time or always wear seatbelt as passenger, 3) whether the individual has been a passenger with drunk driver, 4) whether the individual has ever had sexual intercourse, 5) whether the individual has had more than 4 sex partners, 6) whether the individual use birth control when engaged in sexual relations, 7) whether the individual has ever tried tobacco products, 8) whether the individual has ever tried alcohol, 9) whether the individual had 5 or more drinks in last 30 days, 10) whether the individual has ever tried marijuana, 11) whether the individual has ever tried cocaine, 12) whether the individual watches TV 3 or more hours per day, and 13) whether the individual played on at least one sports team during the last year.

The educational attainment data are from IPMUS-USA between 1995 to 2015 and provides the educational attainment of each birth cohort between 1974 to 1995. Specifically, this study researches whether the individual completed high school and entered college, as reported at age 20. Individual observations are again aggregated to the state X year X sex X age X race cell level.

The empirical specifications control for other potentially relevant state-level determinants varying over time. Using Current Population Survey data, for each cell, I calculate individual characteristics: total population, real household income, number of siblings, and parents' highest education (in the form of binary indicators for less than high school, some college, and college graduate). I also obtain the relevant age-specific population to weight the data. Household income is included as a gross measure of socioeconomic

³ There are two sexes: male and female and four races: white, black, Hispanic, and 'other minority'.

⁴ The 2015 YRBS National, State, and District Combined Datasets contains data from YRBS surveys conducted from 1991-2015 in multiple states. There are 10 states that have not authorized the CDC to release their data. These are: CO, HI, IN, LA, MA, NM, OH, PA, TX, and VT. After individually contacting each of these states for their data, it was determined that none of them had consistent data from 1991-2015.

status. Economic controls for each state over time are included: the unemployment rate, the real per capita income, and the real minimum wage. These are provided by the U.S. Census Bureau. All monetary values are in 10,000s and deflated to 2015 dollars using the Consumer Price Index (CPI).

State-specific laws targeting youth behavior are included in binary form: a dropout age of 17, a dropout age of 18, and no-pass-no drive. The compulsory schooling age laws are provided by the National Center for Education Statistics' Digest of Education Statistics Table 5.1 from 1996 – 2015 and all enactment years are cross-validated using Lexus-Nexus. The No-Pass-No-Drive are state-level laws that were passed over the last two decades and link teen driver licensure to school attendance, academic performance, and behavior (see Barua and Vidal-Fernandez (2013) and Kennedy (2016) for overviews, law enactment dates, and analyses). I construct a binary variable equal to one if the state has law(s) linking teen driving to school outcomes during the year. Lastly, I include recently enacted medical marijuana laws using a state-by-state guide provided by Rolling Stones magazine. All laws, including GDL provisions, are indexed to what was enacted when the individual was 16 years old.

GDL program data are provided by Williams et al. (2015) who use the historical records provided by the Insurance Institute for Highway Safety (IIHS) to identify the implementation date for all GDL provisions. All dates were cross-validated using Lexus-Nexus searches and no errors were identified. There are four GDL provisions evaluated and binary indicator variables are constructed for each: *minimum intermediate licensing age 16.5 or older*, *nighttime driving restriction once licensed*, *teen passenger restriction once licensed*, and *teen driver cellphone/texting ban*.

There are 294,579 observations from the YRBS data and 19,042 IPMUS observations that are aggregated to approximately 2,880 cells (9 years x 40 states x 2 sexes x 4 races). There are several black and Hispanic cells missing and almost half of all 'other minority' cells. Due to these limitations, we do to conduct separate analysis on 'other minorities'. The descriptive statistics are provided in Table 1.

3.0 Health and Risk Behaviors on Educational Attainment, Linear Model Approach

3.1 Specification

I estimate the effects of health and risk behaviors using within state variation over time. The baseline approach to estimating the effect on educational attainment corresponds to the following linear model:

$$Y_{ist} = X_{ist}\beta_1 + W_{st}\beta_2 + R_{ist}\gamma + \delta_i + \delta_s + \delta_t + \varepsilon_{ist}$$

where Y_{ist} is the percent of individuals that completed high school or entered college within cell i in state s during calendar year t , X_{ist} contains the individual and household characteristics, and W_{st} contains state

controls and educational laws, R_{ist} is an individual health and risk behavior indicator, δ_i are cell fixed effects, δ_s are state fixed effects, and θ_t are time fixed effects. I cluster the standard errors at the state level, the level of the GDL instruments used later. The state control variables included in the baseline model account for potential bias driven by inherent differences across states over time. The coefficients of interest is γ and estimates the correlation between a health and risk behavior and an educational attainment. All coefficient estimates are interpreted as percent effects in decimal format.

4.2. Results

The analysis is conducted for each of the 13 behaviors and 2 educational outcomes for a total of 26 regressions. The results are provided in Tables 2-4. Across all regressions, several of the coefficients demonstrate stability. First, parents' highest education being some college increases the likelihood of completing high school by 7.1%-8.4% and entering college by 10.8%-11.2%. Similar rates are identified for those with parents' highest education being college. Second, higher state unemployment boasts high school completion by 1.3-1.7 percent. Third, a state with a dropout age of 17 experiences a 5.6% - 11.0% decline in high school completion and college entrance. The excluded category is the state requires a high school diploma to dropout (and very marginally those few states with a dropout age of 16). A state with a dropout age of 18 reduces the likelihood of entering college by 6.2%-15.7%.

The estimated correlation between health and risk behaviors and educational attainment is quite weak. First, none of the substance-related behaviors had significance on the likelihoods of either high school completion or entering college. Second, having sex with multiple partners is negatively correlated with the likelihood of finishing high school (11.3%) and entering college (23.0%). No other sexual behavior was statistically correlated with educational attainment. Third, participating in team sports is positively correlated with the likelihood of finishing high school (9.9%), but not entering college.

The naïve linear model is estimated by sex and race and these results are provided in Table 5. It should be noted that each cell within this table is a separate regression. For example, the estimate, -0.149, under the column 'male' and row 'TV watching' is the estimated coefficient of a separate regression including only males and includes the health behavior indicator 'watching more than 3 hours of TV per day'. This regression includes all other covariates listed in the above specification and are parsimoniously omitted. The results suggest that only males watching TV watching is negatively correlated with completing high school. There are a few significant findings with respect to the likelihood of entering college. First, males with multiple sexual partners is negatively correlated with entering college (-34.1%). Second, smoking tobacco and marijuana is negatively correlated with Hispanics from entering college. No other health or risk behaviors were statistically significant on the likelihood of completing high school or entering college at a 5% level.

4.0 GDL Laws on Health and Risk Behaviors

4.1 Specification

I test the strength of the GDL provision as IVs by conducting regression analysis and using F-tests to determine the strength of these instruments. The baseline approach to estimating the first-stage corresponds to the following linear model:

$$R_{ist} = X_{ist}\beta_1 + W_{st}\beta_2 + GDL_{st}\gamma + \delta_i + \delta_s + \delta_t + \varepsilon_{ist}$$

where GDL_{st} contains the vector of GDL provisions and all other variables are as listed above. A F-test on the vector of γ provides an indicator of the strength of the instruments. The results of the first-stage estimation is provided in Tables 6-10.

4.2. Results

I first demonstrate that these laws are valid by providing evidence that they significantly vehicular safety. In Table 6, I provide estimates on the three vehicle behavior indicators. The results suggest that the GDL provision teen driver cellphone/texting band reduced the number of individuals never wearing their seatbelt by 2.2% and increased the number of individuals always wearing their seatbelt by 9.3%. The results also suggest that the GDL provision minimum intermediate licensing age of 16.5 or older increased seatbelt usage as a passenger by 31.5%. Lastly, the teen passenger restriction once licensed increased the likelihood of being a passenger with a drunk driver by 2.4%. This is likely due to restriction who is able to provide rides to youth. The F-tests suggest that GDL provisions as a whole are strong and differential impact youth. The magnitudes of the F-tests suggest that youth that are on the margin of sometimes wearing their seatbelts are now almost always or always wearing them. This type of youth are somewhat risk averse. On the other hand, those that never or rarely wear their seatbelt as a passenger are likely more risk seeking and are not affected as profoundly by the GDL laws.

The impact on other health and risk behaviors are provided in Table 7. First, the GDL law minimum intermediate licensing age of 16.5 or older substantially reduces illegal substance use. Specifically, those that have ever used alcohol, being drunk often, marijuana, cocaine, and steroids use all fall when GDL provisions are enacted. Second, it appears individuals are more like to have sex with multiple partners when GDL provisions are enacted. The F-tests suggest that GDL provisions have their strongest effect substance use, and specifically, being drunk and steroid and marijuana use.

The impact of health and risk behaviors by gender are provided in Tables 8-9. These results mostly fortify the main results with very few exceptions. Additionally, the impact of health and risk behaviors by

race are provided in Table 10. The impact of GDL provisions appears to be largest on vehicular behavior of whites. Additionally, GDL provisions appear to not have differential effects across race with respect to substance use or sexual behavior. Lastly, blacks appear most impacts by GDL provisions with respect to TV watching.

5.0 Health and Risk Behaviors on Educational Attainment, Two-sample Two-stage Least Squares Approach

5.1. Reduced form estimates

Prior to estimating the 2S2SLS model, I estimate a reduced form to identify whether GDL laws impact educational attainment. The model specification is:

$$Y_{ist} = X_{ist}\beta_1 + W_{st}\beta_2 + GDL_{st}\gamma + \delta_i + \delta_s + \delta_t + \varepsilon_{ist}$$

where all variables are as listed above. A F-test on the vector of γ provides an indicator of the strength of GDL provisions on educational attainment. The results are provided in Table 11. These results suggest that there is no impact of GDL provisions on educational attainment (either individually or in aggregate). Table 12 provides the results by sex and race and only includes the estimated coefficients on the GDL program (i.e., reduced display of coefficients). These results suggest that GDL provisions have very little differential effects across sex and race. The exception is that Hispanics' educational attainment appear to be more affected by these provisions than other races.

5.2. 2S2SLS Specification

I now estimate the effects of health and risk behaviors on educational attainment using the 2S2SLS approach. This augments the baseline approach of estimating by utilizing the GDL laws as instrumental variables. The results are provided in Table 13 and Table 14 by sex and race.

5.3. Results

The analysis is conducted for each of the 11 behaviors (excludes the vehicle behavior indicator regressions) and 2 educational outcomes for a total of 22 regressions. The output is again parsimonious and each cell within this table is a separate regression. The results suggest that health and risk behaviors have very little impact on educational attainment and the significant effects following a probability of a significant finding at 5% (i.e., a 5% significance level indicates that randomly I would expect five regressions out of 100 to provide significance).

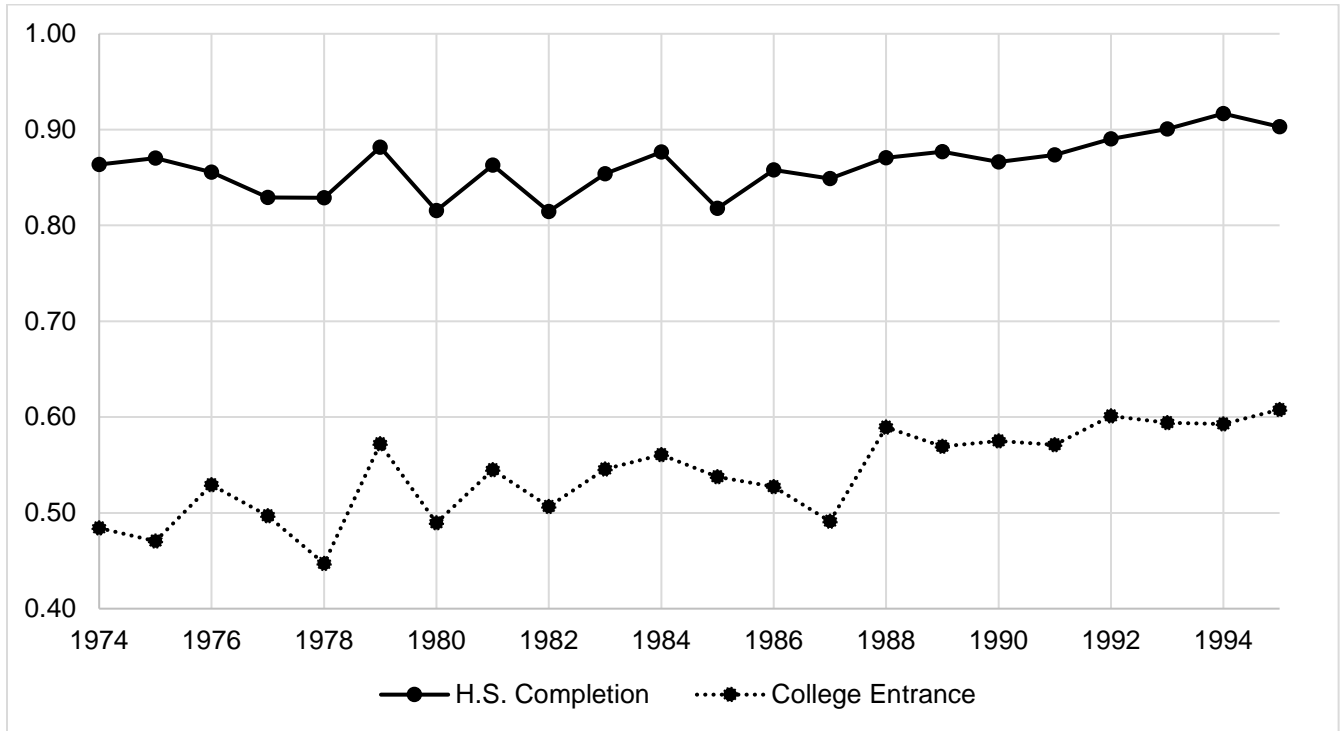
6.0 Conclusion

This paper updated Dee and Evans (2003) estimates on the relationship between risky behavior and educational attainment. The results of this paper also concludes that risky behavior does not have a profound influence on educational attainment and there is no single risky behavior that profoundly influences the percent of individuals who graduate from high school or attend college.

6.0 References

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Figure 1: U.S. High School Completion and College Entrance Rates



Source: IPMUS-USA data from 1995-2015. Note: Includes those born between 1974 and 1995 who indicate at age 20 that they completed high school and entered college, respectively, index by birth year. Rates provided by the proportion of birth cohort.

Figure 2: U.S. High School Completion and College Entrance Rates, By Race and Sex

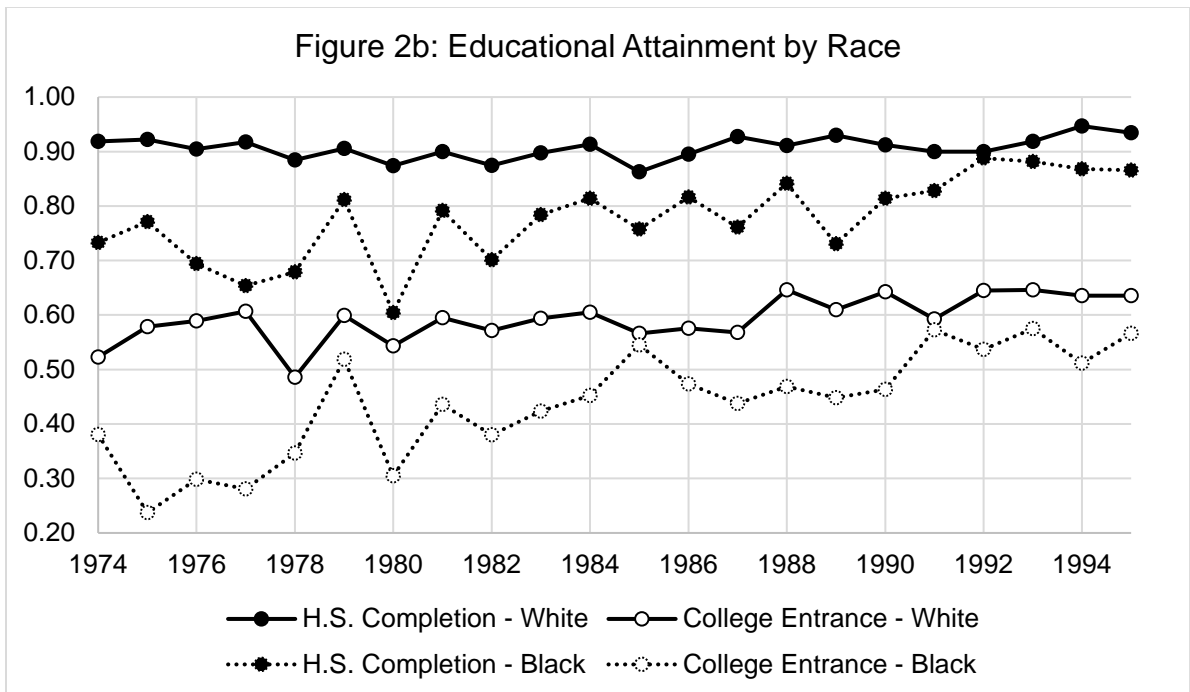
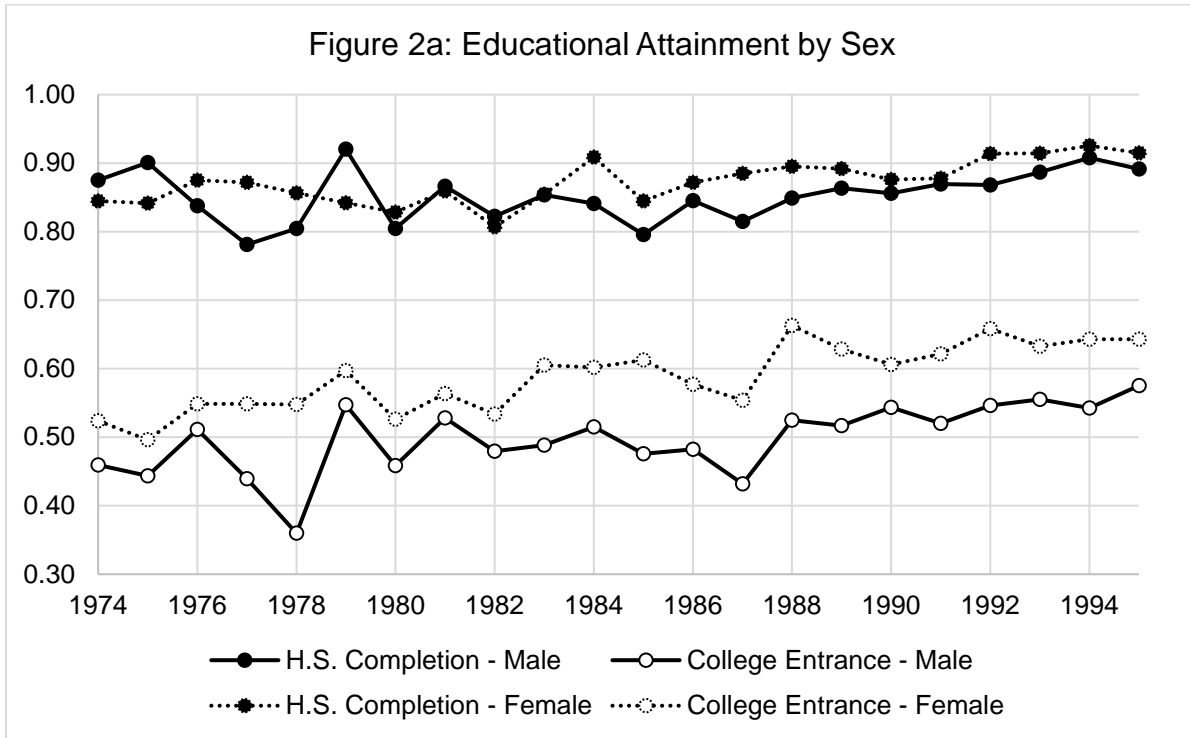
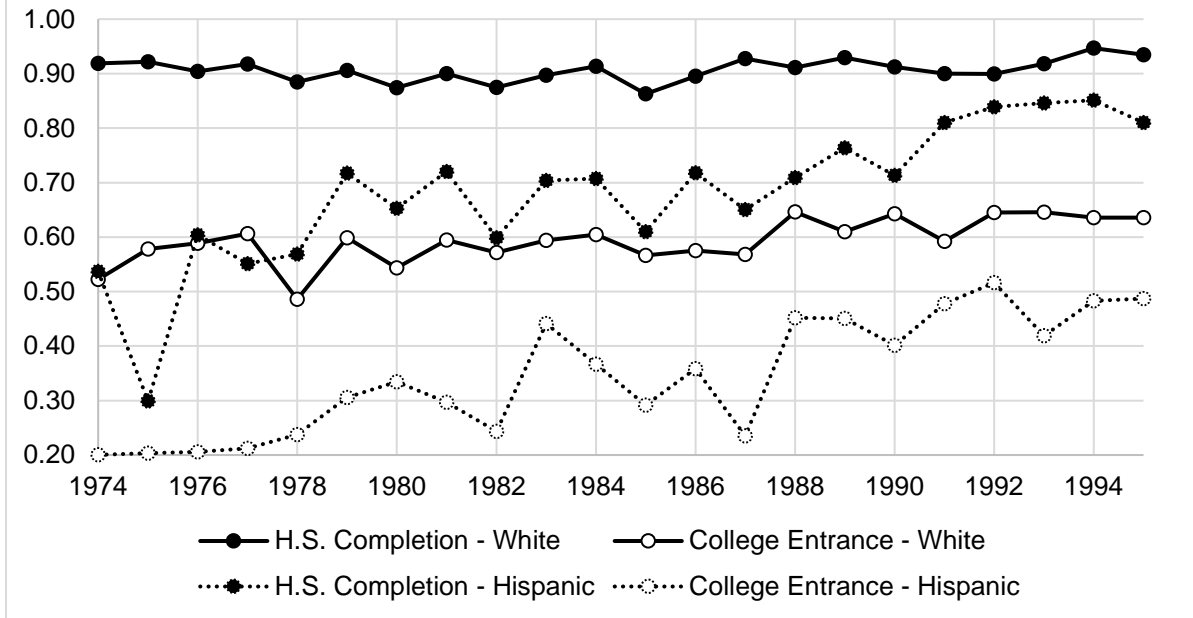
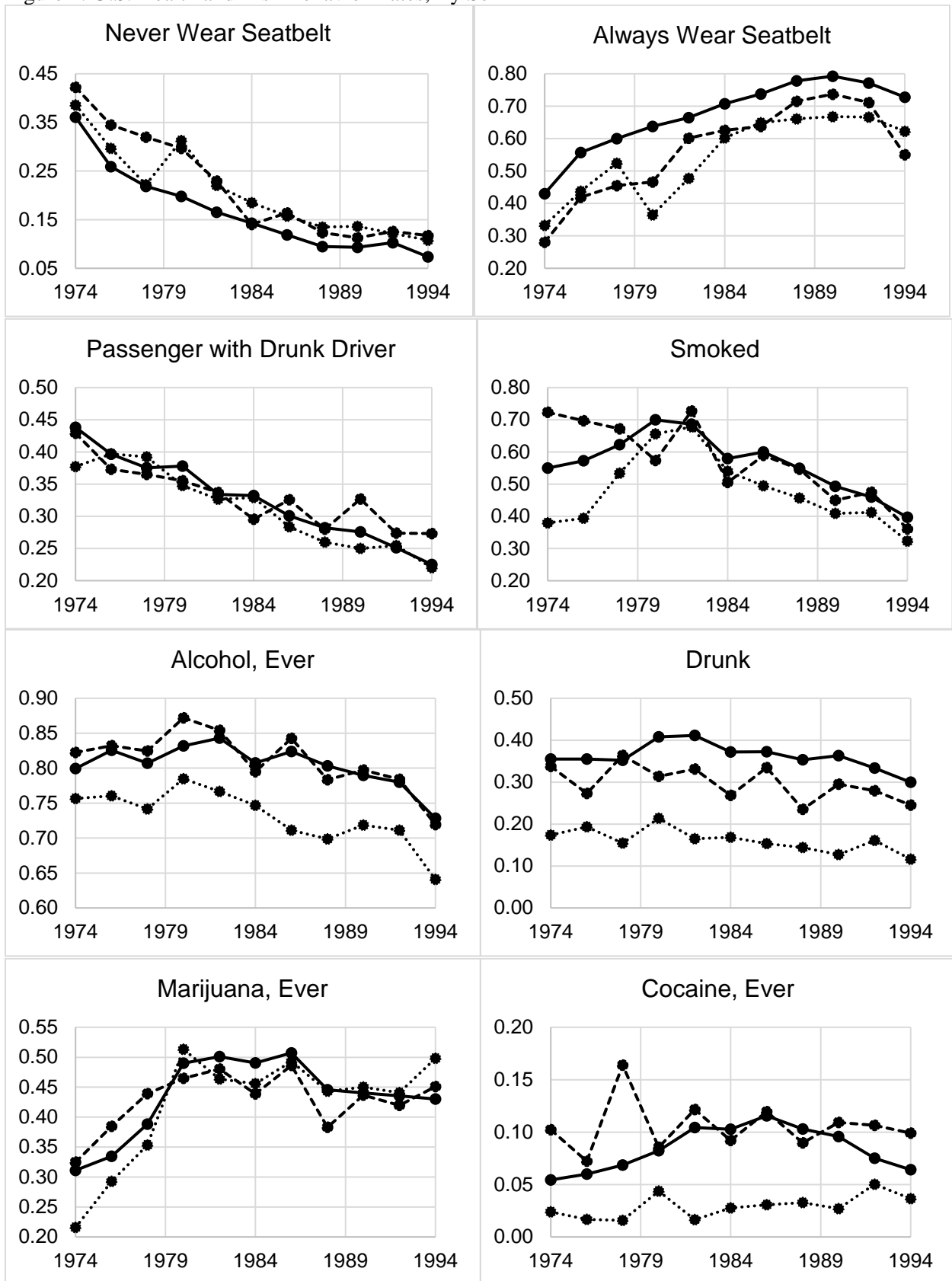


Figure 2c: Educational Attainment by Race Con.

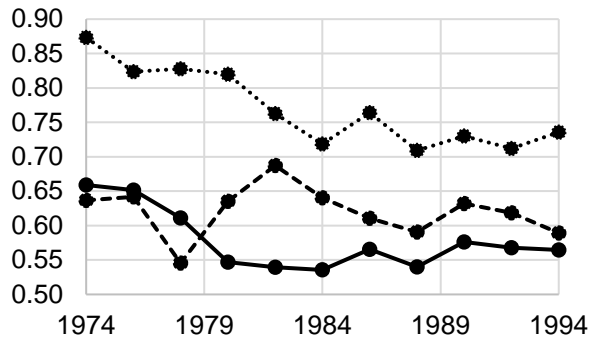


Source: IPMUS-USA data from 1995-2015. Note: Includes those born between 1974 and 1995 who indicate at age 20 that they completed high school and entered college, respectively, index by birth year. Rates provided by the proportion of birth cohort.

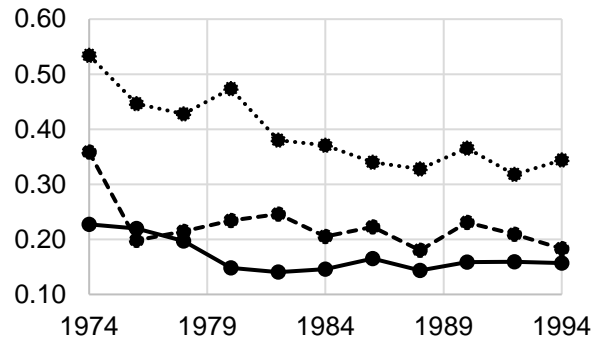
Figure 2: U.S. Health and Risk Behavior Rates, By Sex



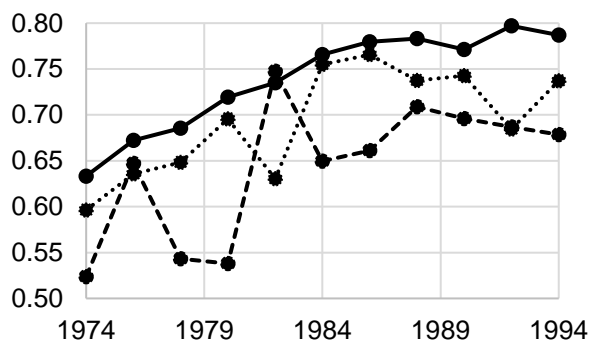
Intercourse, Ever



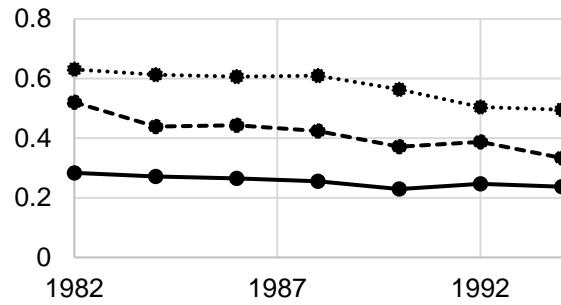
Multiple Sexual Partners



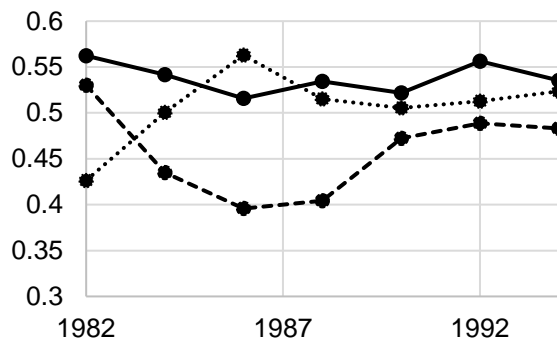
Birth Control



Watch 3 or more hours of TV daily



Team Sports Participation



Legend

Table 1: Summary Statistics

| | Obs | Mean | Std. Dev. |
|---|-------|------|-----------|
| Individual Characteristics | | | |
| Never or rarely wear seatbelt as passenger | 2,743 | 0.14 | -- |
| Most of the time or always wear seatbelt as passenger | 2,831 | 0.68 | -- |
| Passenger with drunk driver | 2,738 | 0.29 | -- |
| Ever had sexual intercourse | 2,513 | 0.55 | -- |
| More than 4 sex partners | 2,489 | 0.18 | -- |
| Use birth control | 2,421 | 0.73 | -- |
| Tried tobacco product | 2,831 | 0.49 | -- |
| Tried alcohol | 2,390 | 0.76 | -- |
| 5 or more drinks in last 30 days | 2,816 | 0.28 | -- |
| Tried marijuana | 2,725 | 0.42 | -- |
| Tried cocaine | 2,758 | 0.07 | -- |
| TV watching of 3 or more hours per day | 2,185 | 0.34 | -- |
| Played on at least one sports team | 1,828 | 0.53 | -- |
| Complete high school (asked at age 20) | 2,831 | 0.87 | -- |
| Entered college (asked at age 20) | 2,831 | 0.56 | -- |
| Male | 2,831 | 0.51 | -- |
| Age of 17 | 2,831 | 0.54 | -- |
| White | 2,831 | 0.64 | -- |
| Black | 2,831 | 0.18 | -- |
| Hispanic | 2,831 | 0.13 | -- |
| Other minority | 2,831 | 0.06 | -- |
| Household Income | 2,417 | 43.9 | 18.0 |
| Number of siblings in HH | 2,473 | 1.28 | 0.51 |
| Parents' highest ed. le h.s. | 2,473 | 0.10 | -- |
| Parents' highest ed. h.s. | 2,473 | 0.31 | -- |
| Parents' highest ed. some coll. | 2,473 | 0.29 | -- |
| Parents' highest ed. coll. | 2,473 | 0.30 | -- |
| State-level Characteristics and Laws | | | |
| Unemployment Rate | 2,831 | 6.49 | 2.30 |
| Income | 2,831 | 3.69 | 0.62 |
| Minimum Wage | 2,831 | 7.09 | 0.83 |
| Medical Marijuana | 2,831 | 0.02 | 0.14 |
| Dropout age of 17 | 2,831 | 0.20 | 0.40 |
| Dropout age of 18 | 2,831 | 0.16 | 0.36 |
| No Pass, No Drive | 2,831 | 0.49 | -- |
| State-level Graduate Drivers' Licensing Laws | | | |
| Minimum inter. licensing age 16.5 or older | 2,831 | 0.15 | -- |
| Night driving restriction once licensed | 2,831 | 0.80 | -- |
| Teen passenger restriction once licensed | 2,831 | 0.21 | -- |
| Teen driver cellphone/texting ban | 2,831 | 0.50 | -- |

Note: Includes those born between 1974 and 1995 who are 16 and 17 years of age in the 1991 to 2011 YRBS Survey and 20 years of age in the 1995 to 2015 IPUMS-USA data. All laws are oriented to what was in effect at age 16. Population weighted. 2015 dollars. Income and expenditures in 1,000s. Standard deviations omitted on all binary indicator variables.

Table 2: Effects of Illegal and Illicit Drug Behavior on Educational Attainment

| | High School Completion | | | | | | | | | | | |
|--------------------------------------|------------------------|------------------|-----------|------------------|-----------|------------------|-----------|------------------|-----------|------------------|-----------|------------------|
| | Coeff. | Robust Std. Errs | Coeff. | Robust Std. Errs | Coeff. | Robust Std. Errs | Coeff. | Robust Std. Errs | Coeff. | Robust Std. Errs | Coeff. | Robust Std. Errs |
| Individual Characteristics | | | | | | | | | | | | |
| Log(HH Income) | 0.000 | 0.013 | -0.008 | 0.018 | 0.001 | 0.013 | 0.002 | 0.014 | 0.000 | 0.013 | 0.001 | 0.014 |
| Number of siblings in hh | 0.010* | 0.006 | 0.007 | 0.007 | 0.009 | 0.006 | 0.009 | 0.006 | 0.010* | 0.006 | 0.010 | 0.006 |
| Parents' highest ed. le h.s. | -0.017 | 0.040 | -0.010 | 0.045 | -0.015 | 0.040 | -0.007 | 0.041 | -0.019 | 0.040 | -0.011 | 0.042 |
| Parents' highest ed. some coll. | 0.072*** | 0.023 | 0.084*** | 0.025 | 0.071*** | 0.023 | 0.071*** | 0.023 | 0.071*** | 0.023 | 0.076*** | 0.023 |
| Parents' highest ed. coll. | 0.048* | 0.027 | 0.048* | 0.026 | 0.047* | 0.027 | 0.048* | 0.026 | 0.048* | 0.027 | 0.058** | 0.028 |
| State-level Characteristics and Laws | | | | | | | | | | | | |
| Unemployment Rate | 0.010* | 0.006 | 0.010 | 0.006 | 0.009* | 0.005 | 0.010* | 0.006 | 0.010* | 0.006 | 0.012* | 0.006 |
| Log(Income) | 0.156 | 0.159 | 0.146 | 0.236 | 0.155 | 0.162 | 0.176 | 0.169 | 0.138 | 0.164 | 0.223 | 0.187 |
| Minimum Wage | 0.010* | 0.005 | 0.011** | 0.005 | 0.009* | 0.005 | 0.007 | 0.006 | 0.008 | 0.005 | 0.006 | 0.007 |
| Medical Marijuana | -0.050 | 0.030 | -0.072* | 0.040 | -0.052 | 0.031 | -0.072* | 0.037 | -0.081** | 0.039 | -0.041 | 0.025 |
| Dropout age of 17 | -0.056*** | 0.020 | -0.062*** | 0.017 | -0.057*** | 0.019 | -0.058*** | 0.018 | -0.056*** | 0.019 | -0.063*** | 0.018 |
| Dropout age of 18 | -0.058 | 0.035 | -0.055* | 0.031 | -0.059* | 0.034 | -0.062* | 0.035 | -0.069** | 0.033 | -0.063* | 0.035 |
| No Pass, No Drive | -0.011 | 0.014 | 0.002 | 0.010 | -0.013 | 0.014 | -0.011 | 0.014 | -0.013 | 0.014 | -0.011 | 0.014 |
| Risky Behavior | | | | | | | | | | | | |
| Smoking | 0.023 | 0.030 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Alcohol - Ever | -- | -- | 0.006 | 0.052 | -- | -- | -- | -- | -- | -- | -- | -- |
| Drunk | -- | -- | -- | -- | 0.063 | -0.058 | -- | -- | -- | -- | -- | -- |
| Marijuana | -- | -- | -- | -- | -- | -- | 0.065 | 0.060 | -- | -- | -- | -- |
| Cocaine | -- | -- | -- | -- | -- | -- | -- | -- | -0.050 | 0.090 | -- | -- |
| Steroids | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -0.109 | 0.110 |
| R-squared | 0.27 | | 0.27 | | 0.27 | | 0.27 | | 0.27 | | 0.26 | |

Table 2 Con.: Effects of Illegal and Illicit Drug Behavior on Educational Attainment

| | Enter College | | | | | | | | | | | |
|--------------------------------------|---------------|------------------|-----------|------------------|-----------|------------------|-----------|------------------|-----------|------------------|-----------|------------------|
| | Coeff. | Robust Std. Errs | Coeff. | Robust Std. Errs | Coeff. | Robust Std. Errs | Coeff. | Robust Std. Errs | Coeff. | Robust Std. Errs | Coeff. | Robust Std. Errs |
| Individual Characteristics | | | | | | | | | | | | |
| Log(HH Income) | 0.014 | 0.018 | -0.006 | 0.019 | 0.014 | 0.018 | 0.012 | 0.019 | 0.013 | 0.018 | 0.011 | 0.019 |
| Number of siblings in hh | 0.029** | 0.014 | 0.020 | 0.017 | 0.029** | 0.014 | 0.028* | 0.015 | 0.030** | 0.014 | 0.034** | 0.015 |
| Parents' highest ed. le h.s. | -0.034 | 0.037 | -0.007 | 0.036 | -0.032 | 0.037 | -0.029 | 0.041 | -0.039 | 0.038 | -0.042 | 0.040 |
| Parents' highest ed. some coll. | 0.110*** | 0.034 | 0.098** | 0.038 | 0.110*** | 0.034 | 0.108*** | 0.034 | 0.108*** | 0.034 | 0.111*** | 0.035 |
| Parents' highest ed. coll. | 0.089** | 0.038 | 0.057 | 0.036 | 0.090** | 0.038 | 0.091** | 0.038 | 0.090** | 0.038 | 0.089** | 0.040 |
| State-level Characteristics and Laws | | | | | | | | | | | | |
| Unemployment Rate | -0.003 | 0.009 | 0.005 | 0.010 | -0.003 | 0.009 | -0.005 | 0.010 | -0.003 | 0.009 | -0.001 | 0.011 |
| Log(Income) | -0.121 | 0.280 | -0.085 | 0.356 | -0.118 | 0.283 | -0.158 | 0.299 | -0.115 | 0.281 | -0.010 | 0.333 |
| Minimum Wage | 0.012 | 0.008 | 0.008 | 0.011 | 0.013 | 0.008 | 0.013 | 0.009 | 0.012 | 0.008 | 0.012 | 0.010 |
| Medical Marijuana | 0.032 | 0.025 | 0.039 | 0.031 | 0.036 | 0.024 | 0.040 | 0.033 | 0.023 | 0.034 | 0.026 | 0.031 |
| Dropout age of 17 | -0.108*** | 0.038 | -0.117*** | 0.036 | -0.106*** | 0.037 | -0.105*** | 0.038 | -0.108*** | 0.038 | -0.108*** | 0.038 |
| Dropout age of 18 | -0.152*** | 0.032 | -0.143*** | 0.036 | -0.147*** | 0.034 | -0.148*** | 0.034 | -0.157*** | 0.033 | -0.143*** | 0.041 |
| No Pass, No Drive | -0.026 | 0.028 | -0.010 | 0.025 | -0.024 | 0.027 | -0.025 | 0.027 | -0.025 | 0.026 | -0.029 | 0.027 |
| Risky Behavior | | | | | | | | | | | | |
| Smoking | -0.037 | 0.071 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Alcohol - Ever | -- | -- | 0.059 | 0.089 | -- | -- | -- | -- | -- | -- | -- | -- |
| Drunk | -- | -- | -- | -- | 0.024 | 0.065 | -- | -- | -- | -- | -- | -- |
| Marijuana | -- | -- | -- | -- | -- | -- | 0.031 | 0.064 | -- | -- | -- | -- |
| Cocaine | -- | -- | -- | -- | -- | -- | -- | -- | -0.200 | 0.122 | -- | -- |
| Steroids | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 0.112 | 0.199 |
| R-squared | 0.32 | | 0.34 | | 0.32 | | 0.32 | | 0.33 | | 0.32 | |
| Observations | 2,417 | | 2,029 | | 2,407 | | 2,331 | | 2,361 | | 2,243 | |

Note: Includes those born between 1974 and 1995 who are 16 and 17 years of age in the 1991 to 2011 YRBS Survey who are asked whether they completed high school and earned college at age 20. All laws are oriented to what was in effect at age 16. Regressions include cell, state, and birth cohort fixed effects as well as state time trends. Observations weighted using population weights. Standard errors are corrected for clustering at the state level. Significant at * 10%, ** 5%, *** 1%.

Table 3: Effects of Sexual Risky Behavior on Educational Attainment

| | High School Completion | | | | | | Enter College | | | | | |
|---|------------------------|------------------|----------|------------------|-----------|------------------|---------------|------------------|-----------|------------------|-----------|------------------|
| | Coeff. | Robust Std. Errs | Coeff. | Robust Std. Errs | Coeff. | Robust Std. Errs | Coeff. | Robust Std. Errs | Coeff. | Robust Std. Errs | Coeff. | Robust Std. Errs |
| <i>Individual Characteristics</i> | | | | | | | | | | | | |
| Log(HH Income) | -0.011 | 0.013 | -0.010 | 0.013 | -0.009 | 0.014 | 0.004 | 0.019 | 0.003 | 0.019 | -0.004 | 0.017 |
| Number of siblings in HH | 0.010 | 0.006 | 0.010 | 0.006 | 0.009 | 0.006 | 0.031* | 0.016 | 0.032* | 0.016 | 0.028* | 0.017 |
| Parents' highest ed. le h.s. | -0.030 | 0.044 | -0.031 | 0.044 | -0.038 | 0.047 | -0.053 | 0.041 | -0.052 | 0.042 | -0.048 | 0.043 |
| Parents' highest ed. some coll. | 0.077*** | 0.024 | 0.076*** | 0.024 | 0.075*** | 0.026 | 0.111*** | 0.037 | 0.112*** | 0.036 | 0.107*** | 0.035 |
| Parents' highest ed. coll. | 0.052* | 0.029 | 0.053* | 0.029 | 0.052 | 0.031 | 0.092** | 0.041 | 0.093** | 0.042 | 0.083* | 0.042 |
| <i>State-level Characteristics and Laws</i> | | | | | | | | | | | | |
| Unemployment Rate | 0.014** | 0.006 | 0.013** | 0.006 | 0.014** | 0.006 | 0.001 | 0.010 | 0.000 | 0.010 | 0.003 | 0.010 |
| Log(Income) | 0.202 | 0.165 | 0.185 | 0.170 | 0.228 | 0.193 | -0.042 | 0.298 | -0.084 | 0.313 | 0.067 | 0.317 |
| Minimum Wage | 0.008 | 0.004 | 0.007 | 0.004 | 0.007 | 0.005 | 0.014* | 0.008 | 0.013* | 0.008 | 0.013 | 0.008 |
| Medical Marijuana | -0.059** | 0.029 | -0.061** | 0.029 | -0.057* | 0.029 | 0.019 | 0.022 | 0.017 | 0.024 | 0.023 | 0.024 |
| Dropout age of 17 | -0.064*** | 0.019 | -0.056** | 0.022 | -0.065*** | 0.020 | -0.057* | 0.029 | -0.045 | 0.034 | -0.063** | 0.028 |
| Dropout age of 18 | -0.051 | 0.031 | -0.053 | 0.032 | -0.051 | 0.032 | -0.136*** | 0.035 | -0.139*** | 0.036 | -0.133*** | 0.035 |
| No Pass, No Drive | -0.010 | 0.012 | -0.009 | 0.012 | -0.009 | 0.013 | -0.043 | 0.032 | -0.040 | 0.030 | -0.045 | 0.030 |
| <i>Risky Behavior</i> | | | | | | | | | | | | |
| Intercourse | -0.018 | 0.044 | -- | -- | -- | -- | -0.095 | 0.070 | -- | -- | -- | -- |
| Multiple sexual partners | -- | -- | -0.113** | 0.054 | -- | -- | -- | -- | -0.230** | 0.103 | -- | -- |
| Birth Control | -- | -- | -- | -- | -0.033 | 0.051 | -- | -- | -- | -- | -0.046 | 0.082 |
| Observations | 2,152 | | 2,128 | | 2,072 | | 2,152 | | 2,128 | | 2,072 | |
| R-squared | 0.27 | | 0.27 | | 0.27 | | 0.33 | | 0.33 | | 0.34 | |

Note: The sample consists of individuals 16 and 17 years of age in the 1991 to 2011 YRBS Surveys who are asked whether they completed h.s. and earned coll. at age 20. All laws are oriented to what was in effect at age 16. Regressions include cell, state, and birth cohort fixed effects as well as state time trends. Observations weighted using population weights. Standard errors are corrected for clustering at the state level. Significant at * 10%, ** 5%, *** 1%.

Table 4: Effects of Health Habits on Educational Attainment

| | High School Completion | | | | Enter College | | | |
|---|------------------------|------------------|----------|------------------|---------------|------------------|----------|------------------|
| | Coeff. | Robust Std. Errs | Coeff. | Robust Std. Errs | Coeff. | Robust Std. Errs | Coeff. | Robust Std. Errs |
| <i>Individual Characteristics</i> | | | | | | | | |
| Log(HH Income) | -0.014 | 0.014 | -0.007 | 0.014 | 0.005 | 0.021 | -0.001 | 0.015 |
| Number of siblings in HH | 0.011* | 0.006 | 0.010 | 0.007 | 0.040** | 0.017 | 0.039* | 0.020 |
| Parents' highest ed. le h.s. | -0.003 | 0.037 | -0.001 | 0.045 | -0.013 | 0.044 | -0.005 | 0.051 |
| Parents' highest ed. some coll. | 0.090*** | 0.027 | 0.089*** | 0.031 | 0.147*** | 0.035 | 0.161*** | 0.035 |
| Parents' highest ed. coll. | 0.072** | 0.029 | 0.069** | 0.032 | 0.133*** | 0.036 | 0.136*** | 0.040 |
| <i>State-level Characteristics and Laws</i> | | | | | | | | |
| Unemployment Rate | 0.017** | 0.006 | 0.016* | 0.009 | -0.002 | 0.013 | -0.010 | 0.017 |
| Log(Income) | 0.314 | 0.197 | 0.305 | 0.320 | -0.060 | 0.368 | 0.081 | 0.498 |
| Minimum Wage | 0.008 | 0.005 | 0.004 | 0.006 | 0.014 | 0.009 | 0.011 | 0.010 |
| Medical Marijuana | -0.025 | 0.080 | 0.000 | 0.000 | -0.058 | 0.107 | 0.000 | 0.000 |
| Dropout age of 17 | -0.022 | 0.038 | -0.026 | 0.043 | -0.077** | 0.030 | -0.070** | 0.033 |
| Dropout age of 18 | -0.057* | 0.028 | 0.036 | 0.029 | -0.133*** | 0.048 | 0.024 | 0.035 |
| No Pass, No Drive | 0.000 | 0.051 | 0.041 | 0.072 | 0.012 | 0.022 | 0.050 | 0.045 |
| <i>Health Habits</i> | | | | | | | | |
| TV Watching | -0.069 | 0.050 | -- | -- | -0.057 | 0.071 | -- | -- |
| Team Sports | -- | -- | 0.099** | 0.047 | -- | -- | 0.107 | 0.068 |
| Observations | 1,893 | | 1,563 | | 1,893 | | 1,563 | |
| R-squared | 0.26 | | 0.27 | | 0.32 | | 0.33 | |

Note: The sample consists of individuals 16 and 17 years of age in the 1991 to 2011 YRBS Surveys who are asked whether they completed h.s. and earned coll. at age 20. All laws are oriented to what was in effect at age 16. Regressions include cell, state, and birth cohort fixed effects as well as state time trends. Observations weighted using population weights. Standard errors are corrected for clustering at the state level. Significant at * 10%, ** 5%, *** 1%.

Table 5: Risky and Healthy Behavior on Educational Attainment, By Sex and Race

| | H.S. Completion | | | | |
|---------------------------------------|-----------------|---------|--------|--------|----------|
| | Male | Female | White | Black | Hispanic |
| <i>Illegal and Illicit Substances</i> | | | | | |
| <i>Risky Behaviors</i> | | | | | |
| Smoking | 0.058 | 0.010 | 0.008 | 0.076 | -0.036 |
| Alcohol - Ever | 0.130* | -0.086 | -0.060 | -0.044 | -0.011 |
| Drunk | 0.131 | 0.052 | 0.057 | 0.069 | -0.017 |
| Marijuana | 0.099 | 0.058 | 0.011 | 0.015 | -0.087 |
| Cocaine | -0.033 | -0.065 | 0.173 | -0.068 | -0.173 |
| Steroids | -0.340 | -0.004 | 0.130 | 0.002 | 0.109 |
| <i>Sexual Risky Behaviors</i> | | | | | |
| Intercourse | -0.019 | -0.001 | 0.109 | 0.041 | -0.184 |
| Partners | -0.181 | -0.052 | 0.001 | 0.044 | -0.113 |
| Birth Control | 0.029 | -0.070 | -0.164 | 0.164 | 0.019 |
| <i>Health Habits</i> | | | | | |
| TV Watching | -0.149** | 0.037 | -0.107 | 0.018 | -0.029 |
| Team Sports | 0.107 | 0.067 | 0.067 | -0.136 | 0.110 |
| | Enter College | | | | |
| | Male | Female | White | Black | Hispanic |
| <i>Illegal and Illicit Substances</i> | | | | | |
| <i>Risky Behaviors</i> | | | | | |
| Smoking | -0.014 | -0.057 | 0.018 | 0.092 | -0.267** |
| Alcohol - Ever | 0.220* | -0.103 | -0.026 | 0.131 | -0.148 |
| Drunk | 0.099 | -0.023 | -0.079 | 0.070 | -0.119 |
| Marijuana | -0.033 | 0.036 | -0.023 | 0.191 | -0.285** |
| Cocaine | -0.294 | -0.117 | -0.061 | 0.113 | -0.330 |
| Steroids | -0.207 | 0.293 | 0.268 | -0.242 | 0.265 |
| <i>Sexual Risky Behaviors</i> | | | | | |
| Intercourse | -0.126 | -0.119 | 0.031 | -0.001 | -0.263* |
| Partners | -0.341** | -0.194* | -0.175 | -0.104 | -0.090 |
| Birth Control | 0.067 | -0.167* | -0.059 | 0.180* | -0.192 |
| <i>Health Habits</i> | | | | | |
| TV Watching | -0.166 | 0.049 | -0.071 | 0.075 | -0.167 |
| Team Sports | 0.129 | 0.070 | 0.181 | 0.135 | 0.101 |

Note: The sample consists of individuals 16 and 17 years of age in the 1991 to 2011 YRBS Surveys who are asked whether they completed high school and earned college at age 20. All laws are oriented to what was in effect at age 16. Regressions include cell, state, and birth cohort fixed effects as well as state time trends. Observations weighted using population weights. Standard errors are corrected for clustering at the state level. Significant at * 10%, ** 5%, *** 1%.

Table 6: Effects of GDL Laws on Vehicle Safety

| | Never or rarely wear seatbelt as passenger | | Most of the time or always wear seatbelt as passenger | | Passenger with drunk driver | |
|---|--|------------------|---|------------------|-----------------------------|------------------|
| | Coeff. | Robust Std. Errs | Coeff. | Robust Std. Errs | Coeff. | Robust Std. Errs |
| <i>Individual Characteristics</i> | | | | | | |
| Log(HH Income) | -0.009** | 0.004 | 0.006 | 0.008 | -0.010* | 0.005 |
| Number of siblings in HH | -0.002 | 0.003 | 0.007 | 0.005 | -0.004 | 0.004 |
| Parents' highest ed. le h.s. | 0.014 | 0.021 | -0.003 | 0.030 | -0.016 | 0.022 |
| Parents' highest ed. some coll. | -0.006 | 0.009 | 0.018 | 0.013 | 0.015 | 0.015 |
| Parents' highest ed. coll. | 0.018* | 0.010 | -0.005 | 0.021 | 0.019 | 0.017 |
| <i>State-level Characteristics and Laws</i> | | | | | | |
| Unemployment Rate | 0.000 | 0.004 | -0.021 | 0.029 | 0.008* | 0.004 |
| Log(Income) | -0.036 | 0.117 | -0.823 | 0.784 | -0.161 | 0.119 |
| Minimum Wage | -0.005** | 0.002 | 0.036* | 0.021 | 0.004 | 0.004 |
| Medical Marijuana | 0.072*** | 0.019 | -0.763** | 0.282 | -0.048** | 0.018 |
| Dropout age of 17 | 0.025 | 0.018 | -0.111 | 0.138 | 0.015 | 0.018 |
| Dropout age of 18 | -0.009 | 0.013 | 0.154* | 0.081 | -0.018 | 0.013 |
| No Pass, No Drive | 0.020*** | 0.007 | -0.003 | 0.057 | 0.000 | 0.013 |
| <i>State-level GDL Provisions</i> | | | | | | |
| Minimum inter. licensing age 16.5 or older | 0.002 | 0.013 | 0.315*** | 0.072 | -0.01 | 0.013 |
| Night driving restriction once licensed | 0.008 | 0.015 | -0.026 | 0.046 | -0.01 | 0.009 |
| Teen driver cellphone/texting ban | -0.022*** | 0.008 | 0.093** | 0.040 | -0.006 | 0.010 |
| Teen passenger restriction once licensed | -0.007 | 0.011 | -0.004 | 0.046 | 0.024*** | 0.008 |
| Observations | 2,070 | | 2,143 | | 2,061 | |
| First-stage F-test (Ho: GDL Provisions = 0) | 3.06** | | 8.62*** | | 4.47*** | |
| R-squared | 0.66 | | 0.73 | | 0.51 | |

Note: The sample consists of individuals 16 and 17 years of age in the 1991 to 2011 YRBS Surveys. Regressions include cell, state, and birth cohort fixed effects as well as state time trends. Observations weighted using population weights. Standard errors are corrected for clustering at the state level. Significant at * 10%, ** 5%, *** 1%.

Table 7: Effects of GDL Laws on Risky Behavior

| <i>Common Illegal Substance Risky Behaviors</i> | Smoking | Alcohol - Ever | Drunk | Marijuana | |
|---|---------|----------------|-----------|-----------|--|
| Minimum inter. licensing age 16.5 or older | -0.054 | -0.032*** | -0.031*** | -0.075*** | |
| Night driving restriction once licensed | 0.098** | -0.008 | -0.019** | 0.001 | |
| Teen driver cellphone/texting ban | 0.024 | -0.012 | -0.011 | -0.007 | |
| Teen passenger restriction once licensed | 0.000 | 0.000 | 0.027*** | -0.005 | |
| Observations | 2,143 | 1,772 | 2,138 | 2,067 | |
| First-stage F-test (Ho: GDL Provisions = 0) | 1.63 | 2.58* | 7.14*** | 6.77** | |
| R-squared | 0.88 | 0.66 | 0.72 | 0.48 | |

| <i>Less Common Illegal Substance Risky Behaviors</i> | Cocaine | Steroids |
|--|----------|-----------|
| Minimum inter. licensing age 16.5 or older | -0.025** | -0.01 |
| Night driving restriction once licensed | 0.000 | 0.003 |
| Teen driver cellphone/texting ban | -0.013** | -0.013*** |
| Teen passenger restriction once licensed | 0.002 | -0.005 |
| Observations | 2,091 | 1,969 |
| First-stage F-test (Ho: GDL Provisions = 0) | 2.76** | 5.59*** |
| R-squared | 0.05 | 0.03 |

| <i>Sexual Risky Behaviors and Healthy Habits</i> | Intercourse | Partners | Birth Control | TV Watching | Team Sports |
|--|-------------|----------|---------------|-------------|-------------|
| Minimum inter. licensing age 16.5 or older | 0.034 | 0.050** | 0.018 | 0.011 | -0.022 |
| Night driving restriction once licensed | 0.021 | 0.011 | 0.001 | -0.006 | 0.014 |
| Teen driver cellphone/texting ban | -0.02 | -0.007 | -0.001 | 0.009 | 0.009 |
| Teen passenger restriction once licensed | -0.023 | -0.019 | -0.006 | 0.005 | 0.021 |
| Observations | 1949 | 1909 | 1864 | 1,893 | 1,563 |
| First-stage F-test (Ho: GDL Provisions = 0) | 1.07 | 2.59* | 0.12 | 0.65 | 3.57** |
| R-squared | 0.703 | 0.753 | 0.322 | 0.81 | 0.62 |

Note: The sample consists of individuals 16 and 17 years of age in the 1991 to 2011 YRBS Surveys. Regressions include individual and state-level covariates, cell, state, and birth cohort fixed effects, and state time trends. Observations weighted using population weights. Standard errors are corrected for clustering at the state level. Significant at * 10%, ** 5%, *** 1%.

Table 8: Effects of GDL Laws on Risky Behavior - Diff-in-Diff

| <i>Vehicle Safety</i> | Female | | | Male | | |
|---|---------------------|----------------------|-----------------------------|---------------------|----------------------|-----------------------------|
| | Never wear seatbelt | Always wear seatbelt | Passenger with drunk driver | Never wear seatbelt | Always wear seatbelt | Passenger with drunk driver |
| Minimum inter. licensing age 16.5 or older | 0.001 | 0.315*** | 0.016 | -0.004 | 0.311*** | -0.026 |
| Night driving restriction once licensed | 0.018 | -0.039 | -0.001 | 0.014 | -0.037 | -0.016 |
| Teen driver cellphone/texting ban | -0.024* | 0.054 | 0.006 | -0.020** | 0.097** | -0.016 |
| Teen passenger restriction once licensed | -0.015 | 0.003 | 0.027*** | -0.005 | -0.008 | 0.024** |
| Observations | 1,035 | 1,070 | 1,030 | 1,035 | 1,073 | 1,031 |
| First-stage F-test (Ho: GDL Provisions = 0) | 1.04 | 8.25*** | 2.85** | 2.45* | 8.35*** | 3.65** |
| R-squared | 0.69 | 0.74 | 0.59 | 0.60 | 0.73 | 0.53 |

| <i>Common Illegal Substance Risky Behaviors</i> | Smoking | Female | | | Smoking | Male | | |
|---|---------|----------------|----------|-----------|---------|----------------|----------|-----------|
| | | Alcohol - Ever | Drunk | Marijuana | | Alcohol - Ever | Drunk | Marijuana |
| Minimum inter. licensing age 16.5 or older | -0.035 | -0.025 | 0.008 | -0.064** | -0.078 | -0.052*** | 0.056*** | -0.093*** |
| Night driving restriction once licensed | 0.081** | 0.013 | -0.018 | 0.001 | 0.092 | -0.028** | -0.021* | 0.005 |
| Teen driver cellphone/texting ban | 0.014 | -0.008 | -0.012 | -0.004 | 0.018 | -0.007 | -0.01 | -0.015 |
| Teen passenger restriction once licensed | -0.006 | -0.028* | 0.039*** | 0.005 | 0.014 | 0.027** | 0 | -0.017 |
| Observations | 1,070 | 887 | 1,068 | 1,034 | 1,073 | 885 | 1,070 | 1,033 |
| First-stage F-test (Ho: GDL Provisions = 0) | 1.19 | 2.20* | 3.2** | 1.75 | 0.77 | 7.88*** | 4.46*** | 3.11** |
| R-squared | 0.90 | 0.72 | 0.74 | 0.52 | 0.88 | 0.65 | 0.72 | 0.46 |

| <i>Less Common Illegal Substance Risky Behaviors</i> | Female | | Male | |
|--|---------|-----------|-----------|----------|
| | Cocaine | Steroids | Cocaine | Steroids |
| Minimum inter. licensing age 16.5 or older | -0.022 | -0.012 | -0.029*** | -0.013** |
| Night driving restriction once licensed | 0.002 | 0.005 | -0.004 | 0.001 |
| Teen driver cellphone/texting ban | -0.016* | -0.021*** | -0.011 | -0.007 |
| Teen passenger restriction once licensed | 0 | -0.002 | 0.007 | -0.007** |
| Observations | 1,044 | 987 | 1,047 | 982 |
| First-stage F-test (Ho: GDL Provisions = 0) | 1.75 | 1.37 | 2.63* | 3.08** |
| R-squared | 0.40 | 0.29 | 0.49 | 0.23 |

Table 9: Effects of GDL Laws on Risky Behavior - Diff-in-Diff

| <i>Sexual Risky Behaviors</i> | Female | | | Male | | |
|---|-------------|----------|---------------|-------------|----------|---------------|
| | Intercourse | Partners | Birth Control | Intercourse | Partners | Birth Control |
| Minimum inter. licensing age 16.5 or older | 0.063** | 0.071** | 0.06 | 0.014 | 0.035* | -0.041 |
| Night driving restriction once licensed | 0.016 | 0 | 0.029 | 0.012 | 0.020* | -0.026 |
| Teen driver cellphone/texting ban | -0.034* | -0.02 | -0.011 | -0.007 | 0.005 | 0.01 |
| Teen passenger restriction once licensed | -0.022 | -0.024* | -0.022 | -0.02 | -0.022* | 0.021 |
| Observations | 973 | 954 | 933 | 976 | 955 | 931 |
| First-stage F-test (Ho: GDL Provisions = 0) | 1.99 | 2.33* | 1.08 | 0.47 | 2 | 0.50 |
| R-squared | 0.78 | 0.82 | 0.28 | 0.62 | 0.51 | 0.41 |

| <i>Healthy Habits</i> | Female | | Male | |
|---|-------------|-------------|-------------|-------------|
| | TV Watching | Team Sports | TV Watching | Team Sports |
| Minimum inter. licensing age 16.5 or older | 0.004 | 0.03 | 0.027 | -0.052 |
| Night driving restriction once licensed | -0.003 | -0.005 | -0.001 | 0.003 |
| Teen driver cellphone/texting ban | -0.01 | 0.026 | 0.037* | -0.004 |
| Teen passenger restriction once licensed | -0.006 | 0.048*** | 0.015 | 0.021 |
| Observations | 948 | 782 | 945 | 781 |
| First-stage F-test (Ho: GDL Provisions = 0) | 3.01** | 0.95 | 2.95** | 0.78 |
| R-squared | 0.79 | 0.44 | 0.84 | 0.55 |

Note: The sample consists of individuals 16 and 17 years of age in the 1991 to 2011 YRBS Surveys. Regressions include individual and state-level covariates, cell, state, and birth cohort fixed effects, and state time trends. Observations weighted using population weights. Standard errors are corrected for clustering at the state level. Significant at * 10%, ** 5%, *** 1%.

Table 10: Effects of GDL Laws on Health and Risk Behaviors

| <i>Vehicle Safety</i> | White | | | Black | | | Hispanic | | |
|--|---------------------|----------------------|-----------------------------|---------------------|----------------------|-----------------------------|---------------------|----------------------|-----------------------------|
| | Never wear seatbelt | Always wear seatbelt | Passenger with drunk driver | Never wear seatbelt | Always wear seatbelt | Passenger with drunk driver | Never wear seatbelt | Always wear seatbelt | Passenger with drunk driver |
| Min.inter. licensing age 16.5 or older | 0.005 | 0.361*** | -0.004 | 0.032 | 0.134 | -0.029 | 0.028 | 0.312** | -0.011 |
| Night driving restriction | -0.002 | -0.028 | 0.001 | 0.097** | -0.187 | -0.026 | 0.009 | 0.056 | -0.046 |
| Teen driver cellphone/texting ban | -0.016* | 0.076** | 0.01 | -0.027 | 0.085 | -0.05 | 0.036 | -0.065 | -0.015 |
| Teen passenger restriction | -0.009 | 0.008 | 0.014 | -0.022 | 0.026 | -0.03 | 0.018 | -0.064 | 0.167** |
| Observations | 808 | 832 | 804 | 431 | 448 | 433 | 450 | 466 | 446 |
| F-test (Ho: GDL Provisions = 0) | 1.82 | 8.13*** | 0.75 | 2.65* | 3.98** | 2.19* | 1.56 | 2.5* | 1.93 |
| R-squared | 0.81 | 0.73 | 0.73 | 0.69 | 0.71 | 0.59 | 0.63 | 0.81 | 0.50 |

| <i>Illegal Substance</i> | Smoking | White | | | Smoking | Black | | | Smoking | Hispanic | | |
|---|---------|----------------|----------|---------|----------|----------------|---------|----------|---------|----------------|--------|----------|
| | | Alcohol - Ever | Drunk | MJ | | Alcohol - Ever | Drunk | MJ | | Alcohol - Ever | Drunk | MJ |
| Min. inter. licensing age 16.5 or older | -0.049 | -0.007 | -0.021 | -0.042* | -0.103** | -0.064 | -0.016 | -0.086** | 0.002 | -0.133 | -0.006 | -0.178** |
| Night driving restriction | 0.071 | 0.003 | -0.022** | 0.018 | 0.056 | -0.002 | 0 | -0.048 | 0.202** | 0.037 | -0.014 | -0.084 |
| Teen driver cellphone/texting ban | 0.023 | 0 | 0 | 0.003 | -0.004 | 0.008 | -0.024 | -0.011 | -0.067 | 0.033 | -0.011 | -0.019 |
| Teen passenger restriction | 0.027 | -0.003 | 0.033** | -0.004 | -0.070** | -0.046 | -0.035* | -0.052* | 0.033 | -0.065 | 0 | 0.047 |
| Observations | 832 | 700 | 828 | 792 | 448 | 378 | 448 | 444 | 466 | 384 | 466 | 459 |
| F-test (Ho: GDL Provisions = 0) | 0.70 | 0.03 | 2.69** | 0.97 | 2.53* | 1.77 | 1.09 | 7.87*** | 5.19*** | 2.93** | 0.03 | 2.53* |
| R-squared | 0.92 | 0.88 | 0.78 | 0.78 | 0.91 | 0.50 | 0.46 | 0.67 | 0.87 | 0.50 | 0.50 | 0.49 |

| <i>Less Common Illegal Substance</i> | White | | Black | | Hispanic | |
|--|---------|----------|-----------|----------|----------|----------|
| | Cocaine | Steroids | Cocaine | Steroids | Cocaine | Steroids |
| Min.inter. licensing age 16.5 or older | -0.02 | -0.011** | 0.017 | 0.013 | -0.038 | -0.001 |
| Night driving restriction | -0.004 | -0.001 | 0.009 | 0.022 | -0.002 | -0.01 |
| Teen driver cellphone/texting ban | -0.003 | -0.008 | -0.031*** | -0.026 | -0.015 | -0.006 |
| Teen passenger restriction | 0.006 | -0.004 | -0.018 | -0.02 | 0.029 | -0.012 |
| Observations | 804 | 772 | 446 | 422 | 463 | 424 |
| F-test (Ho: GDL Provisions = 0) | 0.75 | 1.54 | 3.58** | 2.59* | 0.47 | 0.40 |
| R-squared | 0.57 | 0.60 | 0.43 | 0.47 | 0.53 | 0.49 |

Table 10 Con.: Effects of GDL Laws on Health and Risk Behaviors

| | White | | | Black | | | Hispanic | | |
|---|-------------|----------|---------------|-------------|----------|---------------|-------------|----------|---------------|
| | Intercourse | Partners | Birth Control | Intercourse | Partners | Birth Control | Intercourse | Partners | Birth Control |
| <i>Sexual Behaviors</i> | | | | | | | | | |
| Minimum inter. licensing age 16.5 or older | 0.012 | 0.023 | 0.018 | 0.066 | 0.094* | -0.079 | 0.138 | 0.105 | 0.057 |
| Night driving restriction once licensed | 0.003 | 0.016* | -0.01 | 0.042 | -0.001 | -0.006 | 0.087** | 0.069 | -0.037 |
| Teen driver cellphone/texting ban | -0.012 | -0.001 | -0.008 | 0.009 | 0.031 | 0.001 | -0.07 | -0.076* | 0.236*** |
| Teen passenger restriction once licensed | -0.001 | -0.022** | -0.004 | -0.119 | -0.060* | 0.075 | -0.084** | -0.046 | 0.044 |
| Observations | 760 | 744 | 732 | 412 | 412 | 401 | 419 | 400 | 389 |
| First-stage F-test (Ho: GDL Provisions = 0) | 0.31 | 2 | 0.37 | 1.38 | 2 | 0.47 | 2.10 | 1.87 | 4.35*** |
| R-squared | 0.75 | 0.62 | 0.49 | 0.73 | 0.79 | 0.39 | 0.53 | 0.68 | 0.46 |

| | White | | Black | | Hispanic | |
|---|-------------|-------------|-------------|-------------|-------------|-------------|
| | TV Watching | Team Sports | TV Watching | Team Sports | TV Watching | Team Sports |
| <i>Health Habits</i> | | | | | | |
| Minimum inter. licensing age 16.5 or older | 0.004 | -0.012 | 0.068*** | 0.05 | -0.156 | -0.012 |
| Night driving restriction once licensed | -0.009 | 0.003 | 0.022 | 0.003 | 0.02 | 0.156 |
| Teen driver cellphone/texting ban | 0.009 | 0.008 | 0.058** | 0.019 | -0.077 | 0.042 |
| Teen passenger restriction once licensed | 0.014 | 0.034* | -0.058** | 0.038 | 0.008 | -0.096 |
| Observations | 716 | 612 | 397 | 328 | 418 | 341 |
| First-stage F-test (Ho: GDL Provisions = 0) | 0.65 | 1.99 | 8.79*** | 0.93 | 0.78 | 0.66 |
| R-squared | 0.64 | 0.72 | 0.56 | 0.78 | 0.63 | 0.66 |

Note: The sample consists of individuals 16 and 17 years of age in the 1991 to 2011 YRBS Surveys. Regressions include individual and state-level covariates, cell, state, and birth cohort fixed effects, and state time trends. Observations weighted using population weights. Standard errors are corrected for clustering at the state level. Significant at * 10%, ** 5%, *** 1%.

Table 11: Reduced Form Effects of GDL Laws on Education Attainment

| | Complete H.S. | | Enter College | |
|---|---------------|------------------|---------------|------------------|
| | Coeff. | Robust Std. Errs | Coeff. | Robust Std. Errs |
| Individual Characteristics | | | | |
| Log(Household Income) | -0.004 | 0.013 | 0.01 | 0.019 |
| Number of siblings in household | 0.010* | 0.006 | 0.033** | 0.015 |
| Parents' highest ed. less than high school | -0.009 | 0.038 | -0.001 | 0.037 |
| Parents' highest ed. some college | 0.081*** | 0.025 | 0.134*** | 0.030 |
| Parents' highest ed. college or beyond | 0.066** | 0.028 | 0.127*** | 0.034 |
| State-level Characteristics and Laws | | | | |
| Unemployment Rate | 0.014** | 0.006 | 0.003 | 0.012 |
| Log(Income) | 0.22 | 0.222 | -0.03 | 0.346 |
| Minimum Wage | 0.005 | 0.005 | 0.014** | 0.006 |
| Medical Marijuana | -0.079** | 0.033 | 0.035 | 0.040 |
| Dropout age of 17 | -0.023 | 0.030 | -0.043 | 0.029 |
| Dropout age of 18 | -0.056* | 0.031 | -0.129*** | 0.045 |
| No Pass, No Drive | -0.005 | 0.027 | -0.101*** | 0.033 |
| State-level GDL Provisions | | | | |
| Minimum inter. licensing age 16.5 or older | -0.013 | 0.041 | 0.013 | 0.046 |
| Night driving restriction once licensed | -0.001 | 0.018 | 0.023 | 0.034 |
| Teen driver cellphone/texting ban | 0.022 | 0.023 | 0.027 | 0.017 |
| Teen passenger restriction once licensed | -0.019 | 0.016 | 0.009 | 0.025 |
| Observations | 2,143 | | 2,143 | |
| F-test (Ho: GDL Provisions = 0) | 0.71 | | 0.97 | |
| R-squared | 0.27 | | 0.32 | |

Note: The sample consists of individuals 16 and 17 years of age in the 1991 to 2011 YRBS Surveys. Regressions include cell, state, and birth cohort fixed effects as well as state time trends. Observations weighted using population weights. Standard errors are corrected for clustering at the state level. Significant at * 10%, ** 5%, *** 1%.

Table 12: Reduced Form Effects of GDL Laws on Education Attainment, By Sex and Race

| | H.S. Completion | | | | |
|--|-----------------|--------|--------|--------|----------|
| | Male | Female | White | Black | Hispanic |
| Minimum inter. licensing age 16.5 or older | -0.026 | 0.009 | -0.015 | 0.008 | -0.077 |
| Night driving restriction once licensed | -0.014 | 0.006 | 0.003 | 0.02 | -0.115* |
| Teen driver cellphone/texting ban | 0.071* | -0.028 | 0.019 | -0.083 | 0.220*** |
| Teen passenger restriction once licensed | -0.031* | -0.006 | -0.009 | -0.073 | -0.034 |
| Observations | 1,070 | 1,070 | 832 | 448 | 466 |
| F-test (Ho: GDL Provisions = 0) | 2.55* | 0.28 | 0.22 | 1.40 | 4.06*** |
| R-squared | 0.32 | 0.27 | 0.27 | 0.32 | 0.40 |

| | Entered College | | | | |
|--|-----------------|--------|--------|--------|----------|
| | Male | Female | White | Black | Hispanic |
| Minimum inter. licensing age 16.5 or older | 0.109* | -0.072 | -0.001 | 0.201* | -0.018 |
| Night driving restriction once licensed | 0.034 | 0.008 | 0.038 | 0.062 | -0.227** |
| Teen driver cellphone/texting ban | 0.075* | -0.012 | -0.008 | 0.094 | 0.166** |
| Teen passenger restriction once licensed | -0.008 | 0.027 | 0.008 | -0.029 | 0.069 |
| Observations | 1,070 | 1,070 | 832 | 448 | 466 |
| F-test (Ho: GDL Provisions = 0) | 1.92 | 0.62 | 0.16 | 1.98 | 5.94*** |
| R-squared | 0.32 | 0.35 | 0.35 | 0.32 | 0.46 |

Note: The sample consists of individuals 16 and 17 years of age in the 1991 to 2011 YRBS Surveys. Regressions include cell, state, and birth cohort fixed effects as well as state time trends. Observations weighted using population weights. Standard errors are corrected for clustering at the state level. Significant at * 10%, ** 5%, *** 1%.

Table 13: 2SLS Estimates of Risky and Healthy Behaviors on Educational Attainment

| | H.S. Completion | | Enter College | | Obs. |
|----------------------------------|-----------------|------------------|---------------|------------------|------|
| | Coeff. | Robust Std. Errs | Coeff. | Robust Std. Errs | |
| <i>Substance Risky Behaviors</i> | | | | | |
| Smoking | 0.017 | 0.017 | 0.369 | 0.289 | 2143 |
| Alcohol - Ever | 0.586 | 0.484 | 0.15 | 0.975 | 1772 |
| Drunk | -0.003 | 0.414 | 0.175 | 0.537 | 2138 |
| Marijuana | 0.113 | 0.385 | -0.016 | 0.598 | 2067 |
| Cocaine | -0.433 | 0.881 | -1.089 | 1.19 | 2091 |
| Steroids | -1.291** | 0.654 | -1.935** | 0.964 | 1969 |
| <i>Sexual Risky Behaviors</i> | | | | | |
| Intercourse | 0.397 | 0.642 | -0.395 | 0.651 | 1949 |
| Partners | 0.886 | 0.681 | -0.463 | 0.697 | 1909 |
| Birth Control | -0.138 | 0.233 | 0.32 | 0.456 | 1864 |
| <i>Healthy Habits</i> | | | | | |
| TV Watching | -0.899 | 0.745 | 0.407 | 0.848 | 1893 |
| Team Sports | 0.444 | 0.418 | 1.166 | 0.756 | 1563 |

Note: The sample consists of individuals 16 and 17 years of age in the 1991 to 2011 YRBS Surveys who are asked whether they completed high school and earned college at age 20. All laws are oriented to what was in effect at age 16. Regressions include cell, state, and birth cohort fixed effects as well as state time trends. Observations weighted using population weights. Standard errors are corrected for clustering at the state level. Significant at * 10%, ** 5%, *** 1%.

Table 14: 2SLS Coefficient Estimates of Risky and Healthy Behaviors on Educational Attainment, By Sex

| | H.S. Completion | | | | |
|---|-----------------|--------|---------|---------|----------|
| | Male | Female | White | Black | Hispanic |
| <i>Illegal and Illicit Substances Risky Behaviors</i> | | | | | |
| Smoking | 0.04 | -0.034 | 0.040 | -0.126 | -0.303 |
| Alcohol - Ever | 0.632 | -0.165 | -1.009 | -0.388 | 1.123*** |
| Drunk | 0.201 | 0.129 | 0.2 | 1.231 | -0.002 |
| Marijuana | 0.26 | 0.029 | 0.684 | -0.234 | 0.224 |
| Cocaine | -0.916 | 1.01 | 0.692 | 0.793 | -0.446 |
| Steroids | -1.919 | 0.798 | -0.72 | 1.05 | -0.815 |
| <i>Sexual Risky Behaviors</i> | | | | | |
| Intercourse | 0.156 | 1.137* | 0.711 | 1.57 | -0.974 |
| Partners | 1.255 | 1.14 | 1.148 | 1.031 | -1.188 |
| Birth Control | 0.793 | -0.042 | -0.627* | 0.393 | 0.714** |
| <i>Healthy Habits</i> | | | | | |
| TV Watching | -0.067 | -0.382 | -1.319 | 1.143** | -0.04 |
| Team Sports | 0.148 | 0.421 | 0.552 | 0.26 | 1.071** |

| | Entered College | | | | |
|---|-----------------|---------|--------|--------|-----------|
| | Male | Female | White | Black | Hispanic |
| <i>Illegal and Illicit Substances Risky Behaviors</i> | | | | | |
| Smoking | 0.24 | .536** | 0.385 | -0.441 | -0.316 |
| Alcohol - Ever | -0.65 | 0.804 | 1.297 | -1.345 | 1.117** |
| Drunk | -0.957 | 0.498 | -0.025 | -0.584 | 0.077 |
| Marijuana | -1.163* | 1.439** | 0.609 | -0.45 | 0.135 |
| Cocaine | -3.546* | 1.193 | -0.497 | -0.002 | -1.518 |
| Steroids | -5.589** | 0.656 | -1.449 | -0.475 | -2.342*** |
| <i>Sexual Risky Behaviors</i> | | | | | |
| Intercourse | -0.46 | 0.561 | -0.783 | 0.316 | -1.302* |
| Partners | -0.248 | -0.074 | -0.754 | 0.021 | -1.24 |
| Birth Control | -0.101 | 0.052 | -0.3 | 0.318 | 0.476* |
| <i>Healthy Habits</i> | | | | | |
| TV Watching | 1.083 | -0.098 | 0.371 | -0.032 | 0.055 |
| Team Sports | 0.036 | 0.556 | 0.943 | 1.711 | -0.527 |

Note: The sample consists of individuals 16 and 17 years of age in the 1991 to 2011 YRBS Surveys who are asked whether they completed high school and earned college at age 20. All laws are oriented to what was in effect at age 16. Regressions include cell, state, and birth cohort fixed effects as well as state time trends. Observations weighted using population weights. Standard errors are corrected for clustering at the state level. Significant at * 10%, ** 5%, *** 1%.