Can Technology Really Help to Reduce Underage Drinking? New Evidence on the Effects of False ID Laws with Scanner Provisions

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Abstract

In Volume 36 of this journal, Yoruk (2014) uses data from the National Longitudinal Survey of Youth 1997 and finds that false ID laws with scanner provisions have large impacts on binge drinking participation, frequency of alcohol consumption and binge drinking frequency among minors. This paper reexamines how false ID laws with scanner provisions affect underage drinking. I first demonstrate that analyses based on NLSY97 data fail falsification exercises testing for significant pre-intervention effects, and that the estimated effects based on these data are highly sensitive to the inclusion of a lead term and to sample selection, which weakens confidence in the large estimated effects reported in Yoruk (2014). I then use data from the Youth Risk Behavior Surveillance System to show that false ID laws with scanner provisions have no effect on underage drinking behavior.

JEL classification: I10, I18

Key words: underage drinking; false ID laws with scanner provisions

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1 Introduction

Youth alcohol use is a prominent public health issue in the United States. As the most commonly used and abused drug, alcohol is responsible for more than 4,300 deaths and 185,000 emergency room visits among minors every year.[1] Moreover, recent studies have linked underage alcohol consumption to a variety of undesirable outcomes, including risky sexual behavior (Rees et al., 2001; Carpenter, 2005b; Waddell, 2012), mortality (Dee, 1999; Carpenter, 2004a; Carpenter and Dobkin, 2009; Grant, 2010), morbidity (Carpenter and Dobkin, 2017), crime (Carpenter, 2005a; Carpenter and Dobkin, 2015), poor academic performance (Carrell et al., 2011; Lindo et al., 2013), and unemployment (Renna, 2008). The medical and social costs associated with underage drinking are estimated to be in the billions of dollars per year (Miller et al., 2006).

Given these alarming statistics and findings, how can we best address this problem? Recently, several states have passed false ID laws with scanner provisions (hereafter, FSP laws): these laws incentivize alcohol retailers and bar owners to use electronic scanners to ensure that customers are at least 21 years old and have valid identification.[2] Yoruk (2014) uses data from the National Longitudinal Survey of Youth 1997 and a difference-in-differences design to estimate the effects of these policies on underage drinking and concludes that the adoption of FSP laws significantly reduces youth alcohol use. Moreover, the magnitude of the estimates suggests that FSP laws are extremely effective compared to other alcohol control policies. Prior work has shown that increasing the Minimum Legal Drinking Age (hereafter, MLDA) reduces drinking participation and binge drinking participation by approximately 5% (Dee, 1999; Carpenter et al., 2007); zero tolerance laws have no effect on drinking participation but reduce binge drinking participation by 13% for males (Carpenter, 2004b); social hosting laws have no effect on underage drinking (Dills, 2010); vertical ID laws reduce drinking participation for 16 year olds by 10% but have no effect on binge drinking or drinking frequency (Bellou and Bhatt, 2013).[3] In contrast, the estimates reported in Yoruk (2014) suggest that FSP laws reduce binge drinking participation by 15%, frequency of

[1] See Centers for Disease Control and Prevention (CDC) and Substance Abuse and Mental Health Services Administration (MHSA)

[2] Prices for ID scanners range from $400 to $1,300. (www.idscanner.com)

[3] Though not aiming at reducing underage drinking, Anderson et al. (2013a) suggests that medical marijuana laws reduce drinking participation for 18–19 year olds by around 14%.

alcohol consumption by 20%, and binge drinking frequency by 30%.

What is the argument for FSP laws as an approach to reducing underage drinking? FSP laws provide an affirmative defense for retailers in prosecutions for sales to minors if they can show that the scanner was used properly. These laws have the potential to reduce alcohol sales to youth through two channels. First, there may be a detection effect because an electronic scanner makes it easier to detect fake identification used to purchase alcohol. Second, there may be a deterrence effect as scanners may deter underage youth from trying to purchase alcohol. However, FSP laws may not be effective if few retailers choose to install scanners in their stores or if underage youth substitute towards retailers that do not use scanners, borrow an ID from look-alikes who are over 21, or ask someone older than 21 to purchase alcohol on their behalf.[4] Given this theoretical ambiguity, it is necessary to empirically evaluate the effectiveness of these laws, highlighting the importance of Yoruk (2014). Moreover, if the laws have the large effects reported in Yoruk (2014), it may be efficient for policy makers in every state to consider adopting FSP laws.

In this paper, I reexamine the impact of FSP laws on underage drinking using a difference-in-differences method, exploiting within state variation induced by the timing of several states passing FSP laws. First, I use the restricted National Longitudinal Survey of Youth 1997 (NLSY97) in an attempt to replicate and extend the estimates reported in Yoruk (2014). I demonstrate that analyses based on NLSY97 data fail falsification exercises testing for significant pre-intervention effects, and the magnitude and statistical significance of the estimated effects based on these data are sensitive to the inclusion of a lead term in the specification, weakening confidence in the results originally reported in Yoruk (2014). Moreover, around 50% of the significant estimates disappears when the 1997 wave of the NLSY97 is included in the analysis, casting further doubt on our ability to draw strong conclusions based on analyses of these data. I then turn to another reasonable data set for estimating the effects of FSP laws. In particular, I use the 1991–2013 national Youth Risk Behavior Surveillance System (YRBS), which offers a larger sample size and a longer sample period than NLSY97. Moreover, the YRBS was specifically designed to study youth behaviors, such as alcohol and other drug use, risky sexual behavior, and tobacco use. Estimates based on these data indicate

[4]Yoruk (2014) also mentions reasons why FSP laws may not work.

that FSP laws have no effect on drinking participation, binge drinking participation, or drinking and binge drinking frequency. In contrast to the estimates based on the NLSY97, these results are robust to changes in specifications and do not fail falsification tests. Moreover, estimates allowing for dynamic treatment effects indicate that FSP laws have neither short-term nor long-term effects. Taken together, these results suggest that FSP laws are unlikely to have significantly reduced youth drinking.

2 Reconsidering Evidence from NLSY97

To reexamine the effects of FSP laws, I first use the restricted NLSY97 data—the same source of data as used by Yoruk (2014)—in an attempt to replicate and extend Yoruk's (2014) analysis. The NLSY97 consists of a nationally representative sample of approximately 9,000 youths who were 12–16 years old as of December 31, 1996. These youths have been interviewed annually since 1997.[5] Following Yoruk (2014), I begin by restricting my attention to NLSY97 data from the period 1998–2005. I then include data from 1997 in the analysis.[6]

NLSY97 asks respondents how many days did they consume alcohol and engage in binge drinking (consuming five or more drinks in one sitting) in the past 30 days, respectively. Based on this information, I construct *Days of Alcohol Consumption* and *Days of Binge Drinking* to measure drinking and binge drinking frequency, respectively, and these variables have a value of zero if participants have not drunk or binge drunk in the past 30 days. Using information on drinking and binge drinking frequency, I also generate two dummy variables—*If Consumed Alcohol* and *If Binge Drank*—to measure unconditional drinking and unconditional binge drinking participation in the past 30 days, respectively. The remaining variable, *Average Drinks per Day*, measures drinking intensity, which is calculated as *Days of Alcohol Consumption* times average drinks per sitting divided by 30. Table 1 presents the summary statistics, allowing for a comparison of the sample I used and Yoruk's (2014). In the table, we see that the means and standard deviations I calculate

[5]NLSY97 starts to interview cohorts biennially after 2011.

[6]Following Yoruk (2014), I restrict the sample period to the year of 2005, because no interviewee in the NLSY97 sample is younger than 21 years old after 2005. Personal correspondence with Yoruk indicates that, while not mentioned in Yoruk (2014), those who do not have an exact interview date or exact birthday are dropped, along with those who reported drinking more than more than 30 drinks a day more than 30 drinks a day.

from the NLSY97 sample are close to those reported in Yoruk (2014).

Following Yoruk (2014), I use a difference-in-differences methodology in the analysis, exploiting variation in the timing of FSP law adoption across states. Specifically, I estimate the following model:

$$Y_{istm} = \beta' X_{istm} + \alpha' S_{stm} + \gamma FSP_{istm} + \mu_s + \eta_t + \lambda_m + \delta_{st} + \varepsilon_{istm}$$

where i indicates individuals, s indicates states, t indicates years, and m indicates months. In this model, Y_{istm} is a measure of drinking behavior; X_{istm} refers to a variety of individual-level controls, including age, gender, race, family size, income, marital status, employment status, educational attainment and being a student; S_{stm} is a vector of state-level time-varying controls, including unemployment rates, per capita income, state beer taxes rates, and indicators for several other alcohol policies, including BAC 0.08 laws, social hosting laws, Sunday alcohol sales, and vertical ID laws; δ_{st} indicates state-specific linear time trends.[7] The state, year and month fixed effects are captured by μ_s, η_t and λ_m, respectively. FSP_{istm} is the variable of interest, which equals one if a FSP law is in effect at month m, year t in state s for individual i. The estimate of γ identifies the causal effect of FSP laws on underage drinking under the identifying assumption that, in the absence of FSP laws, the change in underage alcohol consumption in the states passing FSP laws would have been the same as the change in underage alcohol consumption in other states. Models with binary outcome variables are estimated as linear probability models, and standard errors are clustered at the state level (Bertrand et al., 2004).

Table 2 is an attempted replication of Yoruk's main results. Column 1 reprints Yoruk's baseline estimates, from a model that includes state, year and month fixed effects, and Column 2 shows my attempted replication of the baseline estimates. Columns 3 through 5 progressively add individual- and state-time-varying controls, a lead term (a dummy variable for the two years before the policy

[7] I follow Yoruk (2014) in constructing control variables. I define treatment using introduction dates of FSP laws from the Alcohol Policy Information System (AIPS), and law effective dates are listed in Table A1. The data for state beer taxes are from the Beer Institute's Brewer's Almanac (2013); unemployment rates are from the Bureau of Labor Statistics (BLS); state-level income per capita are from the Bureau of Economic Analysis (BEA); the introduction dates of BAC 0.08 laws, social hosting laws, and Sunday alcohol sales are from the Alcohol Policy Information System; and data on the introduction years of vertical ID laws are from Bellou and Bhatt (2013).

adoption), and state-specific linear time trends to the estimation strategy. Columns 6 through 9 are similar but additionally control for individual fixed effects. The estimated effects of the FSP laws reported in this table are often statistically significant, suggesting that FSP laws reduce underage drinking. However, the estimated effects of the lead term are statistically significant nearly as often. Convention would have us interpret these estimates as failed placebo tests that cast doubt on the main results.

Table 3 extends the analysis by also using data from the 1997 survey wave, which increases the sample size by about 20%. Yoruk (2014) does not discuss why these data were not included in his analyses. However, these data would appear to be particularly important because they disproportionately include young teens while his analysis of heterogeneity indicates that his main results are largely driven by effects on young teens.[8]

The results shown in this table demonstrate that Yoruk's choice to omit data from 1997 leads to estimates that are statistically significant about twice as often as they are when this additional year of data is used in the analysis. This lack of robustness casts further doubt on our ability to draw any strong conclusion based on analyses of the NLSY97 data. I also note that the lead terms continue to be large and significant for Days of Alcohol Consumption and Days of Binge Drinking when 1997 data are included in the analysis.

To summarize, the results from the NLSY97 are sensitive to the inclusion of a lead term, raising concerns about the validity of the common trends assumption with this dataset. Moreover, the results are sensitive to sample selection. When the entire available sample is used, approximately 50% of the previously significant results disappears, and almost all the estimates become smaller in magnitude when 1997 data are included in the analysis. Overall, this set of estimates substantially weakens the confidence in the results originally reported in Yoruk (2014).[9]

[8]See Table 6 in Yoruk (2014). The reasons, as suggested by Yoruk (2014), could be that young teens have less chance of knowing someone older than 21 to purchase alcohol for them; they are more likely to be asked for identification in the stores; and they are not in college where alcohol is more accessible.

[9]Table A2 presents my attempted replication and extension of Yoruk's (2014) dynamic analysis, with Panel A omitting 1 year before the FSP laws, and shows that none of the estimates are significant. These results are at odds with Yoruk's (2014) finding of an immediate effect on average drinks per day. Moreover, while the indicators for years leading up to the policies are insignificant in this specific analysis, this appears to be due to a lack of power associated with using a single year of baseline data (i.e. having only one year serve as the omitted category) when the sample size is small. It is evident from my main results that the indicators for one and two years prior to the laws

3 New Evidence from YRBS

3.1 Main Results

In this section, I turn to an alternative data set for estimating the effects of FSP laws—the restricted national Youth Risk Behavior Surveillance System (YRBS). YRBS is a biennial survey spanning the years from 1991 to 2013. It surveys a nationally representative sample of youth about their health-risk behaviors, such as alcohol and drug use.[10] Primarily designed to monitor health-risk behavior that contributes significantly to death, disability, and social problems among youth, the YRBS provides comprehensive information on youth alcohol consumption. It has been used in a number of other studies on youth health behavior (Bellou and Bhatt, 2013; Carpenter and Cook, 2008; Carpenter and Stehr, 2008, 2011; Anderson et al., 2015, 2013b; Anderson, 2014; Colman et al., 2013). Unlike the NLSY97, this survey focuses exclusively on ninth through twelfth grade students; however, this is arguably an attractive feature in this context, because Yoruk's (2014) estimates suggest 13–17 year olds are responsive to these policies whereas older individuals are not.[11]

One potential advantage of the NLSY97 dataset is that it allows for the inclusion of individual fixed effects. However, the results based on the NLSY97 with and without individual fixed effects do not differ, which is not surprising because it is unlikely that individual characteristics are correlated with the introduction of FSP laws. In contrast, the primary advantages of the YRBS dataset are a much larger sample size and a much longer sample period. These advantages have important implications for the reliability of the analysis. First, larger samples are expected to more closely approximate the population and to enhance precision. Second, the longer sample period of the

are significant when all prior years are used as the baseline. I have also performed an analysis that is closer in spirit to Yoruk's analysis of dynamics that enhances power by omitting one and two years prior to the policies instead of just one. I present the results of this analysis in Panel B of Table A2. These estimates also indicate that Yoruk's (2014) NLSY97 sample fails the falsification tests. As a whole, this set of results further weakens confidence in the conclusions drawn from Yoruk's analysis of FSP laws.

[10] YRBS codes 7 for people aged 18 years and over, so potentially the sample could include people over age 21. Inclusion of individuals aged over 21 will attenuate the results, since FSP laws only target people under the age of 21. However, because YRBS targets ninth through twelfth graders, it is unlikely that they are over 21. According to 2013 Current Population Survey October supplements, people 21 years old and older account for only 2.5% of the entire high school population. Thus, I recode these people as 18 years old and include them in the main analysis. I drop individuals whose age information is missing, accounting for around 2% of the entire sample.

[11] Noting that because the YRBS survey ninth through twelfth grader, the results based on the YRBS sample may not apply to minors who are not in the ninth through twelfth grade. Based on the NLSY97 sample, Yoruk (2014) finds that FSP laws have significant effects for 18–20 year olds who are not in college.

YRBS offers a longer pre-treatment period than the NLSY97, which is crucial for a difference-in-differences identification strategy. Having few years of pre-treatment data increases the risk that the estimates may be biased by anomalous spikes in the data prior to treatment, which might explain why the NLSY97 estimates vary considerably when controlling for a lead term.

Same as the NLSY97, YRBS also asks individuals about their frequency of alcohol use in the previous 30 days, including the number of days of alcohol consumption and the number of days of binge drinking (consuming five or more drinks in one sitting).[12] Following the same method as used in the NLSY97 sample, I construct *Days of Alcohol Consumption* and *Days of Binge Drinking* to measure drinking and binge drinking frequency, respectively, and also generate two dummy variables—*If Consumed Alcohol* and *If Binge Drank*—to indicate unconditional drinking and binge drinking participation in the past 30 days, respectively.[13]

Summary statistics presented in Table 1 allows for a comparison of the NLSY97 and the YRBS. The summary statistics based on the YRBS and NLSY97 are remarkably similar for the four underage drinking indicators calculated from both samples, even though the size of the full sample of YRBS is more than three times of the NLSY97's.

Table 4 shows the main results from YRBS sample, and each underage drinking measure is presented panel by panel.[14] Column 1 presents estimates from the baseline specification, which

[12]Note that for both males and females in YRBS binge drinking is defined as five drinks in one sitting, which is consistent with NLSY97. Other data sources may set the reference level at four drinks for females. For questions on drinking frequency, YRBS codes 1 as no drinking, 2 as drinking 1 or 2 days, 3 as drinking 3 to 5 days, etc. I recode no drinking to 0 and use the midpoint to recode the rest. That is, I recode 1.5 for drinking 1 or 2 days, 4 for drinking 3 to 5 days, 7.5 for drinking 6 to 9 days, 14.5 for drinking 10 to 19 days, 24.5 for drinking 20 to 29 days and 30 for drinking 30 days. The same applies for binge drinking frequency. I recode 0 for reporting no binge drinking, 1 for binge drinking 1 days, 2 for binge drinking 2 days, 4 for binge drinking 3 to 5 days, 7.5 for binge drinking 6 to 9 days, 14.5 for binge drinking 10 to 19 days, and 25.5 for binge drinking over 20 days. Table A3 presents an analysis I perform to show that measurement errors are not responsible for the discrepancy in results between YRBS and NLSY97 samples. Using Yoruk's (2014) NLSY97 sample, I recoded the responses following YRBS's coding scheme for the two variables that were interpolated based on mid-point of ranges, and present results using both the original and recoded responses. Estimates based on the two sets of responses are similar, indicating that measurement errors are not responsible for the differences in results.

[13]One thing to note about the YRBS data is that it does not contain the exact dates of the interview. However, all surveys took place between February and May of odd-number years. Since none of the policy changes happened during an interview window, treatment status can be assigned without error. I use all of the data available. Yoruk (2014) does not treat Nebraska and Utah as treatment states because no interviewee in NLS797 is under 21 after 2005, and these states passed FSP laws in 2009 and 2010, respectively. Moreover, the statistical significance and magnitude of the estimates remain robust if these states are excluded.

[14]The results are unweighted so that they are comparable to Yoruk (2014)'s main results. Weighted results are shown in Appendix Table A4.

simply controls for state and year fixed effects.[15] The results from this specification indicate that FSP laws have no effect on drinking participation, binge drinking participation, drinking frequency, or binge drinking frequency. While these estimates are not less precise than those based on the NLSY97 sample, they cannot rule out large positive or negative impact of the FSP laws. In Column 2, I add controls for economic conditions and state-level underage alcohol control policies, as well as individual characteristics.[16] I note that the estimate for binge drinking participation becomes *positive* and significant at the 10% level once these controls are added; however, the point estimate is positive and is not robust across specifications. Overall, the results change little once time-varying controls are added, suggesting that there may be little scope for omitted, unobserved factors to bias the estimates, and supporting the conclusion that FSP laws have no effect on reducing any of the underage alcohol consumption measures.

In Column 3, I also include a lead term to the specification: a dummy variable for the two years before the policy changes. Under the common trends assumption, the coefficient on the lead term should be zero and the inclusion of this lead term should not meaningfully change the estimated effects. Unlike the results from the NLSY97 sample, the coefficients for the lead term are rarely significant, which provides support for the validity of the analysis using these data. Moreover, the estimates with and without a lead term are very similar, all suggesting that FSP laws do not reduce underage drinking. In Column 4, I add state-specific linear time trends to the specification, thereby allowing each state to follow a different trend. To conclude, the estimates are largely robust under various model specifications, and provide little evidence that FSP laws have reduced any of the underage alcohol consumption behavior.[17]

[15] Yoruk (2014) also controls for month fixed effects, which is infeasible for the YRBS data. However, this should not influence the estimates, as the interview period of YRBS is from February to May, a period that does not exhibit much seasonal variation in alcohol consumption behavior (Carpenter, 2003). Moreover, I conduct an analysis where I do not include monthly fixed effects in the analyses for the 1998–2005 NLSY97 sample and for the 1997–2005 NLSY97 sample and present the results in Appendix Table A5 and A6. These results are very close to the corresponding results with monthly fixed effects, indicating that seasonality is not responsible for the differences in results.

[16] YRBS has information on age, gender and race. Other individual characteristics such as marital status, employment status and income level are not available on YRBS; however, it should not meaningfully affect the estimates since individual-level characteristics are unlikely to be correlated with whether states passed FSP laws. Also, only a small fraction of underage minors are married or have jobs.

[17] Figure A1 presents a graphical analysis to explore if the estimates are sensitive to the treated states considered and if there are heterogeneous treatment effects across states. I continue to use a model with state and year fixed effects, controls, and state-specific linear time trends, but drop 1, 2 or 3 treatment states in this analysis. Figure A1 plots the coefficient estimates and the 95% confidence interval against the ranking of coefficient estimates from

As an additional way of estimating the effects of FSP laws on drinking, I investigate dynamic responses in youth drinking behavior to the adoption of FSP laws. I do so by replacing the indicator for having a FSP law in place with a set of indicator variables corresponding to five and six years prior to adoption, three and four years prior to adoption, one and two years prior to adoption, the year of adoption, the first and second years after adoption, the third and fourth years after adoption, and five or more years after adoption.[18] As before, I continue to control for individual- and state-time-varying controls and state-specific linear time trends. Figure 1 plots coefficient estimates and 95% confidence intervals from the dynamic analysis. This figure shows that the coefficient estimates for years leading up to the policy changes are rarely statistically significant at the 5% level, supporting the common trends assumption. Moreover, the same is true for the lags, indicating that FSP laws have no effect on reducing underage drinking behavior in the short term or in the long term.

4 Conclusion

Youth alcohol use imposes substantial costs on society and has long been a major public health concern in the United States. In this paper, I employ a difference-in-differences design to reexamine the effect of false ID laws with scanner provisions on underage drinking using 1991–2013 national Youth Risk Behavior Surveillance System data. In contrast to previous findings based on the NLSY97, the results using these data indicate that these laws have no effect on reducing underage drinking behavior, and that conclusion is robust under various model specifications. Estimates allowing for dynamic treatment effects lead to the same conclusion. Moreover, an attempted replication and extension of prior work using the NLSY97 suggests that previously reported estimates based on those data are not reliable. As a whole, my analyses suggest that a stricter false ID law with enforced use of electronic scanners in alcohol sales is not an effective approach to reducing

this analysis. As estimates are rarely significant in Figure A1, it shows that there are no heterogeneous treatment effects across states and, further, FSP laws do not reduce underage alcohol use. Yoruk (2014) also shows that the estimated effects he documents are not driven by any particular states. Noting that the YRBS does not cover all states in all years, these results provide reassuring evidence that the differences between the estimates reported in Yoruk (2014) and those documented here are unlikely to be driven by differences in the composition of states included in the NLSY97 and YRBS.

[18] Since YRBS is a biennial survey, I combine two years together instead of estimating year-by-year effects.

underage drinking.

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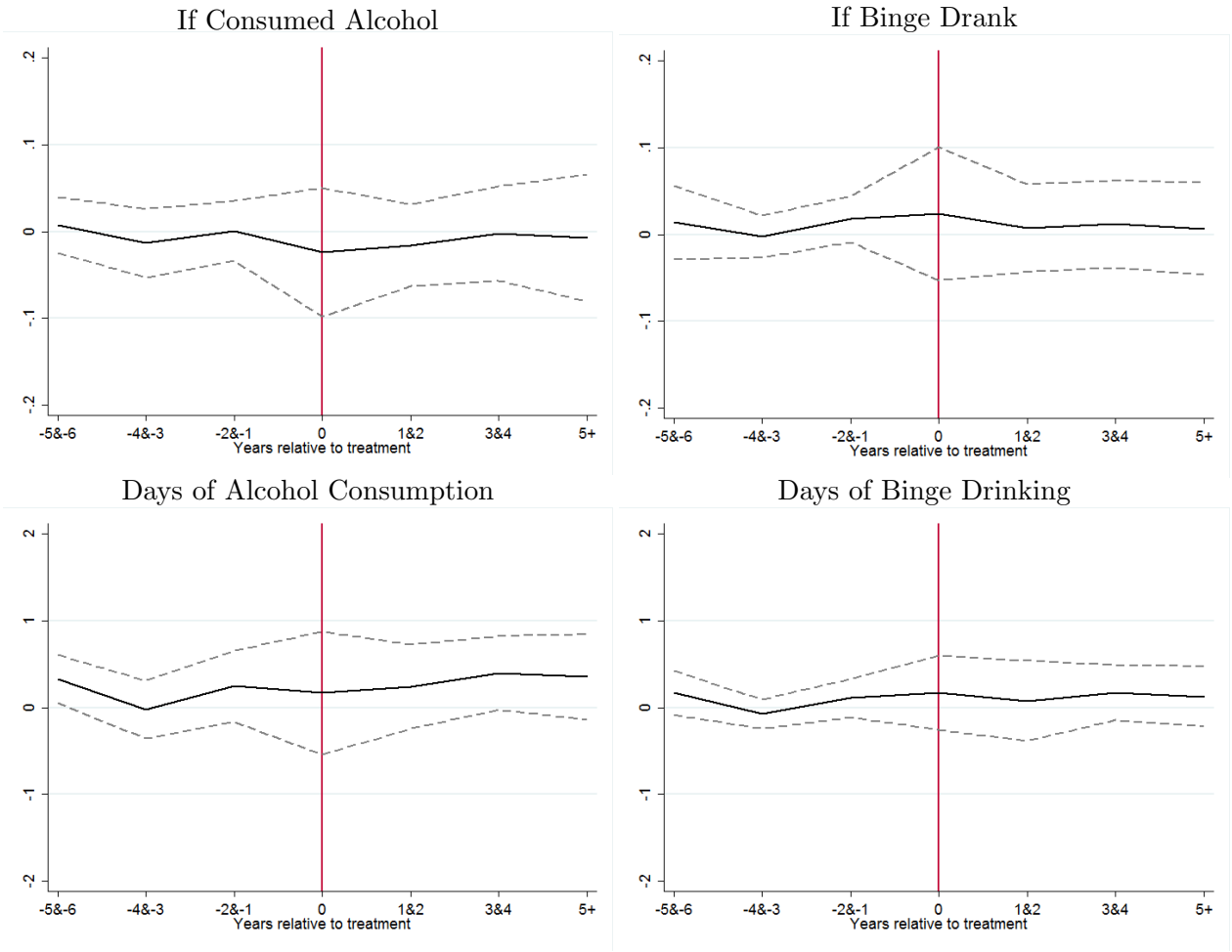
Figure 1: Estimated Effects of FSP Laws Over Time



Notes: Sample is 1991–2013 YRBS survey. Coefficient estimates are from a model controlling for state and year fixed effects, controls and state-specific linear time trends. Controls include gender, race, age, unemployment rate, log of income per capita, state beer tax per gallon, and dummy variables controlling for various state policies on youth alcohol access. Standard errors are clustered at the state level, and 95% confidence intervals are shown in dash line. The omitted years are seven and more years prior to law adoption. Estimates are unweighted.

Table 1: Summary Statistics

Variable	N	Mean	S.D.
Panel A: If Consumed Alcohol			
Yoruk(2014): NLSY97 (98–05)	40,315	0.477	0.499
Replication: NLSY97 (98–05)	40,164	0.476	0.499
Extension: NLSY97 (97–05)	49,089	0.431	0.495
YRBS (98–05)	54,730	0.464	0.499
YRBS (91–13)	157,288	0.455	0.498
Panel B: If Binge Drank			
Yoruk(2014): NLSY97 (98–05)	40,249	0.276	0.447
Replication: NLSY97 (98–05)	40,097	0.275	0.446
Extension: NLSY97 (97–05)	49,020	0.246	0.431
YRBS (98–05)	56,539	0.292	0.455
YRBS (91–13)	164,501	0.286	0.452
Panel C: Days of Alcohol Consumption			
Yoruk(2014): NLSY97 (98–05)	40,315	2.731	5.021
Replication: NLSY97 (98–05)	40,164	2.685	4.938
Extension: NLSY97 (97–05)	49,089	2.373	4.688
YRBS (98–05)	54,730	2.616	5.116
YRBS (91–13)	157,288	2.507	4.926
Panel D: Days of Binge Drinking			
Yoruk(2014): NLSY97 (98–05)	40,249	1.283	3.308
Replication: NLSY97 (98–05)	40,097	1.249	3.214
Extension: NLSY97 (97–05)	49,020	1.108	3.042
YRBS (98–05)	56,539	1.299	3.465
YRBS (91–13)	164,501	1.233	3.332
Panel E: Average Drinks per Day			
Yoruk(2014): NLSY97 (98–05)	40,034	0.542	1.553
Replication: NLSY97 (98–05)	39,883	0.548	1.562
Extension: NLSY97 (97–05)	48,786	0.481	1.465

Notes: Sample weighted means are reported.

Table 2: Attempted Replication of Yoruk (2014)'s Main Results, Highlighting Significance of Leads

	Yoruk (2014)	Replication							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Panel A: If Consumed Alcohol									
FSP Laws	-0.008	-0.004	-0.003	-0.006	0.019	0.003	0.000	-0.000	0.011
	(0.010)	(0.011)	(0.013)	(0.017)	(0.026)	(0.011)	(0.012)	(0.014)	(0.023)
1&2 Years Prior to FSP Laws				-0.005	0.009			-0.001	0.001
				(0.010)	(0.014)			(0.009)	(0.011)
N	40,076	40,164	40,070	40,070	40,070	40,164	40,070	40,070	40,070
R^2	0.040	0.039	0.106	0.106	0.108	0.068	0.077	0.077	0.082
Panel B: If Binge Drank									
FSP Laws	-0.026**	-0.023*	-0.019*	-0.034**	-0.009	-0.023***	-0.021**	-0.028**	-0.015
	(0.010)	(0.012)	(0.011)	(0.015)	(0.017)	(0.008)	(0.009)	(0.013)	(0.017)
1&2 Years Prior to FSP Laws				-0.026***	-0.020**			-0.013	-0.017**
				(0.008)	(0.009)			(0.008)	(0.008)
N	40,009	40,097	40,004	40,004	40,004	40,097	40,004	40,004	40,004
R^2	0.032	0.032	0.095	0.096	0.097	0.051	0.060	0.060	0.064
Panel C: Days of Alcohol Consumption									
FSP Laws	-0.198*	-0.168*	-0.166*	-0.364***	-0.297***	-0.208*	-0.251**	-0.422***	-0.417***
	(0.112)	(0.093)	(0.089)	(0.088)	(0.100)	(0.121)	(0.113)	(0.114)	(0.108)
1&2 Years Prior to FSP Laws				-0.361***	-0.377***			-0.315***	-0.377***
				(0.084)	(0.111)			(0.089)	(0.103)
N	40,076	40,164	40,070	40,070	40,070	40,164	40,070	40,070	40,070
R^2	0.026	0.026	0.084	0.084	0.085	0.054	0.065	0.065	0.068
Panel D: Days of Binge Drinking									
FSP Laws	-0.142	-0.125	-0.092	-0.229***	-0.091	-0.136*	-0.127*	-0.237***	-0.160**
	(0.087)	(0.091)	(0.063)	(0.079)	(0.103)	(0.073)	(0.069)	(0.084)	(0.078)
1&2 Years Prior to FSP Laws				-0.249***	-0.193***			-0.203***	-0.196***
				(0.052)	(0.065)			(0.045)	(0.039)
N	40,009	40,097	40,004	40,004	40,004	40,097	40,004	40,004	40,004
R^2	0.020	0.020	0.071	0.071	0.073	0.037	0.044	0.045	0.048
Panel E: Average Drinks per Day									
FSP Laws	-0.093**	-0.086**	-0.081*	-0.139***	-0.110***	-0.121***	-0.131***	-0.180***	-0.146***
	(0.040)	(0.039)	(0.048)	(0.040)	(0.035)	(0.041)	(0.048)	(0.043)	(0.041)
1&2 Years Prior to FSP Laws				-0.104***	-0.093**			-0.091***	-0.085***
				(0.036)	(0.041)			(0.025)	(0.028)
N	39,795	39,883	39,790	39,790	39,790	39,883	39,790	39,790	39,790
R^2	0.013	0.013	0.051	0.051	0.052	0.022	0.027	0.027	0.029
Controls	No	No	Yes	Yes	Yes	No	Yes	Yes	Yes
1&2 Years Prior to FSP Laws	No	No	No	Yes	Yes	No	No	Yes	Yes
State-specific Linear Time Trends	No	No	No	No	Yes	No	No	No	Yes
Individual Fixed Effects	No	No	No	No	No	Yes	Yes	Yes	Yes

Note: *** p<0.01, ** p<0.05, * p<0.1 Sample is 1998–2005 NLSY97 survey. All regressions include state, year and month fixed effects. Individual-level controls include age, gender, race, family size, income, marital status, employment status, educational attainment and being a student. State-level controls include unemployment rate, log of income per capita, state beer tax per gallon, and dummy variables controlling for various state policies on youth alcohol access. Standard errors are clustered at the state level. Estimates are unweighted.

Table 3: Extending Yoruk (2014) to Utilize Full NLSY97 Sample

	Yoruk (2014)	Extension							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Panel A: If Consumed Alcohol									
FSP Laws	-0.008	-0.002	0.005	0.005	0.021	0.003	0.006	0.010	0.026
	(0.010)	(0.013)	(0.015)	(0.018)	(0.020)	(0.013)	(0.014)	(0.017)	(0.018)
1&2 Years Prior to FSP Laws				-0.000	0.009			0.008	0.012
				(0.010)	(0.010)			(0.010)	(0.010)
N	40,076	49,089	48,979	48,979	48,979	49,089	48,979	48,979	48,979
R^2	0.040	0.071	0.135	0.135	0.137	0.124	0.133	0.133	0.137
Panel B: If Binge Drank									
FSP Laws	-0.026***	-0.014	-0.008	-0.013	-0.014	-0.017*	-0.013	-0.013	-0.014
	(0.010)	(0.012)	(0.011)	(0.014)	(0.016)	(0.010)	(0.010)	(0.013)	(0.016)
1&2 Years Prior to FSP Laws				-0.014	-0.012*			0.001	-0.003
				(0.009)	(0.007)			(0.010)	(0.008)
N	40,009	49,020	48,911	48,911	48,911	49,020	48,911	48,911	48,911
R^2	0.032	0.047	0.105	0.105	0.107	0.078	0.086	0.086	0.090
Panel C: Days of Alcohol Consumption									
FSP Laws	-0.198*	-0.140	-0.103	-0.204**	-0.283***	-0.161	-0.164	-0.230**	-0.341***
	(0.112)	(0.090)	(0.086)	(0.097)	(0.064)	(0.098)	(0.099)	(0.110)	(0.063)
1&2 Years Prior to FSP Laws				-0.266***	-0.302***			-0.175*	-0.240**
				(0.084)	(0.099)			(0.090)	(0.105)
N	40,076	49,089	48,979	48,979	48,979	49,089	48,979	48,979	48,979
R^2	0.026	0.043	0.095	0.096	0.097	0.080	0.091	0.091	0.094
Panel D: Days of Binge Drinking									
FSP Laws	-0.142	-0.080	-0.041	-0.105	-0.143	-0.093	-0.077	-0.115	-0.180**
	(0.087)	(0.086)	(0.066)	(0.081)	(0.090)	(0.078)	(0.071)	(0.088)	(0.072)
1&2 Years Prior to FSP Laws				-0.167***	-0.160***			-0.101	-0.123**
				(0.060)	(0.054)			(0.062)	(0.052)
N	40,009	49,020	48,911	48,911	48,911	49,020	48,911	48,911	48,911
R^2	0.020	0.027	0.072	0.072	0.074	0.047	0.054	0.054	0.058
Panel E: Average Drinks per Day									
FSP Laws	-0.093**	-0.065**	-0.052	-0.078**	-0.072*	-0.088***	-0.086**	-0.101***	-0.097***
	(0.040)	(0.029)	(0.034)	(0.031)	(0.036)	(0.027)	(0.034)	(0.033)	(0.032)
1&2 Years Prior to FSP Laws				-0.070	-0.049			-0.040	-0.026
				(0.045)	(0.049)			(0.042)	(0.043)
N	39,795	48,786	48,677	48,677	48,677	48,786	48,677	48,677	48,677
R^2	0.013	0.021	0.055	0.055	0.057	0.035	0.040	0.040	0.042
Controls	No	No	Yes	Yes	Yes	No	Yes	Yes	Yes
1&2 Years Prior to FSP Laws	No	No	No	Yes	Yes	No	No	Yes	Yes
State-specific Linear Time Trends	No	No	No	No	Yes	No	No	No	Yes
Individual Fixed Effects	No	No	No	No	No	Yes	Yes	Yes	Yes

Note: *** p<0.01, ** p<0.05, * p<0.1 Sample is 1997–2005 NLSY97 survey. All regressions include state, year and month fixed effects. Individual-level controls include age, gender, race, family size, income, marital status, employment status, educational attainment and being a student. State-level controls include unemployment rate, log of income per capita, state beer tax per gallon, and dummy variables controlling for various state policies on youth alcohol access. Standard errors are clustered at the state level. Estimates are unweighted.

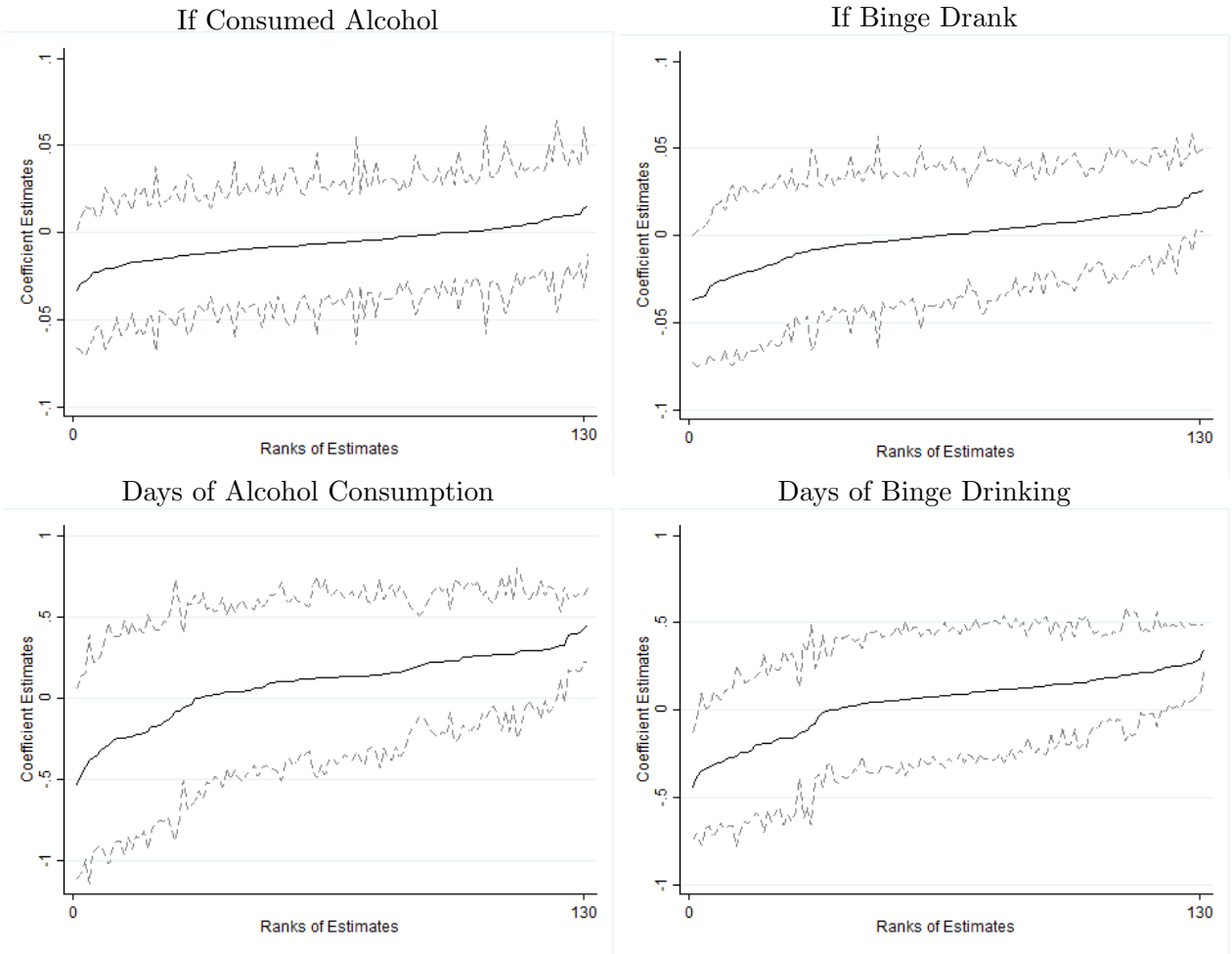
Table 4: Estimated Effects of FSP Laws on Underage Drinking Using YRBS Data

	(1)	(2)	(3)	(4)
Panel A: If Consumed Alcohol				
FSP Laws	0.006	0.013	0.016	-0.004
	(0.010)	(0.011)	(0.011)	(0.022)
1&2 Years Prior to FSP Laws			0.017	0.004
			(0.015)	(0.019)
N	157,288	155,480	155,480	155,480
Panel B: If Binge Drank				
FSP Laws	0.007	0.019*	0.023**	0.009
	(0.011)	(0.010)	(0.011)	(0.026)
1&2 Years Prior to FSP Laws			0.022*	0.016
			(0.011)	(0.017)
N	164,501	162,585	162,585	162,585
Panel C: Days of Alcohol Consumption				
FSP Laws	0.116	0.224	0.253*	0.192
	(0.118)	(0.136)	(0.130)	(0.276)
1&2 Years Prior to FSP Laws			0.146	0.133
			(0.135)	(0.176)
N	157,288	155,480	155,480	155,480
Panel D: Days of Binge Drinking				
FSP Laws	0.040	0.125	0.142	0.125
	(0.075)	(0.087)	(0.086)	(0.221)
1&2 Years Prior to FSP Laws			0.085	0.092
			(0.069)	(0.113)
N	164,501	162,585	162,585	162,585
Control Variables	No	Yes	Yes	Yes
1&2 Years Prior to FSP Laws	No	No	Yes	Yes
State-specific Linear Time Trends	No	No	No	Yes

Notes: *** p<0.01, ** p<0.05, * p<0.1

Sample is 1991–2013 YRBS survey. All regressions include state and year fixed effects. Individual-level controls include gender, race and age. State-level controls include unemployment rate, log of income per capita, state beer tax per gallon, and dummy variables controlling for various state policies on youth alcohol access. Standard errors are clustered at the state level. Estimates are unweighted.

Figure A1: Are Estimates Sensitive to the Treated States Considered?



Notes: Sample is 1991–2013 YRBS surveys. These figures plot the coefficient estimates and the 95% confidence interval against ranking of the coefficient estimates. These estimates are from models with state and year fixed effects, controls and state-specific linear time trends, dropping 1, 2 or 3 treatment states in the analysis. Standard errors are clustered at the state level. Estimates are unweighted.

Table A1: Law Effective Dates of False ID Laws with Scanner Provisions

State	Law Effective Date
Arizona	8/12/2005
Connecticut	10/1/2001
Nebraska	7/15/2010
New York	9/1/1999
North Carolina	11/14/2001
Ohio	9/21/2000
Oregon	1/1/2000
Pennsylvania	12/16/2002
Texas	9/1/2005
Utah	7/1/2009
West Virginia	6/6/2003

Source: Alcohol Policy Information System (APIS)

Table A2: Attempted Replication and Extension of Yoruk's (2014) Dynamic Analysis

	If Binge Drank	Days of Alcohol Consumption	Days of Binge Drinking	Average Drinks per Day
Panel A				
4+ years before	0.035	-0.002	0.150	0.045
	(0.031)	(0.229)	(0.198)	(0.106)
3 years before	0.007	0.099	0.008	0.042
	(0.023)	(0.145)	(0.180)	(0.073)
2 years before	-0.003	-0.067	-0.248	-0.048
	(0.022)	(0.141)	(0.197)	(0.070)
1 year before (omitted)				
1 year after	0.005	0.112	0.023	-0.033
	(0.016)	(0.202)	(0.112)	(0.059)
2 years after	0.017	0.130	0.114	0.017
	(0.015)	(0.331)	(0.123)	(0.086)
3 years after	0.010	0.372	0.130	0.072
	(0.030)	(0.291)	(0.171)	(0.096)
4+ years after	0.037	0.764	0.281	0.144
	(0.029)	(0.702)	(0.304)	(0.152)
N	40,004	40,070	40,004	39,790
Panel B				
4+ years before	0.038***	0.064	0.399***	0.093
	(0.012)	(0.174)	(0.090)	(0.065)
3 years before	0.009	0.153*	0.212***	0.081**
	(0.009)	(0.085)	(0.056)	(0.037)
1&2 years before (omitted)				
1 year after	0.005	0.112	0.023	-0.033
	(0.016)	(0.202)	(0.110)	(0.059)
2 years after	0.016	0.118	0.067	0.008
	(0.013)	(0.319)	(0.095)	(0.079)
3 years after	0.009	0.348	0.040	0.055
	(0.027)	(0.284)	(0.129)	(0.082)
4+ years after	0.035	0.727	0.144	0.117
	(0.024)	(0.677)	(0.227)	(0.133)
N	40,004	40,070	40,004	39,790

Note: *** p<0.01, ** p<0.05, * p<0.1 All regressions include state, year and month fixed effects, controls and state-specific linear time trends. Individual-level controls include age, gender, race, family size, income, marital status, employment status, educational attainment and being a student. State-level controls include unemployment rate, log of income per capita, state beer tax per gallon, and dummy variables controlling for various state policies on youth alcohol access. Standard errors are clustered at the state level. Data are from 1998–2005 NLSY97 sample. Estimates are unweighted.

Table A3: Estimated Effects on Underage Drinking, Adding Measurement Errors to NLSY97 to Be Comparable to YRBS

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A: Days of Alcohol Consumption, Original Responses								
FSP Laws	-0.168*	-0.166*	-0.364***	-0.297***	-0.208*	-0.251**	-0.422***	-0.417***
	(0.093)	(0.089)	(0.088)	(0.100)	(0.121)	(0.113)	(0.114)	(0.108)
1&2 Years Prior to FSP Laws			-0.361***	-0.377***			-0.315***	-0.377***
			(0.084)	(0.111)			(0.089)	(0.103)
N	40,164	40,070	40,070	40,070	40,164	40,070	40,070	40,070
R^2	0.026	0.084	0.084	0.085	0.054	0.065	0.065	0.068
Panel B: Days of Alcohol Consumption: Variables Recoded								
FSP Laws	-0.177*	-0.184*	-0.388***	-0.296***	-0.203	-0.250*	-0.423***	-0.400***
	(0.097)	(0.099)	(0.107)	(0.096)	(0.136)	(0.128)	(0.128)	(0.101)
1&2 Years Prior to FSP laws			-0.371***	-0.375***			-0.318***	-0.384***
			(0.097)	(0.128)			(0.103)	(0.126)
N	40,164	40,070	40,070	40,070	40,164	40,070	40,070	40,070
R^2	0.025	0.084	0.084	0.085	0.054	0.064	0.064	0.067
Panel C: Days of Binge Drinking, Original Responses								
FSP Laws	-0.125	-0.092	-0.229***	-0.091	-0.136*	-0.127*	-0.237***	-0.160**
	(0.091)	(0.063)	(0.079)	(0.103)	(0.073)	(0.069)	(0.084)	(0.078)
1&2 Years Prior to FSP Laws			-0.249***	-0.193***			-0.203***	-0.196***
			(0.052)	(0.065)			(0.045)	(0.039)
N	40,097	40,004	40,004	40,004	40,097	40,004	40,004	40,004
R^2	0.020	0.071	0.071	0.073	0.037	0.044	0.045	0.048
Panel D: Days of Binge Drinking: Variables Recoded								
FSP Laws	-0.118	-0.092	-0.234***	-0.093	-0.125	-0.127*	-0.237**	-0.170*
	(0.099)	(0.068)	(0.086)	(0.119)	(0.077)	(0.073)	(0.092)	(0.096)
1&2 Years Prior to FSP laws			-0.259***	-0.193**			-0.202***	-0.193***
			(0.069)	(0.082)			(0.062)	(0.063)
N	40,097	40,004	40,004	40,004	40,097	40,004	40,004	40,004
R^2	0.020	0.069	0.069	0.071	0.035	0.043	0.043	0.046
Controls	No	Yes	Yes	Yes	No	Yes	Yes	Yes
1&2 Years Prior to FSP Laws	No	No	Yes	Yes	No	No	Yes	Yes
State-specific Linear Time Trends	No	No	No	Yes	No	No	No	Yes
Individual Fixed Effects	No	No	No	No	Yes	Yes	Yes	Yes

Note: *** p<0.01, ** p<0.05, * p<0.1 All regressions include state, year and month fixed effects. Individual-level controls include age, gender, race, family size, income, marital status, employment status, educational attainment and being a student. State-level controls include unemployment rate, log of income per capita, state beer tax per gallon, and dummy variables controlling for various state policies on youth alcohol access. Standard errors are clustered at the state level. Data are from 1998–2005 NLSY97 sample. Estimates are unweighted.

Table A4: Weighted Least Square Estimates of FSP Laws on Underage Drinking

	Full Sample	Male	Female
Panel A: If Consumed Alcohol			
FSP Laws	-0.027	-0.041	-0.006
	(0.023)	(0.038)	(0.024)
N	155,480	76,026	79,454
Panel B: If Binge Drank			
FSP Laws	-0.011	-0.015	0.000
	(0.023)	(0.033)	(0.022)
N	162,585	79,713	82,872
Panel C: Days of Alcohol Consumption			
FSP Laws	-0.114	-0.181	0.010
	(0.222)	(0.294)	(0.227)
N	155,480	76,026	79,454
Panel D: Days of Binge Drinking			
FSP Laws	-0.090	-0.121	-0.020
	(0.191)	(0.246)	(0.189)
N	162,585	79,713	82,872

Notes: *** p<0.01, ** p<0.05, * p<0.1 Sample is 1991–2013 YRBS survey. All regressions include state and year fixed effects, individual- and state-level controls, lead term and state-specific linear time trend. Standard errors are clustered at the state level. Individual-level controls include gender, race and age. State-level controls include unemployment rate, log of income per capita, state beer tax per gallon, and dummy variables controlling for various state policies on youth alcohol access. Estimates are weighted by survey weights.

Table A5: Attempted Replication of Yoruk (2014)'s Main Results, Without Month Fixed Effects

	Yoruk (2014)	Replication							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Panel A: If Consumed Alcohol									
FSP Laws	-0.008	-0.000	-0.006	-0.011	0.009	0.010	0.001	0.000	0.015
	(0.010)	(0.012)	(0.014)	(0.017)	(0.027)	(0.012)	(0.012)	(0.015)	(0.024)
1&2 Years Prior to FSP Laws				-0.008	0.003			-0.001	0.002
				(0.010)	(0.013)			(0.009)	(0.011)
N	40,076	40,164	40,070	40,070	40,070	40,164	40,070	40,070	40,070
R^2	0.040	0.037	0.104	0.104	0.106	0.064	0.075	0.075	0.079
Panel B: If Binge Drank									
FSP Laws	-0.026**	-0.022*	-0.023*	-0.038**	-0.020	-0.018*	-0.021**	-0.028**	-0.012
	(0.010)	(0.012)	(0.011)	(0.015)	(0.018)	(0.009)	(0.009)	(0.013)	(0.017)
1&2 Years Prior to FSP Laws				-0.029***	-0.026***			-0.013	-0.016*
				(0.008)	(0.009)			(0.009)	(0.008)
N	40,009	40,097	40,004	40,004	40,004	40,097	40,004	40,004	40,004
R^2	0.032	0.031	0.094	0.094	0.096	0.048	0.058	0.059	0.062
Panel C: Days of Alcohol Consumption									
FSP Laws	-0.198*	-0.140	-0.188*	-0.394***	-0.368***	-0.122	-0.248**	-0.420***	-0.401***
	(0.112)	(0.096)	(0.094)	(0.092)	(0.101)	(0.117)	(0.113)	(0.113)	(0.109)
1&2 Years Prior to FSP Laws				-0.378***	-0.414***			-0.315***	-0.368***
				(0.078)	(0.098)			(0.092)	(0.106)
N	40,076	40,164	40,070	40,070	40,070	40,164	40,070	40,070	40,070
R^2	0.026	0.025	0.083	0.083	0.084	0.051	0.064	0.064	0.067
Panel D: Days of Binge Drinking									
FSP Laws	-0.142	-0.109	-0.098	-0.236***	-0.111	-0.088	-0.127*	-0.237***	-0.154*
	(0.087)	(0.092)	(0.063)	(0.080)	(0.110)	(0.077)	(0.070)	(0.085)	(0.078)
1&2 Years Prior to FSP Laws				-0.253***	-0.204***			-0.203***	-0.192***
				(0.051)	(0.063)			(0.045)	(0.035)
N	40,009	40,097	40,004	40,004	40,004	40,097	40,004	40,004	40,004
R^2	0.020	0.020	0.071	0.071	0.072	0.035	0.044	0.044	0.047
Panel E: Average Drinks per Day									
FSP Laws	-0.093**	-0.078**	-0.083*	-0.140***	-0.115***	-0.098**	-0.129***	-0.179***	-0.141***
	(0.040)	(0.039)	(0.049)	(0.040)	(0.037)	(0.040)	(0.048)	(0.043)	(0.041)
1&2 Years Prior to FSP Laws				-0.106***	-0.096**			-0.090***	-0.082***
				(0.036)	(0.041)			(0.026)	(0.029)
N	39,795	39,883	39,790	39,790	39,790	39,883	39,790	39,790	39,790
R^2	0.013	0.013	0.051	0.051	0.052	0.020	0.026	0.026	0.029
Controls	No	No	Yes	Yes	Yes	No	Yes	Yes	Yes
1&2 Years Prior to FSP Laws	No	No	No	Yes	Yes	No	No	Yes	Yes
State-specific Linear Time Trends	No	No	No	No	Yes	No	No	No	Yes
Individual Fixed Effects	No	No	No	No	No	Yes	Yes	Yes	Yes

Note: *** p<0.01, ** p<0.05, * p<0.1 Sample is 1998–2005 NLSY97 survey. All regressions include state and year fixed effects. Individual-level controls include age, gender, race, family size, income, marital status, employment status, educational attainment and being a student. State-level controls include unemployment rate, log of income per capita, state beer tax per gallon, and dummy variables controlling for various state policies on youth alcohol access. Standard errors are clustered at the state level. Estimates are unweighted.

Table A6: Extending Yoruk (2014) to Utilize Full NLSY97 Sample, Without Month Fixed Effects

	Yoruk (2014)	Extension							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Panel A: If Consumed Alcohol									
FSP Laws	-0.008	0.001	0.003	0.002	0.014	0.009	0.007	0.009	0.028
	(0.010)	(0.014)	(0.016)	(0.019)	(0.021)	(0.013)	(0.014)	(0.017)	(0.019)
1&2 Years Prior to FSP Laws				-0.003	0.005			0.007	0.012
				(0.009)	(0.010)			(0.010)	(0.010)
N	40,076	49,089	48,979	48,979	48,979	49,089	48,979	48,979	48,979
R^2	0.040	0.069	0.133	0.133	0.135	0.120	0.131	0.131	0.135
Panel B: If Binge Drank									
FSP Laws	-0.026***	-0.013	-0.011	-0.017	-0.022	-0.013	-0.013	-0.013	-0.012
	(0.010)	(0.013)	(0.011)	(0.014)	(0.017)	(0.010)	(0.010)	(0.013)	(0.017)
1&2 Years Prior to FSP Laws				-0.016*	-0.017**			0.000	-0.003
				(0.009)	(0.007)			(0.010)	(0.008)
N	40,009	49,020	48,911	48,911	48,911	49,020	48,911	48,911	48,911
R^2	0.032	0.046	0.104	0.104	0.106	0.075	0.085	0.085	0.089
Panel C: Days of Alcohol Consumption									
FSP Laws	-0.198*	-0.117	-0.118	-0.224**	-0.335***	-0.099	-0.162	-0.232**	-0.339***
	(0.112)	(0.093)	(0.091)	(0.101)	(0.059)	(0.099)	(0.100)	(0.111)	(0.065)
1&2 Years Prior to FSP Laws				-0.278***	-0.330***			-0.182**	-0.245**
				(0.079)	(0.092)			(0.090)	(0.105)
N	40,076	49,089	48,979	48,979	48,979	49,089	48,979	48,979	48,979
R^2	0.026	0.043	0.095	0.095	0.097	0.078	0.090	0.090	0.093
Panel D: Days of Binge Drinking									
FSP Laws	-0.142	-0.067	-0.045	-0.110	-0.158	-0.059	-0.076	-0.117	-0.182**
	(0.087)	(0.087)	(0.066)	(0.082)	(0.096)	(0.079)	(0.072)	(0.088)	(0.072)
1&2 Years Prior to FSP Laws				-0.172***	-0.169***			-0.107*	-0.128**
				(0.061)	(0.057)			(0.061)	(0.050)
N	40,009	49,020	48,911	48,911	48,911	49,020	48,911	48,911	48,911
R^2	0.020	0.026	0.072	0.072	0.074	0.045	0.054	0.054	0.057
Panel E: Average Drinks per Day									
FSP Laws	-0.093**	-0.058**	-0.052	-0.080**	-0.075*	-0.070**	-0.084**	-0.100***	-0.096***
	(0.040)	(0.029)	(0.035)	(0.032)	(0.038)	(0.028)	(0.034)	(0.034)	(0.033)
1&2 Years Prior to FSP Laws				-0.072	-0.052			-0.041	-0.026
				(0.045)	(0.049)			(0.042)	(0.042)
N	39,795	48,786	48,677	48,677	48,677	48,786	48,677	48,677	48,677
R^2	0.013	0.021	0.055	0.055	0.056	0.034	0.039	0.039	0.041
Controls	No	No	Yes	Yes	Yes	No	Yes	Yes	Yes
1&2 Years Prior to FSP Laws	No	No	No	Yes	Yes	No	No	Yes	Yes
State-specific Linear Time Trends	No	No	No	No	Yes	No	No	No	Yes
Individual Fixed Effects	No	No	No	No	No	Yes	Yes	Yes	Yes

Note: *** p<0.01, ** p<0.05, * p<0.1 Sample is 1997–2005 NLSY97 survey. All regressions include state and yaer fixed effects. Individual-level controls include age, gender, race, family size, income, marital status, employment status, educational attainment and being a student. State-level controls include unemployment rate, log of income per capita, state beer tax per gallon, and dummy variables controlling for various state policies on youth alcohol access. Standard errors are clustered at the state level. Estimates are unweighted.