

Internet Alcohol Sales to Minors

Rebecca S. Williams, MHS, PhD; Kurt M. Ribisl, PhD

Objectives: To determine whether minors can successfully purchase alcohol online and to examine age verification procedures at the points of order and delivery.

Design: A cross-sectional study evaluated underage alcohol purchase attempts from 100 popular Internet vendors.

Setting: The study was conducted at the University of North Carolina at Chapel Hill, July 14-27, 2011.

Participants: Eight 18- to 20-year-old individuals participated.

Outcome Measures: Rates of successful sales to minors and use of age verification procedures at order and delivery were determined.

Results: Of the 100 orders placed by the underage buyers, 45% were successfully received; 28% were rejected

as the result of age verification. Most vendors (59%) used weak, if any, age verification at the point of order, and, of 45 successful orders, 23 (51%) used none. Age verification at delivery was inconsistently conducted and, when attempted, failed about half of the time.

Conclusions: Age verification procedures used by Internet alcohol vendors do not adequately prevent online sales to minors. Shipping companies should work with their staff to improve administration of age verification at delivery, and vendors should use rigorous age verification at order and delivery. Further research should determine the proportion of minors who buy alcohol online and test purchases from more vendors to inform enforcement of existing policies and creation of new policies to reduce youth access to alcohol online.

Arch Pediatr Adolesc Med. 2012;166(9):808-813.

Published online May 7, 2012.

doi:10.1001/archpediatrics.2012.265

INTERNET ALCOHOL SALES HAVE RECEIVED relatively little legislative attention in recent years compared with Internet cigarette sales, which are now regulated by 34 state laws,¹ 2 federal laws,^{2,3} and 4 federal agreements.⁴⁻⁷ One reason that Internet cigarette sales garnered such public health and regulatory attention was that few Internet cigarette vendors (ICVs) properly verified

For editorial comment see page 866

buyers' ages, resulting in as many as 92% selling to minors.^{8,9} The issue of age verification is potentially a concern for the Internet alcohol vendor (IAV) industry as well, but has not been the focus of what little regulatory attention has been given to this \$2.4-billion-a-year industry (verbal and written communication, Wanda V. Vega-Garcia, BS, Service Sector Statistics Division, Retail Census Branch, US Census Bureau, January 27, 2012).¹⁰ Instead, the legislative focus for Internet alcohol sales has primarily been on loosening commerce restrictions to allow interstate ship-

ment of wine from vineyards^{11,12} rather than on youth access prevention.

This issue came before the US Supreme Court in 2005 in *Granholm v Heald*.¹³ The court ruled that laws in New York and Michigan allowing in-state but not out-of-state wineries to ship wine to consumers were unconstitutional because they interfered with free trade and interstate commerce by giving an unfair economic advantage to in-state wineries. The states claimed that these sales undermined their ability to police underage drinking, asserting that minors have easy access to credit cards and are likely to purchase alcohol online, but the court found that

"The States, aided by several amici, claim that allowing direct shipment from out-of-state wineries undermines their ability to police underage drinking. Minors, the States argue, have easy access to credit cards and the Internet and are likely to take advantage of direct wine shipments as a means of obtaining alcohol illegally. The States provide little evidence that the purchase of wine over the Internet by minors is a problem."^{13(p26)}

No peer-reviewed studies have examined the sales and age verification practices of IAVs and assessed whether mi-

Author Affiliations: Center for Health Promotion and Disease Prevention (Dr Williams) and Department of Health Behavior, Gillings School of Global Public Health, and Lineberger Comprehensive Cancer Center (Dr Ribisl), University of North Carolina at Chapel Hill.

nors can purchase alcohol. Several anecdotal reports, however, have shown that youth can easily obtain alcohol from IAVs. In 2003 and 2004, student studies at Gonzaga University¹⁴ and the University of Tennessee¹⁵ reported underage buyers receiving online alcohol orders without being questioned about their age. In 2006, an investigative reporter detailed 2 cases in which a 15-year-old individual received alcohol without age verification, even though one of the packages was clearly labeled as wine and in need of an adult signature.¹⁶ In addition, a 2004 undercover operation in Massachusetts led to lawsuits against 4 IAVs for selling to minors.¹⁷

The goals of this study were to determine whether minors can successfully purchase alcohol from Internet vendors and to examine age verification procedures at the points of order and delivery.

METHODS

SAMPLE

One hundred popular alcohol vendor websites composed the study sample. A private sector online risk-monitoring firm (Cyveillance, Inc) helped to develop the strategy for identifying IAV websites.¹⁸ Specially developed search algorithms and intelligent web spiders reviewed more than 40 million websites, postings to approximately 100 000 message boards and newsgroups, and 1 million spam e-mail messages to identify websites that were likely to be IAVs based on key words appearing in text and features indicative of online retailers (eg, prices and secure shopping carts). Each website on the list of possible IAVs was reviewed manually by trained data collectors to determine whether it was an English-language website direct shipping alcohol to consumers. In cases in which websites on the list turned out to be online shopping portals for IAVs, all links were reviewed as potential IAVs.

A similar approach for a longitudinal study of IAVs¹⁸ yielded at its peak 775 websites, and the present study was modeled after that one. Using the same procedures to identify IAVs, however, yielded a larger number of websites, and, because of budgetary constraints, only the first 5000 sites identified could be screened. Alexa.com traffic-ranking data based on the number of unique monthly visitors to each site were used to identify the 100 most popular IAVs after applying the exclusion criteria detailed in **Table 1** (eg, vendor does not ship to North Carolina).

BUYERS

The study buyers were eight 18- to 20-year-old English-speaking individuals who lived in the county where the study was conducted. At this age, they were adults but still minors according to the legal age to purchase alcohol. Purchases were divided among multiple buyers (with each making 11-14 purchase attempts) to minimize the chances that delivery drivers' age verification attempts might be biased by a growing recognition of recipients. A letter of immunity from prosecution was obtained from the local district attorney to protect all staff and buyers involved in the study.

STUDY PROCEDURES

In July 2011, under one-on-one staff supervision and using procedures approved by the University of North Carolina institutional review board, buyers visited the study websites and attempted to purchase the minimum order of the lowest-priced alcohol available, tracking the process in the study's online data

Table 1. Internet Alcohol Vendor Purchase Survey Sample Exclusion Criteria

Criteria

1. Vendor does not accept online orders
2. Vendor does not ship to North Carolina (study location)
3. Sites with a minimum purchase that is prohibitively high for youth (more than \$100)
4. International sites, as the study's prepaid Visa debit cards do not allow international purchases
5. Buyers' clubs for which:
 - Buyer cannot place and receive order within 30 d, eg, club distributes quarterly shipments
 - Buyer will receive multiple shipments of alcohol after study ends, eg, 1-y subscription to wine-of-the-month club
 - Orders will incur recurring credit card charges, eg, monthly billed wine-of-the-month club

collection system. The buyers recorded details of the order (alcohol type, brand, volume, cost, shipper, age warnings, and age verification attempts) and the delivery (shipping company, whether there was human interaction, and age verification attempts).

A large proportion of the IAVs in the study sample exclusively sell wine, and FedEx and UPS have policies and procedures for age verification at delivery (AVAD) for wine shipments; it is against FedEx and UPS policies to ship any other type of alcohol (eg, beer, liquor). Both companies have official stickers for labeling packages as alcohol requiring AVAD, as well as labeling embedded in (and printed underneath) their shipping label barcodes to trigger AVAD by delivery drivers (the second feature can be used for AVAD of nonalcohol products without the alcohol sticker). It is against federal law to ship any alcohol via the United States Postal Service.¹⁹ When nonwine products were available, buyers ordered them to test how they would be shipped and to maximize the data available on sales of these products. To ensure unbiased representation of all shipping companies, in cases in which vendors offered multiple carrier options, the shipper was randomly selected. Purchases were made using Visa debit gift cards purchased with cash.

When encountering age verification, buyers were allowed to misrepresent their age by clicking a button or checkbox or typing a false birth date. However, if they were required to provide identification (ID) to complete a purchase, they provided their real North Carolina driver's license, which uses 3 visual cues to clearly identify individuals younger than 21: vertical orientation, a colored border around the photo, and text in that border indicating the date that they will become 21.²⁰ Buyers were not allowed to alter their own ID, use a friend's or relative's ID, or use any other strategies to thwart age verification. Although youth outside a study setting could use these strategies, this protocol measured the extent to which minors can successfully obtain alcohol without engaging in these illegal activities.

When packages were delivered, buyers recorded the date, by whom the package was delivered, details of age verification attempts, and whether the package was labeled for AVAD.

RESULTS

ORDER SUCCESS RATES

Of the 100 online alcohol purchase attempts made by underage buyers in this study, 45 were successfully received (**Figure**). Of the remaining orders, 12 were rejected at or shortly after the point of order as a result of

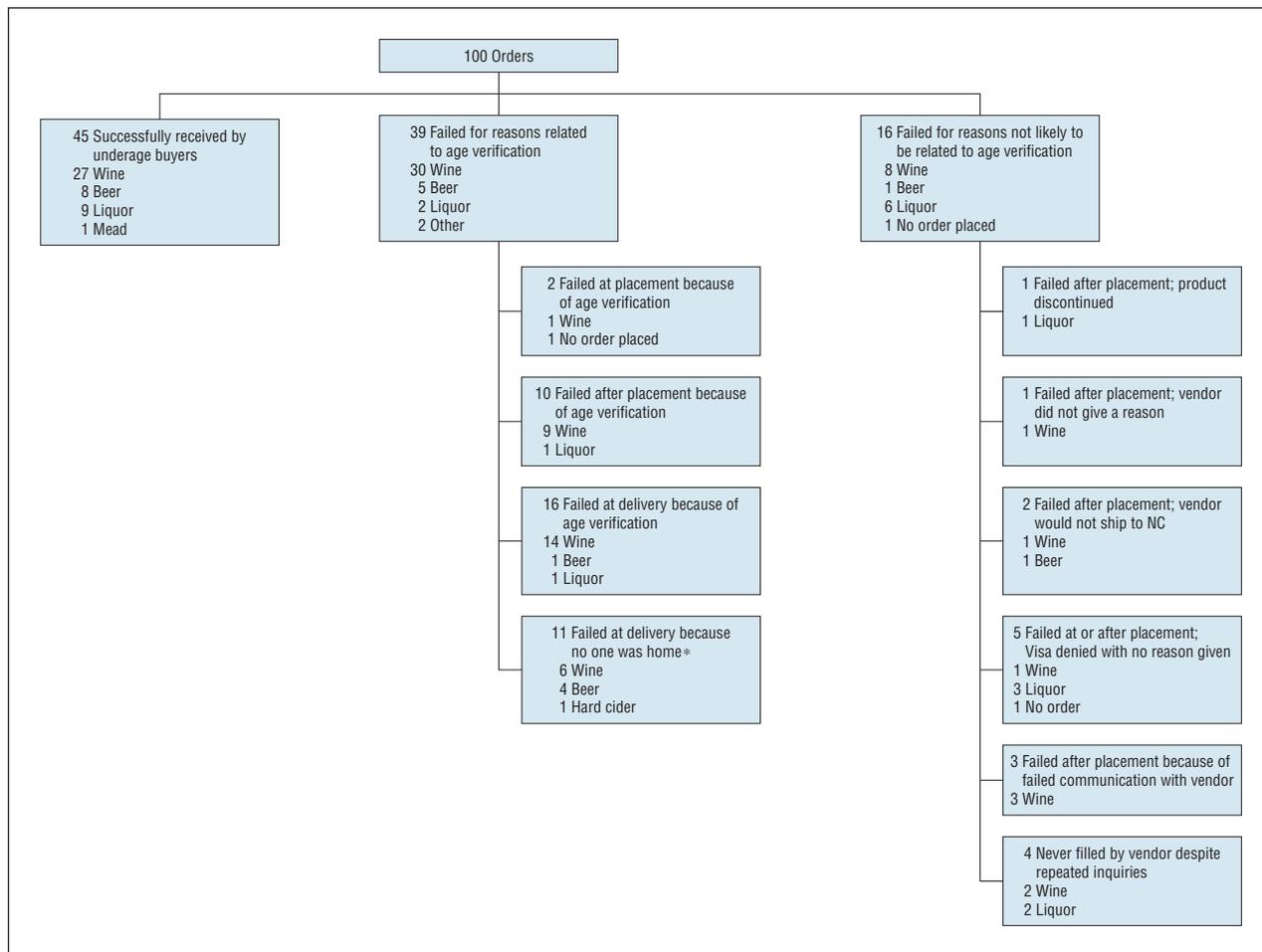


Figure. Final order status of 100 purchase attempts in Internet alcohol youth purchase survey. *It is unknown which of the following 3 possible reasons was responsible for 11 packages being returned to the sender because no one was home: (1) package required age verification at delivery, (2) package required signature (but not age verification) at delivery, or (3) delivery driver was uncomfortable leaving packages unattended in the recipient's neighborhood. If there have been reports of thefts of unattended packages in a neighborhood, drivers may, at their discretion, choose not to leave packages unattended. NC indicates North Carolina.

Table 2. Types of Alcohol Ordered and Received in Internet Alcohol Youth Purchase Survey Involving 100 Orders

Type of Alcohol	No. Ordered	No. (%) ^a		
		Successfully Received	Failed Related to Age Verification	Failed for Other Reasons
Wine	65	27 (42)	30 (46)	8 (12)
Liquor	17	9 (53)	2 (12)	6 (35)
Beer	14	8 (57)	5 (36)	1 (7)
Mead	1	1 (100)	0	0
Hard cider	1	0	1 (100)	0
Order rejected before alcohol selected	2	0	1 (50)	1 (50)
Total	100	45 (45)	39 (39)	16 (16)

^aThe percentages in the table represent the percentage of all orders placed for that type of alcohol. So, for example, of the 65 wine orders placed, 42% were successfully received, 46% failed because of age verification, and 12% failed for other reasons.

age verification and 16 were rejected after the delivery driver checked the recipient's ID. Eleven more failed at the point of delivery because no one was home to receive the order, although it is unclear whether these IAVs had requested a signature or AVAD. The remaining 16 orders failed for other reasons that appear to be unrelated to age verification (eg, technical and communication problems with vendors).

Most (65%) of the websites sold wine exclusively. When other categories of alcohol were available, they were purchased in lieu of wine (**Table 2**). The IAVs that sold non-wine products were more likely than wine-only vendors to sell to minors, but the differences were not statistically significant ($P = .50$). While 42% of wine orders ($n = 27$) were successfully received, 53% of liquor orders ($n = 9$) and 57% of beer orders ($n = 8$) were successfully received.

Table 3. Age Verification Strategies Encountered at the Point of Order in Internet Alcohol Youth Purchase Survey Involving 100 Orders

Strategy	No. Ordered	Successfully Received, No. (%) ^a
Age verification strategies that do not effectively verify age	59	32 (71)
User clicks checkbox/button	31	8 (18)
"Submitting order" certifies age	23	10 (23)
Credit card number used to verify age	1	0
Vague "age will be verified" statement	8	2 (5)
No attempts to verify age	41	23 (51)
Age verification strategies that could potentially block youth access	41	13 (29)
Date of birth	39	12 (27)
Entering driver's license number	2	0
Sending a copy of driver's license	3	0
Online age verification service	2	1 (2.3)
Challenge questions ^b	0	0
Total	100	45 (100)

^aThe percentages in the Successfully Received column represent the percentage of all successfully received orders that used that youth access prevention strategy; eg, 27% of all successfully received orders used date of birth to verify buyers' age.

^bWhen used, challenge questions are multiple choice questions based on public records information, asked after identification (ID) information has been verified against government databases as a real adult ID, to determine whether the ID actually belongs to the buyer. This method may thwart underage buyers using a parent's or friend's ID; however, since the buyers in this study used their own IDs, they would not have seen challenge questions even if they were in use by the vendor because their ID would not have been verified as an adult ID.

AGE VERIFICATION AT THE POINT OF ORDER

There was very little use of age verification at the point of order (**Table 3**). In fact, age warnings were infrequent (18%) on the 100 IAV websites, especially by those that sold to minors (9%). Most vendors (59%) used weak age verification, if any, relying on checkboxes or buttons (31%) or spurious claims that by merely submitting an order, users were legally certifying their age (23%). Many vendors (41%) did not address age verification at the point of order at all. Of the orders successfully received, 71% (n=32) did not use rigorous age verification at the point of order and 51% (n=23) used none. Orders from vendors that used weak or no age verification at the point of order were significantly more likely to be successful than were those from vendors using more rigorous age verification ($P=.03$).

Buyers entered a false date of birth for the 39 vendors that requested their birth date. Only 3 of those orders (7.7%) were rejected for age verification reasons; those vendors may have used an online age verification service to determine that the date of birth did not match that in the buyer's government records.

In all 5 cases in which the vendor collected a driver's license number, they rejected the sale after receiving the buyer's actual license number, indicating that the number was used to verify the buyer's age. At the point of order, 2 vendors requested that the user enter their driver's license number and 1 asked the user to send a copy of the license. Two more contacted the buyer after the order was placed and requested a copy of the license.

Table 4. Use of Age Verification at Delivery in Internet Alcohol Youth Purchase Survey Involving 100 Orders

Age Verification at Delivery Condition	Overall	FedEx	UPS
Package marked as requiring age verification at delivery	47	30	17
Official age verification and alcohol label	23	16	7
Official age verification label, not labeled as alcohol	7	3	4
Unofficially labeled as requiring age verification	1	1	0
Labeling unknown; package returned to sender because of age verification failure	16	10	6
Driver attempted to verify age at delivery	30	18	12
Driver erroneously delivered package to underage buyer after attempting to verify age	14	12	2

Only 2 vendors indicated use of online age verification services on their websites. One was unspecified and blocked the underage sale. The other used IDology, and not only failed to block the sale at the point of order but also failed to block the sale at delivery; the FedEx delivery driver handed the recipient the package after merely asking whether the recipient was older than 21 years.

AGE VERIFICATION AT DELIVERY

Age verification at delivery was inconsistently administered and, when used, failed about half the time (**Table 4**). A total of 47 packages arrived labeled as requiring AVAD. Twenty-three featured the carrier's AVAD and alcohol labeling and 7 used the carrier's AVAD barcode labeling without the alcohol sticker. One was labeled as requiring age verification but not using the carrier's official labeling standards. Because delivery was refused on the basis of age verification and the packages were returned to the senders, it is unknown how the remaining 16 packages were labeled.

Many deliveries did not include any attempts to verify age. Sixteen orders (35.5% of successfully received orders, 10.6% of orders labeled for AVAD) were left at the door with no human interaction, and 14 (31.1% of successful orders, 25.5% of orders labeled for AVAD) were handed to the recipient with no attempt to verify age.

Delivery staff attempted to verify the recipient's age for 30 orders but blocked only 16 of those. In 14 cases (31.1% of successful orders), the alcohol was delivered to underage recipients after taking their word that they were older than 21 years or after examining their vertical driver license that clearly labeled them as being younger than 21. In one case, the driver "looked it over, claimed it was a new license and he didn't know how to read it, looked at it a few seconds longer, then had me sign for the delivery."

FedEx did a poorer job than UPS of verifying age at delivery. About a third of each company's deliveries labeled for AVAD were returned to the sender after delivery was refused on the basis of age verification. However, in cases in which delivery staff attempted to perform AVAD, FedEx packages were significantly more likely to be delivered to the underage buyer ($P=.007$).

Four orders (3 FedEx, 1 UPS) were picked up by recipients at the company's package distribution centers. All were labeled for AVAD and in each case, despite showing an underage ID, the minor was given the package. One buyer said, "The clerk checked my ID, pointed at it right where it said WILL TURN 21 IN 2014 and said 'OK!', and gave me the package."

In another case, after making several attempts to deliver a package labeled for AVAD while a buyer was out of town, the driver simply left the package at the door rather than returning it to the sender. On a separate delivery, because the buyer was not home, the driver delivered 2 packages to the buyer's middle-aged neighbor, who in turn delivered the packages to the buyer, unaware of what was in them.

COMMENT

With 45 of 100 alcohol purchase attempts successfully received by underage buyers, the age verification procedures in use by IAVs clearly do not adequately prevent online alcohol sales to minors. This sales rate is comparable to the rate of offline retail sales in communities where there is little or no enforcement. In such areas, individuals who look younger than 21 years can buy alcohol without showing ID in 45% to 50% of attempts.²¹⁻²³ However, compliance checks and active enforcement of youth access laws in retail stores have been shown to reduce underage sales by as much as half.²⁴⁻²⁷ Enforcement operations that replicate our findings and cite vendors and/or shipping companies might also reduce sales to minors.

For online stores, AVAD is the only opportunity for face-to-face age verification (the standard in retail stores), yet fewer than half of the vendors used this option. Furthermore, in cases in which the vendor used AVAD, it was frequently implemented improperly by delivery services, resulting in a substantial number of successfully received orders. In 36.1% of cases in which the vendor paid for AVAD, delivery staff failed to administer it. In the cases in which the delivery staff did attempt AVAD, they failed to do so properly about half the time. Delivery staff examining recipients' driver licenses should have been able to consistently reject the deliveries; each buyer's license used no less than 3 strategies to very clearly label the owner as younger than 21 years.

It is very important that shipping companies work with their staff to ensure more faithful execution of their policies and procedures for alcohol shipments. In this study, shipping companies frequently delivered beer and liquor in violation of their own policies, and AVAD was often executed poorly, if at all. Furthermore, it is important that alcohol be delivered only to the individual who ordered it, not to neighbors who may unwittingly participate in the delivery of alcohol to underage buyers. While the delivery driver technically delivered the packages to an adult, they also facilitated the underage buyer in obtaining alcohol. Also, although AVAD is very important, IAVs should not rely so heavily on using only AVAD to prevent youth access. Because age verification left to delivery drivers was frequently done incorrectly, IAVs should also use rigorous age verification at the point of order.

It is important to note that buyers in this study were barred from using a strategy to bypass age verification that minors overwhelmingly say they have access to and are very willing to use: a parent's driver license.²⁸ Future studies should assess the ease with which youth in real-world circumstances (ie, with access to a friend's or parent's license) can bypass age verification, as well as vendors' ability to thwart such purchases by using rigorous age verification at both the points of order and delivery.

This study's purchases were made using prepaid Visa gift cards, which necessarily limited the study sample to domestic websites (these cards were not usable for international purchases). They were selected after we concluded that they would provide the greatest protection against buyers being linked to their study participation. Future studies should include international vendors because, in the ICV industry, many vendors ship from overseas to offer lower prices by avoiding payment of excise taxes, and it is important to determine whether this is also an issue for IAV sales.

Prepaid gift cards are easy for youth to obtain and are difficult to track. The cards were purchased with cash without ID, were managed online, and nothing was ever mailed to the user; it would be easy for minors to buy and maintain such cards for online purchases without their parents being aware.

This study was limited to the 100 most popular IAVs, which were disproportionately wine vendors (vs beer, liquor, or other alcohol, which are more frequently used by youth²⁹). Although this study provides important evidence that these IAVs do a poor job of preventing youth access, further research is needed to determine the proportion of minors who buy alcohol online and to guide the formation of public health policy on online alcohol sales and age verification, with samples including larger numbers of vendors selling nonwine alcohols.

At the peak of the ICV industry, the methods described herein identified 775 ICVs.¹⁸ Owing in large part to extensive regulatory attention, that number dwindled to 392 in 2009 before beginning to rise again (R.S.W., unpublished data, 2009). Considering that there are generally fewer cost advantages to buying alcohol online as compared with cigarettes (because of lower excise taxes and higher shipping cost for alcohol vs cigarettes), we expected to find substantially fewer IAVs than ICVs. However, we had to stop counting when we reached 5000 because of budgetary constraints—clearly there were more to be found. The community of IAVs is far larger than the community of ICVs; future research should more completely identify the population and capture data on sales and age verification practices from a greater proportion of the IAV population.

The application of similar approaches that have been used to regulate ICV sales to IAV sales may be effective in regulating this industry. As with ICVs, issues of jurisdiction, interstate sales, and the sheer number of vendors make it difficult for state officials to intervene directly with the IAVs. However, working at the federal level to cut off vendors from their established shipping and payment-processing partners could, as it did with ICVs, lead to an increase in vendors going out of business and

a substantial decrease in vendors using banned shippers and payment processors.³⁰ Greater enforcement of existing policies, or perhaps new policies, are needed to effectively reduce youth access to alcohol online.

Accepted for Publication: February 29, 2012.

Published Online: May 7, 2012. doi:10.1001/archpediatrics.2012.265

Correspondence: Rebecca S. Williams, MHS, PhD, Center for Health Promotion and Disease Prevention, University of North Carolina at Chapel Hill, 200 N Greensboro St, Ste D-13, Carrboro, NC 27510 (rebeccawilliams@unc.edu).

Author Contributions: Dr Williams had full access to all the data in the study and takes responsibility for the integrity of the data and the accuracy of the data analysis. *Study concept and design:* Williams. *Acquisition of data:* Williams. *Analysis and interpretation of data:* Williams and Ribisl. *Drafting of the manuscript:* Williams and Ribisl. *Critical revision of the manuscript for important intellectual content:* Williams and Ribisl. *Statistical analysis:* Williams. *Obtained funding:* Williams and Ribisl. *Administrative, technical, and material support:* Williams. *Study supervision:* Williams.

Financial Disclosure: None reported.

Funding/Support: This work was funded by grant 64747 from the Robert Wood Johnson Foundation Substance Abuse Policy Research Program.

Role of the Sponsor: The funding source had no role in the design and conduct of the study; in the collection, analysis, and interpretation of the data; or in the preparation, review, or approval of the manuscript.

Additional Information: This study of the practices of Internet alcohol vendors was a part of the authors' larger longitudinal study of Internet cigarette vendors ongoing since 1999 and funded from 2008-2011 by a grant from the Robert Wood Johnson Foundation Substance Abuse Policy Research Program. The grant funded ongoing surveillance of Internet cigarette vendors as well as exploratory research to identify Internet alcohol vendors, analyze their website content, compare their practices with those of Internet cigarette vendors, and examine the extent to which Internet alcohol vendors prevent sales to minors.

REFERENCES

1. Chriqui JF, Ribisl KM, Wallace RM, Williams RS, O'Connor JC, el Arculli R. A comprehensive review of state laws governing Internet and other delivery sales of cigarettes in the United States. *Nicotine Tob Res.* 2008;10(2):253-265.
2. Prevent All Cigarette Trafficking Act of 2009 (PACT Act), Pub L No. 111-154, Stat 1147 (2010).
3. Family Smoking Prevention and Tobacco Control Act, §1256 (2009).
4. Attorney General of the State of New York Health Care Bureau. In the matter of United Parcel Service: assurance of discontinuance. October 2005. <http://www.ag.ny.gov/sites/default/files/press-releases/archived/9tiupsaodfinal.oct.pdf>. Accessed March 22, 2012.
5. Attorney General of the State of New York Health Care Bureau. In the matter of DHL Holdings USA, Inc., and DHL Express (USA), Inc.: assurance of discontinuance. July 2005. <http://www.ag.ny.gov/sites/default/files/press-releases/archived/9tiupsaodfinal.oct.pdf>. Accessed March 22, 2012.
6. Attorney General of the State of New York Health Care Bureau. In the matter of Federal Express Corporation, and FedEx Ground Package Systems, Inc.: assurance of compliance. February 2006. <http://www.ag.ny.gov/sites/default/files/press-releases/archived/FedEx%20-%20Executed%20AOC.pdf>. Accessed March 22, 2012.
7. Alt Powell E. Deal aims to prevent web cigarette sales. New York, NY: Associated Press; March 17, 2005.
8. Ribisl KM, Williams RS, Kim AE. Internet sales of cigarettes to minors. *JAMA.* 2003;290(10):1356-1359.
9. Jensen JA, Hickman NJ III, Landrine H, Klonoff EA. Availability of tobacco to youth via the Internet. *JAMA.* 2004;291(15):1837.
10. US Census Bureau. *United States Census of Retail Trade, 2007.* Washington, DC: Government Printing Office; 2007.
11. Specialty Wine Retailers Association. Supreme Court decision supports wine direct shipping. 2008. <http://www.reuters.com/article/2008/02/22/idUS191756+22-Feb-2008+BW20080222>. Accessed March 22, 2012.
12. Reikhof GM, Sykuta ME. Politics, economics, and the regulation of direct interstate shipping in the wine industry. *Am J Agric Econ.* 2005;87(2):439-452. doi: 10.1111/j.1467-8276.2005.00733.x.
13. *Granholm v Heald*, 544 US 460 (2005).
14. Heckman C. A few clicks can get minors liquor. *Seattle Post-Intelligencer.* August 9, 2004.
15. Bomar E, Davis J, Hall M, Lewandowski A, Weidenbenner S. *Internet Sales of Alcohol.* Knoxville: University of Tennessee; 2003.
16. O'Connor D. Wine ordered online lands in teen hands. *St. Paul Pioneer Press.* June 5, 2006:A1.
17. Brief of Ohio and 32 other states as Amici Curiae Supporting Petitioners. In: *Granholm v Heald*, 03-1116, Supreme Court of the United States (2004). <http://www.law.indiana.edu/instruction/tanford/web/wine/33states.pdf>. Accessed March 22, 2012.
18. Ribisl KM, Kim AE, Williams RS. Sales and marketing of cigarettes on the Internet: emerging threats to tobacco control and promising policy solutions. In: Bonnie RJ, Stratton K, Wallace RB, eds. *Ending the Tobacco Problem: A Blueprint for the Nation.* Washington, DC: National Academies Press; 2007.
19. Can you ship it? 2012. <https://www.usps.com/ship/can-you-ship-it.htm>. Accessed January 31, 2012.
20. WWAY News Channel 3. North Carolina's new driver's license. 2008. http://www.waytv3.com/north_carolina039s_new_driver039s_license/10/2008. Accessed December 22, 2011.
21. Forster JL, McGovern PG, Wagenaar AC, Wolfson M, Perry CL, Anstine PS. The ability of young people to purchase alcohol without age identification in northeastern Minnesota, USA. *Addiction.* 1994;89(6):699-705.
22. Perry CL, Williams CL, Komro KA, et al. Project Northland: long-term outcomes of community action to reduce adolescent alcohol use. *Health Educ Res.* 2002; 17(1):117-132.
23. Toomey TL, Wagenaar AC, Gehan JP, Kilian G, Murray DM, Perry CL. Project ARM: alcohol risk management to prevent sales to underage and intoxicated patrons. *Health Educ Behav.* 2001;28(2):186-199.
24. Wagenaar AC, Toomey TL, Erickson DJ. Preventing youth access to alcohol: outcomes from a multi-community time-series trial. *Addiction.* 2005;100(3):335-345.
25. Centers for Disease Control and Prevention. Enhanced enforcement of laws to prevent alcohol sales to underage persons—New Hampshire, 1999-2004. *MMWR Morb Mortal Wkly Rep.* 2004;53(21):452-454.
26. Presseur DF, Williams AF, Weinstein HB. Policing underage alcohol sales. *J Safety Res.* 1994;25(3):127-133. doi:10.1016/0022-4375(94)90069-8.
27. Lewis RK, Paine-Andrews A, Fawcett SB, et al. Evaluating the effects of a community coalition's efforts to reduce illegal sales of alcohol and tobacco products to minors. *J Community Health.* 1996;21(6):429-436.
28. Williams RS, Ribisl KM. *Effectiveness of Tobacco Co Efforts to Verify Age and Restrict Minors' Access to Cigarette Marketing Websites: A Report to the National Association of Attorneys General.* Chapel Hill: University of North Carolina at Chapel Hill; 2011.
29. Johnston LD, O'Malley PM, Bachman JG, Schulenberg JE. *Secondary School Students.* Ann Arbor: Institute for Social Research, University of Michigan; 2011. *Monitoring the Future: National Survey Results on Drug Use, 1975-2010*; vol 1.
30. Ribisl KM, Williams RS, Gizlice Z, Herring AH. Effectiveness of state and federal government agreements with major credit card and shipping companies to block illegal Internet cigarette sales. *PLoS ONE.* 2011;6(2):e16754. doi:16710.11371/journal.pone.0016754.