Self-Checkout Supermarket Lanes: A Potential Source of Alcohol for Minors

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Abstract

The minimum drinking age in all 50 states (U.S.) is 21 years of age. Drinking among minors remains a serious public health concern. Self-checkout (SCO) options in off-sale (e.g., markets, liquor stores and the like) alcohol outlets (e.g., grocery store chains) represent a potential source of illicit access to alcohol. This exploratory study examined the ability of young adults to purchase alcohol through self-checkout lanes without being asked for age verification. Two hundred and sixteen stores with self-checkout lanes were randomly selected in five southern California counties. Pseudo-patrons independently judged to be ≤23 years of age purchased alcohol in each store. Overall, 8.4% of all purchase attempt observations resulted in a failure to ask for identification to purchase alcohol. The growing number of self-checkout options at supermarkets is a potential source of alcohol for minors. Policies similar to those used to control the sale of tobacco might be employed to better regulate alcohol sales at self-checkout lanes.

Keywords: Under-age drinking, alcohol availability, technology

Introduction

The current minimum age to purchase alcohol is 21 years in all 50 United States. Despite this, underage drinking remains fairly widespread with slightly over 40% of all high-school seniors reporting alcohol use at least once in the past 30 days, while 53.8% of 19-20 year olds report such use (Johnston et al., 2009). About 45% of all high-school seniors also reported being drunk at least once in the past year (Johnston et al., 2009). By age 20, over 80% of all U.S. young adults have consumed alcohol (Office of the Surgeon General, 2007).

According to the National Institute on Alcohol Abuse and Alcoholism (2006), underage drinking is associated with a number of adverse physical, developmental, and mental health consequences including alcohol use disorders, injury and death. Combined, such problems cost society up to $61 billion a year (Miller et al., 2006).

The U.S. Surgeon General's Call to Action to Prevent and Reduce Underage Drinking (Office of the Surgeon General, 2007) emphasizes the need to restrict youth access to alcohol through consistent public policy and enforcement of alcohol laws. Although alcohol retailers are required to check identification to ensure all persons purchasing alcohol are 21 years of age, such safeguards often fail. Studies examining rates of age verification (I.D.) for alcohol purchases by young people have found broad regional variations in failure to ask for I.D.. Rates of failure to I.D. minors or young adults have ranged between 34% in Oregon (Paschall et al., 2007) to as high as 97% in Washington D.C. (Preusser & Williams, 1992). Paschall et al. (2007) found that chain and grocery stores failed to check I.D. for 34% of all young adult alcohol purchases. Table 1 presents the failure rates from five different studies of I.D. checks in grocery stores. As shown in the table, rates vary by geographic location.

Self-Checkout (SCO) lanes have become increasingly common at major grocery store chains. An estimate by IHL consulting group that monitors the grocery industry (www.marketingandretailnews.com/article/9174.aspx, 6-22-10) suggests self -checkout lanes accounted for $1.2 trillion worth of consumer purchases in 2009, an increase from $34 billion in 2005. To date, little is known concerning how well alcohol sales are regulated when a consumer uses a self-checkout lane. Although business models vary, stores often have one staff person assigned to monitor several lanes. Products containing alcohol are theoretically flagged by barcode so the self-checkout scanner disallows a transaction to be completed until a store employee I.D.s the consumer. Given the relatively poor record of grocery stores in checking I.D.s for alcohol purchases and the ostensibly growing use of self-checkout lanes, a better understanding the potential for minors to illicitly purchase alcohol via SCO lanes is warranted. To our knowledge, this exploratory study is the first to systematically assess the ability of young adults to purchase alcohol using SCO without a valid I.D. check. Specifically, we are interested in the following research questions:

1) To what extent can young adults purchase alcohol using SCO lanes without being asked for I.D.?
2) What, if any, environmental store characteristics are associated with failure to verify the age of young adults purchasing alcohol?

Methods

Design and Sample

We used a cross-sectional observational research approach to answer the above research questions. There is no organization that tracks the number of SCO's at supermarket chains and

the time it would take to visit all grocery store chains in five counties to assess the number of SCO's was both time and cost prohibitive. Therefore a trade union provided us with a sampling frame of the population (N=353) of chain supermarkets stores with SCO's in Southern California (Riverside, Los Angeles, San Bernardino, Orange, and San Diego Counties). Using the frame, we drew a random sample of 225 stores, stratified proportionally by county. Nine stores in our sample did not have operational SCOs, thus our final sample included 216 stores (95%, +/- 3.2%). San Diego State University's, Institutional Review Board, for the protection of human subjects, approved this study.

Pseudo-patrons

Given selling alcohol to persons less than 21 years of age is illegal, we were precluded from using actual minors for this study. Instead, similar to other studies we recruited younger looking research assistants. We initially recruited seven potential pseudo-patrons. Each of these potential pseudo-patrons was aged ≤ 25 years. Photos of potential pseudo-patrons were shown to a volunteer panel of 20 undergraduate students. These students were asked (in the following order): 1) Pretend you worked in a liquor store. If the person in the photo attempted to purchase alcohol, would you ask for their I.D.? 2) What is the age of the person in the photo? Ratings were summed for each potential pseudo-patron and summary statistics were computed: for question 1) mean percent of "yes" responses and for question 2) mean age, SD. The current responsible beverage training programs being used for alcohol license holders in California suggests that all persons appearing to be under 30 be asked for I.D. when purchasing alcohol (Personal communication with San Diego Responsible Hospitality Coalition, 2010). As such, we conservatively set an *a priori* minimum mean rated age for our pseudo-patrons at < 23 years. We also required that the mean percent of affirmative ratings of question 1 be 80% or higher.

Based on these criteria, two potential pseudo-patrons were eliminated. For the remaining five pseudo-patrons (three males and two females) the mean estimated age was 22.3 (SD=3.29). Pseudo-patrons were trained to follow an observational protocol (see below) and went on a test purchase while being shadowed by field staff.

Procedure

Each day during the observation period, each pseudo-patron was given a driving route of 8 to 14 stores to observe. Observations occurred between the hours of 10:00 a.m. and 8:00 p.m. (see Table 2 for the distribution). At each store, pseudo-patrons selected one product (of their choosing) containing alcohol for purchase (purchases included a variety of beer [singles, six packs, high end micro brews, malt liquors, etc.], wines and wine coolers) along with a snack item. For each store, pseudo-patrons were given a $10 bill to pay for the purchase. Before approaching the SCO, pseudo-patrons noted, on a detailed data collection form, immediately upon exiting the store the following: 1) whether there were security guards in the front of the store, 2) the number of employees in the SCO area, 3) whether store employees had a clear view of the SCO lane, 4) the number of other customers in the SCO lane they were using, 5) the number of SCOs, and 6) the number of non-SCO lanes.

Once the pseudo-patron was at the SCO lane, he or she first scanned the alcohol beverage. In cases where the scanner blocked the alcohol purchase in some way, the pseudo-patron quickly attempted to scan the snack item to see if the system could be over-ridden. Related to the alcohol purchase, pseudo-patrons noted the following: 1) whether the SCO allowed the alcohol purchase without flagging the alcohol purchase for a store employee, 2) whether a store employee asked for I.D. to complete the alcohol purchase, 3) whether the store employee asked their age, 4) whether the store employee asked any other question to illicit a

verbal response, and 5) whether the store employee made eye contact with the pseudo-patron. Data collection forms were completed immediately after leaving the store.

Data Analysis Approach

Given the exploratory nature of the study, we first computed descriptive statistics for each variable. Next we generated a series of bivariate analyses to examine the relationships between store characteristics and I.D. failure rates. Finally, we entered statistically significant or marginally significant bivariate predictors of I.D. failure into a binary logistic multiple regression analyses to identify the adjusted contribution of these predictors to I.D. failure rate.

Results

Overall, 8.4% of all purchase attempts resulted in a failure to check the pseudo-patrons I.D. to verify the alcohol purchase was legal. The SCO unit failed to flag the alcoholic beverage purchase on 9.2% of all purchase attempts. See figure 1.

Table 2 presents percentages for the I.D. check outcome variable by store characteristics. As noted in the table, the distributions for time and county did not vary significantly with I.D. failure. Three variables—having a security guard present, having an employee ask for the date of birth, and an employee asking any questions of the pseudo-patron— were consistent across all failed I.D. purchases. That is, in all failures to I.D. check our pseudo-patrons, there were no security guards present and store employees never asked for a date of birth or asked any questions. In 50% of the cases where our pseudo-patron was able to over-ride a flagged alcohol purchase by quickly scanning the snack item, an I.D. check was not completed ($\chi^2(1) = 4.56$, p=.03). When an employee made eye contact with the pseudo-patron, failure to check for an I.D. was significantly less likely (21.0% vs. 79.0%). Finally, when there were fewer than four people

in line there was a marginally statistically significant increased failure to check I.D. (χ^2 (1) = 3.37, p=.07, phi =.126).

Results of a binomial multiple logistic regression analysis predicting failure to check I.D. is presented in Table 3. Consistent with the bivariate analyses, the ability of the pseudo-patron to over-ride a flagged alcohol purchase by scanning another item and having an employee make eye contact were independently associated with failure to check I.D. In cases where a flagged alcohol purchase could be over-ridden, failure to check I.D. increased by over a factor of three. In contrast, when employees made eye contact with the pseudo-patron there was about a 79% decrease in failure to I.D.

Discussion

This study, to our knowledge, is the first attempt to systematically assess the potential of SCO lanes to be a source of illicit alcohol for minors. Overall, we found that I.D.s were checked for alcohol purchases in SCO lanes over 90% of the time; however, at almost 10% failure, SCO lanes represent a concerning potential source of alcohol for underage drinkers. SCO scanners failed to flag an alcohol purchase about 9.0% of the time, but 90% of those failures were rectified by store employees. In 21% of all failures to check I.D. for an alcohol purchase, our pseudo-patrons had eye contact with a store employee. When employees made eye contact with our pseudo-patrons the likelihood of failure to ask for an I.D. was significantly lower. When pseudo-patrons were able to over-ride a flagged alcohol purchase at the SCO lane the likelihood of failure to ask for an I.D. to verify the alcohol purchase increased over three times.

The study had several strengths including: 1) a large random sample of stores with SCO lanes, 2) a systematic data collection protocol, and 3) pseudo-patrons independently judged to be less than 23 years of age. The study, however, is not without its limits. First, it is possible that

our sampling frame was not totally complete. As such, the external validity of the above results should be viewed with caution. Second, although in theory our young looking pseudo-patrons should have been I.D. on every occasion, they all were over 21 years of age. Without conducting a law enforcement operation using actual minors, the above results can only be viewed as estimates of failure to I.D. minors for alcohol purchases. Finally, we were unable to compare I.D. failure rates for standard checkout lanes relative to SCO lanes in the same stores and geographic areas. Such a study would help tease out the relative strengths and weaknesses of both approaches as alcohol control mechanisms.

From a prevention standpoint the results of the present study are mixed. On the one hand, our failure to I.D. rate is lower than reported by studies examining I.D. checks in standard checkout lanes. It is important to note, however, that the majority of those studies were conducted over a decade ago and varied in geographic location. Given that alcohol control varies greatly by jurisdiction (e.g., enforcement, penalties and the like) cross study comparisons are difficult. Further, in the past decade or so there has been an increased interest in environmental prevention approaches (DeJong et al., 1998; Office of the Surgeon General, 2007) including responsible beverage service designed to reduce under-age access to alcohol. Such approaches are particularly common in Southern California. Thus, the overall base failure rate for I.D. checks on alcohol purchases might be fairly low in the region regardless of purchase type (i.e., SCO or traditional checkout).

On the other hand, the growth of SCO options for alcohol purchases coupled with the rates of both machine and human failure we observed represent the potential for increased illicit underage drinking in the future. Uniform policies (both public and commercial) and procedures regulating the sale of alcohol at SCOs and consistent enforcement of these policies is necessary

to reduce youth access to alcohol (Office of the Surgeon General, 2007). Further such efforts would serve to prevent increases in the failure rate as SCO options increase. Further, store employees would benefit from periodic responsible beverage training to ensure they are taking the proper steps to ensure alcohol sales are to non-intoxicated adults 21 years or older. Such training would include making eye contact with customers, engaging in a brief conversation including asking the customer their date of birth. It is also important that the criminal and juvenile justice systems, along with law enforcement, consistently and uniformly enforce all existing laws against underage alcohol use (Office of the Surgeon General, 2007).

A variety of future studies would increase our understanding of the potential of SCO lanes as a source of alcohol for underage drinkers including: 1) studies examining both SCO and non-SCO in the same stores; 2) studies in different geographic regions; 3) studies using pseudo-patrons rated to be adolescents, and 4) evaluations of law enforcement decoy programs using underage purchasers.

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Table 1
Previously Published Research

Authors (year)	Date of Observation	Location	Failure rate (%)
Preusser (1992)	Nov-90	Westchester County, NY	80
	Dec-90	Albany, NY	44
	Jan-91	Washington DC	97
Forster (1995)	Apr/June 1992	Wisconsin/Minnesota	50
Grube (1997)	1995	South Carolina	72
	1995	Southern California	44
	1995	Northern California	35
	1995	All Communities	47
	1996	South Carolina	57
	1996	Southern California	22
	1996	Northern California	27
	1996	All Communities	35
Freisthler (2003)	1999/2001	Sacramento	39
Paschall (2007)	Jul-Sept 2005	Oregon	34

Table 2
Descriptive Statistics of Store Characteristics by I.D. Failure Rate (n=216)

Store Characteristic	Overall %	% Overall I.D. Failure
Location		
• Los Angeles	35.0	31.5
• Orange	22.1	31.5
• Riverside	15.9	5.3
• San Bernardino	8.0	5.3
• San Diego	19.0	26.4
Time of Purchase		
• 10:00 am—Noon	16.4	7.1
• 12:01 pm—2:00 pm	29.5	28.6
• 2:01 pm—4:00 pm	25.1	28.6
• 4:01 pm—6:00 pm	20.2	28.6
• 6:01 pm—8:00 pm	8.7	7.1
Employees between SCO and door (yes)	62.7	47.4
Security guard present at door (yes)	10.1	0.0^
Employees had clear view of SCO (yes)	73.1	68.4
Employees assisting others at SCO (yes)	40.1	41.2
SCO flagged alcohol purchase (yes)	90.8	89.5
Alcohol purchase could be over-ridden (yes)	28.6	50.0**
Employee asked birth date (yes)	18.6	0.0^
Employee made eye contact (yes)	56.9	21.1***
Employee questions prompted verbal response (yes)	13.8	0.0^
Time to complete transaction less <1 minute (yes)	36.9	52.6
Fewer than 4 people in line (yes)	90.7	78.9*
Employee asked for I.D. (yes)	91.2	8.5

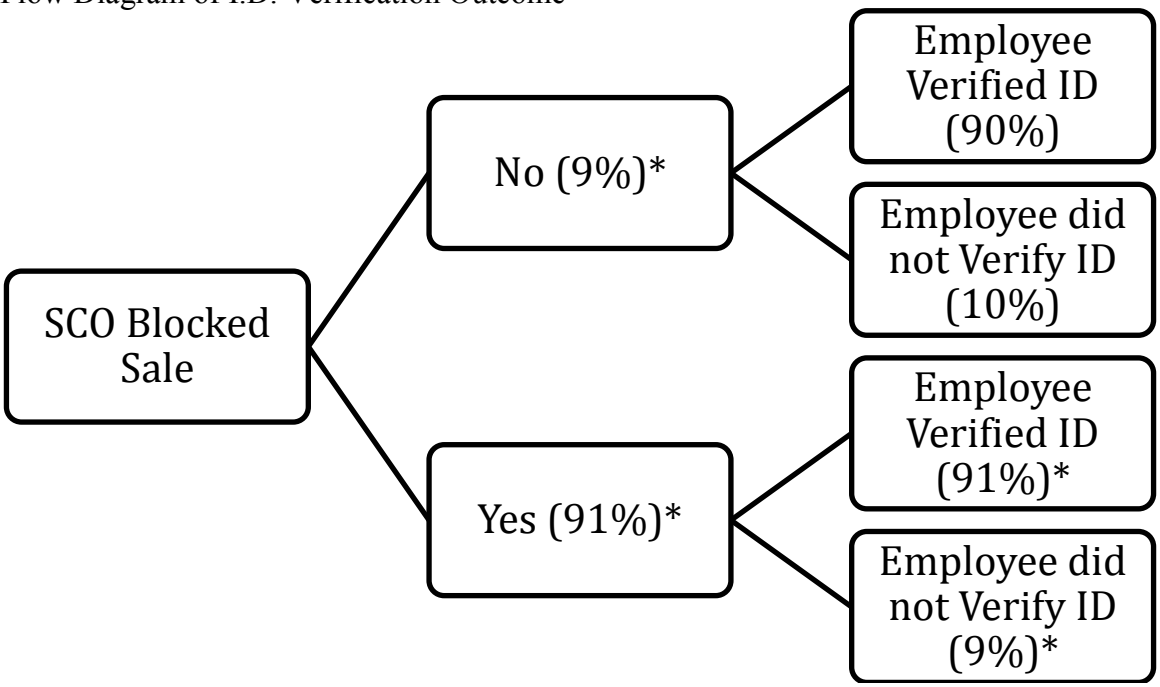
Notes: *p<.10, **p<.05, ***p<.01 ^zero cell values preclude chi-square test

Table 3
Logistic Regression for I.D. Failure Rate (n=216)

	B	Sig.	Exp(B)	95% C.I. for EXP(B)	
				Lower	Upper
Fewer than 3 people in line (1=yes)	1.204	.081	3.333	.862	12.891
Time to complete transaction less <1 minute (1=yes)	-.705	.191	.494	.172	1.422
Alcohol purchase could be over-ridden (1=yes)	1.352	.014	3.866	1.311	11.398
Employee made eye contact (1=yes)	-1.551	.011	.212	.065	.696
Constant	-2.014	.000	.133		

Model χ^2=18.6, df=4, p<.001; Nagelkerke R^2=.19

Figure 1
Flow Diagram of I.D. Verification Outcome



*Rounded