Preventing Illegal Alcoholic Beverage and Tobacco Sales to Minors

through

Electronic Age Verification Devices

A Field Effectiveness Study

conducted by the

Schneider Institute for Health Policy,
Heller School for Social Policy and Management,
Brandeis University

in partnership with the

Florida Department of Business and Professional Regulation

and the

Alcoholic Beverages Division, Iowa Department of Commerce

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Advisory Board

John Albrecht, Senior Deputy Attorney General, Nevada (chair), has directed Synar tobacco inspections and FDA enforcement activities for the state of Nevada and co-authored the June 1999, *Preventing Teenage Access to Tobacco: a Report to the National Association of Attorneys General*.

Read DeButts is the Executive Director of We CARD, a collaboration of manufacturers and retailer associations which provides training and resource materials to tobacco retailers nationwide.

William DeJong, Ph.D., Professor, Boston University School of Public Health, is director of the Higher Education Center on Alcohol and Other Drug Prevention at the Educational Development Center and a national expert on health promotion.

Rick McAllister is the President of the Florida Petroleum Marketers and Convenience Store Association and an authority on responsible retailing of age-restricted products.

Lt. David Myers of the Florida Department of Business and Professional Regulation is a national expert on electronic age verification and ID fraud and the investigator in one of only two prior studies of EAV use in the field.

Rolland W. Trayte is Director, Loss Prevention/Security for Phillips 66 Company, which operates Circle K and Phillips 66 convenience stores and gas stations.

Lynn Walding is the Administrator of the Iowa Alcoholic Beverages Division, Iowa Department of Commerce, with responsibility for enforcing alcohol and tobacco sales to minors laws in that state.

Mark Willingham works with the Division of Alcoholic Beverages and Tobacco within the Florida Department of Business and Professional Regulation and directs the Center for Alcohol and Tobacco Access Prevention.

Project Staff

Brad Krevor, Ph.D., a Senior Research Associate at the Heller School, was the project director for this study.

John Capitman, Ph.D., a Heller School Professor and national programs project evaluator for health foundations, served as project scientist and designed the data collection and analysis.

Leslie Oblak, Ph.D., Research Associate for the Schneider Institute for Health Policy, directed field data collection and assisted in the data analysis.

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Section I: Background

One key component of a comprehensive strategy to curb teenage tobacco use has been restrictions on minors' access to tobacco. Through the Federal Synar Regulations, all states now prohibit the sale of tobacco products to minors and inspect retailers to enforce these laws. Efforts to prohibit the sale of alcoholic beverages to minors are also widespread. Enforcement of these laws holds the potential for reducing the incidence of alcohol abuse and, in particular, the incidence of highway accidents and fatalities attributable to adolescent driving under the influence of alcohol.

Retailers—the object of increasingly aggressive tobacco and alcohol beverage enforcement and regulation—have instructed their employees to verify the age of young customers and decline sales to underage buyers. But national data on sales to minors and surveys of youth behavior indicate that these instructions have largely gone unheeded. The many demands on clerks' attention, especially when stores are crowded, and the desire to avoid delays and confrontation, are contributing factors. Confusion in calculating the age of customers and recognizing fake IDs are additional factors. So, too, is lax supervision of point-of-sales conduct.

Electronic Age Verification (EAV) devices are one possible means to address these problems and reduce minors' access to tobacco and alcohol. These devices—similar to credit and ATM card scanners—read the date of birth encoded on the magnetic stripe and/or bar code on the back of the customer's driver's license or similar ID. The EAV device calculates and displays whether the cardholder is old enough to purchase tobacco or alcohol products. A small demonstration project during Spring break, 1998 by the Florida Department of Business and Professional Regulation—as well as anecdotal reports from EAV manufacturers and customers—suggested that EAV devices were *efficacious*, i.e. they correctly read the data on the ID and calculate the age of the license holder. What had not been examined was whether these devices were *effective*, i.e. would they be used in a real world retail environment correctly and frequently enough to improve compliance with sales to minors laws.

From February through September, 2001 researchers from the Heller School for Social Policy and Management at Brandeis University conducted a Field Effectiveness study of EAV devices in Iowa City, Iowa and Tallahassee, Florida. The project, which was conducted in partnership with the Iowa Alcoholic Beverages Division and the Florida Department of Business and Professional Regulation, was interested in examining two areas relating to EAV use. The first was the question of effectiveness:

- Would EAVs lead to improved responsible retailing practices, increasing the frequency and accuracy of age verification?

The second concern was the impact of EAV devices upon the retail environment:

- Would clerks accept EAV devices and employ them consistently when young customers purchase tobacco or alcohol products?
- How would customers who purchase tobacco or alcohol respond to being asked to swipe their IDs through EAV devices?

In order to answer these questions, the Brandeis team collected both quantitative and qualitative data, including:

1. Pre- and post-EAV installation mystery shopper inspections of tobacco and alcohol retailers to measure age verification practices in treatment and control retail stores;

2. Clerk and manager interviews: confidential telephone interviews with clerks and store managers to examine attitudes towards EAV devices and reasons for their use or disuse;
3. Management interviews: in depth interviews with store owners and district managers, including the perceived value of EAV devices in store operations; and
4. Customer interviews: exit interviews with young customers to examine attitudes towards stores which employ EAV technology and potential impact upon shopping patterns.

Section II: Project Design

Iowa City, Iowa and Tallahassee, FL were selected as study sites for the field effectiveness study. Iowa City (including Coralville, the adjoining suburban community) has a population of approximately 75,000 and 118 tobacco and alcohol retail permit holders. Tallahassee has a population of approximately 155,000 and slightly over 200 tobacco and alcohol retail permit holders.[1] Iowa City and Tallahassee were selected as intervention sites because they best met key criteria: the state driver's license contains date of birth data encoded in machine-readable form; a moderate size city; both college and teen populations; cultural/demographic diversity; and a retailer environment and enforcement community supportive of a research project on youth access prevention. Both cities are home to major universities: Iowa City is the main campus of the University of Iowa, and approximately 30,000 of its residents are between the age of 15 and 24. Tallahassee is home to both Florida State University and the Florida Agricultural and Mechanical University. FSU and UI both are among ten participants in a national program of the Robert Wood Johnson Foundation to address the problem of alcohol abuse in colleges: A *Matter of Degree*. The efforts of A *Matter of Degree* campus directors to involve retailers, community groups and enforcement agencies in problems of alcohol abuse by college students had created an environment of cooperation and a willingness to test strategies to reduce illegal alcohol and tobacco sales to minors, from which the EAV project benefited greatly.

Store Participation

A letter to all Iowa City tobacco and alcohol retailers from Lynn Walding, Administrator of the Alcoholic Beverages Division of the Iowa Department of Commerce ("IA ABD")—and to all Tallahassee tobacco and alcohol retailers from Richard E. Turner, Director of the Division of Alcoholic Beverages and Tobacco of the Florida Department of Business and Professional Regulation ("FL DBPR")—invited retailers to participate in the EAV Field Effectiveness study. 43 retail outlets in Iowa City and 60 retail outlets in Tallahassee agreed to participate. Many nightclubs and restaurants expressed a strong interest in participating in the project but budgetary restraints limited the study to establishments which sell liquor for off-site consumption. Additionally, several grocery store chains employed check-out systems which, in scanning tobacco or alcohol products, prompted clerks to verify and/or enter the date of birth into the register: Since the requirement to enter date of birth information manually could not be suppressed, these chains concluded that EAV devices would be duplicative. Also, there was no room at the registers for the devices.

Lt. David Myers, FL DBPR's expert in ID fraud, conducted a training for store managers in

[1] Since liquor and beer are sold in grocery and convenience stores in both Iowa and Florida, virtually every tobacco retailer also sells alcohol products.

Tallahassee on February 21, 2000 for participating merchants. Iowa ABD Administrator Lynn Walding hosted a similar training in Iowa City on February 28. In both training events, project staff presented the goals of the field effectiveness study and the EAV manufacturer demonstrated EAV operation and support. EAVs were distributed to merchants at the training or delivered within the next few days, with on-site training to those unable to attend. No written materials about how to train and supervise clerks to make the best use of the device, or how to incorporate EAVs into an overall responsible retailing program, were included in the training.

EAV Selection

EAV devices are available in a range of prices and configuration. Least expenses devices (under $400) read the magnetic stripe on the back of a state ID, calculate age and display age (and other encoded data like hair color, height). More expensive devices can also read bar codes. High end models (>$1,500) have the ability to store the data from the ID in memory, print a record of the transaction and/or electronically transfer data.

The EAV device selected for the project is the Hypercom ICE 5500, manufactured by the Logix Companies of Longmont, Colorado. The Hypercom unit is a high-end device whose stored data can be downloaded to a central computer and accessed via the internet. This normal ability of users to access data taken from swiped IDs was suppressed for this project to forestall any concerns about the misuse of personal information. The Hypercom unit also can perform credit card charges and check authorizations: Since one consideration was that EAV technology was more likely to be employed if this function were integrated into a device that conducted other familiar functions, merchants were given the choice of using the Hypercom ICE 5500 as a dedicated EAV device only, or as a multi-purpose point-of-sales device.[2] The Logix Companies was also willing to rent EAVs at a substantially discounted cost to the project so as to enable a greater number of installations and to offer its "1-800" Technical Assistance line to each retailer in the study. The professionalism and assistance of the Logix Companies was greatly appreciated.

Data Collection

1. ***Retailer inspections: Do clerks employ EAVs to verify age and authenticate IDs?***

In the month prior to the distribution of EAV devices, the two Field Supervisors conducted baseline inspections of tobacco and alcohol retailers in the study communities. The protocol for the retail inspections called for unattended 18 year olds to attempt the purchase of cigarettes and unattended 21 year olds to attempt the purchase of beer. Inspectors, both male and female, were trained to request a cigarette brand (or alcoholic beverage) by name; and when the sale was proferred, regardless of whether age had been verified, the inspector was to "discover" that s/he had too little money and leave the store. The inspector would record whether the clerk: 1) immediately offered to sell, 2) offered to sell after merely asking the age of the inspector, 3) requested and visually inspected the inspector's ID, or 4) requested and swiped the ID through an EAV device. Altering the time of day of inspections, reassigning inspection routes and a turn-over in inspectors (and clerks) insured that inspectors would not become familiar to store personnel. The choice to use an 18 (or 21) year old inspector, rather than a minor, reflected in part that Florida law prohibits the attempted purchase of tobacco or alcohol by a minor except for law enforcement purposes. Additionally, the

[2] Interestingly, none of the participating merchants chose to use the Hypercom unit as anything but a dedicated EAV technology. This might merely reflect an unwillingness to change credit card processing protocols during a trial period and/or a prior service contract which could not be terminated without penalty.

use of inspectors who had just reached the legal age of purchase better examines store policies that instruct clerks to inspect all customers appearing to be under the age of 27 (the FDA standard still typically employed by retailers) rather than only those customers who are much younger.

The baseline consisted of two separate inspections of every tobacco permit holder and one additional inspection of all of Iowa City's, and most of Tallahassee's, alcohol permit holders. After the introduction of the EAV devices, the project conducted five post-installation inspections: two in the first month following the month of installation, two more at monthly intervals, and a fifth inspection in the sixth month of EAV use. The first and third inspection attempted tobacco purchases for all retailers with EAV devices; the second and fourth inspection attempted tobacco purchases for all retailers with EAV devices and separate alcohol purchases for most retailers with EAV devices; the fifth and final inspection attempted purchases of tobacco at all tobacco retailers, and attempted purchases of alcohol at most alcohol retailers.

2. ***Telephone interview: How do clerks feel about EAV devices?***

Brandeis staff conducted 90 telephone interviews with store personnel (mostly clerks but some managers) who sold tobacco and alcohol products. 70 interviewees worked in stores which had EAV devices and 20 in stores which did not. These interviews were totally anonymous: interviewers knew only the first name of the clerk and whether the store had an EAV device but not the name or location of the store. Whereas the project relied upon the mystery shopper protocol, above, to measure the degree to which EAVs were used, these telephone interviews examined whether clerks had detected any changes in patterns of attempted purchases since EAV devices had been installed; whether clerks felt that EAV devices made it easier to request IDs and/or calculate age; and the reasons that clerks chose, or declined, to use them.

3. ***District Manager/Owner interviews: How do decision-makers feel about EAV devices?***

Brandeis staff conducted seven in-depth interviews with retail owners and district managers of retail chains to examine how clerks were trained to use EAV devices and determine whether decision-makers believed that EAV technology would be an effective addition to their stores.

4. ***Exit interviews: How do EAVs impact customers?***

Brandeis staff conducted exit interviews with customers of EAV-equipped retailers six to eight weeks after the EAV devices were introduced. 133 customers (73 in Florida, 60 in Iowa) appearing to project staff to be under age 27, of whom half had purchased tobacco or alcohol products, consented to a two minute interview. Customers were asked their feelings about being required to swipe an ID through an EAV machine in order to purchase alcohol or tobacco and their opinions about stores which required electronic age verification.

Section III: Results

Do clerks use EAV devices to verify age and authenticate IDs?

Tables 1 and 2 show that for both study sites, stores provided with EAV devices and comparison stores did not differ significantly in age verification behavior for either tobacco or alcohol sales at either baseline or at the final post-test. In all seven mystery shopper inspections, the inspectors noted whether clerks 1) immediately offered to sell, 2)

Table 1

Percentage of Stores Which Requested an ID Before Offering to Sell Tobacco Products to an 18-year-old Inspector

		Baseline 1*	Baseline 2*	6-Month Post-test
Florida	Stores with EAVs	81%	86%	72%
	Control	80%	78%	71%
Iowa	Stores with EAVs	43%	51%	51%
	Control	61%	52%	65%

* Baseline 1 and Baseline 2 were conducted within days of one another by different inspectors at different times of day.

Table 2

Percentage of Stores which Requested an ID Before Offering to Sell Alcoholic Beverages to a 21-year-old Inspector

		Baseline	6-Month Post-test
Florida	Stores with EAVs	62%	37%
	Control	77%	63%
Iowa	Stores with EAVs	84%	78%
	Control	85%	73%

offered to sell after merely asking the age of the inspector, 3) requested and visually inspected the inspector's ID, or 4) requested and swiped the ID through an EAV device. Conditions 3) and 4) were characterized as *age verification*. Conditions 1) and 2) were characterized as *no age verification*.[3]

The investigators had hypothesized that EAVs would increase the frequency that clerks requested, and inspected, IDs (whether the IDs were in fact swiped through an EAV device or not). But in the final inspection (P5) of all retailers in Iowa City and Tallahassee at month 6, stores with EAV devices did not significantly increase their age verification rates over baseline 1 or 2 for either tobacco or alcohol. Nor did stores with EAV devices display significant increases in the rate of age verification compared to control stores. The Florida tobacco age verification rates for treatment and control stores were 81% and 80% for baseline 1 and 86% and 78% for baseline 2, but by the last post-installation inspection, the rates decreased to 72% and 71%. The first baseline Iowa tobacco age verification rates were 43% and 61%, and 55% and 52% for baseline 2, for treatment and control stores. The last post-installation inspection resulted in rates of 51% and 65%. The alcohol inspections had similar results: Florida baselines were 62% and 77% for treatment and control, the follow-up inspections decreased to 37% and 63%; Iowa baselines were 84% and 85% for treatment and control, the follow-up inspections decreased to 78% and 73%. In each of these cases, there were no significant differences in rates.[4] There were notable differences in age verification rates between Florida stores and Iowa stores at some time frames for both products, but the variability in age verification and the similarity in the range of verification observed is also striking. In Florida, age verification rates ranged from 37% to 86% and in Iowa, age verification rates ranged from 43% to 85%.

Trends in Use of EAV Device

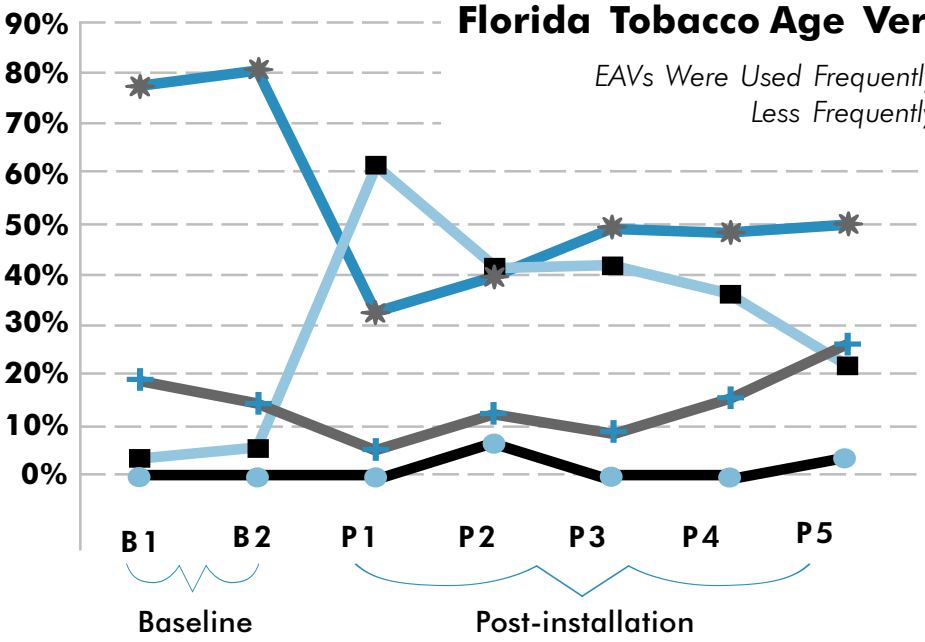
Figures 1 through 4 examine the rates of age verification behavior. The investigators had hypothesized that rates for requesting IDs and employing the EAVs would increase sharply after introduction of the devices; and that EAV use rates (but not necessarily the rates for requesting an ID) would stabilize or slowly move back towards baseline levels over time. The figures show that there was indeed a sharp increase in use of the EAVs and in ID requests at the first post-installation inspection: EAVs were employed in 62% of tobacco inspections in Florida and 44% in Iowa. But EAV use deteriorated rapidly in the succeeding months: By P3 (8 to 11 weeks following EAV introduction), EAV use in tobacco inspections had fallen to 42% in Florida and 24% in Iowa. Alcohol inspections also revealed a decrease in EAV use over time: in Florida, the first post-installation inspection was 12% but decreased to 4% in post-installation 5. Although the Florida alcohol trends are somewhat different than for tobacco in Florida or either product in Iowa, the basic finding of little overall impact on age verification is still indicated.[4] There was a jump in EAV use at the first Iowa alcohol post-installation inspection, but this rate decreased to that of the baseline over the next two inspections. Thus, it appears that clerks initially used the EAV devices but over time this use faded. While merely asking age was consistently low, asking for IDs often increased as the use of the devices went down, but overall levels of age verification (inspecting an ID and/or swiping an ID through an EAV device) stayed relatively constant over time.

[3] Asking age would appear to be an attempt at age verification. But minors who purchase tobacco and alcohol products misrepresent their age; and asking if the customer is 18 (or 21) without inspecting an ID contributes little to preventing illegal sales to minors. Ironically, only underage buyers in compliance checks conducted by enforcement agencies give their actual age. So asking age without inspecting an ID may prevent an illegal sale in many enforcement inspections but seldom when an underage customer attempts to purchase tobacco or alcohol for his or her actual use.

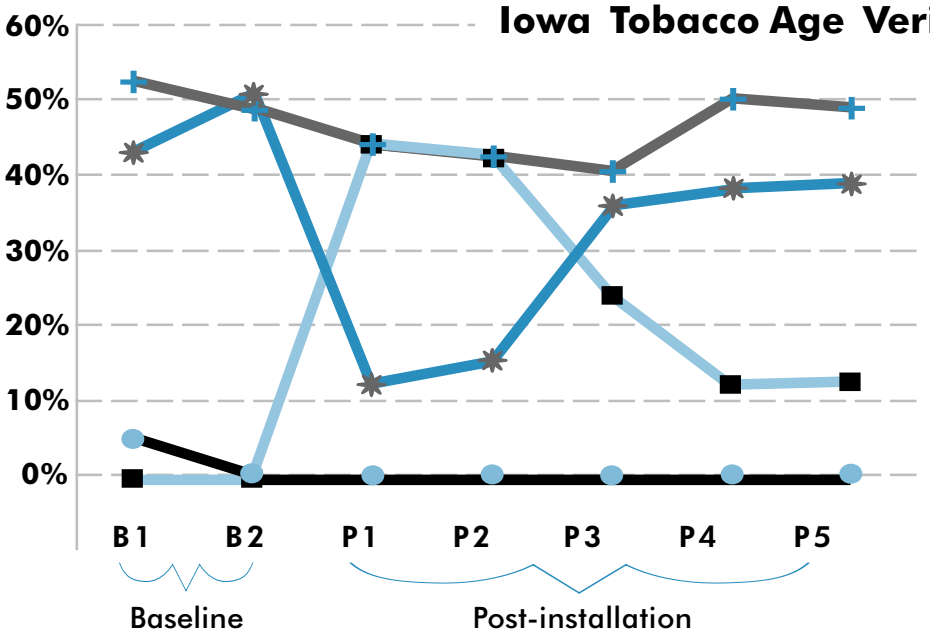
[4] Notable was the 37% for the post-installation 5 inspection for alcohol in Florida. This is considerably lower than the other age verification rates. Further analysis discovered that many of these post-installation 5 inspections were conducted by one female inspector who was asked for identification at a lower rate than the other inspectors.

Florida Tobacco Age Verification

EAVs Were Used Frequently At First But Less Frequently Over Time



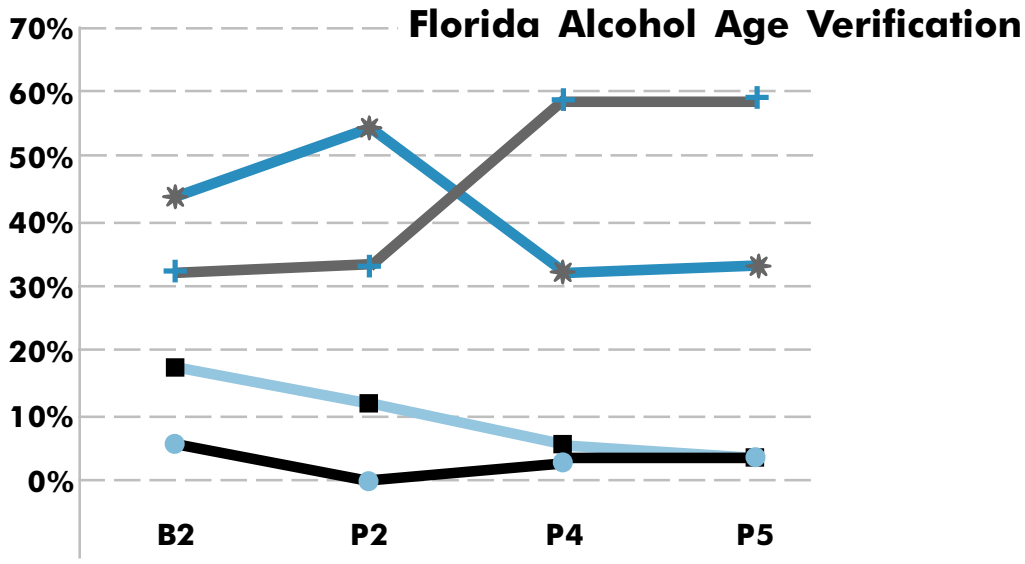
Iowa Tobacco Age Verification

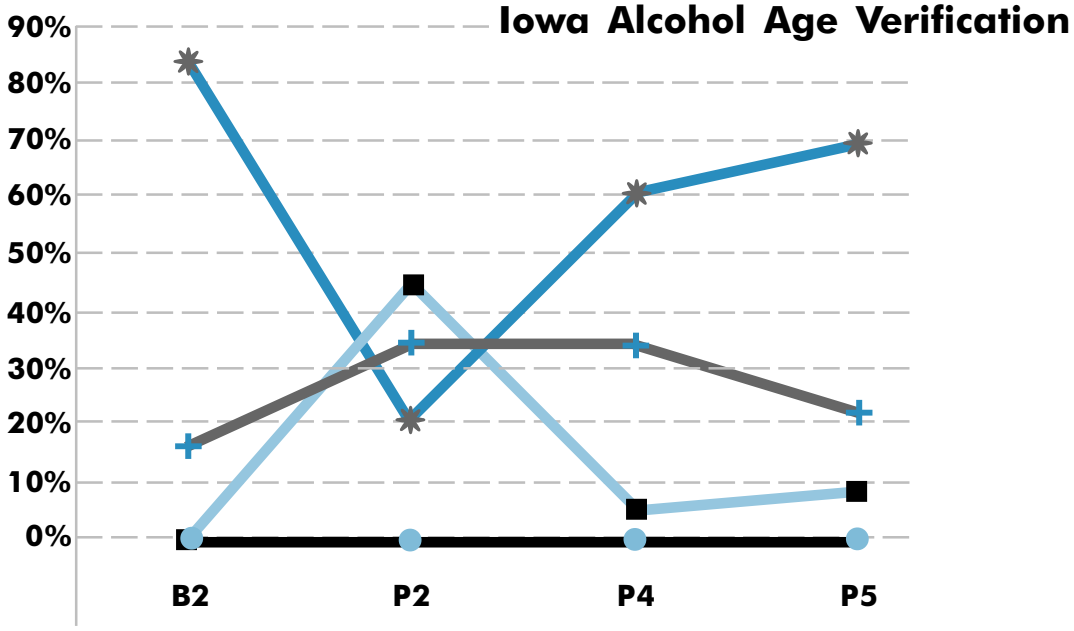


Key:

- **None:** Clerk offered sale unhesitatingly
- **Age:** Clerk asked about but did not verify age
- **ID:** Clerk requested an ID
- **EAV:** Clerk swiped ID through an EAV device

P1: Month 1
P2: Month 1
P3: Month 2 and 3
P4: Month 3 and 4
P5: 6 Months





Key:

- None: Clerk offered sale unhesitatingly
- Age: Clerk asked about but did not verify age
- ID: Clerk requested an ID
- EAV: Clerk swiped ID through an EAV device

B1: Baseline
P2: Month 1
P4: Month 3 and 4
P5: 6 Months

Sales Clerk Interviews

Interviews were conducted with 90 clerks and store managers (of which 20 worked in stores which were not equipped with EAV devices) to ascertain their perception of the devices. When asked to explain the methods used for age verification, many of the clerks from participating stores reported using the EAV devices (85% Florida, 79% Iowa). Despite the fact that clerks claimed to use the devices, the EAVs were not used all the time. 51% of the Florida clerks reported frequently using the devices for tobacco purchases while 48% reported frequent EAV use for alcohol purchases. About 35% of Iowa clerks reported frequently using the devices for tobacco purchases and 42% reported using them frequently for alcohol purchases. 22% of Florida clerks and 35% of Iowa clerks reported that they used the devices rarely for tobacco purchases while 20% and 30% reported use of the EAVs for alcohol purchases. Thus, while most clerks did say they used the EAV devices, they often also acknowledged not using the EAV devices for every tobacco and alcohol transaction.

Some clerks reported having problems with the devices. This was more the case in Iowa where 47% of clerks commented on concerns with the devices as compared to 19% of clerks in Florida. Among those who said they did not use the EAVs, two clerks in Florida and 11 clerks in Iowa claimed the devices did not work. Two clerks in Florida reported that the device was not conveniently located. Two Iowa clerks attributed their non-use of the device to difficulties processing out-of-state licenses.[5]

Another reason clerks may not use the EAVs is because they already have other methods of checking customers' age. For instance, 19% of Florida clerks and 17% of Iowa clerks type the date of birth of customers attempting to purchase tobacco or alcohol products into the register. The register, in turn, alerts the clerk whether the customer is of age to make the purchase. Also, clerks look at identification as a method for confirming age. 15% of Florida clerks and 12% of Iowa clerks look at identifications to make sure the picture matches the customer. Furthermore, 4% of Florida clerks and 31% of Iowa clerks look at IDs and calculate age mentally. In fact, 29% of Florida clerks and 55% of Iowa clerks reported using three or more methods of age verification. The need for many clerks to apply multiple procedures to satisfy age verification responsibilities while making judgements about how and when to apply them may in part explain the lack of consistent age verification by clerks in the two study communities.

Clearly, many of the clerks did report using the devices. In fact, a substantial number commented on the positive aspects of the EAVs. Nearly half of respondents from participating stores reported that the use of EAVs made their jobs easier (48% Florida, 42% Iowa). We asked a series of questions to ascertain the clerks' personal thoughts on the devices including how strongly they believe: EAV devices make it easier to request that customers show an ID; EAV devices make it easier for the clerk to determine the actual age of the customers; and EAV devices make it easier for the clerk to refuse to sell to customers who are underage. The vast majority of respondents answered that they agreed with each of the preceding statements. Also, approximately 70% of respondents recommended that their stores continue to use EAV devices to prevent illegal purchases of tobacco and alcohol products (74% Florida, 70% Iowa).

One noteworthy finding relates to clerks' perception of the difficulty in declining sales to minors. Applying a ten point scale on the perceived difficulty of declining sales to minors, with 1 being extremely easy and 10 being extremely difficult,

[5] When a fake ID is swiped, the EAV reads, and displays, no data (since fake IDs seldom contain data encoded on the magnetic stripe). The investigators hypothesize that in some instances, clerks misconstrued the failure to read data as an EAV failure rather than the correct detection of no data. However, magnetic stripes are clearly susceptible to damage that prevents EAVs from reading them.

Florida clerks had a mean of 2.1 with a standard deviation of 2.5 while Iowa clerks had a mean of 2.1 with a standard deviation of 1.9. The investigators had hypothesized that the use of an EAV device would make it easier for clerks to decline an underage sale and thus increase as well the rate of age verification. But clerk responses in the two study communities suggest that the fear of confrontation with customers may not be a critical component in the failure of store personnel to verify age.

Owner/District Manager Interviews

The project conducted 7 in-depth telephone interviews with owners/district managers who were asked their attitudes about EAV devices in light of their experiences during the study. These owners/district managers agreed, or strongly agreed, that EAV devices were reliable and effective, making it easier for clerks to request IDs and verify age. They agreed or strongly agreed that they were satisfied with the devices and would consider acquiring this or similar technology. Owners and district managers were asked what they felt would be a reasonable cost for a basic EAV device, or one which included data storage and credit card authorization capabilities, selecting from: **a.** under $400, **b.** $400 - $800, **c.** $800 - $1,200, **d.** over $1,200. Three respondents selected under $400 for a basic EAV, and 4 selected between $400 - $800. For an expanded capability EAV, 3 selected $400 - $800 and 3 selected $800 - $1,200—prices significantly below their current retail cost for the Hypercom Ice 5500 or comparable devices. One respondent claimed no interest at all in an expanded device. Another made the interesting observation that "I want verification, not certification."

Customer Attitudes

The exit interviews offered the opportunity to assess customer opinions regarding the use of EAV devices. Customers appearing to be under the age of 27—approximately half of whom had just purchased tobacco or alcohol products—were asked their attitudes about store policies and procedures as well as privacy issues. Almost three quarters of respondents felt strongly that stores should have procedures that stop sales of alcohol and tobacco products to young people. The vast majority of customers stated that they do not mind if clerks check their IDs (96% Florida, 81% Iowa). Only 4% of customers in Florida and 2% of customers in Iowa reported that they strongly disagreed with the statement "It is no problem for me if they check my identification." Very few customers expressed that they would ever chose to go to a different store to purchase alcohol or tobacco rather than a store which employed an EAV to verify age: The overwhelming majority (96% Florida, 98% Iowa) stated that this would not be a consideration. In fact, 42% of customers in Florida and 55% of customers in Iowa felt strongly that they would rather shop at stores that use EAV devices. The use of the devices does not appear to intimidate customers as only 7% of respondents in Florida and 2% of respondents in Iowa reported that they felt uncomfortable having the data on their IDs read by an EAV device.

Section IV: Discussion

The most significant finding from this field effectiveness study of introducing EAV technology to reduce underage sales of alcohol and tobacco was that EAV devices were not effective in improving the rate of age verification by store

personnel. Most clerks and managers reported using the devices at least some of the time. Along with district managers/owners, they were generally satisfied with their performance and would recommend their continued use. But stores with EAV devices did not require young, unfamiliar customers attempting to purchase tobacco or alcohol products to furnish IDs for inspection (and/or swiping through the EAV) any more frequently than at baseline or any more frequently than stores without EAV devices. Although EAVs may have improved the *accuracy*[6] of age verification, EAVs did not increase the *frequency* of age verification. The EAV was a useful tool which most clerks and managers used some of the time. For many clerks it became another option in attempting to meet age verification requirements. But the larger problem—that a significant percentage of young customers attempting to purchase tobacco and alcohol products were never asked to furnish an ID, even though they were unfamiliar to the clerk—was in no way improved by the use of EAVs. Thus, the effectiveness of EAVs is constrained by the very problems of clerk conduct (the inability to estimate age and/or unwillingness to ask for ID) that the EAV is designed to ameliorate.

This low effectiveness in increasing the frequency of age verification underscores both the critical role played by clerk decisions whether to verify age and the high variability of clerk behavior. This variability explains the inconsistency observed in store behavior. In the pre-test period, all retailers were inspected for tobacco two times within several days by inspectors of the same age. For 33% of stores in Florida and 42% of stores in Iowa, inspectors recorded different store behaviors—that is, a clerk verified age (inspected an ID visually or swiped it through an EAV device[7]) on the 1st or 2nd visit, but not in both visits. The baseline age verification rates were 81% and 86% for tobacco in Florida, and 43% and 51% for tobacco in Iowa; but a consistent store policy of verifying age was observed only 66% of the time in Florida and 33% of the time in Iowa. There are two significant implications in this inconsistency in age verification conduct:

1. Clerk attitudes and decisions, rather than store policies, determine store conduct.

2. The rates at which stores consistently verify age are significantly lower than single-inspection compliance rates would suggest. The percentage of stores which make underage sales some of the time is substantially greater than the percentage of stores which make underage sales at one moment in time, as measured by a standard single-visit compliance inspection. Coupled with recent research that underage smokers are able to purchase tobacco at rates nearly 6 fold greater than the nonsmokers used in standard compliance inspections[8], this study strongly suggests that stores consistently decline underage sales of tobacco and alcohol products at rates which are actually far lower than standard measures employed by the public health community and enforcement agencies would suggest.

These observations support the need for comprehensive *systems* for responsible retailing. The study found that simply introducing an EAV into stores as a discrete device—with only a single training for managers but without comprehensive and standardized clerk training on EAV use and operation—did not lead to their consistent and effective use. [In one store, during customer exit interviews, project staff observed that the clerk in the second shift reported a distinctly different protocol for EAV use than the clerk in the earlier shift.] But with consistent training in EAV use for all new employees, with integration of the EAV device into the standard protocol for age-restricted

[6] Clerks often presume that customers who tender an ID are of legal age and thus fail to verify age. For those clerks who do verify age, mental calculations show a high rate of error.

[7] As noted earlier, several stores in Tallahassee had acquired EAV devices prior to the study.

[8] DiFranza JR, Savageau JA, Bouchard J. Is the standard compliance check protocol a valid measure of the accessibility of tobacco to underage smokers? Tobacco Control, 2001; 3:227-232.

products and into the physical configuration of the check-out counter, and with continuing managerial supervision, EAVs may yet play an important role in an effective system of positive age verification. A study of the adoption and implementation of EAV technology as part of a comprehensive system of responsible retailing within individual retail chains may well show EAVs in a far more favorable light than the current study.

EAVs as an Affirmative Defense

The inconsistency in EAV use has salience for the question of EAVs and legal liability. Two states—New York and Connecticut—have passed laws which provide retailers who use EAV devices with an "affirmative defense" against actions arising from the illegal sale of tobacco or alcohol products to minors. The special concern among retailers relates to liability resulting from an underage DUI accident. These laws recognize that the use of EAV devices provides merchants with a tool to decline underage sales and a record (print and/or electronic) of transactions. But if clerks do not employ the EAV device consistently with young customers, then there is some question whether the EAV record can be seen as an accurate reflection of all the transactions involving young customers.

The problem of inconsistent use would be solved if swiping an ID through an EAV were required to complete the transaction. One multiple outlet liquor store in Tallahassee had mandatory swiping of IDs integrated into their cash register system. But there are several problems which would preclude mandatory EAV use as a standard protocol:

- Scratches or exposure to magnetic fields may damage the magnetic stripes on some IDs and prevent the data from being read.
- Not all states have machine-readable IDs and the codes are not standardized.
- Manual entry of date of birth data (the option when the data can not be read) is time consuming and does not allow the clerk to compare encoded data with the information on the front of the ID.
- Although systems requiring EAV swiping would have by-pass options for these contingencies, the ability of the clerk to by-pass the EAV reintroduces the initial problem that clerks may simply circumvent EAV verification altogether. Thus, the effectiveness of a system in which IDs must be read electronically to consummate sales of tobacco or alcohol products at the cash register may still require comprehensive training and supervision of sales personnel.