



Wyoming's 2009 Synar Tobacco Compliance Report

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Wyoming's 2009 Synar Tobacco Compliance Report

By

Tiffany Comer Cook, M.S., Assistant Research Scientist
Kit Freedman, Graduate Assistant

With the assistance of

Mark A. Leonardson, Graduate Assistant
Humphrey Costello, M.A., Assistant Research Scientist

Wyoming Survey & Analysis Center

University of Wyoming
1000 E. University Ave, Dept. 3925
Laramie, WY 82071
(307) 766-2189 • wysac@uwyo.edu
wysac.uwyo.edu

Under contract to
Wyoming Department of Health
Mental Health & Substance Abuse Services Division
6101 N. Yellowstone Road
Cheyenne, WY 82002

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1. Executive Summary

The Synar Amendment, enacted in 1992, requires states to have laws prohibiting the sale and distribution of tobacco products to persons under 18 and to enforce those laws effectively (Substance Abuse and Mental Health Services Administration [SAMHSA], n.d.). The SAMHSA regulation implementing the Synar Amendment requires states to conduct annual, random, and unannounced inspections to ensure compliance with tobacco sales laws.

Since 2003, the Wyoming Department of Health, Mental Health and Substance Abuse Services Division (MHSASD) has contracted with the Wyoming Survey and Analysis Center (WYSAC) at the University of Wyoming to conduct the Synar compliance inspections. WYSAC recruits minor buyers (15-, 16-, and 17-year-old youth) each summer to conduct these inspections, under adult supervision, on a stratified random sample of tobacco retail outlets in Wyoming. The overall weighted retailer violation rate in 2009 was 9.6%.

The overall weighted retailer violation rate was 9.6%

To determine which factors were most influential in predicting whether a clerk would attempt to sell, we ran a logistic regression (see Appendix E for results of the full model). Controlling for other variables, key findings from our analysis include the following:

- A clerk failing to ask for an ID was the greatest predictor of attempting to sell: clerks who failed to ask for an ID were 182 times more likely to attempt a sale than clerks who asked for an ID.
- When reporting data, we asked the minor buyers to approximate the clerks' age. Clerks who appeared to be younger than 25 were seven times more likely to sell than clerks who appeared to be 25 or older.
- Clerks were 17 times more likely to attempt to sell to older buyers (16- or 17-year-olds) than younger buyers (15-year-olds).

2. Introduction

2.1. Background

The Synar Amendment, enacted in 1992, requires states to have laws prohibiting the sale and distribution of tobacco products to persons under 18 and to enforce those laws effectively (Substance Abuse and Mental Health Services Administration [SAMHSA], n.d.). Following the passage of the amendment, SAMHSA established requirements for state compliance. States must adopt and enforce laws prohibiting the sale of tobacco to youth under the age of 18; conduct annual, random, and unannounced inspections to ensure compliance with the law; and develop a strategy and timeframe for achieving an inspection failure rate of less than 20% (SAMHSA, n.d.).

Since 2003, the Wyoming Department of Health, Mental Health and Substance Abuse Services Division (MHSASD) has contracted with the Wyoming Survey and Analysis Center (WYSAC) at the University of Wyoming to conduct Wyoming's annual Synar compliance inspections.

2.2. Organization of this Report

This document contains four additional sections. Section 3 describes the methods WYSAC used to conduct the Synar inspections and to analyze the data. Section 4 presents the key findings from the Synar study. Section 5 provides conclusions and Section 6 gives recommendations for future Synar inspections. Section 7 contains reference citations. Four appendices appear after the references section. Appendix A provides the buyer script. Appendix B presents the results for each question on the 2009 Synar Inspection Form. Appendix C lists ineligible, inaccurate, and uninspected outlets found during the 2009 Synar study. Appendix D presents detailed information about our sampling and calculations for the retailer violation rate (RVR), and Appendix E presents the results of the full logistic regression model.

3. Methods

3.1. Sampling Design

Before conducting the inspections, WYSAC drew a sample of tobacco retail outlets from the 2009 list frame of 531 outlets (MHSASD provided the list which was updated for 2009 by using the results from the 2008 Synar study). After removing three outlets that were located on the Wind River Indian Reservation, we had a total of 528 outlets. We categorized each tobacco retail outlet into one of two strata (or categories), based on its location in either a large municipality or a small municipality. As in previous years, we defined large municipalities as having a population of at least 3,000 and small municipalities as having a population of fewer than 3,000. The list frame had 159 outlets in the small stratum and 369 outlets in the large stratum. We then used the Synar Survey Estimation System, Version 4.0 (SSES) to determine the sample size for each stratum (see Appendix D for more information about the SSES sampling). SSES computed a sample size of 159¹ for the small stratum and a sample size of 140 for the large stratum. Using SPSS Version 17.0, WYSAC

¹ SSES uses the stratum-specific retailer violation rate (RVR), completion rate, and accuracy rate. Because Wyoming's small stratum had a relatively high RVR and low completion and accuracy rates last year, using a safety margin of anything higher than 3.5% yielded a sample size higher than the outlet frame size. We, therefore, chose to use a safety margin of 3.5% and attempt to survey *all* stores in the small stratum. We used a safety margin of 10% for the large stratum.

drew a random sample of 140 outlets located in large municipalities. Adding to this list the 159 stores in the small municipalities, we obtained a total sample size of 299 outlets.

3.2. Synar Inspections

Recruitment of adult supervisors/drivers and youth inspectors began in April 2009. Synar inspections began on June 29, 2009 and ended on August 21, 2009.

3.2.1. Inspection Teams

The Synar inspection teams consisted of one adult supervisor/driver and two minor buyers. Eight teams completed the state's inspections. A plain-clothed law enforcement officer also accompanied the team. The primary role of the law enforcement officers was to observe the inspection; they did not issue any citations for noncompliance. WYSAC collaborated with the Wyoming Association of Sheriffs and Chiefs of Police (WASCOP) to find and coordinate with local officers who had jurisdiction over the areas in which the supervisors traveled. Prior to beginning the inspections, WYSAC trained all adult supervisors in Synar protocol. Adult supervisors trained minor buyers to look for certain elements while in the store (i.e., the location of tobacco products, the approximate age of the clerk, gender of the clerk, and anti-tobacco messages).

3.2.2. Recruitment of Minor Buyers

WYSAC recruited most minor buyers by asking previous buyers to provide referrals. Program managers in the Tobacco-Free Wyoming Communities Program also provided contacts. We first contacted potential youth participants via telephone to describe the project and speak with one of their parents or guardians. Once the minor and the parent/guardian expressed interest, we sent them a written description of the project, a parent permission form, and hiring forms. We required completed parent permission forms before any youth could participate. Seven 15-year-olds, nine 16-year-olds, and one 17-year-old participated in the 2009 Synar study. Each of the eight teams included both a male and female minor buyer.

All youth participants resided within the area they inspected, thereby reducing travel time and eliminating the need for overnight stays. To ensure consistency in buying procedure, all youth followed a written script (in Appendix A) and role-played with the adult supervisors until they mastered the buying procedure.

3.2.3. Inspection Protocol

Upon arriving at an outlet, one minor buyer (alternating between male and female buyers when possible) entered the outlet and, following the buyer script, attempted to purchase cigarettes. Law enforcement officers did not accompany the minor buyer into the store. If the buyer knew anyone in the inspection site, s/he left the location without attempting a purchase and returned to the car so that the second buyer could make an attempt. If both minors knew someone in the outlet, the team returned later to attempt the buy. In a few cases, this option was not feasible, and we recorded the site as "eligible but uninspected."

Survey protocol required minor buyers to leave their identification in the car with the adult supervisor or to leave it at home. This strategy allowed minor buyers to answer honestly, "I don't have it on me," if a clerk asked for identification. Similarly, if asked their age, minor buyers were trained to answer honestly. Each minor buyer carried approximately \$1.00 in cash, so if a sale was

attempted, they could produce too little cash to pay for the cigarettes. In accordance with protocol, no purchase attempts were consummated. The inspection was completed either by a refusal to sell or by an attempt to sell. Following the attempted purchase, minor buyers left the store.

Immediately following each inspection, minor buyers returned to the vehicle and reported the details of the attempted purchase to the adult supervisor, who then entered this information on a data form. Reported information included store name and address, inspection date and time, completion status of the inspection, minor age and gender, approximated clerk age, clerk gender, type and brand of tobacco product requested, location of tobacco products in the store, outcome of the sales attempt, and the presence of any visible anti-tobacco messages (e.g., Got ID?). WYSAC collected the forms at the end of each inspection period.

3.3. Inspected Outlets

Of the 299 outlets in the sample, WYSAC *visited* 294 outlets (a *visit* rate of 98%). Five stores were not visited for the following reasons: could not locate (3), ran out of time (1), and duplicate entry on the list (1). We had 26 ineligible outlets (22 of which were visited). These outlets were ineligible for the following reasons: did not sell tobacco products (9), out of business (8), temporary closure (4), could not locate (3), private club (1), and duplicate entry on the list (1). Another 13 outlets were eligible, but not *inspected* (we *visited* 12 of these outlets). These outlets were not inspected for the following reasons: in operation but closed at time of visit (4), tobacco out of stock (3), both youth inspectors knew someone in the store (2), ran out of time (1), presence of police (1), unsafe to access (1), and discomfort entering the premises (1). The total number of *eligible* stores was 273 (143 in the small stratum and 130 in the large stratum). WYSAC *inspected* 260 outlets or 95% of the eligible outlets in the sample. Of these, 135 outlets were in the small stratum (18 more outlets than the minimum required by CSAP) and 125 outlets were in the large stratum (19 more outlets than the minimum required by CSAP). Appendix C includes a full list of uninspected sites and reasons for omission.

3.4. Analysis

To determine which factors were most influential in predicting whether a clerk would attempt to sell, we ran logistic regressions using SPSS version 17.0. Using “attempted sale” as the dependent variable, we initially examined each independent variable (location of cigarettes, presence of anti-tobacco signs, clerk gender, approximate age of clerk, clerk ask for ID, and clerk ask for age) by itself to determine its affect on sale attempts. Based on the results of our initial analyses, we created a final model with six independent variables (see Appendix E for more information on our logistic regression model). We also conducted a Pearson chi-square test for several independent variables to determine their relationships with “attempted sale.” We report significant differences when $p < 0.05$, suggesting that we can determine with 95% confidence that our results are true and are not due to chance.

4. Key Findings

4.1. Retailer Violation Rate (RVR)

The noncompliance rate or retailer violation rate (RVR) is the percentage of stores that attempted to sell to a minor. We weighted the overall RVR to account for our stratified sampling design (see Appendix D for the RVR formula). In 2009, the overall weighted RVR was 9.6%

SSES provided a summary table of Synar survey estimates and sample sizes (Table 1). The standard error was $\pm 1.4\%$, which meets the SAMHSA precision requirement of $\pm 3.0\%$. Because we drew a sample of outlets and didn't inspect *all* outlets in Wyoming, SSES calculated a 95% confidence interval. Therefore, as shown in Table 1, we can be 95% confident that the "true" value of the RVR is between 6.9% and 12.3%. When accounting for error, the likely maximum RVR (12.3%) is still well below the 20% noncompliance standard set by SAMHSA.

Table 1. Synar Survey Estimates and Sample Sizes
CSAP-SYNAR REPORT

State	WY
Federal Fiscal Year (FFY)	2010
Date	10/15/2009 11:51
Data	2009 SSES Data.xlsx
Analysis Option	Stratified SRS with FPC

Estimates

Unweighted Retailer Violation Rate	10.8%
Weighted Retailer Violation Rate	9.6%
Standard Error	1.4%
Is SAMHSA Precision Requirement met?	YES
Right-sided 95% Confidence Interval	[0.0%, 11.9%]
Two-sided 95% Confidence Interval	[6.9%, 12.3%]
Design Effect	1.0
Accuracy Rate (unweighted)	91.3%
Accuracy Rate (weighted)	91.7%
Completion Rate (unweighted)	95.2%

Sample Size for Current Year

Effective Sample Size	223
Target (Minimum) Sample Size	299
Original Sample Size	299
Eligible Sample Size	273
Final Sample Size	260
Overall Sampling Rate	53.9%

4.2. Analysis to Predict Attempted Sales

4.2.1. Significant Factors Contributing to Attempted Sales

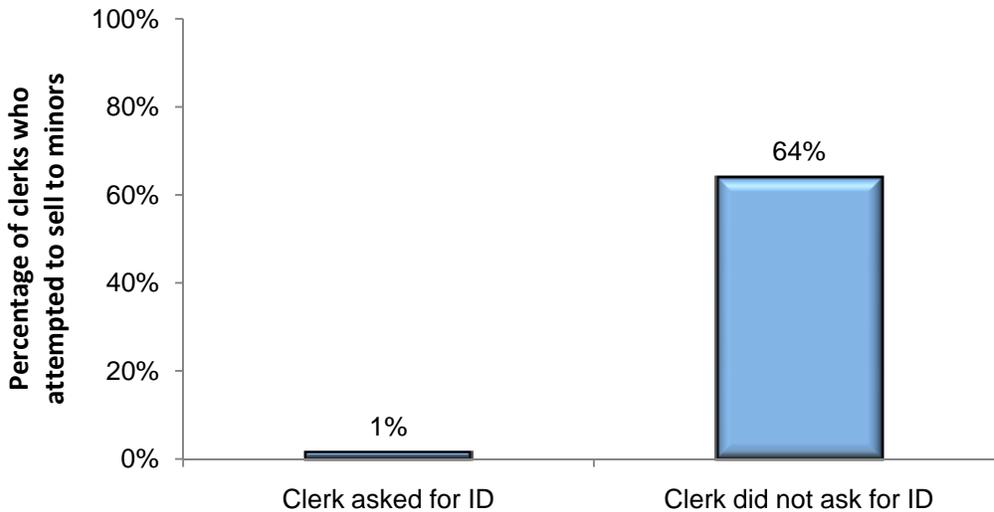
This section describes the variables we included in our logistic regression model. Taken together, these variables best describe the probability of attempting to sell. Although not all variables in our model are significant, accounting for all of these variables at once leads to the best description of the factors contributing to a clerk attempting to sell cigarettes to a minor. Appendix E presents the variables and statistics associated with our logistic regression model. We report significant differences when $p < 0.05$, suggesting that we can determine with 95% confidence that our results are true and are not due to chance.

Clerk Request for ID

The most sizable and significant predictor of attempting to sell was failing to ask for identification. Controlling for all other variables in the model, clerks who failed to ask for an ID were 182 times more likely to sell to minors than clerks who asked for an ID ($p = 0.000$; $CI = 32.523, 1018.477$).

Figure 1 shows the relationship between sale attempts and asking for an ID; 64% of clerks who did not ask for an ID attempted to sell, compared to only 1% of clerks who asked for an ID.

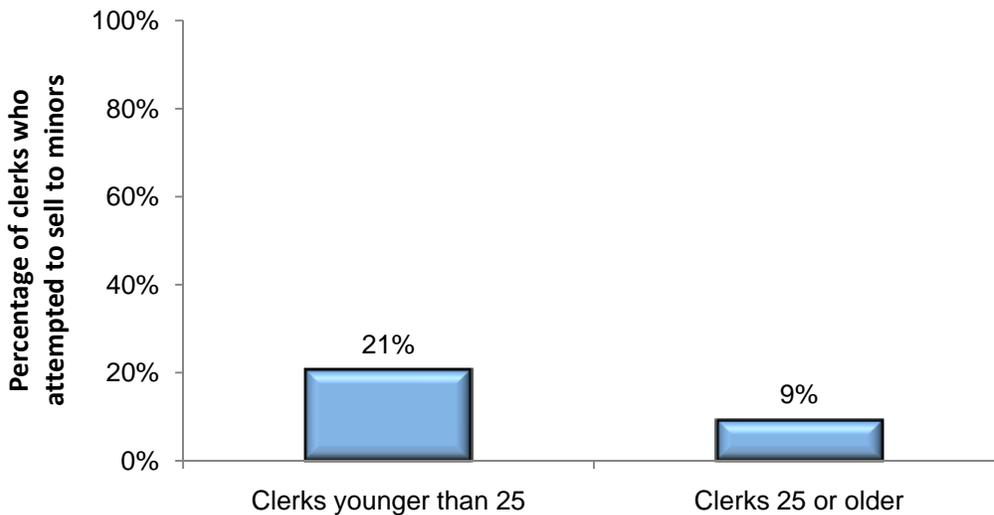
Figure 1. Relationship between Clerks Asking for ID and Attempting to Sell



Clerk Age

When reporting data, we asked the minor buyers to approximate the clerks' age. Controlling for all other variables in the model, clerks who appeared younger than 25 years of age were 7 times more likely to sell than clerks who appeared 25 or older (Figure 2; $p = 0.031$; $CI = 1.192, 42.195$).

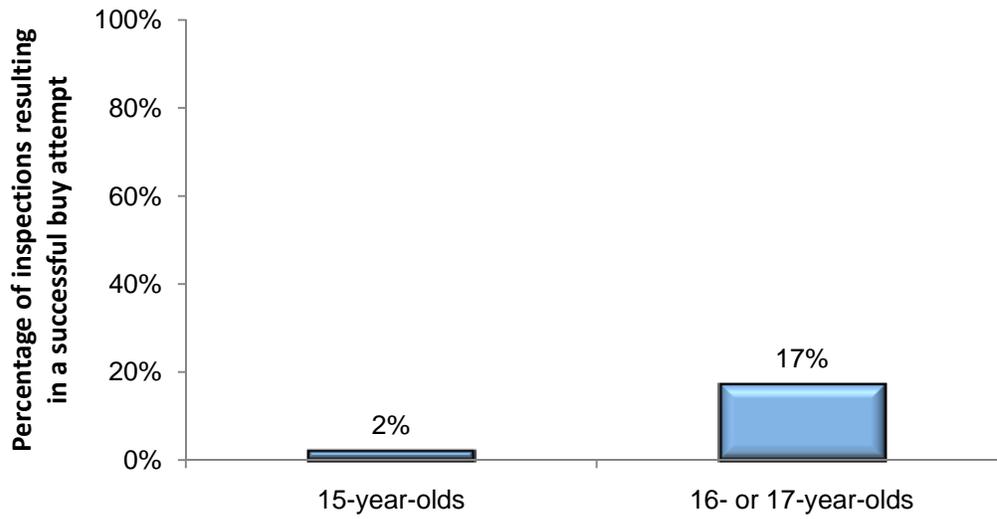
Figure 2. Relationship between Clerks' Age and Attempting to Sell



Buyer Age

Controlling for all other variables in the model, clerks were 17 times more likely to attempt to sell to 16- or 17-year-old buyers than to 15-year-olds ($p = 0.008$; $CI = 2.114, 143.726$); 17% of the buy attempts conducted by 16- or 17-year-olds resulted in a successful "buy" (Figure 3).

Figure 3. Relationship between Youth Age and Successful Buy Attempts



4.2.2. Nonsignificant Factors Contributing to Attempted Sales

This section describes the nonsignificant variables in our logistic regression model.

Municipality Size

Minor buyers inspected 135 outlets in small municipalities (towns with fewer than 3,000 people) and 125 outlets in large municipalities (towns with at least 3,000 people). Because the size of the town has historically been a significant predictor of attempting to sell, we included this variable in our model. However, our analysis found that town size was not a significant predictor of attempting to sell when included in a model that controlled for other variables; clerks in small towns were no more likely to attempt to sell to minors than clerks in large towns ($p = 0.990$; $CI = 0.235, 4.174$).

Independent of our logistic regression model, a chi-square test still shows this relationship as nonsignificant ($p = 0.166$; $\chi^2 = 1.921$).

Buyer Gender

When controlling for the other variables in our model, youth gender was not a significant predictor of attempting to sell. Clerks were no more likely to sell to females than males ($p = 0.182$; $CI = 0.631, 11.301$). Youth gender was likewise nonsignificant in the chi-square test ($p = 0.109$; $\chi^2 = 2.562$).

Presence of Anti-tobacco Signs

The majority of stores (84%) had at least one anti-tobacco sign present in the store. Accounting for the other variables in our model, the presence of anti-tobacco signs was not a significant predictor of attempting to sell ($p = 0.127$; $CI = 0.712, 15.561$). However, an independent chi-square test suggests that clerks in stores with the presence of anti-tobacco signs (8%) sold to minors less often than clerks in stores without the presence of anti-tobacco signs (24%; $p = 0.003$; $\chi^2 = 8.785$). This difference suggests that the presence of anti-tobacco signs alone may indicate a reduction in the likelihood that a clerk will attempt to sell to minors. However, when put into the regression model and accounting for the influence of other variables, the presence of anti-tobacco signs becomes nonsignificant. Other variables (such as the clerk asking for an ID) have more influence on whether a clerk attempts to sell.

4.3. Factors Not Contributing to Attempted Sales

This section reports the statistically nonsignificant relationships between the retailer violation rate (RVR) and other variables. Nonsignificant results mean that the presence or absence of the characteristic had no statistically significant impact on the likelihood of attempting to sell. When we included these variables in our preliminary logistic regression models, they were not statistically significant and did not improve the model. They were, therefore, excluded from the final model.

Clerk Request for Age

Only 7% of clerks asked for an age and, as outlined in the protocol, when the buyer responded honestly, none of these clerks attempted to sell; 93% of clerks did not ask for age. Clerks who failed to ask for the buyers' age were no more likely to attempt to sell than clerks who asked for the buyers' age ($p = 0.128$; $\chi^2 = 2.318$). By contrast, 86% of clerks asked for an ID. Only 12% of clerks failed to ask for an age or an ID. It appears that clerks asked for an ID much more often than they asked for age, which is a more objective way to determine the legality of selling cigarettes.

Location of Cigarettes

Only 4% of stores had cigarettes accessible to customers (i.e., customers could pick up a pack of cigarettes without the assistance of an employee). The likelihood of attempting to sell was not dependent on whether the cigarettes were accessible or not accessible to customers ($p = 0.421$; $\chi^2 = 0.647$).

Clerk Gender

The majority (82%) of clerks in our study were female. However, female clerks were just as likely to attempt to sell to a minor as were male clerks ($p = 0.547$; $\chi^2 = 0.363$).

Type of Store

The Synar drivers collected information about type of store (i.e., convenience with gas, convenience without gas, pharmacy/drug store, grocery store, discount store/superstore, tobacco store, restaurant/café, and other). Our analysis found no significant relationship between type of store and attempted sales; no particular type of store was more like likely to attempt a sale.²

5. Conclusions

The 2009 Synar study discovered an overall weighted retailer violation rate of 9.6%. This percentage is slightly higher than the 2008 rate of 9.0%. However, we cannot say that the RVR *increased* since 2008 because the 2008 rate (9.0%) is within the 95% confidence interval (6.9% to 12.3%) for the 2009 rate. Therefore, we conclude that the rates for the two years are not significantly different from each other.

Wyoming's RVR has been below the 20% maximum since 2000. (Before 2000, it was as high as 56%; see Table 2). These low rates suggest that tobacco sales to minors are infrequent and that compliance is high. The low rates also highlight the success of Wyoming's continued emphasis to educate tobacco merchants on the illegality of selling tobacco to minors.

² We ran individual chi-square tests with type of store against attempted sales. Because we ran eight separate tests for this variable, we do not include the χ^2 statistics or the p values here.

Table 2. Retailer Violation Rates, 1996–2009*

Synar Survey Year	Retailer Violation Rate (in %)	95% Confidence Interval (in %)
1996	42.0	NA
1997	28.5	NA
1998	45.6	NA
1999	55.8	NA
2000	8.9	6.5–11.3
2001	9.5	7.0–11.8
2002	8.2	5.2–11.2
2003	8.0	2.2–13.8
2004	8.7	5.5–11.9
2005	7.0	6.5–11.3
2006	6.5	4.3–8.7
2007	7.7	5.7–9.7
2008	9.0	6.6–11.4
2009	9.6	6.9–12.3

*Confidence intervals not available for 1996–1999.

The strongest predictor of attempting to sell was the clerk failing to ask the minor for an ID. In the 2009 Synar study, only 1% of clerks who asked for an ID attempted to sell. This finding suggests that clerks who ask for an ID almost never sell to minors. Attempts to sell were also influenced by the age of the clerk (clerks who appeared younger than 25 were 7 times more likely to sell than clerks who appeared 25 or older) and the age of the minor buyer (clerks were 17 times more likely to attempt to sell to a 16- or 17-year old than to a 15-year-old). Targeting education efforts toward very young clerks may reduce noncompliance. Since clerks were more likely to sell to older youth, dispelling the notion that 17 is “close enough” may further reduce the RVR.

6. Recommendations

This year marks the first year WYSAC began using 17-year-olds for Synar inspections, and we had only one 17-year-old conduct inspections. Since older youth are more likely to generate a successful purchase attempt, we recommend using equal numbers of 15-, 16-, and 17-year-olds for the 2010 inspections to more easily identify the relationship between youth age and sale attempts.

The last Synar coverage study (to determine the coverage and accuracy of our list frame) was conducted in 2007. SAMHSA requires each state to conduct a coverage study every three years (SAMHSA, 2006). The 2010 Synar inspections should include a coverage study to meet this requirement.

7. References & Bibliography

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Frequencies: O:\Tobacco Project\SYNAR\2009\Data\SYNAR 2009 Data (Final).sav

Logistic Regression: O:\Tobacco Project\SYNAR\2009\Data\SYNAR 2009 Data (4 File for Analysis).sav

8. Appendices

Appendix A. Synar Survey Script

The adult supervisors trained the youth buyers to follow the protocol below.

Script and instructions:

Please practice this script with your supervisor until you feel comfortable attempting your first purchase.

If the cigarettes are within reach:

Select a pack of Marlboro Lights and place it on the counter.

If the cigarettes are behind the counter:

Say: "I'd like a pack of Marlboro Lights."

If the store does not have Marlboro Lights:

Females ask: "How about a pack of Camel Lights?"

Males ask: "How about a pack of Camels?"

If the clerk asks for ID:

Say: "I don't have any ID with me."

If the clerk asks your age:

Be truthful in telling your age.

If the clerk asks who the tobacco is for:

Say: "For me."

If the clerk refuses to sell (they might say something like, "Sorry, I can't sell that to you.):

Leave the store.

If the clerk offers to sell (they ring up the purchase and wait for your money):

Fumble in your pocket and produce only one or two dollars, then say, "I don't have enough money, never mind." Or "Sorry, I thought this was a \$10 bill."

Then leave the store.

Appendix B. Synar Survey Results

This appendix provides the frequencies for every question on the 2009 Synar Inspection Form. Because of rounding, not all percentages add to 100%. Five stores were not visited for the following reasons: could not be located (3), ran out of time (1), and duplicate entry on the list (1). The valid total for questions 1 and 2 include stores we *visited*. The valid total for questions 3, 4, 6–10, and 13–16 include stores we *inspected*, and the valid total for questions 5, 11, and 12 includes all stores in the sample. See Appendix C for a complete list of ineligible outlets and eligible outlets that were uninspected.

1. Inspection month

	Frequency	Valid percent
June	39	13%
July	100	34%
August	155	53%
Valid total	294	100%
Stores not visited	5	
Total	299	

2. Time of visit

	Frequency	Valid percent
AM	95	33%
PM	195	67%
Valid total	290	100%
No answer	4	
Stores not visited	5	
Total	299	

3. Age of youth buyer

	Frequency	Valid percent
Stores visited by 15-year-olds	108	42%
Stores visited by 16-year-olds	139	53%
Stores visited by 17-year-olds	13	5%
Valid total	260	100%
Ineligible	26	
Eligible but not inspected	13	
Total	299	

4. Gender of youth buyers

	Frequency	Valid percent
Stores visited by female youth	130	50%
Stores visited by male youth	130	50%
Valid total	260	100%
Ineligible	26	
Eligible but not inspected	13	
Total	299	

5. Outlet county

	Frequency	Valid percent
Fremont	27	9%
Laramie	26	9%
Natrona	26	9%
Lincoln	19	6%
Sweetwater	17	6%
Albany	16	5%
Carbon	16	5%
Uinta	15	5%
Crook	14	5%
Park	14	5%
Sublette	14	5%
Teton	14	5%
Campbell	13	4%
Big Horn	12	4%
Sheridan	11	4%
Johnson	8	3%
Washakie	8	3%
Platte	7	2%
Weston	7	2%
Converse	5	2%
Niobrara	5	2%
Goshen	3	1%
Hot Springs	2	1%
Total	299	100%

6. Type of store

	Frequency	Valid percent
Convenience (with gas)	180	69%
Grocery store	41	16%
Convenience (no gas)	11	4%
Other (specify): <i>see below</i>	10	4%
Tobacco store	7	3%
Pharmacy / Drug store	5	2%
Discount / Superstore (e.g., Wal-Mart, Target)	4	2%
Restaurant / Cafe	2	1%
Valid total	260	100%
Ineligible	26	
Eligible but not inspected	13	
Total	299	

“Other” responses:

- Bookstore
- Bookstore/ tobacco
- General store & restaurant
- Grocery with gas
- Laundromat
- Little America
- Marina
- Pawn/tobacco
- Smoke shop
- Trading post

7. Location of cigarettes

	Frequency	Valid percent
Not accessible (customers require assistance from an employee to obtain cigarettes)	248	96%
Accessible (customers can pick up a pack of cigarettes without the assistance of an employee)	11	4%
Valid total	259	100%
No answer	1	
Ineligible	26	
Eligible but not inspected	13	
Total	299	

8. Were there any anti-tobacco signs present in the store? (e.g. "No sales to minors")

	Frequency	Valid percent
Yes	217	84%
No	42	16%
Valid total	259	100%
No answer	1	
Ineligible	26	
Eligible but not inspected	13	
Total	299	

9. Clerk gender

	Frequency	Valid percent
Female	212	82%
Male	48	18%
Valid total	260	100%
Ineligible	26	
Eligible but not inspected	13	
Total	299	

10. Approximate age of clerk

	Frequency	Valid percent
15-24	39	15%
25-34	70	27%
35-44	55	21%
45-54	57	22%
55-88	39	15%
Valid total	260	100%
Ineligible	26	
Eligible but not inspected	13	
Total	299	

11. Was the outlet (store) eligible for an inspection?

	Frequency	Valid percent
Yes	273	91%
No	26	9%
Valid total	299	100%

11a. If NO, mark one of the following reasons the store was ineligible for inspection:

	Frequency	Valid percent
Does not sell tobacco products	9	35%
Out of business	8	31%
Temporary closure	4	15%
Could not locate	3	12%
Duplicate	1	4%
Private club/ personal residence	1	4%
Valid total	26	100%

12. If outlet is eligible, was inspection completed?

	Frequency	Valid percent
Yes	260	95%
No	13	5%
Valid total	273	100%
Ineligible	26	
Total	299	

12a. If NO, mark one of the following reasons the inspection was not completed:

	Frequency	Valid percent
In operation, but closed at time of visit	4	31%
Tobacco out of stock	3	23%
Both youth inspectors know someone in the store	2	15%
Ran out of time	1	8%
Presence of police	1	8%
Unsafe to access	1	8%
Other (specify): <i>see below</i>	1	8%
Valid total	13	100%
Ineligible	26	
Completed inspections	260	
Total	299	

“Other” responses:

- Discomfort entering the premises

13. If inspection was completed, was buy attempt successful?

	Frequency	Valid percent
No	232	89%
Yes	28	11%
Valid total	260	100%
Ineligible	26	
Eligible but not inspected	13	
Total	299	

13a. If YES, how much was the pack?

	Frequency	Valid percent
\$4.00-4.99	5	21%
\$5.00-5.99	15	63%
\$6.00-\$7.02	4	17%
Valid total	24	100%
No answer	4	
Unsuccessful purchase attempt	232	
Ineligible	26	
Eligible but not inspected	13	
Total	299	

14. What tobacco brand was attempted to be purchased?

Tobacco brand	Frequency	Valid percent
Marlboro Lights	250	97%
Marlboro	3	1%
Camel	3	1%
Camel Lights	1	0.4%
Valid total	257	100%
No answer	3	
Ineligible	26	
Eligible but not inspected	13	
Total	299	

15. Did the clerk ask for youth's ID?

	Frequency	Valid percent
Yes	213	86%
No	36	14%
Valid total	249	100%
No answer	11	
Ineligible	26	
Eligible but not inspected	13	
Total	299	

16. Did the clerk ask for youth's age?

	Frequency	Valid percent
No	226	93%
Yes	18	7%
Valid total	244	100%
No answer	16	
Ineligible	26	
Eligible but not inspected	13	
Total	299	

Appendix C. Ineligible, Inaccurate, and Uninspected Outlets

This appendix includes three tables. **Table C-1** presents the ineligible outlets in 2009; MHSASD should remove all outlets in this table (with four exceptions) from the 2010 Synar list frame. The exceptions include the four outlets labeled “temporary closure,” which are highlighted in the table. Although ineligible for the 2009 survey, these outlets should remain on the list because they may reopen and become eligible tobacco outlets for the 2010 survey.

Table C-2 identifies list frame inaccuracies discovered during the inspections and subsequent corrections. MHSASD should make these changes for the 2010 Synar inspection list frame. Finally, **Table C-3** lists eligible, but uninspected outlets and the reason they were not inspected.

Table C-1. Ineligible Outlets (n=26)

Name	Address	City	County	Town size	Reason for ineligibility
789 Truck Stop	10367 Hwy 789	Riverton	Fremont	Large	Duplicate
Amangani Hotel	1535 NE Butte	Jackson	Teton	Large	Other: limited public access
Big Country Oil	210 Dayton Street	Ranchester	Sheridan	Small	Out of business
Big Horn Mercantile	210 Johnson	Buffalo	Sheridan	Large	Does not sell tobacco products
Big Horn Mountain Stage	201 2 nd Street	Ten Sleep	Washakie	Small	Temporary closure
Burney & Company	501 Nichols	Big Piney	Sublette	Small	Out of business
Chevron-Hillcrest	1949 Harrison Drive	Evanston	Uinta	Large	Temporary closure
Conoco	¼ mile north of Hwy. 789	Baggs	Carbon	Small	Does not sell tobacco products
Cross Roads C-Store	Business I-80 & US Hwy14	Urie	Uinta	Small	Out of business
Dry Creek Station	292 N. Alpine	LaBarge	Lincoln	Small	Could not locate
Elk Horn Trading	14523 W. Hwy 191	Bondurant	Sublette	Small	Temporary closure
Fontenelle Store	19 Fontenelle Way	Kemmerer	Lincoln	Small	Could not locate
Gasamat	4789 W. Yellowstone Hwy	Mills	Natrona	Large	Out of business
Hatchet Resort	19980 E. US Hwy 287	Moran	Teton	Small	Does not sell tobacco products
Hoback Village	Hwy 191	Bondurant	Sublette	Small	Out of business
Huff & Puff	102 W. Cedar	Rawlins	Fremont	Large	Out of business
Hwy 59 Self Service	201 Hwy 59	Douglas	Converse	Large	Does not sell tobacco products
Longhorn Grocery & Cafe	Main Street	LaGrange	Goshen	Small	Does not sell tobacco products
Midway Mall	Hwy 189 Pinemar Subdivison	Big Piney	Sublette	Small	Does not sell tobacco products
RTO Hilltop Sinclair	912 W. Main Street	Riverton	Fremont	Large	Does not sell tobacco products

Table C-1 Continued. Ineligible Outlets

Name	Address	City	County	Town size	Reason for ineligibility
Sam's Club	1948 Dell Range Blvd.	Cheyenne	Laramie	Large	Does not sell tobacco products
Smoker Friendly	3350 E. I-80 Exit 370	Cheyenne	Laramie	Large	Could not locate
Stop and Shop Grocery	637 W. Loucks	Sheridan	Sheridan	Large	Out of business
Table Rock	I-80 Exit 150 (south)	Wamsutter	Sweetwater	Small	Out of business
Taylor Creek Exxon	1426 Warm Springs Drive	Dubois	Fremont	Small	Temporary closure
The Place	Hwy 130, 10 miles east of 230/130 intersection	Saratoga	Carbon	Small	Does not sell tobacco products

Table C-2. Inaccurate Information on the 2009 Synar List Frame³ (n=18)

Name	Address	City	County	Town size	Correction	Updated Information
<i>Big Horn Junction</i>	7088 Coffeen Ave.	Sheridan	Sheridan	Large	Name change	Cenex Express 24
Big Horn Mercantile	210 Johnson	<i>Big Horn</i>	<i>Sheridan</i>	<i>Small</i>	City/ county/ strata change	Buffalo, Johnson, Large
<i>Cowboy Gas</i>	560 W. Broadway	Jackson	Teton	Large	Name change	Exxon
<i>Cruel Jacks Conoco</i>	8 Purple Sage Rd.	Rock Springs	Sweetwater	Large	Name change	Cruel Jacks Sinclair
<i>Faler's General Store</i>	341 E. Pine	Pinedale	Sublette	Small	Name change	Ridley's Family Market
<i>Farson Shell</i>	2 Hwy 28	Farson	Sweetwater	Small	Name change	Valley Mart
<i>Holly Ponds Texaco</i>	910 Long Drive	Sheridan	Sheridan	Large	Name change	Sinclair
<i>Hwy 59 Self Service</i>	201 Hwy 59	Douglas	Converse	Large	Name change	Brother's Propane
<i>James Mines & Sons</i>	3800 Hwy 191	Eden	Sweetwater	Small	Name change	Sinclair
<i>Kum & Go #943</i>	501 E. Hart	Buffalo	Johnson	Large	Name change	Cenex 'Zip Trip'
<i>One Stop Shoppe Co-op</i>	440 W. Big Horn Ave.	Worland	Washakie	Large	Name change	Conoco Go Gas Express
<i>Point of Rock</i>	I-80 Exit 130 (North)	Wamsutter	Sweetwater	Small	Name change	Conoco (Point of Rock)
<i>Red Eagle</i>	199 Hwy 16 East	Buffalo	Johnson	Large	Name change	Exxon
<i>Sinclair: Pinedale Super Center</i>	1088 Pine Street	Pinedale	Sublette	Small	Name change	Pinedale Super Center Sinclair
<i>Stadium Sports</i>	855 CY Ave.	Casper	Natrona	Large	Name change	The Smoke Shop
<i>Stop 'n Go Convenience Store</i>	519 S. Poplar	Casper	Natrona	Large	Name change	Conoco

³ Italicized fields indicate outdated/incorrect information

Table C-2 Continued. Inaccurate Information on the 2009 Synar List Frame

Name	Address	City	County	Town size	Correction	Updated Information
Texaco Food Mart #3	1200 17 th St.	Cody	Park	Large	Name change	Shell
The Hamsfork Station-Sinclair	306 US Hwy 189	Kemmerer	Lincoln	Small	Name/ address change	Sinclair- The Hamsfork Station/ 304 US Hwy 189

Table C-3. Eligible, but Uninspected Outlets (n=13)

Name	Address	City	County	Town size	Comment
All American Fuel	225 Front Street	Big Piney	Sublette	Small	Tobacco out of stock
Blair's Super Market	331 W Coulter	Powell	Park	Large	Both youth inspectors knew someone in the store
Fuel Depot	1807 Lance Creek Hwy	Lance Creek	Niobrara	Small	Ran out of time
Hanna General Store	12 Miners Plaza	Hanna	Carbon	Small	Closed at time of visit
Jim Bridger Trading Post	I-80 Exit 34	Fort Bridger	Uinta	Small	Closed at time of visit
Kaycee General Store	102 Park	Kaycee	Johnson	Small	Closed at time of visit
Mangy Moose	Mangy Moose Building	Teton Village	Teton	Small	Other: no clerk
Smith's Conoco	1425 S Hwy 89	Jackson	Teton	Large	Tobacco out of stock
Texaco Food Mart #3	1200 17 th Street	Cody	Park	Large	Unsafe to access
The Junction Tobacco Shop	312 E. Grand Avenue	Laramie	Albany	Large	Tobacco out of stock
The MC Market	200 E 2 nd Street	Casper	Natrona	Large	Presence of police
Upton Co-op/Country Store	222 W Hwy 16	Upton	Weston	Small	Closed at time of visit
Westside Deli Store	4015 W Lake Creek Drive	Wilson	Teton	Small	Both youth inspectors knew someone in the store

Appendix D. Sampling Design and RVR Calculations

Tables D-1 and D-2 provide information on the sample sizes for the two strata, depicting output obtained by using the SSES Sample Size Calculator. WYSAC entered several variables (under “Input Information” in each table). An explanation of each variable follows:

- **One-sided option for 95% Confidence Interval** meets the same precision requirement with a smaller sample size than the two-sided choice.
- **Outlet Frame Size** represents the total population of tobacco retail stores on the list frame. Since we conducted the sample size calculations separately for each stratum, the outlet frame size is specific to the stratum (large or small). The original list frame had 162 small municipality outlets and 369 large municipality outlets.
- **Expected Retailer Violation Rate (RVR)** is the weighted RVR from last year’s survey. Again, the weighted RVR is specific for each stratum. The small municipality RVR from last year was 17.6% and the large municipality RVR from last year was 5.2%.
- **Design Effect** is estimated from last year’s survey. The design effect normally accounts for the loss of effectiveness by using a sampling design other than a simple random sample. Since we conducted the sample size calculations separately and conducted a simple random sample within each stratum, the design effect for both strata was 1.
- **Expected Accuracy Rate** is the percentage of outlets whose information was accurate on last year’s list frame. This rate provides an estimate of the proportion of outlets on the list frame that are actually eligible for the Synar survey. This percentage is specific to each stratum.
- **Expected Completion Rate** is the percentage of stores inspected by last year’s study participants. The numerator is the percentage of outlets visited; the denominator is the number of outlets drawn for the sample. This percentage is specific to each stratum.
- **Safety Margin Used** is the percentage by which the sample size is inflated to ensure a large enough sample size. A safety margin allows us to account for ineligible outlets (e.g., businesses that had closed, were not accessible to minors, or did not sell cigarettes) on the list frame. Because of the high RVR and the low completion and accuracy rates in the small stratum, using a safety margin of anything higher than 3.5% yielded a sample size higher than the outlet frame size. We, therefore, chose to use a safety margin of 3.5% and attempt to survey *all* stores in the small stratum. We used a safety margin of 10% for the large stratum.

Once we entered this information, SSES provided three outputs: effective sample size, target sample size, and planned original sample size. Definitions for each of these outputs follow.

- **Effective Sample Size** is the sample size needed to meet the SAMHSA precision requirement under simple random sampling.
- **Target (Minimum) Sample Size** is the sample size needed to achieve the desired precision requirement with a complex sampling design. This number is the product of the effective sample size and the design effect. Since our design effect for both strata is 1, our effective sample size is the same as our target sample size (e.g., $119 \times 1 = 119$).
- **Planned Original Sample Size** is the actual sample size we used to draw the sample. To compute this number, SSES inflates the target sample size using the accuracy and completion rates and incorporates the safety margin.

Table D-1. SSES Sample Size Output for the *Small* Sampling Frame

Synar Survey	
State	WY
FFY	2010
Date	10/13/2009 16:04
Input Information	
Option for 95% Confidence Interval	One-Sided
Outlet Frame Size	159
Expected Retailer Violation Rate	17.60%
Design Effect	1
Expected Accuracy Rate	80.90%
Expected Completion Rate	94.44%
Safety Margin Used	3.50%
Sample Size	
Effective Sample Size	117
Target(Minimum) Sample Size	117
Planned Original Sample Size	159

Table D-2. SSES Sample Size Output for the *Large* Sampling Frame

Synar Survey	
State	WY
FFY	2010
Date	5/14/2009 13:37
Input Information	
Option for 95% Confidence Interval	One-Sided
Outlet Frame Size	369
Expected Retailer Violation Rate	5.20%
Design Effect	1
Expected Accuracy Rate	87.80%
Expected Completion Rate	95.10%
Safety Margin Used	10%
Sample Size	
Effective Sample Size	106
Target(Minimum) Sample Size	106
Planned Original Sample Size	140

We estimate the weighted RVR by:

$$\left(\frac{x_{large}}{n_{2 large}}\right)\left(\frac{n_{1 large}}{n_{large}}\right)\left(\frac{N_{large}}{N_{total}}\right) + \left(\frac{x_{small}}{n_{2 small}}\right)\left(\frac{n_{1 small}}{n_{small}}\right)\left(\frac{N_{small}}{N_{total}}\right)$$

where:

- x_{large} = the number of noncompliant outlets within the large stratum
- $n_{2 large}$ = the number of outlets inspected within the large stratum

$n_{1\ large}$	= the number of outlets eligible for inspection within the large stratum
n_{\large}	= the number of outlets in the original sample within the large stratum
N_{\large}	= the number of large stratum outlets on the list frame
N_{total}	= the estimated number of total outlets eligible for inspection in the list frame
x_{\small}	= the number of noncompliant outlets within the small stratum
$n_{2\ small}$	= the number of outlets inspected within the small stratum
$n_{1\ small}$	= the number of outlets eligible for inspection within the small stratum
n_{\small}	= the number of outlets in the original sample within the small stratum
N_{\small}	= the number of small stratum outlets on the list frame

We estimate number of total outlets eligible for inspection in the list frame by :

$$N_{total} = N_{\large} \left(\frac{n_{1\ large}}{n_{\large}} \right) + N_{\small} \left(\frac{n_{1\ small}}{n_{\small}} \right)$$

This gives an estimated number of total outlets eligible for inspection:

$$369(130/140) + 159(144/159) = 486.64$$

Thus, the weighted noncompliance rate for the 2009 Synar study was:

$$(10/125)(130/140)(369/486.64) + (18/135)(144/159)(159/486.64) = 0.096 \text{ or } 9.6\%$$

Appendix E. Logistic Regression Model

Variable	Coefficient	Standard Error	Significance	Odds Ratio	95% Confidence Interval (lower, upper)
Clerk less than 25	1.959	0.910	0.031*	7.091	1.192, 42.195
Youth_gender_female	0.982	0.736	0.182	2.671	0.631, 11.301
Ask_ID	5.204	0.879	0.000***	181.999	32.523, 1018.477
Anti-tobacco_signs_present	1.202	0.787	0.127	3.328	0.712, 15.561
Stratum_small	-0.009	0.734	0.990	0.991	0.253, 4.174
Youth less than 16	2.858	1.076	0.008***	17.432	2.114, 143.726

* $p < 0.05$ *** $p < 0.001$