



Wyoming's 2007 Synar Tobacco Compliance Report

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Wyoming's 2007 Synar Tobacco Compliance Report

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, in part, 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. This year, WYSAC also conducted an extensive coverage study to determine how well the state's tobacco retailer list frame (used to conduct the Synar survey) reflects the actual composition of tobacco retail outlets in the state.

The inspections resulted in the following key findings:

- The overall weighted retailer violation rate (RVR) was 7.7%
 - The RVR for small municipalities was 13.4% while the RVR for large municipalities was 5.1%.
- 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 over 300 times more likely to attempt to sell than clerks who asked for an ID.
- Other characteristics associated with attempts to sell included the following:
 - Female buyers: 14% of inspections resulted in females “buying” cigarettes, compared to only 5% of inspections resulting in males “buying.”
 - Younger clerks: 19% of clerks aged 16 to 24 attempted to sell, compared to 8% of clerks aged 55 to 75.
 - Absence of youth access messages: 18% of outlets without “No Sales to Minors” signs attempted to sell, compared to 8% of outlets that had at least one sign.

Key findings from the coverage study include the following:

- 79.6% of stores found during the coverage study were on the original list frame.
 - This rate differed among communities: the rate was only 41.7% for communities with a population of less than 3,215, 81.3% for communities with a population of 3,215 to 4,381, and 80.7% for communities with a population of more than 4,381.
- 69.6% of stores found during the coverage study were completely accurate on the original list frame.
 - The accuracy rate differed among communities: it was only 25.0% for communities with a population of less than 3,215, 75.0% for communities with a population of 3,215 to 4,381, and 70.6% for communities with a population of more than 4,381.

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. These requirements compel states to adopt and enforce laws prohibiting the sale of tobacco to youth under the age of 18, to conduct annual, random, and unannounced inspections to ensure compliance with the law, and to develop a strategy and timeframe for achieving an inspection failure rate of less than 20% (SAMHSA, n.d.).

As it has since 2003, the Wyoming Department of Health, Mental Health and Substance Abuse Services Division (MHSASD) contracted with the Wyoming Survey and Analysis Center (WYSAC) at the University of Wyoming to conduct its annual Synar compliance inspections. This year, WYSAC also conducted an extensive coverage study to determine how well the state's tobacco retailer list frame (used to conduct the Synar survey) reflects the actual composition of tobacco retail outlets in the state. WYSAC strictly followed SAMHSA protocol to conduct the inspections and the coverage study.

2.2. Organization of this Report

This document contains four additional sections. Section 3 describes the methods WYSAC used to conduct the Coverage Study and Synar inspections, and Section 4 presents the key findings from both studies. Section 5 provides conclusions and recommendations for continued Synar compliance, and Section 6 contains reference citations. Four appendices appear after the references section. Appendix A provides the buyer script and the results for each question on the Synar Survey data collection form. Appendix B lists the new and inaccurate outlets found during the Coverage Study. Appendix C lists ineligible, inaccurate, and uninspected outlets for the 2007 Synar Survey and, finally, Appendix D reports the specific calculations used to obtain the weighted coverage and accuracy rates.

3. Methods

3.1. Coverage Study Methods

The Center for Substance Abuse Prevention (CSAP) at the Substance Abuse and Mental Health Services Administration (SAMHSA) requires states to conduct a frame coverage study every three years (SAMHSA, 2006a). The purpose of the coverage study is to assess how well the state's tobacco retailer list frame (used to conduct the Synar survey) reflects the actual composition of tobacco retail outlets in the state. Low coverage list frames may bias the estimate of the retailer violation rate, "since the unlisted outlets might be different from those on the list with respect to their likelihood of selling tobacco to youth" (SAMHSA, 2006a, p. 2). Therefore, to comply with SAMHSA requirements, WYSAC conducted an extensive coverage study this year.

To conduct the coverage study, WYSAC strictly followed SAMHSA protocol as outlined in their *Guide for a Synar Sampling Frame Coverage Study* (SAMHSA, 2006a). We used census tracts (defined by the Census Bureau) to define the geographical areas for the coverage study. To reduce costs and

improve efficiency, we used a stratified sampling design by dividing the census tracts into three strata. We defined “large” census tracts as having a population of 4,382 or more; “medium” census tracts as having a population of 3,215 to 4,381; and “small” census tracts as having a population of 3,214 or less. We then sampled 19 tracts from the large stratum,¹ six tracts from the medium stratum, and three tracts from the small stratum. Since canvassing rural tracts is more costly and time-consuming, we oversampled urbanized (large) tracts and under-sampled rural (small) tracts.² As recommended by SAMSHA, we sampled a total of 28 tracts to encompass an estimated 120 tobacco retail outlets.

Once we drew the sample, we hired several qualified drivers to conduct the coverage study. We trained them on how physically to canvass each census tract, noting *all* stores that sold tobacco *and* were accessible to minors. Bars and liquor stores are not legally accessible to minors, and therefore, were omitted from the coverage lists. Most often, we sent two drivers on a coverage study trip so that one could navigate and look for stores while the other drove. We instructed drivers *not* to canvass dirt roads and any area that was not accessible to the public (e.g., gated neighborhoods and state or national parks where one needed to pay an entrance fee). Per SAMHSA protocol, drivers did not use any lists to identify outlets.

To determine the coverage rate, WYSAC analysts carefully compared the list of outlets discovered during the coverage study to the outlets on the list frame. If the outlet found during the coverage study was on the list frame, we then determined if its address was 100% accurate. For several outlets, we contacted the field worker or the outlet itself to clarify specific information. After we checked all canvassed outlets against the list frame, we determined a coverage rate.

When calculating the coverage rate, WYSAC accounted for the fact that we used a stratified sampling design to conduct the coverage study. We used a sampling weight for each sample area (in our case, small, medium, and large strata). We also calculated a weighted accuracy rate (to determine the accuracy of the list frame). Our specific calculations to obtain the weighted coverage rates and the weighted accuracy rates are given in Appendix D.

3.2. Inspection Methods

3.2.1. Sampling Design

Before conducting the inspections, WYSAC drew a sample of tobacco retail outlets from the 2007 list of 542 outlets (provided by MHSASD). We categorized each outlet into one of two categories (or strata): each outlet was located either in 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. We then used the Synar Survey Estimation System, version 3.2 (SSES) to determine the sample size for each stratum.

¹ When WYSAC drew the first sample from the large stratum, we pulled the census tract that contains the F.E. Warren Air Force Base which is not open to the general public. We removed this tract from the sample and randomly drew another large tract to compensate.

² WYSAC used population as a proxy for urban and rural tracts. However, the proxy didn't completely correlate. For example, only one census tract encompasses all of Sublette County, a rural area. Because the tract is one county, the population was large enough to categorize it as an urban tract instead of the more appropriate rural classification. Population *density* may have been a more appropriate way to identify urban and rural areas, but the Census Bureau does not currently provide this information.

Tables 1 and 2 provide the results of the SSES Sample Size Calculator. WYSAC entered several variables (under "Input Information" in each table). An explanation of each variable follows:

- WYSAC chose the one-sided **Option for 95% Confidence Interval** since this option meets the same precision requirement with a smaller sample size than with the two-sided choice.
- **Outlet Frame Size** is the number 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 172 small municipality outlets and 370 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 8.2% and the large municipality RVR from last year was 5.8%.
- **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 completely 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. We used a safety margin 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. As in previous years, we oversampled by 15% for each 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 which is why our effective sample size is the same as our target sample size (i.e., $98 \times 1 = 98$).
- **Planned Original Sample Size** is the sample size we used to draw the sample and reflects a 15% safety margin above the target sample size.

Using SPSS version 15.0, WYSAC drew a random sample of 147 outlets located in small municipalities and 171 outlets located in large municipalities. This equates to a total sample size of 318 outlets (and includes 59% of the outlets on the list frame).

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

State	Wyoming
Federal Fiscal Year	2008
Date	7/5/2007 14:08
Input Information	
Option for 95% Confidence Interval	One-Sided
Outlet Frame Size	172
Expected Retailer Violation Rate	8.20%
Design Effect	1
Expected Accuracy Rate	85.80%
Expected Completion Rate	89.90%
Safety Margin Used	15%
Sample Size	
Effective Sample Size	98
Target(Minimum) Sample Size	98
Planned Original Sample Size	147

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

State	Wyoming
Federal Fiscal Year	2008
Date	7/5/2007 14:12
Input Information	
Option for 95% Confidence Interval	One-Sided
Outlet Frame Size	370
Expected Retailer Violation Rate	5.80%
Design Effect	1
Expected Accuracy Rate	82.10%
Expected Completion Rate	93.90%
Safety Margin Used	15%
Sample Size	
Effective Sample Size	114
Target(Minimum) Sample Size	114
Planned Original Sample Size	171

3.2.2. Inspection Protocol

WYSAC recruited most minor buyers by asking previous buyers to participate again and/or provide referrals. Family members, coworkers, and Tobacco-Free Wyoming Communities program managers also provided contacts. We first contacted potential minor buyers via telephone to describe the project. We also spoke with one of their parents. Once the minor and the parent expressed interest, we sent them a written description of the project, a parent permission form, and hire forms. We required completed parent permission forms before any youth could participate. Nineteen youth aged 15 or 16 participated in the 2007 Synar Survey. All youth resided within the region they inspected, 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.

The Synar teams consisted of one adult supervisor/driver, one or two minor buyers, and, typically, one law enforcement officer. The primary role of the law enforcement officer 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 to which the supervisors traveled. When possible, teams included both a male and female minor buyer. Prior to beginning the inspections, WYSAC instructed all adult supervisors in Synar protocol. Adult supervisors trained minors 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 youth-access messages).

Upon arriving at an outlet, one minor buyer (alternating between male and female buyers when possible) entered the outlet and 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, he/she left the location without attempting a purchase and returned to the car so that the second buyer might 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 the minor to answer honestly, “I don’t have it on me,” if a clerk asked the minor for identification. Similarly, if asked their age, minors replied honestly. Each 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 the inspection, the buyer 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, clerk age and 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 youth-access messages. WYSAC collected the forms at the conclusion of each trip.

3.2.3. Inspected Outlets

Of the 318 outlets chosen for the sample, WYSAC actually *visited* 315 outlets (due to youth unavailability, we could not visit three outlets). Of these, WYSAC *inspected* 283 outlets; 127 outlets from the small stratum (29 more outlets than the minimum) and 156 outlets from the large stratum (42 outlets more than the minimum). Of the 315 outlets visited, 20 were ineligible (most of these were ineligible because they were out of business) and 15 were not inspected because of other reasons (primarily because the minor knew the clerk at the time of visit). WYSAC inspected 95% of eligible outlets in the sample and 148 more outlets than the minimum. Appendix C includes a full list of uninspected sites and the reason for their omission.

4. Key Findings

4.1. Coverage Study Key Findings

The *unweighted* coverage rate for the 2007 Synar Coverage Study was:

$$\text{coverage} = 100 \times \frac{132 \text{ outlets found by the coverage study that were on the list frame}}{175 \text{ total outlets found by the coverage study}}$$

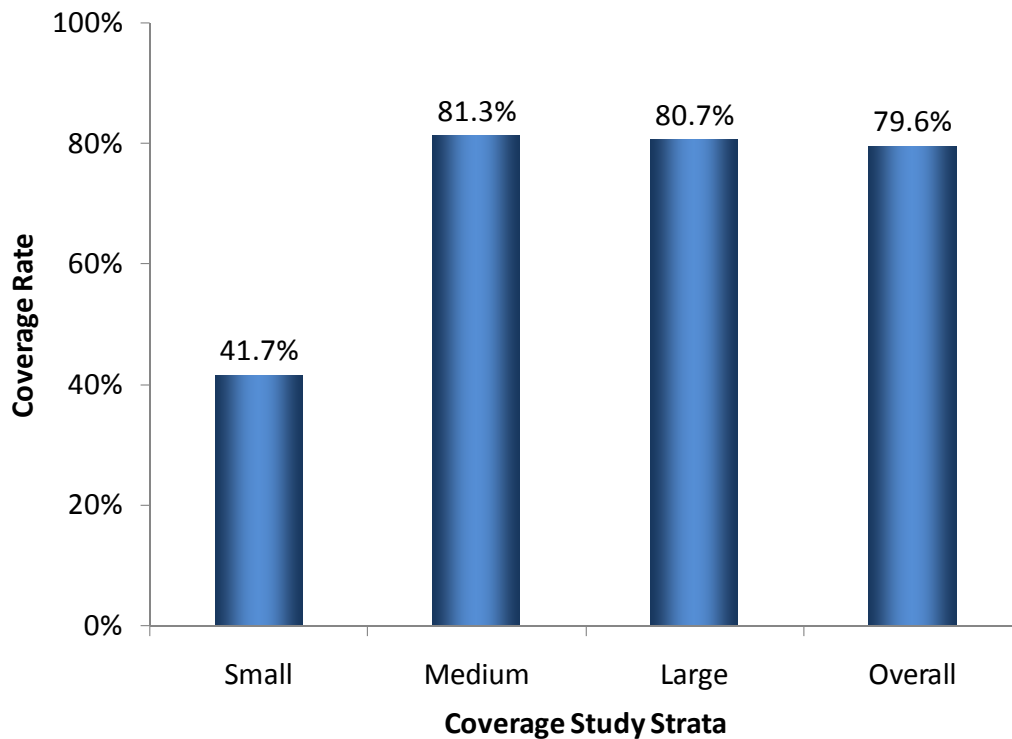
Therefore, the unweighted coverage rate for the 2007 Synar Coverage Study was 75.4%. However, we needed to adjust the coverage rate to account for the stratified sampling design. By weighting the coverage rate for each stratum (see Appendix D for calculations), we found an overall weighted coverage rate of 79.6%. SAMHSA *recommends* at least a 90% coverage rate but *requires* a coverage rate of at least 80% for the Synar Survey (SAMHSA, 2006a). Therefore, the 2008 Synar Survey will need to take corrective action to account for the low coverage rate. SAMHSA (2006a, p. 7) recommends the following corrective actions:

1. Improve the frame to reach the minimum coverage prior to drawing the Synar sample, or
2. Use an area frame or list-assisted area frame for the Synar Survey itself.

SAMHSA provides documentation and technical assistance to help states implement the corrective procedures.

The coverage study found an overall coverage rate of 79.6%, but the coverage rates differed among strata (Figure 1).

Figure 1. Coverage Rates by Stratum



The coverage rates for the medium and large strata were proximate and at or above the SAMHSA threshold of 80%. (The rates were 81.3% for the medium stratum and 80.7% for the large stratum.) The coverage rate for the small stratum, however, was much lower (at 41.7%) and creates a lower overall coverage rate. Efforts to improve coverage for Wyoming's rural areas will improve the state's overall coverage rate.

Although less important than coverage, WYSAC calculated an accuracy rate to determine the accuracy of the list frame. (See Appendix D for details.) The overall accuracy rate was 69.6%,

meaning almost 70% of the outlets found in the coverage study were also on the list frame and had correct addresses. As with the coverage rate, the small stratum was the least accurate. The small stratum had an accuracy rate of only 25.0%, the medium 75.0%, and the large 70.6%.

4.2. Inspection Key Findings

4.2.1. Retailer Violation Rate (RVR)

Wyoming's unweighted noncompliance or retailer violation rate (RVR) was:

$$\frac{25 \text{ noncompliant outlets}}{283 \text{ outlets inspected}} = 0.088 \text{ or } 8.8\%$$

Since WYSAC used a stratified sampling design, we weighted the overall RVR to account for this sampling method. We estimated the weighted RVR by:

$$(N_{large} / N_{total})(x_{large} / n_{2 large}) + (N_{small} / N_{total})(x_{small} / n_{2 small})$$

where:

N_{large} = the number of large stratum outlets on the list frame

N_{total} = the number of total outlets on the list frame

x_{large} = the number of noncompliant outlets within the large stratum

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

N_{small} = the number of small stratum outlets on 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

Thus, the weighted noncompliance rate for the 2007 Synar Survey was:

$$(370/542)(8/156) + (172/542)(17/127) = 0.077 \text{ or } 7.7\%$$

SSES provided a summary table of Synar survey estimates and sample sizes (see Table 3). The design effect of 0.8 accounts for the analysis of both strata together. In this case, the stratified sampling design *improved* sampling efficiency, yielding a design effect less than one.

The standard error was $\pm 1.0\%$ which meets the SAMHSA precision requirement of $\pm 1.82\%$.

Because we drew a sample of outlets and didn't inspect *all* outlets in Wyoming, SSES calculated a 95% confidence interval. Therefore, we can be 95% confident that the "true" value of the RVR is between 5.7% and 9.7%. When accounting for error, the likely maximum RVR (9.7%) is well below the 20% noncompliance standard set by SAMHSA.

Table 3. Synar Survey Estimates and Sample Sizes

CSAP-SYNAR REPORT

State	Wyoming
Federal Fiscal Year (FFY)	2007
Date	9/25/2007 10:23
Analysis Option	Stratified SRS with FPC

Estimates

Unweighted Retailer Violation Rate	8.8%
Weighted Retailer Violation Rate	7.7%
Standard Error	1.0%
Is SAMHSA Precision Requirement met?	YES
Right-sided 95% Confidence Interval	[0.0%, 9.4%]
Two-sided 95% Confidence Interval	[5.7%, 9.7%]
Design Effect	0.8
Accuracy Rate (unweighted)	93.7%
Accuracy Rate (weighted)	94.0%
Completion Rate (unweighted)	95.0%

Sample Size for Current Year

Effective Sample Size	137
Target (Minimum) Sample Size	135
Original Sample Size	318
Eligible Sample Size	298
Final Sample Size	283
Overall Sampling Rate	55.9%

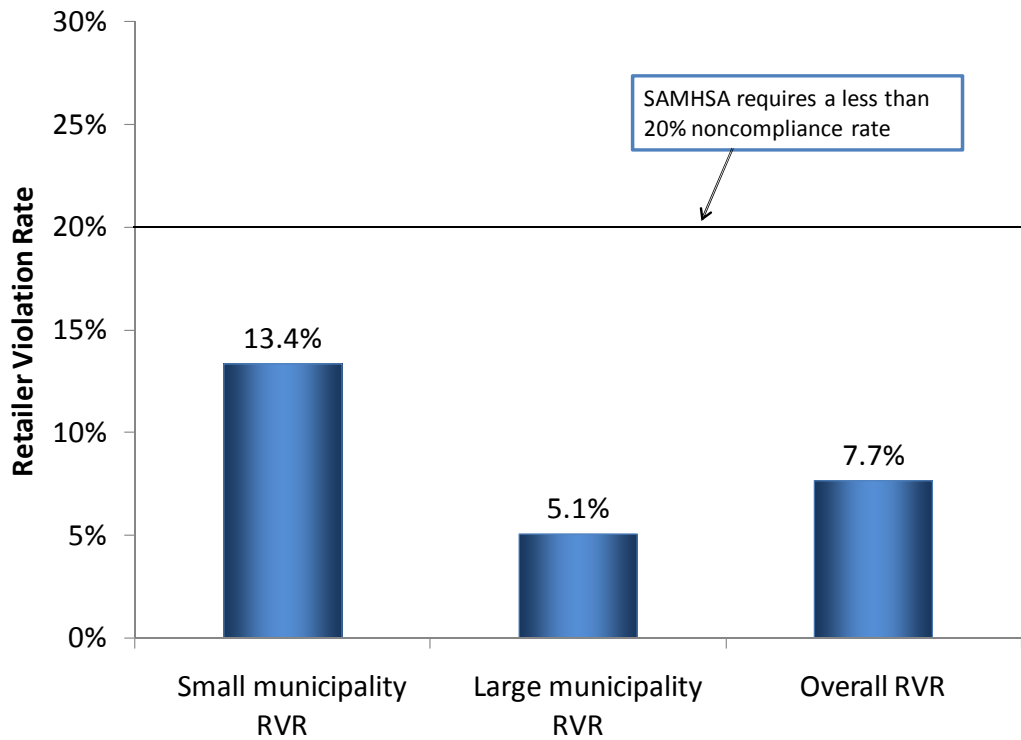
4.2.2. Significant Relationships between the RVR and Descriptive Variables

This section reports the significant relationships between the retailer violation rate (RVR) and other variables. To test significance, we conducted a chi-square test using SPSS 15.0. We report only significant differences when $p < 0.05$. This approach means we're more than 95% confident that our results are not random. For the variables that were significant (based on the chi-square test), we calculated odds ratios to determine the likelihood of selling to a minor.

4.2.2.1. Municipality Size

By the end of data collection, youth buyers had inspected 156 sites in large municipalities (8 of which attempted to sell) and 127 sites in small municipalities (17 of which attempted to sell). The test results showed that a significantly greater proportion of clerks at outlets in small municipalities attempted to sell cigarettes to minors (13.4%) than in large municipalities (5.1%; $p = 0.02$; see Figure 2). Although significantly larger, the small municipality rate is still below the SAMHSA noncompliance requirement of 20%.

Figure 2. Retailer Violation Rate (RVR) by Municipality Size



4.2.2.2. Clerk Request for ID

Clerks who failed to ask for an ID were over 300 times more likely to attempt to sell ($p = 0.000$). Overall, 89% of clerks asked for an ID. Of the 11% who failed to ask for an ID, 72% attempted to sell. Of clerks who asked for an ID, only 1% attempted to sell ($p = 0.000$; Table 4).

WYSAC calculated odds ratios for the “clerk request ID” variable collectively with the other variables that had a significant relationship with RVR (i.e., youth gender and presence of youth access messages). The results showed that the clerk failing to ask for an ID was the most sizable and significant predictor of attempting to sell.

Table 4. Relationship between Clerk Asking for ID and RVR

		Did clerk attempt to sell?	Percentage of Clerks
Did clerk ask for an ID?	Yes (89%)	Yes	1%
		No	99%
	No (11%)	Yes	72%
		No	28%

4.2.2.3. Gender of Youth Buyer

Clerks attempted to sell to female youth more often than to male youth: 14% of inspections resulted in females successfully “buying” cigarettes, compared to only 5% of inspections resulting in males “buying” ($p = 0.011$; Table 5). Female and male clerks attempted to sell at approximately the same rate. However, male clerks were equally likely to sell to female and male buyers, but female clerks

sold to female buyers more often than to male buyers. Of the female clerks, 12% attempted to sell to female buyers, and 4% attempted to sell to male buyers ($p = 0.029$).

Table 5. Relationship between Youth Gender and RVR

		Did clerk attempt to sell?	Percentage of Clerks
Youth buyer gender	Female (44%)	Yes	14%
		No	86%
	Male (56%)	Yes	5%
		No	95%

4.2.2.4. Age of Clerk

When reporting data, we asked the minor buyers to approximate the clerk's age. Clerks who looked to be between 16 and 24 attempted to sell more often than did clerks who looked to be above the age of 24 ($p = 0.028$; Table 6).

Table 6. Relationship between Estimated Age of Clerk and RVR

		Did clerk attempt to sell?	Percentage of Clerks
Estimated age of clerk	16–24 (23%)	Yes	19%
		No	82%
	25–34 (25%)	Yes	7%
		No	93%
	35–44 (24%)	Yes	3%
		No	97%
	45–54 (15%)	Yes	7%
		No	93%
	55–75 (13%)	Yes	8%
		No	92%

4.2.2.5. Presence of Youth Access Messages

Clerks in outlets without “No Sales to Minors” signs attempted to sell more often than clerks in outlets with such signs. Overall, 88% of outlets had at least one of these signs present; in these outlets, 8% of clerks attempted to sell. Of the 12% of outlets that didn't have the sign present, 18% of clerks attempted to sell ($p = 0.044$; Table 7). This relationship holds true for other state-sponsored youth access signs: 7% of outlets with other state-sponsored youth access messages had clerks that attempted to sell, compared to 14% of clerks in outlets without such signs present ($p = 0.048$).

Table 7. Relationship between “No Sales to Minors” Signs and RVR

		Did clerk attempt to sell?	Percentage of Clerks
Were there “No Sales to Minors” signs present?	Yes (88%)	Yes	8%
		No	92%
	No (12%)	Yes	18%
		No	82%

4.2.3. Nonsignificant Relationships between the RVR and Descriptive Variables

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.

4.2.3.1. Clerk Request for Age

Most clerks (94%) did not ask for the minor's age, but clerks who failed to ask for the minor's age were no more likely to attempt to sell than clerks who asked for the minor's age ($p = 0.171$). No clerks who asked for an age attempted to sell.

4.2.3.2. Accessibility of Tobacco Products

WYSAC defined tobacco products as accessible if they were placed at the check stand, in a display case, or in an aisle. Tobacco was inaccessible if it was placed behind the counter (outside of customer reach). Overall, 80% of stores had some or all tobacco products accessible to the customer. Clerks in outlets with accessible tobacco products were no more likely to attempt to sell than clerks in outlets with no accessible tobacco ($p = 0.580$).

4.2.3.3. Gender of Clerk

There was no significant difference between male and female clerks and the number of times they attempted to sell cigarettes ($p = 0.349$).

4.2.3.4. Age of Youth Buyer

The minors' age did not impact whether clerks attempted to sell to them. WYSAC employed 15- and 16-year-olds and both ages had approximately the same number of sale attempts ($p = 0.200$).

4.2.3.5. County

Noncompliance rates did not significantly differ among counties. All counties attempted to sell at approximately the same rate ($p = 0.761$).

5. Conclusions and Recommendations

The 2007 Synar Survey discovered an overall weighted retailer violation rate of 7.7%. This percentage is slightly higher than the 2006 rate of 6.5%. However, we cannot say that the RVR *increased* since 2006 because the 2006 rate (6.5%) is within the 95% confidence interval (5.7% to 9.7%) for the 2007 rate. We, therefore, 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. (Prior to that, it was as high as 56% in 1999; see Table 8.) These low rates suggest that tobacco sales to minors are infrequent and that retail clerks' 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.

Table 8. Retailer Violation Rates, 1996–2007*

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

*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 2007 Synar Survey, 11% of clerks failed to ask for an ID and of these, 72% attempted to sell. This finding suggests that clerks who asked for an ID were aware of the illegality of selling tobacco products to minors. Other characteristics associated with attempts to sell included female buyers, younger clerks, absence of youth access messages, and rural areas. Targeting these areas and increasing consequences for selling tobacco to minors may further reduce the RVR.

The data collection form used for the 2007 Synar Survey was also the form used in previous years. Throughout the 2007 study, WYSAC researchers noticed a need for the data form to be updated and improved. Some questions, for instance, are slightly misleading or unclear. Therefore, we recommend improving and updating the data form for the 2008 Synar Survey.

Per SAMHSA's requirement, WYSAC conducted an extensive coverage study to assess how well the state's tobacco retailer list frame (used to conduct the Synar survey) reflects the actual composition of tobacco retail outlets in the state. SAMHSA *recommends* at least a 90% coverage rate but *requires* a coverage rate of at least 80% (SAMHSA, 2006a). The 2007 Synar Coverage Study found an overall weighted coverage rate of 79.6%. Therefore, the 2008 Synar Survey must take corrective action to account for this low coverage rate. Coverage rates were inconsistent among strata (with the rural stratum having the lowest coverage at 41.7%). Analysis also revealed that only 69.6% of the outlets found in the coverage study were recorded with correct addresses on the list frame. Again, the rural stratum had the lowest accuracy rate at only 25.0%. When updating the list frame in the future, we recommend MHSASD establish standardized protocol and methodology for collecting list frame information. MHSASD should also provide consistent training on data collection, especially in rural communities. Doing so will ensure that future Synar Surveys are conducted without bias.

6. References & Bibliography

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7. Appendices

Appendix A. Synar Survey Results

This appendix provides the 2007 Synar script along with the frequencies for every question on the 2007 Synar Survey. In the frequency tables, WYSAC **bolded** the highest percentages and frequencies in each category to help identify them. Because of rounding, not all percentages add to 100%.

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

Script and Instructions for the Minor Attempting to Purchase:

Please practice this script with your adult driver at least two times before your first purchase attempt.

If the cigarettes are within reach:

Select a hard or soft pack of Marlboro Lights and place on the counter.

If the cigarettes are behind the counter:

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

If the store does not have Marlboros:

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 the age of the buyer:

The minor is truthful in telling his/her age.

If the clerk refuses to sell:

The minor leaves the store.

If the clerk offers to sell:

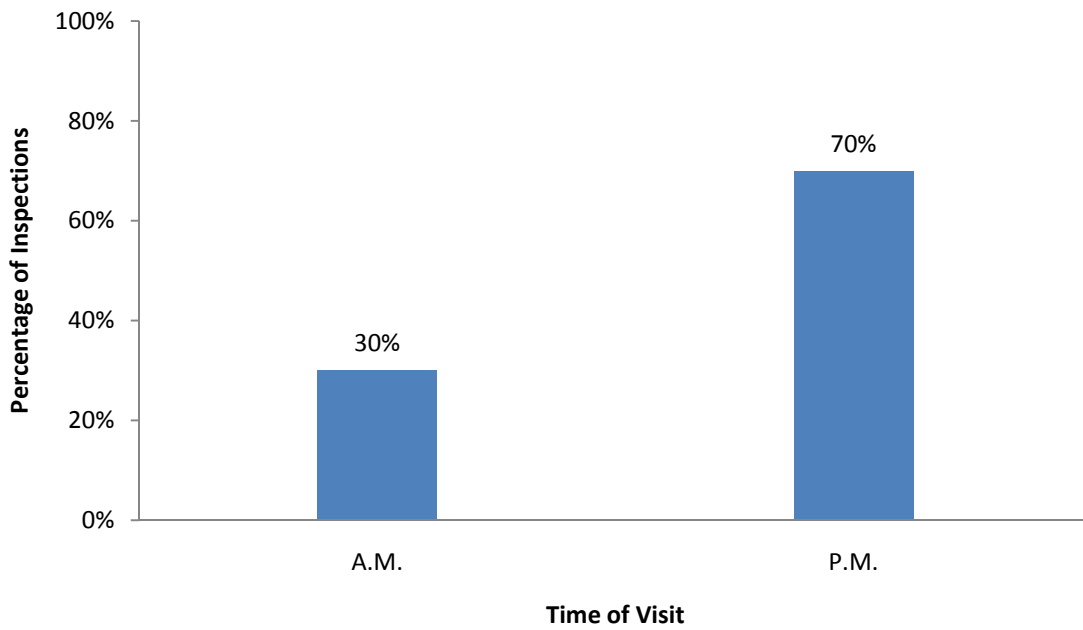
The minor asks the price, fumbles in his/her pocket, and produces only one or two dollars, then says, "I don't have enough money, never mind." Or "I thought this was a \$10 bill."

The minor then leaves the store and reports the following information to the driver.

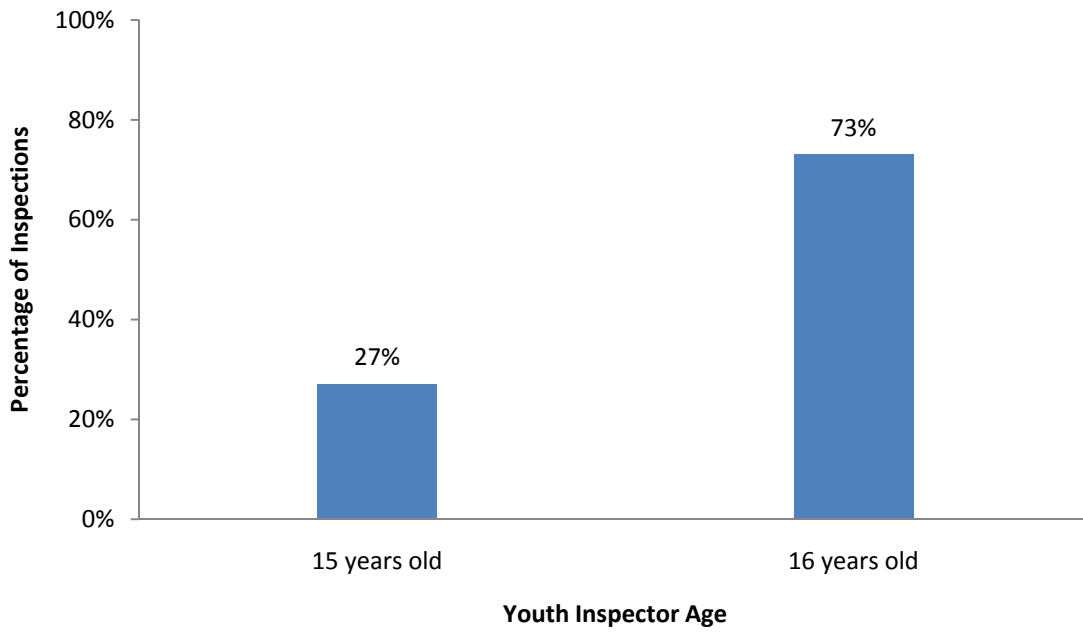
1. Inspection month

	Frequency	Valid Percent
July	35	11%
August	281	89%
Valid Total	315	100%
Stores not visited	3	
Total	318	

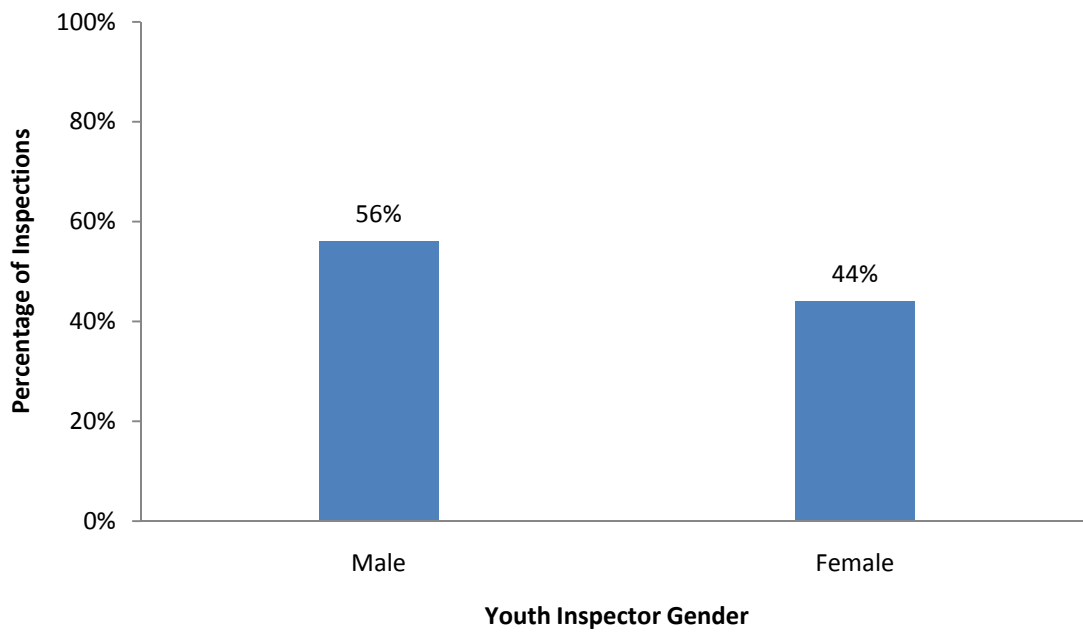
2. Time of visit (A.M. or P.M.)



3. Age of youth buyers



4. Gender of youth buyers



5. Outlet county*

	Frequency	Valid Percent
Natrona	37	12%
Sweetwater	28	9%
Fremont	28	9%
Laramie	25	8%
Lincoln	19	6%
Crook	16	5%
Teton	15	5%
Sheridan	14	4%
Albany	12	4%
Carbon	13	4%
Big Horn	13	4%
Park	12	4%
Campbell	14	4%
Uinta	12	4%
Sublette	11	4%
Goshen	9	3%
Platte	9	3%
Johnson	8	3%
Converse	5	2%
Washakie	6	2%
Weston	5	2%
Niobrara	4	1%
Hot Springs	3	1%
Total	318	100%

*All 23 Wyoming Counties were represented in the sample.

6. Type of outlet

	Frequency	Valid Percent
Over the counter	296	100%
Vending machine	0	0%
Valid Total	296	100%

On 24 data forms, we had no data for this question. This gap occurred for two main reasons:

- Teams found the outlet ineligible upon inspection (see item 14 for details).
- Teams did not complete the inspection (see item 16 for details).

7. Clerk gender

	Frequency	Valid Percent
Female	223	77%
Male	66	23%
Total	289	100%

8. Clerk age, by category (based on the youth buyers' estimates)

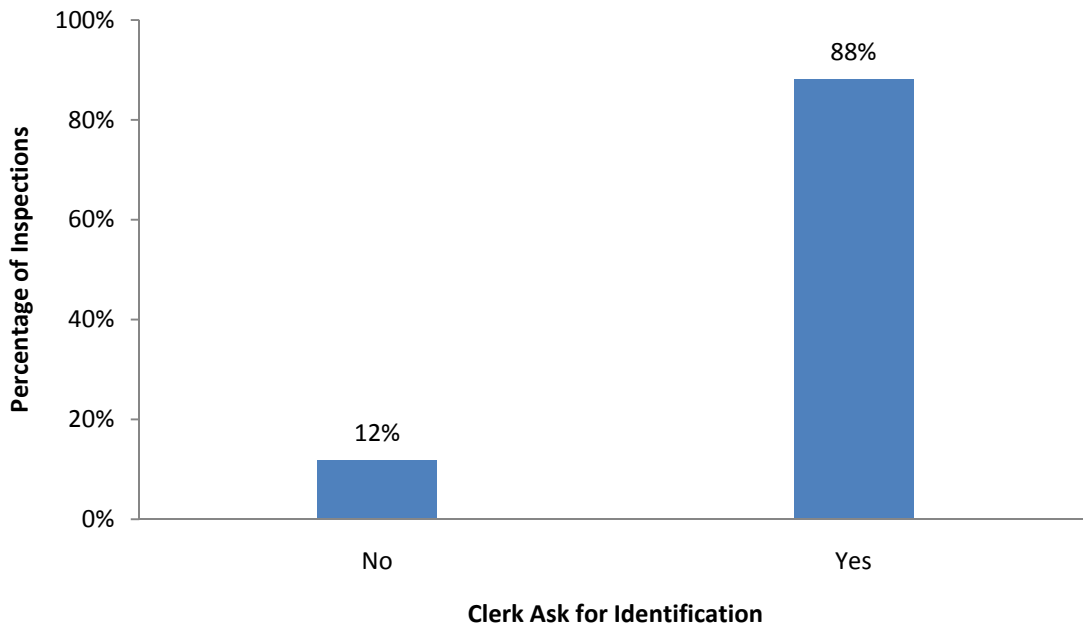
	Frequency	Valid Percent
16-24	69	24%
26-34	71	25%
35-44	69	24%
45-54	43	15%
55-75 (oldest estimated age was 75)	38	13%
Total	290	100%

9. Tobacco brand requested by youth buyer

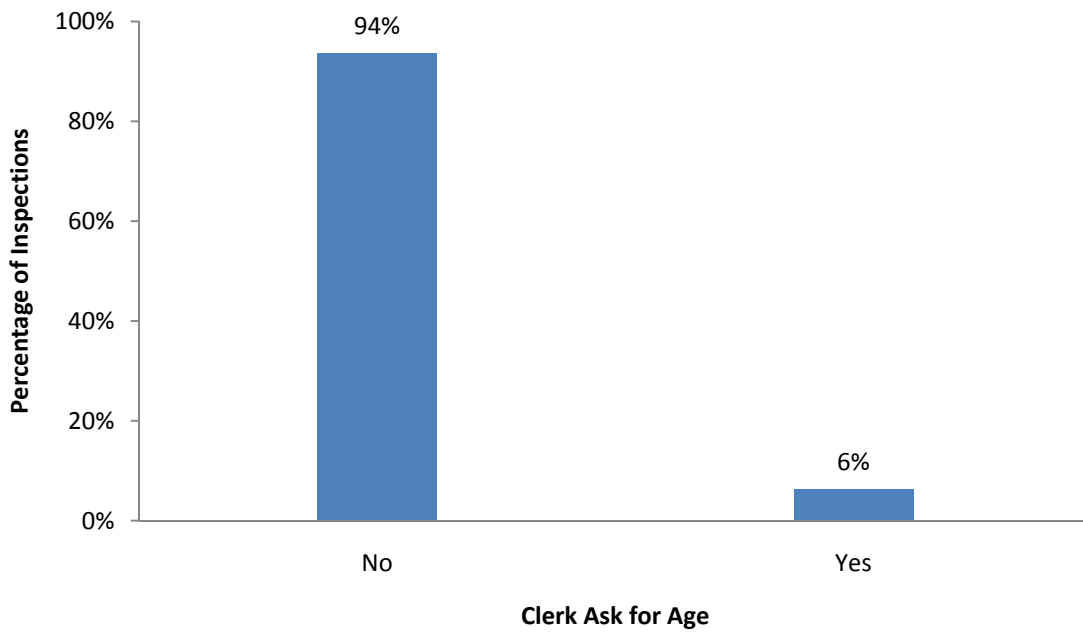
	Frequency	Valid Percent
Marlboro Lights	179	69%
Camel Lights	39	15%
Marlboro	33	13%
Camel	9	3%
Other brand	1	0%
Total	261	100%

Other: Marlboro Reds

10. Did clerk ask for ID?



11. Did clerk ask for age?



12a. Location of tobacco products (check all that apply)*

Specific Location	Frequency	Percentage of Stores
Behind counter	258	91%
In an aisle	11	4%
Display case	162	57%
At check stand	194	68%
Total stores	285	

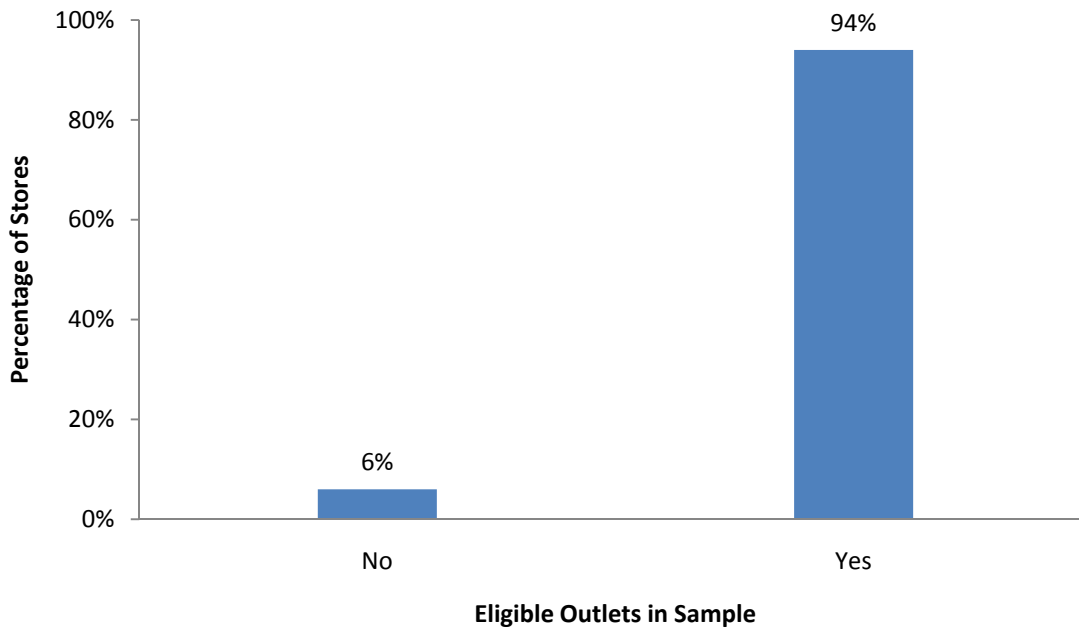
*Percentages sum to more than 100% because a store could have more than one location for tobacco products.

12b. Location of tobacco products by category*

	Frequency	Percentage of Stores with Known Tobacco Locations
Any accessible	229	80%
None accessible	56	20%
Total stores	285	100%

*If tobacco was located at the check stand, in a display case, or in an aisle, then WYSAC considered the tobacco accessible. "All accessible" outlets (8%) are included in the "any accessible" category. WYSAC only classified tobacco located behind the counter as inaccessible.

13. Is outlet eligible?

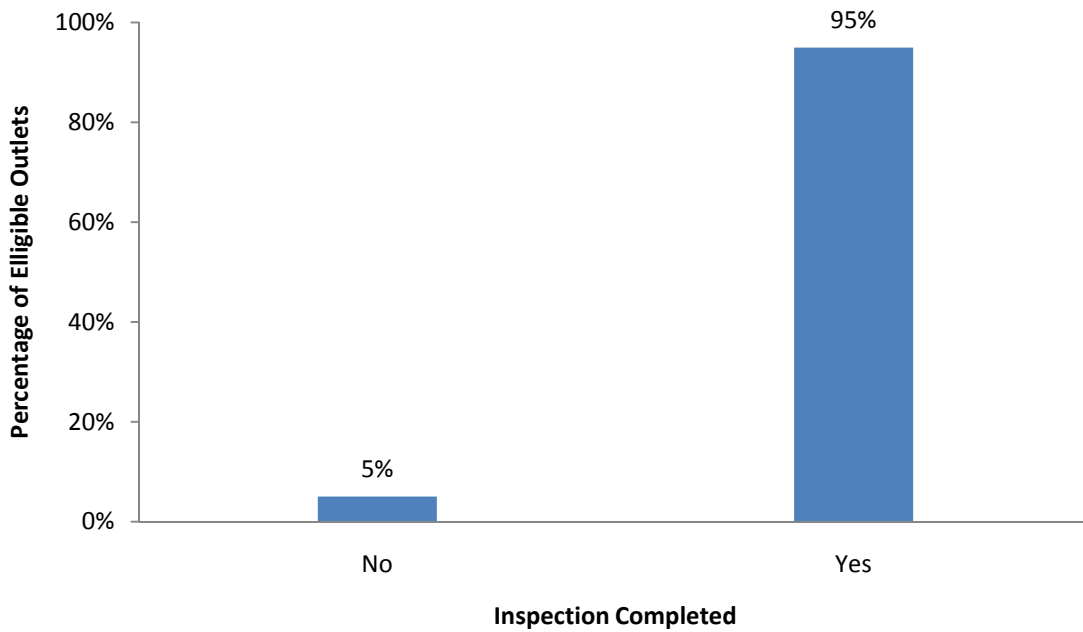


14. If outlet is ineligible, check one of the following reasons:

	Frequency	Valid Percent
Out of business	13	65%
Does not sell tobacco products	3	15%
Inaccessible by youth	1	5%
Temporary closure	2	10%
Other ineligibility (see below)	1	5%
Private club or private residence	0	0%
Unlocatable	0	0%
Wholesale only/carton sale only	0	0%
Vending machine broken	0	0%
Duplicate	0	0%
Total	20	100%

Other: Only cells cigars and pipe tobacco, no cigarettes.

15. If outlet is eligible, was inspection completed?

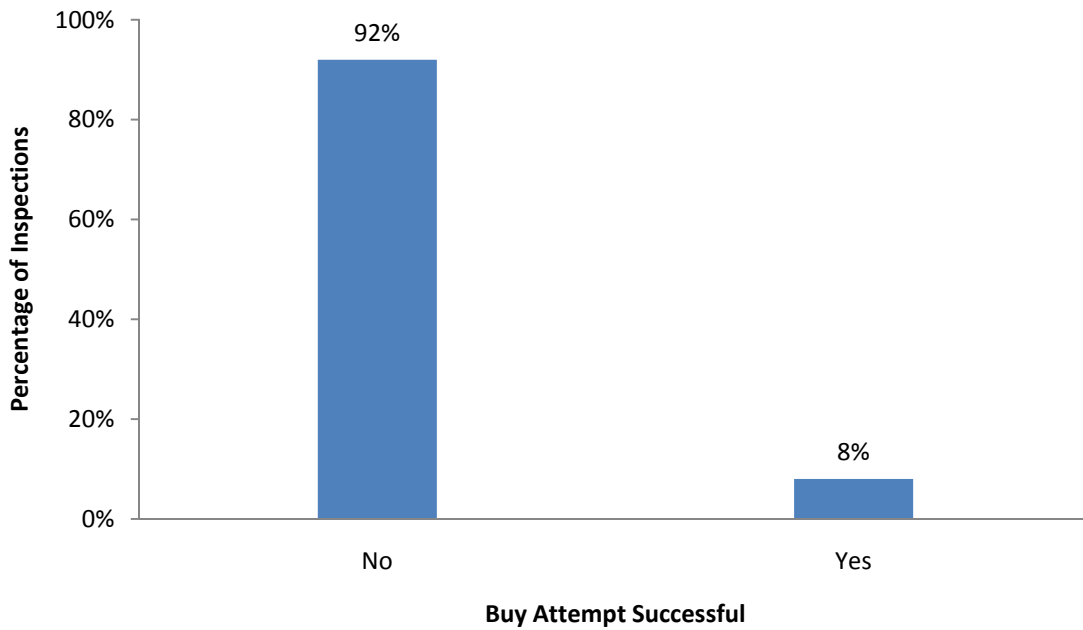


16. If outlet is eligible, but inspection was not completed, check one or more of the following reasons:

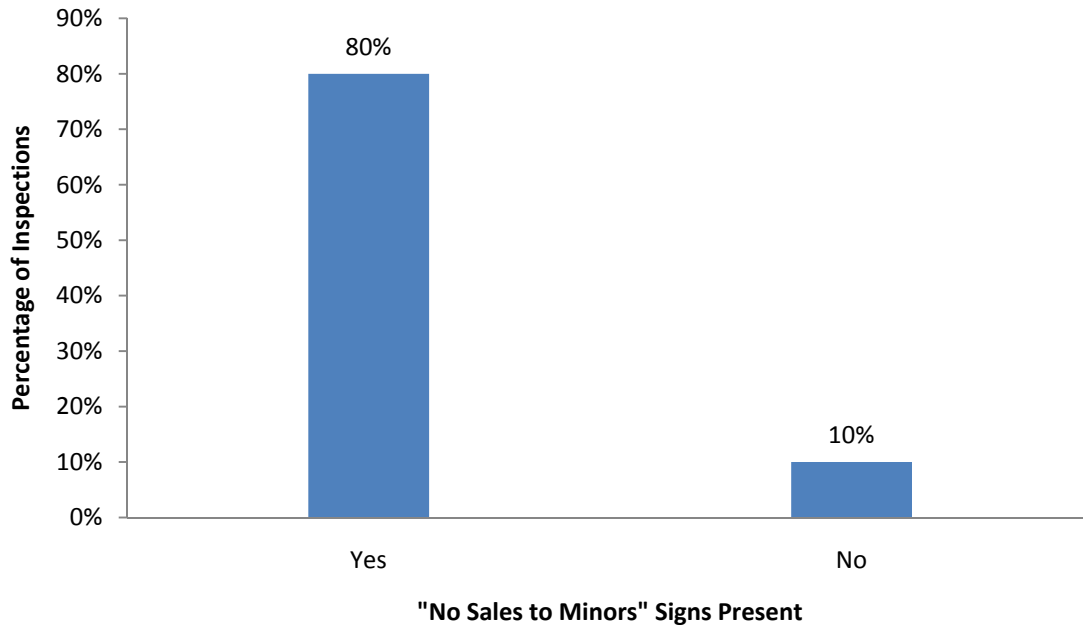
	Frequency	Percentage of Eligible, Uninspected Stores
Youth buyer knows salesperson	8	53%
Ran out of time	3	20%
In operation but closed at time of visit	2	13%
Tobacco out of stock	1	7%
Other noncompletion (see below)	1	7%
Unsafe to access	0	0%
Presence of police	0	0%
Moved to new location but not inspected	0	0%
Drive through only/youth buyer has no driver's license	0	0%
Total	15	100%

Other: The clerk refused to sell because of clerk's own age.

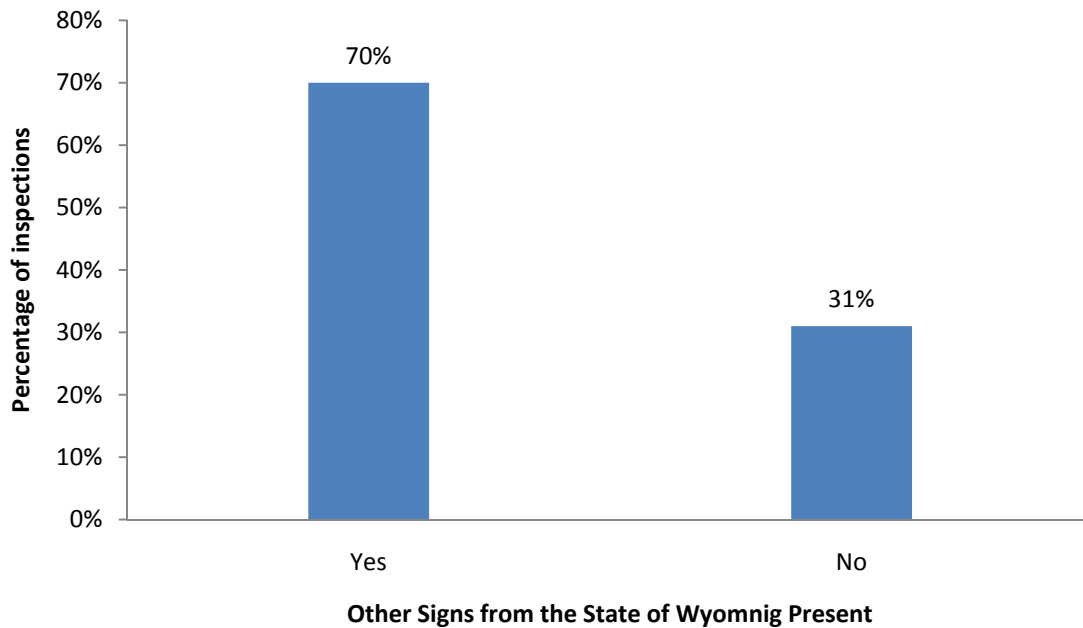
17. If inspection was completed, was buy attempt successful? (weighted percentages)



18. Were there "No Sales to Minors" signs present?



19. Were there any other posters/signs from the State of Wyoming present?*



* The percentages here do not total 100% because of rounding from the original values: Yes was 69.5%; No 30.5%.

Appendix B: New and Inaccurate Outlets from the 2007 Synar Coverage Study

This appendix includes three tables. **Table 1** presents the eligible outlets that were found by the Coverage Study and were not on the list frame. MHSASD should add these outlets to the 2008 Synar inspection list frame. **Table 2** presents the list frame *address* inaccuracies discovered during the Coverage Study and subsequent corrections. MHSASD should make these corrections to the 2008 Synar inspection list frame. Finally, **Table 3** presents the list frame outlet *name* inaccuracies discovered during the Coverage Study and subsequent corrections. We recommend that MHSASD make these changes for the 2008 Synar inspection list frame.

Appendix B Table 1. Outlets to Add to the List Frame

	Outlet Name	Outlet Address	City	County	Stratum	Comment
1	Byron Bar & Grill	136 E Main St	Byron	Big Horn	Large	
2	Waterhole #1 Hangout	91 E Main St	Cowley	Big Horn	Large	
3	Diamond J Bar & Lounge	40 A14 East (2 miles east of Lovell)	Lovell	Big Horn	Large	
4	Maverik	217 W Main	Lovell	Big Horn	Large	
5	Frontier Lanes	5700 S Douglas Hwy	Gillette	Campbell	Large	
6	Shell Food Mart	10800 Hwy 59 & Union Chapel Rd	South of Gillette	Campbell	Large	
7	Sundance Lounge (Nat. 9)	1020 E Hwy 14/16	Gillette	Campbell	Medium	
8	Hay Creek Golf Course	1229 E Elkhorn	Wright	Campbell	Large	
9	Mountain Market	702 Freeman	Encampment	Carbon	Small	
10	Mangy Moose	108 E Riverside Ave (Hwy 230 & 1st St)	Riverside	Carbon	Small	
11	Riverside Garage & Cabins	Hwy 230 & 1st St	Riverside	Carbon	Small	
12	Rendezvous Lodge	Byway 130 and Ryan Park Rd # 1	Saratoga	Carbon	Small	

Appendix B Table 1 Continued. Outlets to Add to the List Frame

	Outlet Name	Outlet Address	City	County	Stratum	Comment
13	The Place	HC 63 Snowy Range Hwy 130	Saratoga	Carbon	Small	
14	Valley Foods	1602 S Hwy 130	Saratoga	Carbon	Small	
15	Lazy River Cantina	110 E Bridge	Saratoga	Carbon	Small	
16	Saratoga Inn	601 Pic Pike Rd	Saratoga	Carbon	Small	
17	Hwy 59 Self Service	201 Hwy 59	Douglas	Converse	Small	
18	Short Supply	755 Ranch Rd	Rolling Hills	Converse	Small	
19	Silver Spur Lanes	1290 W Main St/Hwy 287	Lander	Fremont	Medium	
20	Exxon	75 E Hwy 16	Buffalo	Johnson	Small	
21	Hitching Post	51 S Main	Buffalo	Johnson	Large	
22	Powder River Travel Plaza	3401 Upper Powder River Rd	Buffalo	Johnson	Small	
23	Lakestop Store Motel Cafe	9 Lake Desert Rd	Buffalo	Johnson	Small	
24	Invasion Bar & Restaurant	343 Nolan	Kaycee	Johnson	Small	
25	Valero One Stop	2354 E Lincolnway	Cheyenne	Laramie	Large	
26	Sam's Club	1948 Dell Range	Cheyenne	Laramie	Large	
27	Target	1708 Dell Range	Cheyenne	Laramie	Large	
28	Walgreens	1501 Stillwater	Cheyenne	Laramie	Large	
29	Walton's General Store	Hwy 89	Smoot	Lincoln	Large	

Appendix B Table 1 Continued. Outlets to Add to the List Frame

	Outlet Name	Outlet Address	City	County	Stratum	Comment
30	JJ's Bar & Grill	2008 Cy Ave	Casper	Natrona	Medium	
31	El Mark-O Lanes	2800 Cy Ave	Casper	Natrona	Medium	Vending machine
32	Sidelines Sports Bar	1121 Poplar	Casper	Natrona	Medium	
33	Prairie Schooner Bar	320 2nd	Edgerton	Natrona	Medium	
34	Eagles Aerie #186	850 Main	Sheridan	Sheridan	Large	
35	The C Store	Hwy 191	Between Pinedale and Farson	Sublette	Large	
36	Jubilee Foods	101 Nichols	Big Piney	Sublette	Large	
37	Hoback Village	Hwy 191	Bondurant	Sublette	Large	
38	Midway Truck Stop	PO Box 4820	Marbleton	Sublette	Large	
39	Pub Place	4125 Hwy 89	Jackson	Teton	Large	
40	Horse Creek Station	Horse Creek Rd off Hwy 89	Jackson Hole	Teton	Large	
41	Amanagane Hotel	1535 NE Butte	Jackson Hole	Teton	Large	
42	Patio Grill of the Teton Pines Hotel	3550 N Clubhouse Dr	Jackson Hole	Teton	Large	
43	Gas Groceries	I-80 Exit 34	Fort Bridger	Uinta	Large	
44	Jim Bridger Trading Post	I-80 Exit 34	Fort Bridger	Uinta	Large	
45	Cross Roads C-Store	Business I-80 and US 414	Urie	Uinta	Large	

Appendix B Table 2. List Frame Addresses to Change

	Outlet Name	Outlet Address (corrected)	Town	County	Stratum	Comment
1	Cozzen's Cash Store	120 E Main	Byron	Big Horn	Large	List frame has 116
2	Conoco Kwik Shop	Lakeway & 4-J	Gillette	Campbell	Large	On the list frame incorrectly as 505
3	Short Stop Convenience Store	513 E 2nd St	Gillette	Campbell	Medium	Hwy 14/16 is 2nd street- list frame had only intersection (correctly)
4	Kwik Shop	920 E Laramie	Gillette	Campbell	Large	List frame has 1920
5	The Little Store	Hwy 50 & W 4-J Rd	Wright	Campbell	Large	List frame has Gillette
6	Trading Post	210 Hwy 70	Encampment	Carbon	Small	List frame has Riverside
7	The Bill Store	3539 Hwy 59	Bill	Converse	Small	List frame town is Douglas, not Bill
8	Orin Junction Truck Stop Sinclair	75 US Hwy 18-20	Orin	Converse	Small	List frame town is Douglas, not Orin
9	Cenex- The Wolf Den	173 Hwy 16 East	Buffalo	Johnson	Small	List frame has 17345
10	Safeway	469 E Pershing	Cheyenne	Laramie	Large	List frame has 400
11	Love's	3306 College Dr	Cheyenne	Laramie	Large	List frame has 3305
12	Walgreens	2304 E Lincolnway	Cheyenne	Laramie	Large	List frame has 2302
13	Albertson's Express	3363 E Pershing	Cheyenne	Laramie	Large	List frame has 3355; shares parking lot with 3355 Albertson's
14	Albertson's Express	1010 Cy Ave	Casper	Natrona	Medium	List frame has 1076
15	Edgerton Grocery	937 Hwy 387	Edgerton	Natrona	Medium	List frame has 936

Appendix B Table 2 Continued. List Frame Addresses to Change

	Outlet Name	Outlet Address (corrected)	Town	County	Stratum	Comment
16	Sinclair	901 Long	Sheridan	Sheridan	Large	List frame has a Texaco at 910
17	Kmart	510 S Hwy 89	Jackson	Teton	Large	List frame has 1357, but phone call confirmed 510 as only area Kmart
18	The Jackson Whole Grocer	974 W Broadway	Jackson	Teton	Large	List frame has 970
19	The Westside Store	4015 W Lakecreek Dr	Jackson Hole	Teton	Large	List frame has Wilson, not Jackson

Appendix B Table 3. List Frame Outlet Names to Change

	Outlet Name (Corrected)	Outlet Address	Town	County	Stratum	Comment
1	Yellowstone Tobacco Co	507 Ash St	Frannie	Big Horn	Large	List frame has Frannie Smoke Shop
2	Exxon	1801 Hwy 310, 1 mile east of Lovell	Lovell	Big Horn	Large	List frame has Save Way Gas
3	Country Store Conoco	303 S 1st St	Saratoga	Carbon	Small	List frame has Country Ventures
4	Shell	74 E Hwy 16	Buffalo	Johnson	Small	List frame has Short Stop
5	Exxon	100 Central Ave	Cheyenne	Laramie	Large	List frame has Conoco
6	Exxon	3030 E Lincolnway	Cheyenne	Laramie	Large	List frame has Big D/Exxon
7	Exxon	2029 Dell Range	Cheyenne	Laramie	Large	List frame has Big D/Exxon
8	Conoco	2603 Big Horn Ave	Cody	Park	Large	List frame has Rimrock Corner
9	Shell	1200 S 17th	Cody	Park	Large	List frame has Texaco Food Mart
10	Loaf N Jug	2558 Foothill	Rock Springs	Sweetwater	Medium	List frame has Mini Mart
11	Chevron Food Mart	401 Cache	Jackson	Teton	Large	List frame has Cache Chevron
12	Benedict's Market	950 N Hwy 414	Mountain View	Uinta	Large	List frame has Benedict's Thriftway

Appendix C: Ineligible, Inaccurate, and Uninspected Outlets from the 2007 Synar Survey

This appendix includes three tables. **Table 1** presents the outlets ineligible in 2007; MHSASD should remove all outlets in this table (with two exceptions) from the 2008 Synar list frame. The exceptions include the outlets labeled “temporary closure.” Although ineligible for the 2007 survey, these two outlets should remain on the list because they may reopen and become eligible tobacco outlets for the 2008 survey.

Table 2 provides the list frame inaccuracies discovered during the inspections and subsequent corrections. MHSASD should make these changes for the 2008 Synar inspection list frame. Finally, **Table 3** lists eligible, but uninspected outlets and the reason they were not inspected.

Appendix C Table 1. Ineligible Outlets

	Name	Address	City	Municipality Size	County	Reason for Ineligibility
1	Cenex	168 Hunt Rd	Laramie	Large	Albany	Out of business
2	Showboat General Store	110 Central Ave.	Deaver	Small	Big Horn	Out of business
3	United Pawn Browkers Smoke Shop	705 E. Hwy 14-16	Gillette	Large	Campbell	Out of business
4	Devil's Tower Golf Club	Hwy 24	Hulett	Small	Crook	Does not sell tobacco products
5	End of the Trail	4850 I-80 Service Rd	Burns	Small	Laramie	Out of business
6	Kum & Go #51702	550 S Washington	Afton	Small	Lincoln	Out of business
7	E.R. Cigar Store	3702 N Salt Creek Hwy	Bar Nunn	Small	Natrona	Out of business
8	Copy Cat Corner (formerly Smoker's Choice/United Pawn)	1843 E 2nd	Casper	Large	Natrona	Out of business
9	Plant Store (formerly Center St Kum & Go)	560 N Center	Casper	Large	Natrona	Out of business
10	Red Eagle Foodstore #15	3600 W Yellowstone	Mills	Small	Natrona	Temporary closure ³

³ This outlet should remain on the list frame for Synar 2008.

Appendix C Table 1 Continued. Ineligible Outlets

	Name	Address	City	Municipality Size	County	Reason for Ineligibility
11	United Pawn/Smoker's Choice	4101 W Yellowstone	Mills	Small	Natrona	Out of business
12	Exxon	1502 Sheridan	Cody	Large	Park	Does not sell tobacco products
13	Andy's Conoco	210 E Whalen	Guernsey	Small	Platte	Out of business
14	Kum & Go	2327 N Main	Sheridan	Large	Sheridan	Out of business
15	Table Rock		Table Rock	Small	Sweetwater	Out of business
16	Red Desert		Wamsutter	Small	Sweetwater	Inaccessible to youth
17	Tobacco Row	120 N Cache Dr.	Jackson	Large	Teton	Only sells cigars and pipe tobacco, no cigarettes
18	Hatchet Resort	19980 E US Hwy 387	Moran	Small	Teton	Does not sell tobacco products
19	Loaf N Jug	40 Yellowcreek	Evanston	Large	Uinta	Temporary closure ⁴
20	Westgate Enterprises	749 Overthrust Rd	Evanston	Large	Uinta	Out of business

⁴ This outlet should remain on the list frame for Synar 2008.

Appendix C Table 2. Inaccurate Information on the 2007 Synar List Frame⁵

	List Frame Name	List Frame Address	List Frame City	County	Municipality Size	Reason for Update	Updated Information
1	County Cash and Save	<i>Main St</i>	Burlington	Big Horn	Small	Address change	112 S Main St
2	<i>Frannie Smoke Shop</i>	507 Ash	Frannie	Big Horn	Small	Name change	Yellowstone Tobacco Co.
3	<i>Overland Express</i>	155 N 4th	Basin	Big Horn	Small	Name change	Overland Express Mart (Conoco)
4	<i>Dan's Supermarket #8</i>	<i>105 Wright Blvd</i>	Gillette	Campbell	Large	Name and address change	Don's Supermarket # 8
5	Kwik Shop #38 Conoco	<i>505 Lakeway</i>	Gillette	Campbell	Large	Address change	405 W Lakeway
6	Huff and Puff Smoke Shop	<i>7th and Douglas Hwy</i>	Gillette	Campbell	Large	Address change	2809 4-J
7	Common Cents	<i>S Douglas Hwy</i>	Gillette	Campbell	Large	Address change	1907 S Douglas Hwy
8	<i>Mini Mart #149</i>	401 S Douglas Hwy	Gillette	Campbell	Large	Name change	Loaf N Jug
9	The Bill Store	3539 Hwy 59	<i>Douglas</i>	Converse	Small	Address change	Bill
10	Donna's Diner	<i>Hwy 14/16</i>	Moorcroft	Crook	Small	Address change	202 Converse
11	Aladdin Store	<i>111 Main St</i>	Aladdin	Crook	Small	Address change	Hwy 24
12	<i>Texaco South Side Travel Gr</i>	167 US Hwy 20 South	Thermopolis	Hot Springs	Large	Name change	Shell South Side Travel Center
13	E.R. Cigar Store	<i>3702 N Salt Hwy</i>	Bar Nunn	Natrona	Small	Address change	3702 N Salt Creek Hwy
14	Loaf N Jug #114	4603 W Yellowstone	<i>Casper</i>	Natrona	Small	Address change	Mills
15	Reds Market	4741 W Yellowstone Hwy	Mills	Natrona	Small	Other	They have cigarettes, not just cigars only

⁵ Italicized fields indicate outdated/incorrect information

Appendix C Table 2 Continued. Inaccurate Information on the 2007 Synar List Frame⁶

	List Frame Name	List Frame Address	List Frame City	County	Municipality Size	Reason for Update	Updated Information
16	Natrona County Airport Gift Shop	8500 Airport Parkway	<i>Casper</i>	Natrona	Large	Address change	Near Casper; outside city limits
17	Ghost Town Truck Stop	6680 W Yellowstone	<i>Casper</i>	Natrona	Large	Address change	Near Casper; outside city limits
18	<i>Hat Six Travel Plaza</i>	6985 Nugget	Evansville	Natrona	Small	Name change	Eastgate Travel Plaza
19	<i>Stadium Sports</i>	855 Cy Ave	Casper	Natrona	Large	Name change	Cy Smoke Shop
20	<i>Jackson's Food</i>	1968 E Yellowstone	Casper	Natrona	Large	Name change	Red Eagle Food Store
21	<i>Conoco Country Store</i>	1737 17th St	Cody	Park	Large	Name change	Cody Country Store (Conoco)
22	<i>Texaco Food Mart #3</i>	1200 17 th St	Cody	Park	Large	Name change	Shell (Red Eagle Foods)
23	<i>Texaco Food Mart #004</i>	492 Main St	Ralston	Park	Small	Name change	Red Eagle Food Store (Shell Station)
24	Big Horn Junction Store	<i>7088 Coffeen Ave</i>	Sheridan	Sheridan	Large	Address change	7078 Coffeen Ave
25	Kmart # 9074	<i>2571 N Business 90</i>	Sheridan	Sheridan	Large	Address change	2571 N Main St
26	<i>Mini Mart #157</i>	1200 Big Horn Ave	Worland	Washakie	Large	Name change	Loaf N Jug
27	<i>One Stop Shoppe Co-op</i>	440 W Big Horn Ave	Worland	Washakie	Large	Name change	Co-op One Stop

⁶ Italicized fields indicate outdated/incorrect information

Appendix C Table 3. Eligible, but Uninspected Outlets

	Name	Address	City	Municipality Size	County	Comment
1	Albertson's #830	3112 Grand Ave	Laramie	Large	Albany	Youth buyer knows salesperson
2	Foster's	1561 Snowy Range Rd	Laramie	Large	Albany	Youth buyer knows salesperson
3	Walcott Service	I-80 Exit 235	Walcott	Small	Carbon	Ran out of time
4	Carlile Store	Hwy 14	Carlile	Small	Crook	Closed at time of visit
5	Pit Stop #2	838 N Federal	Riverton	Large	Fremont	Youth buyer knows salesperson
6	Familee Thriftway	141 N Washington	Afton	Small	Lincoln	Youth buyer knows salesperson
7	Gardner's Country Village	1220 S Washington	Afton	Small	Lincoln	Youth buyer knows salesperson
8	Cy Smoke Shop	855 Cy Ave	Casper	Large	Natrona	Tobacco out of stock
9	Stop-N-Shop Market	637 Loucks	Sheridan	Large	Sheridan	Closed at time of visit
10	James Mines & Sons	3800 A Hwy 191	Eden	Small	Sweetwater	Ran out of time
11	Farson Shell	2 Hwy 28	Farson	Small	Sweetwater	Ran out of time
12	Maverik	222 S Main St	Lyman	Small	Uinta	Youth buyer knows salesperson
13	Benedict's Market	950 W Hwy 414	Mountain View	Small	Uinta	Youth buyer knows salesperson
14	Maverik	655 N Hwy 414	Mountain View	Small	Uinta	Youth buyer knows salesperson

Appendix D: Calculations for the 2007 Synar Coverage Study

The unweighted coverage formula from the federal *CSAP Guide for a Synar Sampling Frame Coverage Study* (Substance Abuse & Mental Health Services Administration [SAMHSA], 2006) is given by the general equation:

$$C = 100 \times \frac{b}{n}$$

where b is the number of outlets from the list frame found by the 2007 Synar Coverage Study and n is the total number of outlets found by the 2007 Synar Coverage Study. Substituting the values from the 2007 Synar Coverage Study, this equation becomes:

$$C = 100 \times \frac{132}{175} = 75.4\%$$

Thus, the unweighted coverage rate for the 2007 Synar Coverage Study was 75.4%. This result is below the CSAP threshold of 80% (SAMHSA, 2006).

However, the 2007 Synar Coverage Study used a stratified sample, so a weighted coverage rate is needed. The general equation for weighting is as follows (see *CSAP Guide for a Synar Sampling Frame Coverage Study*, p 20):

$$C = 100 \times \frac{\sum_{i=1}^k w_i b_i}{\sum_{i=1}^k w_i n_i}$$

where b_i is the number of outlets from the list frame found in each stratum, n_i is the number of outlets found by the 2007 Synar Coverage Study in each stratum, and w_i is the stratum weight, calculated by:

$$w_i = \frac{k_i}{K_i}$$

where k_i is the number of areas selected for coverage in a stratum and K_i is the number of areas in the stratum.

For the 2007 Synar Coverage Study, the general equation expands as follows:

$$C = 100 \times \frac{w_{small} b_{small} + w_{medium} b_{medium} + w_{large} b_{large}}{w_{small} n_{small} + w_{medium} n_{medium} + w_{large} n_{large}}$$

or

$$C = 100 \times \frac{\frac{k_{small}}{K_{small}} \times b_{small} + \frac{k_{medium}}{K_{medium}} \times b_{medium} + \frac{k_{large}}{K_{large}} \times b_{large}}{\frac{k_{small}}{K_{small}} \times n_{small} + \frac{k_{medium}}{K_{medium}} \times n_{medium} + \frac{k_{large}}{K_{large}} \times n_{large}}$$

After excluding census tracts on federal land (Wind River Indian Reservation, Yellowstone National Park, Grand Teton National Park, and F. E. Warren Air Force Base), the 2007 Synar weighted coverage rate is calculated as follows:

$$C = 100 \times \frac{\frac{3}{40} \times 10 + \frac{6}{41} \times 26 + \frac{19}{39} \times 96}{\frac{3}{40} \times 24 + \frac{6}{41} \times 32 + \frac{19}{39} \times 119} = 79.6\%$$

This computation gives a final weighted coverage rate of 79.6%, just below the CSAP threshold of 80% (SAMHSA, 2006).

Because there was a significant difference for coverage rates between strata ($p < 0.001$), WYSAC also calculated separate, unweighted coverage rates:

$$C_{small} = 100 \times \frac{10}{24} = 41.7\%$$

$$C_{medium} = 100 \times \frac{26}{32} = 81.3\%$$

$$C_{large} = 100 \times \frac{96}{119} = 80.7\%$$

Thus, the small stratum coverage rate (41.7%) seems to be negatively influencing the overall coverage rate. The coverage rates for the medium (81.3%) and large strata (80.7%) are similar to each other and at or above the CSAP threshold of 80%.

To calculate the accuracy of the list frame, WYSAC compared the 2007 Synar Coverage Study results to the list frame. We followed SAMHSA's definition of accuracy: we considered an outlet's information 100% accurate if the list frame information would allow field workers to locate the outlet. If the 2007 Synar Coverage Study address and the list frame address were identical, the outlet was accurate. If the 2007 Synar Coverage Study listed a somewhat different *name* than the list frame, we still considered the outlet accurate because the name change would not prevent somebody from locating it. The unweighted accuracy was given by the following equation:

$$A = 100 \times \frac{a}{n}$$

where A is the unweighted accuracy of list frame addresses, a is the number of stores found by the 2007 Synar Coverage Study with accurate addresses, and n is the number of outlets that were found by the 2007 Synar Coverage Study. For the 2007 Synar Coverage Study, this equation becomes

$$A = 100 \times \frac{114}{175} = 65.1\%$$

Thus, the unweighted accuracy of the list frame addresses, based on the 2007 Synar Coverage Study, could be estimated as 65.1%. However, the 2007 Synar Coverage Study used a stratified sample, so a

weighted accuracy rate is needed. Thus, a weighted accuracy for the list frame addresses was calculated with the following equation, based upon the weighted coverage rate equation for the 2007 Synar Coverage Study:

$$A = 100 \times \frac{\frac{k_{small}}{K_{small}} \times a_{small} + \frac{k_{medium}}{K_{medium}} \times a_{medium} + \frac{k_{large}}{K_{large}} \times a_{large}}{\frac{k_{small}}{K_{small}} \times n_{small} + \frac{k_{medium}}{K_{medium}} \times n_{medium} + \frac{k_{large}}{K_{large}} \times n_{large}}$$

where k_i is the number of areas selected for coverage in a stratum, K_i is the number of areas in the stratum, a_i is the number of outlets with accurate list frame address found by the 2007 Synar Coverage Study in each stratum, and n_i is the number of outlets that were found by the 2007 Synar Coverage Study in each stratum. Inserting the values for the 2007 Synar Coverage Study, we get:

$$A = 100 \times \frac{\frac{3}{40} \times 6 + \frac{6}{41} \times 24 + \frac{19}{39} \times 84}{\frac{3}{40} \times 24 + \frac{6}{41} \times 32 + \frac{19}{39} \times 119} = 69.6\%$$

Thus, the weighted accuracy for the addresses on the list frame was 69.6%. Because there was a significant difference between strata accuracies ($p < 0.001$), the stratum accuracy rates were also calculated for comparison using the following equations:

$$A_{small} = 100 \times \frac{a_{small}}{n_{small}} = 100 \times \frac{6}{24} = 25.0\%$$

$$A_{medium} = 100 \times \frac{a_{medium}}{n_{medium}} = 100 \times \frac{24}{32} = 75.0\%$$

$$A_{large} = 100 \times \frac{a_{large}}{n_{large}} = 100 \times \frac{84}{119} = 70.6\%$$

Therefore, as in the weighted coverage rate, the list frame information seems disproportionately inaccurate for the small stratum (25.0%).