

Wyoming's 2012 (FFY 2013) Synar Tobacco Compliance Report

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Wyoming's 2012 (FFY 2013) Synar Tobacco Compliance Report

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Wyoming's 2012 (FFY 2013) Synar Tobacco Compliance Report

1. Executive Summary

The Synar Amendment, enacted in 1992, requires states to enact and enforce laws prohibiting the sale and distribution of tobacco products to individuals under the age of 18. The Substance Abuse and Mental Health Services Administration (SAMHSA) regulation implementing the Synar Amendment requires states to conduct annual, random, and unannounced inspections to ensure compliance with tobacco sales laws (SAMHSA, 2010).

Since 2003, the Wyoming Department of Health (WDH) has contracted with the Wyoming Survey & Analysis Center (WYSAC) at the University of Wyoming to conduct the Synar compliance inspections. Each summer, WYSAC recruits youth inspectors (16- and 17-year-olds) to conduct these inspections, under adult supervision, on a stratified random sample of tobacco retail outlets in Wyoming.

The overall weighted retailer violation rate (RVR) in 2012 (FFY 2013) was 14.4%, which is below the federally stipulated maximum of 20.0%. Two key factors contributed to this rate being higher than last year's rate (8.7%):

- For the first time, WYSAC was not allowed to use 15-year-old youth inspectors, which resulted in having older (and older-looking) youth inspectors this year.¹
- One inspection trip accounted for 21 out of 43 violations.
 - When WYSAC excluded these 21 outlets from this trip, the re-calculated, weighted RVR fell to 8.1%, similar to previous years.
 - The youth inspectors for this trip were the oldest-looking male and oldest-looking female.
 - WYSAC cannot rule out geographic factors (e.g., local law enforcement practices) or the adult supervisor's training of the youth inspectors (though another trip by the same supervisor had a more typical RVR) as contributing to the high RVR for that trip.

Analyses did not indicate an association between clerks' willingness to sell tobacco and type of tobacco (cigarettes or smokeless tobacco), youth inspector gender, store type (convenience vs. all other store types), clerk gender, accessibility of tobacco products, clerks asking youth inspectors for their age, the presence or absence of signs regarding sales to minors, or rural vs. urban stratum. The same analytic techniques revealed the following associations with clerks' willingness to sell tobacco products:

• As in all Synar Inspection Study results since 2007, clerks who asked the youth inspectors for identification (which, according to protocol, youth inspectors could not provide) were much less likely to violate than clerks who did not ask for identification. Since 2007, asking for identification has been the variable most closely associated with violations.

¹ SAMHSA (Marsiglia Gray, 2011) advised states to "take steps within their control to reduce and/or eliminate the use of paid 15-year-olds" until further notice because "the employment of 15-year-old undercover minors may be restricted or prohibited by the Fair Labor Standards Act of 1938 (FLSA)."

- Youth inspectors who looked 18 or older were more likely to find clerks willing to sell tobacco products, as compared to youth inspectors who looked younger than 18.
- Clerk age was associated with violations, without a clear pattern. Unlike previous years (e.g., WYSAC, 2011), there was not a trend for older clerks to be less likely to violate. Clerks who appeared to be between the ages of 55 and 64 were most often willing to sell the tobacco products.
- Inspections that occurred in the afternoon were more likely to result in violations than inspections conducted in the morning.
- One adult supervisor was associated with a higher than typical RVR, though this was likely the result of the anomalous trip discussed above.

2. Introduction

2.1. Background

In 1992, Congress enacted the Alcohol, Drug Abuse, and Mental Health Administration Reorganization Act, which includes an amendment (section 1926) aimed at decreasing youth access to tobacco. This amendment, named for its sponsor, former Congressman Mike Synar (Democrat, Oklahoma), requires states to adopt and enforce laws prohibiting the sale of tobacco to youth under the age of 18. To be in compliance, states must also conduct annual, random, and unannounced inspections to ensure compliance with the law and develop a strategy for achieving a retailer violation rate (RVR) of less than 20.0% (Substance Abuse and Mental Health Services Administration [SAMHSA], 2010). Since 2003, the Wyoming Department of Health (WDH) has contracted with the Wyoming Survey & Analysis Center (WYSAC) at the University of Wyoming to conduct Wyoming's annual Synar Inspection Study to assess tobacco retailer's compliance with the law.

The Family Smoking Prevention and Tobacco Control Act (Tobacco Control Act; Public Law 111-31) was signed into law on June 22, 2009, giving the Food and Drug Administration (FDA) authority over the marketing, sale, and distribution of tobacco products. One of the new regulations in this act is the Regulations Restricting the Sale and Distribution of Cigarettes and Smokeless Tobacco to Protect Children and Adolescents. This regulation was designed to reduce tobacco use by children and adolescents by placing restrictions on the marketing, sale, and distribution of tobacco products. For example, the law requires tobacco retailers to verify that purchasers of tobacco products are 18 years of age or older (with photo identification of anyone 26 years of age or younger). The regulation also prohibits self-service displays and vending machines in areas accessible to youth (FDA, 2010b) and prohibits the use of terms such as light, mild, and low tar in marketing or branding cigarettes (FDA, 2010a).

2.2. Report Organization

This document contains seven sections. Sections 1 and 2 provide an executive summary and an introduction, respectively. Section 3 describes WYSAC's methods for conducting the 2012 (FFY 2013) Synar Inspection Study and for analyzing the data. Section 4 contains key findings of the study. Section 5 provides conclusions, and Section 6 contains a list of references cited in the report. Section 7 contains five (A-E) Appendices. Appendix A presents the script used to train youth inspectors. Appendix B displays the results for each question on the 2012 (FFY 2013) Synar Inspection Form. Appendix C includes detailed calculations for the inspection sampling design, the RVR, and the analyses of associations between violations and other factors. Appendix E is the data collection form used for the 2012 Synar Inspection Study.

3. Methods

3.1. Sampling Design

At the end of the 2011 (FFY 2012) Synar Inspection Study, WYSAC removed ineligible and closed outlets from the tobacco retailer list. WYSAC used this updated list of 527 outlets for the 2012 (FFY 2013) tobacco retailer list frame.

² Conducted in calendar year 2012.

As in previous years, WYSAC categorized each tobacco retail outlet into one of two strata based on its location in either an *urban* town (population 3,000 or more) or a *rural* town (population fewer than 3,000). The list frame had 389 outlets in the urban stratum and 138 outlets in the rural stratum. WYSAC used the Synar Survey Estimation System (SSES), Version 5.1, to determine the sample size for each stratum. (See Appendix C.1 for more information about the sampling calculations and procedure.) With a 20%³ safety margin for noncompletion, SSES yielded a planned sample size of 218 for the urban stratum and a planned sample size of 125 for the rural stratum, resulting in a total planned sample of 343 outlets. WYSAC drew a random sample for each stratum using IBM SPSS Statistics Version 19.

3.2. Protocol

The 2012 (FFY 2013) Synar inspections began on August 2nd and ended on August 22nd. Ten teams completed the inspections. The teams typically consisted of one adult supervisor/driver, two youth inspectors (one male and one female), and one law enforcement officer. One of the teams (Natrona and Converse Counties) consisted of one male and two female youth inspectors because the female initially hired for the team was not able to complete all the inspections. Additionally, one team (Teton County) consisted of one male and no female youth inspector because WYSAC was unable to find a female in that region to help with the inspections. A male hired as an inspector in one region (Uinta and Sweetwater Counties) became unavailable for one day of planned inspections. WYSAC chose not to replace him as a means to counteract the effect of having only a male inspector in Teton County. Overall, none of these exceptions to protocol had a large influence on the gender balance for inspections: females completed 47.3% of the inspections (males completed 52.7%). WYSAC recruited 20 youth inspectors: five 16-year-olds and fifteen 17-year-olds participated in the 2012 (FFY 2013) Synar Inspection Study.⁴

As required by the Wyoming Attorney General, a local law enforcement officer was available for every inspection. Law enforcement officers did not accompany the youth inspectors into the store. The primary role of the law enforcement officers was to observe the inspections; 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 teams conducted inspections.

WYSAC recruited adults in the Laramie, Wyoming, area to be the adult supervisors. Prior to hiring the adult supervisors, WYSAC conducted criminal background checks and reviewed the driving records of applicants. WYSAC trained all adult supervisors in the Synar Inspection Study protocol. The adult supervisors were then responsible for training the youth inspectors.

WYSAC recruited most youth inspectors by asking previous inspectors to participate again (if they were still in the eligible age range) or to provide referrals (if they had turned 18 or were no longer interested in participating). WYSAC first contacted potential youth inspectors via telephone to

³ Historically, WYSAC has used a 10% safety margin. However, the 2011 inspections discovered more out-of-businessretailers than expected, necessitating an extra inspection trip to meet minimum sample size requirements. This discovery led WYSAC to believe the retailer list may be losing accuracy (by over-inclusion). To compensate for this possibility and increase the probability of meeting SAMHSA's sample size requirements during initial inspections, WYSAC increased the safety margin to 20%, as recommended by SAMHSA (2011a, p. 50).

⁴ SAMHSA (Marsiglia Gray, 2011) advised states to "take steps within their control to reduce and/or eliminate the use of paid 15-year-olds" until further notice because "the employment of 15-year-old undercover minors may be restricted or prohibited by the Fair Labor Standards Act of 1938 (FLSA)."

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describe the project and speak with one of their parents or guardians. Once the youth inspector and the parent/guardian expressed interest, WYSAC sent them a written description of the project, a parent/guardian permission form, and hiring forms. WYSAC required completed parent permission forms before any youth inspectors could participate.

All youth inspectors resided within the area they inspected, thereby reducing travel time and eliminating the need for overnight stays by the youth inspectors. To ensure consistency in buying procedure, all youth inspectors followed a written script (see Appendix A) and role-played with the adult supervisors until they mastered the buying procedure. Adult supervisors also trained youth inspectors to observe and describe certain aspects of the stores and clerks (i.e., the location of tobacco products, clerks' stated price of tobacco products, the presence of messages about not selling tobacco products to minors, the approximate age of the clerk, and the gender of the clerk).

Upon arriving at an outlet, one youth inspector (alternating between males and females) entered the outlet and, following the buyer script, attempted to purchase tobacco. During most inspections, youth inspectors attempted to purchase Marlboro Gold cigarettes. When unavailable, females attempted to purchase Camel Blues, and males attempted to purchase Camels. Based on WDH's interest in variables associated with violation rates for smokeless tobacco, WYSAC increased the frequency of the inspections for smokeless tobacco in 2012 (FFY 2013) from one out of every five inspections (as it was in 2010 and 2011) to one out of every three inspections. During smokeless inspections, the youth inspectors (regardless of gender) asked for Skoal Wintergreen long cut or Copenhagen Wintergreen long cut (when Skoal Wintergreen was unavailable). In 2010 (the first year to include smokeless tobacco. WYSAC added flavors and cut to the 2011 protocol to improve the realism of purchase attempts. WYSAC used data on popular brands, flavors, and cuts of tobacco (University of Medicine and Dentistry of New Jersey [UMNDJ]-School of Public Health, 2006) to choose the flavor and cut for the script.

When youth inspectors knew anyone in the store, they left the store without attempting a purchase and returned to the car. If the second youth inspector did not know anyone in the store, he or she would then enter the store and attempt the buy. If both youth inspectors knew someone in the store, the team returned later to attempt the buy.

Survey protocol required youth inspectors to leave their identification in the car with the adult supervisors or to leave it at home. This strategy allowed youth inspectors to answer honestly if a clerk asked for identification, saying, "I don't have it on me." Similarly, if asked their age, youth inspectors were trained to answer honestly. The youth inspectors each carried approximately \$1.00 in cash, so if a clerk was willing to sell the tobacco, they could not produce enough money to pay for it. In accordance with protocol, no purchase attempts were consummated. The inspection was completed either by a clerk's refusal to sell or by a violation (e.g., the clerk stated the price of the product and waited for payment).

Immediately following each inspection, youth inspectors returned to the vehicle and verbally reported the details of the inspection to the adult supervisors, who then entered this information on a data form. (See Appendix E for a copy.) WYSAC collected the forms at the end of each inspection trip. The information reported on the form includes the following:

- Youth inspector name, age, and gender;
- Store name and address (with corrections for the list frame as needed);
- Inspection date and time of day (morning or afternoon);
- Completion status of the inspection (e.g., ineligible outlet, eligible outlet that was not inspected, completed inspection);
- Clerk gender and estimated age;
- Type and brand of tobacco product requested;
- Location of tobacco products in the store (i.e., accessible or not for cigarettes and smokeless tobacco);
- Outcome of the buy attempt (e.g., violation, nonviolation, noncompletion);
- Clerks' stated price for the tobacco products, and
- The presence of any visible youth access messages (e.g., "No Sales to Minors").

Adult supervisors photographed each youth inspector on their first day of inspections. When the inspections were complete, WYSAC asked 21 raters unfamiliar with the Synar project to estimate the age of each youth inspector. WYSAC then calculated the mean for the 21 ratings to determine the *perceived age* for each inspector. WYSAC used these mean ratings to assess whether the youth inspectors looked their age, as SAMHSA recommends (SAMHSA, 2010). These ratings allowed WYSAC to statistically test for whether and under what conditions the youth inspectors who *looked* 18 or older made more successful purchase attempts (i.e., more violations). The lowest perceived age was 16.1 for the youngest-looking youth and the highest perceived ages of 18 or older, and five had perceived ages younger than 18. Because every youth inspector was and looked younger than 26, FDA regulations (FDA, 2010b) indicate that every youth inspector should have been asked for identification on every inspection.

3.3. Inspected Outlets

Of the 343 outlets in the sample, 37 were *ineligible*. These outlets were ineligible for the following reasons: out of business (16), did not sell tobacco products (10), inaccessible to youth (5), temporary closure (4), could not be located (1), and was a duplicate in the sample frame (1). Thus, the total number of *eligible* stores was 306. Another 10 outlets were eligible but *not inspected*. These outlets were not inspected for the following reasons: both youth inspectors knew salesperson (5), in operation but closed at time of visit (2), the team ran out of time (2), and the outlet sold only smokeless tobacco and cigars (1).⁵ WYSAC *inspected* 296 outlets, or 96.7% of the eligible outlets in the sample. Of these, 185 outlets were in the urban stratum and 111 outlets were in the rural stratum.

3.4. Analyses

To calculate the weighted RVR and most of the descriptive statistics reported in Section 3.3, WYSAC used SSES Version 5.1, an add-in for Microsoft Excel 2010. SAMHSA distributes and recommends use of this software to facilitate reporting of analyses by each state. To facilitate

⁵ Contrary to protocol, the youth inspector did not change the inspection from cigarettes to smokeless tobacco.

identification of SSES output tables, WYSAC copied the relevant output tables from SSES directly into this document, preserving the formatting as generated by SSES (e.g., purple shading).

WYSAC conducted two types of crosstab analyses (Pearson's chi-squared test or Fisher's exact test) to identify variables associated with violations. Depending on the specific analysis, WYSAC used Pearson's chi-squared test or Fisher's exact test to identify statistically significant associations. Fisher's exact test is an alternative to Pearson's chi-squared test. It provides more reliable results than Pearson's chi-squared in analyses where conditions in the crosstabs have few observations (as a general rule, a condition with zero observations, e.g., no clerks refusing to sell smokeless tobacco when they did not ask for identification, or 25% of conditions with fewer than five observations).⁶ In Appendix B, WYSAC reports which test WYSAC used for each reported association. In the report, WYSAC reports significant differences when p < .05, suggesting that one can say with 95% confidence that the differences are not due to chance. In general, WYSAC accounts for the stratified sample by reporting weighted data (consistent with SSES). However, WYSAC occasionally reports unweighted counts for clarity.

In previous years (2009, 2010), WYSAC created a logistic regression model to determine the most influential factors in predicting whether a clerk would attempt to sell tobacco products to minors, when statistically controlling for the other predictors. In those years, the primary predictor in models of violations was whether clerks asked youth inspectors for identification. In 2012 (FFY 2013), WYSAC could not perform a similar logistic regression. Although asking for identification and violations were strongly related, they were not so strongly related that WYSAC could treat asking for identification (as WYSAC did in 2011). When WYSAC attempted to model predictors of violations, asking for identification (or not) was a necessary variable (because of the strength of the association), but it was too strong for any other associations to be statistically significant. In effect, it would have masked the effects of other variables in the model. Therefore, WYSAC could not use the 2012 data to develop a good logistic regression model for predicting violations.

⁶ Because of the unique characteristics of Fisher's exact test, two tailed tests (as were used with Pearson's chi squared) tend to be overly conservative (Agresti, 2007 pp. 45–48). Therefore, WYSAC used one-tailed Fisher's exact tests. This decision did not affect conclusions in this report.

4. Key Findings

4.1. Weighted Retailer Violation Rate (RVR) as Calculated by SSES

The noncompliance rate or retailer violation rate (RVR) is the percentage of stores that attempted to sell to a youth inspector. WYSAC weighted the data to account for different sampling ratios (i.e., sampling different percentages of the rural and urban outlets) and different completion rates for the two strata (see Appendix C.2 for the RVR formula and detailed calculations). In 2012 (FFY 2013), the overall weighted RVR was 14.4%. Because of changes to the Synar Inspection Study methods (i.e., changing the protocol for and ratio of smokeless tobacco inspections, changing recruitment of youth inspectors), results from 2012 should not be compared to nor combined with other results (i.e., to conduct trend analyses; Table 1). Additionally, as discussed below (in Section 4.2.2), the unusually high RVR in 2012 may be unduly influenced by the results of a single inspection trip.

Synar Inspection Study year	RVR (in %)	95% confidence interval of RVR (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
2010	7.3	5.2–9.3
2011	8.7	5.7–11.8
2012	14.4	11.8-16.9

Table 1. Weighted Retailer Violation Rates (RVRs), 1996–2012

SSES provided a summary table of Synar Inspection Study estimates and sample sizes (Table 2). The standard error was $\pm 1.3\%$, which meets the SAMHSA precision requirement of less than $\pm 3.0\%$. Because WYSAC drew a sample of outlets and did not inspect *all* outlets in Wyoming, SSES calculated a 95% confidence interval (to account for the possibility of a sampling error). Therefore, as shown in Table 2, WYSAC is 95% confident that the "true" value of the RVR is between 11.8% and 16.9%. Even when accounting for the confidence interval, the likely maximum RVR (16.9%) is still below the 20% noncompliance standard set by SAMHSA (see SAMHSA, 2011b, for details about SSES).

Table 2. Synar Inspection Study Estimates and Sample Sizes

State	WY
Federal Fiscal Year (FFY)	2013
Date	10/3/2012 9:14
Data	Book1
Analysis Option	Stratified SRS with FPC

Estimates

Estimates			
Unweighted Retailer Violation Rate	14.5%		
Weighted Retailer Violation Rate	14.4%		
Standard Error	1.3%		
Is SAMHSA Precision Requirement met?	YES		
Right-sided 95% Confidence Interval	[0.0%, 16.5%]		
Two-sided 95% Confidence Interval	[11.9%, 16.9%]		
Design Effect	1.0		
Accuracy Rate (unweighted)	89.2%		
Accuracy Rate (weighted)	88.6%		
Completion Rate (unweighted)	96.7%		

Sample Size for Current Year

Effective Sample Size	237
Target (Minimum) Sample Size	237
Original Sample Size	343
Eligible Sample Size	306
Final Sample Size	296
Overall Sampling Rate	63.2%

4.2. Additional Analyses

WYSAC used SPSS Statistics Version 19 to identify variables associated with retailer violations. WYSAC weighted the data by strata with a noncompletion adjustment factor, as suggested by SAMHSA and as programmed in SSES. A summary of the statistical comparisons follows in Table 3. (Technical details are provided in Appendix C.3.) A discussion of the associations follows the table. Because percentages reported in this section demonstrate RVRs within groups, they do not total 100% within or across figures. **RVRs and other percentages differ slightly between the figures and Appendix B because of missing data in follow-up analyses (e.g., if a youth inspector did not report whether the clerk asked for identification for a specific inspection).**

Variable	High RVR situation (overall)	High RVR situation (cigarettes)	High RVR situation (smokeless tobacco)
Tobacco type	No statistically significant association	Not applicable	Not applicable
Ask for identification	Not asking for identification	Not asking for identification	Not asking for identification
Perceived age of youth inspector, dichotomized*	Looked 18 or older	Looked 18 or older	No statistically significant association
Estimated clerk age	Clerks aged 55-64	Clerks aged 55-64	Clerks aged 55-64
Time of visit	РМ	РМ	No statistically significant association
Adult supervisor	1 anomalous supervisor	1 anomalous supervisor	1 anomalous supervisor

	Table 3.	Tested	Associations	with	Retailer	Violation,	by	Tobacco	Туре
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* Dichotomized as looking younger than 18 versus looking 18 or older.

As seen in Table 3, the association between all variables and violations are the same overall and for cigarettes. Perceived age of the youth inspector (18 or older vs. younger than 18) and time of visit were associated with violations overall and for cigarettes, but not smokeless tobacco.

Although type of tobacco was not statistically significantly associated with violations (Figure 1), WDH is interested in identifying differences by tobacco type. Therefore, in the following discussion and figures, WYSAC presents the associations between retailer violations and tobacco type separately for each type of tobacco.

Figure 1. Association between Tobacco Type and Violations



Youth inspector gender, store type, youth access signage, clerk gender, accessibility of any tobacco product, clerks asking youth inspectors for their age, and strata were not associated with overall, cigarette-specific, nor smokeless-tobacco-specific RVRs. Therefore, WYSAC does not present detailed results for those variables.⁷ In some years (e.g., WYSAC, 2010, 2011), youth inspector gender has been a statistically significantly associated with violations.

4.2.1. Significant Associations with Violations

In this section, WYSAC reports detailed results for variables associated with clerks' willingness to sell tobacco to minors. Unless otherwise noted, all associations are statistically significant, p < .05.

Clerks Asking for Identification

Clerks who asked youth inspectors for identification were much less likely to violate than clerks who did not ask for identification (Figure 2). Ten out of the 257 clerks who *asked* for identification (which the youth inspectors could not produce) were willing to sell the tobacco product; 33 out of the 38 clerks who did *not* ask for identification were willing to sell the tobacco product.⁸ *Every* inspection for smokeless tobacco in which the clerk did not ask the youth inspector for identification.





⁷ Detailed results are available upon request.

⁸ These are the unweighted frequencies. Percentages reported throughout the body of the report are based on weighted analyses. Thus, they will not match hand calculations based on unweighted frequencies.

Perceived Age of Youth Inspectors

WYSAC dichotomized youth inspectors into two groups: youth inspectors who looked younger than 18 and youth inspectors who looked 18 or older (based on the mean of 21 independent, blind ratings for each youth inspector). Clerks were more likely to attempt to sell tobacco (both types, combined, and cigarettes, separately) to youth inspectors who looked 18 or older (Figure 3). For smokeless tobacco inspections, the association between perceived age of youth inspectors and violations was not statistically significant.





Estimated Clerk Age

Clerk age (as estimated by the youth inspectors) was associated with willingness to sell tobacco products, though WYSAC found substantial variability (Figure 4). Because very few clerks looked younger than 18 (six, unweighted), the results for that group must be interpreted with caution. For all three classifications of tobacco type, clerks with estimated ages between 55 and 64 years were most likely to violate.





Note. Because very few (six, unweighted) clerks had estimated ages younger than 18, the results for that group must be interpreted with caution.

Time of Visit

Afternoon visits were more likely to result in violations overall and for cigarette inspections, but not statistically significantly so for smokeless tobacco inspections (Figure 5).





Adult Supervisor

One supervisor was associated with significantly higher violation rates (overall and for each tobacco type) than the other supervisors (Figure 6). However, further analyses suggest that Adult Supervisor Four's unusually high RVR was because a single trip had an unusually high RVR.

Figure 6. Association between Adult Supervisor and Violations



4.2.2. Explaining the 2012 Increase in RVR

Because the RVR in 2012 (FFY 2013) was higher than the RVR in previous years (2000-2011/FFYs 2001–20012), WYSAC conducted additional analyses (the number of inspections per trip were insufficient to conduct formal statistical tests) and found that one trip (Trip 5) had an unusually high RVR (64.2%) compared to the other nine trips (8.1%, combined). Trip 5 accounted for 21 out of the 43 violations. The two youth inspectors who conducted inspections on Trip 5 were the oldest looking male youth inspector and the oldest looking female youth inspector. Although the perceived ages of the youth inspectors on this trip provide a likely explanation for the higher RVR in 2012, WYSAC cannot rule out geographic factors (e.g., law enforcement practices), chance, or the possibility that the adult supervisor may have trained this team somewhat differently. This last possibility appears unlikely because the same supervisor trained a team on a different trip that had a more typical RVR (Trip 6, RVR of 8.6%).

Trip	Perceived age of each youth inspector	Overall (weighted) RVR	Unweighted number of violations out of # inspections
1	19.7 and 16.7	2.8%	1 out of 45
2	17.9, 17.4, and 16.1	3.4%	1 out of 34
3	18.7 and 18.1	11.1%	4 out of 30
4	19.2 and 18.3	16.7%	4 out of 24
5	21.4 and 19.8	64.2%	21 out of 32
6	19.5 and 18.7	8.6%	3 out of 25
7	18.9 and 17.2	12.3%	5 out of 40
8	20.3	0%	0 out of 13
9	20.1 and 19.7	0%	0 out of 26
10	20.2 and 18.9	15.9%	4 out of 27

Table 4. RVR by Inspection Trip

Note. The same adult supervised Trips 5 and 6.

To illustrate the effect of this trip on the statewide RVR, WYSAC used SSES to determine the RVR when these inspections were excluded from the sample. The weighted RVR for the other nine trips, combined, was 8.1% [95% CI 5.8%–10.3%], similar to previous RVRs (see Table 1, above).

5. Conclusions

The 2012 (FFY 2013) RVR was 14.4%, below the federally stipulated maximum of 20.0%, even when accounting for error with a 95% confidence interval. Because of changes to inspection methods, results from the 2012 Synar Inspection Study should not be compared to nor combined with results from previous years (e.g., to discuss trends in the RVR).

In 2012 (FFY 2013), WYSAC also changed the methods of inspection for smokeless tobacco (first included in 2010). In 2012, WYSAC increased the ratio of smokeless tobacco inspections from the ratio used in 2010 (FFY 2011) and 2011 (FFY 2012). In 2011, WYSAC found that the RVRs for cigarettes (6.4%) and smokeless tobacco (19.0%) were very different (WYSAC, 2011). WYSAC found the RVRs in 2010 and 2012, however, not to be statistically significantly different from each other. With only three years of data regarding tobacco type and different procedures (e.g., addition of flavor and cut in 2011, increased inspection ratio in 2012) in each year, it is too soon to determine

if tobacco type is generally related to RVR. Continuing to use the same procedures for smokeless tobacco inspections would address this question.

From 2000 through 2011 (FFYs 2001 through 2012), the overall RVR remained between 7% and 10%. In 2012 (FFY 2013), the RVR increased. In the same year, the perceived ages of youth inspectors increased substantially as a direct consequence of no longer employing 15-year-olds in this role.⁹ In 2011 (FFY 2012), WYSAC employed 17 youth inspectors: 41% had perceived ages of 18 or older and 58% had perceived ages younger than 18. In contrast, in 2012, WYSAC employed 20 youth inspectors: 75% had perceived ages of 18 or older and 25% had perceived ages younger than 18. WYSAC suspects these changes to the recruitment of youth inspectors contributed to the higher than usual RVR in 2012 (though WYSAC cannot rule out changes in clerk behavior or chance as contributing factors to this difference).

Even more important than the changes in methods, however, was the influence of a single trip with an unusually high RVR. When WYSAC excluded inspections from this trip, the RVR (8.1%) was similar to that of previous years. The two youth who conducted the inspections on this trip were the oldest-looking male and female inspectors, suggesting a possible explanation for the anomaly. However, because the youth involved in this trip did not conduct inspections elsewhere, WYSAC cannot determine whether other factors (e.g., geographic factors or specific youth attributes) are associated with the unusually high RVR for this trip. Because there were too few inspections per trip to conduct formal statistical tests, WYSAC cannot rule out chance as a contributing factor.

WYSAC also considered the possibility that the change in RVR may have been related to changes in the implementation of county-level prevention programming, including a change in the WDH's approach to prevention with associated changes among community staff during the summer of 2012 (FFY 2013). If this had been the case, independent inspections conducted by WASCOP (and also analyzed by WYSAC) would have demonstrated a similar change. The WASCOP inspections did not demonstrate the same increase (WYSAC, 2012). This contrast between inspection projects further supports the explanation that the 2012 Synar Inspection Study RVR was heavily influenced by one anomalous inspection trip.

Despite the changes to methods over time and the unusually high RVR, several variables related to clerks' willingness to sell tobacco products to minors have remained stable. As in previous years, the single variable most associated with violations remains clerks asking for identification. Few clerks who ask for identification are willing to sell tobacco products to youth who cannot produce identification. Older perceived or actual (depending on year) age of youth inspectors has also consistently been associated with violations.

In 2009 (FFY 2010) and 2010 (FFY 2011), WYSAC created logistic regression models to determine the most influential factors in predicting whether clerks would attempt to sell tobacco products to minors when accounting for the effects of other variables. In 2011 (FFY 2012), clerks asking for identification and their willingness to sell were almost perfectly correlated (only one clerk who asked for identification was willing to sell a tobacco product), so WYSAC created a model that used asking for identification as a proxy for willingness to sell. In 2012 (FFY 2013), the association between the two variables was not sufficient to treat asking for identification as a proxy for willingness to sell, but

⁹ SAMHSA (Marsiglia Gray, 2011) advised states to "take steps within their control to reduce and/or eliminate the use of paid 15-year-olds" until further notice because "the employment of 15-year-old undercover minors may be restricted or prohibited by the Fair Labor Standards Act of 1938 (FLSA)."

the association was too strong to allow for the development of a useful logistic regression model for predicting violations in 2012.

As in 2011 (FFY 2012), WYSAC analyzed the possible influence of adult supervisors on the results of inspections. Although preliminary analyses suggested a particular adult supervisor may have been associated with an atypically high RVR in 2012 (FFY 2013), this supervisor was assigned to the trip with the unusually high RVR. The other trip this adult supervised had an RVR similar to the combined RVR of the other trips. Therefore, WYSAC concludes that the youth or geographic factors (as discussed above) are the best explanations for the high RVR linked to that trip and supervisor. In future years, WYSAC will continue to analyze results to identify potential influences of adult supervisors or specific trips on the statewide RVR.

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7. Appendices

Appendix A. Synar Inspection Study Script

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

Script and instructions:

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

In two out of three inspections, you will ask for cigarettes. Before you go into the store, your supervisor will let you know what to ask for. If you're asking for cigarettes, follow this script:

If the cigarettes are within reach: Select a pack of Marlboro Golds and place it on the counter.

If the cigarettes are behind the counter: Say: "I'd like a pack of Marlboro Golds."

If the store does not have Marlboro Golds: Young women pick up a pack of Camel Blues or ask: "How about a pack of Camel Blues?" Young men pick up a pack of Camels or ask: "How about a pack of Camels?" If the store has none of these options: Say: "Then whatever you've got."

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 dollar, then say, "I don't have enough money, never mind," or "Sorry, I thought this was a \$10 bill," then leave the store.

If another customer offers to buy the cigarettes for you: Say: "No, thank you," then leave the store.

For every third inspection, you will ask for smokeless tobacco (chew), instead of cigarettes. Before you go into the store, your supervisor will let you know what to ask for. If you're asking for smokeless tobacco, follow this script:

If the smokeless tobacco is within reach: Select a can of Skoal Wintergreen and place it on the counter.

If the smokeless tobacco is behind the counter: Say: "I'd like a can of Skoal Wintergreen."

If the store does not have Skoal: Pick up a can of Copenhagen Wintergreen or ask, "How about a can of Copenhagen Wintergreen?"

For either brand, if the clerk asks what cut you want (likely a choice between long cut and fine cut)" Say: "Long cut."

If the store has none of these options: Say: "Then whatever you've got." 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 dollar, then say, "I don't have enough money, never mind," or "Sorry, I thought this was a \$10 bill," then leave the store.

If another customer offers to buy the chem for you: Say: "No, thank you," then leave the store.

Appendix B. Synar Inspection Study Results

For every question on the 2012 (FFY 2013) Synar Inspection Form, WYSAC provides the unweighted frequencies, unweighted percentages, and weighted percentages (except items 6 and 7, which ask about eligibility and inspection status, respectively) in this appendix. Of the 343 outlets in the sample, 37 were *ineligible* (see items 6 and 6a). Another 10 outlets were eligible, but *not inspected* (see items 7 and 7a). Thus, WYSAC has a *valid* total of 296 inspected outlets. For every question (except for 6 and 7), WYSAC only reports information for the 296 stores included in the analyses. For questions 6 and 7, WYSAC provides information on all 343 stores in the sample and does not provide weighted percentages. Because of rounding, not all percentages add to 100.0%. Because analyses in the report omitted outlets with missing data on specific items (e.g., if a youth inspector did not report the location of cigarettes, it is treated as missing data in this appendix and was not included in the analysis testing for an association between accessibility of tobacco products and violation), reported percentages in this appendix may differ from those reported in the body of the report. For items with missing data, WYSAC provides explanations and unweighted frequencies of missing data.

1. Inspection month

	Frequency	Valid, unweighted percent	Valid, weighted percent
August	296	100.0	100.0
Valid total	296	100.0	100.0

2. Time of visit

	Frequency	Valid, unweighted percent	Valid, weighted percent
AM	126	42.6	44.2
PM	170	57.4	55.8
Valid total	296	100.0	100.0

3. Age of youth inspector

	Frequency	Valid, unweighted percent	Valid, weighted percent
Stores inspected by 16-year-olds	73	24.7	25.5
Stores inspected by 17-year-olds	223	75.3	74.5
Valid total	296	100.0	100.0

4. Gender of youth inspector

	Frequency	Valid, unweighted percent	Valid, weighted percent
Stores inspected by males	156	52.7	53.1
Stores inspected by females	140	47.3	46.9
Valid total	296	100.0	100.0

5. Outlet county

	Frequency	Valid, unweighted percent	Valid, weighted percent	
Laramie	27	9.1	10.1	
Natrona	25	8.4	9.4	
Sweetwater	25	8.4	9.0	
Fremont	22	7.4	7.5	
Carbon	18	6.1	5.9	
Sheridan	17	5.7	6.3	
Campbell	16	5.4	6.2	
Lincoln	15	5.1	3.6	
Uinta	15	5.1	4.9	
Albany	14	4.7	5.4	
Park	13	4.4	4.7	
Teton	13	4.4	4.8	
Big Horn	12	4.1	2.9	
Crook	11	3.7	2.6	
Sublette	11	3.7	2.6	
Converse	9	3.0	3.3	
Platte	8	2.7	2.4	
Goshen	7	2.4	2.3	
Johnson	7	2.4	2.6	
Niobrara	3	1.0	0.7	
Washakie	3	1.0	1.2	
Weston	3	1.0	0.9	
Hot Springs	2	0.7	0.8	
Total	296	100.0	100.0	

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

	Frequency	Valid, unweighted percent
Yes	306	89.2
No	37	10.8
Valid total	343	100.0

Note. Includes all tobacco retailers in the sample, unlike the majority of tables in Appendix B.

6a.	If NO,	mark	one	of the	folle	owing	reasons	the store	was	ine	ligi	ble	for	ins	pectic	on:
						- · · O					0					

	Frequency	Valid, unweighted percent
Out of business	16	43.2
Does not sell tobacco products	10	27.0
Inaccessible to youth	5	13.5
Temporary closure	4	10.8
Could not locate	1	2.7
Duplicate	1	2.7
Valid total	37	100.0

Note. Includes only ineligible tobacco retailers from item 6, unlike the majority of tables in Appendix B.

	Frequency	Valid, unweighted percent
Yes	296	96.7
No	10	3.3
Valid total	306	100.0
Ineligible	37	
Total	343	

7. If outlet is eligible, was inspection completed?

Note. Includes all tobacco retailers in the sample, unlike the majority of tables in Appendix B.

7a. If NO. mark	one of the f	ollowing reason	is the inspection	was not completed:
1 a. 11 1 1 0, 111a11	$\underline{\mathbf{one}}$ or the r	ono wing reason	io une mopeedor.	was not completed.

	Frequency	Valid, unweighted percent
Both youth inspectors knew someone in the store	5	50.0
In operation but closed at time of visit	2	20.0
Ran out of time	2	20.0
Other (specify): see below	1	10.0
Valid total	10	100.0

Note. Includes only uninspected, eligible tobacco retailers from item 7.

"Other" response:

• Sold chew and cigars only (1)¹⁰

¹⁰ Contrary to the training protocol, the youth inspector did not change the inspection from asking for cigarettes to asking for chewing tobacco.

8. Type of store

	Frequency	Valid, unweighted percent	Valid, weighted percent
Convenience (with gas)	193	65.2	64.9
Grocery store	55	18.6	18.2
Other (specify): see below	16	5.4	5.2
Discount/Superstore (e.g., Wal-Mart, Target)	10	3.4	3.8
Pharmacy/Drug store	9	3.0	3.6
Convenience (no gas)	7	2.4	2.0
Tobacco store	5	1.7	2.0
Restaurant/Cafe	1	0.3	0.2
Valid total	296	100.0	100.0

"Other" responses:

- Truck stop (3)
- Casino/Gift shop (2)
- Farmers co-op/Gas station (2)
- Bait and tackle shop (1)
- Bar-and-grill (1)
- Bookstore (1)
- Gallery/Cigar store (1)
- General store/post office/bar (1)
- Marina (1)
- Newsstand (1)
- Skate shop (1)
- Tobacco with gas (1)

9. Location of cigarettes

	Frequency	Valid, unweighted percent	Valid, weighted percent
Not accessible (customers require assistance from an employee to obtain cigarettes)	278	95.5	95.7
Accessible (customers can pick up a pack of cigarettes without the assistance of an employee)	9	3.1	3.0
Youth could not locate	4	1.4	1.3
Valid total	291	100.0	100.0
Chewing tobacco inspections with no answer on cigarette location	4		
Missing data	1		
Total	296		

10. Location of chewing tobacco

	Frequency	Valid, unweighted percent	Valid, weighted percent
Not accessible (customers require assistance from an employee to obtain cigarettes)	267	95.4	95.5
Accessible (customers can pick up a pack of cigarettes without the assistance of an employee)	9	3.2	3.3
Youth could not locate	4	1.4	1.2
Valid total	280	100.0	100.0
Cigarette inspections with no answer on chewing tobacco location	16		
Total	296		

Constructed variable. Overall tobacco accessibility

	Frequency	Valid, unweighted percent	Valid, weighted percent
Neither cigarettes nor chewing tobacco accessible (customers require assistance from an employee to obtain tobacco products)	261	96.0	96.1
Both cigarettes and chewing tobacco accessible (customers can pick up tobacco products without the assistance of an employee)	7	2.6	2.7
Chewing tobacco was accessible, cigarettes were inaccessible	2	0.7	0.7
Cigarettes were accessible, chewing tobacco was inaccessible	2	0.7	0.5
Valid Total	272	100.0	100.0
Chewing tobacco inspections with no answer on cigarette location	4		
Cigarette inspections with no answer on chewing tobacco location	16		
Missing data (includes youth inspector could not locate)	4		
Total	296		

Note. Treating "youth inspector could not locate" as missing data is a cautious approach: WYSAC does not know if an outlet sold the type of tobacco that was not the target of the inspection. Youth inspectors may have not seen the product, but it could still be for sale. Treating this response as an indication that the store did not sell that product (and, hence, it would not be accessible) risks false negatives. Treating this response as missing or valid data did not affect the conclusions in the report.

	Frequency	Valid, unweighted percent	Valid, weighted percent
Yes	275	94.2	94.4
No	17	5.8	5.6
Valid total	292	100.0	100.0
No answer	4		
Total	296		

11. Were there any youth access signs present in the store (e.g. "No Sales to Minors")?

12. Clerk gender

	Frequency	Valid, unweighted percent	Valid, weighted percent
Female	218	73.6	71.4
Male	78	26.4	28.6
Valid total	296	100.0	100.0

13. Approximate age of clerk

	Frequency	Valid, unweighted percent	Valid, weighted percent
Under 18	6	2.0	1.8
18-24	47	15.9	16.3
25-34	77	26.0	27.9
35-44	76	25.7	25.3
45-54	48	16.2	15.1
55-64	26	8.8	8.4
65-85	16	5.4	5.2
Valid total	296	100.0	100.0

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

	Frequency	Valid, unweighted percent	Valid, weighted percent
Yes (violation)	43	14.5	14.4
No (nonviolation)	253	85.5	85.6
Valid total	296	100.0	100.0

	Frequency	Valid, unweighted percent	Valid, weighted percent
\$2.00-4.50	11	27.5	28.8
\$4.51-4.90	4	10.0	10.6
\$4.91-5.49	13	32.5	32.4
\$5.50-8.00	12	30.0	28.3
Valid Total	40	100.0	100.0
Missing	3		
Not applicable, non- violation	253		
Total	296		

14a. If YES, how much was the pack/can?

Constructed variable. If YES, how much was the pack of cigarettes?

	Frequency	Valid, unweighted percent	Valid, weighted percent
\$2.00-4.50	3	11.5	9.8
\$4.51-4.90	2	7.7	9.8
\$4.91-5.49	11	42.3	41.5
\$5.50-8.00	10	38.5	39.0
Valid Total	26	100.0	100.0
Missing	3		
Not Applicable, nonviolation	180		
Not applicable, chewing tobacco inspection	87		
Total	296		

Constructed variable. If YES, how much was the can of chewing tobacco?

	Frequency	Valid, unweighted percent	Valid, weighted percent
\$2.00-4.50	8	57.1	63.6
\$4.51-4.90	2	14.3	13.6
\$4.91-5.49	2	14.3	13.6
\$5.50-8.00	2	14.3	9.1
Valid Total	14	100.0	100.0
Not applicable, nonviolation	73		
Not applicable, cigarette inspection	209		
Total	296		

15. What type of tobacco did the youth inspector ask for? (Every third inspection should be for chewing tobacco.)

Tobacco type	Frequency	Valid, unweighted percent	Valid, weighted percent
Cigarettes	209	70.6	69.4
Chewing tobacco	87	29.4	30.6
Valid total	296	100.0	100.0

Tobacco type	Tobacco brand	Frequency	Valid, unweighted percent	Valid, weighted percent
	Marlboro Gold	163	55.3	54.3
Cigarottos	Marlboro	21	7.1	6.9
Cigarettes	Camel Blue	15	5.1	5.0
	Camel	9	3.1	2.8
Smokeless	Skoal Wintergreen	80	27.1	28.2
tobacco	Copenhagen Wintergreen	5	1.7	1.7
	Grizz (chewing tobacco)	1	0.4	0.4
Other	Youth inspector improvised and asked for a cigar when cigarette brands were not available	1	0.4	0.4
	Valid total	295	100.0	100.0
No answer	Clerk asked youth inspector for identification before the youth inspector initiated the inspection	1		

16. What tobacco brand was attempted to be purchased?

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

	Frequency	Valid, unweighted percent	Valid, weighted percent
Yes	257	87.1	86.6
No	38	12.9	13.4
Valid total	295	100.0	100.0
No answer	1		
Total	296		

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

	Frequency	Valid, unweighted percent	Valid, weighted percent
No	269	93.4	93.4
Yes	19	6.6	6.6
Valid total	288	100.0	100.0
No answer	8		
Total	296		

Appendix C. Detailed Calculations for the 2012 (FFY 2013) Synar Inspection Study

C.1. Inspection Study Sampling Design

Tables C-1 and C-2 provide information on the sample sizes for the two strata, depicting output from 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. Because WYSAC conducted the sample size calculations separately for each stratum, the outlet frame size is specific to the stratum (urban or rural). The original list frame had 389 urban municipality outlets and 138 rural 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 rural municipality RVR from last year, 2011, was 8.6% and the urban municipality RVR from last year, 2011 (FFY 2012)
- **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. Because WYSAC 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 eligible for the Synar survey. This percentage is specific to each stratum. The expected accuracy rate for the rural stratum was 92.8% and 87.6% for the urban stratum.
- Expected Completion Rate is the percentage of stores inspected by last year's inspection teams. 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. The expected completion rate for the rural stratum was 88.1% and 85.9% for the urban 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 WYSAC to account for ineligible outlets (e.g., businesses that had closed, were not accessible to minors, or did not sell tobacco) on the list frame. WYSAC used a safety margin of 20.0% for each stratum.

Once WYSAC 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. Numerical values are in Tables C-1 (rural strata) and C-2 (urban strata).

- 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. Because the design effect for both strata is 1, the effective sample size is the same as the target sample size.
- **Planned Original Sample Size** is the actual sample size WYSAC 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 C-1. SSES Sample Size Output for the Rural Sampling Frame

Synal Sulvey	
State	WY
FFY	2013
Date	7/5/2012 15:25
Input Information	
Option for 95% Confidence Interval	One-Sided
Outlet Frame Size	138
Expected Retailer Violation Rate	8.90%
Design Effect	1
Expected Accuracy Rate	88.10%
Expected Completion Rate	97.60%
Safety Margin Used	20%
Sample Size	
Effective Sample Size	89
Target(Minimum) Sample Size	89
Planned Original Sample Size	125

Synar Survey

Table C-2. SSES Sample Size Output for the Urban Sampling Frame

Synar Survey

State	WY
FFY	2013
Date	7/5/2012 15:27
Input Information	
Option for 95% Confidence Interval	One-Sided
Outlet Frame Size	389
Expected Retailer Violation Rate	8.60%
Design Effect	1
Expected Accuracy Rate	85.90%
Expected Completion Rate	95.10%
Safety Margin Used	20%
Sample Size	
Effective Sample Size	148
Target(Minimum) Sample Size	148
Planned Original Sample Size	218

Based on the FFY 2013 (calendar year 2012) Synar results, the input values for the FFY 2014 (calendar year 2013) Synar inspections are as follows:

- Rural stratum
 - o Expected RVR = 17/111 = 15.3%
 - Expected accuracy rate = 116/125 = 92.8%
 - Expected completion rate = 111/116 = 95.7%
- Urban stratum
 - Expected RVR = 26/185 = 14.1%
 - Expected accuracy rate = 190/218 = 87.2%
 - Expected completion rate = 185/190 = 97.4%

C.2. RVR Calculations

WYSAC estimated the number of total outlets eligible for inspection in the list frame by

$$N_{urban}\left(\frac{n_{1\ urban}}{n_{urban}}\right) + N_{rural}\left(\frac{n_{1\ rural}}{n_{rural}}\right) = N_{total}$$

where

 $\begin{array}{ll} N_{total} &= \text{the estimated number of total outlets eligible for inspection in the list frame} \\ N_{urban} &= \text{the number of urban stratum outlets on the list frame} \\ n_{1\,urban} &= \text{the number of outlets eligible for inspection within the urban stratum} \\ n_{urban} &= \text{the number of outlets in the original sample within the urban stratum} \\ N_{rural} &= \text{the number of rural stratum outlets on the list frame} \\ n_{1\,rural} &= \text{the number of outlets eligible for inspection within the rural stratum} \\ n_{rural} &= \text{the number of outlets eligible for inspection within the rural stratum} \\ n_{rural} &= \text{the number of outlets in the original sample within the rural stratum} \\ \end{array}$

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

$$389 \ \frac{190}{218} + 138 \frac{116}{125} = 467.1$$

WYSAC estimated the weighted RVR by

$$\left(\frac{x_{urban}}{n_{2\ urban}}\right)\left(\frac{n_{1\ urban}}{n_{urban}}\right)\left(\frac{N_{urban}}{N_{total}}\right) + \left(\frac{x_{rural}}{n_{2\ rural}}\right)\left(\frac{n_{1\ rural}}{n_{rural}}\right)\left(\frac{N_{rural}}{N_{total}}\right) = weighted\ RVR$$

Where, in addition to the variables defined above

 x_{urban} = the number of noncompliant outlets within the urban stratum $n_{2 urban}$ = the number of outlets inspected within the urban stratum x_{rural} = the number of noncompliant outlets within the rural stratum $n_{2 rural}$ = the number of outlets inspected within the rural stratum

Thus, the weighted noncompliance rate for the 2012 (FFY 2013) Synar Inspection Study was

$$\left(\frac{26}{185}\right)\left(\frac{190}{218}\right)\left(\frac{389}{467.1}\right) + \left(\frac{17}{111}\right)\left(\frac{116}{125}\right)\left(\frac{138}{467.1}\right) = .144 \text{ or } 14.4\%$$

C.3. Analyses of Associations with Retailer Violations

The tables below present the results of WYSAC's analyses to examine the possible association between selected variables and retailer violations. In every analysis when WYSAC used Fisher's exact test because it was more appropriate for the data than a Pearson's chi-squared test, the conclusions would have been the same had WYSAC used the Pearson's chi-squared test. Because of the unique characteristics of Fisher's exact test, two tailed tests (as were used with Pearson's chi squared) tend to be overly conservative (Agresti, 2007, pp. 45–48). Therefore, WYSAC used one-tailed Fisher's exact tests. Conclusions in this report would not have differed had WYSAC used two-tailed Fisher's exact tests.

Variable	χ ²	Degrees of freedom	Weighted number of outlets included in analysis	Statistical significance (<i>p</i>)	Higher RVR situation	
Ask for identification	305.07	1	463	< .001	Not asking for identification	
Perceived age of youth inspector, dichotomized	10.92	1	465	.001	Youth inspectors who looked 18 or older	
Estimated clerk age	19.99	6	464	.003	Clerks ages 55- 64	
Time of visit	8.06	1	465	.005	PM	
Adult supervisor	70.83	3	465	< .001	1 anomalous supervisor	
Type of tobacco	0.20	1	465	.659	Smokeless tobacco [†]	
Youth inspector gender	< 0.01	1	464	.998	Male [†]	
Store type, dichotomized	0.33	1	465	.565	Convenience store with or without gas [†]	
Youth access signs	Fisher's exact test, one-tailed*	NA	458	.263	Stores with signs [†]	
Clerk gender	0.05	1	464	.819	Women [†]	
Accessibility of any tobacco product, dichotomized	Fisher's exact test, one-tailed*	NA	425	.225	Accessible [†]	
Ask age	Fisher's exact test, one-tailed*	NA	452	.138	Asking for age [†]	
Rural/Urban stratum	0.12	1	465	.735	Rural outlets [†]	

Table C-3. Tested Associations with Retailer Violation: Tobacco Overall.

* Conclusions would have been the same with two-tailed tests.

[†] The higher RVR situation for nonsignificant associations is provided for informational purposes only, not for interpretation.

Note. The number of outlets included in analyses varies because of missing data. As in the report, WYSAC dichotomized perceived age of youth inspector (18 or older vs. younger than 18), store type (convenience with or without gas vs. all others), and tobacco accessibility (all accessible vs. at least some accessible).

Variable χ ²		Degrees of freedom	Weighted number of outlets included in analysis	Statistical significance (<i>p</i>)	Higher RVR situation	
Ask for identification	195.12	1	322	< .001	Not asking for identification	
Perceived age of youth inspector, dichotomized	8.91	1	323	.003	Youth inspectors who looked 18 or older	
Estimated clerk age	14.07	6	323	.029	Clerks ages 55-64	
Time of visit	9.02	1	322	.003	PM	
Adult supervisor	51.44	3	323	< .001	1 anomalous supervisor	
Youth inspector gender	0.55	1	323	.456	Female [†]	
Store type, dichotomized	0.18	1	323	.676	Convenience stores with or without gas [†]	
Youth access signs	Fisher's exact test, one-tailed*	NA	316	.418	Stores with signs [†]	
Clerk gender	0.02	1	322	.876	Men [†]	
Accessibility of <i>any</i> tobacco product, dichotomized	Fisher's exact test, one-tailed*	NA	294	.253	Accessible	
Ask age	Fisher's exact test, one-tailed*	NA	315	.246	Asking for age [†]	
Rural/Urban stratum	< 0.01	1	322	.995	No difference	

	Table C-4.	Tested	Associations	with	Retailer	Violation:	Cigarettes	Only.
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* Conclusions would have been the same with two-tailed tests.

⁺ The higher RVR situation for nonsignificant associations is provided for informational purposes only, not for interpretation.

Note. The number of outlets included in analyses varies because of missing data. As in the report, WYSAC dichotomized perceived age of youth inspector (18 or older vs. younger than 18), store type (convenience with or without gas vs. all others), and tobacco accessibility (all accessible vs. at least some accessible).

Variable	χ ²	Degrees of freedom	Weighted number of outlets included in analysis	Statistical significance (<i>p</i>)	Higher RVR situation
Ask for identification	Fisher's exact test, one-tailed*	NA	141	< .001	Not asking for identification
Estimated clerk age	16.93	6	144	.01	Clerks ages 55-64
Adult supervisor	19.62	3	143	< .001	1 anomalous supervisor
Perceived age of youth inspector, dichotomized	2.84	1	142	.092	Youth inspectors who looked 18 or older [†]
Time of visit	0.75	1	142	.386	PM [†]
Youth inspector gender	0.60	1	142	.437	Male [†]
Store type, dichotomized	< 0.01	1	142	.978	Convenience stores with or without gas [†]
Youth access signs	Fisher's exact test, one-tailed*	NA	141	.503	Stores with signs [†]
Clerk gender	0.10	1	142	.758	Women [†]
Accessibility of <i>any</i> tobacco product, dichotomized	Fisher's exact test, one-tailed*	NA	132	.522	Accessible [†]
Ask age	Fisher's exact test, one-tailed*	NA	138	.244	Asking for age [†]
Rural/Urban stratum	0.74	1	143	.391	Rural [†]

	Table C-5.	Tested	Associations	with	Retailer	Violation:	Smokeless	Tobacco	Only.
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* Conclusions would have been the same with two-tailed tests.

⁺ The higher RVR situation for nonsignificant associations is provided for informational purposes only, not for interpretation.

Note. The number of outlets included in analyses varies because of missing data. As in the report, WYSAC dichotomized perceived age of youth inspector (18 or older vs. younger than 18), store type (convenience with or without gas vs. all others), and tobacco accessibility (all accessible vs. at least some accessible).

Appendix D. Inspection Information for CSAP's FFY2013 (Calendar Year 2012) Annual Synar Report

This appendix provides the information WDH needs to complete the FFY 2013 (calendar year 2012) Annual Synar Report (ASR) for the Substance Abuse and Mental Health Services Administration (SAMHSA). In this appendix, WYSAC provides answers to ASR questions specific to the inspections. All other answers are more appropriately determined by WDH; however, WYSAC is available for technical assistance.

Section I: Question 6–9

- Question 6. Yes, the sampling methodology has changed since the 2011 Synar Survey. In FFY 2013, WYSAC used a 20% safety margin in determining sampling size.
- Question 7a. Yes, WYSAC used the optional Synar Survey Estimation System (SSES) to analyze the Synar Survey data. The SSES summary tables are included at the end of this document. WYSAC will also e-mail electronic copies of the SSES output to WDH.
- Questions 7b–7h not required because WYSAC used SSES.
- Question 8. Yes, WYSAC used a list frame.
 - o 8a. 2010
 - o 8b. 88.6%
 - 0 8c. No
 - o 8d. 2013
- Question 9. Yes, the inspection protocol has changed since 2011. During every third inspection (an increase from one of every five inspections in 2010 and 2011), youth inspectors (regardless of gender) asked for chewing tobacco rather than cigarettes. Also, prior to June 2012, the youth inspectors were only able to check "Accessible" or "Not Accessible" as options for reporting on location of cigarettes and chew tobacco. WYSAC added a "Youth Inspector Could Not Locate" option on the 2012 (FFY 2013) Synar Inspection Form in addition to "Accessible" and "Not Accessible." Additionally, WYSAC added "Don't know/Not sure" as a response option to clerk's gender. The 2011 Synar Inspection Form had only two options for clerk's gender: "Male" or "Female". WYSAC added these details to the 2012 protocol.
 - \circ 9a. WYSAC conducted the inspections between 08/02/12 and 08/22/12.
 - 0 9b. Twenty youth inspectors participated in the 2012 Synar Survey (FFY 2013).
 - o 9c. Form 5 is not required because WYSAC used SSES.

Section II: Question 1 and 3

- Question 1. No, WYSAC does not anticipate any changes in the Synar sampling methodology or the Synar inspection protocol.
- Question 3. WDH may check the appropriate fields for enforcement, legal, and/or other challenges it faces surrounding the Synar amendment. As far as the inspections, the challenges include the following:
 - o Limitations on completeness/accuracy of list tobacco outlets,
 - o Difficulties recruiting youth inspectors, and
 - Geographic, demographic, and logistical considerations in conducting inspections.

Appendix A: Forms

• Because WYSAC used SSES, WYSAC does not need to complete these forms. The SSES tables are included at the end of this document. WYSAC will also provide an electronic copy of all SSES tables to WDH.

Appendix B: Questions 1–10

- Question 1. WYSAC used a *list frame* sampling method.
- Question 2: Please see Section 3.1 of the report for details. WDH may complete this list as appropriate. Annually, WYSAC updates the list frame from the Synar inspections and, when available, the coverage study.
- Question 3. Skip this question because WYSAC used a list frame, not an area frame.
- Question 4. WYSAC does not include vending machines in the Synar Survey because state law bans them from locations accessible to youth. It may be useful to note that Federal law also bans them from areas accessible to youth.
- Question 5. WYSAC used a *stratified sample* with a *simple random sample*.
- Question 6: Skip this question because WYSAC did not use a systematic sampling method.
- Question 7: Information about stratification:
 - 7a. WYSAC categorized each outlet into one of two strata. WYSAC defined the urban stratum as outlets being located in a town with a population of at least 3,000 and the rural stratum as outlets being located in a town with a population of fewer than 3,000.
 - 7b. WYSAC did not use clustering within the stratified sample.
- Question 8: Skip this question because WYSAC did not use clustering.
- Question 9: WYSAC used SSES to calculate the effective, target, and original sample sizes. WYSAC ran SSES twice, once for the rural stratum and once for the urban stratum. This increases the sample size and reduces error.
- Question 10a.
 - For the rural stratum
 - RVR: 15.3%
 - Frame Size: 138
 - Design Effect: 1
 - Safety Margin: 20%
 - Accuracy (Eligibility) Rate: 92.8%
 - Completion Rate: 95.7%
 - For the urban stratum
 - RVR: 14.1%
 - Frame Size: 389
 - Design Effect: 1
 - Safety Margin: 20%
 - Accuracy (Eligibility) Rate: 87.2%
 - Completion Rate: 97.4%
- Question 10b. Skip this question because WYSAC used SSES.

Appendix C: Questions 1–7

Note: WYSAC has attached the Synar inspection form as Appendix E of the technical report and as a separate file. Upload this form to WebBGAS under the heading "Synar Inspection Form." Upload Section 3.2 from this report to WebBGAS under the heading "Synar Inspection Protocol."

- Question 1: Wyoming Synar Survey protocol:
 - o 1a. Consummated buy attempts are *not permitted*.
 - o 1b. Youth inspectors are not permitted to carry ID.
 - 0 1c. Adult inspectors are *permitted* to enter the outlet *under specified circumstances*.
 - o 1d. Youth inspectors are *required* to be compensated.
- Question 2: The agency that conducts the random, unannounced Synar inspections is a private contractor. The agency name is the Wyoming Survey & Analysis Center (WYSAC) at the University of Wyoming.
- Question 3: The Synar inspections are *never* combined with law enforcement efforts.
- Question 4: WYSAC recruited adults from the Laramie, Wyoming, area to fill the adult supervisor role. Prior to hiring the adult supervisors, WYSAC conducted criminal background checks and reviewed driving records. WYSAC trained all adult supervisors in Synar protocol. The adult supervisors were then responsible for training the youth inspectors. WYSAC recruited most youth inspectors by asking previous buyers to provide referrals. Community prevention professionals administering prevention programming at the county-level also provided contacts. WYSAC first contacted potential youth inspectors via telephone to describe the project and speak with one of their parents or guardians. Once the youth inspector and the parent/guardian expressed interest, WYSAC sent them a written description of the project, a parent permission form, and hiring forms. They required completed parent permission forms before any youth could participate. Five 16-year-olds and fifteen 17-year-olds participated in the FFY 2013 (2012) Synar Inspection Study. Each of the 10 teams included both a male and female youth inspector. All youth inspectors 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 and role-played with the adult supervisors until they mastered the buying procedure. Adult supervisors also trained youth inspectors to look for certain elements while in the store (e.g., the location of tobacco products, the approximate age of the clerk, gender of the clerk, and the presence of youth access messages).
- Question 5: Legal or procedural requirements instituted by the state to address the issue of youth inspectors' immunity during inspections:
 - o 5a. WYSAC instituted no legal requirements.
 - 5b. Yes. Youth inspectors are not permitted to have identification on them during the inspection, helping to maintain confidentiality. They are instructed to refrain from buy attempts if they know anyone at the location. Also, no purchase is ever consummated as the youth inspectors are not permitted to take more than \$1.00 with them on inspections.
- Question 6: Legal or procedural requirements instituted by the state to address the issue of the safety of youth inspectors during all aspects of the Synar inspection process:
 - o 6a. WYSAC instituted no legal requirements.
 - 6b. Yes. All minors participating in the program must have parental approval and a signed consent form. These youth inspectors are supervised by University of Wyoming contracted adult supervisors. Law enforcement officers were available (by being at the inspection site or available by phone) in case they were needed.

- Question 7: Legal or procedural requirements instituted by the state regarding how inspections are to be conducted:
 - o 7a. WYSAC instituted no legal requirements.
 - 7b. Minors are required to be 16 or 17 years of age and are required to be trained by an adult supervisor prior to participating in the inspections. Youth are not allowed to stay overnight away from home while traveling for inspections. Youth also request smokeless tobacco on every third inspection. As part of the smokeless tobacco inspections, youth were instructed to ask for a specific flavor and cut (if asked about cut).

SSES Tables 1-4

SSES Table 1 (Synar Survey Estimates and Sample Sizes)

CSAP-SYNAR REPORT

State	WY
Federal Fiscal Year (FFY)	2013
Date	10/3/2012 9:14
Data	Book1
Analysis Option	Stratified SRS with FPC

Estimates

Unweighted Retailer Violation Rate	14.5%
Weighted Retailer Violation Rate	14.4%
Standard Error	1.3%
Is SAMHSA Precision Requirement met?	YES
Right-sided 95% Confidence Interval	[0.0%, 16.5%]
Two-sided 95% Confidence Interval	[11.9%, 16.9%]
Design Effect	1.0
Accuracy Rate (unweighted)	89.2%
Accuracy Rate (weighted)	88.6%
Completion Rate (unweighted)	96.7%

Sample Size for Current Year

Effective Sample Size	237
Target (Minimum) Sample Size	237
Original Sample Size	343
Eligible Sample Size	306
Final Sample Size	296
Overall Sampling Rate	63.2%

WYSAC, University of Wyoming

SSES Table 2 (Synar Survey Results by Stratum and by OTC/VM)

FFY: 2013

Samp. Stratum	Var. Stratum	Outlet Frame Size	Estimated Outlet Population Size	Number of PSU Clusters Created	Number of PSU Clusters in Sample	Outlet Sample Size	Number of Eligible Outlets in Sample	Number of Sample Outlets Inspected	Number of Sample Outlets in Violation	Retailer Violation Rate(%)	Standard Error(%)
					All C	Outlets					
1	1	389	339	N/A	N/A	218	190	185	26	14.1%	
2	2	138	128	N/A	N/A	125	116	111	17	15.3%	
Total		527	467			343	306	296	43	14.4%	1.3%
Over the Counter Outlets											
1	1	389	339	N/A	N/A	218	190	185	26	14.1%	
2	2	138	128	N/A	N/A	125	116	111	17	15.3%	
Total		527	467			343	306	296	43	14.4%	1.3%
Vending Machines											
1	1	0	0	N/A	N/A	0	0	0	0	0.0%	
2	2	0	0	N/A	N/A	0	0	0	0	0.0%	
Total		0	0			0	0	0	0	0.0%	0.0%

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SSES Table 3 (Synar Survey Sample Tally Summary)

STATE: WY FFY: 2013

Disposition Code	Description	Count	Subtotal
EC	Eligible and inspection complete outlet	296	
Total (Eligible			
Completes)			296
N1	In operation but closed at time of visit	2	
N2	Unsafe to access	0	
N3	Presence of police	0	
N4	Youth inspector knows salesperson	5	
N5	Moved to new location but not inspected	0	
N6	Drive thru only/youth inspector has no drivers license	0	
N7	Tobacco out of stock	0	
N8	Run out of time	2	
N9	Other noncompletion (see below)	1	
Total (Eligible			
Noncompletes)			10
11	Out of Business	16	
12	Does not sell tobacco products	10	
13	Inaccessible by youth	5	
14	Private club or private residence	0	
15	Temporary closure	4	
16	Can't be located	1	
17	Wholesale only/Carton sale only	0	
18	Vending machine broken	0	
19	Duplicate	1	
110	Other ineligibility	0	
Total (Ineligibles)			37
Grand Total			343

Give reasons and counts for other noncompletion:

Reason	Count
N9: "sold chew and cigars only"	1

SSES Table 4 (Synar Survey Inspection Results by Youth Inspector Characteristics)

STATE: WY FFY: 2013

Frequency Distribution					
Condor	Ago	Number of	Attempted	Successful	
Gender	Age	Inspectors	Buys	Buys	
Male	14	0	0	0	
	15	0	0	0	
	16	3	44	4	
	17	7	112	18	
	18	0	0	0	
	Subtotal	10	156	22	
Female	14	0	0	0	
	15	0	0	0	
	16	3	29	4	
	17	7	111	17	
	18	0	0	0	
	Subtotal	10	140	21	
Other		0	0	0	
Grand Total		20	296	43	

Buy Rate in Percent by Age and Gender					
Age	Male	Female	Total		
14	0.0%	0.0%	0.0%		
15	0.0%	0.0%	0.0%		
16	9.1%	13.8%	11.0%		
17	16.1%	15.3%	15.7%		
18	0.0%	0.0%	0.0%		
Other			0.0%		
Total	14.1%	15.0%	14.5%		

Appendix E. Synar Inspection Form 2012 (FFY 2013) The Synar Inspection Form for 2012 (FFY 2013) is on the following two pages.

2012 Synar Inspection	n Forn	n	
Please complete this form as accurately as po Use pen or pencil to fill in circles completel	ossible and v y, as shown.	vrite legibly.	Mark Answers Like This c> ● ■ NOT Like This c> 文 V
Inspection Date: (MM/DD/YY)	_I_VI_I	[] п	me of Visit: O AM O PM
Youth Inspector			Gender: O Male O Female
Name:			Age:
Adult Supervisor			
Name			
Outlet Information			
ID: Hand ID: Hand ID:	only)		
Name:	A	ddress:	
City:	Si	tate:	Zip Code:
Updated Outlet Information/Correction	ons (if nee	ded)	
Name:	A	ddress:	
City:	S [.]	tate:	Zip Code:
Eligibility/Completion			
Was the outlet (store) eligible for an inspect O Yes O No J	ion?		
If NO, mark <u>one</u> of the following reaso	ons the stor	e was ineligble	for inspection:
O Out of business	O Could no	ot locate	
O Does not sell tobacco products	O Wholesale only / carton sale only		
O Inaccessible to youth	O vending machine		
O Temporary closure	O Other (s	e pecify):	
If outlet was eligible, was inspection comple O Yes O No レ	eted?		
If NO, mark <u>one</u> of the following reas	ons the insp	ection was no	t completed:
O In operation, but closed at time of visit		O Drive throu	igh only
O Unsafe to access		O Tobacco ou	it of stock
O Presence of police		O Ran out of	time
O Both youth inspectors know someone in	n the store	O Other (spe	cify):
	Continued	on back	

2012 Synar I	nspection Form
General Store and Cler	<u> x Information</u>
Type of Store: O Convenience (no gas) O Convenience (with ga O Pharmacy / Drug stor O Grocery store	 O Discount / Superstore (e.g., Wal-Mart, Target) s) O Tobacco store e O Restaurant / Cafe O Other (specify):
Location of Cigarettes: O Accessible (customer O Not Accessible (custo O Youth Inspector Could	s can pick up a pack of cigarettes without the assistance of an employee) mers require assistance from an employee to obtain cigarettes) d Not Locate
Location of Chewing To O Accessible (customer O Not Accessible (custo O Youth Inspector Could	obacco: s can pick up a can of chew without the assistance of an employee) mers require assistance from an employee to obtain chew) d Not Locate
Were there any youth O Yes O No	access signs present in the store? (e.g., "No Sales to Minors")
O Male O Female Approximate Age of C f inspection was complete O Yes (Violation) O No ↓ If YES, how much was th	O Don't know / Not sure lerk: d, was buy attempt successful? (Nonviolation) O Not Completed e pack/can? \$
What type of tobacco did to O Cigarettes O Chewing	t he youth inspector ask for? (Every third inspection should be for chewing tobacco. gTobacco
What tobacco brand was a O Marlboro O Marlboro Golds O Other brand (please spec	attempted to be purchased? O Camel O Skoal Wintergreen O Camel Blues O Copenhagen Wintergreen cify):
Did the clerk ask for yout O Yes O No	n's ID? Did the clerk ask for youth's age? O Yes O No
Notes:	
Youth Inspector Initial:	Adult Inspector Signature:
Return	the completed form to: Wyoming Survey & Analysis Center, Dept. 3925 1000 E. University Ave., Laramie, WY 82071