



WCSA Contraband Tobacco Manitoba Study September - October 2016

Western Convenience Stores Association

Final Report

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Executive Summary

The illicit sale of cigarettes and other tobacco products seriously undermines the health, safety and well-being of communities. The Western Convenience Stores Association (ACSA) funded a study to inform on the potential prevalence of contraband cigarettes in the province of Manitoba.

The study was based on a research protocol developed in 2009 by NIRIC, an independent, Québec-based research firm, in conjunction with the Canadian Convenience Stores Association. To date, NIRIC has completed more than 30 of these studies across Canada.

The methodology involves the collection and analysis of used cigarette ends (cigarette butts) collected from common smoking areas (zones) near public places such as retail malls, public and postsecondary educational institutions, office buildings, hospitals, recreational facilities, etc.

Sample collection was done in the second half of September and in the first week of October 2016 from 30 sites. A total of 4,959 useable samples were collected and analyzed with identified contraband product representing 14.7% (n=714) at the all-site level.

The prevalence of contraband cigarettes at the 30 sites studied ranged from 4.8% to 27.2%. The margin of error at the 95% level of confidence is 2.2%. If we apply this error margin to the contraband average, we could conclude that 95% of time the average is between 12.5% and 16.9% (Exhibit 1).

The variability in individual site findings is clearly reflected in values associated with the mean: the site prevalence mean is 14.7%; with an error margin of 2.2%; and the median value is 15.9%.

<i>2016 Contraband Analysis</i>	
Mean	14.7%
Standard Error	1.1%
Median	15.9%
Standard Deviation	5.8%
Sample Variance	0.3%
Kurtosis	-0.442
Skewness	-0.006
Range	22.5%
Minimum	4.8%
Maximum	27.2%
Count	30
Confidence Level(95.0%)	2.2%

Exhibit 1

Findings provide insight into the potential level of contraband cigarette consumption in Manitoba, but they cannot statistically be extrapolated to the population of contraband cigarette smokers in the province.

To put the study of September - October 2016 in some context, the findings were compared with the Manitoba studies of 2015 and 2013 commissioned by the WCSA using the same research protocols.

The mean of contraband prevalence in 2013 was 14.5%, followed by 13.1% in 2015 and 14.7% this year. As can be seen in Exhibits 2 and 3, there is a similarity in prevalence per site between the two studies. A test of the means did not detect a statistically significant difference between the first two studies. The 2016 study is also statistically similar with the first two study with a mean nearly identical to the 2013 study.

<i>2013 Contraband Analysis</i>	
Mean	14.5%
Standard Error	1.3%
Median	13.9%
Standard Deviation	7.3%
Sample Variance	0.5%
Kurtosis	-0.318
Skewness	0.108
Range	29.9%
Minimum	1.5%
Maximum	31.4%
Count	30
Confidence Level(95.0%)	2.7%

Exhibit 2

<i>2015 Contraband Analysis</i>	
Mean	13.1%
Standard Error	1.2%
Median	11.3%
Standard Deviation	6.5%
Sample Variance	0.4%
Kurtosis	2.256
Skewness	1.131
Range	31.7%
Minimum	2.3%
Maximum	34.0%
Count	29
Confidence Level(95.0%)	2.5%

Exhibit 3

Notable among the findings of the 2016 study are the high prevalence levels of contraband cigarettes near school sites (17.4%) (Exhibit 4).

Site type	Qty	Contraband
School	13	17.4%
City Facility	5	14.3%
Commercial	6	11.7%
Gouvernement	6	11.3%

Exhibit 4

The 2016 study included an analysis for the presence of menthol flavored cigarettes.

The prevalence of menthol cigarettes at the 30 sites studied ranged from 0.0% to 5.56%. The margin of error for the entire sample at the 95% level of confidence is 0.53%.

The low variability in individual site findings is clearly reflected in values associated with the mean: the site prevalence mean is 1.32%; the mean at the 95% confidence is 0.53%; and the median value is 1.12% (Exhibit 5).

Mean	1.32%
Standard Error	0.26%
Median	1.12%
Standard Deviation	1.42%
Sample Variance	0.02%
Kurtosis	1.472
Skewness	1.243
Range	5.56%
Minimum	0.00%
Maximum	5.56%
Count	30
Confidence Level (95.0%)	0.53%

Findings provide insight into the potential level of menthol cigarette consumption in Manitoba, but they cannot statistically be extrapolated to the population of menthol cigarette smokers in the province. Caution should be used in interpreting findings given the small sample sizes.

Due to the study methodology, study findings cannot be extrapolated to the population of contraband cigarette users in Manitoba. **The findings do, however, strongly suggest that the consumption of contraband cigarettes in Manitoba is increasing since 2015 and continues to be well above levels that are acceptable to legal retailers, governments, enforcement agencies and the public at large.**

1. Introduction and Background

Contraband or illegal cigarettes are defined as cigarette products that do not comply with the provisions of applicable federal and provincial statutes. The illicit sale of cigarette products contributes to:

- increased health risks;
- increased cigarette uses by minors;
- increased criminal activity;
- loss of government revenue;
- loss of revenue by retailers selling legal products.

Contraband cigarettes have been a major issue for Canada's convenience store industry for some time. To inform on the situation, the industry, through the Western Convenience Stores Association (WCSA), has commissioned a series of contraband cigarette studies.

The WCSA is a not-for-profit industry association and a regional affiliate of the Canadian Convenience Stores Association. For several years, the Association has commissioned illegal cigarette studies in Manitoba.

This report presents the findings from the most recent research done in September and October 2016 along with a comparative analysis between this study and the studies done in previous years.

2. Methodology

In 2009, NIRIC (an independent Québec-based research firm) developed a research protocol for a controlled cross-sectional study to evaluate the prevalence of illegal cigarettes in public places. This approach was adopted as it provides one of the highest concentrations of types of cigarettes smoked by a wide variety of smokers.

Each study involves the analysis of used cigarette ends (cigarette butts) collected from common smoking areas (zones) near public places such as retail malls, public and postsecondary educational institutions, office buildings, hospitals, recreational facilities, etc.

To date, NIRIC has conducted more than 30 such studies across Canada.

One or more outdoor smoking zones are typically found near a target location. These may be an equipped smoking area (e.g., benches, cigarette disposal containers, etc.) or an informal gathering spot for smokers.

The quality of the cigarette ends is very important and the following inclusion criteria are used to identify a valid sample:

- the filter and 50 mm of the tobacco part of the cigarette are still visible;
- the cigarette end is still in its original form (not open or twisted);
- the cigarette end is not burnt (original color still intact); and
- the cigarette end is dry.

The following procedures are followed for each study:

1. Site locations are identified in consultation with the client.
2. A sample collection time window is established in consultation with the client.
3. Local researchers are scheduled.
4. Pre-collection site visits are conducted where practical.
5. Local researchers are on stand-by monitoring weather conditions and other collection timing determinants.
6. Either pre-collection or day of, each site is photographed, including:
 - general photograph of the front and back of the site;
 - a photograph of each zone identified;
 - Close-up photographs of discarded cigarette ends.
 - Each photo is identified with a name of site-type of photo-date.jpg filename.

7. Post-collection, photo file data is entered into an Excel spreadsheet with column headings:
 - Photo Title
 - Name of Site
 - Type of Photograph (general front or back, zone # or close to zone #)
 - Collection Date
8. Completed photographs and files are uploaded online to NIRIC's FTP site.
9. A minimum of 115 and a maximum of 200 cigarette ends meeting inclusion criteria are collected at each site.
10. Where there is more than one zone, local researchers sample across all zones where practical.
11. The excluded cigarette ends are left on site.
12. For each zone, cigarette ends meeting inclusion criteria are placed in a resealable clear polyethylene bag.
13. Each bag is sealed and then sealed again with masking tape.
14. Each bag is identified with:
 - site name;
 - zone number;
 - date and time of collection;
 - name of sample collector;
 - weather conditions (sun, cloudy, rain, snow, etc.).
15. After approximately six (6) site collections have been completed, samples are packaged in a Purolator rigid corrugated shipping box and shipped priority rate to NIRIC's lab.
16. For each box received, NIRIC lab technicians open each box and verify the state of each sample bag and the completeness of the identification information.
17. Each sample bag is registered in the tracking file under the status received.
18. Each bag is opened and cigarette ends are manually inspected and sorted by comparison with the distinctive signs database. Sorting is done by legal or illegal brand.
 - In some studies, the sorting is done by brand to provide a by-brand count.
 - Cigarettes ends that cannot be identified are discarded from the sample.
 - When a brand cannot be matched to the database, the cigarette end is segregated in a resealable poly bag, identified and logged for further analysis.

- For further analysis, the cigarette end is first photographed and described. It is then dismantled and the paper, filter and tobacco examined. Chemical analysis may be done on the cigarette end components where appropriate.
 - The analysis ultimately determines if the sample is an existing brand or a new brand. An existing brand is returned to the location and zone sample lot and counted as legal or illegal. A new brand is entered into the database and the sample is then returned to the location and zone sample lot and counted as legal or illegal.
19. When completed, sorted samples from each original sample bag are bagged separately (legal, illegal, brand, etc.), and identified. Counts for each original sample bag are then recorded in the master study file (counts, bag and location).
20. When an area/city is completed, results are analyzed and used for the report production. Findings are communicated in a written report to the client.

3. Findings

Thirty (30) sites were identified for the study. Targeted sites were located across Manitoba and represented a variety of public uses. Sample collection was completed between September 25th and October 8th. On the day of collection, cigarette ends were found in each site. The site cleaning procedure used in some sites was work around to avoid non-viable sites situation.

A total of 4,959 useable samples from the 30 sites were analyzed with identified contraband product representing 14.7% (n=714) of the total. Individual sites and site counts are summarized below in Exhibit 6.

Manitoba Contraband Cigarette Study
September – October 2016

Site Name	Community	Site Type	Total Sample	Contraband Count	Site Pct.	Menthol Count	Menthol Pct.
Brandon City Hall	Brandon	City Facility	202	55	27.2%	3	1.5%
Elmwood High School	Winnipeg	School	171	43	25.1%	4	2.3%
Crocus Plains Regional Secondary School	Brandon	School	198	42	21.2%	11	5.6%
Dauphin Regional Comprehensive Secondary School	Dauphin	School	129	26	20.2%	0	0.0%
Vincent Massey High School	Brandon	School	129	26	20.2%	0	0.0%
Royal Canadian Legion	Dauphin	Government	136	27	19.9%	0	0.0%
Daniel McIntyre Collegiate Institute	Winnipeg	School	139	26	18.7%	2	1.4%
Dauphin City Hall	Dauphin	City Facility	184	34	18.5%	3	1.6%
Royal Canadian Legion	Brandon	Government	125	23	18.4%	0	0.0%
École Secondaire Neelin High School	Brandon	School	137	24	17.5%	2	1.5%
Red River College, Steinbach Campus	Steinbach	School	186	32	17.2%	3	1.6%
Steinbach City Hall	Steinbach	City Facility	169	29	17.2%	7	4.1%
Greyhound Station	Brandon	Commercial	165	27	16.4%	0	0.0%
R. B. Russell Vocational High School	Winnipeg	School	168	27	16.1%	4	2.4%
Grant Park High School	Winnipeg	School	119	19	16.0%	1	0.8%
Portage Collegiate Institute	Portage La Prairie	School	133	21	15.8%	1	0.8%
Greyhound station	Portage La Prairie	Commercial	206	31	15.0%	6	2.9%
Government of Manitoba	Steinbach	Government	143	19	13.3%	4	2.8%
Portage Place Shopping Centre	Winnipeg	Commercial	161	21	13.0%	2	1.2%
Sisler High School	Winnipeg	School	147	19	12.9%	3	2.0%
Victoria Plaza Mall	Steinbach	Commercial	158	20	12.7%	1	0.6%
Steinbach Regional Secondary School	Steinbach	School	138	16	11.6%	5	3.6%
Assiniboine Community College Parkland Campus	Dauphin	School	122	13	10.7%	0	0.0%
Shopping Complex	Dauphin	Commercial	217	18	8.3%	3	1.4%
Credit Union Place (arena)	Dauphin	City Facility	200	16	8.0%	2	1.0%
Shopping Complex	Portage La Prairie	Commercial	259	20	7.7%	1	0.4%
Government of Manitoba and Provincial Court	Portage La Prairie	Government	190	13	6.8%	0	0.0%
PCU Centre	Portage La Prairie	Government	119	7	5.9%	0	0.0%
Portage La Prairie City Hall	Portage La Prairie	City Facility	283	14	4.9%	0	0.0%
Royal Canadian Legion	Steinbach	Government	126	6	4.8%	0	0.0%

Exhibit 6

The prevalence of contraband cigarettes at the 30 sites studied ranged from 4.8% to 27.2%. The statistical analysis of the data demonstrates with a confidence level of 95% an error margin of 2.2%. If we apply this error margin to the contraband average, we could conclude that 95% of time the average is between 12.5% and 16.9% (Exhibit 7).

The variability in individual site findings is clearly reflected in values associated with the mean: the site prevalence mean is 14.7%; with an error margin of 2.2%; and the median value is 15.9%.

<i>2016 Contraband Analysis</i>	
Mean	14.7%
Standard Error	1.1%
Median	15.9%
Standard Deviation	5.8%
Sample Variance	0.3%
Kurtosis	-0.442
Skewness	-0.006
Range	22.5%
Minimum	4.8%
Maximum	27.2%
Count	30
Confidence Level (95.0%)	2.2%

Exhibit 7

The results based on the type of site provide some interesting insights in that there is one notable clusters, near school sites, that is much higher than the other type of site (Exhibit 8).

	Total Sample	Contraband Count	Site Pct.
School	1916	334	17.4%
City Facility	1038	148	14.3%
Commercial	1166	137	11.7%
Government	839	95	11.3%

Exhibit 8

Overall, however, it is difficult to draw any meaningful conclusions of contraband tobacco use by type of site based on one study and the findings of this one study. The same can be said for findings based on geographic location provincially.

The regions/cities with the highest prevalence of contraband cigarettes is definitely Brandon followed by Winnipeg. Dauphin and Steinbach area are very similar in percentage. The region of Portage La Prairie is alone with a much lower prevalence of contraband cigarettes (Exhibit 9).

	2016				
Region/city	Total Sample	Contraband Count	Site Pct.	Menthol Count	Menthol Pct.
Brandon	956	197	20.6%	16	1.7%
Winnipeg	905	155	17.1%	16	1.8%
Dauphin	988	134	13.6%	8	0.8%
Steinbach	920	122	13.3%	20	2.2%
Portage La Prairie	1190	106	8.9%	8	0.7%

Exhibit 9

The 2016 study included an analysis for the presence of menthol flavored cigarettes.

The prevalence of menthol cigarettes at the 30 sites studied ranged from 0.0% to 5.56%. The margin of error for the entire sample at the 95% level of confidence is 0.53%.

The low variability in individual site findings is clearly reflected in values associated with the mean: the site prevalence mean is 1.32%; the mean at the 95% confidence is 0.53%; and the median value is 1.12% (Exhibit 10).

<i>2016 Menthol Statistic analysis</i>	
Mean	1.32%
Standard Error	0.26%
Median	1.12%
Standard Deviation	1.42%
Sample Variance	0.02%
Kurtosis	1.472
Skewness	1.243
Range	5.56%
Minimum	0.00%
Maximum	5.56%
Count	30
Confidence Level(95.0%)	0.53%

Exhibit 10

Findings provide insight into the potential level of menthol cigarette consumption in Manitoba, but they cannot statistically be extrapolated to the population of menthol cigarette smokers in the province. There is no significant difference in between the site types or the regions/cities regarding the level of menthol cigarettes. Caution should be used in interpreting findings given the small sample sizes.

4. A Comparative Analysis

In 2013 and 2015, NIRIC completed a contraband cigarette study in Manitoba involving largely the same sites and using the same research protocols. To put the study of September - October 2016 in some context, the findings were compared with the two previous studies.

The mean of contraband prevalence in 2013 was 14.5%, followed by 13.1% in 2015 and 14.7% this year. As can be seen in Exhibits 11 and 12, there is a similarity in prevalence per site between the two studies. A test of the means did not detect a statistically significant difference between the first two studies. The 2016 study is also statistically similar with the first two study with a mean nearly identical to the 2013 study.

2013 Contraband Analysis	
Mean	14.5%
Standard Error	1.3%
Median	13.9%
Standard Deviation	7.3%
Sample Variance	0.5%
Kurtosis	-0.318
Skewness	0.108
Range	29.9%
Minimum	1.5%
Maximum	31.4%
Count	30
Confidence Level(95.0%)	2.7%

Exhibit 11

2015 Contraband Analysis	
Mean	13.1%
Standard Error	1.2%
Median	11.3%
Standard Deviation	6.5%
Sample Variance	0.4%
Kurtosis	2.256
Skewness	1.131
Range	31.7%
Minimum	2.3%
Maximum	34.0%
Count	29
Confidence Level(95.0%)	2.5%

Exhibit 12

As can be seen in Exhibits 13, there is a clear increase of the mean in 2016 compare with the 2015 study.

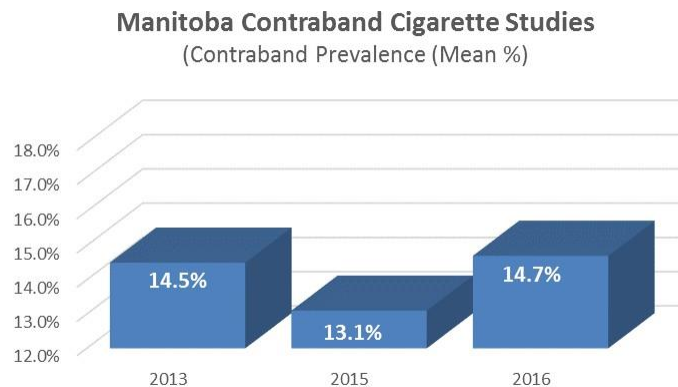


Exhibit 13

We conducted a statistical test on the means in order to test the similarity of the studies. The standard error range of the three studies overlap in a range of 67% and when compared two by two the studies of 2013 and 2016 overlap in excess of 90%. With these findings, we can conclude the means of the three studies are statically similar.

Exhibits 14, 15 and 16 below summarize the contraband prevalence findings from the three studies. The site prevalence mean was highest in 2016 near schools, the government sites were very similar in the three studies and the city facility sites seems to be decreasing over the years. Regarding the geographic prevalence, the regions/cities of Brandon and Winnipeg had an increase in contraband prevalence between 2015 and 2016. The region of Portage La Prairie seems to be decreasing over the years.

	2013			2015			2015		2016			2016	
	Total Sample	Contraband Count	Site Pct.	Total Sample	Contraband Count	Site Pct.	Menthol Count	Menthol Pct.	Total Sample	Contraband Count	Site Pct.	Menthol Count	Menthol Pct.
School	1895	197	10.4%	2145	294	13.7%	44	2.1%	1916	334	17.4%	36	1.9%
Government	890	119	13.4%	758	93	12.3%	10	1.3%	839	95	11.3%	4	0.5%
Commercial	892	187	21.0%	1084	127	11.7%	20	1.8%	1166	137	11.7%	13	1.1%
City Facility	749	147	19.6%	877	141	16.1%	34	3.9%	1038	148	14.3%	15	1.4%

Exhibit 14

Region/city	2013			2015			2015		2016			2016	
	Total Sample	Contraband Count	Site Pct.	Total Sample	Contraband Count	Site Pct.	Menthol Count	Menthol Pct.	Total Sample	Contraband Count	Site Pct.	Menthol Count	Menthol Pct.
Winnipeg	884	81	9.2%	974	129	13.2%	20	2.1%	905	155	17.1%	16	1.8%
Portage La Prairie	902	146	16.2%	1049	109	10.4%	26	2.5%	1190	106	8.9%	8	0.7%
Dauphin	897	176	19.6%	757	98	12.9%	16	2.1%	988	134	13.6%	8	0.8%
Steinbach	871	114	13.1%	1060	174	16.4%	31	2.9%	920	122	13.3%	20	2.2%
Brandon	872	133	15.3%	1024	145	14.2%	15	1.5%	956	197	20.6%	16	1.7%

Exhibit 15

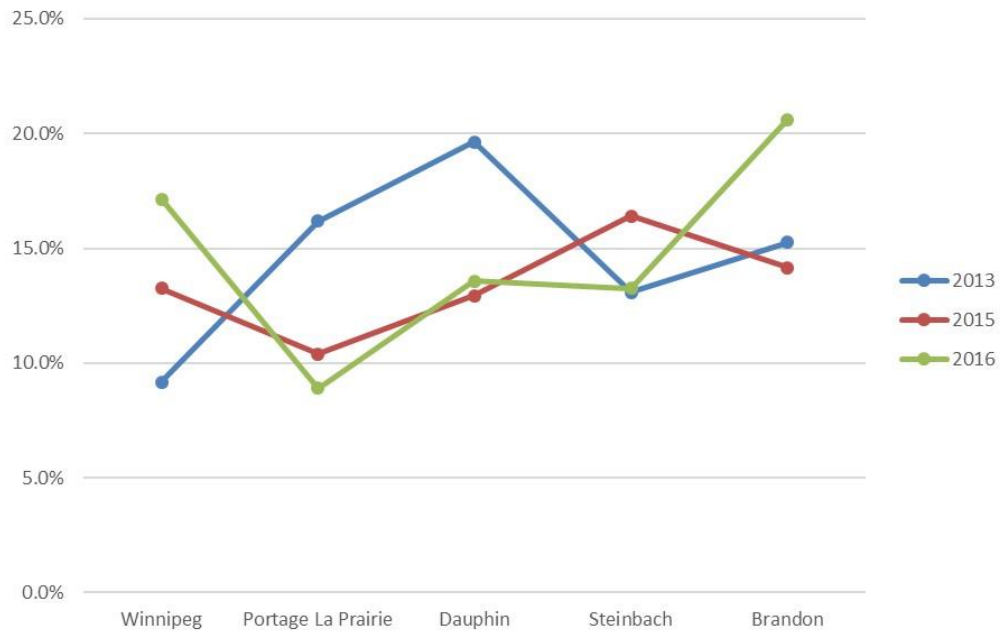


Exhibit 16

Overall, findings suggest that there is likely an increase of contraband cigarettes in the regions/cities of Brandon and Winnipeg, this increase reflect on the province average by a percentage increase since 2015. Only the region of Portage La Prairie and Steinbach had a small mean decrease.

Due to the study methodology, study findings cannot be extrapolated to the population of contraband cigarette users in Manitoba. The findings do, however, strongly suggest that the consumption of contraband cigarettes in Manitoba is increasing since 2015 and continues to be well above levels that are acceptable to legal retailers, governments, enforcement agencies and the public at large.

