

ILLICIT CIGARETTES STUDY (ICS) IN MALAYSIA 2019 WAVE 3 (OCT-DEC) REPORT

Report Commissioned by CMTM member companies

JULY 2019



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ILLEGAL CIGARETTES CRITERIA FOR VERIFICATION

Packs with at least one (1) of the following features:

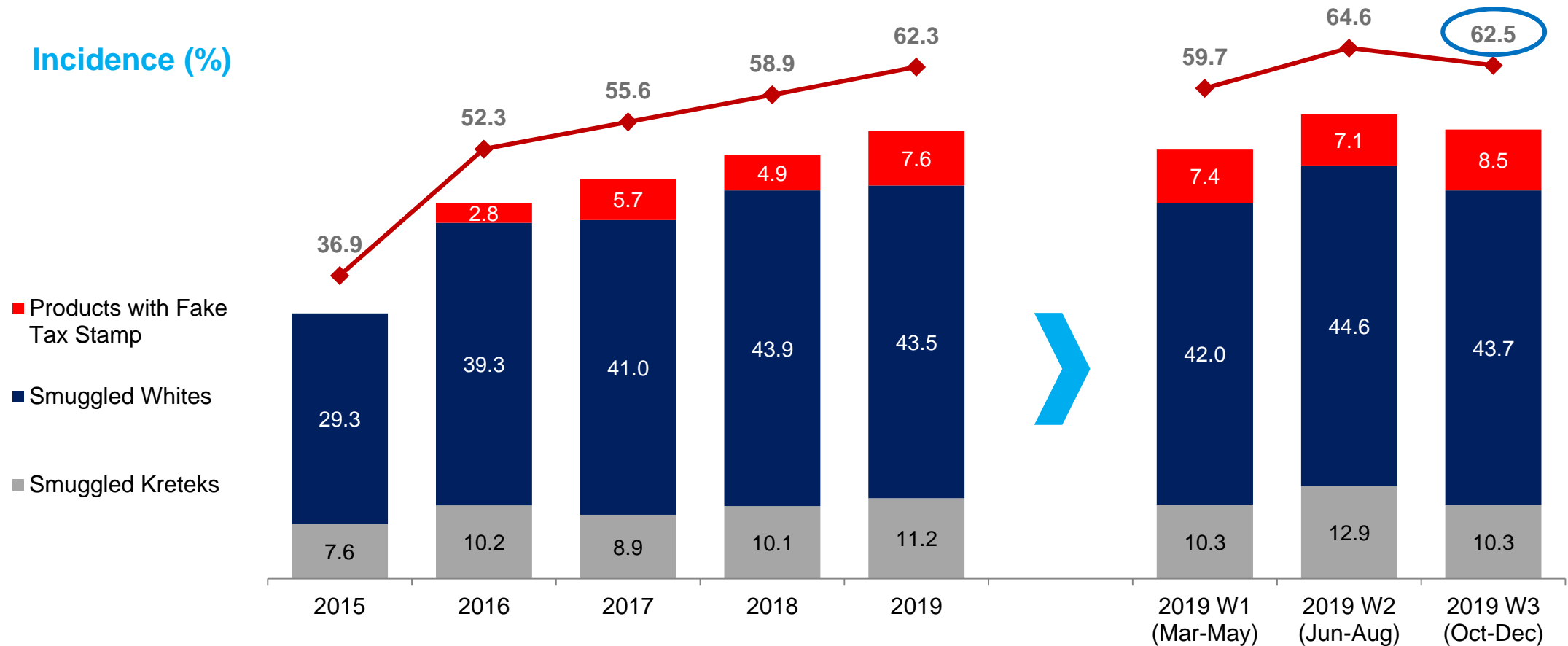
1. Absence of Registered Importers
2. Unregistered Importers*
3. Absence of Registered Manufacturers
4. Unregistered Manufacturers*
5. Packs with counterfeit (fake) Malaysian tax stamp**
6. Packs without Malaysian tax stamp
7. Packs with non-Malaysian tax stamp
8. Unregistered Brand*
9. Non Compliance to Ministry of Health's Control of Tobacco Product Regulations (CTPR) 2004
 - I. Absence or Non Compliance of Pictorial Health Warning Requirements
 - I. Pack Size other than 20 sticks
 - II. Absence or Non Compliance of mandated labeling requirements

* Not registered with the Royal Malaysian Customs

** Verified by Lembah Sari Sdn Bhd (LSSB) – Government appointed sole vendor for tax stamp

ILLEGAL CIGARETTES INCIDENCE AT NATIONAL LEVEL:

Overall declined by 2.1ppt vs 2019 W2 (Jun-Aug)



Volume (Billions sticks)

	2015	2016	2017	2018	2019	2019 W1 (Mar-May)	2019 W2 (Jun-Aug)	2019 W3 (Oct-Dec)
Illegal Cigarettes	7.1	10.1	11.1	12.0	12.2	2.8	3.2	3.1
Estimated Total industry	19.2	19.3	20.0	20.4	19.5	4.6	4.9	4.9
Incidence	36.9%	52.3%	55.6%	58.9%	62.3%	59.7%	64.6%	62.5%



ILLEGAL CIGARETTES INCIDENCE BY STATES:

8 States recording an increase vs. 2019 W2 (Jun-Aug)

	A				B				A minus B				Volume Contribution
	Oct-Dec, 2019				Jun-Aug, 2019				Variance (W3'2019 vs. W2'2019)				
	Total Illegal	Fake Tax Stamp	Smuggled Whites	Smuggled Kretek	Total Illegal	Fake Tax Stamp	Smuggled Whites	Smuggled Kretek	Total Illegal	Fake Tax Stamp	Smuggled Whites	Smuggled Kretek	
Sarawak	84.5	0.0	70.3	14.2	86.7	0.1	71.5	15.1	-2.2	-0.1	-1.2	-0.9	4%
Terengganu	81.2	2.3	74.6	4.3	78.8	3.0	71.3	4.5	+2.4	-0.7	+3.3	-0.2	4%
Sabah	80.2	0.1	75.8	4.3	83.1	0.0	72.0	11.1	-2.9	+0.1	+3.8	-6.8	8%
Pahang	79.2	4.2	64.9	10.1	78.6	6.0	62.8	9.8	+0.6	-1.8	+2.1	+0.3	11%
Kelantan	78.2	3.0	71.0	4.2	76.4	1.1	71.1	4.2	+1.8	+1.9	-0.1	0.0	7%
WP KL	62.5	5.4	41.6	15.5	66.0	3.0	42.4	20.6	-3.5	+2.4	-0.8	-5.1	13%
Selangor	62.4	7.7	37.6	17.1	67.0	4.8	40.3	21.9	-4.6	+2.9	-2.7	-4.8	27%
Kedah	59.6	13.3	41.4	4.9	56.6	13.9	35.3	7.4	+3.0	-0.6	+6.1	-2.5	3%
Perlis	56.3	8.4	37.9	10.0	30.9	2.5	23.1	5.3	+25.4	+5.9	+14.8	+4.7	0%*
Melaka	55.3	16.7	35.0	3.6	50.4	17.8	28.8	3.8	+4.9	-1.1	+6.2	-0.2	3%
Penang	54.8	15.7	33.2	5.9	59.5	16.6	37.3	5.6	-4.7	-0.9	-4.1	+0.3	6%
N.Sembilan	45.6	14.6	23.5	7.5	50.3	15.8	27.4	7.1	-4.7	-1.2	-3.9	+0.4	2%
Johor	42.8	15.3	22.3	5.2	42.2	13.3	24.6	4.3	+0.6	+2.0	-2.3	+0.9	9%
Perak	39.2	16.3	21.4	1.5	38.3	11.6	24.8	1.9	+0.9	+4.7	-3.4	-0.4	2%
National Incidence	62.5	8.5	43.7	10.3	64.6	7.1	44.6	12.9	-2.1	+1.4	-0.9	-2.6	100%

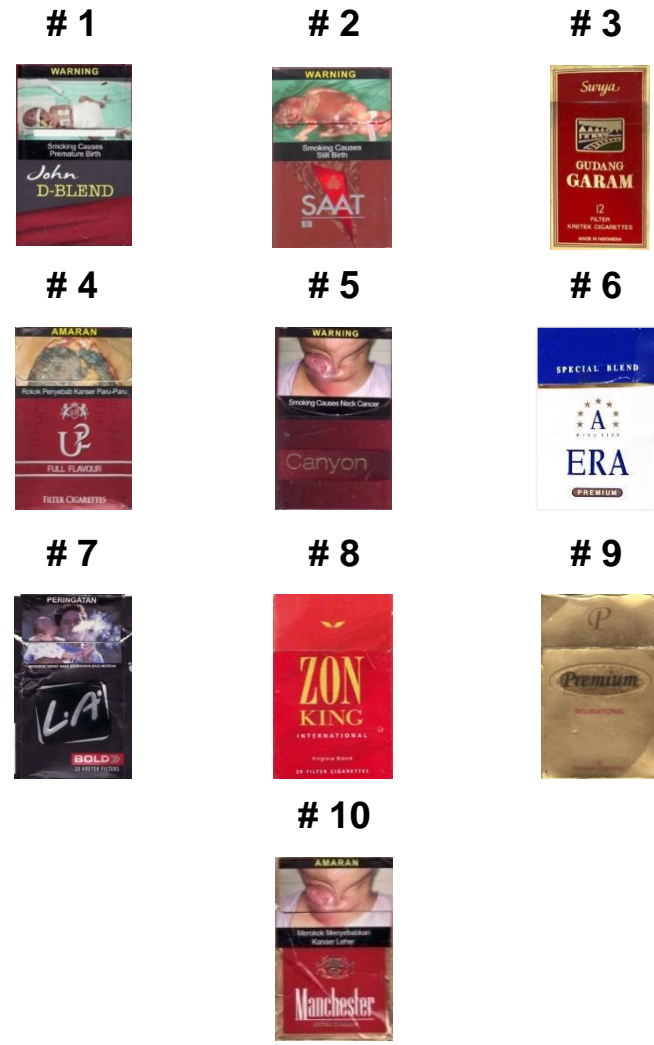
0%* Incidence is less than 0.5%; figure is too small to feature.



TOP 10 ILLEGAL CIGARETTES BRANDS*

They account for approximately 79% of illegal cigarettes volume

	Illegal Brand	Oct-Dec, 2019	Jun-Aug, 2019	Variance
		SOM (%)	SOM (%)	SOM (%)
1.	John	14.4	15.4	-1.0
2.	Saat	6.1	4.2	+1.9
3.	Gudang Garam	5.9	6.7	-0.8
4.	U2	5.7	5.6	+0.1
5.	Canyon	4.3	3.9	+0.4
6.	Era	4.0	4.9	-0.9
7.	LA	2.7	4.6	-1.9
8.	Zon King	2.2	2.5	-0.3
9.	Premium	1.4	1.5	-0.1
10.	Manchester	1.4	0.9	+0.5
Total 10 Total		48.0	50.2	-2.2
Other Illegal		14.5	14.4	+0.1
Total Illegal %		62.5	64.6	-2.1

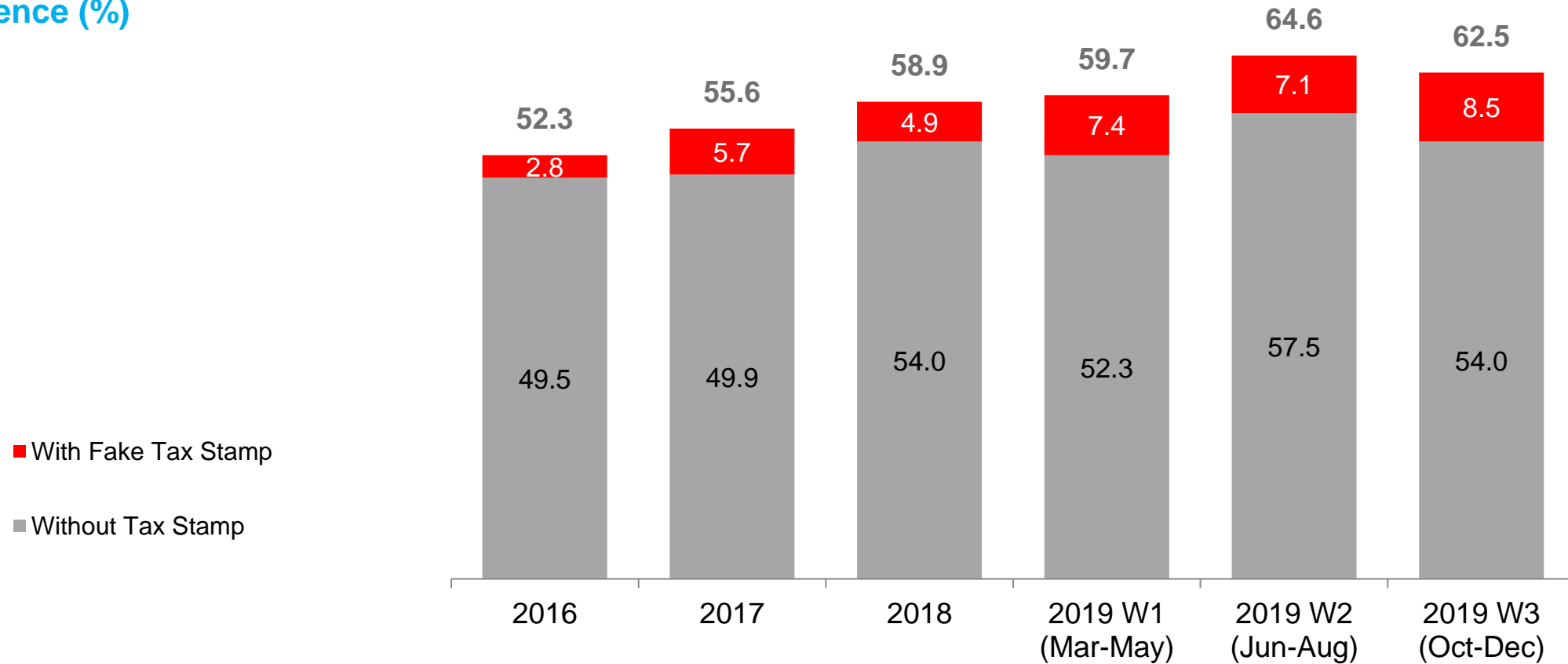


*relates to incidence of empty packs collected that meet any of illegal cigarettes criteria in page 3, regardless whether they are a legal brand or otherwise

TAX STAMP BREAKDOWN OF ILLEGAL CIGARETTES:

89% of illegal cigarettes are without tax stamps while remaining 14% are with fake tax stamps

Incidence (%)



APPENDIX: NIELSEN'S ICS RESEARCH OBJECTIVE & METHODOLOGY

RESEARCH OBJECTIVES

1 Identify the **incidence & trend** of illegal cigarettes in Malaysia & at State Level

2 Identify the **illegal brands** available in Malaysia and at State Level

3 Identify the level of **compliance vs. non-compliance** on cigarette packs

I. Security features (Tax Stamps)

II. Brands of Local Manufacturers and Importers registered with Royal Malaysian Customs

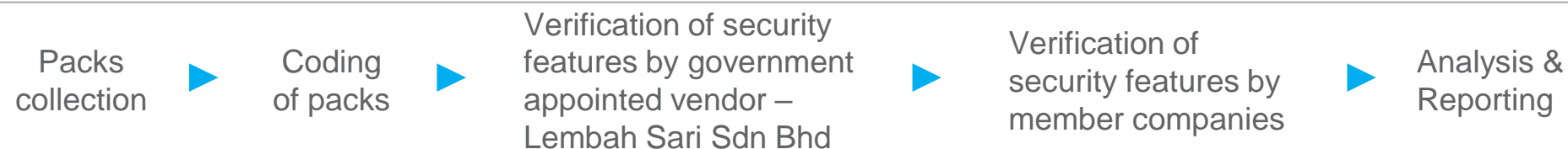
III. Mandated Labeling Requirements (under Control of Tobacco Product Regulations, Trade Description Act, Price Control & Anti Profiteering Act)

OVERVIEW OF STUDY FRAMEWORK

METHODOLOGY

- Method: **Litter collection of cigarette packs.**
- Frequency: **3 waves** in a year.
- Geographical coverage: Nationwide (Pen. M'sia and Sabah & Sarawak)
- Sample size: Nationwide **51,000 packs per wave** (Pen M'sia = A minimum of 3,000 packs per State, Sabah & Sarawak = 4,000 packs each)

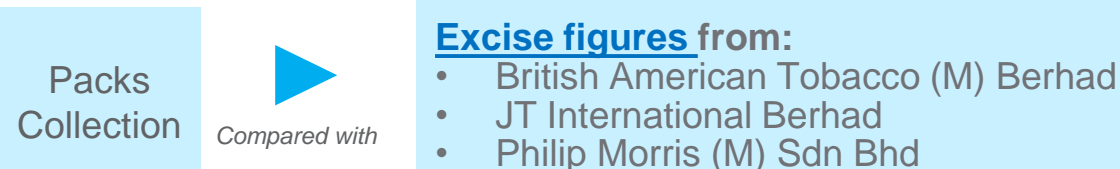
PROCESS



SAMPLING ERROR

0.4% at national level and minimum 1.6% at state level

RELIABILITY



A correlation of **0.99** consecutively since 1993 to 2019 were achieved indicating that the Litter Survey is reliable.

ICS RESEARCH METHODOLOGY AND DESIGN

- i. ICS Universe, Sample Size**
- ii. Sampling Coverage Of ICS and Fieldwork
- iii. Coding Processes
- iv. Data Processing
- v. Weighting The Survey Data

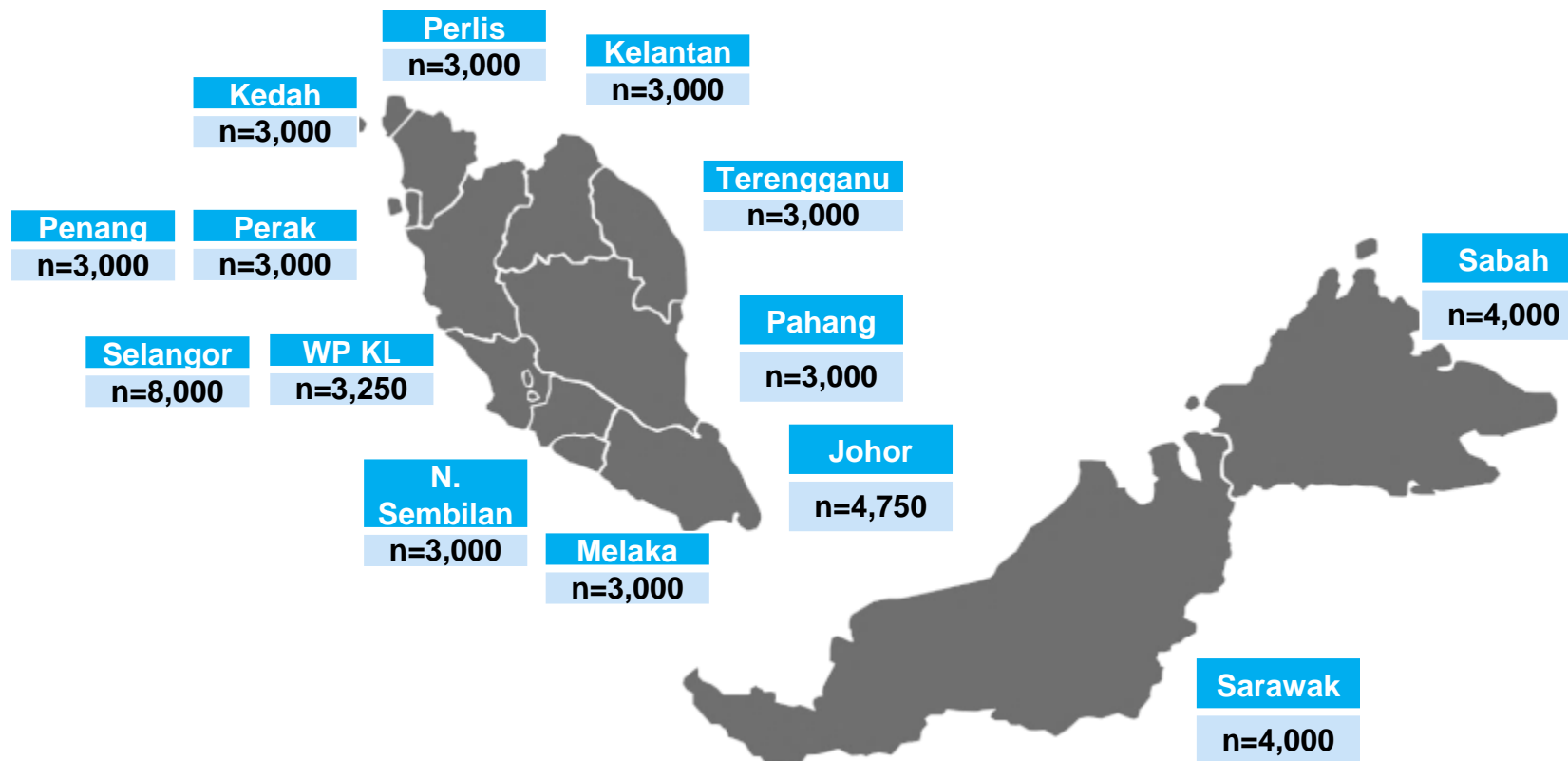
WHY SAMPLE SIZE OF 51,000 PACKS?

Sample Size (n=)	Sampling Error @ 95% Confidence
n=50	14.9%
n=100	9.9%
n=250	5.9%
n=500	4.1%
n=1,000	2.8%
n=2,000	2.0%
n=3,000	1.6%
n=4,000	1.4%
n=10,000	0.8%
n=20,000	0.6%
n=51,000	0.4%

- The data accuracy for a sample size is dependent on the sample size of a study; **Sampling error declines** as **sample size** for a study is **increased**
- To ensure minimal sampling error at **National level**, **sample size of n=51,000** was chosen
- At State level, a minimum sample size of n=3,000 was chosen to optimize data accuracy without impacting the efficiency of fieldwork turnaround time.
- **Any further increment** in sample size will have **minimal effect** in reducing sampling error

GEOGRAPHICAL COVERAGE & SAMPLE SIZE FOR EACH STATE

- State in Pen Malaysia, minimum sample size $n=3,000$
- State in East Malaysia, sample size $n=4,000$
- **These sample size are robust** taking into consideration geographical landscape, different cigarettes volume pattern and efficient turnaround of fieldwork



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SAMPLING COVERAGE OF ICS

STATE	DISTRICT COVERED		
Perlis	Kangar		
Kedah	Kuala Muda	Kota Setar	Kulim
	Kubang Pasu	Baling	Pendang
Penang	Timur Laut	Seberang Perai Tengah	Seberang Perai Utara
Perak	Kinta	Larut & Matang	Manjung
	Hilir Perak	Kerian	
Selangor	Petaling	Ulu Langat	Klang
	Gombak	Kuala Langat	
WP KL	Spread across KL		
N. Sembilan	Seremban	Jempol	Port Dickson
	Tampin		
Melaka	Melaka	Alor Gajah	
Johor	Johor Bahru	Batu Pahat	Kluang
	Kulai Jaya	Muar	Kota Tinggi
Pahang	Kuantan	Temerloh	Bentong
	Maran	Rompin	Pekan
Terengganu	Kuala Terengganu	Kemaman	Dungun
	Besut		
Kelantan	Kota Bharu	Pasir Mas	Tumpat
	Bachok	Tanah Merah	
Sabah	Kota Kinabau	Tawau	Sandakan
	Lahad Datu	Keningau	Semporna
	Papar	Penampang	Beluran
	Tuaran	Ranau	Kota Belud
Sarawak	Kuching	Miri	Sibu
	Bintulu	Serian	Samarahan
	Sri Aman	Sarikei	Kapit
	Bau	Limbang	Saratok

- Nationwide
- All 13 states in Peninsular and East Malaysia and KL Federal Territory
- Covers each state's **top 50% most populous** districts
- The sampling approach ensure **both Urban & Rural** coverage reflects data released by Malaysia Department of Statistic (Census 2010)

FLOW CHART FOR PRE-FIELDWORK AND FIELDWORK

Establish starting point of collection



Collect 25 packs from the street each week

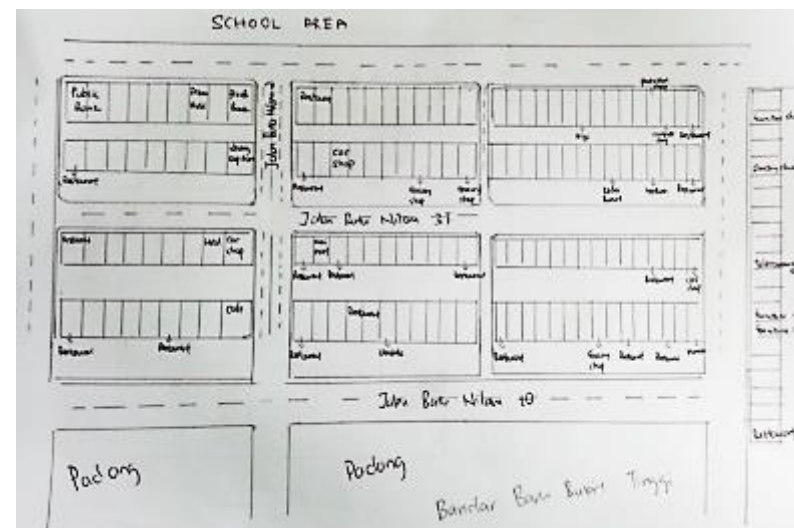


Attach label to bag: Standard label with the following:

- *State*
- *Location collected*
- *Area type*
- *Date of collection*



Packs will then be delivered to Nielsen's Head Office at KL for coding



GUIDELINES FOR PACK COLLECTION

- All Packs collected from the collection points must be in decent condition. If not Lembah Sari Sdn. Bhd. will not be able to validate the authenticity of a pack if the packs are so badly damaged that certain key elements are missing
- Instruction to collectors is to collect pack in decent condition.
- No instruction on brand restriction is issued (hence, [rejection of packs in poor condition applies to all](#) brands)
- As such, collectors will have no preference on the packs being collected as long as it is in decent condition
- Remuneration for packs collected are standard across all pack type / brand



Visual Examples of Unacceptable Packs

ICS RESEARCH METHODOLOGY AND DESIGN

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A ROBUST SOP FOR PACK VERIFICATION & CODING PROCESS

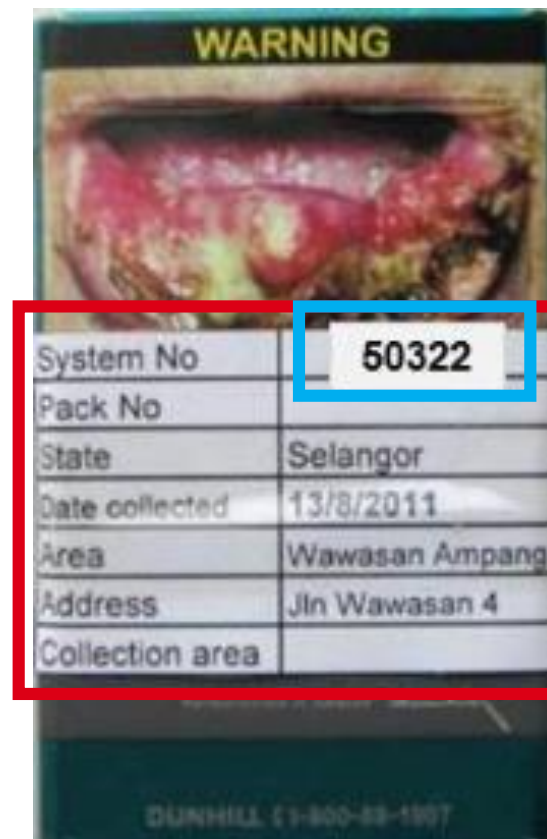
The following diagram illustrates the pack verification & coding process



CODING AND STORAGE PROCESS AT NIELSEN HQ



1. Packs which arrive at Nielsen HQ are assigned a unique pack ID number

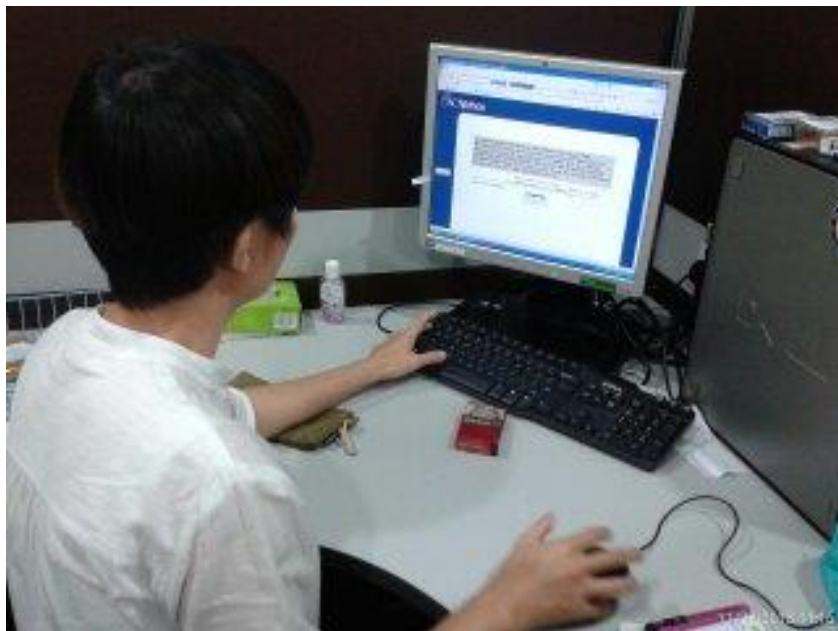


A unique ID is assigned to each pack when it reach Nielsen HQ

Each cigarettes pack which arrive will have a sticker with details on when and where it is collected

Pack Sample

CODING AND STORAGE PROCESS AT NIELSEN HQ



2. Once the pack ID number is assigned, data entry process will begin. All information on the pack will be captured

3. When data entry is completed, the packs are sorted by brands and types



CODING AND STORAGE PROCESS AT NIELSEN HQ

4. Once the sorting is complete, the cigarettes packs are stored on shelves with labeling for easy retrieval when required



ILLEGAL CIGARETTES CRITERIA FOR VERIFICATION

Packs with at least one (1) of the following features:

1. Absence of Registered Importers
2. Unregistered Importers*
3. Absence of Registered Manufacturers
4. Unregistered Manufacturers*
5. Packs with counterfeit (fake) Malaysian tax stamp**
6. Packs without Malaysian tax stamp
7. Packs with non-Malaysian tax stamp
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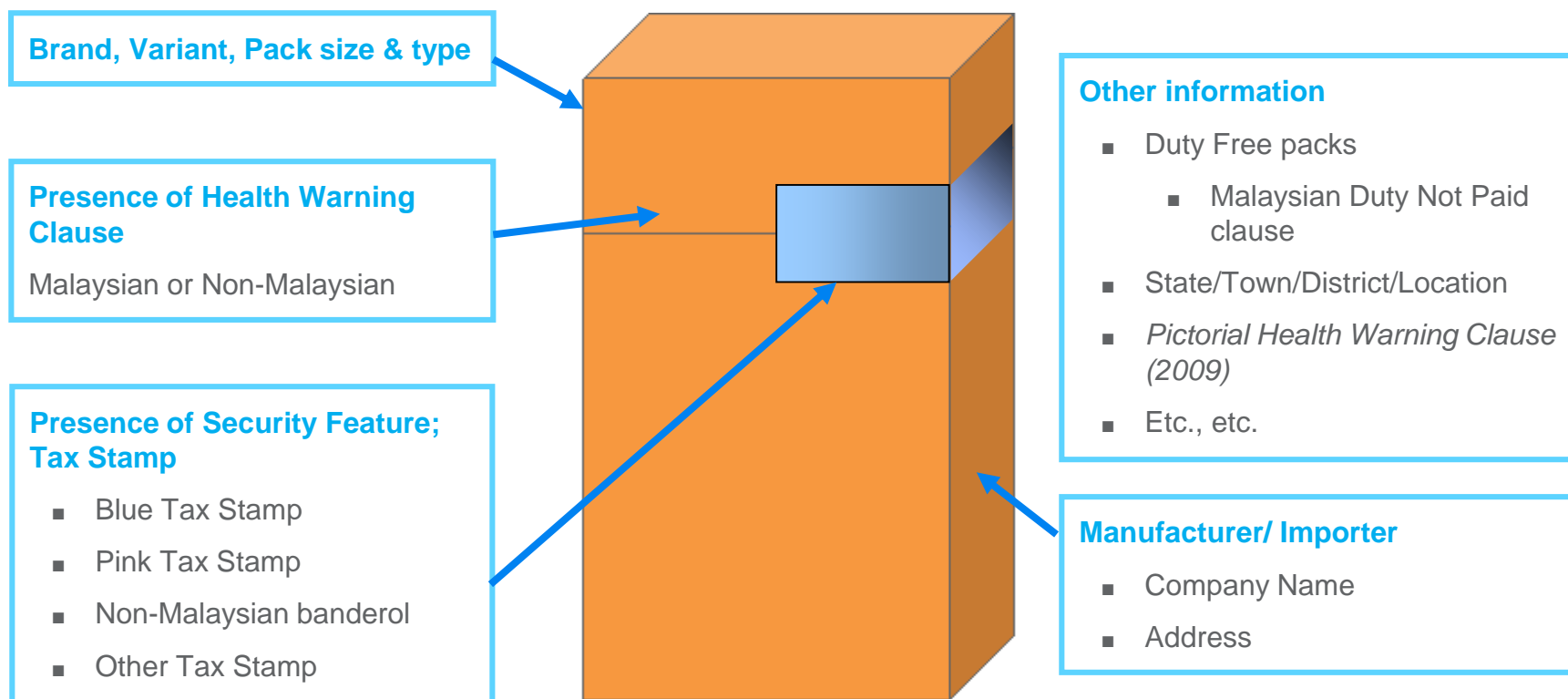
** Verified by Lembah Sari Sdn Bhd (LSSB) – Government appointed sole vendor for tax stamp

REGULATIONS SET BY THE MALAYSIA GOVERNMENT

- All locally manufactured cigarettes and imported cigarettes are required to meet the following criteria:
 - **Registered brand** with Customs
 - **Registered manufacturer** with Customs
 - **Registered importer** with Customs (if it is an imported pack)
 - **Malaysian labeling requirements** i.e. pictorial health warning clause, textual health warning clause, “no sales to under 18” clause, manufacturing date, name and address on manufacturer/importer
 - **Pack size** of not less than 20 sticks
- Additional security features for imported / manufactured packs for **domestic** consumption:
 - Blue tax stamp
- Additional security features for imported / manufactured packs for **duty free** consumption:
 - Pink tax stamp

VISIBLE ELEMENTS CAPTURED IN ICS

The following visible elements is **checked & coded / captured** for *each* of the collected packs by Nielsen Malaysia



Information on registered brands, registered manufacturers/ Importers is provided by CMTM

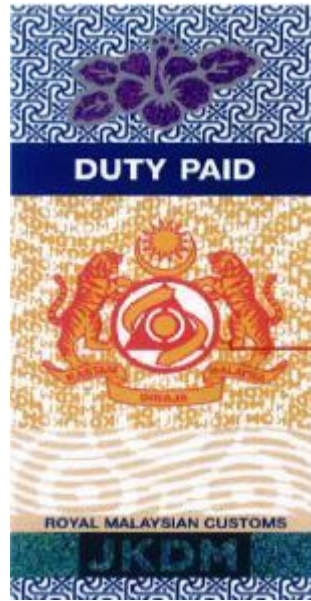
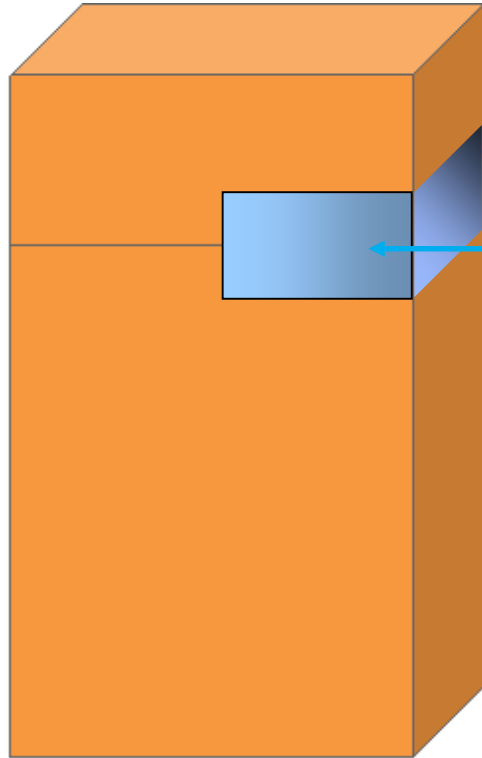
VERIFICATION OF SECURITY TAX STAMP

- **Tax Stamps** are verified by Lembah Sari using the special reader/tool
- Verification outcome: **sign off by Lembah Sari & Nielsen** as witness

No	Pack ID System	Brand	Pack Size	Security Ink	Remarks (by LSSB)	Other Comments
10	7	30720	John	20	F	
11	8	111197	John	20	F	
12	9	110215	John	20	F	
13	10	101121	John	20	F	
14	11	40085	John	20	F	
15	12	40782	John	20	F	
16	13	121022	John	20	F	
17	14	100613	John	20	F	
18	15	121195	John	20	F	
19	16	110975	John	20	F	
20	17	60734	John	20	F	
21	18	110977	John	20	F	
22	19	41164	John	20	F	
23	20	40784	John	20	F	
24	21	40689	John	20	F	
25	22	40788	John	20	F	
26	23	40711	John	20	F	
27	24	10938	John	20	F	
28	25	41090	John	20	F	
29	26	40662	John	20	F	
30	27	40996	John	20	F	
31	28	4167	John	20	F	
32	29	111168	John	20	F	
33	30	41032	John	20	F	
34	31	40639	John	20	F	
35	32	120799	John	20	F	
36	33	40843	John	20	F	
37	34	4088	John	20	F	



VERIFICATION OF SECURITY TAX STAMP



Blue Tax Stamp
(Domestic Market)

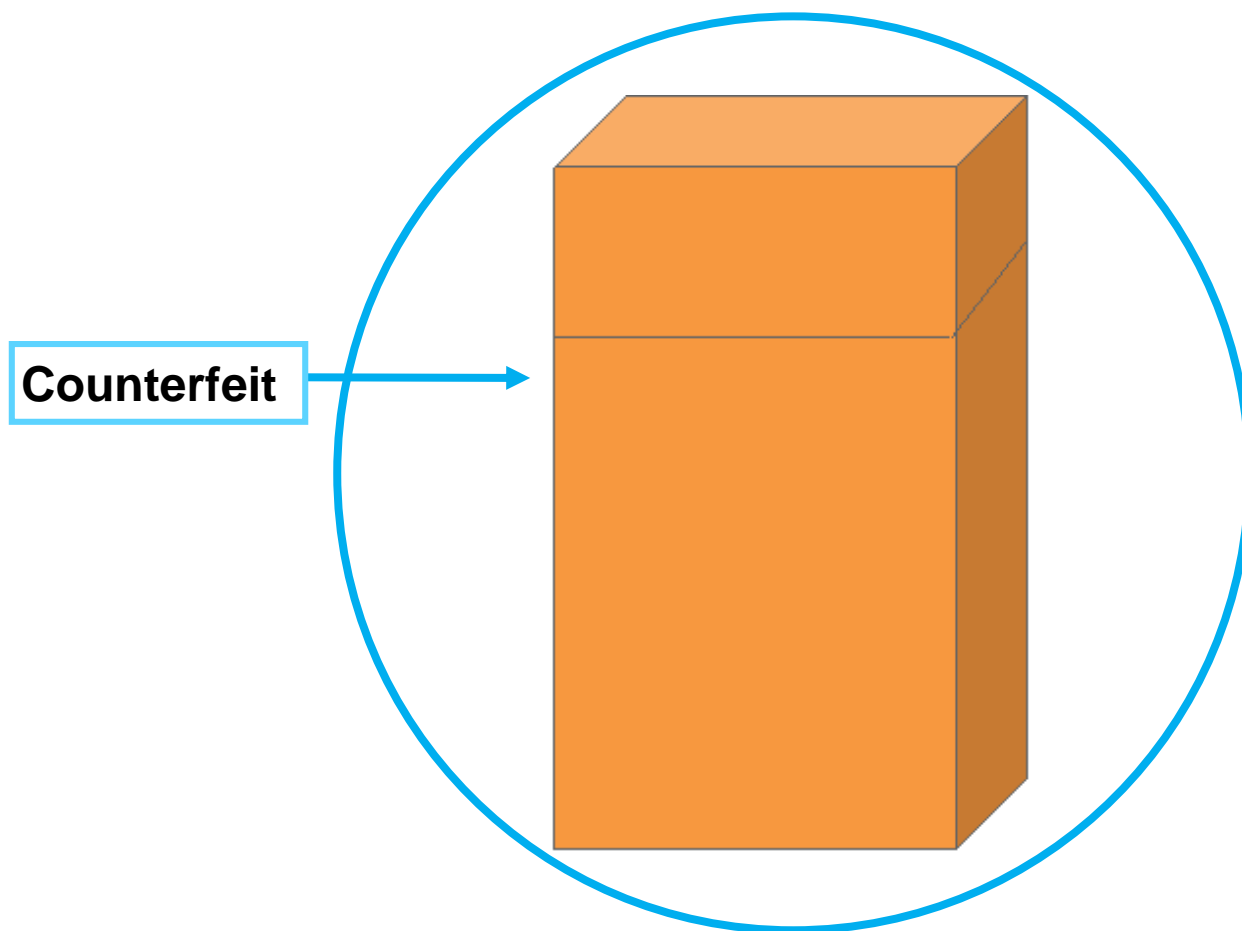
OR



Pink Tax Stamp
(Duty Free Market)

VERIFICATION OF NON-VISIBLE ELEMENTS

- Only applicable to CMTM members' brands
- **Verification** by the respective member companies' **technical experts**
- Pack **IDs of identified Counterfeit packs** are given to Nielsen Malaysia

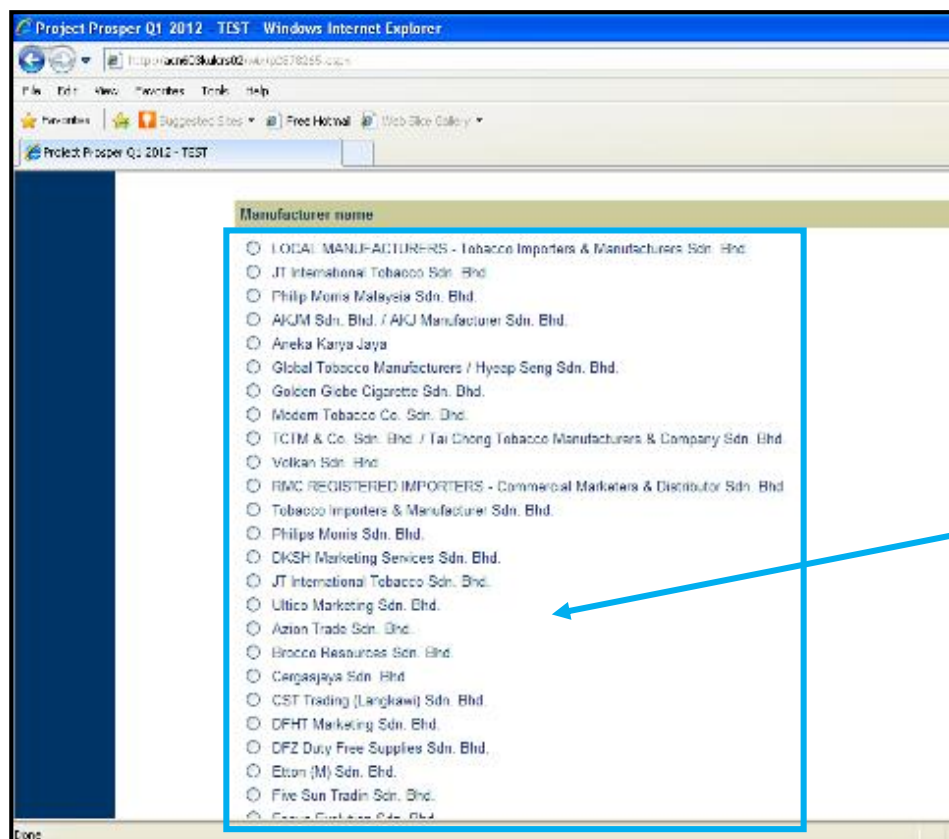


ICS RESEARCH METHODOLOGY AND DESIGN

- i. ICS Universe, Sample Size
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DATA PROCESSING (DATA CLEANING & MERGING)

- Software program to ensure data accuracy
- Logic checks on brand and manufacturers
- Security feature verification results merged into data file



Control of Response List by Researchers

- Data entry can only input data as per the response list provided
- Any new information to be added to the response list is **subject to Research Team approval**
- Research Team will **review and validate the new details** before adding in any new response into the system

DATA PROCESSING (QUALITY CONTROL)

	A1	responseid										
	A	B	E	F	G	H	I	J	K	L	M	
1	responseid	respid	Q5.Wave	Q6.Month	Q8.State	Q10.Location	Q8.Street	Q13.Spec	Q13	Q26.Region	Q20.Brand	
2	1	24003	Wave 3, Week 33: 03/10/20	Oct-12	Johor	Johor - Ba,Urban	Johor, Bar Taman Bc South [Joh	Dunhill Re				
3	2	0	Wave 3, Week 33: 03/10/20	Oct-12	Perlis	Perlis - Ko,Urban	Perlis, Kor Jalan Ara, North [Per	Peter Stuy				
4	3	36003	Wave 3, Week 33: 03/10/20	Oct-12	Sabah	Sabah - Ko,Urban	Sabah, Ko Likas - Tor East Mala	Dunhill Re				
5	4	10	Wave 3, Week 33: 03/10/20	Oct-12	Perlis	Perlis - Ko,Urban	Perlis, Kor Jalan Ara, North [Per	Dunhill Re				
6	5	36038	Wave 3, Week 33: 03/10/20	Oct-12	Sabah	Sabah - Ko,Urban	Jln Paser, Jalan Pas East Mala	Dunhill Re				
7	6	36004	Wave 3, Week 33: 03/10/20	Oct-12	Sabah	Sabah - Ko,Urban	Sabah, Ko Likas - Tor East Mala	Winston R				
8	7	24004	Wave 3, Week 33: 03/10/20	Oct-12	Johor	Johor - Ba,Urban	Johor, Bar Taman Bc South [Joh	Dunhill Re				
9	8	24005	Wave 3, Week 33: 03/10/20	Oct-12	Johor	Johor - Ba,Urban	Johor, Bar Taman Bc South [Joh	Dunhill Re				
10	9	36005	Wave 3, Week 33: 03/10/20	Oct-12	Sabah	Sabah - Ko,Urban	Sabah, Ko Likas - Tor East Mala	Dunhill Me				
11	10	24006	Wave 3, Week 33: 03/10/20	Oct-12	Johor	Johor - Ba,Urban	Johor, Bar Taman Bc South [Joh	Dunhill Re				
12	11	36040	Wave 3, Week 33: 03/10/20	Oct-12	Sabah	Sabah - Ko,Urban	Jln Paser, Jalan Pas East Mala	Dunhill Me				
13	12	36006	Wave 3, Week 33: 03/10/20	Oct-12	Sabah	Sabah - Ko,Urban	Sabah, Ko Likas - Tor East Mala	Gudang G				
14	13	36007	Wave 3, Week 33: 03/10/20	Oct-12	Sabah	Sabah - Ko,Urban	Sabah, Ko Likas - Tor East Mala	Gudang G				
15	14	30070	Wave 3, Week 33: 03/10/20	Oct-12	Kedah	Kedah - A,Urban	Jalan Peg, Jalan Peg North [Per	Marlboro				
16	15	36041	Wave 3, Week 33: 03/10/20	Oct-12	Sabah	Sabah - Ko,Urban	Jln Paser, Jalan Pas East Mala	Dunhill Me				
17	16	24007	Wave 3, Week 33: 03/10/20	Oct-12	Johor	Johor - Ba,Urban	Johor, Bar Taman Bc South [Joh	Winston R				
18	17	24008	Wave 3, Week 33: 03/10/20	Oct-12	Johor	Johor - Ba,Urban	Johor, Bar Taman Bc South [Joh	Winston R				
19	18	36042	Wave 3, Week 33: 03/10/20	Oct-12	Sabah	Sabah - Ko,Urban	Jln Paser, Jalan Pas East Mala	Premium 8				
20	19	36008	Wave 3, Week 33: 03/10/20	Oct-12	Sabah	Sabah - Ko,Urban	Sabah, Ko Likas - Tor East Mala	Gudang G				
21	20	36009	Wave 3, Week 33: 03/10/20	Oct-12	Sabah	Sabah - Ko,Urban	Sabah, Ko Likas - Tor East Mala	Gudang G				
22	21	4	Wave 3, Week 33: 03/10/20	Oct-12	Perlis	Perlis - Ko,Urban	Perlis, Kor Jalan Ara, North [Per	Salem Me				
23	22	30079	Wave 3, Week 33: 03/10/20	Oct-12	Kedah	Kedah - A,Urban	Jalan Peg, Jalan Peg North [Per	Marlboro				
24	23	36010	Wave 3, Week 33: 03/10/20	Oct-12	Sabah	Sabah - Ko,Urban	Sabah, Ko Likas - Tor East Mala	Marlboro				
25	24	36043	Wave 3, Week 33: 03/10/20	Oct-12	Sabah	Sabah - Ko,Urban	Jln Paser, Jalan Pas East Mala	Premium 8				
26	25	36011	Wave 3, Week 33: 03/10/20	Oct-12	Sabah	Sabah - Ko,Urban	Sabah, Ko Likas - Tor East Mala	Ero Premi				
27	26	36044	Wave 3, Week 33: 03/10/20	Oct-12	Sabah	Sabah - Ko,Urban	Jln Paser, Jalan Pas East Mala	Premium 8				
28	27	24009	Wave 3, Week 33: 03/10/20	Oct-12	Johor	Johor - Ba,Urban	Johor, Bar Taman Bc South [Joh	Winston R				
29	28	30080	Wave 3, Week 33: 03/10/20	Oct-12	Kedah	Kedah - A,Urban	Jalan Peg, Jalan Peg North [Per	Marlboro				
30	29	5	Wave 3, Week 33: 03/10/20	Oct-12	Perlis	Perlis - Ko,Urban	Perlis, Kor Jalan Ara, North [Per	Marlboro				
31	30	24010	Wave 3, Week 33: 03/10/20	Oct-12	Johor	Johor - Ba,Urban	Johor, Bar Taman Bc South [Joh	Winston R				
32	31	36045	Wave 3, Week 33: 03/10/20	Oct-12	Sabah	Sabah - Ko,Urban	Jln Paser, Jalan Pas East Mala	Premium 8				
33	32	30081	Wave 3, Week 33: 03/10/20	Oct-12	Kedah	Kedah - A,Urban	Jalan Peg, Jalan Peg North [Per	Marlboro				

10% of data entered into the database will be cross-check by a QC personnel to ensure data accuracy and coders are capturing the data correctly

QC personnel will randomly select 10% of packs which has been keyed into the system, cross-compare to ensure pack features is similar to what has been recorded in the system and rectify the data

Besides completing a 10% physical QC check, the database is reviewed to check for data discrepancy against known facts

- E.g. Dunhill belongs to BAT M'sia ,
- Legal packs comes only in pack size of 20s

If any data discrepancies are detected, the affected pack will be extracted and a physical validation process will be undergone

ICS RESEARCH METHODOLOGY AND DESIGN

- i. ICS Universe, Sample Size
- ii. Sampling Coverage Of ICS and Fieldwork
- iii. Coding Processes
- iv. Data Processing
- v. **Weighting The Survey Data**

Why apply Weighting to Survey Data?

- A weighting process is used to determine the total estimated cigarettes volume pattern of an individual state
- If weighting is not done, then:
 - **All states** in Peninsular are assumed to have **equal volumes** of total cigarettes volume
 - Perlis with a smaller population will be **over represented** and Selangor, with a bigger population will be **under represented**
 - Sabah and Sarawak, combined would represent about 16% (8,000 of 51,000 packs) of total cigarettes volume in Malaysia, which in reality is less than 10%.

HOW DOES NIELSEN WEIGHT THE DATA?

Step 1: Establish the Estimated Legal Industry Volume

- The **estimated legal industry volume** is established based on the following information:
 - In-market sales** as provided independently by British American Tobacco Malaysia (BATM), Philip Morris Malaysia (PMM) and Japan Tobacco International (JTI)
 - Local manufacturers' **volume** from **Nielsen's Retail Audit**
 - Malaysian Duty Free** volume from Illicit Cigarettes Study (**ICS**)

	Oct-Dec, 2019	
	('000 sticks)	
CMTM Member Companies (BATM, PMM, JTI)	1,640,800	Derive from actual in-market sales as provided by CMTM member companies
Other Local manufacturers	78,913	Retail Audit volume is used as substitute since actual data is not available
Malaysian Duty Free	124,638	ICS volume estimation is used as substitute since actual data is not available
Total Legal Cigarettes Sales	1,844,350	

Unit of measurement : thousand sticks

HOW DOES NIELSEN WEIGHT THE DATA?

Step 2: Establish the Legal Industry Volume contribution by State

- Using Nielsen Retail Audit as a guideline, **establish each states' legal volume contribution** towards the national volume of 1,844,350,000 sticks

	NIELSEN RETAIL AUDIT	STATE'S LEGAL VOLUME CONTRIBUTION
PERLIS	4,822	0.3%
KEDAH	48,753	3.4%
PENANG	110,132	7.8%
PERAK	75,215	5.3%
SELANGOR	386,388	27.3%
WP KL	186,493	13.2%
N.SEMBILAN	58,312	4.1%
MELAKA	65,756	4.6%
JOHOR	279,430	19.8%
PAHANG	67,966	4.8%
TERENGGANU	21,456	1.5%
KELANTAN	46,617	3.3%
SABAH	45,944	3.2%
SARAWAK	17,515	1.2%
NATIONAL	1,414,799	

Step 2a. (Using Retail Audit)

State Legal Volume Contribution = $\frac{\text{State's Retail Audit Volume}}{\text{National Volume}}$
 (e.g. $386,388 / 1,414,799 = 27.3\%$)

	NIELSEN RETAIL AUDIT	STATE'S LEGAL VOLUME CONTRIBUTION	PROJECTED/ ESTIMATED STATE LEGAL VOLUME
SELANGOR	386,388	27.3%	503,700
NATIONAL	1,414,799		1,844,350

Step 2b.

Projected States Legal Volume = State Legal Volume Contribution X National Legal Volume
 (derived from Retail Audit) (obtained from Step 1)

(e.g. $27.3\% \times 1,844,350 = 503,700$)

HOW DOES NIELSEN WEIGHT THE DATA?

Step 2: Key Output

	NIELSEN RETAIL AUDIT	STATE'S LEGAL VOLUME CONTRIBUTION	PROJECTED/ ESTIMATED STATE LEGAL VOLUME
PERLIS	4,822	0.3%	6,286
KEDAH	48,753	3.4%	63,554
PENANG	110,132	7.8%	143,570
PERAK	75,215	5.3%	98,052
SELANGOR	386,388	27.3%	503,700
WP KL	186,493	13.2%	243,115
N.SEMBILAN	58,312	4.1%	76,016
MELAKA	65,756	4.6%	85,720
JOHOR	279,430	19.8%	364,268
PAHANG	67,966	4.8%	88,602
TERENGGANU	21,456	1.5%	27,970
KELANTAN	46,617	3.3%	60,771
SABAH	45,944	3.2%	59,893
SARAWAK	17,515	1.2%	22,833
NATIONAL	1,414,799		1,844,350

HOW DOES NIELSEN WEIGHT THE DATA?

Step 3: Establish the Incidence for Legal / Illegal Cigarettes

- Convert the data from “**packs collected** “ to “**sticks**” (based on pack size)
- The **study’s unit of measurement** is based on consumption in **sticks**
 - Though CTPR prohibits the sales of cigarettes below the pack sizes of 20 sticks, **illegal cigarettes** (primarily for illegal kretek) could still be found **in pack sizes below 20 sticks**
 - The **calculation based on number of packs collected** will **create a false inflation** on illegal volume due to the presence of packs sizes below 20 sticks

State	Total packs collected (Oct'16 – Dec'16)	Number of legal packs collected	(Unweighted) Volume of legal packs collected	Number of illegal packs collected	(Unweighted) Volume of illegal packs collected	Total volume (Legal + Illegal)	Incidence of legal cigarettes	Incidence of illegal cigarettes
			A		B	C = A + B	D = A / C	E = B / C
SELANGOR	8,000	2,835	56,700	5,165	94,229	150,929	37.6%	62.4%

Step 3a.

Sum up the number of sticks per pack for all legal packs collected to establish the estimated legal volume in sticks

Step 3b.

Repeat Step 3a to establish the estimated illegal volume in sticks

Step 3c.

Sum up the total consumption for both legal and illegal to establish The estimated total cigarette volume at state level

Step 3d.

Calculate the ratio of estimated legal vs. illegal volume

HOW DOES NIELSEN WEIGHT THE DATA?

Step 3: Incidence for Legal / Illegal Cigarettes Key Output

- Establish the level of legal vs. illegal cigarettes ratio in each respective state

State	Total packs collected (Oct'16 – Dec'16)	Number of legal packs collected	(Unweighted) Volume of legal packs collected	Number of illegal packs collected	(Unweighted) Volume of illegal packs collected	Total volume (Legal + Illegal)	Incidence of legal cigarettes	Incidence of illegal cigarettes
			A		B	C = A + B	D = A / C	E = B / C
Perlis	3,000	1,230	24,600	1,770	31,820	56,420	43.6%	56.4%
Kedah	3,000	1,177	23,540	1,823	34,774	58,314	40.4%	59.6%
Penang	3,000	1,313	26,260	1,687	31,803	58,063	45.2%	54.8%
Perak	3,000	1,810	36,200	1,190	23,373	59,573	60.8%	39.2%
Selangor	8,000	2,835	56,700	5,165	94,229	150,929	37.6%	62.4%
WP KL	3,250	1,153	23,060	2,097	38,500	61,560	37.5%	62.5%
Negri 9	3,000	1,571	31,420	1,429	26,366	57,786	54.4%	45.6%
Melaka	3,000	1,328	26,560	1,672	32,839	59,399	44.7%	55.3%
Johor	4,750	2,682	53,640	2,068	40,066	93,706	57.2%	42.8%
Pahang	3,000	594	11,880	2,406	45,290	57,170	20.8%	79.2%
T'gganu	3,000	550	11,000	2,450	47,608	58,608	18.8%	81.2%
Kelantan	3,000	637	12,740	2,363	45,714	58,454	21.8%	78.2%
Sabah	4,000	784	15,680	3,216	63,335	79,015	19.8%	80.2%
Sarawak	4,000	598	11,960	3,402	65,388	77,348	15.5%	84.5%

HOW DOES NIELSEN WEIGHT THE DATA?

Step 4: Project Total Market Volume

- Once each states' estimated legal volume and legal incidence have been established, the numbers will be used to project total industry volume for each state

	STATE LEGAL VOLUME	LEGAL INCIDENCE	TOTAL MARKET VOLUME	STATE ILLEGAL VOLUME
	A	B	$C = A / B$	$D = C - A$
SELANGOR	503,700	37.6%	1,340,792	837,092

Step 4a.

Based on the incidence for legal cigarettes of 38.2% in Selangor, project the total volume for the state
(e.g. 503,700 divide by 37.6% = 1,340,792)

Step 4b.

Illegal volume is established by subtracting the projected total state's volume with the legal volume
(e.g. 1,340,792 – 503,700 = 837,092)

HOW DOES NIELSEN WEIGHT THE DATA?

Step 4: Key Output - Illegal Cigarettes Incidence @ National level

- Repeat the same process in Step 4 for all States

	STATE LEGAL VOLUME	LEGAL INCIDENCE	TOTAL MARKET VOLUME	STATE ILLEGAL VOLUME
PERLIS	6,286	43.6%	14,416	8,130
KEDAH	63,554	40.4%	157,439	93,885
PENANG	143,570	45.2%	317,445	173,875
PERAK	98,052	60.8%	161,360	63,308
SELANGOR	503,700	37.6%	1,340,792	837,092
WP KL	243,115	37.5%	649,009	405,894
N.SEMBILAN	76,016	54.4%	139,805	63,789
MELAKA	85,720	44.7%	191,706	105,985
JOHOR	364,268	57.2%	636,356	272,087
PAHANG	88,602	20.8%	426,377	337,776
TERENGGANU	27,970	18.8%	149,024	121,054
KELANTAN	60,771	21.8%	278,831	218,060
SABAH	59,893	19.8%	301,813	241,920
SARAWAK	22,833	15.5%	147,669	124,835
NATIONAL	1,844,350		4,912,042	3,067,692

Divide **National Illegal Volume 3,067,692** with **National Total Market Volume 4,912,042** **62.5%**

