ILLICIT CIGARETTES STUDY (ICS) IN MALAYSIA 2019 (ANNUALISED) REPORT

Report Commissioned by CMTM member companies

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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
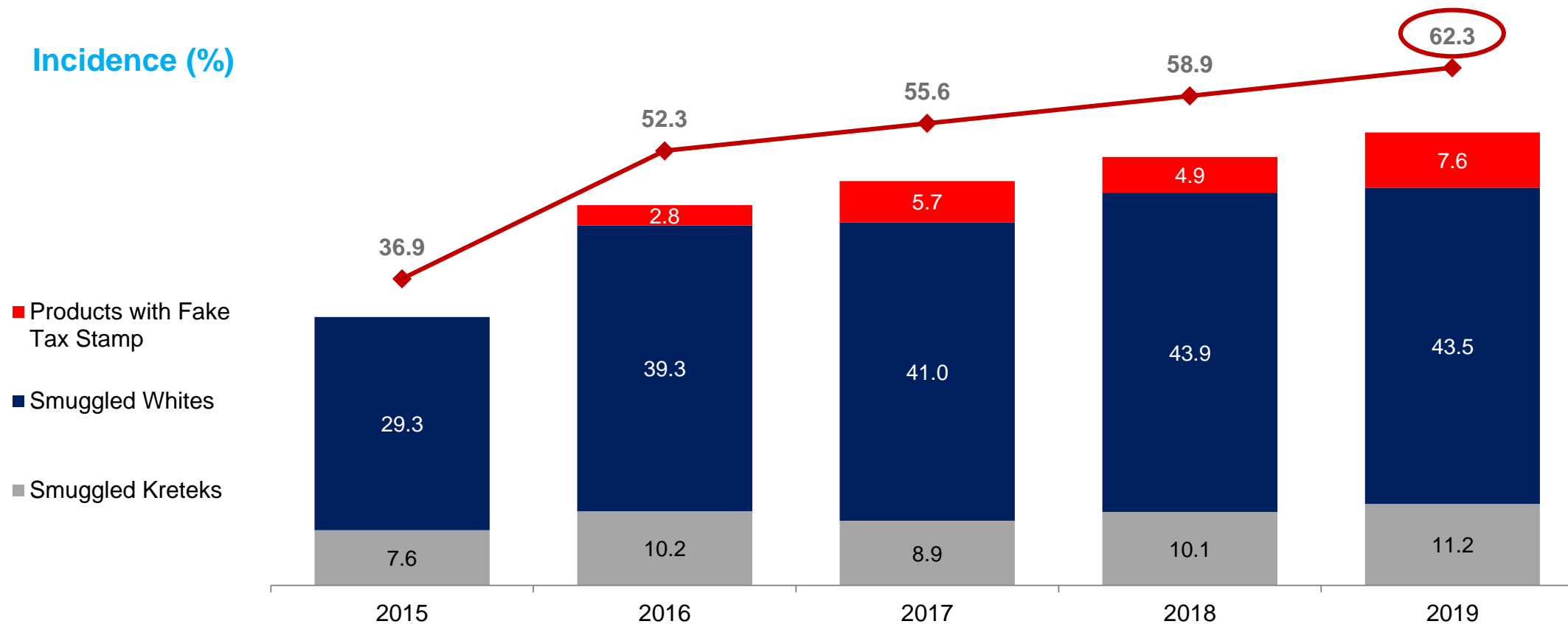   II. Absence or Non Compliance of mandated labeling requirements

*   Not registered with the Royal Malaysian Customs
**   Verified by Lembah Sari Sdn Bhd (LSSB) – Government appointed sole vendor for tax stamp

IILEGAL CIGARETTES INCIDENCE AT NATIONAL LEVEL:
Overall increased by 3.4ppt vs 2018

Incidence (%)

Legend:
- ■ Products with Fake Tax Stamp
- ■ Smuggled Whites
- ■ Smuggled Kreteks

	2015	2016	2017	2018	2019
Incidence % (line)	36.9	52.3	55.6	58.9	62.3
Products with Fake Tax Stamp		2.8	5.7	4.9	7.6
Smuggled Whites	29.3	39.3	41.0	43.9	43.5
Smuggled Kreteks	7.6	10.2	8.9	10.1	11.2

Volume (Billions sticks)	2015	2016	2017	2018	2019
Illegal Cigarettes	7.1	10.1	11.1	12.0	12.2
Estimated Total industry	19.2	19.3	20.0	20.4	19.5
Incidence	36.9%	52.3%	55.6%	58.9%	62.3%

ILLEGAL CIGARETTES INCIDENCE BY STATES:

9 States recording an increase vs. 2018

|	A 2019				B 2018				A minus B Variance (2019 vs. 2018)				Volume Contribution
	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	86.1	0.0	72.2	13.9	83.5	0.0	67.6	15.9	+2.6	0.0	+4.6	-2.0	5%
Sabah	81.0	0.0	75.0	6.0	81.3	0.0	79.7	1.6	-0.3	0.0	-4.7	+4.4	9%
Terengganu	78.7	3.5	70.5	4.7	76.5	2.0	65.5	9.0	+2.2	+1.5	+5.0	-4.3	4%
Pahang	77.8	5.4	62.7	9.7	72.5	2.0	60.0	10.5	+5.3	+3.4	+2.7	-0.8	10%
Kelantan	76.2	1.7	69.1	5.4	78.0	0.0	71.0	7.0	-1.8	+1.7	-1.9	-1.6	6%
Selangor	63.8	6.5	38.1	19.2	56.4	4.0	34.9	17.5	+7.4	+2.5	+3.2	+1.7	28%
WP KL	62.0	4.4	40.3	17.3	50.8	1.9	35.2	13.7	+11.2	+2.5	+5.1	+3.6	13%
Kedah	59.6	13.0	38.7	7.9	55.2	9.2	37.6	8.4	+4.4	+3.8	+1.1	-0.5	4%
Penang	55.3	15.0	34.9	5.4	54.5	11.2	37.9	5.4	+0.8	+3.8	-3.0	0.0	6%
Melaka	50.4	16.0	31.1	3.3	52.4	11.1	36.8	4.5	-2.0	+4.9	-5.7	-1.2	3%
N.Sembilan	48.4	14.3	26.9	7.2	43.6	12.6	25.0	6.0	+4.8	+1.7	+1.9	+1.2	2%
Perlis	42.8	7.1	28.6	7.1	39.3	9.1	25.5	4.7	+3.5	-2.0	+3.1	+2.4	0%*
Johor	41.1	13.6	23.4	4.1	43.9	7.4	31.4	5.1	-2.8	+6.2	-8.0	-1.0	8%
Perak	37.6	12.6	23.4	1.6	46.2	7.0	29.2	10.0	-8.6	+5.6	-5.8	-8.4	2%
National Incidence	62.3	7.6	43.5	11.2	58.9	4.9	43.9	10.1	+3.4	+2.7	-0.4	+1.1	100%

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

TOP 10 ILLEGAL CIGARETTES BRANDS*

They account for approximately 77% of illegal cigarettes volume

	Illegal Brand	2019 SOM (%)	2018 SOM (%)	Variance SOM (%)
1.	John	14.2	14.4	-0.2
2.	Gudang Garam	6.0	5.9	+0.1
3.	U2	5.3	5.7	-0.4
4.	Saat	4.9	6.1	-1.2
5.	Canyon	4.5	4.3	+0.2
6.	Era	4.4	4.0	+0.4
7.	LA	3.6	2.7	+0.9
8.	Zon King	2.2	2.2	-
9.	Premium	1.5	1.4	+0.1
10.	Luffman	1.3	0.9	+0.4
	Total 10 Total	**47.9**	**47.6**	**+0.3**

	2019	2018	Variance
Other Illegal	*14.4*	*11.3*	*+3.1*
Total Illegal %	**62.3**	**58.9**	**+3.4**
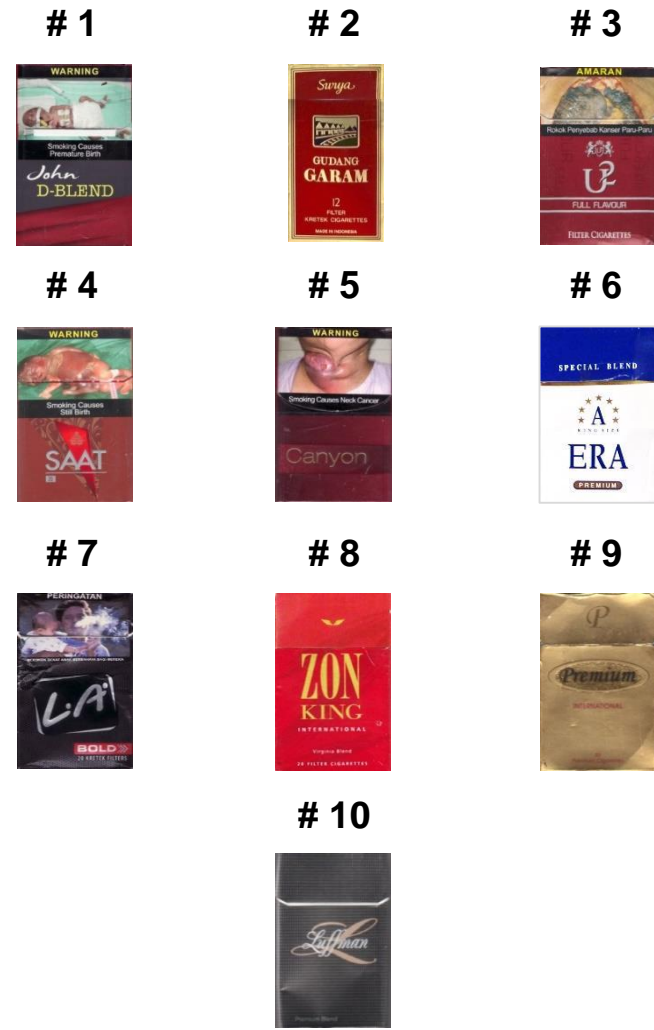
relates to incidence of empty packs collected that meet any of illegal cigarettes criteria in page 3, regardless whether they are a legal brand or otherwise

1

2

3

4

5

6

7

8

9

10

TAX STAMP BREAKDOWN OF ILLEGAL CIGARETTES:
88% of illegal cigarettes are without tax stamps while remaining 12% are with fake tax stamps

Incidence (%)

Legend:
- ■ With Fake Tax Stamp
- ■ Without Tax Stamp

Year	Total	With Fake Tax Stamp	Without Tax Stamp
2016	52.3	2.8	49.5
2017	55.6	5.7	49.9
2018	58.9	4.9	54.0
2019	62.3	7.6	54.7
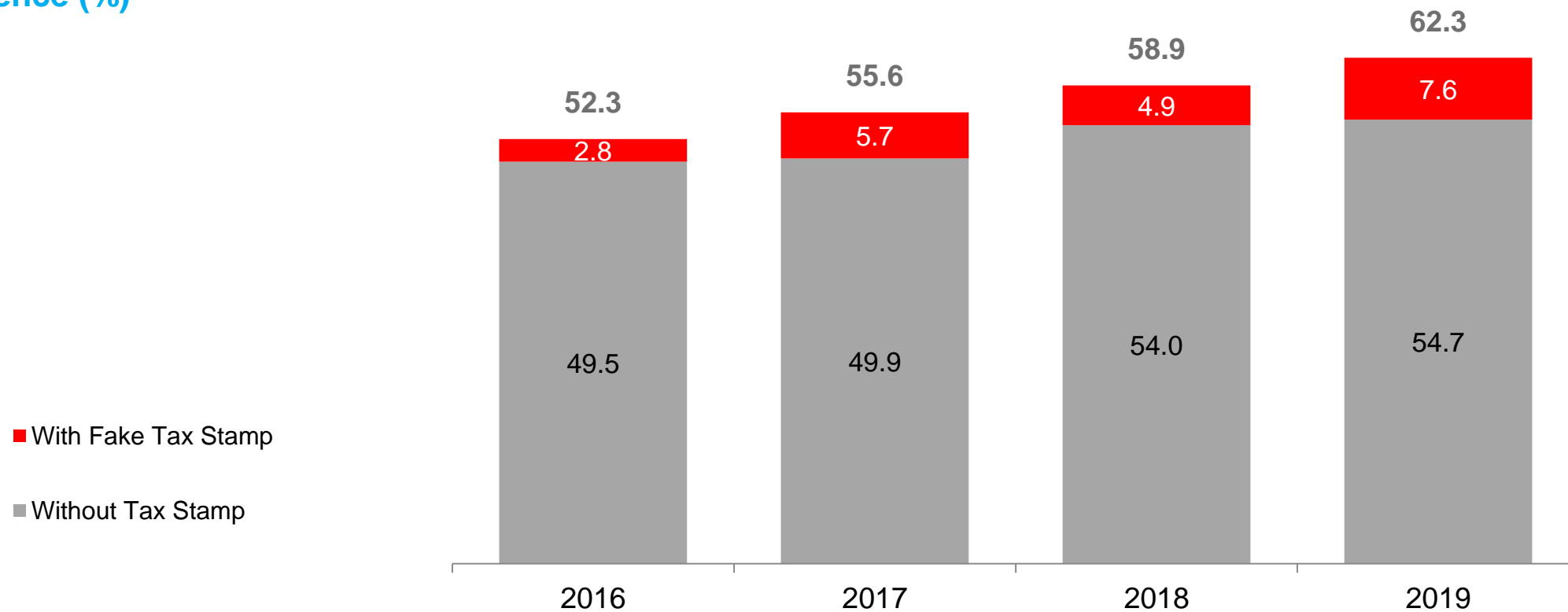
APPENDIX: NIELSEN'S ICS RESEARCH OBJECTIVE & METHODOLOGY

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

Packs collection ▶ Coding of packs ▶ Verification of security features by government appointed vendor – Lembah Sari Sdn Bhd ▶ Verification of security features by member companies ▶ Analysis & Reporting
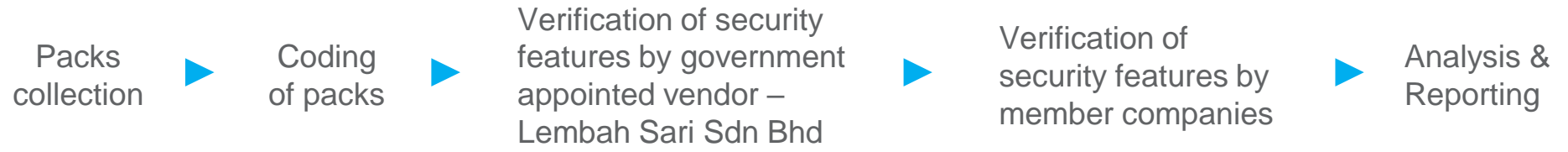
SAMPLING ERROR

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

RELIABILITY

Packs Collection ▶ *Compared with*

Excise figures from:
- British American Tobacco (M) Berhad
- JT International Berhad
- Philip Morris (M) Sdn Bhd

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

- Results are presented as ratio or percentages of sticks collected.

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
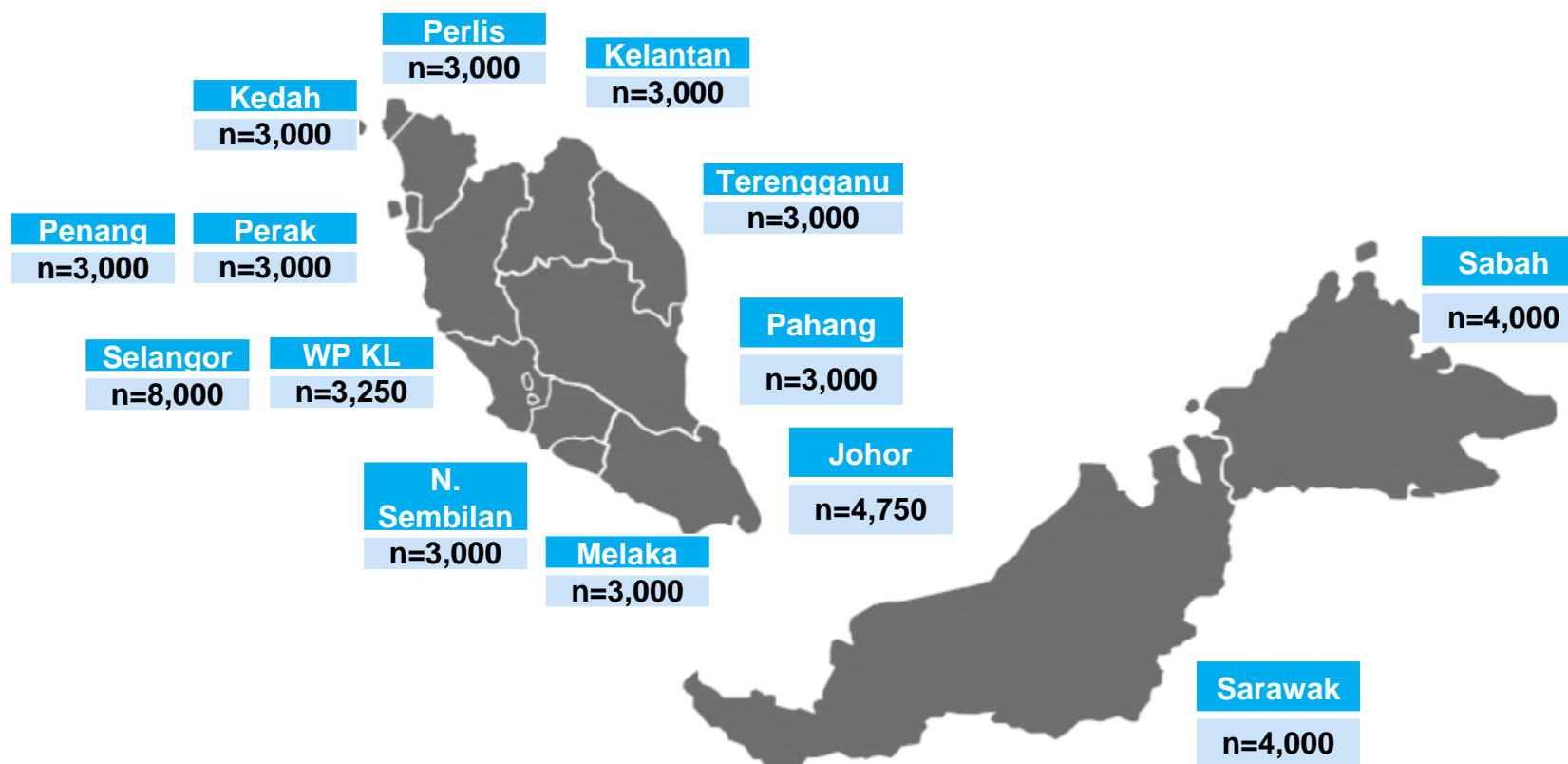
Perlis n=3,000

Kelantan n=3,000

Kedah n=3,000

Terengganu n=3,000

Penang n=3,000

Perak n=3,000

Sabah n=4,000

Selangor n=8,000

WP KL n=3,250

Pahang n=3,000

Johor n=4,750

N. Sembilan n=3,000

Melaka n=3,000

Sarawak n=4,000

ICS RESEARCH METHODOLOGY AND DESIGN

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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
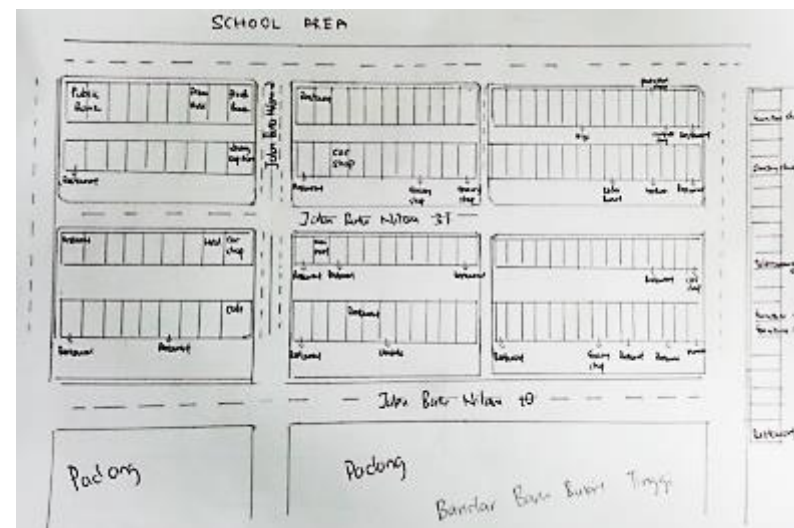
GUIDELINES FOR PACK COLLECTION

- 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

i.   ICS Universe, Sample Size

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A ROBUST SOP FOR PACK VERIFICATION & CODING PROCESS

The following diagram illustrates the pack verification & coding process

1 Pack Collection
Weekly

2 Data Entry
Weekly

3 Quality Control
Weekly 10%

4 Data Cleaning & Processing
Weekly

5 Data Checking/ Reporting
Weekly

6 Pack Sorting & Warehouse Storage
Weekly

7 Preparation for Lembah Sari Review
Wave End

8 Lembah Sari Review
Wave End

9 Check Lembah Sari Verifications
Wave End

10 Preparation for CMTM verification
Wave End

11 Packs & Excel Sheet to CMTM to Verify
Wave End

12 Compile Lembah Sari & CMTM's Feedback
End of Wave

13 Data Change Instructions to DP
Wave End

14 Final Tabulation
Wave End

15 Final Reporting
Wave End

16 Pack Disposal & Wave Gaps

CODING AND STORAGE PROCESS AT NIELSEN HQ

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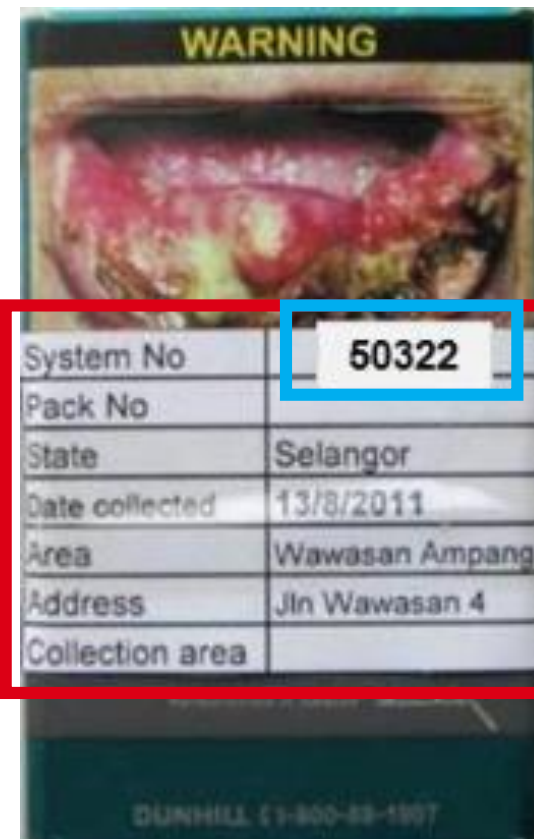
Pack Sample

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

CODING AND STORAGE PROCESS AT NIELSEN HQ
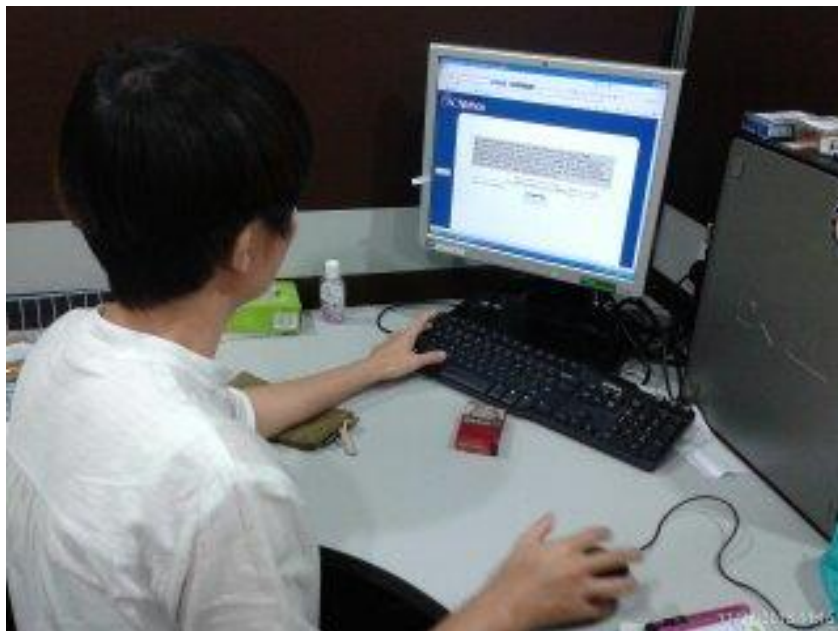
2. Once the pack ID number is assigned, data entry process will begins. All information on the pack will be captured

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

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*

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

Brand, Variant, Pack size & type

Presence of Health Warning Clause

Malaysian or Non-Malaysian

Presence of Security Feature; Tax Stamp

- Blue Tax Stamp
- Pink Tax Stamp
- Non-Malaysian banderol
- Other Tax Stamp

Other information

- Duty Free packs
  - Malaysian Duty Not Paid clause
- State/Town/District/Location
- *Pictorial Health Warning Clause (2009)*
- Etc., etc.

Manufacturer/ Importer

- Company Name
- Address

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

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
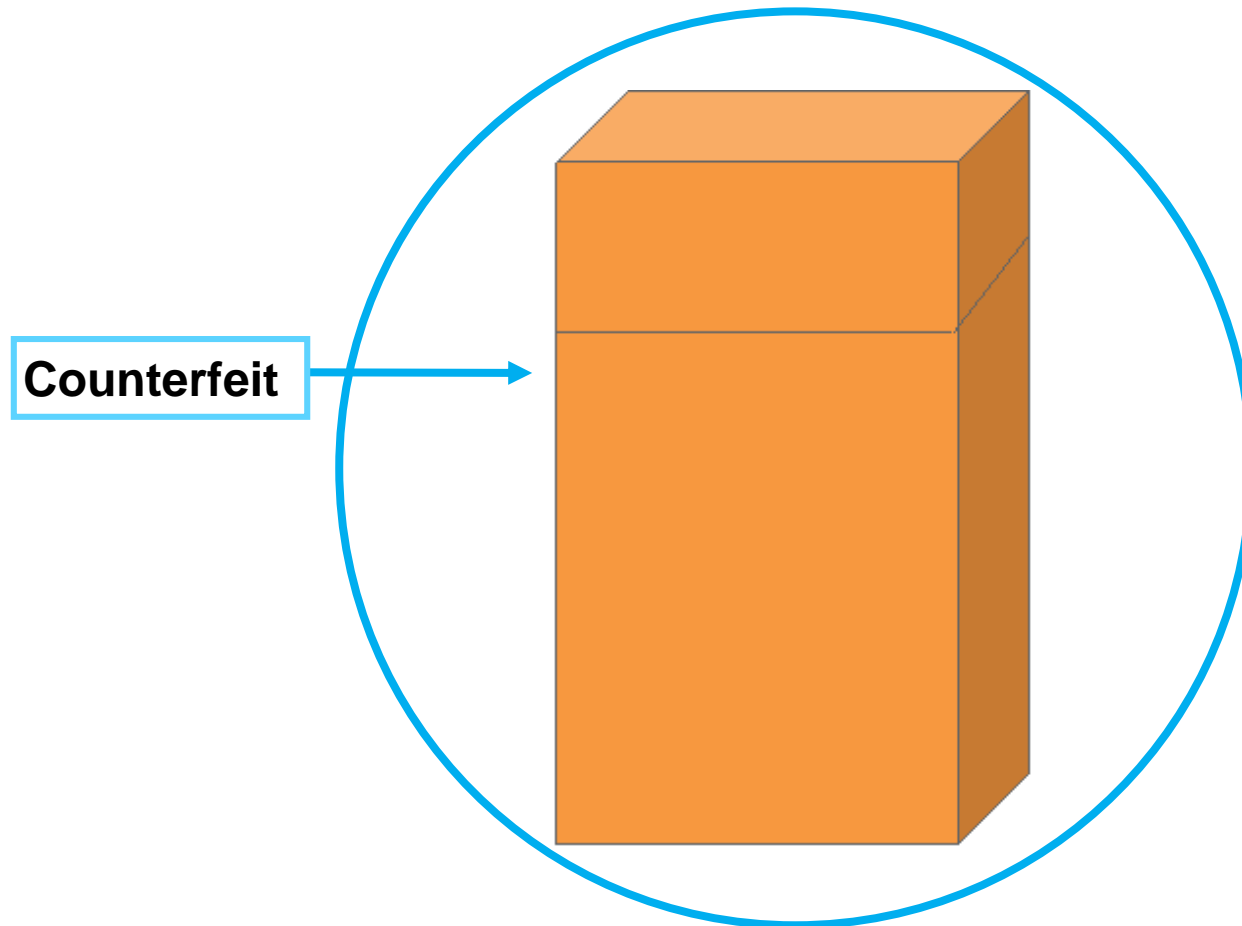
Counterfeit

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

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
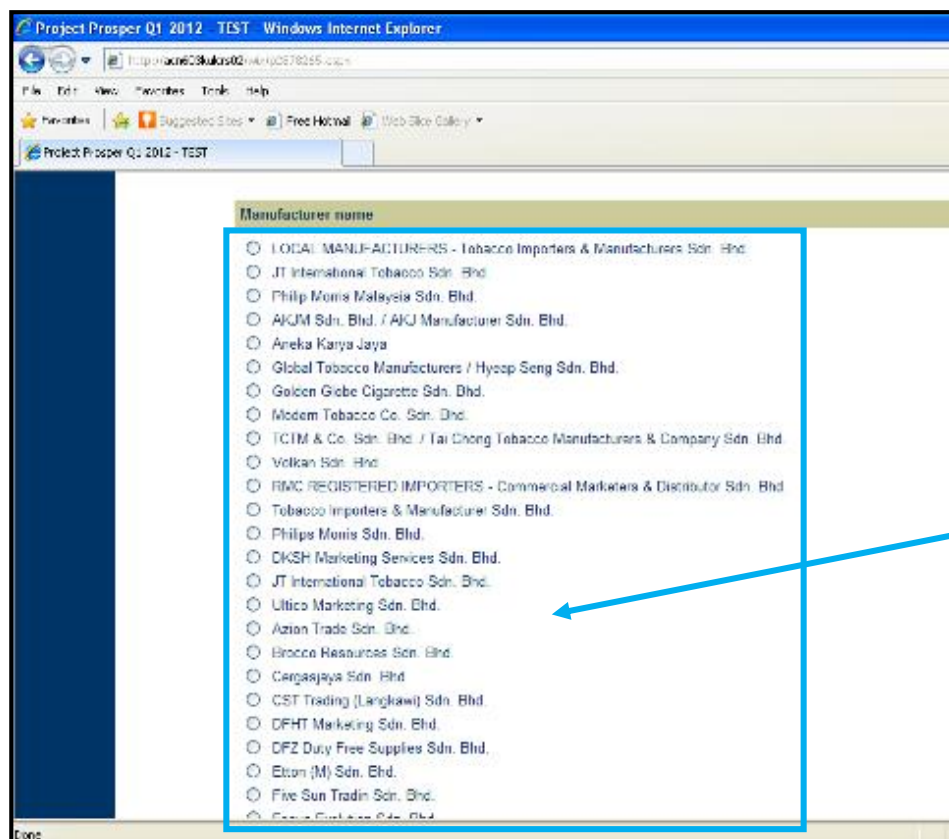
Control of Response List by Researchers

- 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)

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

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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)**

	2019 ('000 sticks)	
CMTM Member Companies (BATM, PMM, JTI)	6,372,800	Derive from actual in-market sales as provided by CMTM member companies
Other Local manufacturers	352,624	Retail Audit volume is used as substitute since actual data is not available
Malaysian Duty Free	634,886	ICS volume estimation is used as substitute since actual data is not available
Total Legal Cigarettes Sales	**7,360,310**	

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 7,360,310 sticks

	NIELSEN RETAIL AUDIT	STATE'S LEGAL VOLUME CONTRIBUTION
PERLIS	16,889	0.4%
KEDAH	170,764	3.9%
PENANG	356,474	8.2%
PERAK	243,912	5.6%
SELANGOR	1,156,611	26.6%
WP KL	556,712	12.8%
N.SEMBILAN	176,340	4.1%
MELAKA	198,851	4.6%
JOHOR	848,143	19.5%
PAHANG	208,172	4.8%
TERENGGANU	72,534	1.7%
KELANTAN	139,795	3.2%
SABAH	148,034	3.4%
SARAWAK	58,463	1.3%
NATIONAL	4,351,692	

Step 2a. **(Using Retail Audit)**

State Legal Volume Contribution = State's Retail Audit Volume / National Volume

(e.g. 1,156,611 / 4,351,692 = 26.6%)

	NIELSEN RETAIL AUDIT	STATE'S LEGAL VOLUME CONTRIBUTION	PROJECTED/ ESTIMATED STATE LEGAL VOLUME
SELANGOR	1,156,611	26.6%	1,956,255
NATIONAL	4,351,692		7,360,310

Step 2b.

Projected States Legal Volume

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

(e.g. 26.6% x 7,360,310 = 1,956,255)

HOW DOES NIELSEN WEIGHT THE DATA?

Step 2: Key Output

	NIELSEN RETAIL AUDIT	STATE'S LEGAL VOLUME CONTRIBUTION	PROJECTED/ ESTIMATED STATE LEGAL VOLUME
PERLIS	16,889	0.4%	28,565
KEDAH	170,764	3.9%	288,825
PENANG	356,474	8.2%	602,928
PERAK	243,912	5.6%	412,545
SELANGOR	1,156,611	26.6%	1,956,255
WP KL	556,712	12.8%	941,604
N.SEMBILAN	176,340	4.1%	298,255
MELAKA	198,851	4.6%	336,330
JOHOR	848,143	19.5%	1,434,521
PAHANG	208,172	4.8%	352,095
TERENGGANU	72,534	1.7%	122,681
KELANTAN	139,795	3.2%	236,444
SABAH	148,034	3.4%	250,380
SARAWAK	58,463	1.3%	98,882
NATIONAL	**4,351,692**		**7,360,310**

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 (2019)	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	24,000	8,229	164,580	15,771	288,375	452,955	36.2%	63.8%

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 (2019)	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	9,000	5,041	100,820	3,959	71,643	172,463	57.2%	42.8%
Kedah	9,000	3,497	69,940	5,503	102,134	172,074	40.4%	59.6%
Penang	9,000	3,917	78,340	5,083	96,325	174,665	44.7%	55.3%
Perak	9,000	5,561	111,220	3,439	67,243	178,463	62.4%	37.6%
Selangor	24,000	8,229	164,580	15,771	288,375	452,955	36.2%	63.8%
WP KL	9,750	3,546	70,920	6,204	114,202	185,122	38.0%	62.0%
Negri 9	9,000	4,494	89,880	4,506	84,158	174,038	51.6%	48.4%
Melaka	9,000	4,453	89,060	4,547	89,134	178,194	49.6%	50.4%
Johor	14,250	8,313	166,260	5,937	115,680	281,940	58.9%	41.1%
Pahang	9,000	1,907	38,140	7,093	133,427	171,567	22.2%	77.8%
T'gganu	9,000	1,861	37,220	7,139	138,020	175,240	21.3%	78.7%
Kelantan	9,000	2,082	41,640	6,918	132,235	173,875	23.8%	76.2%
Sabah	12,000	2,266	45,320	9,734	191,124	236,444	19.0%	81.0%
Sarawak	12,000	1,635	32,700	10,365	199,542	232,242	13.9%	86.1%

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	1,956,255	36.2%	5,402,491	3,446,236

Step 4a.
Based on the incidence for legal cigarettes of 38.2% in Selangor, project the total volume for the state
(e.g. 1,956,255 divide by 36.2% = 5,402,491)

Step 4b.
Illegal volume is established by subtracting the projected total state's volume with the legal volume
(e.g. 5,402,491 – 1,956,255 = 3,446,236)

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	28,565	57.2%	49,960	21,395
KEDAH	288,825	40.4%	714,707	425,882
PENANG	602,928	44.7%	1,348,935	746,007
PERAK	412,545	62.4%	661,415	248,869
SELANGOR	1,956,255	36.2%	5,402,491	3,446,236
WP KL	941,604	38.0%	2,478,474	1,536,870
N.SEMBILAN	298,255	51.6%	578,329	280,074
MELAKA	336,330	49.6%	677,565	341,235
JOHOR	1,434,521	58.9%	2,434,343	999,821
PAHANG	352,095	22.2%	1,586,374	1,234,279
TERENGGANU	122,681	21.3%	576,527	453,846
KELANTAN	236,444	23.8%	991,503	755,059
SABAH	250,380	19.0%	1,316,956	1,066,576
SARAWAK	98,882	13.9%	708,903	610,021
NATIONAL	**7,360,310**		**19,526,481**	**12,166,171**

Divide **National Illegal Volume 12,166,171** with **National Total Market Volume 19,526,481** **62.3%**