ILLICIT CIGARETTES STUDY (ICS) IN MALAYSIA 2018 (ANNUALISED) REPORT

Report Commissioned by CMTM member companies

FEBRUARY 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
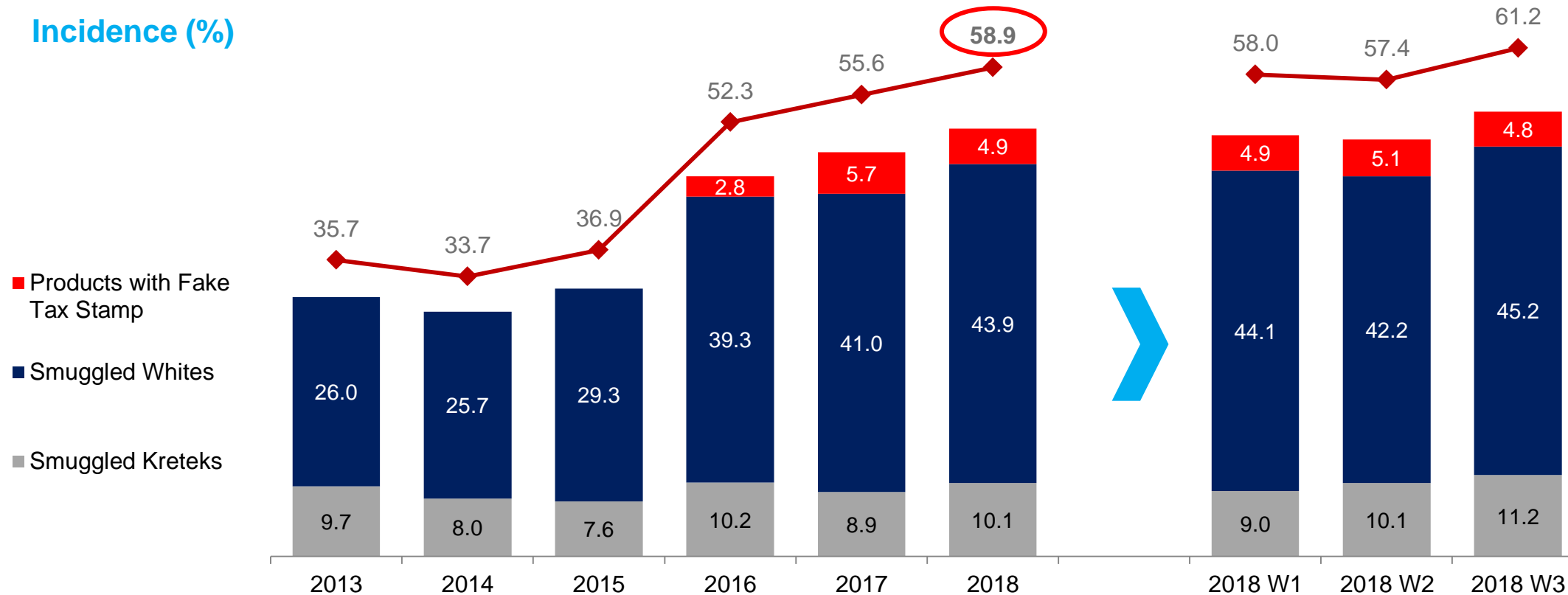   II. Absence or Non Compliance of mandated labeling requirements

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

IILEGAL CIGARETTES INCIDENCE AT NATIONAL LEVEL:

Continues on upward trend, recording a +3.3ppt increase vs. 2017

Incidence (%)

Legend:
- ■ (red) Products with Fake Tax Stamp
- ■ (navy) Smuggled Whites
- ■ (gray) Smuggled Kreteks

	2013	2014	2015	2016	2017	2018		2018 W1 (Mar-May)	2018 W2 (Jun-Aug)	2018 W3 (Oct-Dec)
Products with Fake Tax Stamp				2.8	5.7	4.9		4.9	5.1	4.8
Smuggled Whites	26.0	25.7	29.3	39.3	41.0	43.9		44.1	42.2	45.2
Smuggled Kreteks	9.7	8.0	7.6	10.2	8.9	10.1		9.0	10.1	11.2
Incidence line	35.7	33.7	36.9	52.3	55.6	**58.9**		58.0	57.4	61.2

Volume (Billions sticks)

	2013	2014	2015	2016	2017	2018		2018 W1 (Mar-May)	2018 W2 (Jun-Aug)	2018 W3 (Oct-Dec)
Illegal Cigarettes	7.9	7.0	7.1	10.1	11.1	12.0		3.0	2.9	3.3
Estimated Total industry	22.1	20.8	19.2	19.3	20.0	20.4		5.1	5.0	5.4
Incidence	*35.7%*	*33.7%*	*36.9%*	*52.3%*	*55.6%*	*58.9%*		*58.0%*	*57.4%*	*61.2%*

ILLEGAL CIGARETTES INCIDENCE BY STATES:

11 States recording an increase vs 2017

	A 2018				B 2017				A minus B Variance (2018 vs 2017)				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	83.5	0.0	67.6	15.9	76.2	0.0	59.9	16.3	+7.3	0.0	+7.7	-0.4	5%
Sabah	81.3	0.0	79.7	1.6	69.3	0.0	64.8	4.5	+12.0	0.0	+14.9	-2.9	9%
Kelantan	78.0	0.0	71.0	7.0	73.4	0.2	67.9	5.3	+4.6	-0.2	+3.1	+1.7	9%
Terengganu	76.5	2.0	65.5	9.0	77.2	0.9	68.8	7.5	-0.7	+1.1	-3.3	+1.5	4%
Pahang	72.5	2.0	60.0	10.5	72.4	2.7	57.2	12.5	+0.1	-0.7	+2.8	-2.0	10%
Selangor	56.4	4.0	34.9	17.5	51.3	4.8	32.7	13.8	+5.1	-0.8	+2.2	+3.7	22%
Kedah	55.2	9.2	37.6	8.4	50.1	6.6	36.1	7.4	+5.1	+2.6	+1.5	+1.0	5%
Penang	54.5	11.2	37.9	5.4	52.6	10.2	35.1	7.3	+1.9	+1.0	+2.8	-1.9	7%
Melaka	52.4	11.1	36.8	4.5	53.0	16.2	33.3	3.5	-0.6	-5.1	+3.5	+1.0	4%
WP KL	50.8	1.9	35.2	13.7	46.3	3.7	32.1	10.5	+4.5	-1.8	+3.1	+3.2	9%
Perak	46.2	7.0	29.2	10.0	36.1	8.6	24.8	2.7	+10.1	-1.6	+4.4	+7.3	4%
Johor	43.9	7.4	31.4	5.1	42.4	8.4	30.4	3.6	+1.5	-1.0	+1.0	+1.5	10%
N.Sembilan	43.6	12.6	25.0	6.0	50.8	14.1	25.9	10.8	-7.2	-1.5	-0.9	-4.8	2%
Perlis	39.3	9.1	25.5	4.7	34.6	5.2	24.4	5.0	+4.7	+3.9	+1.1	-0.3	0%*
National Incidence	58.9	4.9	43.9	10.1	55.6	5.7	41.0	8.9	+3.3	-0.8	+2.9	+1.2	100%

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

TOP 10 ILLEGAL CIGARETTES BRANDS*

They account for approximately 78% of illegal cigarettes volume

	Illegal Brand	2018 SOM (%)	2017 SOM (%)	Variance SOM (%)
1.	John	13.5	10.9	+2.6
2.	Gudang Garam	5.5	5.1	+0.4
3.	Saat	5.4	6.0	-0.6
4.	U2	5.0	5.7	-0.7
5.	Era	4.8	2.7	+2.1
6.	Canyon	4.8	4.7	+0.1
7.	L.A.	2.7	2.2	+0.5
8.	Zon King	1.7	2.4	-0.7
9.	Premium	1.3	0.8	+0.5
10.	A380	1.3	1.2	+0.1
	Total 10 Total	**46.0**	**41.7**	**+4.3**

	2018 SOM (%)	2017 SOM (%)	Variance SOM (%)
Other Illegal	12.9	13.9	-1.0
Total Illegal %	**58.9**	**55.6**	**+3.3**

1

2

3

4

5

6

7

8

9

10
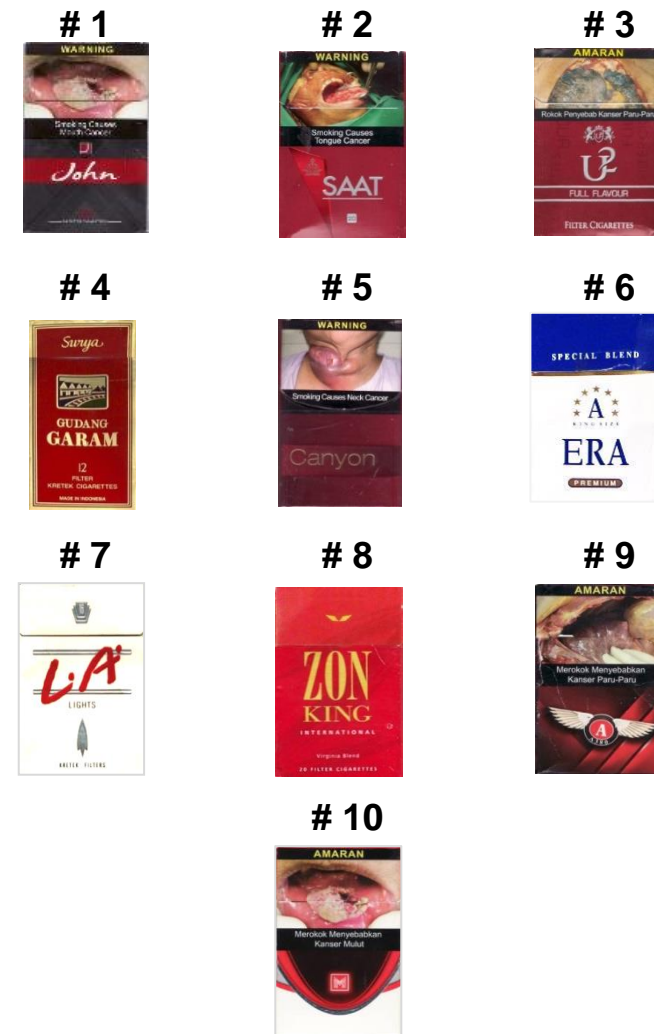
relates to incidence of empty packs collected that meet any of illegal cigarettes criteria in page 3, regardless whether they are a legal brand or otherwise

TAX STAMP BREAKDOWN OF ILLEGAL CIGARETTES:

91% of illegal cigarettes are without tax stamps while remaining 9% are with fake tax stamps

Incidence (%)

- ■ With Fake Tax Stamp
- ■ Without Tax Stamp

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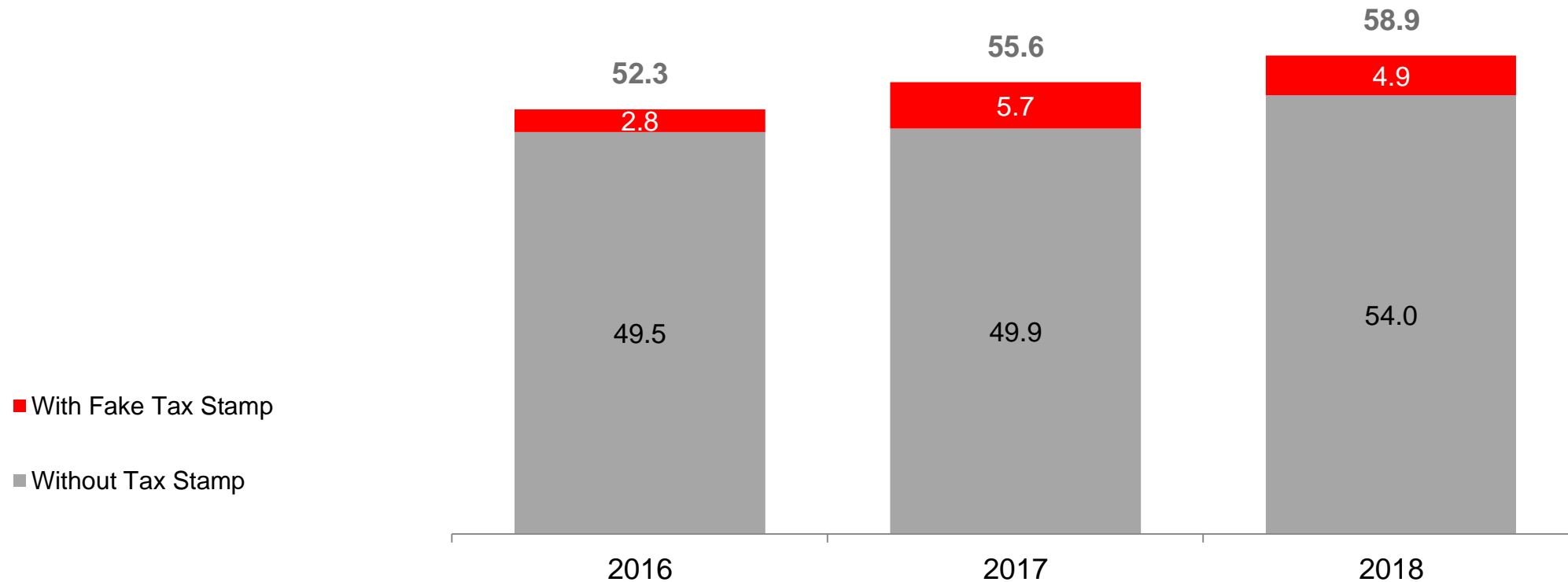
APPENDIX: NIELSEN'S ICS RESEARCH OBJECTIVE & METHODOLOGY

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
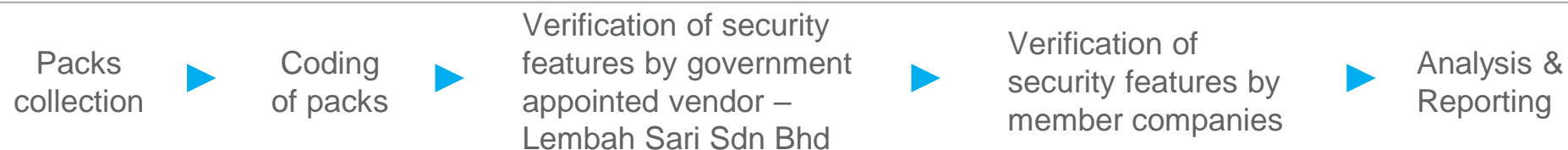
SAMPLING ERROR

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 2017 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
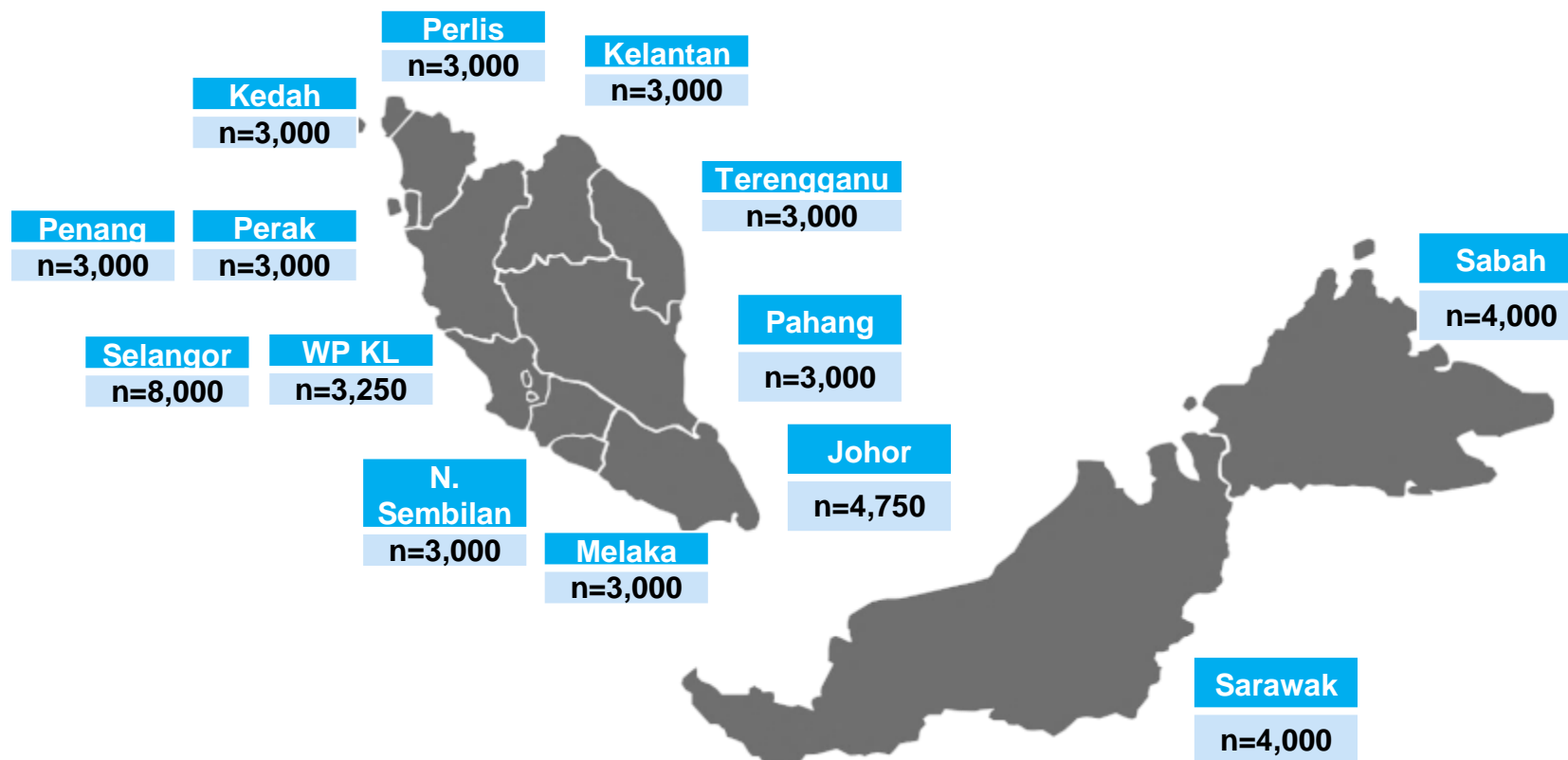
Perlis n=3,000

Kelantan n=3,000

Kedah n=3,000

Terengganu n=3,000

Penang n=3,000

Perak n=3,000

Sabah n=4,000

Pahang n=3,000

Selangor n=8,000

WP KL n=3,250

Johor n=4,750

N. Sembilan n=3,000

Melaka n=3,000

Sarawak n=4,000

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

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
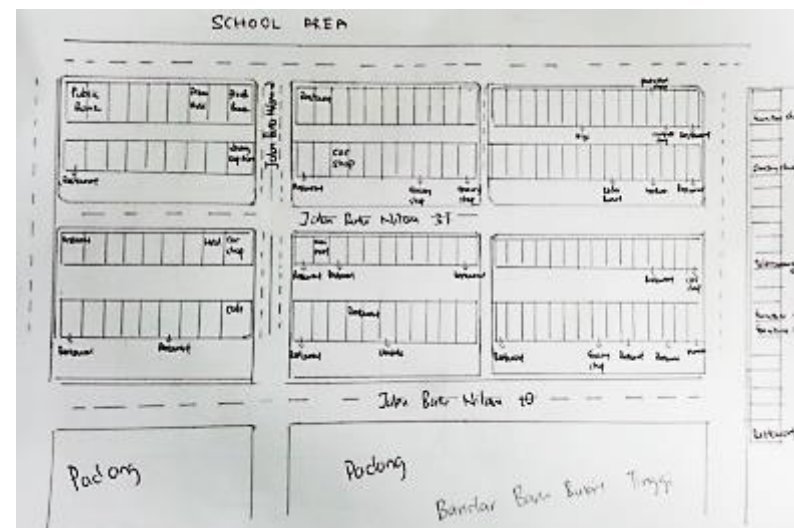
GUIDELINES FOR PACK COLLECTION

- 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

ii.   Sampling Coverage Of ICS and Fieldwork

iii. Coding Processes

iv.   Data Processing

v.   Weighting The Survey Data

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
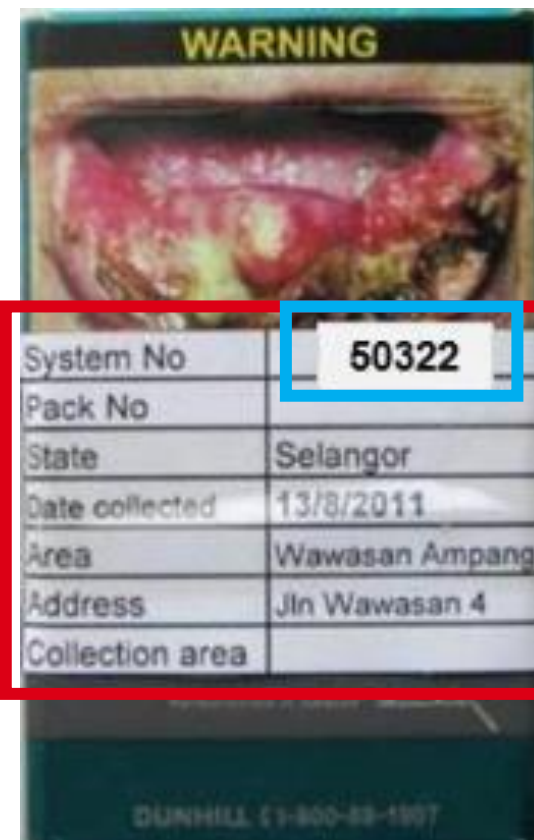
Pack Sample

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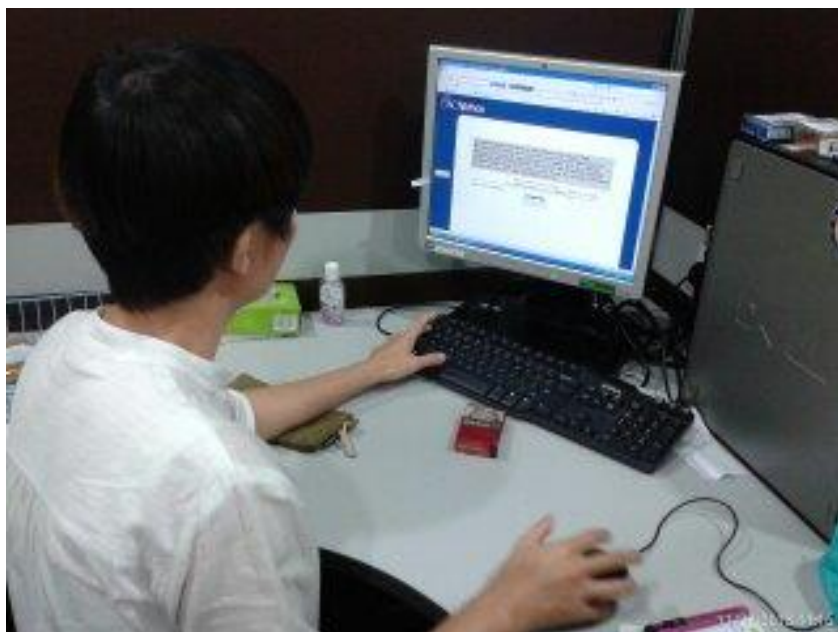
2. Once the pack ID number is assigned, data entry process will begins. All information on the pack will be captured

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
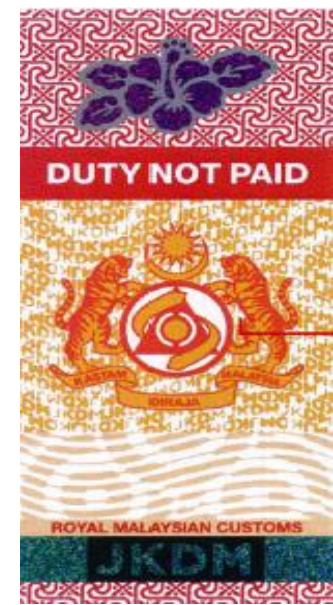
Pink Tax Stamp
(Duty Free Market)

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
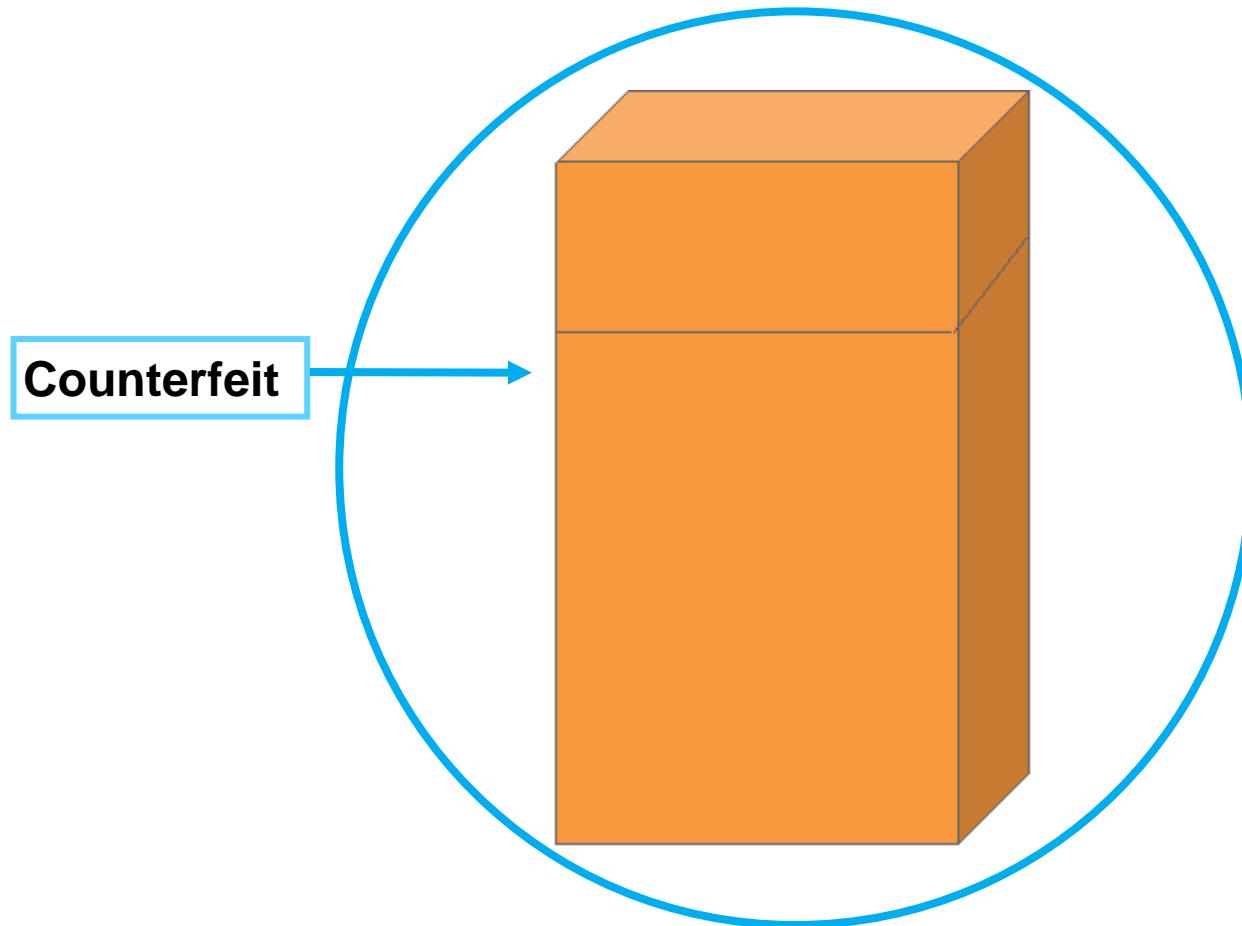
Counterfeit

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
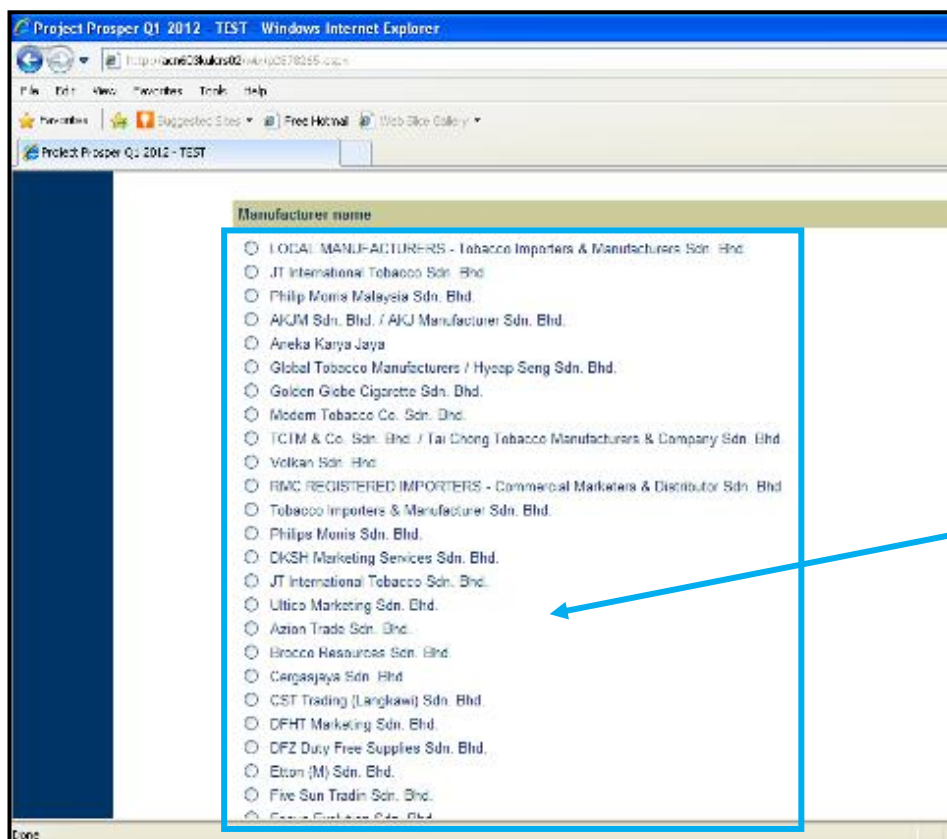
Control of Response List by Researchers

- 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

ICS RESEARCH METHODOLOGY AND DESIGN

i.   ICS Universe, Sample Size

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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)**

	2018, Oct-Dec ('000 sticks)
CMTM Member Companies (BATM, PMM, JTI)	1,769,280
Other Local manufacturers	139,358
Malaysian Duty Free	180,856
Total Legal Cigarettes Sales	**2,089,494**

Derive from actual in-market sales as provided by CMTM member companies

Retail Audit volume is used as substitute since actual data is not available

ICS volume estimation is used as substitute since actual data is not available

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 1,999,798 million sticks

	NIELSEN RETAIL AUDIT	STATE'S LEGAL VOLUME CONTRIBUTION
PERLIS	7,989	0.5%
KEDAH	80,775	4.7%
PENANG	146,705	8.5%
PERAK	105,160	6.1%
SELANGOR	439,593	25.5%
WP KL	213,983	12.4%
N.SEMBILAN	73,613	4.3%
MELAKA	83,011	4.8%
JOHOR	312,208	18.1%
PAHANG	90,784	5.3%
TERENGGANU	29,376	1.7%
KELANTAN	59,353	3.4%
SABAH	56,798	3.3%
SARAWAK	22,594	1.3%
NATIONAL	**1,721,940**	

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

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

(e.g. 439,593 / 1,721,940 = 25.5%)

	NIELSEN RETAIL AUDIT	STATE'S LEGAL VOLUME CONTRIBUTION	PROJECTED/ ESTIMATED STATE LEGAL VOLUME
SELANGOR	439,593	25.5%	536,426
NATIONAL	**1,721,940**		**2,089,494**

Step 2b.

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

(e.g. 25.5% x 2,0894,94 = 533,426)

HOW DOES NIELSEN WEIGHT THE DATA?

Step 2: Key Output

	NIELSEN RETAIL AUDIT	STATE'S LEGAL VOLUME CONTRIBUTION	PROJECTED/ ESTIMATED STATE LEGAL VOLUME
PERLIS	7,989	0.5%	9,694
KEDAH	80,775	4.7%	98,016
PENANG	146,705	8.5%	178,019
PERAK	105,160	6.1%	127,606
SELANGOR	439,593	25.5%	533,426
WP KL	213,983	12.4%	259,659
N.SEMBILAN	73,613	4.3%	89,326
MELAKA	83,011	4.8%	100,730
JOHOR	312,208	18.1%	378,849
PAHANG	90,784	5.3%	110,162
TERENGGANU	29,376	1.7%	35,646
KELANTAN	59,353	3.4%	72,022
SABAH	56,798	3.3%	68,922
SARAWAK	22,594	1.3%	27,417
NATIONAL	1,721,940		2,089,494

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	3,036	60,720	4,964	89,400	150,120	40.4%	59.6%

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	1,840	36,800	1,160	21,501	58,301	63.1%	36.9%
Kedah	3,000	1,149	22,980	1,851	33,247	56,227	40.9%	59.1%
Penang	3,000	1,336	26,720	1,664	31,590	58,310	45.8%	54.2%
Perak	3,000	1,456	29,120	1,544	27,126	56,246	51.8%	48.2%
Selangor	8,000	3,036	60,720	4,964	89,400	150,120	40.4%	59.6%
WP KL	3,250	1,482	29,640	1,768	32,193	61,833	47.9%	52.1%
Negri 9	3,000	1,633	32,660	1,367	25,705	58,365	56.0%	44.0%
Melaka	3,000	1,399	27,980	1,601	31,195	59,175	47.3%	52.7%
Johor	4,750	2,566	51,320	2,184	42,286	93,606	54.8%	45.2%
Pahang	3,000	717	14,340	2,283	42,669	57,009	25.2%	74.8%
T'gganu	3,000	628	12,560	2,372	45,112	57,672	21.8%	78.2%
Kelantan	3,000	626	12,520	2,374	44,694	57,214	21.9%	78.1%
Sabah	4,000	582	11,640	3,418	68,025	79,665	14.6%	85.4%
Sarawak	4,000	614	12,280	3,386	64,972	77,252	15.9%	84.1%

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	533,426	40.4%	1,320,361	786,935

Step 4a.
Based on the incidence for legal cigarettes of 47.2% in Perlis, project the total volume for the state
(e.g. 533,426 divide by 40.4% = 1,320,361)

Step 4b.
Illegal volume is established by subtracting the projected total state's volume with the legal volume
(e.g. 1,320,361 – 533,426 = 789,935)

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	9,694	63.1%	15,363	5,669
KEDAH	98,016	40.9%	239,648	141,632
PENANG	178,019	45.8%	388,689	210,670
PERAK	127,606	51.8%	246,344	118,738
SELANGOR	533,426	40.4%	1,320,361	786,935
WP KL	259,659	47.9%	542,085	282,426
N.SEMBILAN	89,326	56.0%	159,511	70,185
MELAKA	100,730	47.3%	212,959	112,229
JOHOR	378,849	54.8%	691,331	312,482
PAHANG	110,162	25.2%	437,150	326,988
TERENGGANU	35,646	21.8%	163,515	127,869
KELANTAN	72,022	21.9%	328,865	256,843
SABAH	68,922	14.6%	472,071	403,149
SARAWAK	27,417	15.9%	172,432	145,015
NATIONAL	2,089,494		5,390,324	3,300,830

Divide **National Illegal Volume 3,300,830** with **National Total Market Volume 5,390,324** **61.2%**