

TECHNICAL NOTES

2021 GLOBAL ADULT TOBACCO SURVEY

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I. Introduction

a. Background

The Global Adult Tobacco Survey is a nationally representative household-based survey for adults aged 15 years old and over. GATS is developed to systematically monitor tobacco use (smoked and smokeless) and track key tobacco control interventions in the country. The GATS has been implemented in middle-low-income countries to fulfill obligations under the WHO Framework Convention on Tobacco Control (FCTC) and the MPOWER package of tobacco policies as key to the FCTC. The **MPOWER** policies are: **M**onitor tobacco use and prevention policies; **P**rotect people from tobacco smoke; **O**ffer help to quit tobacco use; **W**arn about the dangers of tobacco; **E**nforce bans on tobacco advertising, promotion, and sponsorship; and **R**aise taxes on tobacco.

The Philippine Statistics Authority (PSA), in partnership with the Department of Health (DOH), conducts the 2021 Global Adult Tobacco Survey (GATS). Technical support for this survey was provided by the World Health Organization (WHO), the US Centers for Disease Control and Prevention (CDC), and the Research Triangle Institute (RTI) International.

The 2021 GATS the third in a series of adult use of tobacco survey conducted nationwide since 2009.

b. Objectives

GATS is a nationwide household-based survey developed to systematically monitor adult tobacco use (smoking and smokeless) and track key tobacco control interventions. It aims:

1. to produce national and urban-rural estimates of tobacco use, exposure to secondhand smoking, and frequency of quit attempts; and
2. to measure the impact of various tobacco control and prevention initiatives at the country level.

Specifically, the 2021 GATS seeks:

1. to collect data on the prevalence, frequency, and intensity of tobacco use (smoking and smokeless);
2. to collect data on exposure to secondhand smoking;
3. to collect data on frequency of quit attempts;
4. to analyze cessation activities indicators such as health care provider advice and methods used to quit smoking;
5. to analyze indicators of smoke-free air at home and public places;
6. to analyze economic indicators such as average price paid per cigarette during last purchase and percentage of current smokers by cigarette brand;
7. to analyze indicators of media exposure for counter and pro tobacco; and
8. to analyze indicators of acknowledgement of health effects.

c. Scope and coverage

The Philippine 2021 GATS has a national sample of approximately 21,000 sample households deemed sufficient to provide reliable estimates at the national level and for some selected highly urbanized cities for this round. These sample housing units are selected from the 2013 Master Sample (MS) for household-based surveys of the PSA.

All men and women 15 years old and over in the sample households who consented to interview were interviewed using the Individual Questionnaire. Persons who reside in the institutions are not within the scope of the survey.

II. Data Collection

The fieldwork for the Philippine GATS ran for 28 days including holidays. It commenced from 05 November to 05 December 2021. In this round of the GATS, Computer-Assisted Personal Interviewing (CAPI) using Tablet was utilized during the data collection. Prior to fieldwork, the assignment of workload to each field interviewer (FI) and loading of samples in the tablets were done including quality checks by the IT focal. The statistical researchers visited the sample housing units listed in the tablet and interviewed the eligible respondents. The eligible respondent is the household head or the spouse of the head. In the absence of the household head or his/her spouse, the respondent can be any responsible adult member who can provide reliable answers to questions asked by the survey interviewer about the household and its members.

The GATS interview consists of two parts: the Household Questionnaire (household screening) and the Individual Questionnaire (individual interview). The household screening was administered to determine if the selected household meets GATS eligibility requirements and to make a list, or roster, of all eligible members of the household 15 years of age and older. Once a roster of eligible residents of the household is completed, one individual will be randomly selected to complete the Individual Questionnaire.

III. Methodology

The Philippine 2021 GATS utilizes the 2013 Master Sample (MS) design for household-based surveys with some modifications to conform to the GATS protocol on sampling design. One of four replicates of the MS was used for GATS with a sample of about 11,000 households in each round to generate national level estimates with urban-rural and male-female subgroups. Specifically for this round of GATS, a nationally representative sample was drawn with an addition of oversamples for five cities namely, Baguio City, Quezon City, General Santos City, Cebu City, and Zamboanga City. The additional samples would increase the total estimated sample size to around 20,671 households compared to the previous rounds of around 11,000 households.

Sampling Frame

The 2013 MS sampling frame was constructed based on the results of the 2010 Census of Population and Housing. This was refreshed with the 2015 Census of Population results where the EA Reference File (EARF) was used as the PSU frame and the 2015 list of households for each of the PSUs was used as the SSU frame.

Sampling Domain

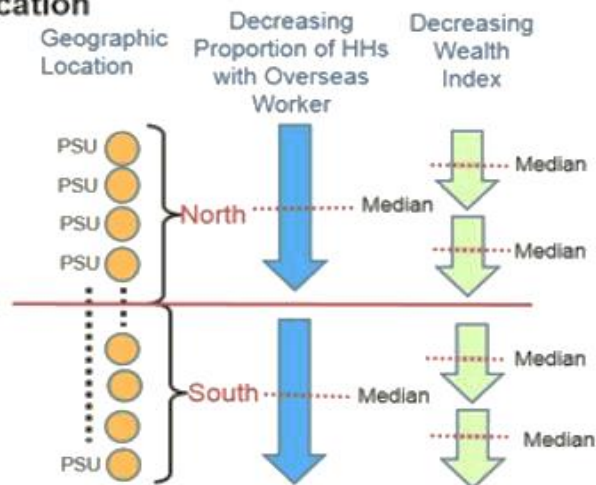
The 2013 MS has 117 major domains as follows: 81 provinces (including the newly created province Davao Occidental); 33 highly urbanized cities (including 16 cities in the National Capital Region); and 3 other areas (Pateros, Isabela City, and Cotabato City).

Primary Sampling Units

In the 2013 Master Sample Design, each sampling domain (i.e., province/HUC) is divided into exhaustive and non-overlapping area segments known as Primary Sampling Units (PSUs) with about 100 to 400 households. Thus, a PSU can be a barangay/Enumeration Area (EA) or a portion of a large barangay, or two or more adjacent small barangays/EAs.

2x2x2 Implicit Stratification

- Using 2 X 2 X 2 (i.e., 8 groups) implicit stratification, for each domain, PSUs are listed and sorted according to the following scheme:



The PSUs are then ordered according to the following: (1) North-South/West-East Geographic location; (2) Decreasing Proportion of HHs with Overseas Workers; and (3) Decreasing wealth Index.

Stages of Selection

The sample selection methodology for the 2021 GATS is based on a two-stage stratified sample design similar to the 2013 Master Sample Frame.

In the first stage, 1 replicate will be selected randomly from the MSF within each province/HUC strata while 21 replicates will be selected randomly from the MSF for the five (5) identified cities (Baguio City, Quezon City, General Santos City, Cebu City, and Zamboanga City).

In the second stage of selection, an equal take of 16 housing units per PSU for province domains and 12 housing units for non-province domains was employed using systematic random sampling from the 2015 Census of Population (POPCEN) list of housing units.

As a result of the two-stage sampling, a total sample of 1,604 PSUs from the Master Sample Frame were selected and a total of 20,671 housing units or at least 20,671 households for the whole country were considered. Non-replacement of HUs and no changes are allowed on the drawn sample housing units. An adjustment in the sample size has already been made for the ineligibility of some sample households and possible non-response based on previous surveys of the PSA.

For the third round of GATS, there was an oversample for five selected cities (Baguio City, Quezon City, General Santos City, Cebu City, and Zamboanga City) to come up with city-level estimates. Each of the five cities had a sample of 168 PSUs equivalent to 2,016 sample housing units or at least 2,016 sample households since some housing units contain more than one household. The total sample size of at least 20,671 households is more than enough to comply with the GATS sample size requirements.

During the visit of the interviewer to each sample household, the field interviewer administered the Household Questionnaire and the Individual Questionnaire. This process was done using Lenovo M8 tablet device. Using the questions in the tablet device, the interviewer creates a roster of all eligible residents who consider the selected household to be their usual place of residence at the time the roster is completed. All eligible resident/s in the housing unit is included in the roster.

Finally, using the random generation application incorporated in the GATS General Survey System (GSS), one eligible individual (15 years old and over), is randomly selected from the roster to complete the GATS Individual Questionnaire. There are no substitutes for the eligible individual once selected.

Estimation Procedure

Base Weight Computation

The base weight is computed as the inverse of selection probability

$$w_{p\tau\alpha\beta} = \frac{A_p}{a_p} \times \frac{B_{p\tau\alpha}}{b_{p\tau\alpha}}$$

where:

A_p - total number of PSUs in the domain p

a_p - total number of sample PSUs in the domain p

$B_{p\tau\alpha}$ - total number of housing units in PSU α and replicate τ

$b_{p\tau\alpha}$ - total number of sample housing units in PSU α and replicate τ

For housing units with at most 3 households the base weight is computed as

$$w_{p\tau\alpha\beta} = \frac{A_p}{a_p} \times \frac{B_{p\tau\alpha}}{b_{p\tau\alpha}}$$

For housing units with more than 3 households the base weight is computed as

$$w_{p\tau\alpha\beta\gamma} = \frac{A_p}{a_p} \times \frac{B_{p\tau\alpha}}{b_{p\tau\alpha}} \times \frac{C_{p\tau\alpha\beta}}{c_{p\tau\alpha\beta}}$$

where:

$C_{p\tau\alpha\beta}$ - total number of households in the sample housing unit

$c_{p\tau\alpha\beta}$ - 3, the number of sample households in the sample housing unit

The base weight is adjusted for unit non-response and further calibrated to conform to the known or projected 2016 population count.

Base Weight Adjustment

For unit non-response adjustment (within domain p), the adjustment is computed as:

$$A_{p1} = \frac{\text{weighted}^* \text{ total number of eligible sample hhs}}{\text{weighted}^* \text{ total number of responding hhs}}$$

Applying this to the base weight, we have:

$$w'_{p\tau\alpha\beta_{adj}} = w_{p\tau\alpha\beta} \times A_{p1}$$

Further adjustment (calibration) is made to conform with known population count, as follows:

Age Group	Gender	
	Male	Female
0 – 14	C1	C2
15 – 24	C3	C4
25 – 34	C5	C6
35 – 44	C7	C8
45 – 54	C9	C10
55 – 64	C11	C12
65 and over	C13	C14

$$A_{p2c} = \frac{X_{pc}}{\hat{X}_{pc,adj}}$$

where:

- X_{pc} - is the projected total population for age-sex class c
 $\hat{X}_{pc,adj}$ - is the weighted estimate of the population for age-sex class c using the non-response adjusted weight.

Hence, the final weight (calibrated weight is):

$$w'_{p\tau\alpha,fin} = \underbrace{w'_{p\tau\alpha,adj}}_{\substack{\text{non-response} \\ \text{adjusted} \\ \text{weight}}} \times \underbrace{A_{p2c}}_{\substack{\text{population} \\ \text{adjustment} \\ \text{factor}}}$$

Estimation of Total

- Generally, the estimate for the weighted total for a sampling domain (province/HUC) considering l number of sample replicates is:

$$\hat{Y}_p = \sum_{\tau=1}^l \sum_{\alpha=1}^{a_{\tau}} \sum_{\beta=1}^{b_{\tau\alpha}} w'_{p\tau\alpha,fin} y_{p\tau\alpha\beta} \quad l = 1 \text{ to } L \text{ replicates}$$

- For each of the sampling domain considering 4 sample replicates are used (e.g, Labor Force Survey round), the estimate for the weighted total is:

$$\hat{Y}_p = \sum_{\tau=1}^4 \sum_{\alpha=1}^{a_{\tau}} \sum_{\beta=1}^{b_{\tau\alpha}} w'_{p\tau\alpha,fin} y_{p\tau\alpha\beta} \quad l = 1 \text{ to } 4 \text{ replicates}$$

- For other household-based surveys (e.g., APIS, HSDV, MFS), considering only 1 sample replicate is used, the estimate for the weighted province/city total is:

$$\hat{Y}_p = \sum_{\alpha=1}^{a_{\tau}} \sum_{\beta=1}^{b_{\tau\alpha}} w'_{p\tau\alpha,fin} y_{p\tau\alpha\beta}$$

Data Checking, Coding and Filtering Prior to Estimation of Proportions

Enumeration is a highly complex operation, and it may happen that reported/encoded entries during data collection have some omissions and implausible/inconsistent entries. Editing is a process meant to correct these errors. During the interview, embedded editing was activated, and errors/inconsistent entries were detected by the program. Editing was also done after every interviewed household to ensure the completeness and consistency of encoded entries. No further processing was done in the field office except for some validation of the interview status of the respondents in coordination with the focal from the subject matter division.

Preliminary data cleaning and preparation of inputs for the computation of weights were done by PSA. Meanwhile, other stages of data cleaning, weight computation/adjustments, and final tabulations of data were done by the Center for Disease Control and Prevention (CDC).

IV. Concepts and Definitions of Terms

- **Daily.** Means smoking at least one tobacco product every day or nearly every day over a period of a month or more.
- **Less than daily.** Means smoking at least one tobacco product in a week over a period of a month or more.
- **Current Tobacco Users.** Percentage of adults who currently use tobacco - Number of current daily and less than daily (smoked and smokeless includes heated tobacco in smoked) divided by the total number of respondents.
- **Current Daily Tobacco Smokers.** Percentage of adults who currently smoke tobacco daily is the number of current daily tobacco smokers divided by the total number of respondents.
- **Current Manufactured Tobacco Smokers.** Percentage of adults who currently smoked manufactured cigarettes - Number of current daily and less than daily manufactured cigarette smokers divided by total number of respondents.
- **Former daily smokers.** Percentage of ever daily tobacco smokers who currently do not smoke tobacco is the number of ever daily smokers who currently do not smoke tobacco divided by number of ever daily tobacco smokers. The numerator includes only current non-smokers and not current less than daily smokers.
- **Smokers who made a quit attempt in the past 12 months.** Percentage of adults who smoked tobacco during the past 12 months and tried to quit during the past 12 months is the number of current tobacco smokers who tried to quit during the past 12 months and former tobacco smokers who have been abstinent for less than 12 months, divided by total number of current tobacco smoker and former tobacco smoker who have been abstinent for less than 12 months.
- **Smokers advised to quit by a healthcare provider.** Percentage of current tobacco smokers and recent quitters (less than 12 months) who visited a doctor or health care provider during the past 12 months and were advised to quit smoking tobacco is the number of current tobacco smokers and former tobacco smokers who have been abstinent for less than 12 months, who report being advised to quit smoking during a visit to a health care provider within the past 12 months divided by the number of current tobacco smokers and former tobacco smokers who have been abstinent for less than 12 months, who visited a health care provider in the past 12 months.

- **Adults exposed to tobacco smoke at the workplace.** Percentage of indoor workers who were exposed to tobacco smoke at work in the past 30 days is the number of respondents who work reported being exposed to smoke in indoor areas at work during the past 30 days divided by number of respondents who work outside of the home who usually work in indoors or both indoors and outdoors.
- **Adults exposed to tobacco smoke at home.** Percentage of indoor workers who were exposed to tobacco smoke at home at least monthly is the number of respondents who reported being exposed to smoke at home either daily, weekly, or monthly divided by total number of respondents.
- **Adults exposed to tobacco smoke in various public places** (various places include government buildings/offices, healthcare facilities, restaurants, bars/nightclubs, public transportation, universities, schools/educational institutions). The percentage of adults who visited various public places in the past 30 days and were exposed to tobacco smoke inside is the number of respondents who reported being exposed to smoke inside various places in the past 30 days divided by the number of respondents who reported visiting various public places in the past 30 days.

V. Dissemination of Results

The 2021 GATS Philippines Factsheets, Country Report, and Public Use File are publicly available at the PSA website (www.psa.gov.ph), DOH website (www.doh.gov.ph), and CDC website (nccd.cdc.gov).

VI. Citation

Philippine Statistics Authority (PSA) and Department of Health (DOH). 2021. Philippine Global Adult Tobacco Survey: Country Report 2021. Quezon City and City of Manila, Philippines: PSA and DOH.

VII. Contact Information

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