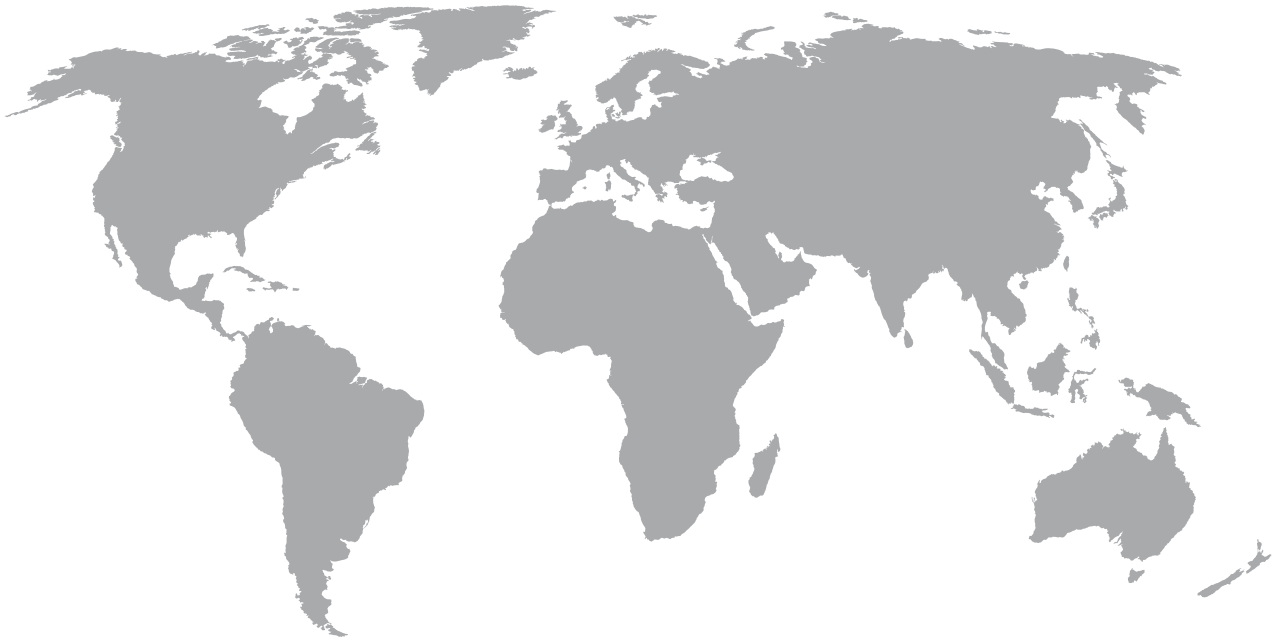
Global Adult Tobacco Survey (GATS)



Data Management Implementation Plan

Global Adult Tobacco Survey (GATS)
Data Management Implementation Plan

September 2020

Global Adult Tobacco Survey (GATS)
Comprehensive Standard Protocol

GATS Questionnaire
Core Questionnaire with Optional Questions
Question by Question Specifications

GATS Sample Design
Sample Design Manual
Sample Weights Manual

GATS Fieldwork Implementation
Field Interviewer Manual
Field Supervisor Manual
Mapping and Listing Manual

GATS Data Management
Programmer's Guide to General Survey System
Core Questionnaire Programming Specifications
Data Management Implementation Plan
Data Management Training Guide

GATS Quality Assurance: Guidelines and Documentation

GATS Analysis and Reporting Package
Fact Sheet Templates
Country Report: Tabulation Plan and Guidelines
Indicator Definitions

GATS Data Release and Dissemination
Data Release Policy
Data Dissemination: Guidance for the Initial Release of the Data

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Disclaimer: The views expressed in this manual are not necessarily those of the GATS collaborating organizations.

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1. Introduction

Tobacco use is a major preventable cause of premature death and disease worldwide, with approximately 1.4 billion people age 15 years or older using tobacco[1]. Furthermore, more than 8 million people die each year due to tobacco-related illnesses[2]. If current trends continue, tobacco use may kill a billion people by the end of this century, and it is estimated that more than three quarters of these deaths will be in low- and middle-income countries[3]. An efficient and systematic surveillance mechanism is essential to monitor and manage the epidemic.

The ***Global Adult Tobacco Survey*** (GATS), a component of Global Tobacco Surveillance System (GTSS), is a global standard for systematically monitoring adult tobacco use and tracking key tobacco control indicators. GATS is a nationally representative household survey of adults 15 years of age or older using a standard core questionnaire, sample design, and data collection and management procedures that were reviewed and approved by international experts. GATS is intended to enhance the capacity of countries to design, implement and evaluate tobacco control interventions.

In order to maximize the efficiency of the data collected from GATS, a series of manuals has been created. These manuals are designed to provide countries with standard requirements as well as several recommendations on the design and implementation of the survey in every step of the GATS process. They are also designed to offer guidance on how a particular country might adjust features of the GATS protocol in order to maximize the utility of the data within the country. In order to maintain consistency and comparability across countries, following the standard protocol is strongly encouraged.

GATS manuals provide systematic guidance on the design and implementation of the survey.

1.1 Overview of the Global Adult Tobacco Survey

GATS is designed to produce national and sub-national estimates among adults across countries. The target population includes all non-institutionalized men and women 15 years of age or older who consider the country to be their usual place of residence. All members of the target population will be sampled from the household that is their usual place of residence.

GATS uses a geographically clustered multistage sampling methodology to identify the specific households that Field Interviewers will contact. First, a country is divided into Primary Sampling Units, segments within these Primary Sampling Units, and households within the segments. Then, a random sample of households is selected to participate in GATS.

The GATS interview is composed of two parts: *Household Questionnaire* and *Individual Questionnaire*. These questionnaires are administered using an electronic data collection device.

[1] World Health Organization. WHO report on the global tobacco epidemic, 2019: Offer help to quit tobacco use. Geneva, Switzerland: World Health Organization; 2019. https://apps.who.int/iris/bitstream/handle/10665/326043/9789241516204-eng.pdf?ua=1

[2] GBD 2017 Risk Factor Collaborators. Global, regional, and national comparative risk assessment of 84 behavioural, environmental and occupational, and metabolic risks or clusters of risks for 195 countries and territories, 1990-2017: a systematic analysis for the Global Burden of Disease Study 2017. Seattle, WA: Institute for Health Metrics and Evaluation; 2018.

[3] Mathers, C.D., and Loncar, D. Projections of Global Mortality and Burden of Disease from 2002 to 2030. *PLoS Medicine*, 2006, 3(11):e442.

The GATS interview consists of two parts: the *Household Questionnaire* and the *Individual Questionnaire.* The *Household Questionnaire* (household screening) and the *Individual Questionnaire* (individual interview) will be conducted using an electronic data collection device.

At each address in the sample, Field Interviewers will administer the *Household Questionnaire* to one adult who resides in the household. The purposes of the *Household Questionnaire* are to determine if the selected household meets GATS eligibility requirements and to make a list, or roster, of all eligible members of the household. Once a roster of eligible residents of the household is completed, one individual will be randomly selected to complete the *Individual Questionnaire*. The *Individual Questionnaire* asks questions about background characteristics; tobacco smoking; electronic cigarettes; smokeless tobacco; cessation; secondhand smoke; economics; media; and knowledge, attitudes, and perceptions about tobacco.

1.2 Use of this Manual

The purpose of the *GATS Data Management Implementation Plan* (DMIP) is to provide a description of the procedures, practices, and resource information for GATS data management activities inclusive of data extraction, format, transfer, and chain of custody from the interviewer to the global level. The plan was developed in accordance with the GATS task deliverables document and is maintained by the GATS Data Coordinating Center (DCC).

The goal of the DMIP is to provide vital planning and implementation information to the primary GATS partners and to the GATS implementing agencies that reside in each country. It addresses the roles and responsibilities of the GATS partners and implementing agencies and is targeted primarily for use by the following audiences:

- the country staff/institution responsible for planning, acquiring, and managing Information Technology (IT) and human resources to carry out GATS, and
- the country IT staff or data managers responsible for maintaining, transferring, consolidating, and auditing GATS data collection at the interviewer, primary sampling unit (PSU), regional, and/or national level.

This document also provides specific data processing and management activities, and procedures and recommendations to be performed in the course of data collection and consolidation. It should be noted that whenever possible existing GATS resource documents (listed in *Section 1.4* below) are referenced because explicit instructions and specifications are found in those materials. *Appendix A* provides a glossary of terms used in the document.

1.3 Structure of the Data Management Implementation Plan

Data collection, consolidation, and quality control (QC) are performed at three main levels: (1) GATS Data Coordinating Center (DCC) - IT, (2) In-Country Central Office - IT, and (3) Field Interviewers. *Exhibit 1-1* describes the data collection workflow for each of these levels.

Exhibit 1-1. GATS Data Collection Workflow

Location/Resource	Suggested Support Personnel	Main Deliverables
GATS Data Coordinating Center (DCC) - IT	1-2 GATS IT Leads (2nd lead serves as support to primary lead)	Provide training to country staff Provide in-country and remote technical assistance Provide quality assurance, data management and analytic support
In-Country Central Office - IT	1 Country IT Lead (system/database administrator) 1+ Country IT Support Person(s) 1+ Survey and IT trainer(s)	Provide equipment for country Program/Review questionnaire Load questionnaire on handheld devices Provide training and support Consolidate and manage data Perform Quality Control (QC) Analyze and report country data Coordinate data finalization, support, and resolve issues with DCC
Handheld device	Field Interviewers (FI) (typically 1 interviewer per device) Field Supervisors (FS) (typically 1 Supervisor per team of Interviewers	Attend GATS field training (FI/FS) Collect data (FI) Upload data from handheld devices to Central Office (FI/FS)

Resource requirements, including hardware, software, and personnel, along with functional responsibilities and deliverables at each level, are explained in the sections below.

First, however, readers should familiarize themselves with the following list of technical resources, which provide in-depth details of the GATS questionnaire and the recommended electronic data collection technology, and most importantly with the Data Governance guidelines to ensure clear understanding and delineation of the responsibilities and expectations between and among the team members.

1.4 Technical Resources

A series of manuals and technical documents have been created for the countries to follow as they design sampling plans, develop data collection protocols, and collect data for GATS. These manuals are designed to provide the countries with the minimum requirements issued by the U.S. Centers for Disease Control and Prevention (CDC) and the World Health Organization (WHO) on different aspects of the GATS sample design, data collection and data management methodologies. The manuals are also designed to provide guidance on how a country might adjust features of the GATS protocol to maximize the utility of the data for researchers within the country. Considerable flexibility is being offered to countries in the GATS protocol; however, it is important for each country to follow the features that are required by CDC and WHO. These requirements are being issued to maintain consistency in the implementation of GATS between countries. Maintaining this standardization is imperative because it will provide consistency and allow for data integration and analytic comparisons over countries.

1.4.1 Questionnaire Programming

GATS Programmer's Guide to General Survey System—provides information on the GSS set of programs and applications. Information in the document includes the technical and business architecture along with the requirements and usage for the system. This document is written for the IT staff that will be developing and supporting GSS activities.

GATS Core Questionnaire Programming Specifications—contains specifications at the field/variable level for each field in the core instrument.

Country-Adapted GATS Questionnaire—the survey instrument to be implemented in a country. Each country will have a country-specific questionnaire that reflects changes they have applied to the *GATS Core Questionnaire*.

1.4.2 Field Implementation

GATS Field Interviewer Manual—provides step-by-step guidance to GATS Field Interviewers.

GATS Field Supervisor Manual—presents requirements and guidelines for the GATS Field Supervisors who supervise Field Interviewers in countries that are using handheld devices to implement GATS.

1.4.3 Data Management

GATS Data Management and Handheld Device PowerPoint Presentations—used at various meetings, including technical site visits, the presentation spans GATS data management aspects including pre-site visit preparations and pretest activities.

Country IT Survey—gathers country-specific requirements information relating to survey operations, hardware, software, and telecommunication so that a data management model can be selected and adapted.

Data Release Policy—describes detailed policy regarding release of GATS data.

1.4.4 Technical Support

Pretest Preparation Checklist—a list of activities to be performed by both the country and technical support teams 4 to 6 weeks prior to the pretest site visit.

GATS Technical Support Plan—a brief document that outlines the level of support and resources for the GATS country pretest and main study technical assistance.

1.5 Data Governance

Data governance refers to the rules and regulations for managing the availability, usability, integrity, and security of data as an asset. GATS data governance includes a structure that defines the policies and procedures and a plan to implement them. To accomplish the goals of GATS, it is necessary to put personnel, policies, procedures, and organizational structures in place to make data accurate, consistent, secure, and available. GATS data governance is planned, managed, and implemented through a multinational structure as described in detail below.

To aid in the establishment of GATS data governance, two documents have been created. This DMIP manual exists to guide the standardization of GATS data management activities and to serve as a reference for planning and implementation. In conjunction with the DMIP, the *GATS Data Release Policy* details the policies regarding the release of GATS data to the public.

1.5.1 Data Management Planning

Development and Approval of Data Policies, Standards, and Procedures

All participants in this structure are stakeholders in the data management policies, procedures, and recommendations process. The DCC drafts and finalizes the policies and plans. GATS partners review and approve plans and policies. These approved plans and policies are subsequently made available to participating GATS country implementing agencies for their feedback and implementation. The DCC will maintain and release updated versions as plans and policies change.

Data Stewardship

Data stewardship is the identification of positions in organizations that are accountable for the definition, production, and use of the data. Although the implementing agency is responsible for identifying and providing staff resources, this plan provides guidance in this effort. *Appendix B* provides a potential list of staff that may be used to support and perform GATS data management activities, along with their job descriptions. For countries needing to acquire IT staff for the implementation of GATS, this resource may serve to help evaluate the people on their ability to be responsible for the data. Although in-country staffing is expected to be composed of numerous medical, technical, and administrative positions, this plan solely addresses technical staff and their needed resources. Although various technical position titles may vary, staffing may include one to three individuals in the following roles, depending on the number of field staff and the technical aspects required in the country: IT/Computer Specialist, Data Manager, Database Administrator, Statistical Programmer, and Applications Programmer.

1.5.2 Data Management Control

Coordinating Data Activities

Once planned, data management activities must be coordinated. This plan covers GATS procedures for performing these activities specific to the following:

- Planning, supervision, training, and control over data management.
- Data architecture and design.
- Defining, monitoring, and improving data quality.
- Global-level concerns.
  - *Database design, implementation, and support.*
  - *Reviewing data and performing QC activities.*
  - *Receiving and documenting data files.*
- Enabling reporting (e.g., integrating, controlling, and providing metadata; creating analysis datasets at the international level).

Monitoring and Managing GATS Data

Within the numerous GATS data management activities, data monitoring will require significant ongoing interaction between the GATS partners and the implementing agencies. The goal of the GATS is to provide guidance for a sustainable in-country surveillance system as well as an integrated global-level data repository that allows for user analysis. Survey monitoring (e.g., field progress, data collection, transmission, and aggregation) is a key coordinated, ongoing activity that will require all stakeholders to be involved.

Communication

Communication is extremely important for successful data governance. The GATS partners must tell implementing agencies what steps are being taken and why and inform relevant partners to incorporate their ideas and feedback. Input and feedback make governance efforts more effective in achieving goals and are vital to the success of GATS. Communication mechanisms include:

- ongoing technical assistance,
- ongoing GATS partners meetings, and
- partner conferences.

2. General Data Management Planning Guide

Each participating GATS country will submit a GATS survey proposal that include the details for data collection and data management plans, including technical and human resource requirements. The proposal will include the final determination of data collection technology, if other than that recommended and provided by GATS. The final proposal must include description of the following:

- Determination and description of the number of Primary Sampling Units (PSUs).
- Number of interviewers and other technical and data management staff at the national level and at each PSU.
- Description of the interview data collection technology (hardware, software, etc.), if other than the hardware and software recommended by GATS.
- Description of data consolidation and management technologies at the national level, including computers, databases, Internet capabilities, and data quality analysis software.
- Sampling case assignments and management procedures, including the tracking of follow-up and incomplete cases.
- Procedures for data gathering and consolidation from interviewers to the central database.
- Data quality testing and remediation procedures at the PSU and national level.
- Data transfer, aggregation, and chain-of-custody procedures from PSUs to the country central database.
- Procedures for transfer of data approved for release from the country to the DCC.
- Technical and data management training plans for Field Interviewers, Field Supervisors, and IT staff at the PSU/regional/national level.
- Field Interviewer and Field Supervisor training plans.
- Country technical and data management staff training plan.

3. Field Data Collection

GATS countries use handheld device-based electronic data collection technologies to ensure timely, cost-effective, and quality-controlled survey data collection and consolidation. GATS will work with the country on delivery or purchase of handheld devices, software to develop electronic GATS questionnaires in the country's host language, and procedures to transfer and consolidate data from handheld devices to the central database and to the DCC global repository.

Countries with established national electronic data collection infrastructure may choose to deploy their existing technology and expertise for field data collection instead of the handheld technology recommended by the GATS. However, closer collaboration between countries using their existing infrastructure and the GATS partners will be necessary to ensure that GATS data are collected in accordance with agreed-upon specifications and quality.

3.1 Electronic Data Collection Handheld Devices

General Survey System (GSS) software, which is designed to run on an Android platform (Version 5.1 or later), has been tested and implemented using the Samsung Galaxy Tab A (Model SMT-280).

Procurement of handheld devices will be handled based on each countries' approved proposals. Additional units (10%) will be included with each shipment for use as backup units. All handheld devices will remain in the country after completion of the GATS survey. Handheld devices are suitable for use in a wide range of applications including non-GATS surveys.

3.2 Electronic Survey Questionnaire Software and Data Storage

Significant efforts went into developing an electronic GATS questionnaire for the handheld device with appropriate data entry validation, skip patterns, and standard data coding and formatting. The survey questionnaire program was developed using the GSS software. This software will be made available to GATS host countries. GSS questionnaires are certified for use with the handheld device only. Data collected by the GSS questionnaire are stored internally in a SQLite database format.

3.3 Handheld Device and Questionnaire Software Installation and Technical Support

Training on the installation, setup, and operation of the GSS software on handheld devices and laptop/computer for GATS implementation will be provided to IT personnel in each country as part of the Pretest. Country IT personnel will install and set up the handheld devices for the final survey and provide training and technical support to GATS field team (supervisors and interviewers) as part of the final survey implementation plan. A training guide has been prepared to be used for onsite training. This will ensure a systematic and consistent approach in the training that takes place in each country. Training and technical support will be available in the following areas:

- Setting up the handheld device systems' software.
- Selecting the most effective data management plan for each country.
- Developing questionnaire forms using GSS.
- Programming the core GATS questionnaires.
- Setting up multiple language versions of the questionnaires.
- Loading sample files and initializing the case management systems.
- Training and supporting Field Interviewers and Field Supervisors on use of handhelds and data transfer.
- Managing and performing the data management tasks to including transfer of data from the handheld devices to the central database.

The *GATS Programmer's Guide to General Survey System* provides detailed instructions on how to prepare equipment and questionnaires for the field.

Appendix C provides a list of the main setup tasks that are required on site.

The *GATS Data Management Training Guide* will be available to direct training activities. The Pretest training, in conjunction with the guide are aimed at training those in-country staff who will eventually train all staff for the production full-scale survey. Technical support will be provided after the pretest and during full-scale survey operations. Part of the pretest setup and training will focus on developing a support hierarchy within the host country and communications and support mechanisms to provide second- and third-tier support to in-country staff.

3.4 Data Collection Procedures

The data collection procedures supported by GSS and the operations required by field staff are detailed in the field manuals that have been developed. The *GATS Field Interviewer Manual* provides step-by-step guidance to Field Interviewers. The *GATS Field Supervisor Manual* presents requirements and guidelines for the Field Supervisors who supervise Field Interviewers.

The GSS software and its implementation, as described in the above manuals, will lead to building databases that contain the questionnaire data collected by each interviewer. In addition, these databases will contain the case management information that tracks the events that are recorded as each case is worked. The GSS provides several levels of data QC and built-in QC checks that control operations of a given Field Interviewer. The details of these checks and processes can be found in the *GATS Field Interviewer Manual* and the *GATS Core Questionnaire Programming Specifications* which contains specifications at the column/variable level for each data field in the core instrument.

The following sections describe the resources and procedures that are required to transfer the data from the individual handheld devices and merge it into a central database that reflects all the data collected from all the field staff.

4. Country Data Management

The national implementing agency will be the starting point and the end point for the survey operations. At the start, it will begin the process by designing and building the sample frame and household lists that define the survey. During survey implementation, it will be the central point that monitors survey operations and provides the overall QC focus for the survey. At the end, it will be the repository for all data collected during survey operations. These tasks will require human and machine resources. Countries that do not have available existing computing facilities to consolidate and host GATS data should plan to acquire a high-end PC(s) with hardware, software, and performance capacity to host, manage, analyze, and generate GATS reports.

4.1 Case File Management

The implementing agency and its partners will develop country GATS survey sample design. This will require staff that can design and draw a national sample and IT staff resources that can convert the sample design into files suitable for use on the GSS devices (the handheld devices). The initial stage for starting a GSS-based survey is the development of the household-level file that drives the case assignment process. Country project staff will build this file and prepare it for allocation to the individual handheld devices. In countries where a total file of selected households is not available prior to the start of the survey, procedures will have to be developed to build interim case files that will allow loading the handheld devices with households to be surveyed during survey operations.

4.2 Country GATS IT Staff

At the national level, IT staff will be required to manage and support the survey activity. It is recommended that one system and database administrator position be filled. They will assume the following tasks:

- Setup of handheld devices and laptop/computer systems.
- Modification and testing of questionnaire's programming.
- Setup of multiple language versions of the questionnaires.
- Setup of file transfer protocols, hardware, and software.
- Development of a survey monitoring process and monitoring.
- Development of household-level sample files.
- Master data file construction.
- Routine data management activity.
- Running of routine statistical reports for QC activities.
- Support of training activities.

These staff will be required for several months prior to the pretest and through the development of the national database. Refer to the *GATS Quality Assurance: Guidelines and Documentation* for information on additional QC tasks for the country IT staff.

4.2.1 Field Interviewers, Field Supervisors, and IT Staff Training

Training and Technical Assistance to GATS Countries

Each country will translate and modify the GATS questionnaire to include its supplemental questions. Training on the use and implementation of the survey questionnaire for the administration—and the accompanying documentation—is, therefore, necessary for each GATS country (see *GATS Data Management Training Guide*).

Training

IT Staff training at the national level is to be planned and scheduled according to the following objectives:

- Objective 1: Provide country GATS IT staff with assistance to program, test, and maintain a handheld device-based survey, as needed.
- Objective 2: Review the GATS pretest questionnaire, including question and response wording, probing instructions, and pace of questions.
- Objective 3: Train country GATS IT staff on use of handheld device hardware and software, as needed. The pretest should "test" all the technical aspects of the handheld device including data collection, aggregation, and transfer.
- Objective 4: Observe pretest implementation in one rural and one urban environment, if feasible.
- Objective 5: Gather information on the main survey implementation plan and the procedures for use in tailoring technical assistance and training support for the main implementation.
- Objective 6: Debrief WHO, CDC, and other GATS staff on strengths, weaknesses, and recommendations on survey pretest preparations and implementation. The IT support technical staff will prepare a site visit report documenting the IT training, data collection, and management during pretest field work.

Preparation for Pretest

To ensure the pretest is implemented on schedule, numerous activities must be accomplished prior to the pretest site visit. These activities should be completed 2 to 3 weeks prior to the pretest site visit. Pre-site visit activities are documented in the *Pretest Visit Checklist*.

Ongoing technical assistance to the host country survey staff will be provided. Support will be provided (in English) through telephone, chat, and e-mail communications. To facilitate communication, several technical support tools will be used, such as remote access to share screens and a mechanism to exchange files. These support tools will be installed and tested during pretest activities. Technical support activity will be logged and reviewed to search for common problems or emerging issues during survey operations. Regular feedback will be provided to CDC, CDC Foundation, and WHO on technical support activities.

Appendix A: Glossary of Commonly Used Terms and Definitions

Capacity Building: The process of developing and strengthening the skills, abilities, processes, and resources that organizations and communities need to survive, adapt, and thrive.

Data Aggregation: The process of combining data files at various levels (e.g., over Field Interviewers, over Field Supervisor, over regions).

Data Governance: The process by which an organization manages the quality, consistency, usability, security, and availability of the data.

Data Management: Processes for preparing and managing the data inclusive of sample assignments, transfer, and aggregation of the collected data, monitoring and reporting of collected data; based on country's survey operations and IT infrastructure.

Data Stewardship: The identification of positions in organizations that are accountable for the definition, production, and usage of the data.

Data Transfer: Method of moving data between devices and levels (e.g., from handheld device to Field Supervisor laptop or other data centers).

Designer: A GSS questionnaire design program for preparing and/or modifying a survey instrument. The Designer allows the creation, deletion, and modification of questions in two languages in the GSS. This application is a PC-based program.

Export: A GSS program used to export data from a handheld device.

File Builder: A GSS data aggregation program that runs on a PC for use in combining Field Interviewer files.

GATS: Global Adult Tobacco Survey.

GSS: General Survey System, a questionnaire development and presentation system engine that allows defining of data collection forms on a standard desktop PC and execution of these data collection forms or questionnaires on the handheld device.

Guideline: A way of implementing the principle, sometimes with additional information supplied.

Handheld Device: A handheld device is a mobile computer. GSS software is designed to run on an Android platform (Version 4.0 or later) and has been tested and implemented using the Samsung Galaxy Tab.

SD Card: A Secure Digital card, a type of flash memory card format.

Standard: A general principle that needs to be followed. Standards can be voluntary or mandatory, and as technology and needs change, become superseded.

Surveillance System: Public health surveillance is the ongoing systematic collection, analysis, and interpretation of data for use in the planning, implementation, and evaluation of public health policies, programs and practice. A surveillance system provides the functional capacity for data collection and analysis and the timely dissemination of information derived from these data to persons who can undertake effective prevention and control interventions.

Appendix B: Recommended Staff Position Descriptions

This appendix contains a list of responsibilities, skills and qualifications, role components, and background for each of the proposed data management staff positions. The positions described are:

- IT Specialist/Database Administrator, and
- Data Manager/Statistical Programmer.

Information Technology Specialist

Responsibilities for this position(s) encompass supporting the Global Tobacco Surveillance System (GTSS) Global Adult Tobacco Survey (GATS) data collection and management activities and providing technical assistance. In this capacity, the position will perform the following activities:

- Act as the main in-country technical reference for GATS, serving as the primary point of contact for all country handheld device instrument/questionnaire and handheld device hardware issues.
- In collaboration with country focal point, act as the liaison with international partners and the implementing agency (inclusive of any contractors) to facilitate all IT activities.
- Coordinate and collaborate with all partners at all levels for the implementation of GATS.

Implementing Agency Support Activities

- Attend GATS IT training as provided by the technical team and the international partners, becoming proficient in the handheld device usage, software programming, and supporting applications aspects.
- Assist the implementing agency in installation and preparation of programs and procedures for the use, storage, and management of GATS data.
- Assist the implementing agency in identification, procurement, installation, and operation of supporting electronic equipment such as laptops and supporting software.
- Prepare the handheld device with the needed software for the implementation of GATS and support all functionality of the use of handheld devices, including data transfer from field staff to a centralized location.
- Provide input for developing ongoing data collection and management activities and effective information dissemination within the country.
- Provide support for data aggregation, as required.
- Support/perform data dissemination from the implementing agency to the international partners.
- Provide software and hardware technical assistance in the implementing agency for all GATS data collection and management activities.

Field/Operational Support Activities

- Assist in training field staff in using the handheld devices and ensure staff expertise in using it.
- Support the nationals in the technical use of the handheld devices.

- Solve problems that arise in the use of the handheld devices and supporting applications at the national level.
- Assist in monitoring site adherence to data collection protocol(s), including security and confidentiality.

Programming Activities

- Oversee instrument/questionnaire testing activities prior to release to ensure instrument and data specifications are met.
- Write software programs needed to produce reports and provide support for data export and dissemination as needed.
- Working from the GATS questionnaire specifications, write programming instructions to perform instrument/questionnaire modifications/additions.

Skills

This position demands the following skills:

- Strong communication skills—both written and verbal preferred—and the ability to communicate in English.
- Experience in technical support activities; desire to work in a team-oriented environment.
- Experience in data collection instrumentation software highly desirable.
- Experience in Microsoft office products in a Windows environment.
- Experience in SQL and statistical software (SPSS, SAS, Stata, EpiInfo) preferred.
- Strong troubleshooting skills.
- Education or coursework that required the development or adaptation of computer programs and systems and provided knowledge/work experience equivalent a plus.

Background

If possible, this position should reside within the implementing agency. Staff will direct the development and operation of the country's GTSS GATS system. Activities include instrumentation and system development, installation, modification, maintenance, monitoring, and/or integration of computer operating systems, applications, and databases to meet GATS requirements and needs.

Data Manager

The Data Manager will typically be responsible for performing data management tasks such as data validation, cleaning and editing, tracking data collection, monitoring data-related activity including data transfers, maintaining the surveillance data repository, and producing reports and developing and maintaining documentation. This position will ensure the completeness, accuracy, and reliability of surveillance data.

Duties include:

- assisting in the planning and implementation of the data management activities and functions of a large-scale surveillance system;
- working to improve the quality of the data being collected, producing summaries and listings of the data, and testing new processes and components for the management of the system;
- using reports to track progress and ensure that timeliness and quality expectations are met;
- assisting in the standardizing of data management procedures, and reviewing and revising procedural manuals and standard operating procedures as needed;
- responding to data requests when needed, interacting with other staff, and assisting in the preparation of training materials and training activities; and
- working collaboratively with other staff members including country focal point, principal investigator/Survey Director, and survey field staff, statisticians, other Data Managers and IT specialists.

Position Justification

The Data Manager position(s) focuses on routine data management activities specific to maintaining the GATS database(s), reviewing data, reporting, and grantee monitoring. The position is the backbone of the day-to-day data management processing and activities for the system.

Education, Experience, and Skills

- Bachelor's or master's degree in a public health-related science field, computer science, or other information technology specialty preferred with a minimum 6 years' experience in research, specializing in data management, or at least 2 years' experience in clinical data management.
- Previous experience as Data Manager.
- Intermediate skill level in statistical software such as SAS, SPSS, Stata, and MS Office products, including MS Excel, MS Word, and MS PowerPoint.
- Working knowledge of other computer software and software programming, database systems, data collection systems, and data verification and validation techniques.
- Excellent verbal and written communication skills.
- Good problem-solving skills and the ability to work under pressure and meet deadlines.

Appendix C: GSS Setup Activities

Exhibit C-1. IT Specialist GSS Setup Activities

Step	Handheld device	Laptop
1	Inventory, set up, and test handheld devices	Install GSS software and required Microsoft components from provided software distribution
2	Perform factory reset, if needed	Check that the following Microsoft products are installed: – MS.NET Framework
3	Build Field Interviewer list	Check that C:\GATSAndroid2 trees contain full GATS GSS software set
4	Install GATS application	Test laptop configuration to see that all GATS Tool Kit components are available and working: – Designer – Edit DB tables – Case file tools – Data aggregation – Help files
5	Prepare Casefile.txt for loading cases	

Appendix D: Security and Backup

Data security and data backup are key activities and requirements for successful data collection. The systems described in this document have built-in security and backup components and support extended procedures where needed. Data security, as defined for this document, is the process by which data on a device or in a file are protected from access by unauthorized users. Data backup is the process by which data are protected from loss due to hardware or software failures, equipment damage, or equipment loss by making external copies of the original data.

Security

The systems described in this document support data security by applying several layers of control over GATS data. The GATS databases stored on both the handheld devices and the aggregated databases stored on aggregation devices may be encrypted. Hence data are encrypted while at rest on the laptops and while in storage on the handheld devices. The encryption password is known only to system staff supporting the applications and is not entered during normal operations, hence does not need to be known by field workers. In addition, entry into the GATS applications on a handheld device is protected by a required password. If deemed necessary, optional logon security is available in the handheld device operating system that requires individual passwords be entered before providing access to the handheld device. It is expected that laptop systems used for GATS will require usernames and passwords to login to the laptop operating system. The recommended data transmission tools specify an encrypted transmission protocol for electronic movement of the files between aggregation sites.

Data Backup

The GATS handheld devices have built-in and recommended data backup features. The GSS Case Management System will make a backup of the live, in memory, database every time the field worker exits the Case Management System. Additional data backup procedures will be designed when the data management plan for country is finalized.

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