Household Budget Survey – HBS 2014
Sint Maarten, Dutch Caribbean

Methodological Report

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Introduction

The Household Budget Survey (HBS) is used to collect income and expenditure statistics from households. These statistics are used for a variety of purposes namely; the determination of expenditure shares (weights) for the computation of the consumer price index (CPI), to provide data for the household accounts in the national accounts and to provide data for welfare analysis (Poverty line calculation). This survey was last carried out on a sample of the households on Dutch Sint Maarten in 2004/05 by CBS Curacao. The following methodological report is meant as a tool in the preparation of the upcoming HBS in 2014 to be carried out by the department of statistics (STAT) Sint Maarten.

Structure of the report
This report is organized in eight chapters as follows:

- Chapter 1 gives the background to, and justification for and Legal Authority to conduct the Household Budget Survey (HBS)

- Chapter 2 discusses a conceptual framework and operational definition for Household, Income and Expenditure. Identifying the components to be included in the operational definition, those that should be excluded.

- Chapter 3 this chapter presents the planning and organization of the HBS project.

- Chapter 4 presents sampling methodology used to determine sample size and sample selection.

- Chapter 5 describes survey documents used, provides the code books and instruction manuals used for the project.

- Chapter 6 provides the planning, organization and requirements to execute the field work of the HBS project.

- Chapter 7 discusses the method of data collection and data capture and data storing procedures.

- Chapter 8 describes the editing and coding process, tabulation and ultimate reporting of the results.

Household income and expenditure statistics serve a variety of purposes with respect to economic, social and other forms of description and analysis.

Consumer price index (CPI)

The CPI measures the changes over time in the cost of a "basket" of goods and services represented by a household's consumption expenditures. It is considered as the best available measure of inflation of the prices of consumer goods and services in the economy. Thus CPI is used to index payments as well as, on occasion, formulate monetary policies. In some countries, CPI is conceived and constructed to be a cost-of living index that reflects changes over time in the prices of goods and services relative to what is required to maintain the same standard of living as that of the reference period.

Consumption expenditure statistics are used in the compilation of CPI to:

- Identify the goods and services that should go into the basket; and
- Derive the component expenditure shares for categories of the goods and services covered by the CPI, used as weights in the computation of CPI. The key statistics required are the levels or share of expenditures for different categories of goods and services, assumed to have similar price movement for the population groups covered. Although other sources are used in the construction of weights, expenditure surveys are considered the main source for this purpose. (ILO, 2003)

Welfare analysis

Assessing levels and trends in the well-being of members of a society is essential in order to describe the welfare of that society. One of the most important and most accessible indicators of well-being of a household is that of economic well-being represented by the totality of economic resources available to the household.

The flow of receipts and disbursements representing income, consumption expenditure and investments (future capacity to consume) therefore defines limits to the lifestyle of the household and its level of wealth. They are reasonably measurable, meaningful, and concrete; and can be used to place households in relative positions.

Statistics of income and consumption expenditure are used to generate distributions of income/consumption expenditure across households for:

I. Studying population groups at the bottom end of this distribution (poverty) or the measurement of its dispersion (inequality);

II. Analysis of the characteristics of population groups at different levels of the income/consumption expenditure distribution;
Producing various statistics relating to income/consumption poverty, inequality and social exclusion, such as a poverty line;

III. Analysis of non-monetary dimensions of poverty and social exclusion such as employment, health, education, and housing conditions;

IV. Measuring the level, nature and structure of living conditions of households in time and space, especially for specific sub-populations, such as the elderly, the young and various categories of workers. (ILO, 2003)

National accounts

In the compilation of national accounts, income and expenditure statistics based on micro data can serve both as the basis for estimates of certain components for the household sector and as quality control checks for estimates of components produced from other types of statistics. (ILO, 2003)

Evaluation of government policies

Income and expenditure statistics are also used for the formulation, implementation, monitoring and impact evaluation of economic and social welfare policies, and of changes to such policies. (ILO, 2003)

Other types of analysis

Some other types of studies using income and expenditure statistics include:

I. analysis of the relationship between income distribution, economic activity and returns to labour, capital and land;

II. labour market analysis – relationships between income, or some components of income, and characteristics of workers, jobs, place of work and job search;

III. formulation and monitoring of wage policies – including the setting of minimum wages;

IV. analysis of the determinants of consumer behaviour;

V. analysis of the generation and uses of income – informal sector income, rural income, financing of consumption expenditure;

VI. analysis of savings behaviour of individuals in different types of households;

VII. analysis of indebtedness, ownership of assets, etc.;

VIII.   analysis of the effect on households of drastic sudden changes in economic and social policies such as in the transition economies;

IX.   measuring the economic impacts of tourism. (ILO, 2003)

Consumer demand and market research

Household income and expenditure surveys provide a rich source of data for studying the consumption and buying habits of different population groups and for market research. Combining consumption expenditure statistics and data from population censuses enriches these types of analyses. (ILO, 2003)

Derived Objectives

The objectives set for this Household Budget Survey (HBS) are:

I.   To determine the items of household goods and services that will constitute the updated consumer basket of goods and services whose prices are to be collected each month for the computation of the CPI,

II.   To derive the weight (relative importance) of each item included in the CPI basket,

III.   To provide data on the distribution of household income and expenditure,

IV.   To supplement the data used in the household accounts for National Accounting purposes,

V.   To provide information for welfare (poverty) analysis.

Historical Development

The previous Household Budget Surveys (HBS) were carried out by CBS Curacao during 1988-1989; 1994-1995 and 2004-2005. As per 10-10-2010 Department of Statistics (STAT) has been formed and will hence forth carry out all HBSs on a 5-year interval.

Coverage

The sets of households covered by CPIs and the national accounts are not intended to be the same, CPIs typically covering a smaller set of households. Household consumption expenditures in national accounts cover the expenditures made by all households, including institutional households resident in the country or region, whether those expenditures are made inside or outside the country or region of residence. CPIs tend to cover the expenditures and prices paid by households within the geographical boundaries of a country or region, whether the households are residents or visitors. More importantly, most CPIs are purposely defined to cover only selected groups of non-residential households. For example, CPIs may exclude very wealthy households or be confined to households in urban areas or headed

by wage-earners. (ILO, Consumer price index manual: Theory and practice, 2004)

The HBS 2013 covers a sample of all private non-institutional households on Dutch Sint Maarten. Households of non-residents as well as institutional households such as hotels, hospitals and prisons were excluded from the sample. Children studying abroad will not be included in the household. Additionally Households with monthly income greater than or equal to 25,000 ANG and those with 10 or more members are excluded from HBS sample.

Legal Authority

Statistics Legislation of 1976 No. 145 provides the legal authority to conduct the Household Budget Survey (HBS). The Statistics Legislation obligates the sample selection of households to provide the required information according to the approved questionnaires and documents. All staff (including temporary recruited staff) has signed a declaration of secrecy as to ensure that all information collected is kept confidential.

Household

The UN recommends the following definition of a household: A household may either be:

- A one-person household: a person who makes provision for his or her own food or other essentials for living without combining with any other person.
- A multi-person household: two or more persons living together who make some common provision for food or other essentials for living. The persons may pool their incomes and may, to a greater or lesser extent, have a common budget; they may be related or unrelated persons or a combination of both. (ILO, 2003)

Further the UN distinguishes an 'informal domestic relations' criteria as to determine if there are multiple households in one dwelling. The criteria for informal domestic relations are:

- Mutual agreement has been made concerning the purchase of food and other living necessities;
- Everyone is using the main room of the house (the living room);
- Everyone uses the kitchen together. (UN, 2008)

Dwelling and living accommodation are hence two separate concepts, as a dwelling may contains living accommodations for multiple households.

Additionally note the following:

- Persons with a variable address, who are not a member of one particular household, will be interviewed in the household where they are staying at the time of the interview.
- Persons living in a collective dwelling (a prison, a mental institution, etc.) will be excluded from the HBS.
- Children studying abroad will not be included in the household.
- Households with monthly income greater than or equal to 25,000 ANG are excluded from HBS sample.
- Households with 10 or more members are also excluded from HBS sample.

Income

ILO defines income as receipts (both cash and in kind) which are regular and recurring. To be considered as income it should contribute to the economic

wellbeing, excluding those receipts which reduce net worth. Gross income is defined as the sum of the following types of income:

1) Income from Employment
   a) Employee income;
   b) Income from self-employment or entrepreneurial income;
2) Property income;
3) Transfer income;
4) Other income such as value of goods produced by households for their own consumption

Receipts which are non-regular or non-recurring, were excluded from income, these are

- money derived from sale of property and possessions,
- withdrawals from savings,
- loans obtained,
- repayments of loans by other households,
- cash gifts from other households,
- capital transfers such as inheritances, lump sum, etc.

Household income

Household income consists of all receipts in cash, in kind or in services that are received by the household or by individual members of the household at annual or more frequent intervals, but excludes non-regular or non-recurring receipts.

Disposable income

The disposable income is obtained as the gross income less compulsory deductions such as income tax and contributions to pensions and social security schemes. Unless otherwise stated, disposable income has been used as the analytical income measure since it is close to the total receipts available for consumption expenditure during the accounting period. (Bundhoo, Sept. 2008)

Income from Employment

Income from employment comprises receipts for participation in economic activities in a strictly employment-related capacity, as defined in the resolution adopted by the Thirteenth International Conference of Labour Statisticians (1982) concerning statistics of the economically active population, employment, unemployment and underemployment. It consists of: (a) employee income, and (b) income from self-employment. (ILO, 2003)

Employee income

Gross employee income refers to all regular income from paid employment including travelling allowance, rent allowance, bonuses and gratuities as well as any income received in kind. It is to be noted that income derived by employees from subsidiary or parallel business was also included as employee income. However, employer's contributions to pensions and insurance schemes on behalf of employees were excluded. Estimates of monthly employee income refer to the monthly equivalent income. Estimates are based on the last pay; in cases where the period covered was not monthly, the pay was adjusted to a monthly equivalent income. In addition, the amount received as end of year bonus was divided by twelve months to obtain the equivalent average monthly income. (Bundhoo, Sept. 2008)

Income from self-employment

Income from self-employment income is defined as the net income derived from self-employment in household enterprises, business, trade, crop cultivation and independent professional activities. (Bundhoo, Sept. 2008)

Property income

Property income relates to net receipts derived from ownership of assets and includes interests, dividends as well as rent of buildings, land, machinery and equipment. (Bundhoo, Sept. 2008)

Transfer income

Transfer income consists of pensions and allowances from government and private organisations as well as inter household transfers such as alimony, child support, parental support and, goods and services from charities. (Bundhoo, Sept. 2008)

Other income

Goods produced by households for their own consumption were valued at the market prices prevailing during the reference period. The imputed income thus obtained was considered as "other income". (Bundhoo, Sept. 2008)

Expenditure

Household consumption expenditure is the value of consumer goods and services acquired, used or paid for by a household through direct monetary purchases, own-account production, barter or as income in-kind for the satisfaction of the needs and wants of its members. Household expenditure is defined as the

sum of household consumption expenditure and the non-consumption expenditures of the household. (ILO, 2003)

During the Household Budget Survey, households record expenditure data for the survey month on a daily basis in diaries. The HBS expenditure data refers to the cost of acquiring goods and services during the reference period, regardless of whether the household paid for or consumed them during that period. The estimates of household expenditure refer to consumption expenditure which includes:

- money expenditure on goods and services intended for consumption by the household,
- consumption of goods and services which are either own-produced, received free or at reduced price by the household. These were valued at prevailing market prices.

Non-consumption expenditure as well as certain types of goods and services received free were excluded; these are:

- investment related expenditures such as purchase of land, houses and major house repairs, etc.;
- expenditure associated with business;
- direct taxes, social security contributions and pension premiums;
- the rental value of owner-occupied and free housing units;
- inter household transfers such as alimony, child support, parental support and, goods and services from charities
- services received free from the state such as education and health. (Bundhoo, Sept. 2008)

Non-response

Non-response is when an address is not successfully counted due to the following reasons:

- Households with monthly income greater than or equal to 25,000 ANG
- Households with 10 or more members are excluded from HBS sample.
- Collective or institutional households (*known addresses are excluded from target population prior to sample selection*)
- 3 times no one home
- Refusal
- Address can't be found
- Other: communication problems, HH address became a business, etc.

Chapter 3: Survey Organization

This chapter is intended to present the planning and organization of the HBS project to be conducted by the Department of Statistics (STAT) in 2013.

Survey and Reference Period

The <u>survey period</u> is defined as the period over which data as a whole are collected or compiled. Household income and household expenditure statistics should relate to a full-year accounting period to take into account seasonal variations in incomes and expenditures. For the purpose of compiling consumer price indices, the accounting period should as much as possible be a normal year with respect to economic and social factors. (ILO, 2003)

The accounting period used in the retrospective questionnaire is; 1-month, 3-month, 6-month and 12-month moving <u>reference period</u> relative to the survey period. A moving reference period reduces the risk of recall errors, especially when the survey period is also long. During the Household Budget Survey, households record expenditure data for 2-weeks / 14 days on a daily basis in diaries. They also answer a retrospective questionnaire with varying reference periods; 1-month, 3-month, 6-month and 12-month relative to the survey period to ensure good quality data and minimizing recall errors.

During the survey period the households write all expenditures (bills) in the household expenses book (diaries). The survey period lasts 14 days per household. This means that for 14 days the households write down all expenditures in the household expenses books (diaries). Here the following two possibilities exist:

I.   one writes down from the first up to and including the 14th of the month;
II. if the writing period falls in the last 2 weeks of the month, then we do the following:
  a. If the month has 31 days, the writing period lasts from the 18th up to and including the 31st of the month in question.
  b. If the month has 30 days, the writing period lasts from the 17th up to and including the 30th of the month.
  c. In Feb. 2013 this period will last from the 15th up to and including the 28th of the month.

Schedule

The Household Budget Survey has six (6) phases namely;

HBS 2014 Methodology Report
   I.   Planning and Preparation
  II.   Digitalization and Testing
 III.   Publicity, Recruitment and Training
  IV.   Pilot Survey
   V.   Survey period
  VI.   Market Research

Phase 1: <u>Planning and Preparation</u>

Timeframe: 1 year (Jan. - Dec. 2014)
- Questionnaire Development
- Methodology Development
- Budget
- Schedule Plan
- Code books
- Instruction Manuals

Phase 2: <u>Digitalization and Testing</u>

Timeframe: 3-4 months (Jan 2014 – Aug 2014)
- Questionnaire in ODK
- Development of SQL Database
- Testing Digital Questionnaire
- Variable list
- Development of Edit Program (Access)

Phase 3: <u>Publicity, Recruitment and Training</u>

Timeframe: 4 month (Jun 2014 – Dec 2015)
- Recruitment of 40 freelancers
- 6 day Training (15th – 24th October 2014)
- 3 day refresher Training (14th – 16th January 2015)
- 2 day Training (Market Research) (October 2015)
- Publicity Campaign (Oct 2014 – Dec 2015)
- HH Recruitment Letters (September 2014)

Phase 4: <u>Pilot Survey</u>

Timeframe: 1 month (Nov – Dec 2014)
- 150 Pilot Survey Full Load (1st-14th Nov 2014
- Pilot Survey Evaluation (Nov - Dec 2014)

Phase 5: <u>Survey period</u>

Batch_nr	Start date	revised if delay	revised if delay	PLAN 1 WORKLOAD			PLAN 2 WORKLOAD		
				Plan A (20 persons @5HH)	Plan B (15 persons @5HH)	Plan C (10 persons @5HH)	worse (10 persons @6HH)	medium (15persons @6HH)	best (20 persons @6HH)
1	17-Nov-14	1-Dec-14	18-Jan-15	100	75	50	60	90	120
2	1-Dec-14	18-Jan-15	1-Feb-15	100	75	50	60	90	120
3	18-Jan-15	1-Feb-15	15-Feb-15	100	75	50	60	90	120
4	1-Feb-15	15-Feb-15	1-Mar-15	100	75	50	60	90	120
5	15-Feb-15	1-Mar-15	18-Mar-15	100	75	50	60	90	120
6	1-Mar-15	18-Mar-15	1-Apr-15	100	75	50	60	90	120
7	18-Mar-15	1-Apr-15	17-Apr-15	100	75	50	60	90	120
8	1-Apr-15	17-Apr-15	1-May-15	100	75	50	60	90	120
9	17-Apr-15	1-May-15	18-May-15	100	75	50	60	90	45
10	1-May-15	18-May-15	1-Jun-15	100	75	50	60	90	
11	18-May-15	1-Jun-15	17-Jun-15	5	75	50	60	90	
12	1-Jun-15	17-Jun-15	1-Jul-15		75	50	60	15	
13	17-Jun-15	1-Jul-15	18-Jul-15		75	50	60		
14	1-Jul-15	18-Jul-15	1-Aug-15		30	50	60		
15	18-Jul-15	1-Aug-15	18-Aug-15			50	60		
16	1-Aug-15	18-Aug-15	1-Sep-15			50	60		
17	18-Aug-15	1-Sep-15	17-Sep-15			50	45		
18	1-Sep-15	17-Sep-15	1-Oct-15			50			
19	17-Sep-15	1-Oct-15	18-Oct-15			50			
20	1-Oct-15	18-Oct-15	1-Nov-15			50			
21	18-Oct-15	1-Nov-15	17-Nov-15			5			
End of Project	1-Nov-15	15-Nov-15	1-Dec-15	1005	1005	1005	1005	1005	1005

Steps	Action	Timeline Start date	Timeline End date	Responsible
1	Deliver letter and information booklet and request contact number	Monday, August 18, 2014	Tuesday, August 26, 2014	Nacio
3	Contact Household, confirm participation and dates	Wednesday, August 27, 2014	Friday, September 12, 2014	Jaghaira
4	Repeat steps 1 -3 if sample of 150 is not reached	Monday, September 1, 2014	Friday, September 12, 2014	Nacio / Jaghaira
5	Assign interviewer	Friday, September 26, 2014	Monday, September 29, 2014	Jaghaira
6	Contact Household confirm Interviewer and date	Monday, September 29, 2014	Tuesday, September 20, 2014	Jaghaira

Household Recruitment Schedule for HBS 2014

Steps	Action	Batch 1 + 2 November 18 (Tu) December 1 (M)	Batch 3+4 January 18 (Su) February 1 (Su)	Batch 5+6 February 15 (Su) March 1 (Su)	Batch 7+8 March 18 (W) April 1 (W)	Batch 9+10 May 1 (F) May 18 (M)
1	Deliver letter and information booklet and request contact number	Monday, October 6, 2014	Monday, December 1, 2014	Monday, January 5, 2015	Monday, February 2, 2015	Monday, March 16, 2015
2	Assign Interviewer	Monday October 13, 2014	Monday December 8, 2015	Monday, January 12, 2015	Monday, February 9, 2015	Monday, March 23, 2015
3	Contact Household, confirm participation and dates	Monday, October 20, 2014	Monday, December 15, 2014	Monday, January 19, 2015	Monday, February 16, 2015	Monday, March 30, 2015
4	Contact Household confirm date	Monday, November 10, 2014 + Monday November 24, 2014	Monday, January 12, 2015 + Monday,	Monday, February 8, 2015 + Monday,	Monday, March 9, 2015 + Monday March 30, 2015	Monday, April 27, 2015 + Monday,

			January 26, 2015	February 22, 2015		May 11, 2015

- 20 enumerators with workload of 5 HH per block
- Performance Evaluation and follow-up call to participating household

- Data collection and quality check = 100 HH per block
- Quality control calls (20 calls per day)

Phase 6: <u>Market Research (Planning not started)</u>

Timeframe: 3 months (Jul 2013; Oct 2013; Dec 2013)
- 6 supermarkets
  - o Cost U Less
  - o Grande Marche (Bush road)
  - o Grande Marche (Cole bay)
  - o Sunny Food
  - o Fresh Market
  - o Afoo Supermarket
- 4 days per Supermarket
- 4 market researchers per supermarket + 1 supervisor
- 3 supermarkets per market researcher per month (total 12 days each)
- Data entry Market Research (Oct 2013 – Nov 2013 – Jan 2014)

Phase 7: <u>Data entry Household Expenses Diary</u>

After completion of fieldwork, interns will do the data entry of all the household expenses diaries according to the COICOP attached. A form will be developed to assist data entry.

Staff Requirements

The HBS project requires both the involvement of office staff as well as recruited of temporary staff. The project is headed by the statistician (researcher) of prices and CPI and supported by office staff and temporary staff to form the HBS unit. The following functions are needed:

- Project Coordinator
- Fieldwork Coordinator
- Assistant fieldwork
- Assistant data and editing analysts
- IT support
- Interviewers / enumerators
- Data Entry Clerk (intern)

The project coordinator and fieldwork coordinator functions are held by office staff. Thirty (30) enumerators are needed of which 20 are to be in the field conducting household surveys and 10 enumerators are back-up field staff. Additionally one quality control calling agent and one data entry clerk is required. In total 40 temporary staff has to be recruited.

Recruitment of Field Staff

The recruited field staff should have the following qualifications and competencies;

- Minimal Completed High School (preferred MBO or Associate Degree)
- Capability to utilized Mobile Devices (computer literate)
- Good with numbers (numerical oriented)
- Organized and Good Time Management
- Polite Demeanour
- Stress Resistant
- High Work Ethic (can handle confidential information and has a sense of integrity)
- Preferred persons between 25-50 years of age

Roles and Responsibilities of HBS Staff

Tasks of **Fieldwork Staff / Interviewer**:

- Collection of data from household via mobile device (Tablet)
- Data entry of Household (HH) Daily Expenses into Tablet
- Scheduling of HH visits with the HH.
- Management of multiple HH per 14 day cycles

- Management of administration for STAT office
- Scheduled weekly visits with STAT office

Tasks of **Temp Assistant Fieldwork**:

- Full assistant to Fieldwork Coordinator
- HH quality control call-backs
- Providing supply material to interviewers

Tasks of **Fieldwork Coordinator**:

- Development of instruction draft manual for Interviewers
- Recruitment & Training of field work staff
- Responsible for the management of Enumerators in the field
- Performance report of the field work staff
- Payment production lists of Interviewers
- HH confirmation and Allocation to Interviewer
- Weekly/ Regular contact with Interviewers(on appointment) and Project Leader(Wednesdays)
- Providing supply material to interviewers (maps, pens, etc.)
- HH quality control call-backs

Tasks of **Temporary Analyst**:

- Collection of Household (HH) data from mobile device (Tablet)
- Editing of Data collected
- Weekly appointments with each Interviewer
- Management of administration of the Interviewers
- Update completion status of each HH throughout project process
- Weekly update meetings and reports with Project leader on interviewers and HHs managed (Wednesdays)

Tasks of **Project Leader**:

- Responsible for the management and daily activities of the project;
- Recruitment & Training of Fieldwork staff and Temporary Analyst
- Weekly reporting of Temp. Analyst & Fieldwork Status at HBS Team Meetings (Fridays)
- Weekly meetings with Temp. Analyst & Fieldwork Coordinator (Wednesdays)
- Approval of HH completion and Voucher issuance
- Data validation, tabulation and analysis

Tasks of **IT support**:

- Development of Digital Survey (ODK)

- Development of Data storage software (intranet & SQL DB)
- Management and creator of Users for Intranet
- Trouble shoot Major ODK or Intranet Errors
- AD Hoc specific request for additional SQL Queries

Chapter 4: Sampling Methodology

Sample Frame

A **sample frame** is a list of all (or most) of the N units in the universe. A frame may have coverage to the extent that it includes units that are not in the universe or includes duplicates of units. It may have under-coverage to the extent that some units in the universe are missing from the frame. (ILO, Consumer price index manual: Theory and practice, 2004)

The sampling frame used for HBS survey is all private non-institutional households on Dutch Sint Maarten. Institutional households such as hotels, hospitals and prisons were excluded from the population. Under-coverage may exist due to the variation in the household address registry from Census 2011 and the state of affairs in 2013. However the registry will be cross referenced with the electric company (GEBE) on Dutch Sint Maarten, as to identify newly built residential dwellings.

Sampling design

Simple random sampling is a probability sampling procedure that gives every element in the target population, and each possible sample of a given size, an equal chance of being selected. As such, it is an **equal probability selection method** (EPSEM). Every possible combination of sampling units has an equal and independent chance of being selected. However, if subgroups of the population are of particular interests, they may not be included in sufficient numbers in the sample. (Daniel, 2011)

Stratified sampling is a probability sampling procedure in which the target population is first separated into mutually exclusive, homogeneous segments (strata), and then a simple random sample is selected from each segment (stratum). The samples selected from the various strata are then combined into a single sample. This sampling procedure is sometimes referred to as **"quota random sampling."** (Daniel, 2011)

There are eight major steps in selecting a stratified random sample:

1. Define the target population.
2. Identify stratification variable(s) and determine the number of strata to be used. The stratification variables should relate to the purposes of the study. If the purpose of the study is to make subgroup estimates, the stratification variables should be related to those subgroups. The availability of auxiliary information often determines the stratification variables that are used. More than one stratification variable may be used.

However, in order to provide expected benefits, they should relate to the variables of interest in the study and be independent of each other. Considering that as the number of stratification variables increases, the likelihood increases that some of the variables will cancel the effects of other variables, not more than four to six stratification variables and not more than six strata for a particular variable should be used.

3. Identify an existing sampling frame or develop a sampling frame that includes information on the stratification variable(s) for each element in the target population. If the sampling frame does not include information on the stratification variables, stratification would not be possible.

4. Evaluate the sampling frame for under-coverage, over-coverage, multiple-coverage, and clustering, and make adjustments where necessary.

5. Divide the sampling frame into strata, categories of the stratification variable(s), creating a sampling frame for each stratum. Within-stratum differences should be minimized, and between-strata differences should be maximized. The strata should not be overlapping, and altogether, should constitute the entire population. The strata should be independent and mutually exclusive subsets of the population. Every element of the population must be in one and only one stratum.

6. Assign a unique number to each element.

7. Determine the sample size for each stratum. The numerical distribution of the sampled elements across the various strata determines the type of stratified sampling that is implemented. It may be a proportionate stratified sampling or one of the various types of disproportionate stratified sampling.

8. Randomly select the targeted number of elements from each stratum. At least one element must be selected from each stratum for representation in the sample; and at least two elements must be chosen from each stratum for the calculation of the margin of error of estimates computed from the data collected. (Daniel, 2011)

The **proportional stratified sampling** method (quota random sampling) will be used to select the sample of households for the HBS 2013. The following steps are made:

A. Identify the target population. The targeted population is all private non-institutional households on Dutch Sint Maarten excluding institutional households. Ensure each household in the target population has a "Geocode". The "geocode" is a ten digit code which comprises the zone code; district code; neighbourhood code and the street code.

B. The stratification variables are **zone code, district code** and **neighbourhood code**. The number of strata to be used is equal to the

number of districts; excluding districts with less than 2 targeted households. The targeted population is subdivided based on the stratums (districts) and the population within each stratum is determined; this population represents the <u>district density</u>.

C. The sample size per stratum is determine using the proportional <u>district density</u> distribution percentage (i.e. district 1 has 20% of the population and hence, 20% of total sample is selected from district 1.)

D. The sample of households per stratum is randomly selected.

E. Each sample list of selected households per stratum are joined together to comprise the total sample list for HBS 2013.
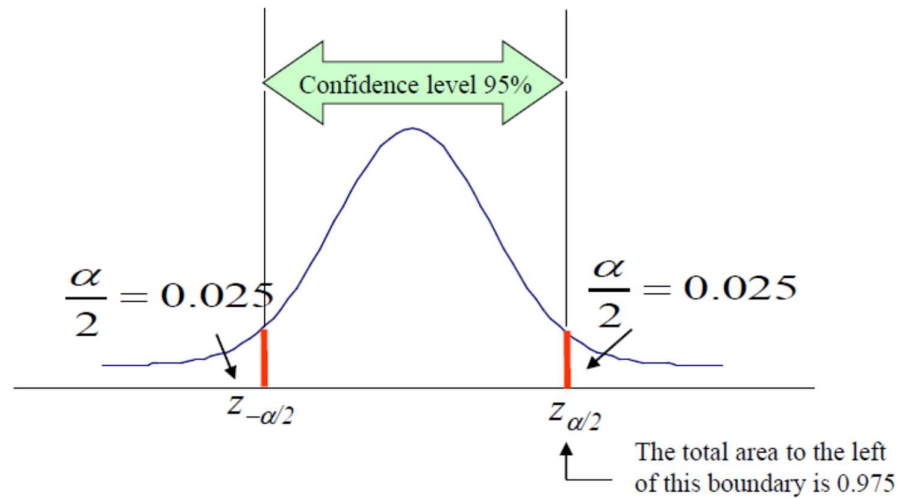
Sample Size

A **confidence interval** is of the form; estimate +/- **margin of error**. The margin of error shows how accurate we believe our guess is, based on the variability of the estimate. For a confidence interval, the **margin of error** is: $Z_{\alpha/2} * \sigma/\sqrt{n}.$ The expression has $Z_{\alpha/2}$ and σ in the numerator $\sqrt{n}$ in the denominator.

So the margin of error gets smaller when:
- z gets smaller
- σ gets smaller
- n gets larger

Confidence Level	Tail area α	$Z_{\alpha/2}$
90%	.05	1.645
95%	.025	1.960
99%	.005	2.576

The total area to the left
of this boundary is 0.975

Sample size formula: $n = \left(\dfrac{z_{\alpha/2} * \sigma}{E}\right)^2$; for the maximum error E of estimate

where σ is known. When σ is unknown we replace it with $p * q$ and population is known N

Then **Sample Size formula** (Krejcie & Morgen, 1970):

$$n = \frac{X^2 * N * (pq)}{d^2 * (N-1) + X^2 * (pq)}$$

$p = 0.5$
$q = 1 - p$
$d = degree\ of\ accuracy = 0.035$
$N = 14,000\ (target\ population\ of\ HH)$
$X^2 = 3.84\ (.05\ level = 95\%\ confidence\ level)$ **Chi-square @ d.f.= 1**

$$n = 742\ HH$$

Expected non-response = 35%
Sample size adjusted for non-response =
$$n = 732HH * 1.35$$

$$n = 1,002 HH$$

The sample size used for the HBS 2014 is 1,005 households; below the table illustrates that variation in the precision levels increases or decreases the sample size required.

Sample Size for ±3%, ±5%, ±7%, and ±10% Precision Levels where Confidence Level Is 95% and P=.5.

Size of Population	Sample Size (n) for Precision (e) of:			
	±3%	±5%	±7%	±10%
5,000	909	370	196	98
6,000	938	375	197	98
7,000	959	378	198	99
8,000	976	381	199	99
9,000	989	383	200	99
10,000	1,000	385	200	99
15,000	1,034	390	201	99
20,000	1,053	392	204	100
25,000	1,064	394	204	100
50,000	1,087	397	204	100
100,000	1,099	398	204	100
>100,000	1,111	400	204	100

Retrospective Questionnaire

Household Booklet Daily Expenses

COICOP Code Book

The International Standard of the Classification of Individual Consumption according to Purpose (COICOP). COICOP is a functional classification that is also used in SNA 1993 and covers the individual consumption expenditures incurred by three institutional sectors, i.e. households, non-profit institutions serving households (NPISHs) and general government.

COICOP has 14 divisions:

- divisions 01 to 12 covering the final consumption expenditure of households;
- division 13 covering the final consumption expenditure of NPISHs;
- division 14 covering the individual consumption expenditure of general government.

The classification has three levels of detail:

   I.   **Division** or two-digit level, (i.e. 01. Food and non-alcoholic beverages);
  II.   **Group** or three-digit level, (i.e. 01.1 Food);
 III.   **Class** or four-digit level, (i.e. 01.1.1 Bread and cereals).

The 12 divisions covering households consist of 47 groups and 117 classes and are listed in Annex 4. Below the level of <u>class</u>, CPI compilers have to create additional detail by further subdividing the classes according to their national needs.

There are some COICOP classes which may, or may not, be included in most CPIs, or for which expenditure data cannot be collected directly from households.

For example, COICOP has a class for the imputed rentals of owner-occupiers, which may be outside the scope of some CPIs. COICOP also has a class for financial intermediation services indirectly measured, which may be outside the scope of some CPIs because of practical measurement difficulties. In any case, the expenditures on these services cannot be collected in household

budget surveys. Similarly, COICOP has a group for expenditure on insurance service charges, which may be within the scope of CPIs but cannot be measured using household surveys. (ILO, Consumer price index manual: Theory and practice, 2004)

The COICOP has been further sub-divided to 4 level **sub-class** or <u>the five-digit level</u> for the coding of the Product (i.e. 01.1.1.1 White bread, 01.1.1.2 Brown bread, 01.1.1.3 French bread, etc.) the full COICOP list used for the HBS is provided in Annex 5.

Business Code List

Annex 6 provides a list of businesses and an associated code used for further analysis of Household expenditure statistics collected from the HBS.

District Code List

Annex 7 provides a list of district codes associated with addresses grouped by district and neighbourhood for further analysis of statistics collected from the HBS.

Income Card
Instruction Manuals

Chapter 6: Fieldwork

Required Resources

For the training of the fieldwork, STAT needs to develop training videos which will show the right way to conduct an interview and a wrong situation. For example, how must the interviewer handle a phone call in the middle of an interview, domestic violence, drugs, dirty home, etc.
The training will take place in a location that allows room for 50 people (interviewers and trainers) and enough room for role play. As trainings will be full days, food and beverage will be provided.

Schedule

The interviewers will receive the training manuals before the training starts. They must review all the material before arriving for the training. Any non-compliance will not be tolerated.

Training Schedule

Day 1:
9am -12:30: Form 1 & 2 (session has 3 phase: P1: Video è P2 Questions è P3 Role Play)
2 pm - 5: Form 4, 5, 6 & 7 (session has 3 phase: P1: Video è P2 Questions è P3 Role Play)

Day 2:
9am -12:30pm: Form 3 & 11 (session has 3 phase: P1: Video è P2 Questions è P3 Role Play)
2 pm – 5pm: Form 8, 9 & 10 (session has 3 phase: P1: Video è P2 Questions è P3 Role Play)

Day 3:
9am – 11am: HH Expense Book
11am - 12:30pm: Administration
2 pm - 5 pm: Role Play

Day 4:
4pm – 9pm: communication skills

Day 5:
4pm – 9pm: communication skills

Day 6:
9am -12:30 pm: Recap
2 pm - 5 pm: Exam

Each interviewer visits

The interviewer must visit the household at least 6 times in the two weeks. The first 4 visits must all be in the first week. The questionnaires must be filled out in order. STAT recommends that all retrospective questionnaires be filled out in the first week. The second week is for collecting of the receipts and ensuring that the household is still keeping and recording all their receipts and expenses.

Fieldwork Quality Control

The Fieldwork coordinator and assistant must conduct a follow-up call with each household. During this call, the household will be asked three standard questions as it relates to the questionnaires, the interviewer and the process. The interviewer will be marked on this score and any bonuses will be related back to their quality score.

Chapter 7: Data Collection

Digitalization of Survey – ODK

- **Retrospective Questionnaire**
- **Household Booklet Daily Expenses**

Survey Database

Variables

Editing and coding

The coding will be done during the interview. The digitalization has eliminated the coding phase of the data collection process. Editing will be done in two parts.
Part 1 is done by the temporary analysts. The editing program will be programmed in Microsoft Access and the editing will take place almost as soon as data is received from the interviewers.
The second part which is more extensive can only be performed once the fieldwork is finalized.

Tabulation

Reporting of Results

Annex

Annex 1: Retrospective Questionnaire

Annex 2: Household Booklet Daily Expenses

Annex 3: Market Research Forms

Annex 4: Classification of Individual Consumption according to Purpose (COICOP)

Annex 5: National COICOP

Annex 6: Business Code List

Annex 7: District Code List

Annex 8: Income Card

Annex 9: Variable List