Ministry of Agriculture & Fisheries

Samoa Bureau of Statistics

Sub regional Training Course on Sampling Methods for Producing Core Data Items for Agricultural and Rural Statistics
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Map of Samoa by Statistical Regions/Summary of main domains

MAP OF SAMOA BYREGIONS, 2016

TOTAL POPULATION : 195,979
TOTAL HOUSEHOLD : 28,880

Savaii Island

43,560 (6,386)

SAVAII

69,376 (10,105)

37,391 (5,840)

NWU

Upolu Island

Upolima Island

Manono Island

AUA

45,652 (6,549)

ROU

Region	AUA	NWU	ROU	SAV	TOTAL
Districts	2	8	14	19	43
Villages	71	59	111	102	343
Enumeration Areas	131	204	168	168	671
Households	5840	10,105	6549	6386	28,880
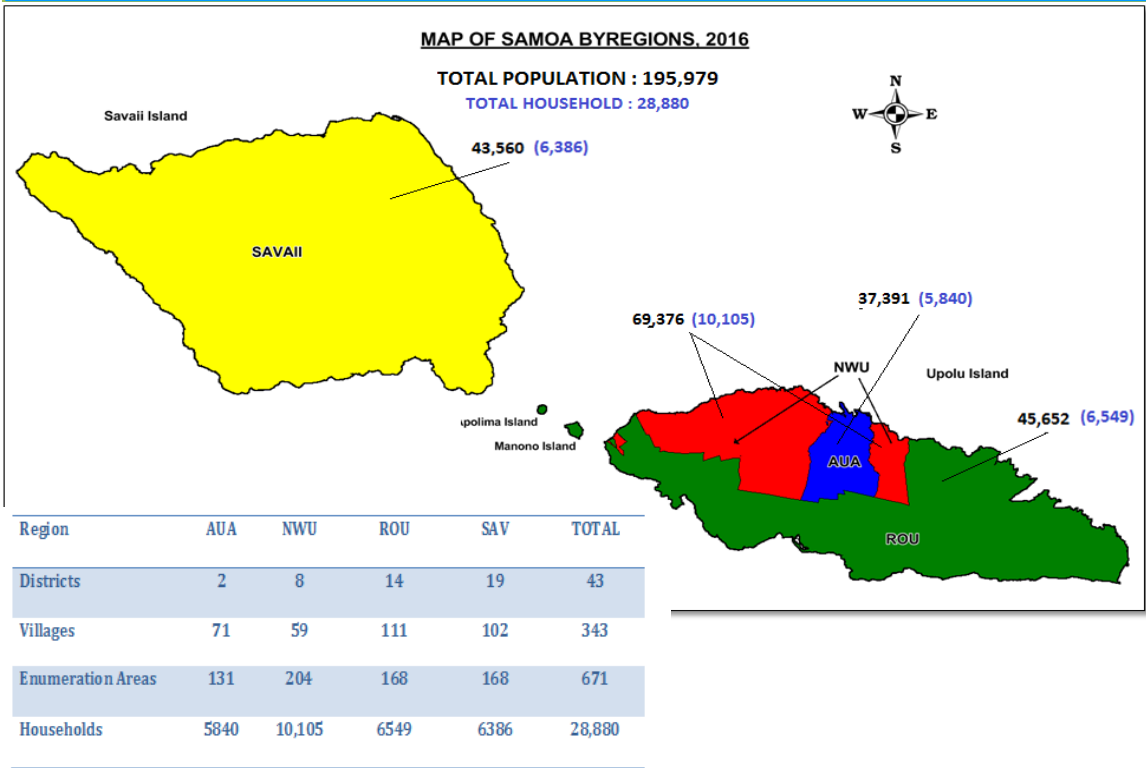
Sampling method and Sampling Design used by Samoa NSO/SBS

Sampling Method

• scientific probability sampling (Probability sampling is the only method by which sampling errors can be determined for selecting a "sample population" instead of the total population (census) to derive population estimates.)

Sampling Design

• "2-stage cluster sampling procedure" (without replacement)

• **first stage of selection :** a stratified sample of EAs will be selected with *probability proportion to size (PPS)*: in each stratum (region), a sample of predetermined number of EAs is selected independently with probability proportional to the EA's measure of size. We normally prefer **10 percent** of the household count as a recommended **sample size** for most survey however; this size can be changed based on specific requirements of each surveys.

• In the **second stage of selection**, a fixed number of households are selected by *equal probability systematic sampling* in the selected EAs. In SBS we normally allocate a fixed number of **5 households in the Urban Area (AUA) and 10 households for all the rural regions** due to the higher transportation costs in those regions.

Agriculture Survey Practice (with reference to Agriculture Survey 2015)

Sample design

- Utilizing available agriculture-related information in the sample design
- households reporting agricultural land or livestock in the census could be sampled more heavily
- households with large land or livestock holdings could be sampled more heavily than those with little land or livestock
- survey covers both households and institutions engaged in agriculture (list of institutions provided from the Ministry of Agriculture and Fisheries (MAF)
- household sector the Population Census 2011 framework is used to draw the appropriate sample of households.

MAJOR AGRICULTURAL DATA COLLECTION ACTIVITIES

1. Agricultural Census

Data collecting agency	SBS
Data collection frequency	Each ten years: last census in 2009; next census planned for 2019.
Data collection methodology	Data collected directly from all households, using face to face interviews.
Data collection staff	SBS and temporary enumerator workforce
Sample size (if applicable)	Detailed crop information collected from 25% sample of cropping households.
Sample selection (if applicable)	Systematic sample basis (every fourth holding selected).
Variables	Household demographics; type of agricultural activity; livestock numbers by type, including numbers slaughtered or sold; fisheries activity; farm equipment/machinery; consumption of major crops; forestry plantings; land use and tenure; non-household labour inputs; household agricultural income and credit; fertiliser and chemical use; crop area grown and harvested by crop type; tree and plant numbers by crop type
Data processing	Computer processing by SBS.
Data dissemination	Analytical Report and Tabular Report, both in pdf format, published on SBS website (www.sbs.gov.ws).
Level of disaggregation available	National; Census Region and District.
Timeliness of data release	The detailed Analytical and Tabulation Reports were both released in January 2012, approximately 26 months after data collection in November 2009.
Latest data available (at October 2014)	2009 data available.

2. Population and Housing Census

Data collecting agency	SBS
Data collecting frequency	Every five years, last PHC was held in 2016; next census will be held in 2021.
Data collection methodology	Data collected directly from all households, using face to face interviews.
Data collection staff	SBS, Ministry of Education Sports and Culture (MESC) and temporary enumerator workforce
Sample size	n.a
Sample selection	n.a
Variables	Household demographics (education level, literacy, employment, land tenure, water and sanitation, transport etc
Data processing	Computer processing by SBS
Level of disaggregation available	National; Census Region, District and Village

3. Household Income and Expenditure Survey (HIES)

Data collecting agency	SBS.
Data collection frequency	Each five years: last HIES conducted in 2013/14; next planned for 2018.
Data collection methodology	Face to face interviews and self-enumeration diary completion over 14 day period.
Data collection staff	SBS workforce
Sample size	Approximately 2,800 households selected, 10% sample of all households.
Sample selection	Data collected directly from approx. 700 households (25% sub-sample) per quarter over four quarters. Independent sub-sample each quarter. The sampling technique used for the 2013 HIES was a stratified single stage cluster design. The first stage involved the selection of the Enumeration Area (EA) using Probability Proportional to Size (PPS) while the second stage involved the selection of a fixed cluster size.
Variables	2013 HIES included household demographics, primary and secondary activities, dwelling details, household expenditures and overseas remittances, individual expenditures, income and loans, information on agriculture, fishing and forestry activities, including income derived from main crop and vegetable production, livestock, horticulture and floriculture activities.
Data processing	Computer processing by SBS.
Data dissemination	2013 HIES currently (at June 2014) in data entry mode.
Level of disaggregation available	National; Census Region.
Timeliness of data release	2013 HIES tabulated data expected to be released in December 2014.
Latest data available (at October 2014)	2008 data available.
Comments/Evaluation/Issues/Potential for expansion or linking with other programmes:	The HIES is a regular survey activity and potential to expand range of agricultural information collected to complement ten-yearly Agricultural Census.

2. Agriculture Survey

Data collecting agency	SBS
Data collecting frequency	Every five years, first survey was 2005 and last survey was in 2015
Data collection methodology	Data collected directly from all households, using face to face interviews.
Data collection staff	SBS and temporary enumerator workforce
Sample design	For sampling purposes, units were formed into six strata in each 4 regions. Stratum 1 (list sample). Households with: more than 100 cattle; or 200 pigs or more; or 500 chickens or more; or with 20 or more acres of crops (in Apia Urban Area). Stratum 2 (list sample). Households with between 51 and 100 cattle. Stratum 3 (list sample). Households with 10 or more acres of crops (except in Apia Urban Area). Stratum 4 (list sample). Households with between 31 and 50 cattle. Stratum 5 (master sample frame). All other households. Stratum 6 (list sample). Institutional holdings.
Sample selection	**The sampling fractions in each stratum were:** • Stratum 1: enumerate all households. • Strata 2 and 3: sample approximately 50 percent of households in each region. • Stratum 4: sample approximately 25 percent of households in each region. • Stratum 5: sample 10.5% of households in each region. • Stratum 6: enumerate all institutions.
Variables	Household growing crops, household raising cattle, land area of major crop, land tenure of major crops, number of households engaged in fishing.

SUMMARY OF THE SAMPLE DESIGN

Table A1: Samoa Agricultural Survey 2015 - sample design

Region	Household sector								
	Stratum 1			Stratum 2			Stratum 3		
	No. of h'holds	Sample h'holds	Enumerated h'holds	No. of h'holds	Sample h'holds	Enumerated h'holds	No. of h'holds	Sample h'holds	Enumerated h'holds
SAMOA	18	18	14	70	36	29	15	8	7
Apia Urban Area	4	4	3	14	7	6	-	-	-
North West Upolu	5	5	3	8	4	3	11	6	5
Rest of Upolu	3	3	3	25	13	12	4	2	2
Savaii	6	6	5	23	12	8	-	-	-

cont.

Table A1 (cont.): Samoa Agricultural Survey 2015 - sample design

Region	Household sector							Institutions		
	Stratum 4			Stratum 5				Stratum 6		
	No. of h'holds	Sample h'holds	Enumerated h'holds	No. of h'holds	Sample enum. areas	Sample h'holds	Enumerated h'holds	No. of units	Sample units	Enumerated units
SAMOA	103	26	22	25,999	331	2,730	2,435	6	6	6
Apia Urban Area	14	4	4	5,356	113	560	481	6	6	6
North West Upolu	15	4	2	8,738	92	916	825	-	-	-
Rest of Upolu	38	9	7	5,855	62	617	569	-	-	-
Savaii	36	9	9	6,050	64	637	560	-	-	-

Examples of MAF surveys undertaken to collect base-line information for the Samoa Agriculture Competitiveness Enhancement Project (SACEP) which is being financed by the World Bank.

4. Cattle Census 2012

Data collecting agency	MAF Animal Production and Health Division
Data collection frequency	Ad hoc: last survey in 2012.
Data collection methodology	Data collected directly from households with cattle.
Data collection staff	MAF
Sample size (if applicable)	2,903 households with cattle enumerated
Sample selection (if applicable)	Sample selected from 2009 Agricultural Census list frame of all households with cattle.
Variables	Geographic coordinates of owners' homes and location of cattle holdings, number and breeds of cattle, herd structure, presence of cattle yards with loading ramps, condition of access roads, frequency of slaughter and markets to which slaughtered animals were sold, amount of money spent by farmers on slaughtering animals and transporting carcasses.
Data processing	Computer processing by MAF.
Data dissemination	Data analysis report in pdf format. Not available from MAF website.
Level of disaggregation available	Released at National; Census Region and District levels.
Timeliness of data release	Data released May 2013, approx. 12 months after end of data collection.
Comments/Evaluation/Issues/Potential for expansion or linking with other programmes:	Known discrepancies with 2009 Agricultural Census and 2011 Population Census cattle data. Suggest that future surveys of this nature be jointly undertaken by SBS and MAF, particularly the enumeration phase.

5. Fruit & Vegetable Survey, 2013

Data collecting agency	MAF Crops Division
Data collection frequency	Ad hoc: last survey in 2013.
Data collection methodology	Data collected directly from households.
Data collection staff	MAF
Sample size (if applicable)	1,700 households (recommended sample 2,000 households)
Sample selection (if applicable)	Mixed frame, collected from Advisory Services / agents in Samoa, such as MWCSD, MAF (Crops Advisory Service, Agriculture Show registrations and competitions), Women in Business Development Inc. (WIBDI), SBEC, SFA (Samoa Farmers Association), Adventist Disaster Relief Agency (ADRA).
Variables	Vegetable and fruit crops grown and sold, land area, land tenure, land use, method of cultivation, irrigation method and water source, production information, including source of seedlings, plants, cost and information sources, fertilizer and chemical use, volumes and expenditure, labour inputs, loans and credit, farm equipment owned, hired or borrowed.
Data processing	Computer processing by MAF.
Data dissemination	Data not yet disseminated (as at November 2014).
Level of disaggregation available	Expected at National; Census Region and District levels.
Timeliness of data release	Data was initially expected to be released early 2014, approx. 12 months after data collection, but was still not available in November 2014.
Comments/Evaluation/Issues/Potential for expansion or linking with other programmes:	Used of mixed (random?) sample frame casts some doubt on the validity of final data.

Framework supporting the development of Agriculture and rural statistics in Samoa

- **Agriculture Sector Plan (ASP 2016-2020)**

These goals are as listed:

1. Sector coordination improved and investment in food security and inclusive commercial agriculture/ fisheries production systems increased.

2. An increased supply and consumption of competitively priced domestically produced food.

3. To enhance private sector capacity in improving production, productivity, product quality, value adding and marketing.

4. To strengthen capacities in rural communities, land owners, farmers and fishers to use natural resources in a sustainable way and increase sector resilience to natural disasters and climate change.

- **Samoa Strategy for the Development of Statistics 2011 – 2021)**

Minimum Core set of Data

Crops	Data collected	Sources of Data
Major crops Examples : - Taro - Taamu - Taro palagi - Coconut - Coco - Breadfruit - banana	Examples: - Number of household growing crops - sale of crop products -crop inputs (inorganic fertilizers, pesticides,organic farming practices)	-MAF administrative data -Agriculture census -PHC2016 -Agriculture Survey 2015 -HIES 2013/2014

Minimum Core set of Data

Livestock	Data collected	Sources of Data
Examples: -cattle farm -piggery farm -poultry farm	Examples: - Number of household raising livestock cattle - Number of household raising pigs - Number of households raising chickens	-MAF administrative data -Agriculture census -PHC2016 -Agriculture Survey 2015 -HIES 2013/2014

Minimum Core set of Data

Fishing

Examples:

- Inshore
- Offshore
- Freshwater

Data collected

Examples:

- Percentage of households engaged in fisheries
- Number of households by fishing habitat
- Percentage of fishing households by type of fishing gear
- Percentage of households by aware-ness of fisheries programmes

Sources of Data

-MAF administrative data

-Agriculture census

-PHC2016

-Agriculture Survey 2015

-HIES 2013/2014

Challenges

- Using of paper form questionnaires created lot of data cleaning due to field error.
- the frequency/ interval of the censuses and surveys collecting agriculture data is considered insufficient to meet the needs of Samoa's government ministries and other public and private sectors organisations for reliable, accurate and timely information.
- Crops cutting method in calculating a crops production area is not applicable in Samoa
- Misleading information from farmers

Solutions

- Replace PAPI by CAPI (Computer Assisted Personal Interviewing), it's cost effective, reliable and saves time.
- Review scope of surveys to 3 years/annually depending on budget available
- Enumerators should be trained well to inform respondents of the importance of the survey and the confidentiality of information to avoid refused hh and hh providing misleading information

Thank You
Faafetai &
Tofa soifua