**Kingdom of Lesotho**

ΣBOS
**Bureau of Statistics**

# 2019/2020 LESOTHO AGRICULTURAL CENSUS

# VOLUME VI: POST ENUMERATION SURVEY TECHNICAL REPORT

# DECEMBER, 2022

**Food and Agriculture Organization of the United Nations**

## PREFACE

The Ministry of Finance and Development Planning through the Department of the Bureau of Statistics (BOS), in collaboration with the Ministry of Agriculture and Food Security (MAFS) conducted the 2019/2020 Agricultural Census. This was the eighth Agricultural Census undertaken by the Government of Lesotho since 1949/1950.

Elaborate and quality framework measures were put in place to minimize potential errors at all stages of the census process to detect errors as soon as possible so that timely remedial actions could be taken even as the census operations continue. In line with the World Programme for the Census of Agriculture WCA2020 recommendations, BOS for the first time in the history of Lesotho's agriculture censuses, carried out a post-census enumeration survey (PES) from 12th May 2021 to 19th June 2021. The objective of the PES was mainly to measure coverage and content errors (also known as response errors) of the 2019/2020 Agriculture Census.

The PES Main Report provides detailed estimates of the agriculture census population, the PES population and the true agriculture population by zone, sex, age, marital status, relationship and education. The coverage rate, omission rate, net coverage error, the erroneously enumerated population, estimated gross coverage error and net coverage error of the characteristics mention are all included in this report. Estimated Content errors of characteristics like age, sex, marital status, relationship and educational level are also included.

BOS would like to acknowledge, with many thanks, the technical assistance, financial contribution and support from the Government given to the Bureau. We acknowledge the support of FAO Representative in Lesotho, Mr. Nthimo; Mr. David Mwesigwa - FAO Emergency and Resilience Coordinator (FAOL) for their unflinching support through the census period.

Our special appreciation goes to Team Leader, Agricultural Census Team (ESS) – Mr. Jairo Castaño; Ms. Adriana Neciu Statistician (ESS); Mr. Kofi Agyeman-Duah, International Agricultural Census Expert for FAO; Mr. Lamin Janneh International Expert of FAO Data Processing for providing the technical backstopping on the project. All participants of the Census, comprising Coordinators, Supervisors, Enumerators as well as support staff are given special acknowledgement. Finally, appreciation goes to numerous farmers who provided information as well as district and local leaders who provided guidance to the enumerators in ten districts where the Census was successfully undertaken.

M.C. Molato

**Director, Bureau of Statistics**
**MINISTRY OF FINANCE AND DEVELOPMENT PLANNING**

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## Acronyms

| | |
|---|---|
| AC | Agriculture Census |
| CAPI | Computer Assisted Personal Interview |
| CsPRO | Census and Surveys Processing Software |
| CV | Coefficient of Variation |
| FAOLES | FAO Lesotho Office |
| GIS | Geographic Information System |
| GPS | Global Positioning System |
| BOS | Bureau of Statistics |
| MoAFS | Ministry of Agriculture and Food Security |
| PES | Post Enumeration Survey |
| PSUs | Primary sampling units |
| SDGs | Sustainable Development Goals |
| SPSS | Statistical Program for Social Scientists |
| TCP | Technical Cooperation Programme |

## Executive Summary

The Lesotho Bureau of Statistics (BOS) in collaboration with the Ministry of Agriculture and Food Security (MoAFS) and FAO technical support undertook the 2019/2020 post enumeration survey from 12 May to 19th June, 2021 after a successful completion of the main agriculture census in April, 2021.

The overall goal of the PES was to assess the quality of the census data collected by measuring the magnitude of non-sampling errors in terms of i) coverage errors and ii) content errors.

## Sampling Design

A one-stage stratified probability sample design was used comprising of 30 primary sampling units (PSUs) selected from the 500 PSUs used in the main census. It covered 480 agricultural households in the four ecological zones.

## Coverage Error Evaluation

The results indicate that the Agriculture Census estimated population for Lesotho is 1,128,994, the PES population is 1,170,609 and the true population is 1,190,058. This gives a coverage rate of 94.8 percent, omission rate of 5.2 percent and net coverage error of 5.1 percent.

## Content Error Evaluation

Five characteristics namely: age, sex, marital status, relationship and education level of individual persons were used for evaluation of the content errors. The content analysis showed that matching the sex characteristics was the best considered method of evaluation with the values of rate of agreement (RA) of 94.6 percent, gross difference rate (GDR) of 0.1 percent and aggregate index of inconsistency (IAG) of 10.7 percent. The next variable was "relationship" with values of IAG of 15.1 percent, GDR of 0.1 percent and RA of 88.1 percent. The least is "education level" with values of IAG of 36.8 percent, GDR of 0.2 percent and RA of 79.1 percent.

## Conclusion

With a coverage rate of 94.8 percent, omission rate of 5.2 percent, net coverage error of 5.1 percent, a coefficient of variation of 5.6 percent and the census agriculture population of 1,009,228 falling within the estimated confidence limits, it can be concluded that, the census results are highly precise and can be used for planning and policy

## SECTION 1: Introduction

### 1.1. Background

The Lesotho Bureau of Statistics (BOS) in collaboration with the Ministry of Agriculture and Food Security (MoAFS) and FAO technical support undertook the 2019/2020 Census of Agriculture from 7th March 2021 to 13th April, 2021. Elaborate and quality framework measures were put in place to minimize potential errors at all stages of the census process and detect errors as soon as possible so that timely remedial actions could be taken even as the census operations continue.

However, in spite of all the measures taken, some coverage and content errors could not be avoided and it is important to measure, analyse and report on these errors. "The World Programme for the Census of Agriculture (WCA2020) recommends that as good practice in agricultural censuses to evaluate the accuracy of data collected so census organizers are aware of its quality and users are aware of data limitations". This is best done via an independent post-census enumeration survey (PES). The PES is a complete re-enumeration of a representative sample of a census population collecting relevant data on key selected variables, followed by matching each holding enumerated in the PES with information from the census enumeration[1]. The results of the comparison are mainly used to measure coverage and content errors (also known as response errors) in the context of the census.

This is the first PES since Lesotho started undertaking agriculture census as far back as 1949/1950.

### 1.2. Objectives

The overall goal of the PES is to assess the quality of the census data collected through the field operation by measuring the magnitude of non-sampling errors in terms of i) coverage errors and ii) content errors.

Specifically, the PES of the 2019/2020 Agriculture census is designed to measure:
  (a) **Under-coverage** error which may arise due to omissions of some units of interest;
  (b) **Over-coverage** error due to duplications and erroneous inclusions of some units that do not have the characteristics necessary to be part of the population of interest but are wrongly included or misclassified in the frame; and
  (c) **Content errors (response errors):** which emanate from **Under reporting**: due to fear of taxation, imposition of land tenure changes or reduction of subsidies, improper keeping of records by some holders (memory recall problems) or **non-**

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[1] WCA2020 Vol. 2

**agreement** of responses to questions on selected characteristics, such as relationship, sex, age, marital status to reference person or head of household.

### 1.3. Rationale

- The PES can indicate to census data user's specific coverage problems inherent in the census data and such errors can be quantified.

- Offers the opportunity to learn from procedural and conceptual limitations in the census which need improvement in future censuses and large-scale surveys.

- It will offer a statistical basis for adjustment of census results. That is, on the basis of net coverage rates, adjustments may be made to the census results should this become necessary.

### 1.4. Reliability of Estimates

Sampling errors, confidence intervals of the estimated indicators and coefficient of variation were computed for the five main variables (Tables A2-A7). From the tables, the estimated indicators: PES population (1,170,609), Census population (1,128,994) and True Population (1,190,058) are all within the acceptable confidence intervals. Moreover, the coefficient of variation of 5.6 percent is found to be a very good precision. In addition, the estimated populations when compared with what was obtained in the main AC shows that the agriculture population of 1,009,228 in the census is also within the estimated confidence limits.

### SECTION 2: Methodology
### 2.1. Scope and Coverage

The PES covered only the agriculture household sector which were covered in the main census. Information on: agriculture household demographic characteristics, land use (number of fields, holding area), livestock numbers (specifically, cattle, sheep, goats and poultry) were collected. However, production and disposal, agricultural practices, irrigation, equipment, labour, other livestock, non-household sector and community profile were excluded from the PES.

### 2.2. Guiding Principles

The following methodological principles guided the implementation of the PES:

a) The PES was strictly treated as an independent sample survey which was as much as feasible managed and executed by completely different field staff;
b) Where it became necessary to use main census field officers, they were deployed to PSUs where they did not work during the census;

c) To ensure that respondents did not suffer from memory loss, the PES data collection was undertaken within a month after the completion of the main census data collection;

d) The same definitions and classifications used in the census were used in the PES;

e) Adequate logistics were provided; and

f) The PES data were matched and compared with the census data using internationally accepted guidelines.

## 2.3. PES Instruments

The PES used five main instruments namely:

a) PES listing form

b) PES Questionnaire (including Reconciliation Questionnaire),

c) Supervisors and Enumerators Instruction Manuals

d) Control forms, and

e) Matching Manual.

The following are some of the socio-demographic variables included in the census questionnaire and repeated in the PES questionnaire for matching content error.

(a) Relationship to head of household or reference person

(b) Age

(c) Sex

(d) Marital status

(e) Education level

## 2.4. Sample Design

The PES adopted a one-stage stratified probability sample design and used the same list of PSUs used for the main census. A sample of 30 PSUs was selected from the list of 500 PSUs used for the census. ***Once a PSU was selected, all the agricultural households selected for the main census was re-enumerated in the PES. This facilitated matching and the estimation of coverage errors in the total agricultural household population.***

### 2.4.1. Target population

The target population was the agriculture households sector covered in the main census in the four agro-ecological zones. However, the non-household sector was excluded.

### 2.4.2. Unit of analysis

The unit of analysis in the PES was agricultural households who operated the agricultural activities.

### 2.4.3.    Stratification

The PSUs was stratified into the four agro-ecological zones namely:

1). Lowlands;
2). Foothills;
3). Mountains; and
4). Senqu River Valley (SRV)

### 2.4.4.    Sample Size and Allocation and Selection

A total of 30 PSUs was selected from the 500 census PSUs by probability proportional to size. This is because unlike population and housing census, the AC did not cover the entire Lesotho PSUs and therefore the 500 census PSUs was considered the universe from which the PES sample was drawn.

In each of the selected 30 PSUs, the 16 agricultural households used for the census was re-enumerated giving a total of 480 agricultural households for the PES to enable matching with the census records.

The allocation of the PSUs and agriculture households are shown in (Table 1).

**Table 1: Allocation of Sample PSUs and Households by Settlement**

| Zone | PSUs | Proportional Share | Sample PSUs | Total Agriculture HHs | Adjusted Sample PSUs | Adjusted Total HHs |
|---|---|---|---|---|---|---|
| Lowlands | 212 | 0.42 | 11.9 | 190 | 12 | 192 |
| Foothills | 82 | 0.16 | 4.6 | 73 | 5 | 80 |
| Mountains | 143 | 0.29 | 8.0 | 128 | 9 | 144 |
| Senqu River Valley (SRV) | 63 | 0.13 | 3.5 | 56 | 4 | 64 |
| **Total** | **500** | **1.00** | **28** | **448** | **30** | **480** |

## SECTION 3: Recruitment, Training and Fieldwork

### 3.1. Recruitment and Training

Training of supervisors and enumerators took place from 1st -10th May 2021. Apart from the training the field staff on the concepts of the PES which was new to them, enumerators were also trained on how to probe the respondents until satisfactory responses were reached before recording into the tablet.

PES data was collected by permanent staff, the composition of data collection teams included Statisticians from Agriculture and Food Security Division, Cartography and Survey Methodology Division, IT and Field Operation Division. Statisticians acted as supervisors while assistant statisticians and field staff were enumerators. IT coordinators ensured application worked perfectly and ready to assist where help was needed.

### 3.2. Team Composition

Six teams were constituted in the data collection. Thirty enumerators and six supervisors were engaged. Each supervisor was in charge of four to five enumerators (Table 2).

**Table 2: Team Composition and Interviewer Workload by Zone**

| Zone | Sample PSUs | Teams per Zone | Enumerators per zone | Supervisors per zone | Total HHs | Average PSU per Enumerator | HHs per Enumerator |
|---|---|---|---|---|---|---|---|
| Lowlands | 12 | 2 | 12 | 2 | 192 | 1.0 | 16 |
| Foothills | 5 | 1 | 5 | 1 | 80 | 1.0 | 16 |
| Mountains | 9 | 2 | 9 | 2 | 144 | 1.0 | 16 |
| Senqu River Valley (SRV) | 4 | 1 | 4 | 1 | 64 | 1.0 | 16 |
| **Total** | **30** | **6** | **30** | **6** | **480** | **1.0** | **16** |

### 3.3. Data Collection

A total of 38 days was used for the data collection exercise: - 20 days for the listing exercise, 16 days for the field work and two days as allocated for lodging and travel time. Just like the main census, the CAPI was used for data collection.

To minimise memory recall which could lead to matching difficulties related to changes in the composition of the household between the census and PES dates, the PES took place from 12th May to 19th June 2021 and was preceded by a ten-day training workshop for the Supervisors and Enumerators.

### 3.4. Monitoring of Field Work

Monitors from the Project Secretariat ensured that regular field visits were carried out. They reviewed the work of the enumerators and ascertained that the field staff did the right thing.

**SECTION 4: Data Processing and Matching Operations**

### 4.1. Data processing
The data was collected using CAPI in CsPro (Census and Surveys Processing Software). Captured data was validated for missing data, duplicates and consistency with all inconsistencies corrected.

### 4.2. Matching
Two methods were used in the matching exercise – i) computer assisted matching using matching algorithms and ii) manual matching of the remaining non-matches and possible matches.

Computer algorithm was developed by the Data Processing Expert in Excel Power Query and SPSS which searched for the corresponding census and PES datasets to match status of each agriculture household member following the matching guidelines developed.

During the manual matching matchers checked the individual characteristics and established whether or not the two datasets which had been combined into one Excel file were matched or unmatched using the matching manual developed as a guide.

Whether e-matching or manual using the tolerance levels (Table 4), the matching process was such that:

a. At the household level, census and PES results of the structure numbers, households GPS coordinates of structures and names of household heads were compared;
b. Within the identified household, demographic characteristics of individuals such as: names, age, sex, relationship to the household head, marital status, educational level and holding status were also compared; and
c. For all other non-matched individuals in the households, the search for a match was done in the same PSU and adjoining PSUs in the district.

The matching produced 1,297 matches and 329 referred for field reconciliation (Table 3).

**Table 3: Non-Matched Results**

| Zone | Cases for Field Reconciliation | Cases for office manual matching | Total |
|---|---|---|---|
| Lowlands | 128 | 500 | 628 |
| Foothills | 54 | 185 | 239 |
| Mountains | 111 | 392 | 503 |
| Senqu River Valley | 36 | 220 | 256 |
| **Total** | **329** | **1,297** | **1,626** |

## 4.3. Field Reconciliation

Field reconciliation was planned for 5 days to try to establish the status of:

- Households and/ or persons enumerated in the PES but not in the census
- Households and/or persons enumerated in the census but not in the PES
- Individuals who could not be matched even after applying flexible established matching rules.

Unfortunately, due to the escalation of the COVID-19 cases, field visits could not take place. So the PES Team resorted to phone calls to respondents to produce additional information which was used to complete the manual matching.

In the end, 1,902 cases were completely matched leaving 85 not matched (Table 4).

The updated matched data was analysed and tables generated for the PES reports.

**Table 4: Final Match Results**

| Zone | Match | Non-Match | Total |
|---|---|---|---|
| Lowlands | 753 | 22 | 775 |
| Foothills | 273 | 15 | 288 |
| Mountains | 577 | 30 | 607 |
| Senqu River Valley | 299 | 18 | 317 |
| **Total** | **1,902** | **85** | **1,987** |

# CHAPTER FIVE: DISCUSSIONS OF RESULTS

## 5.1. Coverage Estimates

The units of observation of the PES were farming household members, their sex, Age, Marital Status, Relationship to the head of the household and their Educational Level in the four ecological zones of Lesotho. The Dual System Estimation (Annex D) was applied in estimating the coverage errors.

## 5.1.1. Coverage Population Estimates

Tables 5-10 provide the estimated PES populations, census populations and true populations for the zones, sex, age, marital status, relationship and broad educational classification as well as the overall coverage error rates and omissions. The results indicate that the Agriculture Census estimated population for Lesotho is 1,128,994, the PES population is 1,170,609 and the true population is 1,190,058. This gives a coverage rate of 94.8 percent, omission rate of 5.2 percent and net coverage error of 5.1 percent. Moreover, 61,804 of the agricultural population were omitted and 741 were erroneously included.

It is worth noting that the PES population and True population in all the zones are higher than the census population with the exception of SRV. Similarly, the census populations for the age groups 30-59 are higher than the true population and PES population. The same applies to the 'Separated", "widowed", Household head", "Spouse", and those with "Vocational or Technical" education.

**Table 5: Summary of Coverage Measure Population Estimates by Zone and Sex**

|  | PES Population | Census Population | True Population |
|---|---|---|---|
| **Lesotho** | **1,170,609** | **1,128,994** | **1,190,058** |
| **Zone** | | | |
| Lowlands | 502,145 | 469,669 | 507,305 |
| Foothills | 192,178 | 179,320 | 193,509 |
| Mountain | 317,634 | 306,488 | 327,069 |
| SRV | 158,652 | 173,518 | 162,007 |
| **Total** | **1,170,609** | **1,128,994** | **1,189,891** |
| | | | |
| **Sex** | | | |
| Male | 633,005 | 612,772 | 641,250 |
| Female | 537,604 | 516,222 | 548,808 |
| **Total** | **1,170,609** | **1,128,994** | **1,190,058** |

**Table 6: Population Estimates by Age Group**

| Age-Group | PES Population | Census Population | True Population |
|---|---|---|---|
| 0-4 | 95,832 | 86,776 | 96,988 |
| 5-9 | 132,130 | 112,630 | 136,340 |
| 10-19 | 308,823 | 285,812 | 313,887 |
| 20-29 | 189,319 | 178,247 | 192,100 |
| 30-39 | 117,214 | 122,123 | 118,131 |
| 40-49 | 103,106 | 113,467 | 103,695 |
| 50-59 | 76,322 | 80,556 | 79,923 |
| 60+ | 147,862 | 149,383 | 149,387 |
| **Total** | **1,170,609** | **1,128,994** | **1,190,058** |

**Table 7: Population Estimates by Marital Status**

| Marital Status | PES Population | Census Population | True Population |
|---|---|---|---|
| Never Married | 420,825 | 393,876 | 426,347 |
| Monogamously Married | 343,760 | 359,596 | 349,998 |
| Polygamously Married | 824 | 2,019 | 824 |
| Separated | 23,800 | 25,166 | 24,665 |
| Divorced | 9,884 | 9,398 | 9,884 |
| Widowed | 81,782 | 83,909 | 82,707 |
| Don't Know | 1,024 | 1,079 | 1,024 |
| **Total** | **882,516** | **875,042** | **895,450** |

**Table 8: Population Estimates by Relationship**

| Relationship | PES Population | Census Population | True Population |
|---|---|---|---|
| Head Of Household | 242,934 | 260,271 | 247,015 |
| Spouse | 119,110 | 126,431 | 120,982 |
| Partner (Cohabiting) | 1,062 | 386 | 1,062 |
| Son/Daughter | 377,714 | 360,853 | 382,375 |
| Son/Daughter-In-Law | 47,841 | 45,059 | 49,034 |
| Step Child | 9,343 | 7,080 | 9,343 |
| Sibling | 18,582 | 17,438 | 18,582 |
| Own Parent | 6,886 | 6,215 | 6,886 |
| Parent-In-Law | 1,816 | 1,219 | 1,816 |
| Grand Parent | 3,512 | 2,050 | 3,512 |

| Relationship | PES Population | Census Population | True Population |
|---|---|---|---|
| Great/Grandchild | 241,338 | 219,291 | 247,521 |
| Other Relative | 60,643 | 48,154 | 61,433 |
| Not Related | 39,827 | 34,547 | 40,542 |
| **Total** | **1,170,609** | **1,128,994** | **1,190,103** |

**Table 9: Population Estimates by Educational Level**

| Educational Level | PES Population | Census Population | True Population |
|---|---|---|---|
| Primary | 485,137 | 484,855 | 494,522 |
| Secondary | 299,871 | 290,655 | 304,194 |
| None | 70,889 | 72,002 | 72,002 |
| Vocational Or Technical | 13,159 | 13,787 | 13,159 |
| Tertiary | 8,870 | 8,762 | 8,870 |
| **Total** | **877,927** | **870,061** | **892,748** |

**Table 10: Summary of Coverage Estimates and Coverage Errors**

| INDICATOR | ESTIMATE |
|---|---|
| **Population Estimates** | |
| PES Population | 1,170,609 |
| Census Population | 1,128,994 |
| True Population | 1,190,058 |
| **Coverage Error Rates** | |
| Omission Rate | 5.2 |
| Coverage Rate | 94.8 |
| Net Coverage Error Rate | 5.1 |
| Erroneous Inclusion Rate | 0.1 |
| Gross Coverage Error Rate Per Unit Enumeration | 5.5 |
| **Omission, Erroneous Inclusion, Gross Coverage Error and Net Coverage Error** | |
| Omission | 61,804 |
| Erroneous Inclusion | 741 |
| Gross Coverage Error | 62,545 |
| Net Coverage Error | 61,063 |

### 5.1.2 Classification of Estimated Populations into Moving Status, Matching status and Enumeration Status

The estimated populations were classified into their moving status (non-movers, out-movers and in-movers), match status (matched non-movers, matched out-movers and matched population) and enumeration status (erroneous inclusions and cases correctly enumerated in census but not in PES).

### 5.1.3 Zones

Among the zones, the highest number of out-movers were found in the Lowlands (30,595) and the highest in-movers (2,806) were in the Mountains where there were 8,841 agriculture census cases that were correctly enumerated but missed during PES (Table 11).

**Table 11: Classification of Estimated Population by Zone**

| Zone | Non-movers | Out-movers | In-movers | Matched non-movers | Matched out movers | Matched population | Erroneous inclusion | Census cases correctly enumerated but missed in PES |
|---|---|---|---|---|---|---|---|---|
| Lowlands | 500,393 | 30,595 | 1,752 | 460,397 | 3,760 | 464,157 | 741 | 4,770 |
| Foothills | 192,178 | 3,678 | 0 | 176,853 | 1,234 | 178,087 | 0 | 1,234 |
| Mountain | 314,828 | 12,932 | 2,806 | 290,322 | 7,325 | 297,647 | 0 | 8,841 |
| SRV | 158,652 | 15,772 | 0 | 165,840 | 4,084 | 169,924 | 0 | 3,594 |
| **Lesotho** | **1,166,051** | **62,977** | **4,558** | **1,093,412** | **16,402** | **1,109,815** | **741** | **18,439** |

### 5.1.4 Sex

Among the sex category, there were 30,418 out-movers under Males and 1,788 in-movers while there were 7,872 agricultural census cases that were correctly enumerated but missed during PES. Moreover, the highest out-movers were 32,560 females and 10,567 agriculture census cases that were correctly enumerated but missed during PES (Table 12).

**Table 12: Classification of Estimated Population by Sex**

| Sex | Non-movers | Out-movers | In-movers | Matched non-movers | Matched out movers | Matched population | Erroneous inclusion | Census cases correctly enumerated but missed in PES |
|---|---|---|---|---|---|---|---|---|
| Male | 631,218 | 30,418 | 1,788 | 596,800 | 7,359 | 604,159 | 741 | 7,872 |
| Female | 534,834 | 32,560 | 2,770 | 496,613 | 9,043 | 505,656 | 0 | 10,567 |
| **Lesotho** | **1,166,051** | **62,977** | **4,558** | **1,093,412** | **16,402** | **1,109,815** | **741** | **18,439** |

### 5.1.5 Age Group

The population estimates by age group in both PES and census enumeration, show that the highest agriculture census cases that were correctly enumerated but missed during PES were 4,611 in the age range "10-19". The highest out-movers (14,297) were in age range "40-49" (Table 13).

**Table 13: Classification of Estimated Population by Age**

| Age Group | Non-movers | Out-movers | In-movers | Matched non-movers | Matched out movers | Matched population | Erroneous inclusion | Census cases correctly enumerated but missed in PES |
|---|---|---|---|---|---|---|---|---|
| 0-4 | 93,933 | 1,372 | 1,899 | 84,707 | 1,034 | 85,741 | 0 | 1,034 |
| 5-9 | 131,485 | 3,240 | 645 | 107,080 | 2,072 | 109,153 | 0 | 3,477 |
| 10-19 | 308,063 | 9,906 | 760 | 276,100 | 5,101 | 281,201 | 0 | 4,611 |
| 20-29 | 188,710 | 11,600 | 609 | 172,199 | 2,737 | 174,936 | 741 | 2,569 |
| 30-39 | 116,569 | 13,477 | 645 | 120,228 | 948 | 121,175 | 0 | 948 |
| 40-49 | 103,106 | 14,297 | 0 | 112,822 | - | 112,822 | 0 | 645 |
| 50-59 | 76,322 | 4,682 | 0 | 73,942 | 2,985 | 76,927 | 0 | 3,629 |
| 60+ | 147,862 | 4,404 | 0 | 146,334 | 1,525 | 147,859 | 0 | 1,525 |
| **Lesotho** | **1,166,051** | **62,977** | **4,558** | **1,093,412** | **16,402** | **1,109,815** | **741** | **18,439** |

### 5.1.6 Marital Status

The population estimates by marital status show that 6,396 monogamously married cases were correctly enumerated in the census but missed during PES and this category recorded the highest number of out-movers (27,663) (Table 14).

**Table 14: Classification of Estimated Population by Marital Status**

| Marital Status | Non-movers | Out-movers | In-movers | Matched non-movers | Matched out movers | Matched population | Erroneous inclusion | Census cases correctly enumerated but missed in PES |
|---|---|---|---|---|---|---|---|---|
| Never Married | 420,065 | 18,885 | 760 | 383,051 | 5,724 | 388,774 | 0 | 5,101 |
| Monogamously Married | 342,506 | 27,663 | 1,254 | 347,962 | 4,497 | 352,459 | 741 | 6,396 |
| Polygamously Married | 824 | 1,195 | 0 | 2,019 | 0 | 2,019 | 0 | 0 |
| Cohabiting | 617 | 707 | 0 | 0 | 0 | 0 | 0 | 0 |
| Separated | 23,800 | 2,964 | 0 | 23,401 | 882 | 24,283 | 0 | 882 |
| Divorced | 9,884 | 1,334 | 0 | 9,398 | 0 | 9,398 | 0 | 0 |
| Widowed | 81,782 | 5,160 | 0 | 82,031 | 939 | 82,970 | 0 | 939 |
| Don't know | 1,024 | 0 | 0 | 1,079 | 0 | 1,079 | 0 | 0 |
| **Lesotho** | **880,502** | **57,907** | **2,014** | **848,941** | **1,684** | **850,625** | **741** | **13,318** |

## 5.1.7 Relationship

The population estimates by relationship shows that 4,300 household heads were correctly enumerated. Apart from that there were more out-movers (22,450) than in-movers (609) under the "Son/Daughter in-law" category but there were no erroneous inclusions. Moreover, there are five variables (Step child, Sibling, Own Parent, Parent-in-Law and Grand Parent) in which there were no erroneous inclusions nor census cases correctly enumerated but missed in PES (Table 15).

**Table 15: Classification of Estimated Population by Relationship**

| Relationship | Non-movers | Out-movers | In-movers | Matched non-movers | Matched out movers | Matched population | Erroneous inclusion | Census cases correctly enumerated but missed in PES |
|---|---|---|---|---|---|---|---|---|
| Head of Household | 242,934 | 15,853 | 0 | 252,960 | 3,010 | 255,971 | 0 | 4,300 |
| Spouse | 119,110 | 8,237 | 0 | 122,519 | 1,956 | 124,475 | 0 | 1,956 |
| Partner (Cohabiting) | 1,062 | 0 | 0 | 386 | 0 | 386 | 0 | 0 |
| Son/Daughter | 377,105 | 22,450 | 609 | 350,897 | 5,558 | 356,454 | 0 | 4,398 |
| Son/Daughter-in-law | 47,841 | 3,157 | 0 | 42,770 | 469 | 43,239 | 741 | 1,078 |
| Step Child | 9,343 | 0 | 0 | 7,080 | 0 | 7,080 | 0 | 0 |
| Sibling | 18,582 | 2,329 | 0 | 17,438 | 0 | 17,438 | 0 | 0 |
| Own Parent | 6,886 | 300 | 0 | 6,215 | 0 | 6,215 | 0 | 0 |
| Step Parent | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Parent-in-law | 1,816 | 0 | 0 | 1,219 | 0 | 1,219 | 0 | 0 |
| Grand Parent | 3,512 | 0 | 0 | 2,050 | 0 | 2,050 | 0 | 0 |
| Great/Grandchild | 240,729 | 7,717 | 609 | 209,025 | 4,789 | 213,814 | 0 | 5,477 |
| Other Relative | 57,303 | 1,939 | 3,340 | 46,916 | 619 | 47,535 | 0 | 619 |
| Not Related | 39,827 | 995 | 0 | 33,938 | 0 | 33,938 | 0 | 609 |
| **Lesotho** | **1,166,051** | **62,977** | **4,558** | **1,093,412** | **16,402** | **1,109,815** | **741** | **18,439** |

### 5.1.8 Education Level

The population estimates by Educational Level show that during PES there was 9,187 missed population at the primary education level which were correctly enumerated during agricultural census enumeration, while 741 persons were erroneously included during census. Moreover, for the None, Vocational or Technical and Tertiary there were no erroneous inclusions and there were no census cases correctly enumerated but missed in PES (Table 16).

**Table 16: Classification of Estimated Population by Educational Level**

| Educational Level | Non-movers | Out-movers | In-movers | Matched non-movers | Matched out movers | Matched population | Erroneous inclusion | Census cases correctly enumerated but missed in PES |
|---|---|---|---|---|---|---|---|---|
| Primary | 483,958 | 31,799 | 1,179 | 467,638 | 7,289 | 474,927 | 741 | 9,187 |
| Secondary | 299,036 | 18,475 | 835 | 281,771 | 4,753 | 286,524 | 0 | 4,131 |
| None | 70,889 | 5,268 | 0 | 72,002 | 0 | 72,002 | 0 | 0 |
| Vocational or Technical | 13,159 | 1,131 | 0 | 13,787 | 0 | 13,787 | 0 | 0 |
| Tertiary | 8,870 | 1,235 | 0 | 8,762 | 0 | 8,762 | 0 | 0 |
| **Lesotho** | **875,913** | **57,907** | **2,014** | **843,960** | **12,042** | **856,002** | **741** | **13,318** |

## 5.2 Content Error Estimates

Content error is defined as the deviation of the obtained value from the true value for given characteristic. Content errors were computed for matched individuals between census and PES data. All the data used were unweighted. Content errors were computed for sex, age, relationship to household head, marital status and education.

Variability between census and PES was measured using Net Difference Rate (NDR), Index of Inconsistency (II), Aggregate Index of Inconsistency (IAG), Gross difference rate (GDR) and Rate of Agreement (RA) (Annex D).

This section discusses findings for content errors which were computed for sex, age, relationship to household head, marital status and education.

### 5.2.1 Sex

Table 17 shows content errors for sex. NDR is low for both males and females implying that the inconsistency of reporting sex is very low for both sexes. Index of inconsistency is low at 10.9 percent for both sexes meaning respondents provided reliable information. An Agreement Rate of 94.6 percent shows that census and PES responses for sex were highly in agreement.

**Table 17: Content Error Indices for Sex**

| Sex | Number of cases in Census | Number of cases in PES | Net Difference Rate (NDR) | Index of Inconsistency |
|---|---|---|---|---|
| Male | 1,062 | 1,074 | -0.6 | 10.9 |
| Female | 925 | 913 | 0.6 | 10.9 |
| **Lesotho** | **1,987** | **1,987** | | |
| | | | | |
| **Aggregate Index of Inconsistency** | | | | 10.7 |
| **Gross Difference Rate** | | | | 0.1 |
| **Rate of Agreement** | | | | 94.6 |

## 5.2.2 Age Group

Table 18 shows the content errors for age. The Aggregate index of inconsistency is very high for age (25.2 percent). Apart from the age groups "50-59" and "60+" which had a low index of inconsistency of 14.1 percent and 11.2 percent respectively, all other age groups had a medium index of inconsistency. The highest inconsistency occurred among the "5-9" age group (32.7%). The NDR is low for all the age categories, however, age groups "0-4" and "10-19" were under reported in the census (-0.3 and -1.2 respectively). The Rate of Agreement for age is 78.5 percent implying that around 79 percent of age responses for both census and PES were in agreement.

**Table 18: Content Error Indices for Age**

| Age Group | Number of Cases in Census | Number of Cases in PES | Net Difference Rate (NDR) | Index of Inconsistency |
|---|---|---|---|---|
| 0-4 | 155 | 160 | -0.3 | 21 |
| 5-9 | 203 | 194 | 0.5 | 32.7 |
| 10-19 | 476 | 500 | -1.2 | 27.2 |
| 20-29 | 329 | 324 | 0.3 | 31 |
| 30-39 | 224 | 219 | 0.3 | 31.8 |
| 40-49 | 200 | 195 | 0.3 | 26.7 |
| 50-59 | 137 | 137 | 0 | 14.1 |
| 60+ | 263 | 258 | 0.3 | 11.3 |
| **Lesotho** | **1,987** | **1,987** | | |
| | | | | |
| **Aggregate Index of Inconsistency** | | | | 25.2 |
| **Gross Difference Rate** | | | | 0.2 |
| **Rate of Agreement** | | | | 78.5 |

### 5.2.3 Marital Status

Information was collected for all household members aged 12 years and above. This variable had 8 categories. As shown in Table 19, the NDR is low for all categories. However, the negative NDRs for "never married", "monogamously married" and "divorced" indicate that these categories were under-reported in the census. Apart from the "never married" (18.3%), "monogamously married" (21.9%) and "widowed" (30.2%) with low and medium index of inconsistencies respectively, all others registered high index of inconsistencies indicating that more probing needs to be done on marital status question in subsequent censuses and surveys. Aggregate index of inconsistency is very high for marital status (25 percent) and RA is 84.3 percent.

**Table 19: Content Error Indices for Marital Status**

| Marital Status | Number of cases in Census | Number of cases in PES | Net Difference Rate (NDR) | Index of Inconsistency |
|---|---|---|---|---|
| Never Married | 674 | 693 | -1.1 | 18.3 |
| Monogamously Married | 636 | 639 | -0.7 | 21.9 |
| Polygamously Married | 14 | 4 | 0.7 | 55.8 |
| Cohabiting | 1 | | 0.1 | 100 |
| Separated | 74 | 43 | 2 | 60.7 |
| Divorced | 4 | 15 | -0.8 | 100.2 |
| Widowed | 145 | 144 | 0 | 30.2 |
| Don't know | 1 | 2 | -0.1 | 100 |
| **Lesotho** | **1,549** | **1,540** | | |
| | | | | |
| **Aggregate Index of Inconsistency** | | | | 25.0 |
| **Gross Difference Rate** | | | | 0.2 |
| **Rate of Agreement** | | | | 84.3 |

### 5.2.4 Relationship to Household Head

This variable was collected for all household members and has 14 categories. Table 20 shows the content errors for relationship to household head. The NDR was low, below 2 percent in absolute terms in all categories with "son/daughter" highest at 1.8 percent. However, with the exception of "spouse", "partner", "son/daughter", "step child" and "not related", the census under-reported all the other categories. The index of

inconsistency which is less than 20 percent for all the categories except "other relative", is low. Index of inconsistency of -82 percent for "Other relative" implies that only 18 percent of the matched cases were consistent, meaning that for future censuses and surveys more probing needs to be done for this category. The Rate of agreement for relationship is acceptable at 88.1 percent.

**Table 20: Content Error Indices for Relationship to Household Head**

| Relationship | Number of cases in Census | Number of cases in Census | Net Difference Rate (NDR) | Index of Inconsistency |
|---|---|---|---|---|
| Head of Household | 445 | 451 | -0.3 | 2.3 |
| Spouse | 233 | 223 | 0.5 | 3.5 |
| Partner (Cohabiting) | 1 | 1 | 0 | 0 |
| Son/Daughter | 680 | 644 | 1.8 | 4.1 |
| Son/Daughter-in-law | 59 | 84 | -1.3 | -18.1 |
| Step Child | 19 | 17 | 0.1 | 5.6 |
| Sibling | 27 | 29 | -0.1 | -1.2 |
| Own Parent | 8 | 11 | -0.2 | -15.9 |
| Parent-in-law | 2 | 3 | -0.1 | -20 |
| Grand Parent | 3 | 4 | -0.1 | -14.3 |
| Great/Grandchild | 373 | 380 | -0.4 | -1.1 |
| Other Relative | 83 | 77 | 0.3 | -82 |
| Not Related | 54 | 63 | -0.5 | -7.9 |
| **Lesotho** | **1,897** | **1,897** | | |
| | | | | |
| **Aggregate Index of Inconsistency** | | | | 15.1 |
| **Gross Difference Rate** | | | | 0.1 |
| **Rate of Agreement** | | | | 88.1 |

### 5.2.5 Educational Level

Educational level was collected for all household members aged 3 years and above. Table 21 presents content errors for broad educational level. The NDR is less than or equal to 2 percent for all five levels of education which is low but secondary and tertiary were under-reported in the census. The index of inconsistency is medium for "primary", "Secondary" and "None" (35.3, 34.9 and 40.6 percent respectively) and high for "Vocational or Technical" with 53.7 and 54.3 percent respectively. Aggregate index of inconsistency is high for education at 36.8 percent. The Rate of agreement is 79.1 percent.

**Table 21: Content Error Indices for Educational Level**

| Broad Educational level | Number of cases in Census | Number of cases in PES | NDR | Index of Inconsistency |
|---|---|---|---|---|
| Primary | 1,072 | 852 | 2.0 | 35.3 |
| Secondary | 490 | 506 | -2.8 | 34.9 |
| None | 290 | 134 | 0.7 | 40.6 |
| Vocational or Technical | 31 | 25 | 0.3 | 53.7 |
| Tertiary | 12 | 15 | -0.3 | 54.3 |
| **Lesotho** | **1,895** | **1,532** | | |
| | | | | |
| **Aggregate Index of Inconsistency** | | | | 36.8 |
| **Gross Difference Rate** | | | | 0.2 |
| **Rate of Agreement** | | | | 79.1 |

**ANNEXES**

## A. Computation of Weights

Weights were computed and applied to the PES data to account of the different probabilities of selection in order to obtain the true contribution of each selected PSU in the sample.

Let  $M_{hi}$  = Number of PSUs in the $i^{th}$ selected PSU in the $h^{th}$ stratum (ecological-zone)

$\Sigma M_{hi}$  = Total Number of PSUs in all the agro-ecological zones.

$a_h$  = Number of clusters selected in the $h^{th}$ stratum

$Y_{hij}$  = Variable value for household j in $PSU^i$ in the $h^{th}$ stratum

$R_{hi}$  = Raising factor for the $i^{th}$ PSU in the $h^{th}$ stratum

Since the PES is a single-stage stratified cluster sampling the probability of selection is:

$$P_{hi} = \frac{a_{hi*M_{hi}}}{\Sigma M_{hi}}$$

Where,

$P_{hi}$ is the probability of selecting the $i^{th}$ PSU in the $h^{th}$ stratum.

## Design Weight (Base Weight)

These weights which are generally called sample weights or design weights/base weights are the inverse of the inclusion probability.

Thus the weighting factor (or expansion factor), $W_{hi}$, for a PSU in the $h^{th}$ stratum is the reciprocal (inverse) of the probability of selecting that PSU.

That is,

$$W_{hi} = \frac{1}{P_{hi}}$$

Since the PES sample was a sub-sample of the 500 PSUs, it was necessary to apply the census raising factor of 25 to each **$W_{hi}$**

Hence the final weight for the sample households in the j-th cluster within the i-th sample PSU in stratum h is given as:

$$W_{hi}'=W_{hi}*25$$

## B. Estimates of Sampling Errors

The SPSS Software Complex Samples (CSPlan) module was used for estimating the sampling errors, the coefficient of variation (CV), the confidence limits, the design effect and the square root of the design effect (Tables A2-A8).

## C. Estimation of Sampling Errors of Key Variables

**Table A1: Sampling Errors for Key Indicators**

| No. | Indicator | Estimate | Base Population |
|-----|-----------|----------|-----------------|
| 1 | Sex | Number | All Agric. Households |
| 2 | Relationship | Number | All Agric. Households |
| 3 | Age | Number | All Agric. Households |
| 4 | Marital status | Number | All Agric. Households |
| 5 | Education level | Number | All Agric. Households |

**Table A2: Sampling Errors of Estimated Agriculture Population by Zone**

| Zone | Estimate | Standard Error | 95% Confidence Interval | | Coefficient of Variation | Design Effect | Square Root Design Effect | Unweighted Count |
|------|----------|----------------|-------|-------|--------|--------|--------|--------|
| | | | Lower | Upper | | | | |
| Lowlands | 466,650 | 16,381 | 432,977 | 500,322 | 3.5 | 1.8 | 1.3 | 775 |
| Foothills | 178,087 | 41,441 | 92,903 | 263,270 | 23.3 | 20.5 | 4.5 | 288 |
| Mountains | 300,453 | 32,446 | 233,759 | 367,147 | 10.8 | 8.6 | 2.9 | 607 |
| Senqu river valley | 169,924 | 28,165 | 112,029 | 227,819 | 16.6 | 9.8 | 3.1 | 317 |
| **Lesotho** | **1,115,113** | **61,901** | **987,874** | **1,242,353** | **5.6** | | | **1,987** |

**Table A3: Sampling Errors of Estimated Agriculture Population by Sex**

| Zone | | Estimate | Standard Error | 95% Confidence Interval | | Coefficient of Variation | Design Effect | Square Root Design Effect | Unweighted Count |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Lower | Upper | | | | |
| Lowlands | Male | 254,831 | 11,279 | 231,647 | 278,015 | 4.4 | 1.2 | 1.1 | 421 |
| | Female | 211,818 | 9,593 | 192,099 | 231,538 | 4.5 | 1.0 | 1.0 | 354 |
| | Total | 466,650 | 16,381 | 432,977 | 500,322 | 3.5 | 1.8 | 1.3 | 775 |
| Foothills | Male | 94,614 | 23,565 | 46,177 | 143,052 | 24.9 | 11.4 | 3.4 | 148 |
| | Female | 83,472 | 18,973 | 44,473 | 122,471 | 22.7 | 8.3 | 2.9 | 140 |
| | Total | 178,087 | 41,441 | 92,903 | 263,270 | 23.3 | 20.5 | 4.5 | 288 |
| Mountains | Male | 159,985 | 16,469 | 126,132 | 193,839 | 10.3 | 3.5 | 1.9 | 326 |
| | Female | 140,468 | 17,701 | 104,082 | 176,853 | 12.6 | 4.6 | 2.1 | 281 |
| | Total | 300,453 | 32,446 | 233,759 | 367,147 | 10.8 | 8.6 | 2.9 | 607 |
| Senqu river valley | Male | 96,723 | 16,210 | 63,402 | 130,043 | 16.8 | 5.3 | 2.3 | 179 |
| | Female | 73,201 | 13,134 | 46,204 | 100,199 | 17.9 | 4.5 | 2.1 | 138 |
| | Total | 169,924 | 28,165 | 112,029 | 227,819 | 16.6 | 9.8 | 3.1 | 317 |
| Lesotho | Male | 606,154 | 34,879 | 534,460 | 677,848 | 5.8 | 7.8 | 2.8 | 1,074 |
| | Female | 508,960 | 30,624 | 446,011 | 571,908 | 6.0 | 6.0 | 2.5 | 913 |
| | **Total** | **1,115,113** | **61,901** | **987,874** | **1,242,353** | **5.6** | | | **1,987** |

**Table A4: Sampling Errors of Estimated Agriculture Population by Age Group**

| Zone Group | Age-Group | Estimate | Standard Error | 95% Confidence Interval | | Coefficient of Variation | Design Effect | Square Root Design Effect | Unweighted Count |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Lower | Upper | | | | |
| Lowlands | 0-4 | 32,731 | 3,851 | 24,815 | 40,647 | 11.8 | .833 | .913 | 54 |
| | 5-9 | 44,119 | 3,697 | 36,519 | 51,718 | 8.4 | .576 | .759 | 74 |
| | 10-19 | 114,743 | 7,105 | 100,138 | 129,348 | 6.2 | .875 | .935 | 190 |
| | 20-29 | 73,668 | 4,892 | 63,613 | 83,724 | 6.6 | .621 | .788 | 123 |
| | 30-39 | 45,827 | 3,117 | 39,420 | 52,234 | 6.8 | .394 | .628 | 76 |
| | 40-49 | 56,555 | 5,386 | 45,483 | 67,626 | 9.5 | .964 | .982 | 92 |
| | 50-59 | 34,902 | 2,635 | 29,486 | 40,319 | 7.5 | .366 | .605 | 58 |
| | 60+ | 64,105 | 4,776 | 54,286 | 73,923 | 7.5 | .674 | .821 | 108 |
| | Total | 466,650 | 16,381 | 432,977 | 500,322 | 3.5 | 1.764 | 1.328 | 775 |
| Foothills | 0-4 | 10,986 | 1,802 | 7,283 | 14,689 | 16.4 | .532 | .730 | 20 |
| | 5-9 | 15,389 | 5,235 | 4,628 | 26,150 | 34.0 | 3.222 | 1.795 | 24 |
| | 10-19 | 43,601 | 17,025 | 8,607 | 78,596 | 39.0 | 12.343 | 3.513 | 68 |
| | 20-29 | 27,342 | 6,805 | 13,354 | 41,331 | 24.9 | 3.098 | 1.760 | 46 |

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| Zone Group | Age- | Estimate | Standard Error | 95% Confidence Interval | | Coefficient of Variation | Design Effect | Square Root Design Effect | Unweighted Count |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Lower | Upper | | | | |
| | 30-39 | 25,403 | 8,281 | 8,381 | 42,426 | 32.6 | 4.929 | 2.220 | 40 |
| | 40-49 | 19,079 | 2,902 | 13,113 | 25,044 | 15.2 | .801 | .895 | 31 |
| | 50-59 | 11,078 | 3,297 | 4,301 | 17,855 | 29.8 | 1.768 | 1.330 | 18 |
| | 60+ | 25,208 | 4,893 | 15,150 | 35,266 | 19.4 | 1.734 | 1.317 | 41 |
| | Total | 178,087 | 41,441 | 92,903 | 263,270 | 23.3 | 20.475 | 4.525 | 288 |
| Mountains | 0-4 | 25,101 | 3,238 | 18,445 | 31,758 | 12.9 | .763 | .873 | 53 |
| | 5-9 | 33,617 | 7,029 | 19,168 | 48,066 | 20.9 | 2.704 | 1.644 | 65 |
| | 10-19 | 77,474 | 9,985 | 56,950 | 97,998 | 12.9 | 2.467 | 1.571 | 156 |
| | 20-29 | 48,482 | 4,978 | 38,251 | 58,714 | 10.3 | .953 | .976 | 102 |
| | 30-39 | 35,152 | 4,719 | 25,451 | 44,853 | 13.4 | 1.167 | 1.080 | 74 |
| | 40-49 | 26,903 | 5,815 | 14,951 | 38,856 | 21.6 | 2.298 | 1.516 | 53 |
| | 50-59 | 16,647 | 2,969 | 10,543 | 22,750 | 17.8 | .959 | .979 | 34 |
| | 60+ | 37,077 | 5,681 | 25,400 | 48,755 | 15.3 | 1.606 | 1.267 | 70 |
| | Total | 300,453 | 32,446 | 233,759 | 367,147 | 10.8 | 8.557 | 2.925 | 607 |
| Senqu river valley | 0-4 | 16,923 | 4,508 | 7,657 | 26,189 | 26.6 | 2.175 | 1.475 | 33 |
| | 5-9 | 17,433 | 3,058 | 11,147 | 23,720 | 17.5 | .972 | .986 | 31 |
| | 10-19 | 46,028 | 9,347 | 26,814 | 65,242 | 20.3 | 3.533 | 1.880 | 86 |
| | 20-29 | 27,402 | 4,581 | 17,986 | 36,819 | 16.7 | 1.401 | 1.184 | 53 |
| | 30-39 | 14,793 | 3,843 | 6,895 | 22,692 | 26.0 | 1.805 | 1.343 | 29 |
| | 40-49 | 10,930 | 3,286 | 4,176 | 17,684 | 30.1 | 1.780 | 1.334 | 19 |
| | 50-59 | 14,945 | 3,051 | 8,674 | 21,216 | 20.4 | 1.126 | 1.061 | 27 |
| | 60+ | 21,469 | 2,301 | 16,739 | 26,199 | 10.7 | .449 | .670 | 39 |
| | Total | 169,924 | 28,165 | 112,029 | 227,819 | 16.6 | 9.827 | 3.135 | 317 |
| Lesotho | 0-4 | 85,741 | 6,992 | 71,369 | 100,113 | 8.2 | 1.102 | 1.050 | 160 |
| | 5-9 | 110,558 | 9,992 | 90,019 | 131,097 | 9.0 | 1.789 | 1.337 | 194 |
| | 10-19 | 281,846 | 22,965 | 234,641 | 329,051 | 8.1 | 4.468 | 2.114 | 500 |
| | 20-29 | 176,895 | 10,771 | 154,756 | 199,035 | 6.1 | 1.391 | 1.179 | 324 |
| | 30-39 | 121,175 | 10,739 | 99,100 | 143,251 | 8.9 | 1.905 | 1.380 | 219 |
| | 40-49 | 113,467 | 9,058 | 94,848 | 132,086 | 8.0 | 1.436 | 1.198 | 195 |
| | 50-59 | 77,572 | 5,995 | 65,250 | 89,894 | 7.7 | .888 | .943 | 137 |
| | 60+ | 147,859 | 9,183 | 128,983 | 166,734 | 6.2 | 1.173 | 1.083 | 258 |

| Zone Group | Age- | Estimate | Standard Error | 95% Confidence Interval | | Coefficient of Variation | Design Effect | Square Root Design Effect | Unweighted Count |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Lower | Upper | | | | |
| Total | | 1,115,113 | 61,901 | 987,874 | 1,242,353 | 5.6 | | | 1,987 |

**Table A5: Sampling Errors of Estimated Agriculture Population by Marital Status**

| Zone | | Estimate | Standard Error | 95% Confidence Interval | | Coefficient of Variation | Design Effect | Square Root Design Effect | Unweighted Count |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Lower | Upper | | | | |
| Lowlands | Never Married | 159,961 | 7,886 | 143,752 | 176,170 | 4.9 | .9 | .9 | 266 |
| | Monogamously Married | 150,058 | 8,812 | 131,945 | 168,171 | 5.9 | 1.1 | 1.1 | 248 |
| | Separated | 13,144 | 3,009 | 6,958 | 19,329 | 22.9 | 1.2 | 1.1 | 22 |
| | Divorced | 6,608 | 1,339 | 3,856 | 9,360 | 20.3 | .5 | .7 | 11 |
| | Widowed | 35,538 | 3,488 | 28,367 | 42,709 | 9.8 | .6 | .8 | 59 |
| | Don't know | 589 | 456 | (349) | 1,526 | 77.5 | .6 | .8 | 1 |
| | Total | 365,897 | 13,258 | 338,645 | 393,149 | 3.6 | 1.5 | 1.2 | 607 |
| Foothills | Never Married | 68,015 | 22,174 | 22,435 | 113,594 | 32.6 | 14.0 | 3.7 | 108 |
| | Monogamously Married | 52,369 | 10,124 | 31,560 | 73,179 | 19.3 | 3.7 | 1.9 | 85 |
| | Separated | 4,795 | 1,519 | 1,673 | 7,917 | 31.7 | .9 | .9 | 8 |
| | Divorced | 2,300 | 877 | 497 | 4,104 | 38.1 | .6 | .8 | 3 |
| | Widowed | 13,531 | 2,222 | 8,964 | 18,098 | 16.4 | .7 | .8 | 24 |
| | Total | 141,011 | 32,675 | 73,846 | 208,175 | 23.2 | 16.1 | 4.0 | 228 |
| Mountains | Never Married | 98,906 | 12,487 | 73,239 | 124,572 | 12.6 | 3.2 | 1.8 | 201 |
| | Monogamously Married | 104,698 | 10,335 | 83,454 | 125,942 | 9.9 | 2.1 | 1.4 | 215 |
| | Polygamously Married | 2,019 | 1,488 | (1,039) | 5,077 | 73.7 | 2.0 | 1.4 | 4 |
| | Separated | 3,491 | 1,174 | 1,078 | 5,903 | 33.6 | .7 | .8 | 7 |
| | Widowed | 20,734 | 3,495 | 13,549 | 27,919 | 16.9 | 1.1 | 1.0 | 39 |
| | Total | 229,846 | 24,084 | 180,340 | 279,353 | 10.5 | 6.1 | 2.5 | 466 |
| | Never Married | 63,147 | 12,217 | 38,035 | 88,258 | 19.3 | 4.5 | 2.1 | 118 |

| Zone | | Estimate | Standard Error | 95% Confidence Interval | | Coefficient of Variation | Design Effect | Square Root Design Effect | Unweighted Count |
|------|------|------|------|------|------|------|------|------|------|
| | | | | Lower | Upper | | | | |
| Senqu river valley | Monogamously Married | 47,974 | 7,601 | 32,349 | 63,598 | 15.8 | 2.3 | 1.5 | 91 |
| | Separated | 2,854 | 1,067 | 661 | 5,047 | 37.4 | .7 | .8 | 6 |
| | Divorced | 490 | 457 | (448) | 1,429 | 93.1 | .8 | .9 | 1 |
| | Widowed | 13,167 | 2,276 | 8,489 | 17,846 | 17.3 | .7 | .8 | 22 |
| | Don't know | 490 | 457 | (448) | 1,429 | 93.1 | .8 | .9 | 1 |
| | Total | 128,122 | 19,885 | 87,249 | 168,995 | 15.5 | 6.5 | 2.5 | 239 |
| Lesotho | Never Married | 390,028 | 29,309 | 329,782 | 450,274 | 7.5 | 7.2 | 2.7 | 693 |
| | Monogamously Married | 355,099 | 18,567 | 316,934 | 393,263 | 5.2 | 2.9 | 1.7 | 639 |
| | Polygamously Married | 2,019 | 1,488 | (1,039) | 5,077 | 73.7 | 2.0 | 1.4 | 4 |
| | Separated | 24,283 | 3,725 | 16,626 | 31,941 | 15.3 | 1.0 | 1.0 | 43 |
| | Divorced | 9,398 | 1,665 | 5,977 | 12,820 | 17.7 | .5 | .7 | 15 |
| | Widowed | 82,970 | 5,874 | 70,896 | 95,044 | 7.1 | .8 | .9 | 144 |
| | Don't know | 1,079 | 645 | (247) | 2,405 | 59.8 | .7 | .8 | 2 |
| | **Total** | **864,877** | **47,105** | **768,051** | **961,702** | **5.4** | | | **1,540** |

**Table A6: Sampling Errors of Estimated Agriculture Population by Relationship**

| Zone | | Estimate | Standard Error | 95% Confidence Interval | | Coefficient of Variation | Design Effect | Square Root Design Effect | Unweighted Count |
|------|------|------|------|------|------|------|------|------|------|
| | | | | Lower | Upper | | | | |
| Lowlands | Head of Household | 111,362 | 4,388 | 102,342 | 120,381 | 3.9 | .3 | .6 | 185 |
| | Spouse | 55,968 | 3,607 | 48,553 | 63,383 | 6.4 | .4 | .7 | 91 |
| | Partner (Cohabiting) | 386 | 299 | (228) | 1,000 | 77.5 | .4 | .6 | 1 |
| | Son/Daughter | 146,546 | 11,432 | 123,047 | 170,045 | 7.8 | 1.8 | 1.4 | 244 |

| Zone | | Estimate | Standard Error | 95% Confidence Interval | | Coefficient of Variation | Design Effect | Square Root Design Effect | Unweighted Count |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Lower | Upper | | | | |
| | Son/Daughter-in-law | 18,516 | 3,462 | 11,400 | 25,632 | 18.7 | 1.2 | 1.1 | 31 |
| | Step Child | 3,020 | 1,826 | (732) | 6,773 | 60.4 | 2.0 | 1.4 | 7 |
| | Sibling | 5,843 | 1,762 | 2,223 | 9,464 | 30.1 | 1.0 | 1.0 | 9 |
| | Own Parent | 2,180 | 735 | 669 | 3,692 | 33.7 | .4 | .7 | 4 |
| | Grand Parent | 609 | 472 | (361) | 1,578 | 77.5 | .7 | .8 | 1 |
| | Great/Grandchild | 96,824 | 7,520 | 81,366 | 112,282 | 7.8 | 1.1 | 1.1 | 161 |
| | Other Relative | 16,728 | 3,339 | 9,865 | 23,591 | 20.0 | 1.2 | 1.1 | 27 |
| | Not Related | 8,667 | 1,723 | 5,125 | 12,208 | 19.9 | .6 | .8 | 14 |
| | Total | 466,650 | 16,381 | 432,977 | 500,322 | 3.5 | 1.8 | 1.3 | 775 |
| | Head of Household | 46,010 | 7,310 | 30,983 | 61,036 | 15.9 | 2.2 | 1.5 | 74 |
| | Spouse | 17,558 | 4,657 | 7,985 | 27,131 | 26.5 | 2.2 | 1.5 | 29 |
| | Son/Daughter | 56,300 | 18,956 | 17,335 | 95,266 | 33.7 | 12.0 | 3.5 | 89 |
| | Son/Daughter-in-law | 3,681 | 2,236 | (915) | 8,277 | 60.7 | 2.4 | 1.6 | 9 |
| | Step Child | 350 | 319 | (306) | 1,006 | 91.3 | .5 | .7 | 1 |
| Foothills | Sibling | 3,717 | 3,009 | (2,469) | 9,903 | 81.0 | 4.4 | 2.1 | 5 |
| | Own Parent | 2,300 | 1,499 | (780) | 5,381 | 65.1 | 1.7 | 1.3 | 3 |
| | Grand Parent | 842 | 768 | (737) | 2,421 | 91.3 | 1.3 | 1.1 | 1 |
| | Great/Grandchild | 29,091 | 4,466 | 19,912 | 38,271 | 15.4 | 1.3 | 1.1 | 50 |
| | Other Relative | 10,455 | 6,361 | (2,621) | 23,531 | 60.8 | 7.0 | 2.6 | 14 |
| | Not Related | 7,782 | 1,999 | 3,673 | 11,891 | 25.7 | .9 | 1.0 | 13 |
| | Total | 178,087 | 41,441 | 92,903 | 263,270 | 23.3 | 20.5 | 4.5 | 288 |
| | Head of Household | 65,835 | 5,679 | 54,162 | 77,508 | 8.6 | .9 | 1.0 | 133 |
| Mountains | Spouse | 36,641 | 3,802 | 28,826 | 44,457 | 10.4 | .7 | .9 | 77 |
| | Son/Daughter | 101,198 | 12,809 | 74,868 | 127,528 | 12.7 | 3.2 | 1.8 | 210 |

| Zone | | Estimate | Standard Error | 95% Confidence Interval | | Coefficient of Variation | Design Effect | Square Root Design Effect | Unweighted Count |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Lower | Upper | | | | |
| | Son/Daughter-in-law | 14,902 | 3,617 | 7,467 | 22,338 | 24.3 | 1.6 | 1.3 | 29 |
| | Step Child | 3,110 | 1,563 | (104) | 6,324 | 50.3 | 1.4 | 1.2 | 7 |
| | Sibling | 4,643 | 1,668 | 1,213 | 8,072 | 35.9 | 1.1 | 1.0 | 10 |
| | Own Parent | 645 | 540 | (464) | 1,754 | 83.7 | .8 | .9 | 1 |
| | Parent-in-law | 619 | 518 | (446) | 1,684 | 83.7 | .8 | .9 | 1 |
| | Great/Grandchild | 48,449 | 11,457 | 24,899 | 71,999 | 23.6 | 5.1 | 2.2 | 91 |
| | Other Relative | 12,630 | 2,916 | 6,637 | 18,624 | 23.1 | 1.2 | 1.1 | 25 |
| | Not Related | 11,780 | 3,323 | 4,948 | 18,611 | 28.2 | 1.7 | 1.3 | 23 |
| | Total | 300,453 | 32,446 | 233,759 | 367,147 | 10.8 | 8.6 | 2.9 | 607 |
| | Head of Household | 34,054 | 5,056 | 23,661 | 44,447 | 14.8 | 1.4 | 1.2 | 59 |
| | Spouse | 14,307 | 3,266 | 7,594 | 21,021 | 22.8 | 1.3 | 1.2 | 26 |
| | Son/Daughter | 52,636 | 7,380 | 37,465 | 67,807 | 14.0 | 1.9 | 1.4 | 101 |
| | Son/Daughter-in-law | 7,490 | 4,384 | (1,521) | 16,501 | 58.5 | 4.6 | 2.1 | 15 |
| | Step Child | 600 | 558 | (548) | 1,747 | 93.1 | .9 | 1.0 | 2 |
| Senqu river valley | Sibling | 3,235 | 1,753 | (369) | 6,839 | 54.2 | 1.7 | 1.3 | 5 |
| | Own Parent | 1,090 | 592 | (126) | 2,306 | 54.3 | .6 | .8 | 3 |
| | Parent-in-law | 600 | 558 | (548) | 1,747 | 93.1 | .9 | 1.0 | 2 |
| | Grand Parent | 600 | 558 | (548) | 1,747 | 93.1 | .9 | 1.0 | 2 |
| | Great/Grandchild | 41,273 | 10,590 | 19,504 | 63,042 | 25.7 | 5.0 | 2.2 | 78 |
| | Other Relative | 7,722 | 5,270 | (3,111) | 18,555 | 68.3 | 6.5 | 2.5 | 11 |
| | Not Related | 6,319 | 4,065 | (2,038) | 14,675 | 64.3 | 4.7 | 2.2 | 13 |
| | Total | 169,924 | 28,165 | 112,029 | 227,819 | 16.6 | 9.8 | 3.1 | 317 |

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| Zone | | Estimate | Standard Error | 95% Confidence Interval | | Coefficient of Variation | Design Effect | Square Root Design Effect | Unweighted Count |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Lower | Upper | | | | |
| Lesotho | Head of Household | 257,261 | 11,424 | 233,778 | 280,743 | 4.4 | 1.2 | 1.1 | 451 |
| | Spouse | 124,475 | 7,735 | 108,576 | 140,374 | 6.2 | 1.0 | 1.0 | 223 |
| | Partner (Cohabiting) | 386 | 299 | (228) | 1,000 | 77.5 | .4 | .6 | 1 |
| | Son/Daughter | 356,681 | 26,619 | 301,965 | 411,397 | 7.5 | 5.2 | 2.3 | 644 |
| | Son/Daughter-in-law | 44,589 | 7,020 | 30,159 | 59,020 | 15.7 | 2.1 | 1.4 | 84 |
| | Step Child | 7,080 | 2,488 | 1,965 | 12,194 | 35.1 | 1.6 | 1.3 | 17 |
| | Sibling | 17,438 | 4,245 | 8,713 | 26,163 | 24.3 | 1.9 | 1.4 | 29 |
| | Own Parent | 6,215 | 1,851 | 2,410 | 10,021 | 29.8 | 1.0 | 1.0 | 11 |
| | Parent-in-law | 1,219 | 762 | (347) | 2,784 | 62.5 | .9 | .9 | 3 |
| | Grand Parent | 2,050 | 1,060 | (129) | 4,230 | 51.7 | 1.0 | 1.0 | 4 |
| | Great/Grandchild | 215,637 | 17,886 | 178,872 | 252,403 | 8.3 | 3.3 | 1.8 | 380 |
| | Other Relative | 47,535 | 9,375 | 28,265 | 66,805 | 19.7 | 3.4 | 1.9 | 77 |
| | Not Related | 34,547 | 5,877 | 22,468 | 46,627 | 17.0 | 1.8 | 1.4 | 63 |
| | **Total** | **1,115,113** | **61,901** | **987,874** | **1,242,353** | **5.6** | | | **1,987** |

**Table A7: Sampling Errors of Estimated Agriculture Population by Educational Level**

| Zone | | Estimate | Standard Error | 95% Confidence Interval | | Coefficient of Variation | Design Effect | Square Root Design Effect | Unweighted Count |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Lower | Upper | | | | |
| Lowlands | Primary | 194,204 | 12,215 | 169,096 | 219,313 | 6.3 | 1.8 | 1.3 | 320 |
| | Secondary | 138,509 | 10,264 | 117,411 | 159,607 | 7.4 | 1.6 | 1.3 | 230 |
| | None | 14,626 | 3,313 | 7,816 | 21,436 | 22.7 | 1.4 | 1.2 | 27 |
| | Vocational or Technical | 9,817 | 2,462 | 4,757 | 14,878 | 25.1 | 1.1 | 1.1 | 16 |

| Zone | | Estimate | Standard Error | 95% Confidence Interval | | Coefficient of Variation | Design Effect | Square Root Design Effect | Unweighted Count |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Lower | Upper | | | | |
| | Tertiary | 7,503 | 1,520 | 4,378 | 10,628 | 20.3 | 0.6 | 0.7 | 12 |
| | Total | 364,659 | 13,511 | 336,886 | 392,432 | 3.7 | 1.6 | 1.2 | 605 |
| Foothills | Primary | 74,631 | 15,562 | 42,643 | 106,620 | 20.9 | 6.3 | 2.5 | 119 |
| | Secondary | 49,401 | 17,253 | 13,936 | 84,866 | 34.9 | 11.4 | 3.4 | 79 |
| | None | 15,502 | 3,047 | 9,238 | 21,766 | 19.7 | 1.1 | 1.0 | 27 |
| | Vocational or Technical | 859 | 494 | (156) | 1,874 | 57.5 | 0.5 | 0.7 | 2 |
| | Total | 140,394 | 32,860 | 72,849 | 207,939 | 23.4 | 16.4 | 4.0 | 227 |
| Mountains | Primary | 143,832 | 16,888 | 109,118 | 178,546 | 11.7 | 4.2 | 2.1 | 291 |
| | Secondary | 56,807 | 6,923 | 42,576 | 71,037 | 12.2 | 1.6 | 1.3 | 115 |
| | None | 25,704 | 6,011 | 13,349 | 38,059 | 23.4 | 2.6 | 1.6 | 52 |
| | Vocational or Technical | 2,162 | 945 | 220 | 4,105 | 43.7 | 0.7 | 0.9 | 5 |
| | Tertiary | 469 | 393 | (338) | 1,277 | 83.7 | 0.6 | 0.8 | 1 |
| | Total | 228,975 | 24,232 | 179,165 | 278,785 | 10.6 | 6.2 | 2.5 | 464 |
| Senqu river valley | Primary | 64,899 | 8,062 | 48,327 | 81,471 | 12.4 | 1.9 | 1.4 | 122 |
| | Secondary | 43,061 | 8,869 | 24,831 | 61,290 | 20.6 | 3.4 | 1.9 | 82 |
| | None | 16,170 | 5,510 | 4,843 | 27,497 | 34.1 | 3.4 | 1.8 | 28 |
| | Vocational or Technical | 948 | 510 | (101) | 1,996 | 53.8 | 0.5 | 0.7 | 2 |
| | Tertiary | 790 | 449 | (132) | 1,712 | 56.8 | 0.5 | 0.7 | 2 |
| | Total | 125,868 | 18,744 | 87,339 | 164,397 | 14.9 | 5.8 | 2.4 | 236 |
| Lesotho | Primary | 477,567 | 27,232 | 421,590 | 533,543 | 5.7 | 6.2 | 2.5 | 852 |
| | Secondary | 287,778 | 23,013 | 240,473 | 335,082 | 8.0 | 4.9 | 2.2 | 506 |
| | None | 72,002 | 9,314 | 52,857 | 91,148 | 12.9 | 2.3 | 1.5 | 134 |
| | Vocational or Technical | 13,787 | 2,731 | 8,173 | 19,401 | 19.8 | 1.0 | 1.0 | 25 |

| Zone | | Estimate | Standard Error | 95% Confidence Interval | | Coefficient of Variation | Design Effect | Square Root Design Effect | Unweighted Count |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Lower | Upper | | | | |
| | Tertiary | 8,762 | 1,633 | 5,406 | 12,119 | 18.6 | 0.5 | 0.7 | 15 |
| | **Total** | **859,896** | **46,914** | **763,463** | **956,328** | **5.5** | | | **1,532** |

**Table A8: Sampling Errors of Estimated Agriculture Population by Holder**

| Zone | Estimate | Standard Error | 95% Confidence Interval | | Coefficient of Variation | Design Effect | Square Root Design Effect | Unweighted Count |
|---|---|---|---|---|---|---|---|---|
| | | | Lower | Upper | | | | |
| Lowlands | 107,477 | 5,291 | 96,602 | 118,353 | 4.9 | .8 | .9 | 179 |
| Foothills | 46,498 | 7,933 | 30,192 | 62,805 | 17.1 | 2.9 | 1.7 | 74 |
| Mountains | 68,762 | 6,205 | 56,007 | 81,517 | 9.0 | 1.4 | 1.2 | 139 |
| Senqu river valley | 34,894 | 4,283 | 26,090 | 43,698 | 12.3 | 1.1 | 1.0 | 64 |
| **Lesotho** | **257,632** | **12,156** | **232,645** | **282,620** | **4.7** | | | **456** |

# D. Coverage Measure Estimates

**Table A9: Omission, Erroneous Inclusion, Gross Coverage Error and Net Coverage Error by Zone and Sex**

| | Omission | Erroneous Inclusion | Gross Coverage Error | Net Coverage Error |
|---|---|---|---|---|
| **Lesotho** | 61,804 | 741 | 62,545 | 61,063 |
| Lowlands | 38,378 | 741 | 39,119 | 37,637 |
| Foothills | 14,189 | 0 | 14,189 | 14,189 |
| Mountain | 20,581 | 0 | 20,581 | 20,581 |
| SRV | -11,511 | 0 | -11,511 | -11,511 |
| **Total** | **61,804** | **741** | **62,545** | **61,063** |
| **Sex** | | | | |
| Male | 29,222 | 741 | 29,963 | 28,481 |
| Female | 32,616 | 0 | 32,616 | 32,616 |
| **Total** | **61,804** | **741** | **62,545** | **61,063** |

**Table A10: Omission, Erroneous Inclusion, Gross Coverage Error and Net Coverage Error by Age**

| Age | Omission | Erroneous Inclusion | Gross Coverage Error | Net Coverage Error |
|---|---|---|---|---|
| 0-4 | 10,212 | 0 | 10,212 | 10,212 |
| 5-9 | 23,710 | 0 | 23,710 | 23,710 |
| 10-19 | 28,075 | 0 | 28,075 | 28,075 |
| 20-29 | 14,594 | 0 | 15,335 | 13,853 |
| 30-39 | -3,992 | 0 | -3,992 | -3,992 |
| 40-49 | -9,772 | 0 | -9,772 | -9,772 |
| 50-59 | -634 | 0 | -634 | -634 |
| 60+ | 4 | 0 | 4 | 4 |
| **Total** | **61,804** | **0** | **62,545** | **61,063** |

**Table A11: Omission, Erroneous Inclusion, Gross Coverage Error and Net Coverage Error by marital Status**

| Marital Status | Omission | Erroneous Inclusion | Gross Coverage Error | Net Coverage Error |
|---|---|---|---|---|
| Never Married | 32,471 | 0 | 32,471 | 32,471 |
| Monogamously Married | -8,857 | 0 | -8,116 | -9,598 |
| Polygamously Married | -1,195 | 0 | -1,195 | -1,195 |
| Cohabiting | 0 | 0 | 0 | 0 |
| Separated | -501 | 0 | -501 | -501 |
| Divorced | 486 | 0 | 486 | 486 |
| Widowed | -1,202 | 0 | -1,202 | -1,202 |
| Don't know | -55 | 0 | -55 | -55 |
| **Total** | **32,390** | **741** | **33,131** | **31,649** |

**Table A12: Omission, Erroneous Inclusion, Gross Coverage Error and Net Coverage Error by Relationship**

| Relationship | Omission | Erroneous Inclusion | Gross Coverage Error | Net Coverage Error |
|---|---|---|---|---|
| Head of Household | -13,256 | 0 | -13,256 | -13,256 |
| Spouse | -5,449 | 113 | -5,449 | -5,449 |
| Partner (Cohabiting) | 676 | 0 | 676 | 676 |
| Son/Daughter | 21,522 | 25 | 21,522 | 21,522 |
| Son/Daughter-in-law | 4,716 | 0 | 5,457 | 3,975 |

| | | | | |
|---|---|---|---|---|
| Step Child | 2,264 | 0 | 2,264 | 2,264 |
| Sibling | 1,144 | 0 | 1,144 | 1,144 |
| Own Parent | 670 | 0 | 670 | 670 |
| Step Parent | 0 | 0 | 0 | 0 |
| Parent-in-law | 597 | 0 | 597 | 597 |
| Grand Parent | 1,462 | 0 | 1,462 | 1,462 |
| Great/Grandchild | 28,230 | 0 | 28,230 | 28,230 |
| Other Relative | 13,278 | 0 | 13,278 | 13,278 |
| Not Related | 5,995 | 0 | 5,995 | 5,995 |
| **Total** | **61,804** | **741** | **62,545** | **61,063** |

**Table A13: Omission, Erroneous Inclusion, Gross Coverage Error and Net Coverage Error by Education Level**

| Educational Level | Omission | Erroneous Inclusion | Gross Coverage Error | Net Coverage Error |
|---|---|---|---|---|
| Primary | 10,407 | 741 | 11,148 | 9,666 |
| Secondary | 13,540 | 0 | 13,540 | 13,540 |
| None | -1,113 | 0 | -1,113 | -1,113 |
| Tertiary | 108 | 0 | 0 | 0 |
| **Total** | **2,265** | **741** | **23,006** | **21,524** |

## Coverage Errors Rates

### Table A14: Coverage Error Rates by Zone and Sex

|  | Omission Rate | Coverage rate (Matched Rate) | Net coverage error rate | Erroneous inclusion rate | Gross coverage error rate per unit enumeration |
|---|---|---|---|---|---|
| **Lesotho** | **5.2** | **94.8** | **5.1** | **0.1** | **5.5** |
| **Zone** |  |  |  |  |  |
| Lowlands | 7.6 | 92.4 | 7.4 | 0.2 | 8.3 |
| Foothills | 7.3 | 92.7 | 7.3 | 0 | 7.9 |
| Mountain | 6.3 | 93.7 | 6.3 | 0 | 6.7 |
| SRV | -7.1 | 107.1 | -7.1 | 0 | -6.6 |
| Total | 5.2 | 94.8 | 5.1 | 0.1 | 5.5 |
| **Sex** |  |  |  |  |  |
| Male | 4.6 | 95.4 | 4.4 | 0.1 | 4.9 |
| Female | 5.9 | 94.1 | 5.9 | 0 | 6.3 |
| **Total** | **5.2** | **94.8** | **5.1** | **0.1** | **5.5** |

### Table A15: Coverage Error Rates by Age

| Age-Group | Omission Rate | Coverage Rate (Matched Rate) | Net Coverage Error Rate | Erroneous Inclusion Rate | Gross Coverage Error Rate Per Unit Enumeration |
|---|---|---|---|---|---|
| 0-4 | 10.5 | 89.5 | 10.5 | 0 | 11.8 |
| 5-9 | 17.4 | 82.6 | 17.4 | 0 | 21.1 |
| 10-19 | 8.9 | 91.1 | 8.9 | 0 | 9.8 |
| 20-29 | 7.6 | 92.4 | 7.2 | 0.4 | 8.6 |
| 30-39 | -3.4 | 103.4 | -3.4 | 0 | -3.3 |
| 40-49 | -9.4 | 109.4 | -9.4 | 0 | -8.6 |
| 50-59 | -0.8 | 100.8 | -0.8 | 0 | -0.8 |
| 60+ | 0 | 100 | 0 | 0 | 0 |
| **Total** | **5.2** | **95.2** | **5.1** | **0.1** | **5.5** |

**Table A16: Coverage Error Rates by Marital Status**

| Marital Status | Omission Rate | Coverage Rate | Net Coverage Error Rate | Erroneous Inclusion Rate | Gross Coverage Error Rate Per Unit Enumeration |
|---|---|---|---|---|---|
| Never Married | 7.6 | 92.4 | 7.6 | 0 | 8.2 |
| Monogamously Married | -2.5 | 102.5 | -2.7 | 0.2 | -2.3 |
| Polygamously Married | -145 | 245 | -145 | 0 | -59.2 |
| Cohabiting | 0 | 0 | 0 | 0 | 0 |
| Separated | -2 | 102 | -2 | 0 | -2 |
| Divorced | 4.9 | 95.1 | 4.9 | 0 | 5.2 |
| Widowed | -1.5 | 101.5 | -1.5 | 0 | -1.4 |
| Don't know | -5.4 | 105.4 | -5.4 | 0 | -5.1 |
| **Total** | **3.6** | **96.4** | **3.5** | **0.1** | **3.8** |

**Table A17: Coverage Error Rates by Relationship**

| Relationship | Omission Rate | Coverage Rate | Net Coverage Error Rate | Erroneous Inclusion Rate | Gross Coverage Error Rate Per Unit Enumeration |
|---|---|---|---|---|---|
| Head of Household | -5.4 | 105.4 | -5.4 | 0 | -5.1 |
| Spouse | -4.5 | 104.5 | -4.5 | 0 | -4.3 |
| Partner (Cohabiting) | 63.7 | 36.3 | 63.7 | 0 | 0 |
| Son/Daughter | 5.6 | 94.4 | 5.6 | 0 | 6 |
| Son/Daughter-in-law | 9.6 | 90.4 | 8.1 | 1.6 | 12.1 |
| Step Child | 24.2 | 75.8 | 24.2 | 0 | 32 |
| Sibling | 6.2 | 93.8 | 6.2 | 0 | 6.6 |
| Own Parent | 9.7 | 90.3 | 9.7 | 0 | 10.8 |
| Step Parent | 0 | 0 | 0 | 0 | 0 |
| Parent-in-law | 32.9 | 67.1 | 32.9 | 0 | 49 |
| Grand Parent | 41.6 | 58.4 | 41.6 | 0 | 71.3 |
| Great/Grandchild | 11.4 | 88.6 | 11.4 | 0 | 12.9 |
| Other Relative | 21.6 | 78.4 | 21.6 | 0 | 27.6 |
| Not Related | 14.8 | 85.2 | 14.8 | 0 | 17.4 |
| **Total** | **5.2** | **94.8** | **5.1** | **0.1** | **5.5** |

**Table A18: Coverage Error Rates by Educational Level**

| Educational Level | Omission Rate | Coverage Rate | Net Coverage Error Rate | Erroneous Inclusion Rate | Gross Coverage Error Rate Per Unit Enumeration |
|---|---|---|---|---|---|
| Primary | 0 | 97.9 | 0 | 0 | 0 |
| Secondary | 4.5 | 95.5 | 4.5 | 0 | 4.7 |
| None | -1.6 | 101.6 | -1.6 | 0 | -1.5 |
| Vocational or Technical | 0 | 0 | 0 | 0 | 0 |
| Tertiary | 1.2 | 98.8 | 1.2 | 0 | 1.2 |
| **Total** | **2.5** | **98** | **2.4** | **0.1** | **2.6** |

**Table A19: Content Errors**

| Variable | Indices | |
|---|---|---|
| **Age** | **Net Difference Rate (NDR)** | **Index of Inconsistency** |
| 0-4 | -0.3 | 21.0 |
| 5-9 | 0.5 | 32.7 |
| 10-19 | -1.2 | 27.2 |
| 20-29 | 0.3 | 31.0 |
| 30-39 | 0.3 | 31.8 |
| 40-49 | 0.3 | 26.7 |
| 50-59 | 0.0 | 14.1 |
| 60+ | 0.3 | 11.3 |
| | | |
| **Sex** | **Net Difference Rate (NDR)** | **Index of Inconsistency** |
| Male | -0.6 | 10.9 |
| Female | 0.6 | 10.9 |
| | | |
| **Relationship** | **Net Difference Rate (NDR)** | **Index of Inconsistency** |
| Head of Household | -0.3 | 2.3 |
| Spouse | 0.5 | 3.5 |
| Partner (Cohabiting) | 0.0 | 0.0 |
| Son/Daughter | 1.8 | 4.1 |
| Son/Daughter-in-law | -1.3 | -18.1 |
| Step Child | 0.1 | 5.6 |
| Sibling | -0.1 | -1.2 |
| Own Parent | -0.2 | -15.9 |
| Step Parent | 0.0 | 0.0 |
| Parent-in-law | -0.1 | -20.0 |
| Grand Parent | -0.1 | -14.3 |
| Great/Grandchild | -0.4 | -1.1 |
| Other Relative | 0.3 | -82.0 |
| Not Related | -0.5 | -7.9 |
| | | |

| Marital Status | Net Difference Rate (NDR) | Index of Inconsistency |
|---|---|---|
| Never Married | -1.1 | 18.3 |
| Monogamously Married | -0.7 | 21.9 |
| Polygamously Married | 0.7 | 55.8 |
| Cohabiting | 0.1 | 100.0 |
| Separated | 2.0 | 60.7 |
| Divorced | -0.8 | 100.2 |
| Widowed | 0.0 | 30.2 |
| Don't know | -0.1 | 100.0 |
| **Educational level** | **Net Difference Rate (NDR)** | **Index of Inconsistency** |
| Primary | 2.0 | 35.3 |
| Secondary | -2.8 | 34.9 |
| None | 0.7 | 40.6 |
| Vocational or Technical | 0.3 | 53.7 |
| Tertiary | -0.3 | 54.3 |

**E. The P and E Samples**

To ascertain the quality of the Census, two concepts need to be clarified – the P sample and the E sample[2]. *The population (P) sample*: consists of a sample of PSUs (clusters) drawn from the same target population but independent from the Census, for the purpose of estimating **Census omissions** when compared to Census records. The estimate of erroneous inclusion provides a correction factor needed in **the Dual System Estimate (DSE)** of the true population. The *E sample* is an enumeration sample drawn from cases already enumerated in the Census, but selected for independent re-interview for the purpose of estimating **Census erroneous inclusions** when compared to original Census records.

In practice, the *E sample* can overlap completely with the P sample in order to reduce costs. It, therefore, consists of the same PSUs selected for the PES. ***Accordingly, in the 2019/2020 Lesotho PES, both the P sample and E sample are the same per the sample design.***

**Dual System Estimation of the True Population**

The estimation of the True Population can be represented in a contingency table or two-by-two tables called the Dual System Estimation of the True Population.

| PES/CENSUS | In Census | Out of Census | Total |
|---|---|---|---|
| In PES | $N_{11}$ | $N_{12}$ | $N_{1+}$ |
| Out of PES | $N_{21}$ | $N_{22}$ | $N_{2+}$ |
| Total | $N_{+1}$ | $N_{+2}$ | $N_{++}$ |

Where,

$N_{11}$ *is* an estimate of the number of agriculture people counted in both the Census and the PES

$N_{12}$ is an estimate of the number of agriculture people counted only in the PES

$N_{21}$ is an estimate of the number of agriculture people counted only in the Census

$N_{22}$ is an estimate of the number of agriculture people missed by both the Census and the PES

$N_{1+}$ is an estimate of the total number of agriculture people counted in the PES

$N_{+1}$ is the total number of agriculture people counted correctly in the Census (thus erroneous inclusions are factored out

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[2] United Nations (2010): Post Enumeration Surveys Operational guidelines, Technical Report

$N_{++}$ is the estimate of the total number of agriculture people.

Dual System Estimate of the size of the total population is given by:

$$N_{++} = [N_{+1}][N_{1+}]/[N_{++}]$$

The Dual System Estimate raises the corrected Census total (where erroneous enumerations are subtracted from the Census population) by the total estimate of the number of people in the PES divided by the estimate of the number that matched to the Census.

**Definition of Indicators[3]**
The following concepts and symbols were adopted for the calculation and presentation of coverage and content indicators. All rates for the Coverage were computed from the weighted sample data. The content data was not weighted.

**Coverage Error Estimates**
1. Matched population = Matched non_movers + Matched out_movers

2. Census population =
   Matched non_movers
   $\quad$ + Matched out_movers
   $\quad$ + Erroneous inclusion
   $\quad$ + Correctly enumerated in the census but missed in the PES

3. PES population = Non_movers + In_movers

4. $\text{True Population} = \dfrac{\text{PES population}\,(N1+)\ \text{x}\ (\text{Census population}\,(N+1\,) - \text{Erroneous inclusions})}{\text{Matched Population}}$

5. Census omissions = True Population $-$ Census Population + Erroneous inclusions)

6. $\text{Coverage rate} = \dfrac{\text{Matched population}}{\text{PES population}}$

7. $\text{Erroneous inclusion rate} = \dfrac{\text{Erroneous inclusions}}{\text{Census population}}$

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[3] United Nations (2010): Post Enumeration Surveys Operational guidelines, Technical Report

8. Net coverage error = True population − Census population

9. Net coverage error rate = $\dfrac{\text{Net coverage error}}{\text{True population}}$

10. Gross coverage error = Omissions + Erroneous inclusions

11. Gross coverage error rate per unit = $\dfrac{\text{Gross coverage error}}{\text{Census Population}}$

**Content Error Estimates**

12. Gross difference rate (GDR). The gross difference rate (GDR) is calculated for the variable as a whole such as age. It is the number of discrepancies between the census responses and PES responses relative to the total number of matched persons.

$$GDR = \dfrac{\{n - \sum_i^s X_{ii}\}}{\{n - (\dfrac{\sum_i^s X_{ii}}{n}\}}$$

13. Rate of Agreement (RA)

$$RA = \dfrac{1}{n}\sum_{i=1}^{c} Y_{ii} \times 100$$

Where:

RA = Rate of agreement

$Y_{ii}$ = number of cases where category i was given as response in both Census and PES.

n = total number of PES cases for which there was a report in both Census and PES.

c = number of categories for a given characteristic.

The rate of agreement indicates the level at which the information given in the Census matches that given during the PES. A low rate of agreement indicates a high degree of variability and vice-versa. The rate of agreement is therefore a good measure of the gross error for an item.

14. The Net Difference Rate (NDR) is the difference between the number of cases in the census and the number of cases in the PES that fall under each response

category relative to the total number of reported persons in both the Census and PES in all response categories.

NDR approximates the level of under reporting or over reporting for each response in the Census and the PES relative to the total number of matched persons in all response categories. It can be interpreted as a measure of the bias only when the PES is considered to have been more accurate closer to the true value than the original response.

$$NDR = (X_{.i} - X_{i.}) * 100/n$$

For $i = 1,..., s$

*Where,*

$x_{.i}$ = unweighted census number of cases in the $i\,th$ category

$x_{i.}$ = unweighted PES number of cases in the $i\,th$ category

$n$ = unweighted total number of reported persons in both census and PES

$s$ = total number of response categories for characteristic $x$.

This is a measure of bias only when the re-interview is considered more accurate than the original response.

15. The Index of Inconsistency (I) is the ratio of the Simple Response Variance (SRV) to the total variance for a given item. i.e. The index of inconsistency is a relative number of cases for which the response varied between the census and PES. It is computed for each response category $i$.

$$I_i = \frac{(X_{.i} + X_{i.} - 2X_{ii})}{\frac{1}{n}\{X_{.i}(n - X_{i.}) + X_{i.}(n - X_{.i})\}}$$

*For s= 1, -, -, -, s*

Where $X_{ii}$ = *number of cases where category i was given as response in both the census and the PES*

16. The Aggregate Index of Inconsistency (IAG) is a summary measure of the index of inconsistency (that is, for all the response categories of the characteristic as a whole).

$$IAG = \frac{[n - \sum_i^s X_{ii}]}{n - \frac{1}{n}\sum_i^s X_{\cdot i} X_{i\cdot}} * 100$$

**Interpretation of the Different Content Error Measures**

| Measure | Level | | |
|---|---|---|---|
| | Low | Medium | High |
| Index of inconsistency (%) | <20 | 20-50 | >50 |
| Absolute value of NDR relative to the mean or proportion (NDR/P) (%) | <20 | 20-50 | >50 |
| Aggregate index of inconsistency (%) | <1 | 1-5 | >5 |

# F. PES QUESTIONNAIRE
## SECTION P1: IDENTIFICATION

| A. | IDENTIFICATION INFORMATION | | Codes | |
|---|---|---|---|---|
| A1. District | | | | |
| A2. Constituency | | | | |
| A3. Community Council | | | | |
| A4. PSU Code | | | | |
| A5. Serial Number of PSU | | | | |
| A6. Agro-Zone | | | | |
| A7. Village Name | | | | |
| A8. Chief/Headman | | | | |
| A9a. PES Structure Number | A9b. Census Structure Number | | | |
| A10. Location of Structure (Coordinates) | Latitude | | Longitude | |
| A11a. PES Household Number | | A11b. Census Household Number | | |
| A12. Name of Household Head | | | | |
| A13. Name of Respondent | | A14. Contact number of respondent | | |

| A15. IS THIS Structure OCCUPIED? | A16. (If No in Q15, ASK NEIGHBOUR ) | A17. Was this household enumerated during the Census? | A18. INTERVIEW STATUS |
|---|---|---|---|
| 1. Yes -- Occupied, GO TO A.17 <br> 2. No -- Vacant, CONTINUE | Was someone living here during the Census? <br><br> 1. Yes, moved permanent <br> 2. Yes, moved temporal <br> 3. No (END INTERVIEW) | 1. Yes, in this structure <br> 2. Yes, elsewhere same village (indicate locality name) <br> 3. Yes, different village same district) <br> 4. No <br> 5. Don't know | 1. Interview Completed <br> 2. Non-Contact <br> 3. Vacant <br> 4. Refused |

| STAFF DETAILS | | | |
|---|---|---|---|
| Name of Enumerator | | | |
| Number of Visits | 1 | 2 | 3 |
| Start Date | | | |
| Start Time | | | |
| End Date | | | |
| End Time | | | |
| Name of Supervisor | | | |
| Date of Inspection | | | |

**PART I: MAIN PES QUESTIONNAIRE**

**SECTION P2: DEMOGRAPHIC AND SOCIAL CHARACTERISTICS OF HOUSEHOLD MEMBERS**

| Household member ID *(CAPI generated)* | **P1**. Names of household members (including those absent and current visitors) *(start from the head)* **First Name** **Middle name** **Surname** | **P2. Residency status of member** Was [NAME] a usual resident or visitor of this household on census night? 1=Yes, Usual member present 2=Yes, Usual member absent 3=Yes, Visitor 4=Born after census night | **P3.** Was (NAME) enumerated during the census? 1 = Yes in this household 2 = Yes in another household in this PSU 3 = Not enumerated | **P4.** What is (name's) relationship to head? **(Refer to codes)** | **P5**. Is (name) Male/female? **1=Male** **2= Female** | **P6**. How old is (name) in completed years? *(If age is less than 1year, write 00)* | **P7.** What is (name's) marital status? *(12 years or older)* | **P8.** What is (name's) highest educational level? *(For those aged 3 years and above)* | **P9.**What is (Name's) Main activity **(10 years and above)?** *(Refer to codes)* | **P9_1.** What is (Name's) Status in employment of Main Job activity *(Refer to codes)* |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | | | | | | | | | |
| 2 | | | | | | | | | | |
| 3 | | | | | | | | | | |

| Household member ID (CAPI generated) | P10. What is (Name) Secondary activity? (Refer to codes) If no Secondary activity, Skip to P11 (10 years and above)? | P10_1.What is (Name's) Status in employment of secondary Job activity (Refer to codes) | P11. Does (Name) operate fields or keep livestock? 1=Yes 2=No 3=N/A (if P9 & P10= 15) skip to next member | P12. What kind of decision does (name) make on fields/livestock? 1=Complete decision 2= Partial (in consultation) 3= No decision Check if P9 or P10=1-6 & P12=1,2 then is a holder Else if, Not a holder, end interview for member. | P13. What is (Holder's) agricultural activity? 1= Mainly crop production (Copy the ID of member to Section 3) 2=Mainly livestock production (Copy the ID of member to Section 4) 3=Mixed Copy the ID of member to Sections 3 and 4 | | |
|---|---|---|---|---|---|---|---|
| 1 | | | | | | | |
| 2 | | | | | | | |
| 3 | | | | | | | |

| CODES FOR RELATIONSHIP TO HEAD (P4) | CODES FOR MARITAL STATUS (P7) | CODES FOR EDUCATIONAL LEVEL ATTAINED (P8) | CODES FOR MAIN and Secondary ACTIVITIES (P9 and P10) | CODES FOR STATUS OF MAIN and Secondary ACTIVITY (P9_1 and 10_1) |
|---|---|---|---|---|
| | | | 00=No Secondary activity | |
| 01   Head of Household | 00   Never Married | 00= Pre-school | 1=Crop production | 1= Employee |
| 02   Spouse | 01   Monogamously Married | (01-07) Std 1-7 | 2= Livestock | 2= Employer |
| 03   Partner (Cohabiting) | 02   Polygamously Married | (11-15) Form 1-5 | 3=Crop and Livestock Production | 3 = Own-account worker |
| 04   Son/Daughter | 03   Cohabiting | 18=None | 4= Fisheries | 4= Contributing family worker |
| 05 Son/Daughter-in-law | 04   Separated | 19= Non Formal Education | 5= Forestry | 5= Member of producers' cooperative |
| 06  Step Child | 05   Divorced | 20= Diploma/ | 6=Aquaculture | 11= Other (specify) |

| | | | | |
|---|---|---|---|---|
| | | Certificate after Primary | | |
| 07 Sibling | 06 Widowed | 21= Vocational and Technical after Primary | 7=Trader | |
| 08 Own Parent | 07 Don't know | 22= Diploma/ Certificate after Secondary | 8= Artisan | |
| 09 Step Parent | | 23=.Vocational Technical after Secondary | 9= Agricultural paid job outside holding | |
| 10 Parent-in-law | | 24= Diploma/ Certificate after High School | 10 = Non agriculture paid job | |
| 11 Grand Parent | | 25= Vocational and Technical after High School | 11= No activity- looking for work | |
| 12 Great/Grandchild | | 26=Graduate | 12= No activity - not looking for work | |
| 13 Other Relative | | 27=Post Graduate Diploma /Honours | 13 = Student | |
| 14 Not Related | | 28=Masters | 14 = Household work | |
| | | 29=PHD | 15 = Too young/old | |
| | | 30= Other (Specify) …………..… … | | |
| | | 99= Don't Know | | |

**SECTION P3: PARTICULARS OF OUT-MOVERS, IN-MOVERS AND OUT OF SCOPE**

| Household member ID (CAPI generated) | OUT-MOVERS | | | | | IN-MOVERS | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | **P14.** Are there any persons who were enumerated in this household (usual members or visitors) during census but did not spend last night (PES night) in this household, or have died since the census?<br><br>1. Yes - LIST THE NAME(S) OF PERSONS WHO HAVE MOVED OUT SINCE CENSUS<br>2. No - END INTERVIEW | **P15**. Is *(name)* Male/female?<br><br>1=Male<br>2=Female | **P16**. How old is *(name)* in completed years?<br><br>*(If age is less than 1year, write 00)* | **P17.** What is *(name's)* marital status?<br><br>*(12 years or older)* | **P18.** What is *(name's)* highest educational level?<br><br>*(For those aged 3 years and above)* | **P19.** Are there any persons who were not members or visitors of your household on census night who are now current members (Including persons who spent the census night in another household or institution but are currently present in your household (e.g. married into the household, students in boarding facilities etc) | P20. Is *(name)* Male/female?<br><br>1=Male<br>2=Female | P21. How old is *(name)* in completed years?<br><br>*(If age is less than 1year, write 00)* | P22. What is *(name's)* marital status?<br><br>*(12 years or older)* | **P23.** What is *(name's)* highest educational level?<br><br>*(For those aged 3 years and above)* |

| | | | | | | 1. Yes - LIST THE NAME(S) OF PERSONS WHO HAVE MOVED IN SINCE CENSUS NIGHT 2. No - END INTERVIEW | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | | | | | | | | | |
| 2 | | | | | | | | | | |

| Household member ID | OUT-OF-SCOPE | | | | |
|---|---|---|---|---|---|
| *(CAPI generated* | **P24.** Are there any persons who were NOT in Lesotho or were not born on or before that census night and who are now living in this household, including persons who were outside the country but are currently living in this household or born into the household after the census night? | **P25**. Is *(name)* Male/female? | **P26**. How old is *(name)* in completed years? | **P27.** What is *(name's)* marital status? | **P28.** What is *(name's)* highest educational level? |
| | | **1=Male** 2=Female | *(If age is less than 1year, write 00)* | *(12 years or older)* | *(For those aged 3 years and above)* |
| | 1. Yes - LIST THE NAME(S) OF PERSONS WHO HAVE MOVED IN SINCE CENSUS NIGHT 2. No - END INTERVIEW | | | | |

| | | | | | |
|---|---|---|---|---|---|
| 1 | | | | | |
| 2 | | | | | |

## SECTION P4: LAND USE AND CROPS (THEME 2 AND THEME 4)

**Land Use during 2019/2020 Agricultural Year (*ask for each field*)**

| Holder ID (from P13) | **PC1_1.** How many fields does (Holder) operate? **(If P13=1 or 3)** | PC1_2.Field No. | **PC1.** Where is the field located? 1= Within PSU 2= Outside PSU but within District 3=Outside PSU and outside District | **PC2.** What is the Land use (LU) type for this field? *(Refer to codes)* | **PC3.** What is the area of the field by land use in acres? *(Holder Estimate)* |
|---|---|---|---|---|---|
| 1 | | | | | |
| 2 | | | | | |
| 3 | | | | | |

| **Land Use Codes (PC2)** |
|---|
| 01= Land under temporary crops |
| 02= Land under temporary meadows and pastures |
| 03= Land under temporary fallow |
| 04= Land under permanent crops |
| 05= Land under permanent meadows and pastures |
| 06= Land under farm buildings and farmyards |
| 07= Forest and other wooded land |
| 08= Area used for aquaculture ( including inland and coastal waters if part of the holding) |
| 09= Land under temporary and permanent crops |
| 013= Other area not elsewhere classified |

## SECTION P5: LIVESTOCK

| **HOLDING LEVEL** | **PL_1. Type of Livestock** | **PL1**. Does the holding keep/rear any of the following livestock? (*Note that the reference period for the livestock is the day of enumeration*) **01= Yes** **02= No (End Interview)** *(Multiple response)* | **PL2**. Number of livestock |
|---|---|---|---|
| | 01=Cattle | | |
| | 02=Sheep | | |
| | 03=Goats | | |
| | 04=Pigs | | |
| | 04=Chicken | | |

**PART II: RECONCILIATION QUESTIONNAIRE**

**SECTION RA: IDENTIFICATION**

| A. | IDENTIFICATION INFORMATION | | | Codes | |
|---|---|---|---|---|---|
| A1.  District | | | | | |
| A2.  Constituency | | | | | |
| A3.  Community Council | | | | | |
| A4.  PSU Code | | | | | |
| A5. Serial Number of PSU | | | | | |
| A6.  Agro-Zone | | | | | |
| A7.  Village Name | | | | | |
| A8.  Chief/Headman | | | | | |
| A9a. PES Structure Number | A9b. Census  Number | | | | |
| A10. Location of  Structure (Coordinates) | Latitude | | Longitude | | |
| A11a. PES Household Number | | A11b. PES Household Number | | | |
| A12. Name of Household Head | | | | | |
| A13. Name of Respondent | | A14. Contact number of respondent | | | |

A15.  REASON FOR RECONCILIATION VISIT

1.  Possible Match (Go to R1)
2.  Person Enumerated in Census but not in PES (Go to R2)
3.  Persons Enumerated in PES but not in Census (Go to R3)

**SECTION R1: POSSIBLE MATCHES (ONLY CASES WITH POSSIBLE MATCH)**

| ID | R1. Name of the person in PES | R2. Name of the person in Census | R3. Are the names in PES and Census for the same person in the household? <br><br>1=Yes, the same person 2=No, Not the same person | R4. Relationship of person to household head in PES <br><br>**Refer to codes** | R5. Relationship of person to household head in Census <br><br>**Refer to codes** | R6. Was the relationship to the household head in the PES and Census correctly obtained? <br><br>1=Yes, Relationship to head in PES was correctly obtained 2=Yes, Relationship to head in Census was correctly obtained 3=Yes, Relationship to head in both PES and Census were correctly obtained 4=No, None was correctly obtained | R7. Sex of the person in PES | R8. Sex of the person in Census | R9. Was the sex in PES and Census the same? <br><br>1=Yes 2=No | R10. Age of (*name*) in PES <br><br>(*If age is less than 1 year, write 00*) | R11. Age of (*name*) in Census <br><br>(*If age is less than 1 year, write 00*) | R12. Was the age in PES and Census correctly obtained? <br><br>1=Yes, PES age is correctly obtained 2=Yes, Census age is correctly obtained 3=Yes, both ages correctly obtained 4=None is correct |
|----|----|----|----|----|----|----|----|----|----|----|----|----|
|  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |

**SECTION R1: POSSIBLE MATCHES CONT'D**

| Household member ID <br><br>(CAPI generated) | R13.What is (Name) education in PES? <br><br>Refer to codes | R14. What is (Name) education in CENSUS? <br><br>Refer to codes | R15. Is the educational status of (Name) in PES and Census the same? <br><br>1=Yes 2=No | R16. What is (Name) marital status PES? <br><br>Refer to codes | R17. What is (Name) marital status in Census? <br><br>Refer to codes | R18. Is the marital status of (Name) in PES and Census the same? 1=Yes 2=No | R19. MATCHING STATUS <br><br>1=Match 2=Non-Match |
|----|----|----|----|----|----|----|----|
|  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |

| CODES FOR RELATIONS HIP TO HEAD (R4 and R5) | CODES FOR EDUCATIONAL LEVEL ATTAINED (R13 and R14) | CODES FOR MARITAL STATUS (R16 and R17) |
|----|----|----|
|  |  |  |
| 01  Head of Household | 00= Pre-school | 00   Never Married |
| 02   Spouse | (01-07)  Std 1-7 | 01   Monogamously Married |

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| | | |
|---|---|---|
| 03 Partner (Cohabiting) | (11-15) Form 1-5 | 02 Polygamously Married |
| 04 Son/Daughter | 18=None | 03 Cohabiting |
| 05 Son/Daughter-in-law | 19= Non Formal Education | 04 Separated |
| 06 Step Child | 20= Diploma/Certificate after Primary | 05 Divorced |
| 07 Sibling | 21= Vocational and Technical after Primary | 06 Widowed |
| 08 Own Parent | 22= Diploma/Certificate after Secondary | 07 Don't know |
| 09 Step Parent | 23=.Vocational Technical after Secondary | |
| 10 Parent-in-law | 24= Diploma/Certificate after High School | |
| 11 Grand Parent | 25= Vocational and Technical after High School | |
| 12 Great/Grand child | 26=Graduate | |
| 13 Other Relative | 27=Post Graduate Diploma /Honours | |
| 14 Not Related | 28=Masters | |
| | 29=PHD | |
| | 30= Other (Specify)……………… | |
| | 99= Don't Know | |

**SECTION R2: PERSONS ENUMERATED IN CENSUS BUT NOT IN PES (ONLY PERSONS IN CENSUS BUT NOT IN PES)**

| SERIAL NUMBER OF HOUSEHOLD MEMBER | R20. NAME OF HOUSEHOLD MEMBER NOT MATCHED | R21. Was [NAME] a usual resident / visitor of this household at census night?<br><br>1 = Yes, Usual member present<br><br>2 = Yes, Usual member absent<br>3 = Yes, Visitor<br>4 = No not a member of this household **(GO TO NEXT PERSON)** | R22. Was [Name] enumerated in this household or elsewhere during the census?<br><br>1= Yes, correctly enumerated in household<br><br>2=Yes, enumerated elsewhere<br><br>3=No, omitted | R23. What was the main reason (Name) was excluded in PES?<br><br>1 = In-mover, was enumerated elsewhere<br>2=Enumerator Erroneously included him/her in Census<br>3 = PES enumerator erroneously excluded him/her<br>4= Other specify | R24. Is name still usual member/visitor of this household?<br><br>1=Yes<br>2=No | R25. WHAT IS THE MOVING STATUS OF (NAME)?<br><br>1=In-mover<br>2=Non-mover<br>3=Out-mover<br>4=Out-of-scope | R26. WHAT IS ENUMERATION STATUS OF (NAME)?<br><br>1=Correctly enumerated<br>2=Erroneously enumerated<br>3=Out of-scope | R27. WHAT IS THE MATCHING STATUS OF (NAME)?<br><br>1=Match<br>2=Non-Match |
|---|---|---|---|---|---|---|---|---|
|  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |

**SECTION R3: PERSONS ENUMERATED IN PES BUT NOT IN CENSUS** *(ONLY PERSONS IN PES BUT NOT IN CENSUS)*

| SERIAL NUMBER OF HOUSEHOLD MEMBER | R28. NAME OF HOUSEHOLD MEMBER NOT MATCHED | R29. Was [NAME] a usual resident / visitor of this household at census night?<br><br>1 = Yes, Usual member present 2 = Yes, Usual member absent 3 = Yes, Visitor 4 = No not a member of this household **(GO TO NEXT PERSON)** | R30. Was [Name] enumerated in this household or elsewhere during the census?<br><br>1= Yes, correctly enumerated in household 2=Yes, elsewhere<br><br>3=No, omitted | R31. What was the main reason (Name) was excluded in Census?<br><br>1 = Out-mover 2=PES enumerator Erroneously included him/her in PES 3 = Census enumerator erroneously excluded him/her 4= Other specify | R32. Is (Name) still usual member/visitor of this household?<br><br>1=Yes 2=No | R33. WHAT IS THE MOVING STATUS OF (NAME)?<br><br>1=In-mover 2=Non-mover 3=Out-mover 4=Out-of-scope | R34. WHAT IS ENUMERATION STATUS OF (NAME)?<br><br>1=Correctly enumerated 2=Erroneously enumerated 3=Out of-scope | R35. WHAT IS THE MATCHING STATUS OF (NAME)?<br><br>1=Match 2=Non-Match |
|---|---|---|---|---|---|---|---|---|
|  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |

**Notes**

a. **In-mover**: An in-mover is one who moved into the household or house/compound after the Census enumeration date.
b. **Match:** A person is classified as a match if the name and other characteristics are the same on both the PES and Census questionnaires. In other words, if there is no doubt that the person in the PES questionnaire is the same person as in the Census questionnaire.
c. **Non-match:** A person is considered as a "Non-Match" if he/she was not enumerated in the Census when he/she should have been. This means that he/she was not found in any Census questionnaire but there is a record from the PES enumeration.
d. **Possible match:** This is the situation where the name recorded on the Census questionnaire is not exactly the same as that on the PES questionnaire or there is a significant difference in age or some other attributes.
e. **Non-mover:** A non-mover refers to a household member enumerated in the PES and was present on Census Night.
f. **Out-mover:** Residents who left the household or died during the interim period between the census and the PES.

g. **Out-of-scope:** A person is considered as out-of-scope if he/she was born after Census Night or if there is insufficient information for matching.
h. **Erroneous enumeration:** It is the enumeration of persons that should not have been included in the census.
i. **Erroneous inclusions:** This includes persons that are enumerated in the census when they should not have been or were enumerated in the wrong place (e.g., including a person who died before the census date and births that occurred after the census date in a census).

**References**

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