표본설계에 관한 Workshop 참가 보고서

Tenth Course/Workshop on
Sample Design for
Household and Establishment Surveys

2004. 10. 18.~11. 12.

Kolkata, India

국 제 통 계 협 력 과

차 례

Ⅰ. 훈련개요

○ 참가자 : 국제통계협력과 최봉수
○ 과정명 : Tenth Course/Workshop on Sample Design for Household and establishment Surveys
○ 기간 : 2004. 10. 18. ~ 2004. 11. 12.(4주간)
○ 장소 : 콜카타 소재 인도 통계교육센터(Indian Statistical Institute)
○ 주관 : UN-SIAP(United Nations Statistical Institute for Asia and the Pacific)
○ 목적 : 아시아 태평양 지역 각 국 통계업무담당자들의 표본추출 능력 향상, 표본조사 설계 및 실시능력 향상
○ 참가국 및 참가자 : 18개국 20명(붙임1. 참가자 명단)
- 18개 국가별 각 1명(인도 2명, 캄보디아 2명)

Ⅱ. 훈련내용

1. 교육내용

○ 표본추출의 기초
○ 단순임의추출(SRS)
○ 계통추출(Systematic Sampling), 층화추출(Stratified Sampling)
○ 집락추출(Cluster Sampling)
○ 다단계 추출(Multi-stage Sampling)
○ 가중치 계산과 추정(Weighting and Estimation)
○ 표본설계와 조사 설계(Sample Design and Survey Design)
○ 품질관리(Quality Management)
○ 표본규모와 표본할당(Sample Size and Allocation)
○ 빈곤통계(Poverty statistics)
○ 분산추정(Variance Estimation)
○ 표본틀(Sampling Frames)

2. 준비위원 및 강사

준비위원 및 강사는 모두 인도 ISI 교수 및 통계부서의 담당과장들로 구성되었으며 각 단락별, 주제별로 담당 교수를 별도로 지정하여 강의 수준은 전문적이고 높았다고 생각됨

<강사 명단>

- ACK- A. C. Kulshreshtha-SIAP -CC- Course Coordinators
- AKY- A. K. Yogi- CSO- CC- Course Coordinators
- TJR- T.J.Rao- ISI -CC- Course Coordinators
- NR- Nilachal Ray-CSO(IS Wing)
- AC- Arjit Chaudhury- ISI
- SS- Savita Sharma- CSO
- SB-Shibdas Bandyopadhyay- ISI
- GCM- G. C. Manna-NSSO-CPD
- AA-Ajay Adhikari- ISI
- Project Guides- S. C. Seddy(DPD), J. K. Kar (SDRD)
- Arun A.- Arun Adhikari- ISI
- BD- B. Dey-SDRD /JPB- J. P. Bhattacharya-SDRD
- BKS- Bikas Sinha- ISI
- SM- S. Mallick- NSSO-DPD
- PM- P. Maiti- ISI
- AJR- A. J. Roy-SDRD
- BKG- B. K. Giri-SDRD
- BBP- B. B. Pal-FODRO, Kolkata

3. 강의시간표 : 붙임2

4. Field Trip

마지막주 수요일에 캘커타에서 60Km 정도 떨어진 웨스트벵갈 지역의 농촌 마을을 방문하여 연간 조사중의 하나인 “가구소비실태조사”의 실제 조사모습을 견학하였음. 농가지역의 경우 지형 특성상 상당히 방대한 지역을 조사직원이 담당하고 있어 이동에 어려움을 많이 겪고 있다고 함. 주로 기차와 버스를 이용하여 이동하고 있으며, 한가구를 방문하여 조사하는데 1시간 30분정도 소요됨. 방문한 마을은 전기가 아직 들어오지 않아 저녁시간에는 방문조사가 어렵다고도 함. 작년 말레이시아에서 개최된 9차과정에서는 필드트립이 현지관광 프로그램이었다고 하여 모두들 관광으로 생각하고 출발하였으나, 이번 교육의 프로그램을 준비한 ISI 측에서는 참가자들이 예측 못한 현지조사 견학으로 프로그램을 구성하여 처음에는 조금 당황했으나 나름대로는 외국의 조사현장을 경험한다는 점에서 소득이 있었다고 생각됨

5. Presentation

가. Country Report 발표

○ 사전 과제물 작성 및 발표

- 각 국별로 실시하고 있는 표본조사 중 대표적인 표본조사에 대한 보고서 작성 제출
- 우리나라에서 실시하고 있는 표본조사의 종류 및 조사주기, 경제활동인구조사를 중심으로 조사목적, 조사대상 및 범위, 조사기준, 표본설계방법, 추정방법, 결과 공표 및 방법 등에 대해 작성 제출

· 자료 : 붙임3. The Sample Surveys on households and establishments in Korea

나. Group Project Work 발표

○ 5명을 1 그룹으로 총 4개 그룹 구성

- 그룹별로 기업통계 또는 가구통계에 대한 과제를 선정하여 조사를 위한 기획, 설계, 조사, 자료처리, 공표 등 제반과정에 대해 토의하여 종합보고서를 작성

○ 수행 과제 : 「가구의 질병통계조사」

- 붙임4 : 수행과제물

Ⅲ. 인도통계교육센터(ISI)소개

통계분야에 대한 연구 및 통계인들에 대한 교육, 연수 및 통계활동의 강화를 위해 P.C Mahalaobis 교수에 의해 1932년에 창설되었으며, 1959년부터 국회에 의해 개정된 법률에 의해 통계관련 학위를 수여할 수 있는 권한이 부여되어 현재는 134명의 박사출신 교수들이 통계관련 연구 및 교육을 담당하고 있음

2003년~2004년중 24개 나라에서 4,219명이 교육훈련을 위해 지원했으며, 그중 테스트를 통과한 521명이 입학하여 297명이 전문적인 통계관련 학위를 취득하였음

Ⅳ. 훈련참가 소감

먼저 이와 같은 과정에 참석할 수 있도록 배려해 준 통계청과 그 담당하는분들에게 감사의 말을 전한다. SIAP에서 주관, 실시하고 있는 “표본설계에 관한 Workshop”은 아시아・태평양 연안 국가들을 대상으로 매년 개최지를 바꿔 실시되며 작년에는 말레이시아에서 개최된바 있으며 내년 개최지는 이란에서 실시된다. 실제로 표본업무를 담당하고 있지는 않지만 조사국에서 일해본 경험상 통계청 직원이라면 표본추출에 관한 기본적인 이론은 갖추고 있어야 되겠다는 생각과 이번에 교육이 실시된 곳이 표본분야에서는 앞선 지식을 갖추고 있다는 인도에서 개최되며 교수들 모두 인도 ISI의 전문 강사진으로 구성된다는 점에서 지원을 하게 되었다. 또한 영어권 국가에서의 교육 경험이 전무하여 걱정도 되었지만 배운다는 생각으로 참석을 하였다.

교육장소인 인도 콜카타(구지명 캘커타)는 우리에게는 1992년 영화 ‘시티 오브 조이’로 많이 알려진 곳이다. 그때 영화로 본 콜카타에 대한 기억은 아주 낙후되고 도시 자체가 매우 지저분한 곳으로만 남아 있었다. 한국에서 출발할때는 늦가을이 시작되어 기온이 선선했지만 콜카타에 머무르는 4주동안은 무더운 여름날씨가 계속되었다. 비록 10여년전 영화상의 도시는 매우 낙후되었지만 그동안 시간이 많이 흘렀으니 어느정도 개발이 되어 환경이 좋아졌을지 않을까 생각을 하고 갔지만 콜카타 공항에 도착하는 순간부터 그 기대는 산산조각이 났다. 단적으로 표현하면 10여년전 그 상황에서 더 이상 개발이 없이 그대로 방치해 둔 상태에서 시간이 지난것처럼 도시는 그 당시의 영화속 상황과 별반 나아진 것이 없는것 같았다.

콜카타로 가기 위해 직항이 없어 몸바이에서 갈아타기 위해 처음 도착하니 무더운 날씨와 탁한 공기에 인도에 도착했다는 생각이 들었다. 인천에서 몸바이까지는 8시간정도 걸렸고 다시 4시간을 대기한후 콜카타로 가는 국내선을 타고 2시간정도 더 소요되었다. 한국에서 밤 9시에 출발해서 콜카타 숙소에 도착하니 아침 10시정도 되었다. 콜카타 공항에서 숙소까지 40분정도 차를 타고 가며 둘러본 도시는 서글픈 생각이 들 정도로 낙후되어 있었고, 무엇보다 공기가 너무나빠 마스크 없이는 다니지 못할 정도였다. 공기가 나쁜 이유는 여러 가지가 있겠지만 아마도 낡은 차량, 질나쁜 연료, 가정의 취사연료 등 여러 가지가 복합적으로 작용하는것 같았다.

숙소는 ISI 내의 기숙사를 이용하게 되었는데 ISI 내에서는 가장 좋은 숙소라는데 우리 기준으로 보면 여인숙정도의 수준이 되는것 같았다. 오기 전에 ISI에서 교육을 받고 왔던 사람들에게 미리 정보를 듣고 왔기 때문에 큰 기대가 없었으므로 그다지 실망도 되지 않았다. 숙소도 숙소지만 모든 참가자들이 힘들어 한 것은 이곳의 식사였다. 4주동안 거의 같은 메뉴가 나오는데 인도 특유의 향이 있는 음식들은 적응하기가 쉽진 않았다.

강의는 오전에는 교수가 이론적인 강의를 하고 오후에는 강의와 실습을 병행해서 진행하는데 오후에는 주로 실습과 토론쪽에 더 비중을 두었다. 단순히 듣는 강의에만 익숙해져 있다보니 처음 몇일간은 적응하는데 어려움을 겪기도 하였다. 부족한 영어실력에 참가자들과 벽이 생길까봐 적극적으로 생활할려고 노력을 하였다. 그래서 지내는 동안 총무를 맏아서 여러 가지 부수적인 일들을 챙겼고, 참가자들이 노트북 컴퓨터와 빔프로젝트 설치 등의 사용에 서툴러 이와 같은 기기들의 사용시 간단한 문제들이 생길때마다 케이블 점검, 소프트웨어 확인 등을 통해 도움을 주다보니 큰 벽은 없이 친밀하게 지낼수 있은것 같다. 나중에 인도의 운영을 담당하는 교수는 나에게 테크니션이라고 칭하며 간단한 문제는 해결을 요청하기도 하였다.

교육장인 ISI는 콜카타에서도 시내중심에서는 택시로 40분정도 걸리는 약간 변두리쪽에 위치하다보니 주변 마을이나 여건이 더욱 열악하였다. 그러나 시내 관광시 방문한 빅토리아메모리얼, 보타닉공원, 사이언스시티 등 몇몇 장소는 시내에 비하면 깨끗하고 구경하기도 괜찮았다. 관광지이니 조금은 깨끗하게 관리를 하고 있는 모양이었다. 교육 마지막주에는 실시된 Field Trip에서는 인도의 시골마을을 직접 눈으로 보고 몸으로 조사현장을 경험해 볼 수 있는 좋은 기회였던것 같다.

조사가구는 버스를 타고 4시간정도 달려서 도착한 시골마을이었는데 거리상으로는 60Km 정도밖에 안되었다. 그만큼 도로나 교통사정이 열악해서 속도를 낼 수도 없었다. 도착한 곳은 우리의 기대와는 전혀 다르게 시골의 한 농가마을이었다. 이곳에서 2시간정도 현지 농가를 대상으로 실제 통계조사를 하는 모습을 견학하고 다시 돌아오니 밤 8시가 되었다. 기대한 바와는 달리 관광은 아니었지만 나름대로 인도의 생활실태나 조사방법, 조사여건 등에 대해 알 수 있는 좋은 기회가 되었던것 같다.

표본과정의 강사들의 강의 수준은 높다고 생각되나 각 나라별 참가자들의 통계작성 수준이 제각각이며 전반적으로 개발도상국들이 주를 이루다 보니 한국의 통계작성 수준이 양적인 면이나 질적인 면에서 앞서 있다는 느낌이 들었으며, 우리의 경우 가구의 소득 및 지출 현황 파악을 위한 도시가계조사를 가계부를 매일 작성하여 조사를 한다고 하니 놀라기도 하며 구체적으로 그 내용을 물어보기도 하였다. 통아라고 하는 나라는 총인구가 17,000명 정도이다 보니 우리 기준으로 보면 모든 통계가 전수조사를 해도 가능할것 같아 물어보니 그 나라 나름대로 통계조사 조직 규모 등에 비례해 표본조사를 실시하는 것 같았다.

보고서를 쓰는 이시점에 동남아 지진해일이 발생하여 많은나라의 참가자들이 직·간접적으로 피해를 입은것 같다. 소식을 접하고 메일을 보내 확인해 보니 태국, 싱가폴 등의 참가자는 피해가 없으나, 몰디브의 참가자는 집이 모두 떠내려가고 형이 다리를 다쳤으나 다행이 나머지 가족들은 모두 무사하다고 연락이 왔다. 그러나 여러 다른 참가자들이 전해온 소식이나 상황을 접해볼때 스리랑카의 참가자가 생사여부가 알려지지 않아 안타까운 마음이 든다.

비록 4주간의 짧은 기간이지만 처음으로 각나라의 통계인들과 같이 숙식을 하며 교육을 받으며 그동안의 나의 짧고도 좁은 시각을 넓히는 계기가 되었고 이란의 참가자의 경우 표본분야에서는 거의 강사정도의 수준이 되는 실력이 있는 것을 보고 놀라기도 하였지만 부족한 부분은 계속적으로 공부를 하고 보충을 해야겠다는 다짐을 하기도 한 좋은 기회였던 것 같다. 아울러 한국의 대외적인 위치를 어느 정도는 간접적으로 느껴볼 수도 있는 좋은 기회였다고 생각된다. 끝으로 이와 같은 좋은 기회를 부여해준 조직에 대해서도 감사한 마음을 전한다.

길거리와 강에서 목욕하는 사람들, 거리를 차지하고 우선 통행권을 갖고 있는 아마도 세상에서 가장 행복한 인도의 소들, 검은 피부의 인도인들, 쉽게 찾아가보기 힘든 인도라는 나라에서 4주간이나 머물며 교육을 받았던 것이 나에게는 큰 행운이었고, 앞으로도 오랫동안 기억속에서 잊혀지지 않고 머물 것 같은 생각이 든다.

<붙임1>

참 가 자 명 단

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<붙임2>

강 의 시 간 표

FIRST WEEK

Time/Date	10:00-10.50	11:00-11.50	12:00-12.50	14:10 - 15:00	15:10 - 16:00	16:10 - 17:00
	Session I	Session II	Session III	Session IV	Session V	Session VI
Monday 18 October	Opening Ceremony SIAP/ CC	Introduction to the Course &Diagnostics-ACK	Getting-to-Know You SIAP/ CC		Lecture: Basic Concepts-ACK	
Tuesday 19 October	Lecture: Simple Random Sampling-ACK			Workshop: Exercises on Simple Random Sampling-AKY		
Wednesday 20 October	Lecture: Systematic Sampling-ACK			Workshop: Exercises on Systematic Sampling-AKY		Introduction to Project Work- CC
Thursday 21 October	Lecture: PPS and PPES Sampling Techniques-ACK			Workshop: : Exercises on PPS and PPES Sampling- AKY		
Friday 22 October	Lecture: Ratio &Regression Estimation-AKY			Workshop: Country Reports I- CC- AKY /TJR		

SECOND WEEK

Time/Date	10:00-10.50	11:00-11.50	12:00-12.50	14:10 - 15:00	15:10 - 16:00	16:10 - 17:00
	Session I	Session II	Session III	Session IV	Session V	Session VI
Monday 25 October	Lecture: Stratified Sampling-SB			Workshop: Country Reports II- CC -TJR		
Tuesday 26 October	Lecture: Cluster Sampling-AA			Workshop: Exercises on Stratified Sampling-SB		
Wednesday 27 October	Lecture: Multistage Sampling- AA			Workshop: Exercises on Cluster &Multistage Sampling - AA		
Thursday 28 October	Lecture: Properties of Estimators/Design-based Estimation-Arun A.			Workshop: Project Work Meetings- Project Guides- JKK &S. C. Seddy		
Friday 29 October	Lecture: Sampling Frames for Household &Enterprise Surveys -GCM			Workshop: Introduction to SPSS for Survey Estimation-SM		

THIRD WEEK

Time/Date	10:00-10.50	11:00-11.50	12:00-12.50	14:10 - 15:00	15:10 - 16:00	16:10 - 17:00
	Session I	Session II	Session III	Session IV	Session V	Session VI
Monday 1 November	Lecture: Weighting and Estimation - SM	Lecture: Sampling Over Time-SM		Workshop: Estimation Procedures with SPSS-SM		
Tuesday 2 November	Lecture: Variance Estimation- Arun A.			Workshop: Exercises on Variance Estimation with SPSS-SM		
Wednesday 3 November	Lecture: Interpenetrating Samples -AJR		Lecture: Sample Design and Estimation for Indian Enterprise Surveys-BKG	Lecture: Sample Design and Estimation for Indian Annual Survey of Industries-NR	Workshop: Project Work Meetings- Project Guides- JKK &S. C. Seddy	
Thursday 4 November	Lecture: Sample Design and Estimation of Indian Socioeconomic Surveys -BD/JPB			Lecture: Small-area Estimation-AC		
Friday 5 November	Lecture: Poverty Profiles and Poverty Mapping-SS			Workshop: Poverty Profiles-SS		

FOURTH WEEK

Time/Date	10:00-10.50	11:00-11.50	12:00-12.50	14:10 - 15:00	15:10 - 16:00	16:10 - 17:00
	Session I	Session II	Session III	Session IV	Session V	Session VI
Monday 8 November	Lecture: Sample Size and Allocation-cost &variance-BKS/PM			Workshop: Exercise on Sample Size and Allocation- BKS/PM		
Tuesday 9 November	Lecture: General problems of organisation of large scale sample surveys: Quality Control and Non sampling Errors - AKY			Project Work Discussions- Project Guides- JKK &S. C. Seddy		
Wednesday 10 November	Field Visit-NSSO,FOD-BBP			Field Visit- NSSO,FOD-BBP		
Thursday 11 November	Workshop: Presentation of Project Work- CC -AKY/TJR					
Friday 12 November	Lecture: Rapid appraisal, focus group discussions &related techniques- CC -AKY/TJR			Evaluation of Course- CC-AKY/TJR	Closing Ceremony-SIAP/CC	

<붙임3> The Sample Surveys on households and establishments in Korea(보고서, *MS Word*)

- 별도 첨부

<붙임4> 수행과제물(그룹프로젝트) : 가구의 질병통계조사

- 별도 첨부

<붙임 3>

UNITED NATIONS
STATISTICAL INSTITUTE FOR ASIA AND THE PACIFIC

TENTH COURSE/WORKSHOP ON SAMPLE DESIGN FOR HOUSEHOLD AND ESTABLISHMENT SURVEYS

18 October – 12 November 2004
Kolkata, India

Country Report
- The sample surveys on households and establishment in Korea

Prepared by Mr. Choi Bong-Su

Republic of Korea

Contents

The sample surveys on household and establishment in Korea

Ⅰ. Introduction

The Korea National Statistical Office (KNSO) conducts 42 censuses and surveys which mainly focus on socio-economic and demographic fields. In addition, KNSO compiles 10 kinds of analysis statistics include the GRDP (Gross Regional Domestic Products), social indicators, population projections, and 1 administrative statistics, etc.

And then, there are 26 sample surveys that have been conducted by KNSO in the last 5 – 10 years. These surveys have been conducted regularly to collect socio-economic and demographic data. These data are used by policy-makers, economic planners, the faculty and scholar, business community and interested members of the public in their area of work.

There are 14 sample surveys on household, such as Social Statistics Survey, Economically Active Population Survey, Household Income and Expenditure Survey, Consumer Sentiment Survey, etc. On the other hand, there are 12 sample surveys on establishment, such as Current Mining and Manufacturing Survey, Production Capacity and Operation Ratio Survey, Construction Orders Received Survey, etc. Table 1 shows the sample surveys on household and table 2 presents the sample surveys on establishment, respectively.

Table 1. Sample Survey on Households

Cycle	Title
Quinquennial	National Survey of Household Income and Expenditure Time Use Survey
Triennial	Statistical Response Survey
Annual	Social Statistics Survey Production Cost Survey of Agricultural Products Basic Agricultural Statistics Survey Basic Fishery Statistics Survey Computer and Internet Use Survey
Monthly	Economically Active Population Survey Household Income and Expenditure Survey Consumer Sentiment Survey (Index) Farm Household Economy Survey Fishery Household Economy Survey Farm Grain Consumption Survey

Table 2. Sample Survey on Establishment

Cycle	Title
Biennial	Statistical Information Utilization & Demand Survey
Annual	Whole Sale and Retail Trade Survey Service Industry Survey Transportation Survey
Monthly	Current Mining and Manufacturing Survey (Indexes of Industrial Production, Producer's Shipment and Inventory) Production Capacity and Operation Ratio Survey (Indexes) Construction Orders Received Survey Machinery Orders Received Survey Current Whole Sale and Retail Trade Survey (Whole Sale and Retail Sales Index) Construction Put-in Place Survey Current Service Industry Survey Consumer Price Survey (Index)

I will explain the Household Income and Expenditure Survey; it was one of the most difficult surveys in our country.

Ⅱ. The Household Income and Expenditure Survey

1. History

The Household Income and Expenditure Survey(HIES) had been conducted with non-farm households in cities during the past sixty or so years and in 2003, it was expanded to included rural non-farm households.

The HIES was first conducted in 1942. In July 1951, the Bank of Korea administered the survey to a purposive sample of 60 households in Pusan City to collect data on the level of households consumption expenditure during the Korean War.

In 1954, a sample of 200 salary and wage earners' households was drawn in Seoul, and the income and expenditure of the households were surveyed until 1959. Since this survey covered only a small fraction of the salary and wage earners' households and was limited to a Seoul, the value of information obtained through this survey was not so great.

In 1960, the survey was revised to extend the coverage so as to obtain various estimates on urban households' income and expenditure by changing the survey method.

In 1963, the responsibility of the survey was transferred to the National Statistical Office in order to strengthen government statistics. The Office expanded the coverage of the survey by including all cities.

Since then, the survey sample has been revised eight times(in 1969, 1972, 1977, 1982, 1988, 1993, 1998 and 2003) to reflect the results of the quinquennial Population and Housing Censuses.

Besides, the survey method was also changed. In 1975, a diary keeping method, which had been applied to the food and beverage items until then, was extended to the other items which gad been collected by interview method.

For the 2003 data, the report of this survey includes urban households in cities only; national estimates including rural areas will be released in the 2004 issue, it will be published in 2005.

2. Purpose

The purpose of the survey is to collect up-to-date information on household income and expenditures and to serve the following objectives :

(1) to analyze variations in the levels of living and the disparities among different socio-economic groups
(2) to obtain weights for the consumer price index
(3) to supply data for the formulation of various economic and social policies

3. Scope and Coverage

The survey covers urban households residing in cities. However, the following types of households are excluded as inappropriate households :

(1) farmers' households
(2) fishermen's households
(3) one-person households
(4) households whose ordinary incomes and expenditures are difficult to be separated from business incomes and expenditures :
   a. households running restaurants, inns or boarding houses in their dwellings
   b. households with two or more live-in employees
(5) foreigners' households

4. Survey Method

The survey is conducted monthly by using the diary. A diary is distributed to each sample household prior to the survey so that income source, types of expenditure and their values can be recorded daily.

Among the sample selected for the survey, some households refuse to participate in the survey. The average monthly response rate in 2003 was approximately 80%.

5. Item Classification

Item of income and expenditure are classified by commodity in accordance with the ILO classification. The monthly rental value of own house and deposit for the lease of a house are categorized as special items and are excluded from income and expenditure.

Since 1995, ten major consumption groups have been used for the expenditure data.

6. Sample Design

6.1 Sample Selection

(1)Survey Population and Characteristic Indicators for Sample Selection

The survey population comprises of 24,998 apartment and ordinary enumeration districts(EDs) in the 10% sample of the 2000 Population and Housing Census(excluding islands and institutions).

For those EDs, characteristics on about 70 indicators are examined to determine selection characteristics. Of the 70 indicators, 30 are chosen as characteristic indicators, which are proven to be correlated with the number of unemployed and household income according to ANOVA analysis.

(2)Creation of ED List and Selection of Primary Sampling Units(PSUs)

The HIES sample is a subsample of the EAPS(Economically Active Population Survey)sample. In the EAPS sample, the nation is divided into 16 regions, i.e., seven large cities and nine provinces. The latter are further divided into dongs and ups/myons. Therefore, there are a total of 25 strata. The sampling ratios of the 25 strata are different.

Within each stratum, EDs(PSUs) are systematically selected with a probability proportional to its measure of size. A total of 1,629 PSUs are selected in the 25 strata for the EAPS sample. Each selected PSU consists of a corresponding number of segments with 5 households in each on average.

From the 1,629 PSUs of the EAPS sample, 999 PSUs are selected for the HIES sample. In each stratum, the sample PSUs are systematically selected with a probability proportional to its size.

(3)Selection of Ultimate Sampling Units(USUs)

In every sample PSU, two segments of about 5 households per each is selected as USU. The sample is self-weighted in each stratum while the sampling rates are different from a stratum to another. As a result, a total of 7,500 households are selected for the sample, with the overall sampling rate of 1/1,430. The average number of households responding to the monthly survey was 6,153 in 2003, of which 3,624 households are in cities.

6.2 Estimation

(1) Quarterly Estimates

$$\bar{y}_q = \sum_h w_{qh} \bar{y}_{qh}$$

$$\bar{y}_{qh} = \hat{Y}_{qh} / \hat{X}_{qh} = \sum_j \hat{Y}_{qh;j} / \sum_j \hat{X}_{qh;j}$$

$$w_{qh} = \hat{X}_{qh} / \sum_h \hat{X}_{qh}$$

$$\hat{Y}_{qh;j} = \sum_k {}_kM_{qh} \, {}_ky_{qh;j}$$

$$\hat{X}_{qh;j} = \sum_k {}_kM_{qh} \, {}_kx_{qh;j}$$

$${}_kM_{qh} = {}_k\hat{X}_{qh} / {}_kx_{qh}$$

Where,

$\bar{y}$ = average estimate per household of characteristic Y of households having characteristic X

$\bar{Y}$ = estimate of characteristic Y of households having characteristic X

$\bar{X}$ = estimate of number of households having characteristic X

x = number of sample households having characteristic X

y = value of characteristic Y enumerated in the sample

w = sample weight

h = subscript for stratum(h=1, 2, ..., 16)

j = subscript for sample ED

k = subscript for dwelling type(1=detached house, 2=apatment, 3=row house and apartment in a private house, 4=other)

(2) Yearly Estimates

The yearly estimates are obtained by averaging the quarterly estimates.

$$\bar{y} = \frac{1}{4} \sum_{q} y_q$$

6.3 Sampling Error

(1) How to Use the Sampling Error

Since the statistics of this survey are estimates based on the sample survey, they may differ from the population parameters that would have been obtained if a complete enumeration had been taken. These differences are not due to nonsampling error.

The measure of sampling error is primarily expressed as the standard error, which means the chances are about 95 out of 100 that the difference between a sample estimate and the population parameter would be smaller than twice the standard error.

The sampling error is presented as the standard error and the relative standard error(the ratio of the standard error to the estimate) is reported in the Appendix.

(2)Estimation of Sampling Error

① Standard Error of Quarterly Average

$$Var(\bar{Y}_q) = var(\hat{\bar{y}}_q) = \sum_h w_{qh}^2 var(\bar{y}_{qh})$$

$$var(\bar{y}_{qh}) = \xi_h \sum_j (\hat{d}_{y_{qhj}} - \bar{y}_{qh} \hat{d}_{x_{qhj}})^2 / \hat{X}_{qh}^2$$

$$\xi_h = [(1 - f_h) n_h] / [2 (n_h - 1)]$$

$$f_h = n_h / (10 N_h) \cong 0$$

$$\hat{d}_{y_{qhj}} = \hat{y}_{qhj} - \hat{y}_{qhj+1}$$

$$\hat{d}_{x_{qhj}} = \hat{x}_{qhj} - \hat{x}_{qhj+1}$$

$$se(\bar{y}_q) = \sqrt{var(\bar{y}_q)}$$

$$rse(\bar{y}_q) = \frac{se(\bar{y}_q)}{\bar{y}_q} * 100$$

Where,

$\bar{y}$ = average estimate per household of characteristic Y of households having characteristic X

$\bar{Y}$ = estimate of characteristic Y of households having characteristic X

$\bar{X}$ = estimate of number of households having characteristic X

x = number of sample households having characteristic X

y = value of characteristic Y enumerated in the sample

w = sample weight

h = subscript for stratum(h=1, 2, ..., 16)

j = subscript for sample ED

n = sampling ED

N = number of EDs in the sampling frame

var = variance

se = standard error

rse = relative standard error

② Standard Error of Yearly Estimates

The standard error of the yearly estimate is the square root of the variance of the yearly estimate. The variance of the yearly estimate is obtained by dividing the sum of the quarterly variance by the square of the number of survey quarters and taking the square root.

$$var(\bar{y}) = \frac{1}{16}\sum_{q} var(\bar{y})$$

$$se(\bar{y}) = \sqrt{var(\bar{y})}$$

$$rse(\bar{y}) = \frac{se(\bar{y})}{\bar{y}} * 100$$

7. Publication of the Survey Results

The results of the survey are released quarterly in the Monthly Statistics of Korea.

The annual report is published in May of the following year.

APPENDIX 1 : Example of Standard Errors of Major Items

1. Standard Errors of Major Items (2003)

<SEOUL>

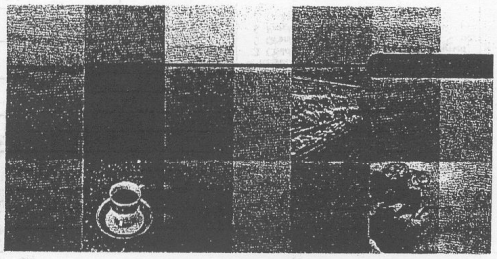
Unit : won, %

전 가 구 All households		근로자 가구 Salary & wage earners' households		근로자외 가구 Other households		
표준오차 Standard error	상대표준오차 Relative Standard error	표준오차 Standard error	상대표준오차 Relative Standard error	표준오차 Standard error	상대표준오차 Relative Standard error	
-	-	145 110	2.230	-	-	**Receipts**
-	-	42 091	1.366	-	-	**Income**
-	-	31 104	1.060	-	-	**Regular income**
-	-	28 763	1.049	-	-	**Earnings**
-	-	24 809	1.163	-	-	Household head
-	-	12 940	3.883	-	-	Spouse
-	-	13 704	4.962	-	-	Other household members
-	-	6 350	7.278	-	-	**Business work**
-	-	5 517	10.957	-	-	**Income from assets**
-	-	7 352	13.319	-	-	**Transfer income**
-	-	27 819	18.869	-	-	**Irregular income**
-	-	129 703	4.053	-	-	**Receipts other than income**
-	-	106 833	4.075	-	-	Reduction in assets
-	-	52 292	9.047	-	-	Addition in debts
-	-	3 548	1.583	-	-	Balance in previous month
-	-	145 110	2.230	-	-	**Disbursements**
25 891	1.084	28 216	1.192	40 254	1.665	**Expenditures**
22 278	1.066	22 961	1.127	36 131	1.674	**Consumption expenditures**
4 144	0.764	4 285	0.801	7 274	1.319	**Food and beverages**
510	1.148	641	1.494	805	1.732	Cereals and bread
603	1.342	683	1.644	966	1.960	Meat
295	1.489	424	2.066	412	2.173	Dairy products
442	1.429	470	1.685	805	2.312	Fish and shellfish
446	1.042	521	1.312	755	1.618	Vegetables and seaweeds
406	1.345	453	1.600	705	2.159	Fruits
297	2.078	376	2.861	450	2.852	Oil fats and condiments
284	1.283	362	1.575	395	1.873	Bread and confectioneries
295	1.360	373	1.721	447	2.063	Tea, soft drink and alcoholic beverages
392	3.342	418	3.714	674	5.458	Other food and beverages
2 836	1.094	3 136	1.183	4 711	1.873	Meals outside the home
2 428	3.359	2 833	4.051	3 925	5.211	**Housing**
1 765	5.391	2 354	7.110	2 513	7.789	Rents paid
1 530	10.046	1 638	11.421	2 820	17.216	House mending
985	4.047	899	3.997	1 628	6.103	Others
1 029	1.027	912	0.982	1 697	1.549	**Fuel, light and water charges**
206	1.459	237	1.710	271	1.872	Water charges
571	1.520	404	1.187	1 024	2.427	Electricity
674	1.636	799	2.082	904	2.021	Fuel
484	6.613	453	6.823	765	9.356	Heating expenses for apartment
2 638	3.467	3 549	4.553	4 465	6.053	**Furniture and utensils**
1 158	10.914	1 555	14.631	1 845	17.466	Furniture
1 178	7.160	1 338	8.638	2 059	11.633	Household appliances
305	5.793	352	6.889	527	9.634	Kitchen utensils
175	1.456	256	2.111	249	2.119	Domestic utensils, non-durable goods

APPENDIX 2 : Example of Survey Questionnaire

Household Income and Expenditure Survey

Household Account Book



National Statistical Office

Period of Survey Year, Month	Enumeration District Number	Segment and Living Quater Number	Household Number	Name of Branch Office
				Name of Enumerator

Receipts and Disbursements

Date :

※ Code	Kind of receipts and Disbursed items and their uses	Receipts (in kind & in cash)	Disbursement: Cash	Disbursement: Installment, Credit Purchase	E-commerce
	※ Total Amount	995	996	997	
999	※ Total Amount in kind				

Receipt 995 + 997		Disbursement 996+997+999	
		Today's Cash Balance	

Household Distinction	Number of Household Members	Number of Earners	Existence Spouse of household head
①Salary ②Wage ③Other ④No-Occupation			1. Existence(living together) 2. Existence(not living together) 3. Nonexistence

I. Items concerning household head				II. Items concerning spouse of household head			
Sex	1. Male 2. Female	Age	Years	Sex	1. Male 2. Female	Age	Years
Educational Attainment			※	Educational Attainment			※
Industry			※	Industry			※
Occupation			※	Occupation			※

III. Items concerning other household members

	Relationship to household head	Sex	Age	Activity Status
1				
2				
3				
4				
5				
6				

※ Relationship of household head
3. Children not married 4. Children married 5. Grandchildren 6. Parent(Parent-in-law) 7. Grandparent 8. Brother, Sister not married 9. others
※ Sex
1. Mele 2. Female
※ Activity Status
1. Attending Kindergarten 2. Attending Primary School 3. Attending Middle School 4. Attending High School 5. Attending College and University 6. Attending Graduate School 7. Working 8. Family workers 9. Others

IV. Items concerning spouse and never-married children not living together (Unit : person)

Relationship / Reason	Spouse	Children
Working		
Schooling		
Other(Army etc.)		

V. Household Type

1. Aged Couple Household
2. Mother and Children Household
3. Dual Income Household
4. Others

VI. Number of Generation in Household

1. One generation household
2. Two generations household (Parent & children not married only)
3. Two generations household(except '2.')
4. Three generations household
5. Four and more generations household

VII. Income source in No-Occupation household

1. Pension
2. Social Security Benefits
3. Gifts and Assistance
4. Rents Received
5. Interest and Dividend
6. Savings
7. Others

VIII. Yearly Income Thou. won

IX. Items concerning Residence (Unit : Thou. won)

Type of Housing	Rental Value	Rental Paid	Deposit
1. Owned			
○ Housing Value (Thou. won) ○ Occupation Rate (%)			
2. Rent Free			
3. Issued House (Free)			
(Not Free)			
4. Rent with Deposit			
5. Monthly Rent with Deposit			
6. Monthly Deduction from Deposit			
7. Monthly Rent Without Deposit			

Ownership of House	1. Yes 2. No

X. Type of Living Quarters

1. Detached dwelling
2. Apartment
3. Row House, Apartment Unit in a private house
4. Others

XI. Total area of floor space (Private use area)	Pyung
XII. No. of possessed private automobiles	0. None 1. One 2. Two and more

No. of surveyer	

<붙임 4>

Tenth Course/Workshop on Sample Design For Household and Establishment Surveys 18 October to 12 November 2004 Kolkata, India

PROJECT ON SAMPLE DESIGN OF HOUSEHOLD HEALTH SURVEY

UNSIAP, 18 Oct. – 12 Nov. 2004) KOLKATA, INDIA

Section 2

1. Ms.Maribel Literal Bernardo –Philippines
2. Mr.Sabapathy SINNARAJAH –Sri Lanka
3. Ms.Ruayin KOGKONTA -Thailand
4. Ms.LE Tien Thuy –Vietnam
5. Mr. CHOI Bong Su - Republic of Korea

Report on 2004 Health Survey

1. Objectives

This Health Survey (HS) aims to provide information on health in the country mainly for the government's progress monitoring of programs on population and health. The HS 2004 specifically aims to:

a) To collect data to be used in the estimation of prevalence and incidence rate of illnesses and disabilities of households at the national and states (provincial/district levels); and

b) To capture the expenditures on health care.

2. Reference Period

The reference period other than health expenditures in the questionnaire is the last 30 days as of the time of visit of enumerator to the households. In case of health expenditures on indoor patients (section B1 of the questionnaire), the reference period is the last 365 days and for outdoor patients, the reference period is last 15 days.

3. Scope & Coverage

The survey involves collection of data on the demographic and health status of the households in the country excluding institutional population. It covers a sample of an estimated number of households taken from some enumeration blocks of all administrative regions of the country.

This survey will cover information on all types of diseases and disabilities for the entire country. Expenditures for this survey will cover only expenditures on treatment, ie. curative and not preventive.

4. Sampling Frame

The sampling frame contains the full identification particulars of the sampling units. Census of Population frame provided geographic identification code of the sampling units. It contains regional identification, district-urban, rural-village name and codes. Census block numbers also included. Latest available census date in the country is taken as the frame for selection of first stage units.

5. Sampling Design

The HS 2004 adopted two-stage sampling design. This used census block as the first stage unit (FSU) and household as secondary sampling unit (SSU). Sampled FSUs were selected with probability proportional to size with replacement (PPSWR) where census

population is taken as size and the SSUs were selected with simple random sampling without replacement (SRSWOR). For selected each enumeration block, a sample of 16 households were taken.

6. **Schedule Design.** There are two types of schedules, i.e. listing schedule and health schedule. Listing schedule (see appendix 1) will contain information of all households coming on a selected FSU.

The health schedule contains three sections, namely: geographic identification, demographic characteristics (section A), and health expenditures (section B). Section B is divided is divided into two sections: indoor patient for the last 365 days (section B1) and outdoor patient for the last 30 days (section B2).

The specific data collected in the households were:

6.1 Demographic Characteristics

6.1.1 Disability/ies of a Person
(Seeing, Communication, Moving/Self-Care/Managing daily routine, hearing and mental behavior)

6.1.2 Illness/es of a Person
(Malaria, Leprosy, Goiter, Tuberculosis, Other respiratory illness, Dengue fever, Stomach cancer, Lung cancer, Childhood illness, and accident/injury)

6.2 Health Expenditures

6.2.1 Indoor patient for the last 365 days
(Diagnostic test, Professional fee, Medical equipment, Transport/Ambulance fee, Medicine, Other expenses)

6.2.2 Outdoor patient for the last 15 days
(Diagnostic test, Professional fee, Medical equipment, Transport/Ambulance fee, Medicine, Other expenses)

7. Concepts & Definitions

Household. A group of individual not necessarily ties by kinship who sleeps in the same housing unit and have common arrangement in the preparation and consumption of food.

Building. It is defined as any structure built, designed or intended for the enclosure, shelter or protection of any person, animal or property, comprised of one or more rooms and/or other spaces covered by a roof and usually enclosed within external walls or with adjacent buildings, which usually extend from the foundation to the roof.

A building may be classified as **residential** or **non-residential.**

a) **Residential buildings** are buildings which by the way they have been designed or constructed or constructed are intended for abode such as single houses, multi-unit residential buildings, etc.

b) **Non-residential buildings** are buildings which have been designed for purposes other than for abode. These include commercial, industrial and agricultural buildings such as offices, rice mills, barns, etc. and other non-residential buildings such as churches, etc.

c) **Structures** which may not be considered as buildings and not intended for human habitation but are presently occupied by a household such as caves, old railroad cars, old buses, culverts, trailers, barges, boats, etc.

Housing unit. It is a structurally separate and independent place of abode which, by the way it has been constructed, converted, **or arranged, is intended for habitation** by one or more households.

Household size. Number of persons living in the household including borders, servants etc. is defined as the household size.

Expenditure. Expenditure means the expenditure by the household on various items of illness in last 365 days(section B1) and 30 days (section B2).

Persons with disability. It refers to a person that has any restriction or lack of ability (resulting from an impairment) to perform an activity in the manner or within the range considered normal for human being. Impairments associated with disabilities may be physical, mental, or sensory motor impairment. This information will enable planners to prepare plans for rehabilitation, education development and preventive programs.

Seeing. Loss of sight of one or both eyes; blurred vision; low vision – cannot read fine prints; cross-eyed.

Communication. Cannot speak; cannot utter/say any word; stuttering, cleft-lip/cleft-palate.

Congenital Cleft-Lip and Cleft-Palate

Cleft lip – upper lip has a slit or opening due to the failure of lips to come together, slit which may pass into the nostril completely or incompletely or maybe on the left or right side or both sides.

Cleft palate – the roof of the mouth has a slit or opening due to failure of both sides of the palate to come together normally; slit may be complete or incomplete

Stuttering – a speech problem characterized by talking with several breaks in their sentences and not said continuously and smoothly; as they say words, the mouth and lips hold a particular position for a certain length of time.

Moving/Self-Care/Managing daily routine. Characterized by underdeveloped/missing/weak paralyzed one or both arms; underdeveloped missing/weak/paralyzed one or both feet or hands. This results to difficulty in doing activities for daily living which requires use of the affected parts.

Difficulty with Hearing. Loss of hearing partial or total; cannot hear at all or cannot hear clearly.

Mental Behavior. Mentally ill; no concept of time and space; behavior is not within the frame of a "normal" person.

Other Disabilities:

1. ***Mental Retardation*** – a condition in which the brain functions below normal that results to a very limited ability to learn; Down Syndrome with physical abnormality such as slanting eyes, small flattened head; short neck, broad nose and protruding tongue.

2. ***Learning Disability*** – have difficulty in understanding and thinking; dyslexia – has difficulty in reading.

3. ***Autism*** – not be able to form relationships with other people; has little or no reaction to people/sound; poor eye contact seems to have a "private language"; rocks back and forth, bites or hits self; head banging; stares at things for long period of time; repeats phrases over and over with little meaning, gets upset when things changed; like to do things in the same manner everytime.

4. ***Attention Deficit/Hyperactivity Disorder or Attention Deficit Disorder*** – has trouble controlling behavior, always "on the go", easily distracted and cannot seem to finish any activity he/she has started; uneasy, impatient, inattentive; destructive; insensitive or unmindful of the feelings of others; demanding of immediate attention.

5. ***Cerebral Palsy*** – lack of muscle control due to brain damage.

8. Determination of total sample size

8.1 The sample size was determined by the population proportion "P" as accurately as possible by the sample proportion "p" computed or the basis of the sample size "n" drawn from the population of size "N".

i.e. Prl p-Pl <d>= 1-Y, where

d= tolerable margin of error

1-Y= computed coefficient attached to the statement that the sample proportion p will be within t-d of the population proportion P. In this survey the d was set to 0.0 and 1- $\propto$=0.05. First, the n_o was determined using this formula:

$n_o = 1/d^2 = 1/(0.01)^2 = 10{,}000$

Upon determination of n_o, the sample household to be taken for each eb's was set to 16. Formula $n = n_o/1 + (n_o\text{-}1/N)$ was used to determine the total number of eb's to be taken as the sample. The PPSWR will be used to allocate the sample Ebs to each region.

8.2 Alternative

The sample size for the entire country can be estimated using this formula:

$$\sigma / \sqrt{n} / \overline{X} = 10$$

The σ and $\overline{X}$ can be estimated using past data or from a pilot survey.

9. Allocation of samples to different stages/stratums

We can allocate the number of samples in the provinces/districts and ultimately to blocks (FSU).

c

10. Sample selection procedures

The total number of household n the selected FSUs should be known. The households in the selected FSUs will be selected by SRSWOR. The FSUs from the district or a province are to be selected by PPSWR with population as size.

11. Description of estimation procedure

i) Estimate

Notations: (should be apply for each region)

h : index for stratum (1 for rural, 2 for urban)
N_h : number of total first sampling unit (FSU) in the h^{th} stratum
n_h : number of FSU in the sample in h^{th} stratum
M_{ih}: total number of household in second stage sampling unit (SSU) in the i^{th} FSU and h^{th} stratum
m_{ih}: total number of household selected in the i^{th} FSU in the h^{th} stratum
y_{ijh}: value of desired parameter for the j^{th} selected household in the i^{th} selected FSU. Here, it is the number of ill member or number of disabled member or the total expenditure on health.

y_{ih} : estimate for the total desired parameter in the i^{th} selected FSU in h^{th} stratum.

Y_i : estimator of total parameter in the i^{th} province/district.

Y : estimator of total parameter in whole country

SRSWOR

$$\hat{y}_{ij} = \frac{1}{n_h}\sum_{h=1}^{n_h} y_{ijh}$$

$$\hat{Y} = \sum_{h=1}^{2} w_h \frac{1}{n_h}\sum_{i=1}^{n_h}\frac{\hat{y}_{in}}{p_{in}}$$

FSU will estimate can be available by using SRSWOR formula. After that by using multiplier we can get the estimate of the entire district/province (y_i). This estimates then added to get the estimate of the entire country (Y).

ii) Variance

First Stage Unit

$$\hat{v}(\hat{Y}_{pps}) = \frac{1}{n(n-1)}\sum_{i=1}^{n}\left[\frac{yi^2}{pi^2} - \hat{n}Y^2{}_{pps}\right]$$

Second Stage Unit

$$\hat{V}(\hat{Y}_{pps}) = \sum_{h=1}^{2} w_h{}^2\,\hat{V}\left(\hat{Y}^h_{pps}\right)\left(\frac{N_1}{N}\right)^2 \frac{1}{n_1(n_1-1)}\sum_{i=1}^{n1}\left(\frac{y_{i1}^2}{p_{i1}^2} - n_1 Y_{1pps}^2\right)$$

$$+\left(\frac{N_2}{N}\right)^2 \frac{1}{n_2(n_2-1)}\sum_{i=1}^{n_2}\left(\frac{y_{i2}^2}{p_{i2}^2}-n_2 Y_{2pps}^2\right)$$

iii) Relative standard error (RSE)

$$RSE=\frac{\hat{V}\left(\hat{Y}\right)}{\hat{Y}}*100$$

iv) Alternate method of estimating variance (Interpenetrating Samples)

12. Non-sampling errors

The following should be taken in consideration to reduce the non-sampling error:

13.1 Korea

- Monitoring reinterview for field survey;
- Meeting with the respondents is being done regularly by the field offices;
- Thanking the respondent by giving incentives and gain cooperation; and
- Spotchecking during survey operation especially during the critical part of enumeration, i.e., the first week of survey enumeration;

13. Survey results

The survey results will be presented in the form of dummy tables. The examples of the table to be generated are the following:

Table1: Demographic information
Table2: Number of Disable Persons and Ill Persons for the Whole Country/Province/State
Table3: Health Situation for the Whole Country/Province/State
Table4: Total Expenditure on Health Care
Table5: Prevalence Rate and Incidence Rate for the Whole Country/Province/State

These tables will be analyzed and published in the form of special release, publication, website, public used file (PUF) among others.

14. Country specific problems and how to tackle it

15.1 Korea

15.1.1 No eligible respondent when the enumerator visit the sample household (husband and wife working);

15.1.2 In rural area, the respondents are too old, they were not able provide accurate information; and

15.1.3 Disharmony between field investigators, e.g. different position but performing same duties.

15.2 Philippines

15.2.1 The selected household has moved away and the dwelling is vacant.

If a household has moved out of the dwelling where it was listed and no one is living in the dwelling, you should consider the dwelling as vacant.

15.2.2 The selected household has moved away and a new household is now living in the same dwelling.

In this case, interview the new household.

15.2.3 The household selected does not live in the building where it was listed.

Interview the household currently living in the building. For example, you are assigned to a household headed by Elpidio Maramot located in BSN “0007”, HUSN “008” and HSN”008” but you found out that Elpidio Maramot actually lives in another building, interview the household currently living in BSN “0007”, HUSN “008” and HSN”008”.

15.2.4 The head of the sample household has changed.

Interview the household and be sure to verify that the household is the original household listed in the building during the listing operation. It is important to know if the current occupant of the building is the original household or a different one in order to put the correct code of the result of the interview in the Household Questionnaire.

15.2.5 The building is closed and neighbors say that the entire household is away.

Inquire from neighbors when will the household return and make a callback to the household during that time. If the household is expected to return after several days, you should still revisit the building two or more times to make sure that the household had not returned. If after two or more revisits and the household has not returned, consider the household as absent for extended period.

A **callback** is a revisit to a household whose respondent has not been interviewed during the previous visit. Any

unsuccessful visit done on the same day as the previous visit will not be counted as callback.

15.2.6 The house is close and neighbors say that no one lives there or the household has moved away permanently.

Consider the dwelling as vacant.

15.2.7 The building assigned to you is a commercial building.

Check carefully if no household is living in the building. If none, consider the building as vacant. Otherwise, interview the household or the present occupant of the building.

15.2.8 The selected building was demolished or destroyed by flood, fire, etc.

Consider the building as destroyed.

15.3 Sri Lanka

Sri lanka has nine provinces, two provinces names are Northern and Eastern. Those areas has political problems, therefore, Department of Census and Statistics (DCS) was not carried out Labor Force Survey (LFS), Household Income and Expenditures Survey (HIES) properly. Recently, DCS started all the surveys in those areas.

15.4 Thailand

There are 2 problems on collection data :

1. Unit non-response error
2. Item non-response error

Example : The sampling household always was non-response, a field work must to collection data about 3 times.

15.5 Vietnam

It is difficult to collect the information of the households living in the mountainous area, because there is rare people in these area knowing the common language