A FRAMEWORK FOR INCORPORATING PERSON-TRIP SURVEY INTO THE PHILIPPINE CENSUS OF POPULATION AND HOUSING

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ABSTRACT

There are numerous options that need to be considered in developing a system that would efficiently generate person-trip data for a more responsive transportation planning and development. This research looked into the feasibility of one of these possible options -- that of incorporating person-trip survey into the Philippine Census of Population and Housing (CPH). The research revealed that incorporating person-trip survey into the CPH was methodologically and legally feasible. The study also recommends a framework of strategies for the efficient incorporation. Other possible options for generating an adequate and reliable person-trip data are also recommended for further exploration.

1. INTRODUCTION

Person-trip data is one of the most important information needed in transportation planning. It describes an area's travel demand scenario. It provides information on the major origins and destinations of the population. It offers facts on the common transportation modes and describes their usage. It also gives information on travel time from a place of origin to a particular destination. The wide variety of trip information it offers allows for an intensive analysis of people's travel behavior subsequently paving the way for the development of policy-responsive transportation models needed to forecast traffic scenarios. Likewise, person-trip data prove to be a vital input to project feasibility and impact evaluation studies. But more importantly, it serves as the best indicator for urban and rural accessibility and mobility.

Essentially requiring a voluminous inventory, person-trip survey is one of the most difficult and expensive surveys needed in transportation planning. It utilizes the household interview survey (HIS) as its major data gathering tool.

Deemed to have rooted from the absence of an efficient data collection system, person-trip data is still quite wanting in terms of adequacy and reliability in the Philippines. This constraint had apparently generated major setback in transportation planning and development through the substantial delay and doubt over the validity of transportation plans developed. The recently conducted Baguio and Dagupan Urban Planning Project (BDUPP) by the NEDA and the Alatec-Harris-Tym Consulting Group, identified the "lack of reliable data on traffic and transportation" in the study area as one of its major constraints.[1]

Another adverse effect of this problem was demonstrated in a study on the uncertainty in transportation demand forecasting. Said study revealed a glaring disparity between the observed and model-forecasted travel demand characteristics in the Philippines.[2] Accordingly, the sources of errors in transportation demand forecasting were : 1) inadequate data; 2) inaccurate forecasting model; and 3) inherent uncertainty of exogenous variables. In addition, the reliability and relevance of the person-trip data from which these models have been formulated also seemed doubtful.

The contribution of an efficient data collection system to transportation planning and development cannot be over emphasized. An efficient data collection system that : 1) is legally based; 2) is institutionally capable of generating data on a geographically comprehensive area and on a continuing basis; 3) is well organized and stable; 4) is manned by experts in data collection and processing; 5) enables data to be kept in a centralized location for easy access and retrieval; and 6) is cost-effective, should now be established.

1.3 Objectives

The general objective of this research is to investigate one possible option in efficiently generating person-trip data by assessing the feasibility of incorporating person-trip survey into the Philippine Census of Population and Housing (CPH) and establishing a framework from which strategies needed for the said incorporation could be instituted. Specifically, it aims to :

1. Assess the feasibility of incorporating person-trip survey into the CPH by using the following criteria : 1) compatibility of the target population; 2) compatibility of the survey methodology; 3) resemblance of data generated for both person-trip survey and the CPH; 4) legality aspects; and 5) pilot-test response rate;

2. Develop a survey questionnaire which incorporates person-trip survey into the CPH;

3. Assess the capabilities of each survey methodology i.e., the personal interview method (PIM) and the self-administered questionnaire (SAQ), by determining the advantages and disadvantages of each in terms of the following criteria : a) data quality; b) time spent in the interview process; c) number of trips reported; and d) number of persons with reported trips;

1.4 Hypotheses and Treatment of Data

One option of efficiently generating person-trip data is by incorporating person-trip survey into the Philippine Census of Population and Housing. This, however, can only be achieved through the adoption of appropriate strategies needed for the said incorporation. One of the strategies that needs careful investigation prior to the proposed incorporation is the survey methodology to be employed in actual data gathering activity. The type of survey methodology used in any data gathering activity affects the reliability of the data generated and, subsequently of plans developed.

Statistical Hypotheses and Treatment of Data :

In order to determine the capabilities and establish each survey methodology's advantages and disadvantages, the t-test was deemed appropriate to investigate the differences of the means of the two survey methodologies i.e., the PIM and the SAQ, in terms of the following criteria : (1) number of correct entries; (2) interview time; (3) number of trips reported; and (4) number of persons with reported trips. Moreover, this test was deemed appropriate because this study involved only two variables for comparison - the PIM and the SAQ. As such, the following null hypotheses were tested:

1. There is no significant difference in the data quality observed for each survey methodology in terms of : a) number of correct entries; b) ratio of correct data entries to number of persons with reported trips; and c) ratio of correct data entries to number of trips reported.

2. There is no significant difference in the interview time spent in administering each data gathering methodology in terms of : a) ratio of the total number of interview hours spent to the total number of household members; b) ratio of the total number of interview hours spent to the total number of visits made; and c) number of visits made by household.

3. There is no significant difference in the number of trips reported under each methodology in terms of the: a) actual number of trips reported; b) ratio of the number of trips reported to the number of persons who reported their trips; c) ratio of the number of trips reported to the total number of household members; and d) ratio of the number of trips reported to the number of household members 7 years old and above.

4. There is no significant difference in the number of persons with reported trips observed under each methodology in terms of the : a) actual number of persons with reported trips; b) ratio of the number of persons with reported trips to the number of household members 7 years old and above; c) ratio of number of persons with reported trips to the total number of household members.

2.0 ASSESSING THE FEASIBILITY OF INCORPORATING PERSON-TRIP SURVEY INTO THE CPH

2.1 Comparing the Person-trip Survey and the CPH Instruments

This section looked into the viability of incorporating person-trip survey into the CPH. It compared both the traditional person-trip surveys and the CPH instruments using the following as indicators.

On the Target Population. The person-trip survey and the CPH have a common target population -- the household. This commonality allows for easier integration of the person-trip survey into the CPH.

On the Methodology. The CPH is conducted using a combination of complete enumeration and sampling. The population and some housing questions are administered through complete enumeration while sampling is used in obtaining additional household housing characteristics.

Likewise, person-trip data gathering also makes use of samples. It however requires lesser samples compared to that of the housing samples used in the 1990 CPH as demonstrated by the following tables. For example, the CPH sampling rate (Table 1) for an area with 2,751 household population count is 100 % as against that of recommended person-trip surveys which ranges from 10 to 20 % for a household population count of 9,091 (Table 2).

Table 1
Sampling Rates Used in Determining CPH Samples

Estimated No. of Households in the Municipality	Estimated Population at 5.5 Persons / HH a/-	Sampling Rate
1 - 500	Under 2,751	100 %
501 - 1,500	2,751 - 8,250	20 %
1,501 - Above	Above 8,250	10 %

Source : 1990 CPH
a/ : Estimated Population at 5.5 Persons / HH was done by the author.

Table 2
Sampling Rates Used in Determining Samples in Traditional Person-trip Surveys

Population of area	Estimated No. of HH at 5.5 pers/HH b/-	Recommended	Minimum
Under 50,000	Under 9,091	20.0 %	10.0 %
50,000 - 150,000	9,091 - 27,273	12.5 %	5.0 %
150,000 - 300,000	27,273 - 54,545	10.0 %	2.85 %
300,000 - 500,000	54,545 - 90,909	6.67 %	2.0 %
500,000 - 1,000,000	90,909 - 181,818	5.0 %	1.43 %
Over 1,000,000	181,818	4.0 %	1.0 %

Source : Juan de Dios Ortuzar. Modelling Transport. Second Edition (Chichester : John Wiley & Sons, 1990), 79
b/ : Estimated No. of HH at 5.5 Persons / HH was done by the author

Despite this disparity, person-trip survey could still be safely merged into the CPH by adopting the same target samples used in the housing sample households.

On the Data Generated by the Census and the Survey. Person-trip surveys obtain household information such as : age, sex, educational attainment, occupation, etc.

Except for the income and person-trip characteristics, the CPH also generates this type of data. The resemblance of data generated by these two instruments allows a practicable merging.

On Legality Aspects. Batas Pambansa Bilang 72 mandates the taking of an integrated census every ten years beginning nineteen hundred and eighty. Section 1 provides the following : "A national census of population and other related data shall be taken every decade beginning in 1980, in accordance with plans prepared by the National Census and Statistics Office, without prejudice to the undertaking of special censuses on agriculture, industry, commerce, housing and other sectors as may be approved by the National Economic and Development Authority."[3]

The foregoing reveals that incorporating person-trip survey into the CPH is feasible as long as this is approved by the NEDA.

2.2 Establishing the Advantages of Incorporating Person-trip Survey into the CPH

This section intensifies the need to incorporate person-trip survey into the CPH. It rationalizes the intended incorporation by citing the benefits that could be derived from the said move. The following presents the advantages of incorporating person-trip survey into the CPH.

Incorporating person-trip survey into the CPH provides geographically comprehensive data for enhanced local planning and development purposes. As far as the local governments are concerned, incorporating person-trip data into the Philippine Census of Population and Housing provides a data base for local planning and project development purposes. A readily available database shall assist LGUs and concerned organizations produce more realistic transportation plans and development strategies. Henceforth, full understanding of transportation problems is enhanced. With the system in place, local transport planners can now sparingly use their own personal judgment[4] in establishing basic assumptions and in resolving conflicting sources of information. Thus, transportation plans can now be more realistic, valid and attainable.

Other CPH-generated Information is Vital in Transportation Planning and Development. More responsive transportation planning and development makes use of other socio-economic data which are not currently being generated by traditional person-trip surveys but, which are currently produced by the CPH. Among these are : 1) socio-cultural characteristics; 2) housing characteristics; and 3) other information needed for the development of transportation demand models. The availability of these data allows for the formulation and development of sound and more policy-responsive transportation policies and decisions.

Allows for intensive analysis of the impact of transportation programs / projects on target beneficiaries. Due to the availability of more reliable and adequate data, incorporating person-trip survey into the census allows for an intense investigation of the impact of transportation programs / projects on the target beneficiaries through the so-called panel analysis. Panel analysis permits repeated cross-sections of the household characteristics over time. It is employed through the use of data from multiple observations on the same

individuals across time. [5] This type of transportation analysis is essential in any developing country, particularly in rapidly urbanizing areas in which changes not only in structure is readily observed, but also on people's travel behavior and life style.[6] These changes have greatly affected travel demand. Thus, the intended incorporation does not only permit the conduct of ex-post evaluation studies regarding the impact of transportation programs / projects, but also, it allows for the conduct of ex-ante project evaluation. These evaluation studies permit the development of sound decisions in resolving transportation problems.

Provides for a more systematic and efficient data gathering activity. With the intended incorporation in place, the government stands to cut down on uncoordinated data collection expenditures while the use of the information generated is optimized. Operational costs such as those incurred in uncoordinated and unsynchronized training, production of materials and information campaign may be reduced. Further, a stock of adequate information that is readily and periodically available saves on time and cost spent for piece-meal data gathering activities. These savings can now instead be spent for actual planning purposes, thereby allowing greater attention and examination of alternate solutions to pressing transportation problems.

Easier and more reliable generation of person-trip data. Unlike the CPH, the generation of person-trip data is not mandated by law. The proposed incorporation of person-trip survey into the census gives some legal basis for person-trip data generation. Thus, cases of non-responses or non-complying households can possibly be dealt with accordingly.

Furthermore, the problems and constraints associated with the conduct of person-trip surveys such as the difficulty of locating respondents and too many replacements could be very well addressed by said incorporation.

Finally, incorporating person-trip survey into the CPH ensures the availability of adequate and reliable person-trip data considering the pool of experts who are tasked to steer data gathering and processing activities.

3.0 CONDUCTING THE PILOT-TEST

3.1 The Study Area and its Basic Profile

Situated some 251 kilometers north of Manila, Baguio, a land-locked city is located in the northwestern section of the province of Benguet. It is bounded by the municipality of Tuba, Benguet on the south west; the municipality of La Trinidad, Benguet on the north; the municipality of Sablan, Benguet on the northwest and the municipality of Itogon on the southeast.

Open spaces in Baguio account for the largest share in land use with 3,271 has. or approximately, 66.9 %. Institutional areas account for 841 has. or 17.2 %; residential areas, 699 has. or 14.3 %, commercial areas, 45 has. or 0.9 %, and industrial areas, 37 has. or 0.8 %.

In terms of socio-economic characteristics, Baguio City has a total enumerated population of 183,142 or 3,736 persons per square kilometer (one of the highest

population density records in the country). Of this, nearly 180,000 lived in private households. The average household size was recorded at 4.9 persons, an observation below the norm for Filipino cities since the national urban average was accordingly 5.3.

With respect to occupation groups, about 49,000 of the city's employed residents had occupations classified by the 1990 Census. Accounting for almost 26 %, the largest group was the elementary occupations. This included the street vendors, domestic cleaners and laborers in agriculture, construction and industry. The second largest group with a registered mark of 18.5 %, belongs to the craft and related workers. The professionals group came in third accounting for some 14.5 %. This proportion is rather higher than that of the national urban average which was placed at 9.2 %. An equally large group is represented by the sales and service workers with 11.3 %. In terms of household income distribution, Baguio-Benguet indicated a low poverty incidence rate at 32.88 % (FIES, 1988). Average annual family income was recorded at P 44,828 or average monthly income of about P 3,800.

With respect to social development, literacy rate in Baguio is high at 85.31 %. However elementary participation rate is low at 59.70 % meaning, about 40 % of the elementary school-going-age population is not attending school.

As of July 1993, Baguio City is made up of a total 315.87 km of road network. Of this, about 60 km or 18 % are classified as national roads; 150 km or nearly 50 % are classified as city roads; and 108 km or 34 % are classified as barangay roads.

3.2 Sampling Strategies

A two-stage sampling strategy was adopted for the pilot-test. The eight Labor Force Survey (LFS) target barangays in Baguio City which were selected (by NSO) through stratified random sampling also served as the pilot barangays for this study. According to NSO, these sample barangays were chosen by sorting (in an ascending order) all the city's 129 barangays according to their population and then grouping them into four sub-groups; in each sub-group, two barangays were randomly chosen, giving a total of eight barangays.

Table 3
Number of Pilot Samples, By Barangay

Barangay	1990 No. of HH in Target Barangay	No. of HH for Pilot Samples	1990 Population of Target Barangay	No. of HH Member Samples
West Quirino Hill	164	2	778	12
Slaughter Compound	343	5	1,608	20
Padre Zamora	377	5	1,577	22
Pacdal	611	10	3,515	45
Bakakeng Norte	442	7	2,431	33
Camp 7	573	8	2,890	44
Fairview	847	12	4,277	67
Upper Market Subd.	71	1	363	3
TOTAL	3,428	50	17,439	246
% to Baguio Total	9.38 %	0.137 %	9.55 %	0.134 %
% to Target Total		1.46 %		1.41 %

Source of Data : NSO Report # 2-14N : 1990 CPH

For the second stage, a simple random sampling at the household level was performed. The number of pilot household samples drawn were made proportionate to the household population count of the barangay. Fifty (50) household respondents, representing about 0.14 % of Baguio's 1990 household population count had been the subject of this pilot-testing activity. The distribution of the number of pilot household samples is shown in the above table.

The NSO Baguio-Benguet Staff performed the random selection of the 50 household respondents. The needed pilot-sample households assigned for each barangay were determined using ratio and proportion.

3.3 The Combined Person-trip Survey and CPH Instruments

Content. The questionnaire used in the pilot-test (Appendix B) was derived from the : 1) 1990 Census of Population and Housing (CPH); 2) 1995 Population Census (POPCEN); and 3) 1986 Metro Manila Transportation Planning Study (JUMSUT). It included three (3) sections dealing on : 1) population (Form 2A); 2) housing (Form 2B); and 3) person-trip (Form 2C). All in all the complete set contained 74 questions on 9-page questionnaire.

Population Questions. Structured in tabular form, the first section which dealt on population was a 4-page questionnaire consisting of 41 questions. It inquired some specific inputs on all persons, persons five years old and over, persons 10 years old and over and females aged 15 - 49 years old. Among the questions asked from all persons included the names of the household members, age, sex, marital status, religious affiliation, citizenship, disability, ethnicity and mother's usual residence. For those members aged five years old and over, the questions asked included the household member's previous residence, language, literacy, school attendance, place of school and highest educational attainment.

The Labor Force Survey (LFS) was also incorporated in the 1990 CPH and 1995 POPCEN. Thus, household members aged 10 years old and over were asked about their trade skills and economic activities for the past 12 months or the previous week. Likewise, for the female household members aged 15-49, questions about fertility were also asked.

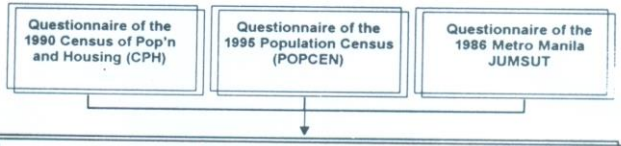
Three (3) items were added into the usual population census questions. These were the : 1) *average monthly income;* 2) the *school address;* and 3) *usual workplace address.* Grouped together with the LFS portion of the usual census questionnaire, the average monthly income was also to be asked from all persons 10 years old and over. A separate column was provided for this question item. On the other hand, the school and workplace addresses were made sub-questions under the headings "Place of School" and "In what city / municipality does/did ___ work during the past 12 months ?"

Housing Questions. The 3-page questionnaire on housing constituted the second section of the set. It asked some 21 questions to all households. The questions asked covered the following : 1) type of residential building; 2) area; 3) state of repair; 4) fuel for lighting and cooking; 5) tenure status of the housing unit; 6) monthly rental; 7) kind of toilet facility; 8) manner of garbage disposal; 9) presence of household conveniences; 10) number of

motor vehicles; 11) garaged vehicles; 12) land ownership and language / dialect generally spoken.

Three (3) items were added into the 1990 CPH housing census questions. These were the : 1) household ownership of a computer; 2) number and type of motor vehicles owned; and 3) number of garaged vehicles. The first item did not require a separate question box because it was already included under an already existing item with a heading of "Presence of Household Conveniences". The next 2 items required two separate question boxes and were ordered one after the other.

Person-trip Questions. Finally, the third section of the set was the 2-page person-trip survey. This was entirely a new addition into the original questionnaire set of the 1990 CPH. It asked some 12 questions pertaining to the following : 1) presence and type of driver's license; 2) places visited during the survey day; 3) origin and destination of trips; 4) time departed / arrived; 5) purpose of trip; 6) mode of travel and place of transfer point. Said questionnaire also consisted of the following : 1) instructions for answering the questionnaire; 2) reminder box; and 3) an illustration and word meaning of a trip. Details of the pilot-test questionnaire are given in figure 1.



FEATURES	PILOT-TEST QUESTIONNAIRE		
	FIRST SECTION	SECOND SECTION	THIRD SECTION
CONTENT	Population questions (Form 2A)	Housing questions (Form 2B)	Person-trip questions (Form 2C)
STRUCTURE	Tabular form	question-box type	question-box type
NO. OF QUESTIONS	41	21	12
NO. OF PAGES	4	3	2
CODING SHEETS	Combination of built-in and separate code sheets	Built-in	Combination of built-in and separate code sheets
NEW ADDITIONS	Average monthly income School & workplace address	Computer ownership No. & type of owned vehicle No. of garaged vehicles	All person-trip information
TARGET RESPONDENTS	All HH members	Household (HH)	HH mem. 7 yrs. old & above
SKIPPING PATTERNS	With GO TO Statements	With GO TO Statements	None
ARROWS/ILLUSTRATIONS	None	With arrows/explanations	With arrows/illustrations
CODE BOXES	With code boxes	With code boxes	With code boxes

Figure 1 : General Features of the Pilot-test Questionnaire

The following describes in detail the other pilot-test documents.

Table 4
Other Pilot-test Documents, By Purpose, By General Attribute

DOCUMENT / ACCESSORY	PURPOSE	NO. OF PAGES	COLOR	SIZE	MATERIAL TYPE
CODE SHEET	- for code number referencing - used for explaining and defining terms	6	yellow	8 1/2" x 11"	cartolina
MEMORY JOGGER	- used to record details of trips made in order to facilitate the filling-up of forms	1	yellow	4 1/4" x 7"	cartolina
APPOINTMENT SLIP	- for making appointments with respondents in case of call-backs	1	yellow	4 1/4" x 7"	parchment paper
INTERVIEW RECORD	- for recording interview time and important remarks - used for summarizing the general attributes of the household - for certification purposes	2	white	8 1/2" x 11"	copy paper
GEOGRAPHIC ID	- used to record the location and identification of the household respondent - used as cover page of the questionnaire	1	white	8 1/2" x 11"	copy paper
ENUMERATOR'S ID	- identification purposes	1	yellow	3 1/2" x 2 1/2"	cartolina with plastic jacket
LETTER TO BARANGAY CAPTAIN	- asks permission to interview - explains interview purpose - seeks assistance in locating respondents - seeks approval of survey	2	white	8 1/2" x 11"	copy paper
LETTER TO RESPONDENT	- explains interview purpose - explains interview process - assures confidentiality of information obtained - seeks respondent support and participation	2	white	8 1/2" x 11"	copy paper
TOKEN	- shows act of gratitude for respondent participation and support				1 Glass canister / 1 Bag of assorted groceries
ENUMERATOR'S MANUAL	- explains the study's objective, procedures in accomplishing forms and other details	35	white	8 1/2" x 11"	copy paper

3.4 Conducting the Pilot-test

The PIM was the sole methodology used in administering the first and second sections of the questionnaire set, i.e., the population and housing questions. The third section which constituted the person-trip survey used either PIM or SAQ, depending on the assignment given to the household. This strategy was employed because the first and second sections

of the questionnaire which come from the CPH employs the same methodology. The following table clearly illustrates this.

Table 5
Matrix of Methodology Assignments, By Portion of the Questionnaire Set

PORTION OF THE QUESTIONNAIRE SET	METHODOLOGY	
	PIM	SAQ
A) POPULATION CENSUS QUESTIONS	Personal interview	Personal interview
B) HOUSING CENSUS QUESTIONS	Personal interview	Personal interview
C) PERSON-TRIP SURVEY QUESTIONS	Personal interview	Self-administered

Conducting the PIM. In conducting the PIM, all three (3) sections of the questionnaire were administered using personal interview. The enumerator's manual was used as a guide in conducting this method. Figure 2 also illustrates the steps employed in the conduct of the PIM..

Conducting the SAQ. Inasmuch as administering the PIM and the SAQ were similar in some aspects, i.e., in both cases, the socio-demographic characteristics of the household was obtained using personal interview, the procedure in obtaining said information followed that of the PIM as discussed above. Figure 3 illustrates how the SAQ was administered.

4.0 PILOT-TEST RESPONSE RATE AND THE APPROPRIATE SURVEY TOOL

4.1 The Participating Pilot-sample Respondents

As cited, 50 households totaling to 246 members had been subjected to the pilot-test. However, this analysis did not include two (2) households assigned under SAQ inasmuch as one refused to participate in the person-trip survey portion due to being a repeated respondent under previous LFS undertakings. The other household had extremely vague trip information details hence, was excluded. Consequently, 29 for the PIM and 19 for the SAQ, totaling to only 48 households have been considered in the following analysis. The table below summarizes the general attributes of the participating pilot-sample households.

Table 6 : Summary of Houshold Attributes, By Survey Method

HOUSEHOLD ATTRIBUTES	PIM		SAQ		TOTAL
	NO.	%	NO.	%	
TOTAL NO. OF HOUSEHOLDS	29	60.42	19	39.58	48
TOTAL NO. OF HH MEMBERS	150	63.03	88	36.97	238
TOTAL NO. OF HH MEMBERS 7 YRS & ABOVE	126	61.17	80	38.83	206
TOTAL NO. OF HH MEMBERS 7 YRS & ABOVE WITH REPORTED TRIPS	104	61.90	64	38.10	168
TOTAL NO. OF TRIPS REPORTED	292		160		452

PROCEDURE IN CONDUCTING THE PIM

REMARKS

Refer to the Manual for Enumerators. When necessary, explain also the importance of incorporating the Person-trip survey to the Census.

Use Forms 2A and 2B in recording demographic and housing characteristics.

Survey day should be 1-2 days from the date the HH demographic and HH information were obtained.

Fill up the name and survey date assigned to the HH on the memory jogger. Date for each HH member to be interviewed about his/her trip should be 1-2 days from survey day.

Use the memory joggers as reference for the interview. Accomplish Form 2C as the interview process is being conducted.

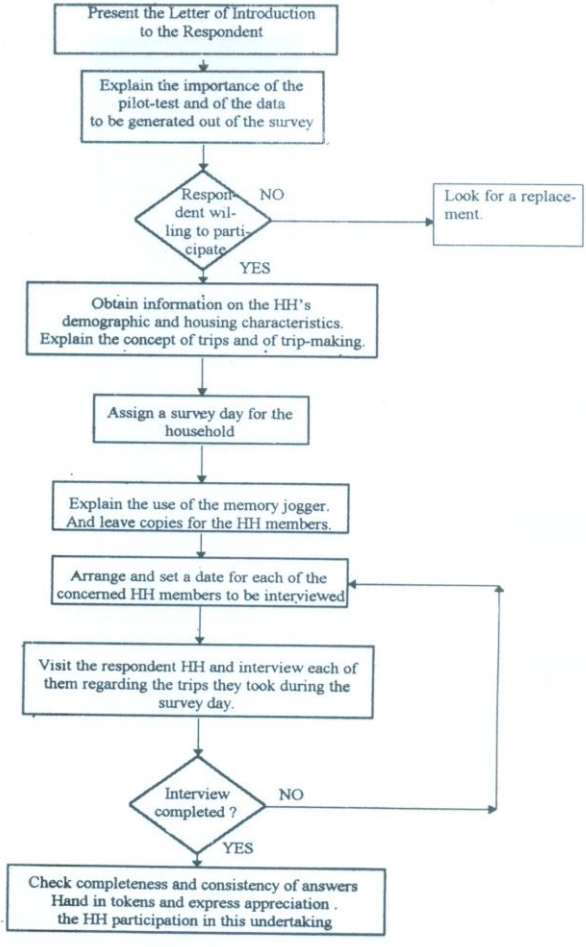


Figure 2 : Conducting the PIM

PROCEDURE IN CONDUCTING THE SAQ

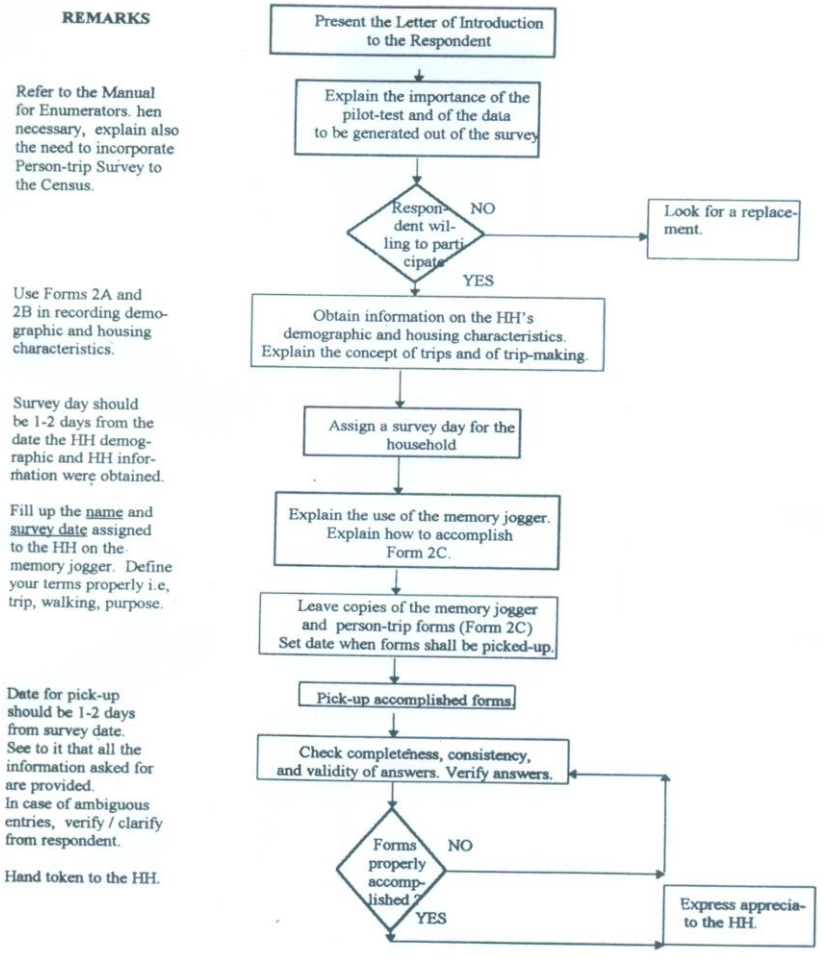


Figure 3 : Conducting the SAQ

As gleaned from the table presented above, there were 48 pilot-sample households who completed the series of interviews. About sixty (60 %) percent of this was assigned with PIM and roughly 40 % with SAQ. The household members aged 7 years old and over who are elligible for person-trip survey was registered to be 206. This accounted for over 86 % of the total household members. Of the elligible household members, 168 or 82 % made trips during the assigned survey days. The total number of trips they have reportedly generated was placed at 452; 292 trips or 65 % of which emanated from the PIM while about 35 % from SAQ.

The ratio of the number of members 7 years old and above with reported trips to the total household members, was calculated at over 70 %. Using the same ratio, 69 % was observed under PIM while 72 % under SAQ.

Finally, the number of household members 7 years old and above with reported trips to total household members 7 years old and above, was placed at over 82 %. Using the same ratio, the PIM had 82.54 % while SAQ had 80 %.

Table 7 : Number / Percentage of Households, By Indicator, By Methodo'ogy

HOUSEHOLD ATTRIBUTES	PIM	SAQ	TOTAL
% OF HH MEMBERS 7 YRS & ABOVE TO TOTAL HH MEMBERS	84.00	90.91	86.55
% OF HH MEMBERS 7 YRS & ABOVE WITH REPORTED TRIPS TO TOTAL HH MEMBERS	69.33	72.73	70.59
% OF HH MEMBERS 7 YRS & ABOVE WITH REPORTED TRIPS TO HH MEMBERS 7 YRS & ABOVE	82.54	80.00	81.55

4.1.1 The Pilot-test Response rate

Table 8 gives the number of household replacements by classification of non-response. Of the 50 pilot sample households, only 22 or less than 50 % were authentic samples. Fifty-six percent were replacements.

Table 8
Number of Household Replacements, By Reason, By Classification of Non-Response

Reason for Replacement	Frequency (No. of HH)	Percentage (%)	Classification of Non-response
Unknown respondent	11	22	Non-genuine
Respondent moved to another location / abroad	11	22	Non-genuine
Respondent deceased	3	6	Non-genuine
Respondent ill a_/	1	2	Non-genuine
No respondent present	2	4	Genuine
Sub-total	28	56	
Authentic household respondents	22	44	
TOTAL	50	100 %	

a_/ : This respondent was already confined at the hospital before the pilot-test. Most of the members of his household were at the hospital

The substantial percentage of replacements were attributed to the obsolescence of the 1990 Household Listing (May 1990) from which the samples were drawn. Reasons for replacement were broken down into five categories as follows: 1) household movement, 22 %; 2) unknown respondents, 22 %; 3) deceased respondent, 6 %; 4) ill respondent, 2 %; and 5) no respondent present, 4 %.

The calculation of the response rate called for a classification of reasons for non-response into two : 1) non-genuine; and 2) genuine. For reasons beyond the control of the respondent, a non-response to the interview was classified as non-genuine. On the other hand, a reason that appeared to be an alibi was classified as a genuine non-response. For instance, those households who cannot be contacted despite several call- back and appointment slips were construed as refusals. Their responses were therefore classified as genuine.

Despite the high incidence of replacement rates, a relatively high response rate was calculated at 91.67 %. Compared to the response rates obtained from various surveys conducted locally and abroad, this was deemed to be relatively high. For instance, similar surveys conducted in Germany obtained about 60 to 65 %[7] response rates. Likewise, a series of panel surveys conducted in Metro Manila obtained household acceptance rates that ranged from 49 to 51 %.[8] The high rate of response to this pilot-test may be attributed to any one or combinations of the following : 1) personalized letters to the respondents; 2) hospitality and cooperatives of respondents; 3) high quality forms and questionnaires; 4) respondent's ease with the enumerators; 5) well trained and qualified enumerators; 6) valuable assistance from barangay officials; and 7) the token.

It is expected that a higher response rate shall be obtained with the actual implementation of the proposed incorporation considering the legal basis of the CPH and the particular provision in BP 72 which called on all local governments to support the conduct of the CPH. Moreover, the nationwide information dissemination that the NSO usually undertakes prior to the conduct of the CPH is also viewed to encourage participation and support from the population.

4.1.2. The Assigned and Actual Survey Methods

Of the 50 pilot sample households, 25 or 50 % were initially assigned to be interviewed using the PIM. The other half was assigned under the SAQ.

As can be seen from the following table, neither methodology maintained the 25 HH assignments. In some instances, the actual method used in the interview differed from the one assigned.

Table 9
Number of HH, By Assigned and Actual Method

ASSIGNED METHOD

	PIM	SAQ
PIM	25	
SAQ		25
TOTAL	25	25

ACTUAL METHOD

TO / FROM	PIM	SAQ
PIM	23	2
SAQ	6	19
TOTAL	29	21

Table 10 reveals that of the 25 households assigned under PIM, 23 maintained their assignments, while two shifted to SAQ. On both cases, the shifts were initiated by the respondents themselves who accordingly recognized the difficulty of the enumerator in reaching their respective residents.

Table 10
Number of Households / Percentage, By Assigned and Actual Methodologies by Reasons for Change

METHOD	ASSIGNED		ACTUAL		REASONS FOR CHANGE OF METHODOLOGY
	Number	Rate (%)	Number	Rate (%)	
PIM to PIM	25	100	23	92	
SAQ to SAQ	25	100	19	76	
SAQ to PIM			6	24	Respondent's difficulty in filling-up forms; ease with PIM over SAQ
PIM to SAQ			2	8	Respondent's preference of SAQ over PIM
TOTAL	50		50		

Table 11
No. of HH, By Actual Methodology Used

PIM	SAQ
29	21

It was reported that the residences of both households were quite distant (a little less than 1 kilometer for both cases) from the route of the nearest jeepney line. Thus, for the convenience of the enumerators, this strategy was resorted to. On the one hand, six out of the 25 households assigned with SAQ shifted to PIM for reasons such as difficulty in filling-up forms; and ease and convenience with the PIM. Consequently, 29 households were interviewed using the PIM while 21 for the SAQ. It should however be noted that of the 21 households assigned under SAQ, the trip characteristics of two households have been excluded in the analysis presented in the succeeding chapters. As confirmed by NSO staff, one household refused to participate in the person-trip survey due to alleged previous participation in a series of LFS undertakings. The forms provided to this household had therefore been returned empty. In the case of the other household, the entries on the person-trip questionnaire were deemed null and void due to extreme ambiguity.

4.2 T-test Results

This section attempts to investigate if there were marked differences bewteen the PIM and SAQ across 13 specific indicators. Said indicators are shown in table 12. The performance of a two-tailed, t-test at 95 % confidence level aided in determining the capability of each survey methodology in administering the combined person-trip survey and CPH instruments. As far as data quality is concerned, it was found out that there was a significant difference between the PIM and SAQ, with the PIM appearing to be a more favorable methodology. In summary, table 13 gives a picture of the difference between the PIM and SAQ. With respect to interview time, it was found out that there is no significant difference between PIM and SAQ.

Table 12 : Specific Indicators Analyzed by Methodology

BASIS FOR COMPARISSON	SPECIFIC INDICATORS
Quality of Data	Number of correct data entries Correct data entries per person with reported trips Correct data entires per total number of trips reported
Interview Time	Interview time per household member Interview time per visit No. of visits per household
Number of Trips Reported	No. of trips reported Trips reported per person with reported trip Trips per household member Trips per household member 7 years old and above
Number of Persons with Reported Trips	Number of persons with reported trips Persons with reported trips per HH member 7 years old & over Persons with reported trips per HH member

Table 13
Summary of Differences of PIM and SAQ, By Specific Criteria

SPECIFIC CRITERIA	DIFFERENCE BETWEEN PIM AND SAQ
QUALITY OF DATA	
Number of correct data entries	1
Correct data entries per person with reported trips	1
Correct data entries per total number of trips reported	1
INTERVIEW TIME	
Interview time per household member	3
Interview time per visit	3
No. of visits per household	3
NUMBER OF TRIPS REPORTED	
No. of trips reported	3
Trips reported per person with reported trip	3
Trips per household member	3
Trips per household member 7 years old and above	3
NUMBER OF PERSONS WITH REPORTED TRIPS	
Number of persons with reported trips	3
Persons with reported trips per HH member 7 years old & over	3
Persons with reported trips per HH member	2

LEGEND :

1 : Significant, (+ t)
2 : Significant, (- t)
3 : Insignificant, (+ t)
4 : Insignificant, (- t)

This means that either PIM or SAQ can be used in the interview process because the difference in the time spent in administering each tool was insignificant. Albeit, the SAQ seemed to be a more efficient methodology as it consumed lesser time compared to PIM.

The other criteria used for comparing the two survey methodologies were the : 1) number of trips reported; and 2) number of persons with reported trips. Generally, there were no

observed significant differences between the PIM and SAQ regarding these criteria. That means, whether PIM or SAQ was utilized in a survey, the difference of the number of trips reported and the number of persons with reported trips resulting from each methodology was insignificant. Notwithstanding, the PIM appeared to be a more favorable methodology over the SAQ due to the higher means attributed to the PIM.

To sum up, the following table enumerates the apparent advantages and disadvantages of each methodology as gathered from the above discussions.

Table 14
Matrix of Advantages / Disadvantages of Survey Methodologies

METHODOLOGY	ADVANTAGE	DISADVANTAGE
PIM	- data quality is assured - more number of trips reported and more number of persons with reported trips appeared to be an advantage	- appears to consume more interview time
SAQ	- appears to require lesser interview time	- data quality is not assured - lesser number of trips reported and lesser number of persons with reported trips appeared to be a disadvantage

Above all, the issue at hand appears to be on the quality of data. While utilizing the PIM may outrightly address this issue, the benefits (shorter time and lesser cost) ascribed to SAQ should not however be discounted. Moreover, the apparent advantage of PIM over SAQ in terms of greater number of trips reported and of persons with reported trips, should likewise be considered as this had an implication on the reliability of the data generated from the survey.

Insofar as the appropriate methodology in incorporating person-trip survey to the census is concerned, the advantages attributed to PIM should be seriously considered.

4.3 Opportunities / Benefits Derived from the Pilot-test.

The following gives an account of the amenities, problems and issues encountered in the pilot-test. It envisions to provide a foundation for the formulation of appropriate strategies in incorporating person-trip survey to the census. Inputs to this section were primarily drawn from the feedback made by the enumerators during the series of Post-Pilot-test Assessment Workshops conducted. A basic framework for the intended incorporation is initially advanced at the end of this chapter.

4.3.1 Amenities derived from the Pilot-test

Physically appealing forms. The questionnaire set and its accessories were made from high quality materials. This boosted the confidence of the enumerators as they dealt with their respondents. On the respondent's side this gave a good impression to the survey and its sincere intentions.

Added amenities such as illustration, instructions and arrows. This substantially helped the enumerators explain the procedures in accomplishing the person-trip survey forms. Besides, some respondents benefitted from these features hence, accomplishing the forms was facilitated.

Sufficient enumerator's survey kit. The survey kit consisted of the enumertor's ID Card, 1 transparent and 1 expanding long envelope, pencil, eraser, clip board, double clips, magic clips, extra survey forms, letters to the respondents and additional blank letters (in case of replacements), the enumerators manual plus additional reminders to enumerators on separate sheets. The adequacy of the kit accordingly added some degree of confidence on the part of the enumerators as they conducted the survey.

Training / Workshop and pre-testing. The training workshop and pre-testing was very beneficial because it accordingly clarified some issues raised with respect to the survey.

Letters to the barangay captain and respondent. A letter to the barangay captains concerned made them aware of the forthcoming pilot-testing in their respective jurisdictions. The letters were personally delivered by the supervisor to the barangay captain's residence 2 days before the scheduled survey. In areas where the supervisor personally met with the barangay captains, (barangay captain present during the letter was delivered), the addresses of some known respondents were given. The information aided the enumerators in locating the respondents.

Likewise, the personalized letter to the respondent (Appendix H) impressed upon them the sincerity of the survey. Somehow it assured them of the confidentiality of the information obtained from their household.

Qualifications of enumerators. The enumerators were all college graduates. Two were residents of Baguio City while the other one was from the Province of Benguet. They were previously involved as contractual employees (some were supervisors at the same time enumerators and editors) to various survey and census undertakings by the NSO. They were involved in various Labor Force Surveys, the 1990 CPH and the 1995 POPCEN. All of them were familiar with the area and were fluent with Ilocano, the commonly used dialect in the area. The other was also fluent in Ibaloi, a native dialect which proved to be advantageous as he dealt with native respondents.

Overall survey organization. The headquarters of the pilot-test was at NEDA-CAR Conference Hall, Baguio Botanical Garden. The supervisor made herself available in that office most of the time during the survey period. A hotline telephone was also made available in cases where the resolution of problems and constraints encountered were urgently needed.

The enumerators were required to visit the headquarters every now and then. They were asked to : 1) submit verbal reports on the status of the survey ; and 2) report important feedbacks from respondents. At least two (2) meetings were held for each survey stage. The regular meetings conducted proved to be an avenue for checking the progress of the survey while resolving vital issues encountered especially where there were doubts with the manner of accomplishing person-trip survey forms.

Good rapport between the enumerators and supervisor. A friendly atmosphere was maintained with respect to supervisor-enumerator, enumerator-enumerator relationships. In one instance where an enumerator had some difficulty with regards to PIM - SAQ implementation, another round of discussion ensued to clarify vague issues. Likewise, to get a feel of what had been actually transpiring in the field, the supervisor voluntarily accompanied one enumerator for the interview of household members.

Furthermore, an open communication within the team was also maintained. For example, the idea of giving-away two types of tokens (a glass canister for the middle to high income groups ; and a bag of assorted groceries for those belonging to the low-income levels) had been a very practical suggestion from the enumerators.

The token. The give-aways proved to be a sign of sincere appreciation and gratitude for the cooperation and support of the households. This also boosted the morale of the enumerators.

On the part of most respondents, the tokens were generally felt as well deserving for the efforts they made. On some households however, these created some sort of guilty feelings especially for the non-complying and mistrustful ones.

The memory jogger. In most instances, the memory jogger accordingly facilitated the interview process. For both PIM and SAQ, it was usually used as the basis in accomplishing person-trip forms, especially in cases of non-complying household members. Although quite a number of the household members did not bring this document along with them during the survey day as instructed, most of them accomplished the memory joggers properly and completely.

Extra and readily available forms. A stock of blank forms were provided to each enumerator. Thus, . there were no problems encountered regarding form availablity.

4.3.1 Problems / Issues Encountered in the Pilot-test

While there were a number of amenities derived from the pilot-test, the magnitude of constraints met was much more. The following were the problems and issues identified in the conduct of the pilot-test as perceived by the enumerators :

Difficulty in locating the respondents. The NSO Baguio-Benguet Staff, randomly drew the 50 pilot-sample households from the 8 target barangays. Only a few (about 10 %) households had their corresponding complete addresses. Consequently, there was difficulty in locating most of the households.

This problem was aggravated by a substantial cases of respondents who were either unknown or have already left their previous residence. Of the 50 households for example, there were 11 or 22 % unknown; and another 11 already moved to another barangay or area or were abroad; while 3 were already deceased.

This constraint could be traced from a number of reasons such as : 1) lack specific addresses, as in most cases, there were no house numbers nor street names where the respondents could be encountered; 2) obsolescence of the 1990 Census of Population and Housing Listing from which the names of the respondents were drawn; 3) difficult terrain and accessibility / mobilty problems; 4) present barangay officials as well as residents in the barangays were not familiar with the respondents nor their whereabouts; and 5) respondents were relatively distant from one another.

A similar case was observed in a study on the conductivity of panel analysis in Metro Manila. The difficulty of locating the respondents was also identified as a major constraint in the survey (Lidasan, p.44). While this problem could be resolved through replacements, the process of locating the unknown respondent alone and the time consumed in looking for a willing replacement substantially delayed the survey. While replacements may be considered immaterial to the result of the study, the cost of delay associated with it may be high.

Considering the foregoing, perhaps a review of the survey process involved need to be undertaken. The MMUTIP survey approach where *households were sampled at equal intervals in the selected barangays* might be more feasible.

Too many replacements. Perhaps it was also because of the obsolescence of the household listing, that the rate of replacements was substantial. About 56 % of the sample households were replaced. The many replacement cases prolonged the duration of the survey.

Further, the continued absence of the respondents in their own residence at the time of the visits compelled the enumerators to look for replacements. As earlier cited, this has some implications on the cost of the survey.

Too many call backs made on some respondents. In some PIM instances, the respondents who were supposed to be interviewed were not present at the time of the scheduled meeting. It was observed for example, that about 10 % of the households were not able to keep up with their previous commitments. This obliged the enumerator to set another date for interview until the process is completed.

Likewise in terms of the SAQ, the respondents were not able to submit the accomplished survey forms at the time of the scheduled pick-up date. In fact, about 14 % of the households experienced difficulty in filling-up the forms. This had been resolved by changing the methodology from SAQ to PIM.

On both cases of shifting, there is an implied added cost particularly on enumerator's transportion and wage. A review on the survey methodology should perhaps be made in order to limit, if not, totally rule-out the concept of call backs.

Too long interview process. In several instances, there were households interviewed beyond the average interview time. Perhaps this was partly because there were too many questions asked but, more precisely because of the Filipino culture of hospitality. Accordingly, some respondents exchanged pleasantries with enumerators while the interview went on. Hence, the longest interview time recorded was 1 hour 15 minutes, while the shortest was recorded at 30 minutes.

Although this issue had some positive effects especially in observing the so-called *GMRC*, this had some negative impact on survey cost. Perhaps then, this issue could be resolved by focusing on the content and structure of the questionnaire in order to shorten interview time.

Shifting from one methodology to the other. This proved to be a very common observation. Initially, there were 25 households assigned to be interviewed under the PIM and 25 for the SAQ. However, due to the difficulty in filling-up the forms, several shiftings particularly from SAQ to PIM was noted. Likewise, changes from PIM to SAQ have also been observed on 2 instances. Accordingly, this was resorted to due to the difficulty in accessing the residence of the respondents.

Inconsistent employemt of survey methodology on some households. In a number of cases under PIM, in which household members cannot possibly be interviewed, the memory jogger was used as basis in accomplishing the person-trip survey forms. In this case, the enumerator filled up the person-trip form with the assistance of another responsible household member.

This also occurred in some households under SAQ in which some non-complying members were likewise unable to accomplish their person-trip forms. In such cases, it was either the enumerator or another responsible household member who accomplished the person-trip forms of said non-complying members. Trip information were based from the memory jogger of said non-complying member.

It could be inferred from the above observation that consistently employing the processes involved in PIM or SAQ is rather impossible. As this may imply adverse effects on data quality, a review of the survey process should be instituted.

Insufficient enumerator's pay. The enumerators were paid P 200 per household, inclusive of transportation allowance. Accordingly, this amount was still insufficient considering the several call backs they made. Besides, they had to eat their lunch outside of their homes to be able to catch up with several appointments earlier made with respondents.

Enumerator's preference of SAQ over PIM. The PIM is accordingly difficult to implement because the enumerator would have to make several call backs to interview each household member in order to complete the process. This implies additional cost in terms of transportation. It likewise prolonged the survey period.

In the case of SAQ, the enumerator also makes several call backs to the household. The intention however is, not to interview but, to gather the completed set of person-trip

questionnaires. Hence, lesser time and cost burden on the part of enumerator was required.

Exclusion of two households from the analysis. The non-inclusion of 2 households in the analysis of SAQ responses was brought about by the : 1) non-participation of 1 household to the person-trip survey; and 2) ambiguity of answers made on the person-trip questionnaire by the other household. As was earlier cited, the household who refused to participate in the person-trip survey was accordingly due to his being a repeated respondent under the LFS. Meanwhile, the other household participated in the person-trip survey but, its answers to the questionnaires were rather vague and incomprehensible. Notably, the questionnaires appeared to have been accomplished in haste. This observation could be associated to the limited time given for the completion of the survey.

Bulky questionnaire set. As earlier informed, the questionnaire consisted of three parts. These were the questions on : 1) population ; 2) housing ; and 3) person-trip. All in all there were 72 questions included in the 9-page questionnaire set. Accordingly, the completed questionnaire set were rather bulky particularly on the person-trip survey forms in which there was one (1) questionnaire for every single trip. This was accordingly bulky because a household which generates 25 trips during the day, would have to accomplish and submit a total of 25 pages, excluding the population and housing questionnaires.

This was not accordingly practical because the enumerators would still need to carry and bring the completed set along with them, for the whole day. Apart from that, the forms entailed additional burden on transportation expenses on the part of the enumerators. It also implied additional materials cost for its production.

Duplication of some questions. An example of a repeated question was accordingly that of the workplace and school addresses. These were asked in the population census questions and again in the person-trip survey questions.

The institution of origin and address were likewise a repitition especially when it came to answering the details of another trip.

This issue does not only imply additional material cost and time, it also confused the respondents and enumerators. Thus, a review of the questionnaire should therefore be instituted in order to address duplication problems.

Too many cross-referencing. The person-trip survey questions required the participation of household members 7 years old and over. Hence, prior to distributing the person-trip survey forms, the enumerators would still have to refer to the completed population census questions in order to determine the needed number of forms. The enumerator also needs to identify whom to interview for the person-trip portion using the population census questions as reference. Obviously, this process required additional time. Apart from taxing, it was also prone to mismatching of person-trip and socio-economic information.

This issue was likewise encountered in the editing process. Logically checking the trip data entries of each household member entailed the continued review and examination

of the socio-economic characteristics of the individual. This tedious process consumed too much time and is likewise prone to mismatching of information provided.

To save on time, a restructuring of the questionnaire should be therefore undertaken. This will also minimize too much cross-referencing and mismaching.

Unfriendly person-trip questionnaire structure.. The 2-page person-trip questionnaire included : 1) 12 questions; 2) instructions for filling-up the forms; and 3) one illustration defining a trip. Although simply designed and structured (because respondents would only have to check the appropriate boxes corresponding to their answers), the questionnaire accordingly appeared very intimidating. There were accordingly too many questions squeezed in a just two pages. And that the instructions were in paragraph form and were printed using small fonts. Because of these, there had been difficulty in accomplishing the forms.

A restructuring of the person-trip survey questions is therefore called for. Enhancements on the font sizes should be instituted. Likewise, instructions should not be written in paragraph form.

Too long skipping patterns. The population census questions included a number of skipping patterns or "GO TO" statements. Accordingly, some were too long that it directed the enumerator to turn to another page in order to complete a loop. This was particularly observed on the labor force section of the questionnaire. Because of this, the enumerators were ocassionally confused. Aside from time consuming, this also required checking and double checking due to its vulnerability to mismatching.

Some respondents declined to report their incomes. Perhaps partly due to lack of authority or skepticism about the confidentiality of the information provided, some households declined to give facts about their financial standing. Perhaps the support of a more authoritative entity is needed to resolve this issue.

Insufficient time allocated for the training workshop and pre-testing. The training workshop and pre-testing was a one-whole day activity. One-half day was allocated for discussion on the Enumerator's Manual while the other half was scheduled for the pre-testing of the questionnaire set. Besides, this also served as the *hands-on* and *dry run* part. The alloted time for the hands-on portion particularly that for the person-trip survey forms were accordingly deemed insufficient. This resulted to some doubts on the part of some enumerators especially in accomplishing the person-trip forms. Conformably, the workshop design should have appropriated more time for practice exercises, especially on the newly incorporated person-trip questions. This should have been done prior to conducting the hands-on portion.

Insufficient time alloted for the duration of the pilot-test survey. There were two stages of the pilot-test. The first was an 8-day survey of 30 households with 3 enumerators, administering. This held an average rate of 1.25 household per enumerator-day. Considering the difficult terrain and the problems associated with locating the respondents, this given period was accordingly insufficient.

On the other hand, the second stage was a 6-day survey with 20 households and 2 enumerators. This had a rate of 1.67 household per enumerator-day. Accordingly, the enumerators experienced more difficulty with such a schedule.

For data quality considerations, it was decided upon that an average of 1 to 1.25 household per day be alloted to each enumerator.

5.0 CONCLUDING REMARKS AND FURTHER DIRECTIONS OF THE STUDY

5.1 Concluding Remarks

This study revealed that incorporating person-trip survey into the CPH was found to be worthwhile and feasible because : (1) person-trip survey and the CPH share the same target population - the household. This makes the incorporation easier and implementable; (2) the CPH used complete enumeration and the sample as means of data gathering. This also allows easier incorporation of the person-trip survey into the CPH because the former also used samples in data gathering; and 3) the data obtained in the CPH and in traditional person-trip surveys were very much alike, thus, allowing for easier and more efficient data gathering activity.

Furthermore, the intended incorporation was found to be legally feasible. Batas Bilang Pambansa 72 did not restrict any rider into the conduct of the Census of Population, provided, this was approved by the NEDA. Thus, an enactment of a new law to operationalize the intended incorporation was not required. Moreover, using the response rate as an indicator, this study likewise demonstrated that merging the said instruments was acceptable on the part of the respondents. This was manifested by the relatively high rate of response to the pilot-test survey.

In terms of applicability of the survey methodology, this study also revealed that the more favorable method of data gathering for the intended incorporation was the personal interview method (PIM). Compared to the self-administered questionnaire (SAQ), utilizing the PIM generated better data quality. On the other hand, the other indicators such as the : (1) time spent in the interview; (2) number of trips reported; and (3) number of persons with reported trips, exhibited no significant difference with the use of both methodologies. Utilizing the SAQ however, appeared to manifest an advantage in terms of lesser interview time while the PIM appeared to be more appropriate especially because it seemed to encourage the reporting of more trips and appeared to have motivated household members to report the trips they actually took.

This study also analyzed the opportunities, problems and issues encountered in the pilot-test. These were reviewed and investigated in order to help establish a framework from which strategies for the intended incorporation could be instituted. The following are the recommended strategies in efficiently incorporating person-trip survey into the CPH.

1. Methodological Aspect

Maintain / Develop further the opportunities / benefits derived from the pilot-test. The opportunities / benefits which were derived from the pilot-test should be maintained and further developed as these proved to have contributed to the viability of the proposed

incorporation, particularly, in obtaining the relatively high rate of response. Table 15 provides a matrix of these opportunities and their corresponding courses of action. Maintaining and further developing these strategies were also deemed necessary to effect a positive impact on the quality of the data generated from any data gathering activity.

Table 15

Strategies for Maintenance / Further Developing

Opportunities / Benefits Derived from the Pilot-test	Remarks
Physically appealing forms	- maintain this strategy
Added amenities such as illustration, instructions and arrows	- further develop this strategy by making each item specific and clear
Sufficient enumerator's survey kit	- maintain this strategy
Training / Workshop and pre-testing	- further develop this strategy by allowing more time for the training / workshop - practice exercises should be included in the design of the workshop
Letters to the barangay captain and respondent	- maintain this strategy
Qualification of enumerators	- maintain this strategy
Overall survey organization	- maintain this strategy
Good rapport between the enumerators and supervisor	- maintain this strategy
The token	- when practicable, this should be maintained
The memory jogger	- when practicable, this should be maintained
Extra and readily available forms	- maintain this strategy

Considering the recognized detrimental effects of poor survey design to the quality of data, care must be taken in deciding which questionnaire design and material was appropriate. The choice of an appropriate survey design substantially rests on the purpose of the survey, desired levels of accuracy, socio-economic characteristics of respondents, physical characteristics of the survey area and budget and time constraints. Likewise, the qualifications of enumerators have convincingly demonstrated that these had an effect on the quality of data obtained in any data gathering activity. Thus, it is important that enumerators are familiar with the survey area and are able to properly communicate and interact with their prospective respondents. As much as possible, enumerators should be properly trained not only in terms of the technical aspects of the questionnaire but also, in terms of public relations. As such, training / workshop for the enumerators should be properly designed and conducted in order to reduce the possible effects of interviewer bias. Moreover, an overall survey organization should also be properly planned and put into effect as efficiently as possible.

Restructure and review the content of the pilot-test questionnaire. The problems encountered such as : 1) bulky and heavy questionnaire; 2) duplication of some questions; 3) too long skipping patterns; 4) too many cross-referencing; 5) too long interview process; and 6) too many call back, indicated the need to restructure and review the content of the pilot-test questionnaire. As much as possible, the person-trip survey should be integrated into the population census questions to avoid too many cross-referencing.

A review of the contents of questionnaire should also be undertaken. If possible, person-trip information items should be reduced to include only those more important ones such as the details of "home-to-work" trips. These include : 1) common mode of travel; 2) average travel time; and 3) workplace address. Incorporating the details of "home-to-work" trips into the CPH, instead of a separate section for the entire person-trip survey

questions as in the pilot-test questionnaire, shall address the identified problems such as: 1) too long interview process; 2) too many call back; and 3) bulky and heavy questionnaire. This also facilitates data gathering and the interview process. Moreover, duplication of questions and too long skipping patterns may also be avoided with this measure. At this point, it is worthwhile to note that emphasis is being placed on gathering the details of "home-to-work" trips because it was easily obtainable compared to other trip purposes. "Home-to-work" trip information were readily generated due to its fixed places and institutions of origin and destination. Moreover, these trips were deemed important in transportation planning because it generally captured the second largest share of total trips made, next only to "to-home" trips.

Use of the personal interview method. The use of personal interview in administering the combined person-trip survey and CPH instruments should be encouraged as it ensured data quality. Compared to SAQ, the PIM as a data gathering tool was found to be suitable for all types of respondents, thus, it is more versatile. Besides, it is compatible with the one currently used in conducting the CPH.

Sampling and implementation strategies. In incorporating person-trip survey into the CPH, a combination of complete enumeration and sampling need to be maintained. Just like the usual conduct of the CPH, two (2) sets of questionnaire should be developed; one set for sample households designated to be asked questions on three aspects : 1) population; 2) housing; and 3) person-trip survey questions. The other set which is intended for the non-sample households is concerned with population and other housing questions only.

Furthermore, in determining the needed sampling rate for the person-trip survey, there is a need to explore the possibility of using the same sampling rates adopted in the 1990 CPH. Although the sampling rates used in the 1990 CPH were relatively higher compared to that of recommended person-trip surveys, adopting the same sampling strategy is still deemed to be logically sound. Moreover, this shall allow easier data gathering and processing especially during the actual implementation stage.

2. Institutional Aspect

Creation of an inter-agency technical working group. To fast-track implementation, an inter-agency TWG may be created under the auspices of the Transportation Science Society of the Philippines (TSSP), NEDA and NSCB to further study the proposed incorporation.

5.2 Further Directions of the Study

1. For a more comprehensive evaluation of the feasibility of incorporating person-trip survey into the CPH, the following should be undertaken :

    1.1 The operational costs required in each survey methodology should also be studied to help in choosing the most favorable methodology.

1.2 A revalidation of this study's findings should also be made by conducting a similar pilot-test in another area.

1.3 Other options / strategies for appropriately incorporating person-trip survey into the CPH should also be initiated.

1.4 An appropriate and efficient coding system should be established for the intended incorporation. Efficient data processing likewise merits intensive investigation.

1.5 A study on the applicability of panel analysis and the so-called activity-based surveys should also be explored. These had been found to be effective in other countries.

2. Considering the perceived disadvantages of incorporating person-trip survey into the CPH such as : (1) heavy and bulky questionnaire; (2) reduced data items to be asked on trip details; and (3) additional operating costs; the feasibility of other options should also be investigated. These options include the possibility of incorporating person-trip survey into the Labor Force Survey (LFS) or conducting a stand-alone person-trip survey. After a thorough evaluation of all these possible options, the most efficient one should be recommended for implementation.

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[1] National Economic and Development Authority by Alatec-Harris Tym Group, Baguio and Dagupan Urban Planning Project : Baguio Urban BLIST, Supporting D Technical Studies. Final Report. October 1994, (n.p.,n.p.,n.d.), D2-2

[2] Olegario G. Villoria, et. al., Uncertainty in Transportation Demand Forecasting.(n.p., n.p., n.d.), n. pag.

[3] National Statistics Office, "Appendix A, Benguet. Report No. 3-15N" , 1990 Census of Population and Housing, 109

[4] United Nations Asian and Pacific Development Institute (UNAPDI), Information for Development Planning. Report of the Seminar on Information for Development Planning, Pattaya, Thailand. 1978 (n.p., n.p., n.d.), 8

[5] Hussein S. Lidasan. A Study on the Conductivity of Panel Survey and Applicability of Panel Data in the Analysis of Variations in Socio-economic Characteristics and "To-work" Travel Behavior Analysis in Developing Countries. 1994 (n.p., n.p., n.d.), i

[6] Hussien S. Lidasan., 26

[7] Manfred Wemuth. "Non-sampling Errors Due to Non-Response in Written Household Travel Surveys". New Survey Methods in Transport. (Utretcht : VNU Science Press, 1985), 349-354

[8] Hussein S. Lidasan. A Study on the Conductivity of Panel Survey and Applicability of Panel Data in the Analysis of Variations in Socio-economic Characteristics and "To-work" Travel Behavior Analysis in Developing Countries Metro Manila : A Case Study. 1994-1995. (n.p., n.p., n.d.), 44

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REFERENCES

Abad, Teresita G. (1989) "Design and Implementation of Planning Information Systems at the Meso-Micro Levels : A Case of Region IV"

Ampt, Elizabeth S. (1989), "Comparison of Self-Administered and Personal Interview Methods for the Collection of a 24-Hour Travel Diaries". Transportation Policy, Management and Technology Towards 2001. Selected Proceedings of The Fifth World Conference on Transportation Research. Volume IV. Western Periodicals Company California, USA

Ampt, Elizabeth S., et. al., eds. (1985), "Second International Conference on New Survey Methods in Transport : Conference Summary". New Survey Methods in Transport. VNU Science Press, The Netherlands

Ampt, Elizabeth S. (1989) "Transport Policy, Management and Technology Towards 2001". Selected Proceedings of the 5th World Conference on Transport Research Vol. IV. Western Periodicals Co., California

Aquino, Gaudencio V. (1971) "Essentials of Research anf Thesis Writing." Phoenix Publishing House, Quezon City

Biciunas, Aristilde E. (1983) "Workshop on Data Needs and Collection". Travel Analysis Methods for the 1980's, Special Report 201. Transportation Research Board. National Academy of Sciences, Washington

Brog, Werner, et. al. (1983) "State of the Art in Collection of Travel Behavior Data". Travel Analysis Methods for the 1980's, Special Report 201. Transportation Research Board. National Academy of Sciences, Washington

Brog, Werner, et. al. (1985) "Collection of Household Travel and Activity Data : Development of a Survey Instrument". New Survey Methods in Transport. VNU Science Press, The Netherlands

Brog, Werner, et. al. (1985) "Selected Results of a Standardized Survey Instrument for Large-Scale Travel Surveys in Several European Countries". New Survey Methods in Transport. VNU Science Press, The Netherlands.

Chou Ya-Lun. "Probability and Statistics for Decision-Making". (1972) Holt, Rinehart & Winston, New York.

Dimitriou, Harry T., et. al. eds. (1990), "Transport Planning for Third World Cities" Routledge, London

Dunphy, Robert T., (1979) "Travel Data from the U.S. Census : A New Foundation for Transportation Planning". Applications and Use of Transportation Data. Transportation Research Record 701. National Academy of Sciences, Washington D.C.

Fielding, Pete (Chairman) (1985). 'Sample Design". New Survey Methods in Transport. VNU Science Press, The Netherlands

Golob, J.M. and Golob, T.F. 'Travel Analysis Methods for the 1980's." Transportation Research Board. Special Report No. 201. National Research Council. Washington D.C.

Jones, Peter M. 'Diary Surveys (1985)." New Survey Methods in Transport. VNU Science Press, The Netherlands

Jones, Peter M. (1992) 'Some Recent Methodological Developments in Our Understanding of Travel Behavior" IATSS Research_ Journal of the International Association of Traffic and Safety Services Vol. 16 No. 2 1992. IATSS, Tokyo

Kuzmyak, J. Richard., et. al. (1979) 'Use of Travel Diaries in Collection of Travel Data on the Elderly and the Handicapped (Abridgment)." Applications and Use of Transportation Data. Transportation Research Record 701. National Academy of Sciences, Washington D.C.

Lidasan, Hussein S. (1995) "A Study on the Conductivity of Panel Survey and Applicability of Panel Data in the Analysis of Variations in Socio-economic Characteristics and *To-work* Travel Behavior Analysis in Developing Countries : A Case Study. 1994-1995"

Liss, Susan. (1984) 'Standard Census Products Related to Transportation Planning". Census Data and Urban Transportation Planning in the 1980s. Transportation Research Record 981. National Research Council, Wachington

Locke, Lawrence F. e. al. (1985), 'Proposals that Work. A Guide for Planning Dissertations and Grant Proposals." Sage Publications, California, USA

Japan International Cooperation Agency (JICA). (1984) The Metro Manila Transportation Planning Study (JUMSUT). Final Report. Main Text. Part V : Home Interview Survey (HIS).

Mcdonell, James J. (1984) 'Transportation-Related Questions on the Decennial Census". Census Data and Urban Transportation Planning in the 1980s. Transportation Research Record 981. National Research Council, Wachington : 1984

Mcloughlin, J. Brian. (1969) 'Urban and Regional Planning : A Systems Approach". Faber and Faber, London

Meyburg, Arnim H. (1985) 'Questionnaire Design abd Piloting." New Survey Methods in Transport. New Survey Methods in Transport. VNU Science Press, The Netherlands

Ministry of Transportation and Communications (MOTC), (1981) 'Home Interview Survey" Metro Manila Urban Transport Improvement Project (MMUTIP) Vol. M-2. May 1981,

Ministry of Transportation and Communications and Baguio City Local Government, " (1983) Survey Instruments and Other Documents Vol.3 Baguio City Transportation Project (BCTP).

National Economic and Development Authority (NEDA), (1994) 'Baguio and Dagupan Urban Planning Project (BDUPP) Supporting Volume D Technical Studies. Final Report."

National Economic and Development Authority (NEDA), (1994) 'Medium Term Philippine Development Plan (MTPDP) 1993-1998".

National Economic and Development Authority (NEDA) (1984), 'Project Development Manual".

National Economic and Development Authority (NEDA) and National Census and Statistics Office (NSCO). (1985) 1985 Family Income and Expenditures Survey. Integrated Survey of Households Bulletin Series 56. Volume I, National Summary : Final Report

National Statistics Office (NSO), (1992) 'Explanatory Text" 1990 Census of Population and Housing Report No. 3-10N : Socio-economic and Demographic Characteristics Baguio City

National Statistical Coordination Board (NSCB), 'Philippine Statistical Development Program 1993-1998"

Organization for Economic Co-operation and Development (OECD), (1977) 'Transport Requirements for Urban Communities : Planning for Personal Travel". OECD, France :

Ortuzar, Juan de Dios, et. al.,'Modelling Transport."(1990) Second Edition. John Wiley and Sons, Chichester

Pagoso, Cristobal M., (1978) et. al. 'Fundamentals Statistics for College Students". Sinag-tala Publishers, Manila

Parel, Cristina P., (1978) et. al. 'Social Survey Research Design". PSSC Social Survey Series Number 1. Philippine Social Science Council, Quezon City

Sammer, Gerd. et al. (1985) 'Effects of Various Population Groups and of Distribution and Return Methods on the Return of Questionnaires and the Quality of Answers in Large Scale Travel Surveys". New Survey Methods in Transport. VNU Science Press, The Netherlands

Smith, Michael E. (1979) 'Design of Small-Sample Home Interview travel Surveys". Applications and Use of Transportation Data. Transportation Research Record 701. National Academy of Sciences, Washington D.C.

Southeast Asia Agency for Regional Transport Communications (SEARTAC), (1977) "Transportation Planning and Administrative Manual For Intermediate Size Cities in Southeast Asia". Kuala Lumpur

Stopher, Peter R. (Chairman). (1985) "Total Design Concepts". New Survey Methods in Transport. VNU Science Press, The Netherlands

University of the Philippines Planning and Development Foundation (UP-PLANADES) (1986) "Rural Accessibility Study for the International Labout Organization".

United Nations Asian and Pacific Development Institute (UNAPDI), "Information for Development Planning. Report of the Seminar on Information for Development Planning, Pattaya, Thailand." 1978

Villoria, Olegario G. Jr., "Urban Transportation Modelling : The Activity-Based Travel Analysis Approach". A Presentation for the First Annual Conference of the Transportation Science Society of the Philippines. 1993

Villoria, Olegario G. Jr., et. al., "Uncertainty in Transportation Demand Forecasting." A Presentation for the Sixth National Convention on Statistics : Gearing the Philippine Statistical System Towards the 21st Century. 1995

Walpole, Ronald E. et. al., "Probability and Statitics for Engineers and Scientists". Third Edition. Macmillan Publishing Company, New York : 1985

Wermuth, Manfred. "Non-sampling Errors Due to Non-Responses in Written Household Surveys." New Survey Methods in Transport. VNU Science Press, The Netherlands : 1985