EVALUATION, ANALYSES AND USES OF CENSUS RESULTS

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A. Evaluation of Field Operations and Census Results

1. Field Operations – Operations Research and Quality Control Checks
2. Checks Using Recent, Good Micro-Data (PBMES Surveys) from Project Sites.
3. Post-Enumeration Survey (PES): Censuses of Population and Agriculture – Non-Sampling Errors.

B. Analyses for Planning and Development

1. Population Profiles by Age/Sex/Education Small and Marginal Farmers and Agricultural Laborers Development Programs/Marketing Strategies by Sex/Income/Culture
2. Drought Prone Area Program/Censuses and Maps in Food Consumption Surveys
3. Cultivable Waste Lands in Operational Holdings
4. High Yielding Varieties (HYVs) and Multiple Cropping Programs
5. Irrigation Programs/Farming Systems/Industrial and Urban Sites
6. Drawing of a Fertilizer Program/Credit Program
7. Livestock/Poultry Program: Households (Backyard) v.s. Commercial Establishments
8. Agricultural Machinery and Implements
9. Incomes and Prices/Manpower and Education Development

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10. Land Reform/Political Aggrupations (Number of Delegates)
11. Census Data in Taxation
12. Census Results and Other Data Needs for Research, Planning and Evaluation

C. **Uses for Statistical Purposes**

1. As Sampling Frame and Bases for Analystical Studies Agro-Economic Zones as Statistical Strata
2. Adjustments from Censuses/Ratio Estimators
3. Weights in Index of Agricultural Production (IAP)
4. Monitoring Changes in Poverty, Inequality and Unemployment Project Benefit Monitoring and Evaluation System (PBMES)
5. Risk and Uncertainty: Distributions of Crop Yields

D. **Special (Transitional) Approaches** in Census Operations Planning and Area Development Schemes and Community Level Systems Approach.

COMMENTS OF B. T. OÑATE

1. Discussions on surveys and censuses will require concepts and linkages between surveys, censuses and the other important components of the entire statistical system (SS) and its sub-systems (i.e. SS Food and Agriculture (FA) and the non SS FA). The flows in the Statistical System will indicate the interaction between surveys and censuses. Due to time limitation, only a few of these interactions could be presented.
2. My role today is to articulate some dimensions related to Evaluation, Analyses and Uses of Census Results. Some of the selected topics are given in the hand-out. In 1978, I wrote a book on "Statistical System in Food and Agriculture: Evaluation, Analysis and Uses of Agricultural Census Results". It is my desire, however, to touch upon only 2 or 3 topics given in the handout, namely:

   (i) *Evaluation* of Census Results through the Post Enumeration Survey (PES)

(ii) *Analysis* for Political Aggrupation to Determine the Number of Delegates and the Amount of Pork Barrel to be allocated.

(iii) *Uses* as Sampling Frame, Bases for Analytical Studies and Weights for Sampling with PPS (probability proportional to size).

Topics (i) and (ii) are statistical approaches while Topic (ii) borders on the political/social implications of census results.

3. *PES* is a simple experiment in two groups but it is, however, recognized to be operationally complex and difficult. This evaluation technique is applied basically to control biases and/or non-sampling errors (NSE) in censuses and surveys. As producer of data, the SS must set certain standard specifications akin to standards set by industry to their commodities. Without PES, the SS would be in a sort of quandary (so to speak) about the contribution of Bias or NSE in the magnitude and control of Mean Square Error (= $S.E.^2$ + $Bias^2$). Some results from the PES of the Agriculture Census in 1971 are available (See Table 3jj, Oñate 1982). These findings are more or less consistent with those reported from other analytical studies.

4. *Sampling Frames*

Population/Production

(a) First Step – *Paper Stratification*/Use of Effective Stratification Variables to Controllable Limits (Population number, area (Ha.) and or number of holders), Barangay frame as PSUs.

$$n_h = n\ (N_h\ S_h / \sum_h N_h\ S_h)$$

optimum allocation ≐ equal take of PSU's)

(i) Barangay as PSU's

(ii) Most of the variance in, say, 2 stage sampling PSU's (barangay) and SSUs (households) would emanate from the between *PSU* variations (major contributor).

(b) Second Step – change the estimation procedure without change in design. No change in design but change estimation procedure from stratified-two-stage *random* stratified-two-stage *separate ratio*

X = Paddy Production ALONE	$CV(\hat{\Upsilon}_{ra}) = \underline{32\%}$
X and Y (Hectarage) separate ratio	$CV(\hat{\Upsilon}_{sera}) = \underline{4\%}$

5. *Interactions* of *PES* and Census Results as *Sampling Frame.* If PES was not instituted as a control mechanism in the censuses and Policy/Strategy/Research Institutions are using the Census Results as frame in their sampling survey instruments, the stratification variables used could be misclassified even for characteristics like resource base related to paddy irrigated (50% or more of holdings under irrigated) and non-paddy irrigated. This stratification variable was used by TBAC in its national farm indebtedness survey. A sample barangay was drawn whose description as given by the statistical system was non-paddy irrigated. Upon evaluation of the survey staff on the characteristic, the particular sample barangay turned up to be highly irrigated paddy area. In fact, this barangay was given an award due to its high level of productivity of paddy.

6. *Recommendations*

Other evidences and experiences seem to indicate the need for an independent statistical audit procedure to assess and evaluate the frames, methodology and results of Philippines surveys and censuses. The basic objective is for the Statistical System to produce data which would possess the standard quality of *precision* and *accuracy, validity* and *consistency, relevance* and *timeliness.* I hope that the Philippine Statistical Association would spearhead a move for such a statistical audit and evaluation which would result toward the production of standard quality data from the Statistical System.