

*The
Philippine
Statistician*



June 1955
VOL. IV NO. 2

Entered as Second Class Mail Matter at the Manila Post Office on
August 25, 1953

THE PHILIPPINE STATISTICIAN

Entered as Second Class Mail Matter at the Manila Post Office on
August 25, 1963

Published Quarterly

by the

Philippine Statistical Association
Incorporated

E. S. SEVILLA, *Secretary-Treasurer*
Room 304 Regina Building, Escolta
P. O. Box 3223, Manila

. . .

EDITORIAL BOARD

Editor
Vicente Mills

Associate Editors
Manuel Ma. Aycardo
Rosendo Regalado

Business Editor
E. S. Sevilla

. . .

Annual Subscription — Four Pesos — One Peso per issue
Philippines and Foreign Countries

The Editors welcome the submission of manuscripts on theoretical and applied statistics for possible publication. Manuscripts should be typewritten entirely double-spaced. Footnotes and references should be typed at the end of the paper.

The Board of Directors of the Philippine Statistical Association wish it to be understood that the Association is not responsible for the theories, statements, or opinions expressed in the addresses delivered and papers read in its meetings, published in *The Philippine Statistician*. The authors of addresses and papers assume sole responsibility.

THE PHILIPPINE STATISTICIAN

Official Journal of the
Philippine Statistical Association
Incorporated

CONTENTS

June 1955

ANNUAL CONFERENCE PAPERS

What Is Wrong With Our Statistics?	Page 62
— <i>Ceferino T. Santiago</i>	
Selected Problems of Design in the College Chick Feeding Experiments	74
— <i>Burton T. Oñate</i>	
Production Data and Crop Cutting Experiments in India	80
— <i>Satya B. Sen</i>	
The 1953 Trend of Mortality in the Philippines	83
— <i>Manuel Ma. Aycardo</i>	

STATISTICAL INFORMATION

The World Birth Rate	92
— <i>UN Information Office</i>	
World Newsprint Production	95
— <i>UN Information Office</i>	
Statistical Training Center Library Acquisitions	97

THE ASSOCIATION

The Board of Directors for 1955	101
Committees	102
Directory of Individual Members, May 20, 1955	103
Statement of Ownership (Required by Act 2580)	111
Directory of Institutional Members	Back Cover

WHAT IS WRONG WITH OUR STATISTICS?

by

CEFERINO T. SANTIAGO*

A Filipino consular official somewhere in the United States was asked by an American business executive for population data and other statistical information about the Philippines, and his reply was terse and evasive: "I am sorry, I have yet to receive the statistics from home."

Another one, this time a Filipino industrialist, traveling on business abroad, answering a question from his American host about the present living cost in Manila for an American family, said: "I have no idea, but a Filipino laborer and members of his family (about 5 in all) can live on P120 to P140 a month."

The incidents just described are reflections of our government's failure to meet the statistical requirements of the public through the issuance of printed statistical publications containing reliable up-to-date data of sufficiently wide coverage to include every vital statistical information imaginable about the Philippines.

Conflicting Statistical Information

Here in the Philippines, we often come across conflicting statistical information that does not speak very highly of government efficiency. For instance, the Bureau of the Census and Statistics has set the number of unemployed at 1.3 million; the Central Bank at 1.8 million; and third, challenging the first two estimates, set the figure at 2 million. So, on the unemployment situation, there are as many estimates as there are statistical offices dabbling in labor statistics.

On the matter of purchasing power of the peso, the Bureau of Commerce has one figure, the Census Bureau another, and the Central Bank still another.

* Assistant Professor, and Vice Head, Mathematics Department, College of Commerce, University of the East.

WHAT IS WRONG WITH OUR STATISTICS?

And here is the climax of the statistical rivalries — the Naric put the entire blame on the Bureau of the Census and Statistics for its loss of more than P3 million, sustained from importing rice not needed in the country. Why? Allegedly due to wrong estimates of the rice crop of the Bureau of the Census and Statistics. Yet, the NARIC has its own separate statistical unit, and in the instant case, it would seem as if it was only passing the buck. The writer has made his own inquiries about this serious charge. It turns out that the representatives of the Bureau of Agricultural Extension in the provinces gather and prepare the data on crop estimates which the Bureau of the Census and Statistics swallows hook, line, and sinker.

But the story on rice statistics does not end there. To forestall similar mistakes in the future, or for some other good purposes, a new division to collect and compile crop statistics has been set up at the Department of Agriculture and Natural Resources; meanwhile, the NARIC has taken steps to strengthen its statistical department with a view to collect better and more reliable statistics on rice than before. Result: As in case of unemployment, cost of living, purchasing power of the peso, trade statistics, etc., there are, and will continue to be, as many different rice statistics as there are offices issuing them independently.

A Case of Statistical Confusion

The statistical confusion that exists today in the Philippines has already assumed the magnitude of a serious problem which the government can ill afford to ignore any longer. The problem must have to be faced squarely and solved promptly and satisfactorily, because an independent Philippines, trying to promote the well-being of its citizenry fast enough would not be able to do so on a scientific basis unless good, comprehensive, and up-to-date statistics are available to guide in the formulation of sound economic and social programs.

The statistical facilities should be pooled together and not widely dispersed in unrelated offices, in order that maximum

efficiency out of the available resources may be attained, and the known causes of statistical deficiencies and conflicting or overlapping jurisdictions in statistical matters reported at once to the President and Congress for the necessary remedial legislation. The causes may be briefly summarized as: (1) lack of budgetary support for the principal statistical machinery of the government—the Bureau of the Census and Statistics; (2) failure to coordinate the activities of the separate statistical units actually existing; and (3) lack of a sufficient force of qualified statisticians.

Brief Historical Background of Philippine Statistics

Before proceeding to suggest measures to improve the present statistical situation, it may be pertinent to give a brief history of the growth and development of statistics in the Philippines.

A few years after the establishment of the Commonwealth Government, the late President Quezon, sensing the inadequacy and paucity of government statistics as an administration tool for the various pet social and economic projects he had long nurtured, stepped into the breach and sent to Congress an Administration Bill seeking to merge all major statistical offices then existing into one — that was in 1940. It was a measure hastily prepared, but nonetheless complete in its coverage, having for its major defect the absence of adequate appropriation to secure the services of qualified statisticians. The result was C.A. No. 591 creating the Bureau of the Census and Statistics out of a merger of the statistical units of the Bureau of Customs, Department of Agriculture and Commerce, Department of Labor, Bureau of Health, National Library and Museum, and the few remaining employees of the then Commission of Census in 1939.

Another sad outcome, as already hinted, was an office of mostly low-salaried employees numbering over 100, with a few able U.S.-educated statisticians who later left when they found better-paying jobs elsewhere.

The aforesaid Act is entitled "An Act to Create a Bureau of the Census and Statistics, to Consolidate Statistical Activities

WHAT IS WRONG WITH OUR STATISTICS?

of the Government Therein;" and the powers, functions, and duties of the Bureau, as enumerated in Section 2 of the law, cover practically the entire gamut of human activities for which statistics are available or could be collected, including demographic and vital statistics, crops and livestock, commercial and industrial activities, prices, employment, wages, social and economic institutions, and even national income as inferred in Par. (g) of Section 2 of the Act which requires the Bureau "to make and publish, from time to time, estimates of population, agricultural production, income, and number of livestock."

Lack of Budgetary Support

With such a broad grant of powers, functions, and duties, the only possible instrument lacking to make of the Bureau of the Census and Statistics an effective agency for collecting and preparing all types of statistics is an adequate appropriation that would permit the establishment of a well-rounded statistical organization, complete in all its aspects. But there has consistently been lack of budgetary support to the Bureau all these years, with the result that the Office cannot accomplish what is expected of it under the Law. Regarding this insufficiency of budgetary support, it may not be amiss to quote a few authorities on statistics:

"Typically, there is lack of understanding of the importance of statistics to efficient administration, economic progress and the well-being of all groups of population. Consequently, machinery for administration of statistical programme has been neglected in organizational and budgetary considerations. This is evidenced by the fact that in the past year the already limited statistical facilities were further curtailed by reducing the status of the basic statistical agency of the Government, the Bureau of the Census and Statistics, and by failure to appropriate sufficient funds to operate the minimum statistical programs prescribed by law."—*Miss Sophya Balicka, FOA Labor Consultant*, in a speech delivered before the Philippine Statistical Association not long ago.

"The statistical situation in the Philippines has been characterized as a case of undernourishment. I am advised that the Bureau of the Census and Statistics has proposed

the restoration of its former organization with some augmentation of its personnel and correction of salary differences. Unless the expansion takes place, it is difficult to see how the current information needs of the government and the Philippine people will be met. Without increased support of this Bureau, the activities of other agencies will become distorted in efforts to meet statistical requisites."—*Dr. Meredith B. Givens, Labor Economist and Statistical Consultant*, now with the Statistical Training Center at the U.P.

"Budgetary appropriations for statistical agencies, in particular, for the Bureau of the Census and Statistics should be increased to meet their statistical responsibilities for the provision of reliable and up-to-date information."—*Mr. William I. Abraham, National Income Expert* from the United Nations.

"The Congress of the Philippines has given extremely limited appropriations for the Bureau of the Census and Statistics. The Congress has not given funds to the Census for technical assistance or for conducting current sample surveys to furnish needed statistics."—*Dr. Robert T. McMillan, Rural Sociologist, FOA, Manila.*

"The Bureau of the Census and Statistics should have more statistically trained personnel, competent to operate it more efficiently. In this field, the Philippine Statistical Association could help the government by making available to the Bureau the services of its members. But then there is need to offer the necessary incentive, which can only be done by increasing the yearly appropriation to say P1 million, in lieu of the less than P200,000 of today. The technically trained statisticians cannot be induced to join the Bureau of the Census and Statistics with the meager salary now being paid. To improve the scale of salaries is not enough. Personnel should likewise be increased. The 121 employees manning the Bureau of the Census and Statistics are utterly insufficient to cope with the enlarged activities due to the greatly increased demand for more expanded statistical service, resulting from the increased activities of industrialization program and the demand of economic planning and development."—*Don Antonio de las Alas, formerly Secretary of Finance. Law maker for many years, Executive Official of the Marsman Interests, and recently President of the Philippine Chamber of Commerce.*

WHAT IS WRONG WITH OUR STATISTICS?

From the government's side came another highly authoritative view on this flagrant inadequacy of financial support to the statistical service of the nation. It was expressed by Mr. Cornelio Balmaceda, as Secretary of Commerce and Industry, when he was guest of the Philippine Statistical Association in one of its banquets. He said in part:

"The Bureau of the Census and Statistics is naturally interested in implementing the functions entrusted to it by the law in line with the present world trends of strengthening and expanding statistical services for the development of a more stable national economy. Much as it would like to accomplish its given task, the Bureau is not in a position to do so in view of its meager resources and inadequate facilities."

Ex-Secretary Balmaceda summarized the problems confronting the Bureau of the Census and Statistics as (1) shortage of personnel; (2) low-scale of salaries; (3) lack of qualified statisticians; and (4) small appropriation. The last-named problem—small appropriation—could also be the direct cause of the first three problems mentioned.

Field Surveys to Be Emphasized

Definitely the present appropriation of the Bureau amounting annually to ₱175,500, is inadequate, as is the concensus of the experts. In the opinion of the Honorable Antonio de las Alas, it should be hiked to ₱1 million, which would be nearly six times the present regular appropriation. Whether or not the suggested increase in budgetary outlay is really the sum needed to re-invigorate the Bureau of the Census and Statistics, the following remarks are food for serious thought: The statistical survey work must have to be emphasized, intensified, and made nationwide as much as possible. In no other way can reliable comprehensive statistical information be collected compiled and made available for public use. The collection of primary data for general statistics must be the exclusive field of the Bureau of the Census and Statistics; and in order that the same can successfully be undertaken, a much bigger outlay than is presently set aside for the purpose, should be provided so that a corps of trained interviewers can be engaged and sent to the field and all their traveling expenses and other sundry expenses met:

The sundry expenses allotted to the Census Bureau do not provide enough sum for statistical surveys, including traveling expenses. How can the Bureau expect to collect statistics of a wide coverage efficiently if it does not conduct periodic surveys for primary data, using for the purpose scientifically prepared questionnaires? Let us take unemployment and the cost of living as specific examples. How can the exact or even approximate number of unemployed, or cost of living in the Philippines be determined, if a sampling survey or a house-to-house survey is not done because of the expense involved?

Now, the rice situation—how can an office correctly forecast the approximate yields of the growing crops unless an actual survey is conducted? A sampling survey in this case would be preferable, as it is time-saving as well as economical to undertake.

All statistical authorities are unanimous that the best way to conduct a statistical survey is to send out dependable interviewers who know how to propound questions with tact and to fill out a questionnaire accordingly. Using the mail exclusively for that purpose often results only in partial coverage and much unreliable information. The Bureau of the Census and Statistics is not in a position to conduct its nation-wide surveys as it does not have personnel out in the cities and provinces to do it.

But aside from providing enough funds for field work, it is also very important to do the same thing with regard to the publication aspect of the work. In other words, printing expenses must be adequate. Statistics are practically valueless unless published, and they should appear in decent-looking publications which would speak highly, not only about the Office responsible for them, but more particularly about the country issuing them—the Philippines.

It would be safe to state that the embarrassment experienced by the two Filipinos abroad mentioned at the beginning of this article would not have taken place had there been in their hands a statistical publication containing comprehensive statistical information about the Philippines at the time.

WHAT IS WRONG WITH OUR STATISTICS?

Lack of Statistical Coordination

Mention has been made elsewhere in this article of the existing lack of coordination of the activities of the various statistical offices or units of the government. Before the last War such a problem existed and, by a bold stroke of the late President Quezon, a merger of all the principal statistical offices then operating was effected. After the War the same problem again reared its ugly head, with the only difference that there is at present no law that could effect another merger, unless the Committee on Government Reorganization created under Republic Act No. 997 will attempt to do it in the interest of economy, simplicity of organization and efficiency. New statistical services came into existence primarily to collect and publish statistical data needed for the efficient operation of the government instrumentalities to which they are attached. Specialized agencies collecting and publishing statistics, some with elaborate statistical units under them, include the Central Bank, Prisco, Naric, National Economic Council, Department of Agriculture and Natural Resources, Bureau of Internal Revenue, Fiber Inspection Service, Bureau of Mines, Bureau of Lands, Department of Public Works and Communications, Civil Aeronautics Administration, Securities and Exchange Commission, Motor Vehicles Office, Department of Labor, Department of Education, Department of Justice, and the Bureau of Health. In fact, almost every important office of the Government keeps statistics of its progress in terms of figures, or collect statistics for its particular operational necessities.

A statistical expert in the person of a certain Dr. R. C. Desai, an Indian national, came to the Philippines in 1951, as a representative of the ECAFE to investigate and report to the United Nations on the various facilities for gathering statistics in this country. His report was not very complimentary, mentioning about the sub-standard quality of Philippine statistics due to neglect in providing for sufficient appropriation, the existence of so many separate statistical offices operating independently, and hinted at the present statistical confusion and wastage of resources resulting from unnecessary duplication of activities. To improve the mess, he recommended:

"One solution would be to strengthen the Bureau of the Census and Statistics with larger budget appropriation and adequately trained personnel, so that it might collect and compile general statistical data and leave special fields to other organizations."

The recommendation of the ECAFE statistician is, however, in line with a plea for increased budgetary support to the Bureau of the Census and Statistics. It will not, however, be able to stop certain duplication of activities that are wasteful, and, therefore, unnecessary. If this is to be eradicated once and for all, one of two choices should be taken, namely: (1) Create the office of a statistical coordinator, a sort of "Statistical Czar," backed up by law, whose principal functions shall be to dictate what statistical information each statistical agency should collect and compile; prescribe the forms or questionnaires to be used; issue instructions, rules and regulations in connection with all phases of the statistical work; take charge of the presentation and interpretation of statistical data, including the publication of a Statistical Journal; or, otherwise, be the chief policy-making official in all statistical matters or, (2) Make the Bureau of the Census and Statistics absorb each and every government statistical agency, division or section existing outside of it. In this alternative, it will be the Director of the Bureau of the Census and Statistics who will act as a sort of "Statistical Czar," a statistical dictator or coordinator who will have the final say on the collection, compilation, systematization, interpretation, analysis, and publication of government statistics.

The last-mentioned alternative, it may be added, will only require a slight amendment to Commonwealth Act No. 591 to effect. The only objection to this plan, of course, is that many of the specialized agencies must have a statistical unit with them for an efficient performance of their duties and activities, and for that reason the latter cannot therefore be detached from them. If it could be possible to keep those outside statistical units where they are to service the government agencies to which they are attached, leaving their supervision and control as a matter that belongs exclusively to the Bureau of the Census and Statistics, then this second choice proposed, just

WHAT IS WRONG WITH OUR STATISTICS?

cited, can be made the working basis for the much-sought-after statistical coordination. In the meantime, however, this proposed set-up cannot include the Central Bank, Prisco, and other government-owned and controlled corporations, because those offices, not depending upon the Central Government for their yearly budgetary expenses, cannot be divested of duties or activities that they do not voluntarily relinquish; unless perhaps, the President orders them to do so. The duplication of activities, so far as these offices are concerned, may therefore, still continue as before, unless they are willing to cooperate by giving up their duplicating functions and depend wholly upon the other agencies for statistics that it is not their exclusive concern to produce or collect.

The author is not sure which one of the two plans mentioned is better, but anything which will hasten the coordination of activities of the sprawling statistical units of the government should be welcome to solve the problem of statistical bedlam and unnecessary rivalry and duplication of activities once and for all.

Lack of Qualified Statisticians

Last, but by no means the least, among the causes for failure to issue good dependable statistics in this country, is the dearth of qualified statisticians, and this was acknowledged by the then Secretary of Commerce and Industry when he said:

"This is one of the fundamental problems that beset the Bureau of the Census and Statistics. There is a dearth of qualified statistical workers who could be depended upon to carry out their responsibilities. This has led to the observation that in many cases the statistical work is at present being done by persons who have had no formal training in this line of work. It is indeed to be deplored that because of great scarcity of qualified statisticians, the statistical office cannot be more adequately manned."

To organize data and make them intelligible to a lay reader is the task of a qualified statistician. Statistical methodology is a specialized knowledge; hence, common sense dictates that, for any statistical office, be it in the Bureau of the Census and Statistics, or in any specialized agency maintaining a statistical

section or division, the choice for key statistical positions should fall on those who have had ample preparations for the job—preferably those who have taken advanced courses in statistics in any university or college of recognized standing, if they are available. In so doing, the work is entrusted in safe hands that will serve as sufficient guaranty that the questionnaires used for collecting data are properly devised; that the figures are assembled, evaluated, classified, averaged, tabulated and interpreted according to statistical rules and accepted formulas; and that the percentage of error, if any, in the tabulated and published data is negligible.

In complex statistical studies, like the preparation of statistics on national income, cost of living, business indices, life expectancy table, or the application of the sampling technique in determining population, volume of trade, industrial output, etc., how can the Bureau of the Census and Statistics undertake successfully these statistical reports, if the technical know-how of the real statisticians is not available?

If the observations of a former Secretary of Commerce and Industry are true then it is high time to create more new positions for qualified statisticians in the Government, more so in the Bureau of the Census and Statistics, as a decisive step to improve the quality of Philippine statistics, and so remove the grounds for innuendoes that the Bureau "is only good as a dumping ground for political appointees and not for the work for which it has been created."

CONCLUSION

To summarize, lack of budgetary support, failure to coordinate the work of the different statistical agencies, and lack of sufficient qualified statisticians constitute the main problems today of those who have in their power to improve and strengthen the statistical services of this Government, under Republic Act No. 997, authorizing the reorganization of the entire government machinery. They are all caused, directly or indirectly, by the small yearly appropriation of the principal statistical agency of the Government.

WHAT IS WRONG WITH OUR STATISTICS?

Failure to undertake frequent statistical researches and surveys; lack of decent-looking statistical publications of sufficiently wide coverage and circulation; unnecessary and wasteful duplication of activities; and lack of interest on the part of capable statisticians, such as those who have made special studies of the different branches of the science of statistics, to join the Bureau of the Census and Statistics—all of these constitute the correct answer to the question posed by this article: "What is wrong with our statistics?"



SELECTED PROBLEMS OF DESIGN IN THE COLLEGE CHICK FEEDING EXPERIMENTS*

by

BURTON T. ORATE**

A SUMMARY

1. Introduction

- 1.1. Statistical and Computing Service Section, U.P. College of Agriculture and Central Experiment Station¹
Functions

1.1.1. Teaching

1.1.2. Consultation, cooperation, service

1.1.3. Research

- 1.2. Function of the design is to increase the sensitivity of the experiment and to provide for simple computational methods (Cox, 1951)². The specifications of the design are often limited by the choice of the experimental unit and the methods of estimating the experimental error.

2. Choice of the Experimental Unit and the Methods of Estimating the Experimental Error

In chick feeding experiments, a pen of pc day-old chicks is assigned by a random scheme to each of r rations. If the mortality is ignored, the effect of the rations on growth, say, after twelve (12) weeks maybe studied by the analysis of variance as follows:

<u>S.V.</u>	<u>D.F.</u>	<u>M.S.</u>	<u>E.M.S.</u>
Rations	$(r-1)$	R	$\sigma^2 + c\sigma^2_r$
Chicks within ration	$r(pc-1)$	C	σ^2_c
Total	$rpc-1$		

* Contribution from the U.P. College of Agriculture and Central Experiment Station, Laguna.

** Statistician and Assistant Professor of Mathematics, U.P. College of Agriculture and Central Experiment Station, Laguna.

COLLEGE CHICK FEEDING EXPERIMENTS

To compare rations, $F = \frac{R}{C}$ is distributed as F with $(r-1)$ and $r(p-1)$ d.f. Here C (experimental error) is the denominator mean square (M.S.).

The allocation of the experimental material may have been done in a different manner, resulting in a different method of estimating the experimental error. Thus, if for each of the r rations, p pens are assigned at random, and each pen consists of c chicks, then the analysis of variance is:

<u>S.V.</u>	<u>D.F.</u>	<u>M.S.</u>	<u>E.M.S.</u>
Rations	$(r-1)$	R	$\frac{\delta^2}{c} + c\delta^2 + pc\delta^2$
Pens within rations	$r(p-1)$	P	$\frac{\delta^2}{c} + c\delta^2$
Chicks within pens	$rp(c-1)$	C	$\frac{\delta^2}{c}$
Total	$rpc-1$		

To compare rations, $F = \frac{R}{S}$ is distributed as F with $(r-1)$ and $r(p-1)$ d.f. Note that our denominator M.S. or error M.S. is not C but P . We can use C if our test accepts that $\frac{\delta^2}{p} = 0$. In general, however, $\frac{\delta^2}{p} \neq 0$, and as such the appropriate error M.S. is P .

If the randomization or allocation of the rp pens is carried through one way restriction, say, time of hatch or initial weight of chicks at hatch, then r similar or identical pens will be randomized to the r rations. This randomization scheme is repeated p times. The analysis of variance on a bird basis (c chicks to a pen) is:

<u>S.V.</u>	<u>D.F.</u>	<u>M.S.</u>	<u>E.M.S.</u>
Groupings (G)	$p-1$	G	$\frac{\delta^2}{s} + c\delta^2 + rc\delta^2$
Rations (R)	$r-1$	R	$\frac{\delta^2}{s} + c\delta^2 + pc\delta^2$
G x R (Experimental)	$(r-1)(p-1)$	E	$\frac{\delta^2}{s} + c\delta^2$
Chicks within cell (Sampling error)	$rp(c-1)$	S	$\frac{\delta^2}{s}$
Total	$rpc-1$		

Again to compare rations, use $F = \frac{R}{E}$ which is distributed as F with $(r-1)$ and $(r-1)(p-1)$ d.f. With the above analysis of variance, one may study the effect of different values of c and p on the variance of a ration mean (Oñate, 1953).³

It may be seen that different allocation and choice of experimental units will result in different methods of estimating experimental error.

Each of these pens is assumed to be balanced as to breed, age, sex, initial weight, condition, and previous treatment. What are the effects of these factors on experimental error? Other factors which may be considered are temperature, humidity, prevalence of wind, mortality, availability of feed and water, variation in the ingredients of a given ration, variation of rations due to settling of some ingredients during storage and errors in the mixing of ingredients.

Will the experimental unit consist of each individual animal or will it be a lot or a pen? Are the errors independently distributed? What is the effect of competition on the estimate of the experimental error?

Experiments to answer some of these questions are now being undertaken with the cooperation of the Division of Poultry Husbandry, Department of Animal Husbandry, U.P. College of Agriculture and Central Experiment Station, Laguna.

3. *Data on the College Chick Feeding Experiments*

The Division of Poultry Husbandry, Department of Animal Husbandry, U.P. College of Agriculture and Central Experiment Station, Laguna, has conducted numerous chick feeding experiments, data of which are available for critical study. These data contain valuable information which may be of use in the choice of a more efficient design in future feeding experiments. Data on the growth responses to rations of 1,556 chicks from 42 different lots or trials show the following:

3.1. *Variation of the weekly variance with feeding time.*

Data show that the weekly variances (s^2) and the stand-

COLLEGE CHICK FEEDING EXPERIMENTS

ard deviation (s) increase with time; so with the weekly mean weights (\bar{x}). Weekly coefficients of variation ($C = \frac{s}{\bar{x}} \times 100\%$) show a decided tendency to increase with time. This result implies that σ or σ^2 increases at a faster rate than μ , where σ^2 and μ are the population variance and mean, respectively. An example of this result is presented in Table 1. It should be noted that these results are mere estimates. Different sizes of sample will be required for different feeding times. Thus

$$t = \frac{\bar{x} - \mu}{\frac{s}{\sqrt{n}}}$$

is distributed as t with $(n-1)$ degrees of freedom (d.f.) where n is the size of sample required. If $\bar{x} - \mu = d$ and t is at the α level then

$$t = \frac{d}{\frac{s}{\sqrt{n}}}$$

TABLE 1. Weekly variance (s^2), standard deviation (s), mean weight (\bar{x}) in grams, coefficient of variation (C) in per cent and age or feeding time in week of male and female chicks.

<u>Male</u>				
<i>Age</i>	s^2	s	\bar{x}	$C = \frac{s}{\bar{x}} \times 100$
<u>weeks</u>	<u>grams</u>	<u>grams</u>	<u>grams</u>	<u>per cent</u>
Initial	7.9	2.8	38.1	7.3
1	52.9	7.3	53.0	13.8
2	186.0	13.7	75.6	18.1
3	461.5	21.5	113.8	18.9
4	1,425.6	37.8	164.5	23.0
5	1,908.6	46.0	203.3	22.6
6	3,047.8	55.2	257.5	21.4
7	5,700.2	75.5	320.5	23.6
8	11,938.9	109.0	397.6	27.4
9	17,533.8	132.4	494.5	26.8
10	22,792.7	150.9	598.9	25.2
11	30,752.2	175.4	683.7	25.7
12	38,795.1	196.9	777.0	25.3

<u>Female</u>				
Initial	9.0	3.0	37.6	8.0
1	52.5	7.2	53.9	13.4
2	174.0	13.2	77.4	17.0
3	416.2	20.4	111.0	18.4
4	977.3	31.3	153.5	20.4
5	1,774.1	42.1	195.9	21.5
6	3,156.7	56.2	245.9	22.9
7	6,215.6	78.8	306.3	25.7
8	10,030.6	100.1	374.4	26.7
9	15,493.0	124.5	447.7	27.8
10	22,842.4	151.1	528.4	28.6
11	30,564.3	174.8	591.0	29.6
12	43,122.1	204.7	650.1	31.9

which upon solving for n will give

$$n = \frac{t^2 \cdot s^2}{d^2}$$

Solution for n is by an iteration procedure and the value of t is taken at t_{α} , α , i.e., at α level and infinite d.f. Since s^2 changes as to time, then n will also change for any given d . Other methods for determining sample size are given by Stein (1945)⁴ and Harris *et al* (1948)⁵. In these estimation procedures, an estimate of δ^2 (s^2) is involved in the solution for n .

- 3.2. Some pooled estimates. The analysis of variance technique is used to isolate estimates of experimental and sampling error. From this analysis, estimates of δ^2

δ^2 , and δ^2 may be computed and these estimates will be $\frac{L \times S}{S \quad L}$ used to effectively increase the efficiency of future designs. A total of 1,556 chicks in 42 lots of trials were used for the analysis shown below.

Analysis of Variance

<u>S. V.</u>	<u>D. F.</u>	<u>S. S.</u>	<u>M. S.</u>	<u>E. M. S.</u>
Lots (L)	41	27,173,799.2	662,775.6	$\delta^2 + k \delta^2 + k \delta^2$ $e \quad o \quad L \times S \quad 2 \quad L$
Sex (S)	1	6,137,334.2	6,137,334.2	$\delta^2 + k \delta^2 + k \delta^2$ $e \quad o \quad L \times S \quad 1 \quad S$
L x S	41	3,379,852.9	82,435.4	$\delta^2 + k \delta^2$ $e \quad o \quad L \times S$
Sampling error	1472	25,689,327.1	17,451.9	δ^2 e
Total	1555	62,380,313.4		

COLLEGE CHICK FEEDING EXPERIMENTS

4. *Other problems Related to Design*

Other problems related to the designs of chick feedings experiments are:

- 4.1. Effect of breed
- 4.2. Effect of mixed sexes
- 4.3. Variation in gains among chicks within pens as compared with that among pens fed the same ration
- 4.4. Effect of size or number of chicks in a pen on experimental error
- 4.5. Number of replicate pens required with different number of chicks per pen to estimate mean differences in gains with various specified precision
- 4.6. Methods of allocating chicks to pens or rations
- 4.7. Efficiencies of different experimental designs



REFERENCES

¹ Oñate, B. T. The statistical laboratory of the U.P. College of Agriculture and Central Experiment Station. *The Philippine Agriculturist* 36:395-401, 1953.

² Cox, G. M. The value and usefulness of statistics in research. Lecture presented in the U.S.D.A. January 11, 1951.

³ Oñate, B. T. Some statistical aspects of the use of composites in soil sampling. *The Philippine Agriculturist* 37:241-257, 1953.

⁴ Stein, C. A two-sample test for a linear hypothesis whose power is independent of the variance. *Annals of Math. Stat.*, Vol. 16:, pp. 243-258. 1945.

⁵ Harris, M., D. G. Horvitz and A. M. Mood. On the determination of samples sizes in designing experiments. *Jour. Amer. Stat. Assoc.*, Vol. 43, pp. 391-402. 1948.



PRODUCTION DATA AND CROP-CUTTING EXPERIMENTS IN INDIA

by

SATYA B. SEN *

A SUMMARY

1. *Introduction*

The total production of a crop for a season is obtained by ascertaining (a) acreage under the crop, and (b) the yields per acre. The figures on both these aspects are collected by the crop season every year in India, and crop-cutting experiments for the more important crops are carried out every season to ascertain yields. The detailed methods vary somewhat in different parts of India depending on whether a state has village-level revenue agents or not.

2. *Method in States with Village-Level Revenue Agents*

(a) These village-level agents furnish the crop acreage figures by complete enumeration.

(b) The yield figures of crops are not, however, furnished by them. Ten to fifteen years ago, the yield figures of different districts were ascertained by revenue officials on basis of "condition factor," i.e., extent of deviation from normal condition. The estimates were really subjective.

Recently there has been a complete change in methods and the yields are ascertained by sample crop cuts. Sample fields scattered all over a state are selected by stratified multi-stage sampling, and plots within these fields, located by a random process, are selected for crop-cutting. Then when ripe, the crops are harvested by the investigators, dried, threshed and weighed, and on basis of all the sample cuts, the average yield per acre for a state is ascertained.

* United Nations Senior Statistical Advisor.

PRODUCTION DATA AND CROP-CUTTING

3. *Method in States with No Village-Level Revenue Agents*

(a) Since there are no village-level agents, even crop acreage figures have to be collected in a *different* way. A percentage of fields scattered all over a state are selected by stratified multi-stage sampling, and the investigators go and inspect the fields during the crop season to record what part of these sample fields are under specified crops. The areas of these fields are available in land settlement records and hence the areas under a crop can be obtained by necessary adjustments. By multiplying these figures by suitable raising factors, the total acreage under a crop for a state is estimated.

(b) To obtain the yield figures, here again, crop-cutting experiments are done. A sub-sample of sample fields is taken and within these sample fields plots are located by random process. When the crops are ripe, the investigators harvest them, dry, thresh and weigh them. The average yield is ascertained on basis of all the samples.

4. *Concluding Remarks*

(a) Various experiments were carried out and are still being carried out in different parts of India to ascertain what should be the size and shape of the sample cuts for the most accurate estimates of yields of different crops. The larger and smaller sizes of cuts have their own disadvantages and advantages. At present the sizes of cuts for a crop in the different parts of the country are fitted in with the degree of training of the investigators.

(b) It will be noted that in both the methods the data are collected on an objective basis. In neither of the two methods are the figures obtained from the statements of the farmers. The acreage figures are obtained directly and also the estimate of yield is obtained directly by crop-cutting experiments.

As compared with a possible method of obtaining production figures from the statements of farmers, the method of direct observation, although somewhat more costly, is preferred, because of the reliability of the latter method. If the

farmers are afraid of taxes or procurements, or if they are suspicious in any way about the motives of the investigation, they may give biased replies. In fact, understatements of production from farmers is a common phenomenon in many countries. These factors as well as just off-hand irresponsible replies may considerably vitiate the figures obtained by statements from farmers. These likely sources of bias are avoided by collecting crop data by direct methods.



THE 1953 TREND OF MORTALITY IN THE PHILIPPINES

by

MANUEL MA. AYCARDO *

SUMMARY

Statistical constants for the quinquennial year period (1948-1952) of selected specific causes of death are computed with a view to:

- (a) determining the statistical characteristics of the sequence of rates,
- (b) serving as a reliable measure in the interpretation of facts, and
- (c) establishing a basic principle of comparison to any subsequent annual rate.

HEALTH STATUS OF 1953. (Table 1.)

1. *Significantly healthy rates:*

General mortality, Tuberculosis of the Lungs, Malaria, Influenza, Tuberculosis other than Lungs, Pertusis, Typhoid fever and Rabies.

2. *Normal Rates (Endemicity):*

Infant mortality, Beri-beri under one year, Pneumonia, Beri-beri over one year, Dysenteries, and Diphtheria.

3. *Significantly Unhealthy Rates (Epidemicity):*

Bronchopneumonia, Bronchitis, Diarrhea and Enteritis (all ages), Tetanus and Measles.

NOTE: The endemic index given in Table 1, (columns 3 & 4) is based upon the probable error concept. The ± 3 PE

* Professor, Faculty of Medicine and Surgery, University of Santo Tomas. Former Chief, Division of Preventable Diseases, Bureau of Health.

TABLE I—Statistical Constants for the Philippines
Rates per 100,000 population unless otherwise specified

	RATE of 1953	1948 — 1952								
		ENDEMICITY		Mean Rate	Standard Devia- tion	Chance Disper- sion	TREND	LEXIAN RATIO		% Charlier's Coeff. of Distur- bance
		Maximum Fluctua- tion	Minimum Fluctua- tion					PROPER	Trend Excluded	
Crude Death Rate (1) ..	11.5	12.3	11.5	11.9	0.42	0.024	-0.2±0.1	17.3	13.7	3.3
Infant Mortality (2)	105.3	111.0	101.0	106.0	5.66	0.387	-2.8±1.2	14.6	10.3	5.3
Brancho pulmonary disease	261.0	253.9	235.3	244.6	10.27	1.109	-0.7±3.0	9.3	9.2	4.2
Bronchopneumonia ...	117.5	107.7	101.1	104.4	3.61	0.728	0.1±1.1	4.9	4.9	3.3
Bronchitis	108.6	104.3	102.9	103.6	0.80	0.720	—	1.1	1.1	0.3
Pneumonia	34.9	38.5	34.7	36.6	2.05	0.429	-0.8±0.5	4.8	4.0	5.5
Tuberculosis	128.2	163.5	151.1	156.8	7.46	0.888	-3.3±1.8	8.5	6.6	4.7
Lungs	120.4	154.7	140.1	147.4	7.96	0.860	-3.0±2.1	9.2	2.1	5.4
Other Organs	7.8	9.7	9.0	9.4	0.39	0.217	-0.3±0.04	1.8	0.6	3.4
Beriberi	116.2	130.4	113.2	121.8	9.48	0.784	-5.8±1.5	12.0	6.0	7.7
Under 1 year	82.2	91.4	80.6	86.0	5.92	0.659	-3.8±0.8	8.9	3.8	6.8
Over 1 year	34.0	39.2	32.4	35.8	3.66	0.424	-2.0±0.7	8.6	5.5	10.0
Diarrhea & Enteritis ..	82.5	76.6	65.0	70.8	6.37	0.597	1.2±1.9	10.6	10.0	8.9
Under 2 years	55.0	50.8	42.8	46.8	4.36	0.486	0.7±0.6	8.1	3.8	9.2
Over 2 years	27.5	26.0	22.0	24.0	2.28	0.348	0.5±0.7	6.5	6.1	9.4
Malaria	32.2	48.9	35.9	42.4	7.07	0.458	-4.7±0.8	15.4	5.3	16.6
Influenza	21.7	31.5	27.0	29.2	2.48	0.384	-1.0±0.6	6.4	5.0	8.3
Tetanus	7.0	6.8	5.8	6.3	0.54	0.115	0.2±0.1	4.7	4.0	8.0
Measles	11.9	7.3	2.8	5.1	2.46	0.160	0.9±0.6	15.3	12.8	48.0
Dysenteries	5.0	6.0	4.1	5.1	1.02	0.159	-0.6±0.1	6.4	3.5	19.8
Pertussis	2.7	3.5	2.8	3.1	0.36	0.126	0.1±0.1	2.8	2.5	10.7
Diphtheria	1.3	2.1	1.3	1.7	0.45	0.093	-0.1±0.1	4.8	4.4	25.0
Typhoid fever	0.7	1.7	1.1	1.4	0.32	0.078	-0.2±0.1	4.1	1.0	22.0
Rabies	0.9	1.3	1.1	1.2	0.92	0.077	0.05±0.01	1.2	1.7	4.1

NOTE: (1) Rate per 1,000 population
(2) Rate per 1,000 live births

THE 1953 TREND OF MORTALITY IN THE PHILIPPINES

TABLE II

PHILIPPINES
SELECTED CAUSES OF DEATH

Rates per 100,000 population unless otherwise specified

<u>CAUSE</u>	<u>1948</u>	<u>1949</u>	<u>1950</u>	<u>1951</u>	<u>1952</u>	<u>1953</u>
Crude death-rates *	12.7	11.9	11.4	11.8	11.8	11.5
Infant mortality **	114	108	102	105	101	105
Bronchopulmonary	244	250	243	241	245	261
Bronchopneumonia	100	110	106	101	105	117
Bronchitis	104	103	103	105	103	109
Pneumonia	40	37	34	35	37	35
Tuberculosis	172	152	149	158	153	128
Lungs	162	143	139	149	144	120
Other organs	10.0	9.4	9.5	9.0	8.9	7.8
Beriberi	140	122	117	116	114	116
Under 1 year	97	87	83	83	80	82
Over 1 year	43	35	34	33	34	34
Diarrhea & Enteritis	71	72	59	78	74	83
Under 2 years	46	49	39	52	48	55
Over 2 years	25	23	20	26	26	28
Malaria	55	45	39	38	35	32
Influenza	33	30	27	26	30	22
Tetanus	6.5	5.4	6.0	6.4	7.0	7.0
Measles	1.3	6.2	7.2	3.1	7.6	11.9
Dysenteries	6.9	5.5	4.2	4.3	4.5	5.0
Pertussis	3.1	3.0	2.6	3.7	3.3	2.7
Diphtheria	1.6	1.8	2.4	1.8	1.0	1.3
Typhoid fever	2.0	1.6	1.2	1.2	1.1	0.7
Rabies	1.1	1.1	1.2	1.3	1.2	0.9

Notes: Data taken from the Bureau of Health.

is considered *significant* or as not within the limits of random sampling. Certainly, there are events occurring in life which would mean disaster to neglect a deviation of ± 3 PE.

CRUDE DEATH-RATE

The general mortality (all causes) in 1953 has greatly improved. It is as low as 11.5 per 1,000 population, the lowest so far on record. In the previous 5-year period (1948-1952) the average rate is 11.9 and the average of 15 pre-war year period (1926-1940) is 16.8. The highest post-war rate is the rate of 1946 (15.1).

The dispersion of the rates about the *mean* in the quinquennial period, is *hypernormal*. This corresponds to the Lexian Series. The rates therefore included in this period vary significantly.

The trend of mortality is definitely downwards. This trend exerts little influence in the lowering of the rates to the category of the Bernoullian Series. The rates are subject to outward perturbing influences.

Lower rates are expected if health conditions continue to be the same in the following years.

INFANT MORTALITY

The ratio of deaths below one year of age to the total number of live births in 1953, shows no apparent improvement over the ratios of previous years. The mortality however is within the normal fluctuation rates.

In the quinquennial period, the most unfavorable rate is the 1948 (114) which reaches the epidemic level. This rate notwithstanding, is significantly lower than the average of the 15 pre-war years (149).

The trend of infant mortality though small is definitely downwards which is useful for statistical contemplation. This healthy sign however may be perturbed by faulty registration of births and many complex factors. Because of faulty registration of births, infant mortality in the Philippines is overstated. For example, it is incongruous to have a crude death-rate as low as 11.5 per 1,000 population in 1953 concomitantly with an infant mortality as high as 105 per 1,000 livebirths. It

THE 1953 TREND OF MORTALITY IN THE PHILIPPINES

follows that the limits of the endemic rates become exceptionally high.

The significant variation of the rates included in the quinquennial years, suggests that the factors causing this variation are not perturbed by the instituted measures of prevention, or that these, are not so intense to affect them sensibly. There is strong evidence that the measures instituted are not in the right direction.

Lower rates however are expected in the following years.

TUBERCULOSIS

In 1953, the mortality of this disease shows great improvement over the rates of previous years. The trend of the 5-year period is negative but insignificant. No less than ninety per cent (90%) of the mortality occurs in the Lungs. It is fifteen times greater than the joint rates of tuberculosis of other organs.

The mortality of Tuberculosis of the Lungs is as low as 120 per 100,000 population in 1953, the lowest so far on record. The average of the 5-year period is 147 and the average of the 15 years before the war is 220.

The rates are erratic in course as shown by the insignificant trend.

The mortality of tuberculosis of other organs remains normal in 1953. Based upon its significantly downward trend which exerts great influence in the lowering of the rates, lower rates are expected in the following years.

BRONCHO-PULMONARY DISEASES

Bronchopneumonia, Bronchitis and Pneumonia

The mortality of this group of diseases averages 245 per 100,000 population in the quinquennial years, whereas in 1953 the mortality is as high as 261 reaching the peak of epidemicity. The majority if not all of the deaths occurs in children and infants. The mortality of tuberculosis of the Lungs already stated averages 147 in the quinquennial years. This mortality is currently claimed as the number one killer of lives in the Philippines. While this is only true as regards the adult population, the group of bronchopulmonary diseases,

certainly is the number one murderer of the infant and child population.

The mortality of Bronchopneumonia in 1953, indicates ill-health of high order since the rate reaches the epidemic level. This disease oftentimes arises as complication during the course of illness of various specific diseases, Nosology in this case is obviously difficult.

The trend of the disease is insignificant and the course is erratic. Perturbing influences are present which are unaffected by measures of control.

The mortality of Bronchitis in 1953 has also reached the epidemic level. The mortality in the quinquennial period is stationary and with normal dispersion.

The mortality of Pneumonia in 1953 remains 'normal. In the 5-year period the rates of 1948 is beyond the rates of epidemicity. The trend is insignificant.

In general, the group of bronchopulmonary diseases, constitutes a serious health problem in terms of mortality, a problem that failed to come across the searching knowledge of public health administrators.

BERI-BERI

This vitamin deficiency disease in the Philippines no longer appears clinically in the classical form, making diagnosis in most cases difficult. The mortality in 1953, remains normal. The average rate of the 15 pre-war years is 129; in the last 5-year period, 122 while the rate of 1953 is 116, which approaches the rate of 1952 (114) the lowest on record.

In the quinquennial years, seventy per cent (70%) of beri-beri mortality occurs in infants. The trend of mortality in infants is definitely downwards. It exerts some influence over the rates but not sufficiently great to bring its dispersion to normalcy. Perturbing influences are still present unaffected by instituted measures of control.

The mortality over one year of age is also normal in 1953, but the trend is negative of great value.

In both cases, lower rates are expected in the following years.

THE 1953 TREND OF MORTALITY IN THE PHILIPPINES

DIARRHEA AND ENTERITIS

The mortality of this group of diseases has reached the epidemic level in 1953 as is the rate of 1951. In the quinquennial period the healthiest rate is that of 1950. The trend though upwards is valueless. The rates fluctuate greatly, and suggests the presence of variability of infection and treatment. Scores of deaths included to this disease entity in reality are dysenteric in nature often proven epidemiologically and backed up by laboratory results.

The mortality is high in the group of under two years of age with positive insignificant trend. Outward factors affecting the rates continue to exist.

The mortality above two years of age has the same statistical characteristics as in the group of under two years. In both cases the course of the rates is erratic.

MALARIA

In 1953, the mortality of malaria is as low as 32 per 100,000 population the best on record. In the quinquennial years, the average rate is 42 and in the 15 pre-war years 89. The rate of 1948 is in the epidemic norm. The trend of mortality though small is significantly downwards. The dispersion of the rates is lightly influenced by the trend but the dispersion is still *hypernormal* suggestive of the presence of variability of toxicity and treatment. Notwithstanding, lower rates are expected in the following years.

INFLUENZA

The mortality in 1953 shows significant improvement over rates of preceding years. It is as low as 22 per 100,000 population the lowest on record. The average of the 5 previous years is 29 and the average of the 15 pre-war years is 64.

The trend in the quinquennial period is negative but insignificant which has no influence in diminishing the rates to normalcy. The dispersion of the rates is as yet *hypernormal*. The rates are subject to outward perturbing influences as reflected by the variability of infection, toxicity and treatment.

TETANUS

The mortality of this disease in 1953 is as high as the rate of 1952. Both rates are in the borderline of ill-health. The trend is significantly positive. The rates are subject to perturbing influences. Higher rates are expected.

MEASLES

In 1953, the mortality of this disease has reached the epidemic level (12). The average rate of the preceding five years is 5 per 100,000 population and the average of 15 pre-war years is 7. Obviously the 1953 rate is comparatively high. It is as high as that of 1930 (11.3) but lower than the rate of 1926 (23.4). The highest rate however is that of 1946 (34.6) and lowest (1.3) is the 1948.

The trend of the disease is positive and insignificant. The great variation of the rates indicates variability of infection unaffected by whatever measure of control. Fatality occurs only in infants invariably to bronchopulmonary complications-bronchopneumonia specifically.

DYSENTERIES

The mortality of this group of diseases in 1953 continues to be normal. In the preceding 5 years the average rate is 5 per 100,000 population whereas the average of the 15 pre-war years is 36. In this period the highest rate is 75 corresponding to 1926.

The trend of the 5-year period is definitely downwards of high significance since it has some effect in the lowering the *hypernormal* dispersion of the rates. There are perturbing factors present left untouched by measures of control.

PERTUSIS

Another healthy sign in 1953 is the mortality from Pertussis. It is too close to the rate of mortality of 1950 the lowest on record. The epidemic rate is that of 1951. The trend of the quinquennial years is insignificant and exerts no influence in diminishing the rates to normalcy. The rates are erratic in course.

THE 1953 TREND OF MORTALITY IN THE PHILIPPINES

DIPHTHERIA

The mortality of this disease in 1953 (1.3) is normal, approaching the rate of 1952 (1.0). The average of the preceding 5 years is 1.7 whereas the average of the 15 prewar years is 0.9 per 100,000 population.

The trend of the quinquennial years is negative but insignificant. The rates assume an erratic course.

The dispersion of the rates is still *hypernormal*, which suggests presence of variability of infection, toxicity and treatment.

TYPHOID FEVER

Another very healthy rate in 1953 is the mortality of this disease. It is as low as 7 per million population against the average of 14 in the preceding 5 years, and 87 in the 15 prewar years.

The trend in the quinquennial years is downwards which is of great significance. It exerts a great influence upon the rates bringing them to the level of normalcy. Lower rates are expected in the following years.

RABIES

Another healthy sign in 1953 is the mortality of Rabies. The trend however of the 5-year period is positive and of high significance. Despite of the excellent rates of 1953, higher or normal rates are expected in the following years.

The dispersion of the rates belongs to the Bernoullian Series.



THE WORLD BIRTH RATE *

BIRTH RATE LOWER THAN AT POST-WAR PEAK
BUT STILL HIGHER THAN IN 1939.

*Trends for Births and Deaths Point toward
High Future Population*

The birth rate is declining from its Post-World War II peak but is still above the 1939 level in most countries.

This trend is reported in the United Nations Demographic Yearbook, 1954.

The Yearbook, described as the most comprehensive compilation of demographic figures ever assembled and published by the UN Statistical Office, provides birth statistics for 183 countries and territories for the period 1920-1953. In addition, it gives statistics on area, population, population density, mortality, marriage, divorce and migration.

Tables in the Yearbook indicate, among other things, that the long-term trend toward lower stillbirth ratios is continuing, that infant mortality is continuing to decrease and life expectancy to increase, and that the combination of these trends points toward larger populations in the future.

The Yearbook does not include current information for the USSR or all the countries of eastern Europe.

Statistics in the Yearbook show that the rise in the birth rate that began with World War II and reached its peak in 1946-47 has been gradually declining since that time. Perhaps the most striking post-war change in the birth rate occurred in Japan, where the drop since 1947 has been from 34.3 births per 1,000 population to 21.5, a decrease of 37 per cent.

However, 1952-53 rates are higher, in general, than the pre-war level, the Yearbook shows. For example, the birth

* From the United Nations Information Office for the Philippines.

THE WORLD BIRTH RATE

rate in France rose from 14.7 in 1939 to 23.8 in 1947 and then dropped to 18.7 in 1953. Similarly, the figures in the United States are: 17.3 in 1939, 25.8 at the post-war peak, and 24.7 in 1953; in England and Wales, 14.8 in 1939, 20.5 at the post-war peak, 15.4 in 1953; in Chile, 33.3 in 1939, 33.8 after the war, and 36.1 in 1953.

A continued decline in infant mortality, in countries for which statistics are available, is shown in tables dating back to 1920.

In some countries, the infant mortality rate in 1953 was less than one-third of the 1920-24 average. In Sweden for example, 61 infants out of 1,000 died in their first year of life in the period 1920-24; in 1953 the rate had dropped to 18.7. In Mexico the rate dropped from more than 200 to less than 100; in Greece, from more than 80 to 43.

Increasing life expectancy is shown in other tables giving previously unpublished material for a number of countries. The highest life expectancy reported is for Norwegian women who—according to calculations based on data for 1946-50—could hope to survive almost 73 years from the time of birth.

The impact of rapid disease eradication can be seen in the life table for Ceylon. Between 1920 and 1946 (a 26-year period), the life expectancy at birth for males in Ceylon increased 11 years, or from 33 to 44 years. But between 1946 and 1952, after malaria control measures had been initiated, the increase was from 44 to 58, an increase of 14 years of life achieved in only 6 years.

The new (1941-1950) life table for India shows an expectancy of 32 years, an increase of 5 years over the previous calculation which related to 1921-1931.

The world-wide improvement in health conditions, as measured by death rates, is also reflected in cause-of-death statistics shown in the Yearbook for a large number of countries. Generally speaking, deaths resulting from tuberculosis continued to decrease in relative importance, whereas deaths from heart disease and cancer increased. There is no indication as

to the part played by improved diagnosis, the Statistical Office commented.

All these statistics—the relatively high birth rates, the low infant and general death rates, the decreasing stillbirth ratios—point toward larger population in the future.

The world as a whole is reported to have had a total of 2,547 million inhabitants at the middle of 1953, an increase of 92 million in the three years since 1950. Part of the apparent increase reflects the influence of more accurate estimates of population based on the many censuses taken around 1950; nevertheless, the Statistical Office believes, it implies an annual percentage increase of well over 1 per cent—a fact which must be taken into consideration when future plans for economic and social development are being made.

By areas, Central Europe continues to have the highest population densities (population per square kilometer) of the world, followed by South Central Asia and Southern Europe.



WORLD NEWSPRINT PRODUCTION *

World production of newsprint in 1953 amounted to about 9,560,00 metric tons (excluding the USSR and mainland China), some 4% more than in the preceding year, and 21% more than in the peak prewar year 1937.

Giving these figures, the latest issue of the UN Statistical Yearbook says that the United States, with a total of 5,467,00 metric tons, is credited with consuming some 57% of the 1953 supply. Next comes the United Kingdom, which used 723,000 metric tons, substantially more than in the earlier postwar years, but 42% less than its prewar average. Third and fourth on the list are Japan, with 414,000 metric tons, and France, with 370,000 metric tons.

The largest producer was Canada, which contributed 54% of the 1953 total. About 10% came from the United States, and the same amount from the joint production of three Scandinavian countries (Finland, Norway and Sweden). The United Kingdom was responsible for more than 6%. Compared with prewar output in 1937, these figures show increases of 42% in Canada; 9% in the United States; 7% in Finland; 15% in Norway; and 19% in Sweden. The United Kingdom's figure represents a drop of 34%.

Per capita newsprint consumption for the year 1953 was highest in the United States, with a figure of 34.2 kilos per person. This was followed by: Canada (21.9 kilos); Sweden (18.3 kilos); Australia (16.2 kilos); New Zealand (15.6 kilos), and the United Kingdom (14.2 kilos).

Before the war (1935-39 average) the United Kingdom headed the list with 26.4 kilos, followed by: the United States (25.1 kilos); Australia (24.3 kilos); New Zealand (21.0 kilos); Canada (15.8 kilos) and Sweden (13.8 kilos).

* From the United Nations Information Office for the Philippines.

Circulation of daily newspapers per one thousand inhabitants in 1952 (the latest year shown for most countries) was easily highest in the United Kingdom, with 615 copies to each 1,000; next in order came: Sweden (490 copies), Luxembourg (447 copies), Iceland (439 copies), and Australia (416 copies). The United States figure was 346 copies per thousand in 1954.

At the other end of the scale came: Afghanistan, Laos and Liberia (one copy per 1,000 inhabitants), Pakistan, Cambodia, Haiti and various African countries (some two to three copies); Thailand (four copies); Indonesia (seven copies); and India (eight copies).



STATISTICAL TRAINING CENTER LIBRARY
RIZAL HALL, PADRE FAURA
MANILA, PHILIPPINES

LIBRARY ACQUISITIONS, DECEMBER-MARCH 1955

- ACKOFF, R. *The Design of Social Research*. Chicago, University of Chicago, 1953, 420 pp.
- AMERICAN ECONOMIC ASSOCIATION. *Economists in the Federal Service*. Report of the Committee on Economists in the Public Service to the American Economic Association on January 24, 1946. Supplement to the Statistical Reporter, No. 102, Washington, D.C., Bureau of the Budget. June 1946. 9 pp.
- BELSHAW, H. *Population Growth and Levels of Consumption in New Zealand*. Some comparisons with Asian Countries. New Zealand, Victoria University College. 27 pp.
- CONNOR, L. R. *Statistics in Theory and Practice*. 3rd ed. London, Pitman, 1949. 374 pp.
- DOBBY, E. H. G. *Southeast Asia*. 2nd ed. Environmental conditions in Southeast Asia: social, cultural and physical aspects and problems peculiar to its people. New York, Widely, 1951. 415 pp.
- GOVERNMENT STATISTICS AND INFORMATION SERVICES. *Government Statistics*. A Report of the Committee on Government Statistics and Information Services. New York, Social Science Research Council, 1937. 174 pp.
- GREAT BRITAIN. Ministry of Labour and National Service. *National Employment Services, Great Britain*. Geneva, 1952. 189 pp.
- HOSELITZ, B. F. *The Progress of Underdeveloped Areas*. Chicago, University of Chicago, 1952. 296 pp.
- HUFF, D. *How to Lie with Statistics*. New York, Norton, 1954. 142 pp.

- INSTITUTE OF INTERNATIONAL INDUSTRIAL AND LABOR RELATIONS, CORNELL UNIVERSITY. *Labor, Management and Economic Growth*. Proceedings of a Conference on Human Resources and Labor Relations in Underdeveloped Countries. New York, 1954. 251 pp. 2 cop.
- INTERNATIONAL LABOUR ORGANIZATION. *Employment and Unemployment Statistics*. Geneva, 1954. 63 pp.
- . *General Report on Progress of Labour Statistics*. Geneva, 1954.
- . *Indigenous Peoples*. Living and Working Conditions of Aboriginal Populations in Independent Countries, Geneva, 1953. 628 pp.
- . *International Comparisons of Real Wages: A Study of Methods*. Geneva, 1954. 83 pp.
- . *International Standard Classification of Occupations: Minor Groups*. Geneva, 1954. 51 pp.
- . *Migrant Workers (Underdeveloped Countries)*. Geneva, 1953. 2 vols.
- . *Minimum Standard of Social Security*. Geneva, 1952. 313 pp.
- . *Organization of Manpower with Special Reference to the Development of Employment Services and Training*. Geneva, 1949. 159 pp.
- . *Social Security: Achievements and Future Policy*. Geneva, 1952. 108 p.
- . *Technical Assistance*. Geneva, 1954. 100 pp.
- . *Textile Wages*. An International Study. Geneva, 1952. 126 pp.
- JAFFE, A. J. *Calculos de Poblacion*. Traducido por Oficina de Coordinacion. Centro Interamericano de Bioestadística, de 'Handbook of Statistical Methods for Demographers.' (Capítulo 7). Santiago, Chile, 1954. (Copy in English also available). 33 pp.

STATISTICAL TRAINING CENTER LIBRARY

- LORENZO, C. M. *Notes on Agricultural Census Methodology*. Washington, D.C., Food and Agriculture Organization, 1949. 76 pp.
- OSTLE, B. *Statistics in Research*. Iowa, Iowa State College Press, 1954. 487 pp. 3 cop.
- PANSE, V. G. *Estimation of Crop Yields*. Rome, Food and Agriculture Organization, 1954. 61 pp.
- PHILCUSA-FOA. Wage and Position Classification Office. *Salary Data in the Philippines*. A Summary of Salaries and other Compensation Practices as Reported by 329 Philippine Enterprises, Private Schools and Private Hospitals. Manila, Bureau of Printing, 1954. 126 pp. 6 cop.
- ROCKEFELLER FOUNDATION. *Annual Report, 1953*. New York, 1954. 432 pp.
- RODGERS, J., and MASON, J. I. *International Statistics for Governments and Business*. Oxford, The Association of Incorporated Statisticians, 1953. 15 pp.
- SHRYOCK, H. S. Jr. *Coordinacion de los Calculos de Poblacion Usados por Instituciones Federales, Estatales y Locales*. Santiago, Chile, Oficina de Coordinacion, 1954. 10 pp.
- STANBERY, D. van *Metodo de Calculo de Poblaciones para Zonas y Comunidades*. Traducido por Oficina de Coordinacion, de 'Better Population Forecasting for Areas and Communities.' Santiago, Chile, Oficina de Coordinacion. 1954. 89 pp.
- UNITED NATIONS. Dept. of Economic Affairs. *The International Flow of Private Capital, 1946-1952*. New York, 1954. 61 pp.
- . *Land Reform. Defects in Agrarian Structure as Obstacles to Economic Development*. New York, 1951.
- . Dept. of Social Affairs. *Foetal, Infant and Early Childhood Mortality*. Vol. 2: Biological, Social and Economic Factors. New York, 1954. 44 pp.

- . Statistical Office. *Direction of International Trade*. (Statistical Papers, Series T). v. 5, no. 11. New York, 1955. 70 pp. 3 cop.
- . ———. *Population and Vital Statistics Reports*. (Statistical Papers, Series A). v. 7, No. 1, New York, 1955. 25 pp. 2 cop.
- . ———. *Preparacion de Informes sobre Encuestas a base de Muestras*. Reproducido por el Centro Interamericano de Bioestadística, 1949. 10 pp.
- . ———. *Report and Proceedings of the United Nations International Seminar on Statistical Organization*. (Statistical Papers, Series M. no. 16). New York, 1953. 137 pp. 13 cop.
- UNITED STATES. Bureau of Labor Statistics. *Personnel Resources in the Social Sciences and Humanities*. A Survey of the Characteristics and Economic Status of Professional Workers in 14 Fields of Specialization. (Bulletin No. 1169. U.S. Dept. of Labor). Washington, D.C., U.S. Govt. Printing Office, 1954.
- . ———. *Program for Employment Hours and Earnings Statistics, 1948-1949*. Washington, D.C., 1948. 13 pp.
- . Employment Service. *Dictionary of Occupational Titles*. 2nd ed. 2 vols. Washington, D.C. 1949. 2 cop.
- . ———. *Labor Market Information in the Employment Service Program: Its Nature, Scope, Sources, Uses*. Washington, D.C. 12 pp.
- . Tariff Commission. *Rules for Tabular Presentation*. Washington, D.C., 1951. 28 cop.
- WEINTRAUB, S. *Income and Employment Analysis*. New York, Pitman, 1951. 239 pp.
- WORLD HEALTH ORGANIZATION. Division de Estadísticas Sanitarias. *Algunas Consideraciones Estadísticas Aplicables al Programa de Zonas de Demostración Sanitaria*. Santiago, Chile. 17 pp.



PHILIPPINE STATISTICAL ASSOCIATION

Incorporated

P. O. Box 3223, Manila

BOARD OF DIRECTORS

For the Year 1955

OFFICERS

<i>President</i>	Cesar M. Lorenzo
<i>First Vice-President</i>	Enrique T. Virata
<i>Second Vice-President</i>	Luis R. Salvosa
<i>Secretary-Treasurer</i>	Exequiel S. Sevilla

DIRECTORS

Santiago F. de la Cruz
Carlos P. Fernandez
Manuel O. Hizon
Vicente Mills
Bernardino A. Perez

COMMITTEES

Actuarial Statistics	Luis R. Salvosa, <i>Chairman</i> Manuel O. Hizon, <i>Member</i> Emeterio Roa, Jr., <i>Member</i>
Agricultural Statistics	Francisco M. Sacay, <i>Chairman</i> Burton T. Oñate, <i>Member</i> Dimas A. Maulit, <i>Member</i>
Business and Economic Statistics	Cesar M. Lorenzo, <i>Chairman</i> Tomas B. Aguirre, <i>Member</i> Celso S. Bate, <i>Member</i>
Labor Statistics	Bernardino A. Perez, <i>Chairman</i> Isidro S. Macaspac, <i>Member</i> Rosendo A. Regalado, <i>Member</i>
Mathematical Statistics	Manuel O. Hizon, <i>Chairman</i> Enrique T. Virata, <i>Member</i> Emeterio Roa, Jr., <i>Member</i>
Membership	Santiago F. de la Cruz, <i>Chairman</i> Tomas B. Aguirre, <i>Member</i> Bernardino G. Bantegui, <i>Member</i>
Psychology and Education Statistics	Isidoro Panlasigui, <i>Chairman</i> Tito Clemente, <i>Member</i> Rosita Tiojanco, <i>Member</i>
Public Relations	Pedro E. Teodoro, <i>Chairman</i> Hilarion P. Vibal, <i>Member</i> Angel Yoingco, <i>Member</i>
Statistical Education	Enrique T. Virata, <i>Chairman</i> Santiago F. de la Cruz, <i>Member</i> Leopoldo Uichanco, <i>Member</i>
Vital Statistics	Victor C. Valenzuela, <i>Chairman</i> Manuel O. Hizon, <i>Member</i> Manuel Ma. Aycardo, <i>Member</i>
Constitution and By-Laws	Carlos P. Fernandez, <i>Chairman</i> Exequiel S. Sevilla, <i>Member</i> Manuel Ma. Aycardo, <i>Member</i>

PHILIPPINE STATISTICAL ASSOCIATION

Incorporated

P. O. Box 3223, Manila

DIRECTORY OF INDIVIDUAL MEMBERS

RECORDING YEAR OF ADMISSION

MAY 20, 1955

—A—

- 1955 ACAYAN, Mrs. Dolores S.; University of the East, Manila
- 1952 AGUIRRE, Tomas B.; Department of Research & Statistics, Philippine National Bank, Escolta, Manila.
- 1953 ALIP, Dr. Eufronio M.; 1312 Dos Castillas, Sampaloc, Manila.
- 1954 ALINO, Reinaldo; Assistant Director, Exchange Control Department, Central Bank of the Philippines, Manila
- 1954 ALONZO, Domingo C.; Mathematics Department, University of the Philippines; Diliman, Quezon City.
- 1953 ALZATE, Loreto V.; Philippine Ra-Me Decorticating, Inc.; 453 Claveria St., Davao City.
- 1952 ANTIPORDA, Alfredo V.; Division Chief, Exchange Control Department, Central Bank of the Philippines, Manila
- 1954 AROMIN, Policarpo; National Employment Service, Department of Labor; Barbosa St., Quiapo, Manila.
- 1952 ARTIAGA, Dr. Santiago; 1020 Taft Avenue, Manila
- 1951 *AYCARDO, Dr. Manuel Ma.; 178 Porvenir St., Pasay City, Tel. 5-24-84.

—B—

- 1953 BACANI, Alberto; College of Commerce, University of the East; Manila.
- 1953 BALICKA, Miss Sophya; Statistical Adviser, United States of America Operations Mission to the Philippines (FOA); Dewey Boulevard, Manila

* Founding Member

- 1954 **BALTAZAR, Tomas**; Division of Evaluation Research & Statistics, Bureau of Private Schools; Manila.
- 1953 **BANCOD, Ricardo T.**; Philippine American Life Insurance Co.; Wilson Building, Juan Luna, Manila.
- 1953 **BANTEGUI, Bernardino G.**; ACCFA; 1586 Taft Avenue, Manila.
- 1952 **BATE, Celso S.**; Import-Export Department, Central Bank of the Philippines; Manila.
- 1953 **BENITEZ, Conrado**; Philippine Women's University; Taft Avenue, Manila.
- 1955 **BENZON, Arturo**; ACCFA; 1586 Taft Avenue, Manila.
- 1952 **BLARDONY, M.**; The Insular Life Assurance Co., Ltd., Insular Life Bldg., Plaza Moraga, Manila.
- 1954 **BRAUM, Dr. Dan**; Institute of Public Administration, University of the Philippines, Rizal Hall; Padre Faura, Manila.
- 1952 **BRINGAS, Honesto**; Wage Administration Service; Manila.

—C—

- 1952 **CAPINPIN, Dr. Jose**; College of Agriculture, University of the Philippines, College, Laguna.
- 1952 **CASTILLO, Jose**; Division of Agricultural Economics, Department of Agriculture & Natural Resources, Manila.
- 1954 **CASTRO, Amado**; College of Business Administration, University of the Philippines; Diliman, Quezon City.
- 1954 **CLAYTON, Claud F.**; Agricultural Economist, United States of America Operations Mission to the Philippines (FOA); Dewey Boulevard, Manila.
- 1953 **CLEMENTE, Dr. Tito**; Bureau of Public Schools; Manila.
- 1953 **CONCEPCION, Mariano V.**; Statistician, United States of America Operations Mission to the Philippines (FOA); Dewey Boulevard, Manila.
- 1955 **CONCEPCIÓN, Miss Mercedes**; Statistical Training Center, Manila.

- 1953 CULABUTAN, Miss Paz; Statistician, Department of Economic Research, Central Bank of the Philippines; Manila.

—D—

- 1951 *DALISAY, Dr. Amando; Executive Director, National Economic Council; Philcusa Bldg., Padre Faura, Manila.
- 1954 DE CASTRO, Pio G.; Technical Assistant to the General Manager and Acting Manager, Trade Assistance Department, Price Stabilization Corporation; Manila.
- 1952 DE LA CRUZ, Dr. Santiago F.; Dean, College of Commerce, University of the East; Manila.
- 1954 DE LOS SANTOS, Dr. Mariano V.; President, University of Manila; 105 Alejandro VI, Sampaloc, Manila.
- 1953 DIAZ, Gilberto C.; Statistician, Exchange Control Department, Central Bank of the Philippines; Manila.

—E—

- 1953 ESPINOSA, Mrs. Mercedes L.; College of Commerce, University of the East; Manila.

—F—

- 1952 FERNANDEZ, Carlos P.; Fernandez Hermanos, Inc.; 109 Juan Luna, Manila
- 1953 FERNANDEZ, Jr., Jose; Vice-President, The Philippine Bank of Commerce; Manila.

—G—

- 1953 GALANG, Major Eulogio G.; Research Development Division; GHQ, AFP, Camp Murphy; Quezon City.
- 1954 GARCIA, Mrs. Fanny; Assistant Director, Department of Economics Research, Central Bank of the Philippines; Manila.
- 1954 GARCIA, Manuel L.; Executive Secretary, Belman Compañía, Inc.; 316 Ronquillo, Sta. Cruz, Manila.
- 1954 GARCIA, Salvador del Rosario; 123-A Arquiza, (down) Manila.

* Founding Member

- 1951 *GIVENS, Dr. Meredith B.; UN Principal Statistical Advisor, Statistical Training Center, University of the Philippines, Rizal Hall, Padre Faura, Manila.
- 1951 *GONZALES, Dr. Leon Ma.; Director, Bureau of the Census & Statistics; Manila.
- 1952 GRAU, Cesareo H.; Vice-President, Philippine American Life Insurance Co.; Wilson Building, Juan Luna, Manila.
- 1955 GUILLERMO, Rodrigo J.; P. O. Box 171, Bacolod City.
- 1952 GUTIERREZ, Mrs. Belen E.; Dean, Institute of Accounts, Business and Finance; Far Eastern University, Manila.

—H—

- 1953 HAWLEY, Dr. Amos H.; University of Michigan, Ann Arbor, Michigan, U.S.A.
- 1954 HEADY, Jr., Dr. Chester Ferrel; University of Michigan, Ann Arbor, Michigan, U.S.A.
- 1955 HERBER, Mrs. Josefina Almalel; 25 San Juan St., Pasay City.
- 1955 HERBER, Teodorico; 25 San Juan St., Pasay City.
- 1954 HILADO, Alfonso; 547 A. Mabini, Manila.
- 1951 *HIZON, Dr. Manuel O.; Associate Actuary, Government Service Insurance System; Port Area, Manila.

—I—

- 1954 IGNACIO, Eduardo, Jr.; University of Santo Tomas, Manila.
- 1952 ISIP, A. B.; Executive Secretary, Philippine Chamber of Industries, Inc.; Samanillo Building, Escolta, Manila.

—K—

- 1953 KRISHNAMURTHY, T.; Specialist in Fundamental & Adult Education; United Nations Building, Padre Faura, Manila.

* Founding Member

- 1954 **KEARL, C. D.**; Department of Agricultural Economics, College of Agriculture, University of the Philippines, College, Laguna.

—I—

- 1954 **LANDAS, Marcelo R.**; Board of Pensions for Veterans, Department of National Defense; Manila.
- 1952 **LARA, Dr. Hilario**; Institute of Hygiene, University of the Philippines; Herran, Manila.
- 1951 ***LEGARDA, Jr., Benito**; Department of Economic Research Central Bank of the Philippines; Manila.
- 1954 **LIZARDO, Jose M.**; Exchange Control Department, Central Bank of the Philippines; Manila.
- 1952 **LOMOTAN, Cesar J.**; Division Chief, Department of Economic Research, Central Bank of the Philippines; Manila.
- 1951 ***LORENZO, Cesar M.**; Executive Vice-President & General Manager, Philippine Phoenix Surety & Insurance Co., Inc.; Regina Bldg., Escolta, Manila.

—M—

- 1954 **MAGTIRA, Cirilo C.**; Mapua Institute of Technology; Manila.
- 1953 **MANZANO, Dr. Iluminado**; University of the Philippines; Diliman, Quezon City.
- 1953 **MAULIT, Dimas A.**; Division of Agricultural Economics, Department of Agriculture & Natural Resources; Manila.
- 1954 **McDIARMID, Orville**; Regional Economist, Office of Regional Director for Far Eastern Operations, Foreign Operations Administration; Washington 25, D.C., U.S.A.
- 1953 **McMILLAN, Dr. Robert T.**; Rural Sociologist, United States of America Operations Mission to the Philippines (FOA); Dewey Boulevard, Manila.
- 1951 ***MILLS, Vicente**; 115-A Buencamino; P. O. Box 1470, Tel. 6-75-68, Manila.
- 1955 **MORRISON, Frank S.**; Analytical Statistician, United States of America Operations Mission to the Philippines (FOA); Dewey Boulevard, Manila.

* Founding Member

—O—

- 1953 **ONATE, Burton T.**; Statistical Training Center, University of the Philippines; Rizal Hall, Padre Faura, Manila.

—P—

- 1952 **PANLASIGUI, Dr. Isidoro**; Dean, College of Education University of the Philippines; Diliman, Quezon City.
- 1952 **PAREL, Miss Cristina**; University of the Philippines; Diliman, Quezon City.
- 1955 **PEREZ, Antonio G.**; Assistant Insurance Commissioner, Office of the Insurance Commissioner; 4th Floor, Choy Building, Dasmariñas, Manila.
- 1952 **PEREZ, Bernardino A.**; Chief Statistician, National Economic Council; Philcusa Bldg., Padre Faura, Manila.
- 1952 **PUYAT, Hon. Gil J.**; Senator, Philippine Senate; Manila.

—R—

- 1951 ***RAMOS, Damaceno**; Price Stabilization Corporation; Binondo, Manila.
- 1951 ***REGALADO, Rosendo**; Chief, Division of Statistics & General Information, Bureau of the Census & Statistics; Manila.
- 1954 **REYES, Miss Alicia I.**; Statistical Assistant, United States of America Operations Mission to the Philippines (FOA); Dewey Boulevard, Manila.
- 1953 **ROA, Conrado C.**; Actuary, Office of the Insurance Commissioner; Choy Building, Dasmariñas, Manila
- 1952 **ROA, Dr. Emeterio**; Vice-President, The Insular Life Assurance Co., Ltd.; Insular Life Bldg., Plaza Moraga, Manila.
- 1953 **ROA, Jr. Emeterio**; Actuary, Great Pacific Life Insurance Co.; 166 Rosario, Manila.
- 1951 ***ROA, Federico**; Actuary, The Insular Life Assurance Co., Ltd.; Insular Life Bldg., Plaza Moraga, Manila

* Founding Member

- 1953 **ROBERTSON, Dr. Lynn S.**; College of Agriculture, Purdue University; Lafayette, Indiana.
- 1954 **ROSS, J. P. B.**; Thieux Seine Et; Marne, France.

—S—

- 1952 **SACAY, Dr. Francisco M.**; ACCFA; 1586 Taft Avenue, Manila.
- 1952 **SALVOSA, Dr. Luis R.**; Actuary, Government Service Insurance System; Port Area, Manila.
- 1951 ***SANTIAGO, Ceferino**; College of Commerce, University of the East; Manila.
- 1953 **SARDA, Miss Mira**; Exchange Control Department Central Bank of the Philippines; Manila.
- 1954 **SEN, Satya B.**; UN Senior Statistical Advisor, Statistical Training Center, University of the Philippines; Rizal Hall, Padre Faura, Manila.
- 1951 ***SEVILLA, Exequiel S.**; Manager, National Life Insurance Co. of the Philippines; Regina Building, Escolta, Manila.
- 1952 **SILVESTRE, Dr. Jose**; 1022 Arlegui, Quiapo, Manila.
- 1953 **SIMBULAN, Cesar G.**; Philippine American Life Insurance Co.; Wilson Building, Juan Luna, Manila.
- 1953 **SORONGON, Arturo P.**; Fiscal Economist, United States of America Operations Mission to the Philippines (FOA); Dewey Boulevard, Manila.
- 1952 **SUMAGUI, Juan O.**; Philippine Council for United States Aid; Philcusa Building, Padre Faura, Manila.
- 1952 **SYCIP, Washington**; Sycip, Gorres, Velayo & Co.; Trade & Commerce Building, Juan Luna, Manila.

—T—

- 1952 **TABLANTE, Nathaniel**; College of Agriculture, University of the Philippines; College, Laguna.
- 1954 **TALAG, Lt. Col. Mariano R.**; HQ. Philippine Navy, Fort San Antonio Abad; Dewey Boulevard, Manila.
- 1954 **TAN, Dr. Vidal A.**; President, University of the Philippines; Diliman, Quezon City.
- 1953 **TEODORO, Pedro E.**; Philippine Promotion Bureau; Regina Building, Escolta, Manila.

* Founding Member

- 1952 TIOJANCO, Mrs. Rosita; College of Commerce University of the East; Manila.

—U—

- 1953 UICHANCO, Miss Epigenia B.; Chief, Evaluation and Research Section, City Schools, City Hall, Manila.
1952 UICHANCO, Dr. Leopoldo; Dean, College of Agriculture, University of the Philippines; College, Laguna.

—V—

- 1952 VALENZUELA, Dr. Victor C.; Institute of Hygiene, University of the Philippines; Herran, Manila.
1953 VARSOVIA, Dr. Mariano; Statistical Department, Rehabilitation Finance Corporation; RFC Building, Escolta, Manila.
1952 VIBAL, Hilarion P.; Business Writers Association of the Philippines; 323 Samanillo Building, Escolta, Manila.
1951 *VIRATA, Dr. Enrique T.; Executive Vice-President, University of the Philippines, Diliman, Quezon City.

—Y—

- 1951 *YOINGCO, Angel; Economist, Committee on Appropriations, House of Representatives; Manila.

* Founding Member



REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND COMMUNICATIONS

BUREAU OF POSTS
Manila

SWORN STATEMENT
(Required by Act 2580)

The undersigned, EZEQUIEL S. SEVILLA, Business Editor of THE PHILIPPINE STATISTICIAN, published quarterly, in English at 304 Regina Building, Escolta, Manila, after having been duly sworn in accordance with law, hereby submits the following statement of ownership, management, circulation, etc., which is required by Act 2580, as amended by Commonwealth Act No. 201:

N a m e	Post-Office Address
Editor: VICENTE MILLS	115-A Buencamino, San Miguel, Manila
Business Editor: EZEQUIEL S. SEVILLA	P. O. Box 3223, Manila
Owner: PHIL. STATISTICAL ASS'N	P. O. Box 3223, Manila
Publisher: PHIL. STATISTICAL ASS'N	P. O. Box 3223, Manila
Printer: CARMELO & BAUERMANN, INC. ..	2037 Ascarra, Manila
Office of Publication	304 Regina Building, Escolta, Manila

If publication is owned by a corporation, stockholders owning one percent or more of the total amount of stocks:

N O N E

Bondholders, mortgagees, or other security holders owning one percent or more of the total amount of security:

N O N E

In case of daily publication, average number of copies printed and circulated of each issue during the preceding month of, 19....

1. Sent to paid subscribers	
2. Sent to others than paid subscribers	
Total	

In case of publication other than daily, total number of copies printed and circulated of the last issue dated March, 1955:

1. Sent to paid subscribers	549
2. Sent to others than paid subscribers	40
Total	589

(Sgd.) EZEQUIEL S. SEVILLA
Business Editor

Subscribed and sworn to before me this 12th day of May, 1955, at Manila, the affiant exhibiting his Residence Certificate No. A-1994 issued at Manila on January 3, 1955.

(Sgd.) GERARDO V. CUI
Notary Public
Until December 31, 1955

Doc. No. 145
Page No. 10
Book No. 1
Series of 1955

(NOTE) — This form is exempt from the payment of documentary stamp tax.

University of the Philippines
STATISTICAL TRAINING CENTER

Rizal Hall, Padre Faura
P. O. Box 479, Tel. 5-46-62
Manila

ADMINISTRATIVE OFFICERS

Vidal A. Tan *President*
Enrique T. Virata *Executive Vice-President*
Arturo M. Guerrero *Acting Registrar*
Rafael Uson *Comptroller*
Antonio Perez *Accounting Officer*

OFFICERS AND STAFF

Enrique T. Virata *Acting Director of the Center*
Meredith B. Givens *United Nations Principal
Statistical Adviser*
Satya B. Sen *United Nations Senior
Statistical Adviser*

Professional Committee on Statistical Training
Appointed by the Philippine Statistical Association
in an advisory capacity

Cesar M. Lorenzo, *Chairman*

Tomas B. Aguirre	Dimas A. Maulit
Sophya Balicka	Vicente Mills
Bernardino G. Bantegui	Francisco M. Sacay
Manuel O. Hizon	Victor C. Valenzuela

The Statistical Training Center was created in accordance with Supplementary Agreement No. 17, entered into by the United Nations and the Government of the Republic of the Philippines, on December 11, 1953.

PHILIPPINE STATISTICAL ASSOCIATION
Incorporated

P. O. Box 3223, Manila

INSTITUTIONAL MEMBERS

Associations

Philippine Sugar Association
The Philippine Association, Inc.

Banks

Central Bank of the Philippines
China Banking Corporation
Philippine Bank of Communications
Philippine National Bank
Rehabilitation Finance Corporation

Business and Industry

Blue Bar Coconut Co.
Caltex, Philippines, Inc.
Elizalde and Co., Inc.
Erlanger and Gallinger, Inc.
International Harvester Company of the Philippines
Koppel (Philippines) Inc.
Menzi and Co., Inc.
Philippine Manufacturing Co.
Philippine Packing Corporation
San Miguel Brewery, Inc.
Standard Vacuum Oil Company
The Shell Company of the Philippines, Ltd.

Education

Far Eastern University
University of the East

Insurance

Government Service Insurance System
National Life Insurance Company of the Philippines
Pacific Union Insurance Company
Provident Insurance Company of the Philippines
The Insular Life Assurance Co., Ltd.
The Philippine American Life Insurance Company