WHY WE CELEBRATE STATISTICS WEEK *

by

Exequiel S. Sevilla [1]

Many of you have doubtless heard the saying that "Anything can be proved by statistics," as well as the joke that "figures do not lie, but liars know how to figure." This is at least one reason why it is valuable for the layman to have some knowledge of statistics so that he may be in a position to understand statistical figures which often appear in the press, reports or speeches, to differentiate between reliable and misleading statistics as well as to know the limitations of certain given figures. As President Magsaysay declared in his Proclamation No. 111 setting aside the period from February 20 to the 26th as National Statistics Week, we need a "program of education for the promoton of knowledge of facts and figures as a healthy basis for knowing our social and economic status and progress" because "democracy laid by well-informed citizens and administrators is a true democracy in action."

In reporting data on social and economic trends, business conditions, opinion polls, censuses, results of experiments, etc., statistical methods and statistical terms are necessary. But the resulting statistics or figures should be understood for what they really mean in order to avoid incorrect or sweeping conclusions. For instance, a great deal of present day statistics is obtained by means of the so-called "sampling method" so as to minimize the cost of the survey as well as to hasten completion of the work. The method is based on the principle that if the samples studied are properly selected and enough of them are included, the characteristics of the samples should be representative of the larger universe or population. Hence,

---

[1] General Manager, National Life Insurance Company

statistics based on sampling should be used with care and with knowledge of their limitations.

One overworked term in statistics is the so-called "average." When you are told that something is an "average," you still do not know very much about it unless you can find out which of the common kinds of average it is — the mean, the median or the mode. For example, if we were dealing with the income of persons engaged in a certain profession, the mean would be found by dividing the total income by the number of professionals, while the median would be the middle income figure if all the incomes were arrayed or arranged from the lowest to the highest, and the mode would represent the income of the most number of the professionals. Consequently, if we were just told that the average income in that profession is ₱500 a month, this figure may mean something or it may not. If this figure is the median, then all we know is that half of the professionals make more than ₱500 a month while the other half makes less than ₱500 a month. But if the figure is the mean, it only means the total income divided by the number of professionals so that it could represent the average of the fat income of a few eminently successful top men in the profession and the meagre income of a great number of luckless professionals at the bottom eking out a hand-to-mouth existence. If the figure were the mode, then it would be more revealing as it represents the most common income in the profession. Let me hasten to add, however, that I do not imply that the mode is the "BEST" average in all cases. For certain purposes, the median is better and for others, the arithmetic mean or the geometric.

Another overworked tool in statistics is the pictorial diagram particularly for comparison purposes because pictures have more eye appeal than dull, dry figures. Even pictorial diagrams, however, can create false impressions. For example, suppose that the rice harvest from a farm using fertilizer is double that of another farm of the same area and locality but not using fertilizer. To show this comparison vividly, I could draw a sack of rice to represent the yield of the fertilized farm which is twice as tall as the sack of rice from the unfertilized farm. My proportion is correct: 2 to 1, is it not? But ac-

tually the sack of rice from the fertilized farm would give a much bigger visual impression because it is not only twice as high as the other sack but also twice as wide and, if we consider three dimensions, the resulting proportion is really 8 to 1, instead of the true 2 to 1. Let us not, therefore, jump to hasty conclusions in viewing pictorial diagrams, or even graphs and charts as the latter can likewise be distorted by "truncating" or by a conscious use of a particular proportion between the ordinate and the abscissa.

It is consequently natural for you to ask me how an ordinary layman like most people could learn to tell a good statistics from a phony one, how to recognize sound and usable data from the maze of figures daily confronting him. Frankly, I must admit that not all statistical information can be tested with mathematical certainty. However, by using some simple questions, you may acquire a working ability to recognize reliable statistics. A popular writer who found himself confronted with the problem of sifting for sound statistical data in a forest of commercial data, found it helpful to ask the following questions:

1. Who says so?
2. How does he know?
3. What is missing?
4. Does it make sense?

Who says so? — The source of data is important as it can give an index as to the quality and completeness of the figures and the presence of any bias. Figures may be only a presentation of favorable data with the unfavorable suppressed. When sources are given, examine and verify them. A statistics on the amount of investment in the sugar industry in the Philippines was given for use by the Laurel Bell Trade Revision Mission in the U.S.A., but when subsequently traced to its source was found to have been taken merely from a newspaper report of a speech which did not give the basis for the figures. When index numbers are used, know the component items and the manner of computation, before using them. The index numbers for rentals in Manila, for example, have not been revised at all since 1947.

How does he know? — If the published figures are the results of sampling, satisfy yourself that the samples have been properly selected and that a sufficient number was used to justify any reliable conclusion. If you have access to the degree of significance of the given data, you are that much better off as this would be a fine index of the dependability of the figures.

What is missing? — If averages are published, find out what kind of average and the extent and reliability of the raw data. If percentages or indexes are used, know what bases were used. For example, if one were to look at the recent statistics on deaths from cancer, one may easily conclude that deaths from cancer are on the rise whereas the higher figure may be simply due to the fact that nowadays the malady is more readily recognized and so reported due to better knowledge and finer techniques.

Does it make sense? — While mathematics is an exact science, there is no substitute for common sense in evaluating figures. There is the example of an electric factory which at first geared its production of electrical appliances to those of small capacity for small families on the basis of the declining birth rate in the country until one of its engineers noticed that he and his friends were having larger families than were recently common. He checked his common sense observation with conditions in other communities with the result that the factory had to alter its production to big family electrical appliances.

If the current series of short talks on the radio being given by members of the Philippine Statistical Association awaken in the listeners at least a curiosity to look further into the subject of statistics, we will consider our efforts as amply repaid. As Secretary-Treasurer of the Association, I would like to avail myself of this opportunity to publicly acknowledge our deep gratitude to the following firms, the institutional members of our Association:

1. Blue Bar Coconut Co.
2. Caltex, Philippines, Inc.
3. Central Bank of the Philippines
4. China Banking Corporation
5. Elizalde & Co., Inc.
6. Erlanger & Gallinger, Inc.

7. Far Eastern University
8. Government Service Insurance System
9. Insular Life Assurance Co., Ltd.
10. International Harvester Co. of the Philippines
11. Koppel (Philippines) Inc.
12. Menzi and Co., Inc.
13. National Life Insurance Co. of the Philippines
14. Pacific Union Insurance Co.
15. Philippine Air Lines, Inc.
16. Philippine American Life Ins. Co.
17. Philippine Association, Inc.
18. Philippine Bank of Communications
19. Philippine Manufacturing Company
20. Philippine National Bank
21. Philippine Packing Corporation
22. Provident Insurance Co. of the Philippines
23. Philippine Sugar Association
24. Rehabilitation Finance Corporation
25. Robot Statistics (Mercantil, Inc.)
26. San Miguel Brewery, Inc.
27. Standard Vacuum Oil Co.
28. Shell Co. of the Philippines, Ltd.
29. University of the East

Without the support and financial help of these institutional members, the Philippine Statistical Association cannot go very far in its objective of fostering general interest in statistics to the end that effective and prompt measures are taken by the proper authorities to make available reliable, accurate and up-to-date statistics for the guidance of, and for use in administration and planning by, not only the Government itself, but also the businessman and the private individual.