

# International Statistical Education Newsletter

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## EDITORIAL

The series of brief reports on current activities from countries round the world continues with one complementing an earlier one from the U.S.A. A rather different kind of report, of a somewhat broader kind, appears for the first time in this issue and deals with the South African scene. Another item that appears for the first time is a section on vacancies, announced in a preceding issue. One item, a report from the ISI Education Committee chairman, has had to be held over until the next issue.

## REPORTS FROM ROUND THE WORLD

### STATISTICAL EDUCATION IN THE REPUBLIC OF SOUTH AFRICA

#### Historical Background

It can justly be claimed that the statistical community in South Africa has been active for almost 50 years. Mathematical statistics in this country had its origins in the thirties after the return to South Africa by some mathematicians who had studied overseas under Karl Pearson and R.A. Fisher. During the thirties and forties, progress in statistical education and research was minimal - particularly due to the influence of the Second World War.

The founding of the South African Statistical Association (SASA) in October 1953 can be regarded as the most important milestone in the development of statistics as an autonomous discipline and the establishment of statistics as a profession in this country. This Association brought together the handful of statisticians working in isolation at various institutions. Among the twelve founder members were people such as J.E. Kerrich, H.S. Sichel, A.G. Aikbous, J.S. Maritz, D.G. Krige, H.S. Steyn, W. Lutz and B. de Loor, all of whom are still known for their contributions to the field of statistical research and education. The South African Statistical Association is celebrating its thirtieth anniversary this year and now has more than 400 members. Since 1967 the South African Statistical Journal has been published biannually as the official journal of the SASA, and for the past five years a quarterly Newsletter containing popular statistical articles, advertisements and SASA news has been distributed to members.

Until the late fifties statistical education was restricted mainly to universities. Short practical courses on descriptive statistics were offered to students in the Commercial Sciences. Mathematical Statistics courses were offered only to postgraduate students in mathematics. However, as a result of efforts during the past twenty years, the present standard of statistical education in South Africa compares well with that of most overseas countries. In the remainder of this report attention will be given briefly to the current state of statistical education in this country, as well as to the

activities of the Education Committee of the SASA, which was formed in 1981.

#### The Current State of Education

Statistics is not offered as a subject at South African schools, and as a result an introductory component has to be included in all statistics courses. However, the fact that all students therefore have a similar background in statistics can be seen as an advantage. The main methods of training are briefly discussed below.

**In-Service Training:** short courses of one or two weeks' duration are offered by various institutions to orientate and train their workers in handling tasks with a statistical component. The Government's Commission for Administration regularly offers such courses to government officials. Research institutions in the natural, human and medical sciences periodically offer short specialized training courses to their research staff. Both these institutions and the universities frequently offer practically oriented seminars to the public and private sectors to create an increased awareness of the important role of statistics.

**Practical courses:** A very large number of one or two semester courses in statistics are offered by South African universities and technicons. These courses are generally tailored to the course of study of the students and are usually compulsory for degree and diploma studies in Commerce, Agriculture and Engineering. It is estimated that approximately 8000 students at the fourteen South African universities and twelve technicons enrol for these courses annually.

**Training of statisticians:** Most universities offer Mathematical Statistics as a major subject for degrees in the Natural Sciences and more than 200 students annually obtain their degree with Mathematical Statistics as a major subject. A few universities offer specialized postgraduate training programmes in Mathematical Statistics, and in 1982 there were approximately 130 students (twenty of whom at doctoral level) engaged in postgraduate studies. Without neglecting the mathematical and theoretical basis of Statistics, most universities approach the training of statisticians from a topical and practical point of

view. Statistical consultation: As a result of the growing awareness among researchers of all disciplines of the important role of statistics in their research investigations, consultation centres were created at research institutions and large universities to provide for the necessary statistical aid and guidance. These centres not only provide an invaluable contribution to the standard of applied research in all disciplines, but also serve as a training mechanism for both researchers and consultants.

Education Committee of the South African Statistical Association

This committee was formed in an effort to promote closer collaboration between the more theoretically orientated statisticians and practising statisticians in the public and private sectors. The Committee also has the task of bringing about closer contact between the statistics lecturers of the various universities and technicians and of promoting the profession of statistician among prospective students and other interested parties. Some activities of this committee are:

.The compilation of university curricula to equip the prospective statistician to function both as a data analyst and a theoretician. A collection of genuinely South African data sets is presently being compiled in book-form by members of the committee to serve as a teaching aid for universities and technicians.

.The organisation of an annual country-wide competition in which prizes are awarded to the best student projects at both undergraduate and post-graduate level. Students are expected to plan and execute a research project in which data are collected and analysed and the results presented in a written report.

.Publicity for study and career opportunities in statistics, especially among high school and prospective university students. Use is made particularly of short informative articles, supported by advertisements for statistics posts, in newspapers and career guides.

.Continuous negotiations with school authorities to have statistics included in school curricula.

Familiarity with statistics at school, no matter how minimal, is expected to result in an increased enrolment of prospective statisticians at universities. We also consider it in the interests of the broader education of children to expose them to the non-deterministic nature of every day phenomena.

Conclusion

At present there is an alarming shortage of statistics lecturers, as well as of practising statisticians in both the public and industrial sectors, in South Africa, and this is causing anxiety in the statistics community. Over the past few decades South Africa has developed into an industrial giant with a resultant increased demand for statisticians by industry. The demand from these sectors has resulted in many vacant posts at the universities, and is having a negative influence on research and teaching at these institutions. The SASA is at present conducting an intensive campaign to obtain funds for large-scale publicity of statistics as a profession.

Natural scientists in South Africa can apply to the South African Council for Natural Scientists for registration as professional natural scientists in terms of the Act on Natural Scientists of 1982. Although the registration requirements are strict, a

VACANCIES

- 1) Brief advertisements for (non-commercial) teaching posts in statistics in the third world will be carried free of charge.
- 2) Readers are asked to bring these to the attention of suitable candidates.

UGANDA, Makerere University (Institute of Statistics and Applied Economics). Professor, Associated Professor, Senior Lecturer, Lecturer in Statistics

number of statisticians have already been registered by the Council. We hope that the increased status given to the profession by this Act will make it more competitive as compared to other professions.

Statistical education in South Africa, as elsewhere in the world, has deficiencies, but is dynamic enough to overcome them. During the past fifty years statistical training in this country has produced many well-known academics, extremely capable researchers and excellent managers and will no doubt continue to do so.

A.G.W. Steyn (Chairman: Education Committee of the South African Statistical Association)

STATISTICAL EDUCATION AND THE AMERICAN STATISTICAL ASSOCIATION

At the pre-college level, the American Statistical Association (ASA) and the National Council of Teachers (NCTM) formed a joint committee on the Curriculum in Statistics and Probability in 1968. Frederick Mosteller of Harvard University served as the first chairman of the committee that prepared *Statistics: A Guide to the Unknown* and *Statistics by Examples*. Under the chairmanships of Richard Pieters (1973-77) and Robert Hogg (1977-80), the committee made many presentations (minicourses) at NCTM meetings and started some special concentrated summer institutes for high school teachers. Jim Swift was chairman from 1980-82 and then the committee prepared an Annotated Bibliography of many statistical texts, which is still available from NCTM. In addition, there was a joint ASA/NCTM leadership conference in December 1981, for 46 mathematics teachers. Richard Schaeffer (1982-) is the present chairman of this joint committee, who has now presented to the National Science Foundation a large proposal to field test and improve certain materials as well as conduct statistical teaching institutes for high school teachers.

At the college level, there are a number of things being promoted by the Statistical Education Section of ASA.

- 1) In about one year, we expect a special issue of *Journal of Education Statistics* to be devoted to worthwhile teaching methods.
- 2) Co-operation with the American Society of Quality Control (ASQC) should produce a better way of introducing statistical methods to engineering students. A proposal is being made to certain industries to have from 25 to 40 statisticians (from industry and teaching) to meet in 1984 for a period of several days to discuss seriously the direction of statistical education in engineering.
- 3) Efforts are being made to help us attract more good mathematics students to college programs in statistics and related fields, such as actuarial science. In particular ASA should co-sponsor an existing national high school mathematics examination.
- 4) The Section sponsors about six sessions at the Annual meeting, concerning topics such as the use of computers, introductory courses in statistics, and possible internships in consulting.

Any enquiries about ASA's efforts in statistical education should be addressed to Professor Robert V. Hogg, Department of Statistics and Actuarial Science University of Iowa, Iowa City, IA 52242, U.S.A.

(especially Agricultural Statistics, Economic Statistics, National Accounts, Development Planning, Data Processing, Biometry, etc.). Expatriate terms available; 2-year contracts, renewable. Teaching in English. Contact Dr. S. Tulya-Muhika, Director, ISEA, Makerere University, P.O. Box 7062, Kampala, Uganda.