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Foreword

This issue of *The Statistician* contains the proceedings of the 15th Annual Conference on Applied Statistics in Ireland (CASI) which was held in Killarney on March 29th–31st, 1995, under the auspices of the All-Ireland Statistical Committee.

Over the years, the CASI has grown in stature and is now regarded as the main forum in Ireland for the presentation of research in statistics. One of the consequences of this growth in stature has been the increase in the number of participants in the conference from outside Ireland. This year's conference welcomed visitors from Britain, the Czech Republic, Hungary, Poland and Switzerland. We hope to see this trend continue in future years.

The conference programme is divided into several sessions, each session consisting of one invited paper and a number of contributed papers. This year the invited papers were read by Professor Steven Haberman from the City University, London, Donal Murphy from the Central Statistics Office in Cork, Professor Julian Peto from the Institute of Cancer Research in Surrey and Professor Bernard Silverman from the University of Bristol. We would like to take this opportunity to thank the invited speakers and all those who contributed papers to what proved to be a most stimulating programme.

We would not have been able to invite speakers and to subsidize post-graduate students without the sponsorship of the British Council, Department of Health and Social Services (Northern Ireland), Philip Morris Europe, Cancer Research Campaign (Northern Ireland), Hoechst Roussel, Action Cancer (Northern Ireland) and R. Watson and Sons, Consulting Actuaries, Dublin. We thank them for their generosity.

This is the fifth successive year in which it was agreed that the proceedings of the conference should be published in *The Statistician* after the normal refereeing procedure. The publication of the proceedings in this way has added enormously to the prestige of the conference. Since this is Nigel Smeeton's last year as Editor of *The Statistician*, we would like to express to him, on behalf of all the statistical community in Ireland, our thanks and appreciation for his immense contribution to the development of the CASI and for his patience and courtesy in dealing with conference contributors ... and organizers!

Let us close by inviting all readers of *The Statistician* to attend future CASI conferences.

Don Barry and Tom O'Donovan
Conference Organizers
University College, Cork

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Accuracy of admission and clinical diagnosis in general, and of malignant tumours and lung cancer, in 2000 consecutive autopsy cases (Budapest study)

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Abstract

Previously published comparisions of pre-autopsy and post-autopsy diagnoses of underlying causes of death have revealed high incidences of discrepancies. During recent years new clinical diagnostic procedures have been introduced but autopsy rates have been falling. Hungary has a high overall autopsy rate compared with other countries. It was therefore chosen for a study aimed at comparing the diagnosis on admission, pre-autopsy clinical diagnosis and post-autopsy diagnosis of underlying cause of death in consecutive autopsies on people aged 30–80 years, 1000 at the Semmelweis Medical University and 1000 at the Postgraduate Medical School in Budapest. Data on contributory causes of death were also analysed. Of the 2000 cases, the underlying cause of death at autopsy was found to be tumours (at any site) in 697 (34.9%), diseases of the circulatory system in 804 (40.2%), diseases of the digestive system in 276 (13.8%), diseases of the endocrine, nutritional, metabolic or immune systems in 53 (2.7%) and diseases of the respiratory system other than neoplasia in 44 (2.2%).

The overall discrepancy rate between the admission and post-autopsy diagnosis of the major category of underlying cause of death was 42.9%, and the overall discrepancy rate between the pre-autopsy (clinical) diagnosis of underlying cause of death and the diagnosis on admission was almost as high (40.0%). In about half of the discrepant cases the admission and clinical diagnoses were confirmed as present at autopsy though not as the underlying causes of death.

Regarding tumours as the underlying cause of death, the false negative rate was 8.8% clinically and 37.4% at admission. 9.1% of clinical and 8.4% of admission diagnoses of tumours were false positives, unconfirmed at post-mortem. Where the diagnosis of a tumour was confirmed, a false site was given in 20.4% of clinical and 20.6% of admission diagnoses. In summary, 72.6% of tumours were diagnosed correctly by the clinical departments and 49.6% by the general practitioner.

One special aim was to determine the accuracy of in-life diagnosis of lung cancer and to identify factors affecting it. In those 87 cases where the admission, clinical or post-mortem autopsy diagnosis included primary lung cancer, additional data were collected concerning clinical investigations relevant to the diagnosis and the histological type of lung cancer and on smoking habits.

59% (36/61) of lung cancers seen at autopsy were not detected pre-autopsy, whereas 50% (25/50) of those diagnosed pre-autopsy were not confirmed at autopsy. The accuracy of diagnosis increased with the number of diagnostic techniques applied. Underdiagnosis was more common in non-smokers and overdiagnosis was more common in smokers.

Graduate and post-graduate education, planning of the health care system and cancer care may benefit from statistical data derived from autopsy diagnoses. Epidemiologists and medical statisticians should take into account biases resulting from inaccuracy of diagnosis carried out in the absence of an autopsy.