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Roles of Statistics in the Life Sciences

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Summary

Quantitative methodologies have always been central in the life sciences, and some of these belong to the general area of statistics. Other methods of data analysis have their part to play, and it is of ongoing importance for the field of statistics to adapt to these developments.

Besides the role of statistical methods in generating new knowledge, there are also regulatory uses of statistics, particularly in drug registration and in environmental standard setting. These dual roles of statistical methods should not be confused.

Statistical data from official sources and elsewhere play important roles in the life sciences, and often necessitate very careful adherence to confidentiality.

The historical role of the ISI towards life sciences has been modulated by the existence of other international organizations in the area.

Key words: Bioinformatics; Biostatistics; Clinical trial; Design of experiments; Epidemiology; International Biometric Society; Randomized clinical trial; Register data.

Statistics for Studies of Human Welfare

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Summary

Developments in the recent past have substantially increased our ability to measure, compute, and communicate. We take the view that a corresponding improved understanding of processes in the life sciences will come about only through more intensive studies of properties of statistical methods and algorithms and transparent, open source computing environments.

Key words: Causality; Graphical Markov models; Life sciences; Open source computing; Randomized intervention studies.

Discussant: Sylvia Richardson

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A brief discussion of some of the challenges facing Biostatistics will be given.

Discussant: C. Hirotsu

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Problems of clinical trials associated with human beings are discussed. They are characterized by very inhomogeneous and limited numbers of samples, and by periods of observation too short to allow efficacy and safety to be evaluated. Avoiding human error associated with subjective measures and ensuring the generalizability of the result of a limited trial to the true target population are crucial. The regulatory science is therefore an important factor in making appropriate decisions and gaining maximal benefit from insufficient information.

Public Awareness, Professionalism & Professional Accreditation; International Collaboration

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I welcome discussion of these issues in an international forum. In my view, the Statistics discipline can only make a “Great Leap Forward” when it starts taking them seriously. The ISI has an opportunity to play a leadership role, which is part of its purpose. My comments are informed by the experience of the Statistical Society of Australia (SSAI) in introducing optional Professional Accreditation for its members, an outcome of a ‘grass roots’ movement in the Australian statistical community in the mid-1990s.

The Professional Statistician

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Panel on Public Awareness, Professionalism & Professional Accreditation; International Collaboration

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Internal Cohesion within ISI

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Here a few thoughts in connection with the proposed panel discussion. Following the suggested key points that need to be addressed I'll single out the topic of international collaboration. More specifically, I would like to focus on the role to be played by ISI. I will even restrict my attention to scientific matters.

The Statistical Profession in China

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This article presents an overview of the status and future of the statistical profession, mainly of four statistical associations as well as their relationships and international collaborations.

With the economy growing and society developing, statistics is having more and more impact on government decision-making, scientific research, public administration, management and personal life.