

## AD HOC STATISTICAL CONSULTING WITHIN A LARGE RESEARCH ORGANISATION

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### Background on organisation

The Council for Scientific and Industrial Research (CSIR) was established in 1945. *"The objectives of the CSIR are ... to foster ... industrial and scientific development ... and thereby to contribute to the improvement of the quality of life of the people of the Republic..."*

The CSIR receives an annual grant from Parliament, through the Department of Science and Technology (DST), which accounts for close to 40% of its total income of roughly R1 100 million per annum. The remainder is generated from research contracts as well as from royalties, licences and dividends. The CSIR consists of eight units covering a range of scientific domains.

Prior to 1987, the emphasis of the CSIR was on promoting science with most of the statistical work involving either statistical theory development or consulting to CSIR researchers. In 1987, the CSIR went through a period of transition, with the focus changing to contract research and statistical consulting to external clients. In 2005, the CSIR again went through a major reorganisation to coincide with the organisation's 60 year anniversary, designed to bring more balance between contract research and contributing to the scientific community.

### Operating environment of statisticians

Although there are analysts and statisticians scattered as individual researchers, usually focused on very specific application domains, throughout the organisation, the Statistical Modelling and Analysis Research Group (SMARG), consisting of nine researchers, are focussed on inter-disciplinary statistical modelling and analysis. This is a relatively small group within an organisation employing almost 2 500 people, of which roughly two thirds form part of the SET core, in other words, those who are directly involved in scientific project work. SMARG participates in various research projects, some self-initiated, others originating from various other groups within the CSIR. An important consequence of the recent reorganisation in the CSIR was that statisticians, in addition to the role they played in multidisciplinary projects, would be expected to develop and maintain a research profile evidenced by accepted scientific outputs. This is currently resulting in exciting new opportunities and personal challenges.

### Need

SMARG statisticians are regularly approached for advice by researchers in other domains on an *ad hoc* basis. It was noted that these *ad hoc* requests were growing to the extent where it was difficult to manage them together with project and research workload. Also, the access to computing and some basic statistical literacy meant that a high proportion of advanced queries were received. Very few requests for help could be dealt with by a phone call or a short conversation.

## Ad hoc consultation initiative

In order to respond to the expected increase in *ad hoc* consulting demands, a limited service which we refer to as “The Statistical HotSeat” was introduced. The service is subsidised from SMARG’s discretionary funding and consists of an initial hour long consultation, with provision for one additional consultation. Provision is made for at most 5 hours of investigation by the consulting statistician. The service does not include data manipulation or any actual analysis, but is limited to discussion and advice.

The initiative has a number of aims, but the main ones being:

- supporting and promoting the rigorous application of statistical methodology within the CSIR;
- increasing awareness of the application of statistical analysis techniques and the value these can add to research;
- building the capacity and experience of statistical researchers; and
- networking.

The challenge was to achieve this in a cost effective way with limited financial and personnel resources.

## Experience

Some of the **challenges** experienced with the HotSeat service:

- Researchers consulting with a statistician after the data is collected;
- Lack of training or experience in statistics of the researcher requiring help;
- Terminology issues resulting from multiple domains;
- Showing that a free service can provide value;
- Gaining acknowledgement for services provided (co-authorships, *etc*); and
- Internal management of statistical resources in order to spread workload evenly.

Some of the **successes** achieved include the following:

- Seeing significant value addition even from a one to two hour sessions;
- Most consultations emanating from word of mouth referrals;
- Valuable capacity development for less experienced statisticians; and
- Exposure to a wide range of interesting practical applications within the CSIR.

Some **general learning** experienced:

- Initial contact is better handled informally than formally for such *ad hoc* service: rather get the person to tell you in a quick phone call or 1 paragraph e-mail message what their study is about than having them fill in and submit a form.
- It was seen as necessary to have some form of brochure that can be handed out to promote the service, and this has to be compiled.

## Conclusion

The *ad hoc* statistical consulting service initiated within the CSIR has proved successful; however, resourcing remains a major challenge. Even limited advertising of the service within the CSIR resulted in many requests for help, showing that a greater need for the service that SMARG can currently supply. We are therefore looking to extend the service in various ways.