



# NEWSLETTER

February 2008

*At a time of national debate on the need for Australia to grow its skills base in the mathematical sciences, it is useful to consider how important their contribution has been to everyday life. Here we illustrate the effect of statisticians on everyday health.*

*Dr John Henstridge  
Managing Director*

## The Invisible Statistician

As a statistician I am often asked, "What do you do?" My explanation often surprises people, who have not realised the impact of statisticians on our world today. Statisticians are the invisible profession, having an impact behind the scenes, but rarely visible to the public. This is particularly the case in health.

I am often mindful of one of the first statisticians working in the area of public health in the nineteenth century. She used carefully collected data to better understand issues and had immense influence on government policy. Her contributions were recognised by her being the first female Fellow of the Royal Statistical Society of London, the world's first statistical society. Her work included collaborating with mathematical statisticians, as she realised that analysis of data was a mathematical process. However, today Florence Nightingale is largely remembered only for her work as a nurse, not for her statistical contributions.



The impact of statisticians and mathematicians upon health research continues. A prime example is the understanding of cancer. In the early 1950s, two medical statisticians, Richard Doll and Peter Armitage, developed a multistage model for cancer, in their attempt to understand the epidemiology of the disease. This model suggested that several genetic mutations are required to cause a malignancy, a profound idea given that it was made before the discovery of DNA. Subsequent research has confirmed the biological basis of this model and it is the centre of much modern cancer treatment.

The role of statisticians in health is growing, sometimes under the name of "bioinformatics". A major research area is molecular genetics – understanding just how the body's DNA, and changes to it, affects outcomes. This research uses established statistical techniques of studying pedigrees, augmented by masses of data from DNA microarrays – clever devices fabricated using microchip technology and which simultaneously test for thousands of genetic markers. The sheer volume of data has driven the development of innovative statistical methods resulting in newly identified human genes being announced almost daily.

Good health planning also requires statistics. Allocating limited resources efficiently requires analysing data from hospitals and understanding where patients will come from and what services they will need. This links to many other areas such as demographics to understand how the population is changing and optimisation methods to determine the best planning solutions.

Data Analysis Australia consults in a range of these areas. For example, Data Analysis Australia pioneered the understanding of how patients choose hospitals in Perth so that future hospitals may be sited more appropriately. More recently we have assisted a range of clients where health statistics is part of litigation. For further information contact **Dr John Henstridge**.



## The Use Of Alternative Water Sources In Land Development

As Australia faces the immediate problem of drought and the longer term challenge of climate change, it is critical to consider all possible sources of water and more appropriate uses of water. These two issues are closely related. Historically, water utilities in Australia have often supplied high quality "potable" or drinkable water where

lower quality would suffice – watering gardens, for example. Systems that supply appropriate quality water reduce the pressure on premium water supplies. A discussion of the front-end tool developed by Data Analysis Australia to help the Water Corporation of WA work with land developers is available on our website. See [www.daa.com.au/case-studies/water-sources/](http://www.daa.com.au/case-studies/water-sources/)

## Staff Profile - Alex Maund

**Alex Maund** joined Data Analysis Australia in May 2007 and was soon promoted to Senior Consultant Statistician. As such, Alex manages projects, clients and consultants, provides technical advice to members of the team and assists in the corporate running of the company.

After graduating in 2002 from the University of Bath, Alex has held statistician positions with the UK Ministry of Defence and the Food Standards Agency. During his years with Defence, Alex worked on demand modelling for housing for the Armed Forces, developing manpower models and forecasts for the British Army, and stock value validation. At the Food Standards Agency, Alex's responsibilities included design and analysis of departmental surveys, development and implementation of training courses, and statistical critiques of scientific research carried out by or on behalf of the department.

Since joining Data Analysis Australia, Alex has been involved in a number of projects including the management, design and analysis of surveys and statistical modelling of data for clients such as Synergy and the Water Corporation. Using his experience in defence, Alex has been key to developing a sampling methodology to assist the Department of Defence in reconciling segments of their General Stores Inventory.

Alex is a keen cook and enjoys fine wines and reading. Originally hailing from Wales means that Alex is a passionate rugby fan but says he will watch almost any sport (even curling and AFL).



## Company News

Data Analysis Australia has the latest release of the 2006 Census of Population and Housing data from the Australian Bureau of Statistics. We are currently updating our population projection model with this data to provide projections Australia-wide at the Census Collection District level. Data Analysis Australia can also provide community profiles for various areas across different demographics using our unique understanding of the data. Please contact **Dr Scott Brown** if you are interested in any population projections or community profiles.

**John Dickson** started work as a Consultant Statistician at Data Analysis Australia in January. John has completed a Bachelor of Computer and Mathematical Sciences degree at the University of Western Australia, and has worked at Edith Cowan University as a Research Assistant, undertaking geostatistical analysis of fisheries data. Also joining us is **Rufus Garton Smith** to provide part time support to the IT team.

Five staff members recently attended an "Advanced Regression Models with R" workshop. The one-day course, held at the University of Western Australia and run by **Prof Martin Hazelton**, enables Data Analysis Australia to use the latest statistical technology during modelling projects.

Work experience student **Junichi Shimoda** spent two weeks with Data Analysis Australia in the new year, while **Chris Sambrooks** is undertaking work experience in the first two weeks of February.

We extend congratulations to **Carole Lefort** whose son and daughter-in-law recently had a baby boy, making Carole a grandmother for the first time.

## Classic Quote

*"No human investigation can be called real science if it cannot be demonstrated mathematically."*

**Leonardo Da Vinci**

97 Broadway  
Nedlands WA 6009

Telephone: +61 8 9386 3304  
Fax: +61 8 9386 3202  
Email: [daa@daa.com.au](mailto:daa@daa.com.au)  
Web: [www.daa.com.au](http://www.daa.com.au)

