

# NEWSLETTER

## September 2002

*While our Managing Director Dr John Henstridge mixes with the elite numeric minds at the International Congress of Mathematicians in Beijing China, it is business as usual at Data Analysis Australia. This newsletter edition has been compiled by the Perth Consulting Team.*

*Jodie Thompson  
Manager Perth Consulting*

### 16th Australian Statistical Conference



Every two years, statisticians and those working with or interested in statistics gather together to share ideas, developments and experiences at an international conference. The 16<sup>th</sup> Biennial Australian Statistical Conference (ASC) was held in Canberra this year on 8<sup>th</sup> – 12<sup>th</sup> July. The sub-zero temperatures did not thwart the 300 statisticians from enjoying the conference. Representing Data Analysis Australia at the ASC were **Dr John Henstridge** and **Jodie Thompson**.

Jodie presented a paper titled "When the Boat Comes In" that considered the issues faced when investigating the operations of bulk cargo jetties using statistical modelling and queuing theory. Audience members who were old enough to remember the television series of the same name understood the reference!

#### When the Boat Comes In

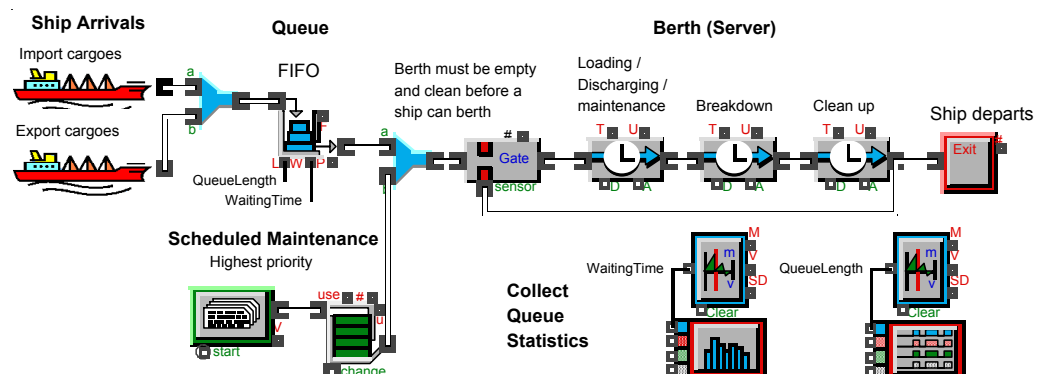
The operations of jetty facilities might be analysed for a number of purposes, for example to measure and forecast their efficiency and utilisation, or to investigate alternative ways to manage and operate a facility. Jetty facilities are complicated in that they can handle different types of cargoes (wet or dry) in different ways (importing or exporting). Some of the activities of a jetty, such as the arrival patterns of vessels that carry bulk cargoes and the time spent by the vessel loading or unloading cargo, are best represented by probabilistic models.

The real constraints of operation – for example the time required for cleaning unloaders if the cargoes change – are difficult to fully model theoretically. A simulation model (as shown below) can combine queuing theory, the statistical distributions for inputs such as ship arrivals, and the real operating conditions. The simulation outputs can then provide insights on issues such as maximum utilisation and expected waiting times before a ship can berth.



The use of statistics and simulation models in this type of application enabled the investigation of scenarios in a safe and cost-free environment. The models developed in Extend by Data Analysis Australia, based on sound statistical assumptions and queuing theory, mimicked the reactions and behaviours of the jetty operations and were able to assist clients in making business decisions about facility management.

For the slide show of this presentation, please see [www.daa.com.au/newsletters/extra/sept02/](http://www.daa.com.au/newsletters/extra/sept02/).



## Statistical Consulting Workshop

Satellite workshops were also held during the ASC, including a Statistical Consulting Workshop at which both John and Jodie presented invited papers.

John shared his extensive experience as an expert witness in a number of cases, predominantly involving civil litigation, in Courts across Australia. He spoke about particular issues facing the statistical expert witness who, on top of the issues facing other expert witnesses, also has the added difficulty in presenting technical and usually quantitative evidence to an audience that is very literate but not very numerate. This is surprising when legal concepts are expressed in phrases such as “the balance of the probabilities” and “beyond reasonable doubt”.

Jodie’s talk on budgeting and quoting in a commercial consulting context described the challenges that face the commercial consultant statistician in bidding for work. Jodie shared her methods of budgeting projects developed over many years that achieve competitive and feasible budgets.



## Perth and Regions Travel Survey (PARTS) Update

A pilot of PARTS was recently conducted and is currently being analysed. The main survey will be commencing shortly. The pilot enabled the PARTS survey team to fine tune the methodology and questionnaire instruments. Participants recognised the importance of the survey and were happy to provide information. The PARTS website is available at <http://www.daa.com.au/parts>.

## Classic Quote

*Spike Milligan:* “How are you at Mathematics?”  
*Harry Secombe:* “I speak it like a native”

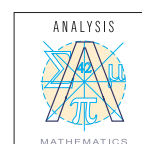
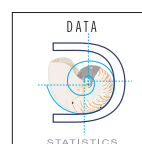
## Company News

Data Analysis Australia welcomes our newest consultant statistician, **Chris Milne**. Chris is a recent graduate from Murdoch University with a Bachelor of Mathematics and Statistics with Honours, and was awarded the 2001 Honours Scholarship sponsored by the WA Branch of the Statistical Society of Australia for honours students in statistics. Chris's areas of expertise are robust statistics, experimental design and modelling.

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## Privacy and Confidentiality

The extension in December 2001 of the Privacy Act to non-government organisations (including the corporate sector) raised the importance of privacy for all organisations dealing with personal information.

As Data Analysis Australia is bound by the National Privacy Principles (NPPs) set out in this legislation, our information management principles and processes were reviewed. Given our rigorous commitment to privacy and confidentiality, it was not surprising that we already met the practical requirements of the legislation.

Our Privacy Statement provides information to clients and interested parties on how Data Analysis Australia protects the privacy and personal information. A copy has been included, and is available electronically at [www.daa.com.au/privacy](http://www.daa.com.au/privacy).

### Assessing Risk of Breach of Privacy

Increased computer power, availability of data and readily accessible sophisticated analysis tools have increased demand for the release of detailed data, even to the level of individual survey respondents or customers. At the same time, the multitude of information sources poses a more difficult question - can a combination of data sources breach privacy even if no single source does?

There is a trade off between the benefits of improved planning made possible through detailed data and the cost to our privacy. There have always been some inferences made from data such as the Census, for example “if you live in suburb X your income is likely to be high”. The issue today is that if detailed data is inappropriately released such inferences can be made with greater confidence.

Assessing the degree of risk associated with a data set is best thought of as an exercise in probability, where the aim is to minimise the chance of any such identification of an individual or breach of privacy. Data Analysis Australia is well equipped to assist clients to assess this risk and, if deemed necessary, can help confidentialise the data to make it “safe” for release.

For further information on privacy or confidentiality, contact **Anna Munday**.