

Food Safety and Innovation

Food Statistical Services

SOUTH
AUSTRALIAN
RESEARCH &
DEVELOPMENT
INSTITUTE
PIRSA

The SARDI Food Safety and Innovation Research Program provides specialist risk assessment and research capability applicable to all commodities and industry sectors. The Food Statistical Services (FSS) form an integral part of the capabilities within the research program by providing expert statistical knowledge and skills in food related industries.

What is statistics?

Statistics is concerned with the collection and analysis of data, through experiments and surveys, to help technical and management staff make informed and scientifically reliable decisions.

Key skills and capabilities:

Experimental design – Experiments are often used to identify and quantify variables that are important for product quality and integrity. Experiments that look at only one variable at a time can be highly inefficient and can lead to misleading results.

FSS can design experiments to investigate many variables at a time, while still maintaining the required level of accuracy.

Experiments can also be designed to:

- validate Hazard Analysis Critical Control Points
- validate the effectiveness of process interventions and process control procedures
- validate performance criteria

Analysis of results – Skills include analysing and interpreting microbiological data, sensory scores and the results of surveys in order to draw accurate conclusions from the data. FSS has extensive experience dealing with data arising from many types of experiments and

can succinctly and visually depict the results for effective communication to clients, customers and company management.

Sampling plans – Sampling plans and frameworks to detect unacceptable levels of contaminants or non-conformities. Examples of sampling plans include

- Presence or unacceptable levels of micro-organisms, such as *Salmonella*
- Presence of disease in food (import/export certification)

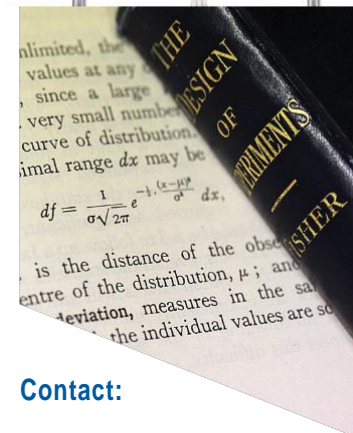
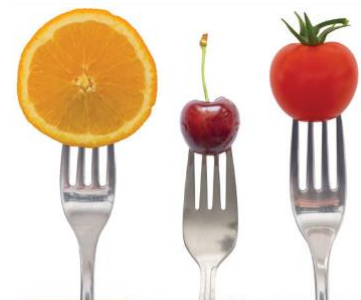
Surveillance programs and surveys

Surveillance programs are used by Government agencies to investigate compliance with the Food Standards Code or other legislation. In addition, regulatory authorities use surveys to benchmark industry sectors and products with respect to levels of microbiological and chemical contamination.

It is important to understand the variables of interest and incorporate product pathways and potential sources of variability. Statistical design of such surveys can help achieve aims while minimising costs.

Statistical process control – Statistical process control deals with monitoring processes and using statistics to determine when processes are in control. FSS can design a Statistical Process Control program which identifies process problems, whether physical, chemical or microbiological.

Process and predictive modelling – FSS has experience in modelling and simulating processes/flows in manufacturing and food industry companies, as well as mathematically modelling different inputs and the effects on the output when inputs are varied, informing risk management decisions and cost-benefit analysis.



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