

**Flexible  
schedule**

# Senior Secondary Student workshops

## Using Data to Develop our World!

### (Statistics in the Data Age)



### Example **SIX-SESSION** option

### ***Enthuse – Engage – Educate***

***Learning Areas: Math, Science, HASS, HPE, Tech***

**Invaluable for Science Extension – Research Projects (& similar syllabi) !!**

**Interactive online sessions (F2F option in Newcastle, NSW) :**

- Emphasis is on authentic learning, conceptual understanding & application!
- \$20 incl GST per student per session (total \$120 incl GST for all SIX sessions per student)^^
- EOI / Enquiries – contact: [info@ssapostercomp.info](mailto:info@ssapostercomp.info)

#### ***Session 1: What's the problem?***

- Examples from practice – how, where & why Statistics, Systems thinking & Scientific research are applied
- Problem Solving Cycle, Experimental Design & Statistical Investigation Process
- Systems thinking and Cause-and-effect
- Acknowledging & reflecting real-world variation
- Developing research questions which are answerable – testable hypotheses, investigations & reporting

#### ***Session 3: Designing for Data***

- Types of studies – Experiment, Observational, Survey
- Data Sources & Quality
- Sampling / Inference – reflecting real-world variation
- Validity & Reliability, Bias & Precision
- Concept of power, types of errors

#### ***Session 5: ANOVA & Hypothesis testing***

- Comparing groups
- Hypothesis testing and Confidence Intervals
- Analysis of Variance (comparing 3 or more groups)
- Use of software

#### ***Session 2: Dealing with Data***

- Data set construction
- Variable Types
- Exploring and presenting data – single variable
  - Data checking
  - Visual displays – pitfalls and best practice
- Introduction to free statistical software
- Introduction to models, analyses and comparisons – overview

#### ***Session 4: Are we related?***

- Exploring and presenting data – two variables
  - Visual displays
  - Assessing associations/relationships
  - How to do so using free software
  - Summary reporting

#### ***Session 6: Regression***

- Simple Linear
- Multiple Linear
- Logistic
- Use of software

^^ min. 10 students to deliver uniquely to your class/school group – bookings per school/class (payable to Hunter Innovation and Science Hub) – we can join your students with others to form min. audience numbers if needed.



#### **About the presenter - Dr Peter Howley**

***Professor of Statistics & Systems thinking -- Award Winning Educator***

***STEM Professional -- Statistical Consultant***

***ACARA Curriculum Officer -- Director - School Maths Competition***

***National STA STEM Ambassador***

***Statistical Education Section Chair - Statistical Society of Australia***

***Creator - National Schools Poster Comp***

***See also <https://ssss.org.au/about-the-presenters/>***