



**select**  
statistical services

be selective

# Select News...



## 92% of Children Enjoy PE

**Hooked  
on Sport**  
**Wedi Gwirioni  
ar Chwaraeon**

Over the Summer, Select worked with Sport Wales to prepare for analysis the response data from the largest survey of young people in the UK. Results from the

survey, the second ever national School Sport Survey, were published by Sport Wales in October. The survey comprises two components: a survey of sports participation among school pupils aged 7-16 which has been run biennially for more than a decade; and a survey of the provision of physical education (PE) by schools which is completed by the Heads of PE and PE coordinators on behalf of their schools. The survey is used strategically by Sport Wales and the Welsh Government to monitor and shape sports policy, and by local authorities, governing bodies and schools to inform and plan local delivery.

The findings include: the numbers of young people taking part in sport or physical activity three or more times a week has risen from 27% in 2011 to 40% in 2013. Boys (44%) were found to be more likely than girls (36%) to regularly participate in sport but, though the figures for both have increased, the gap remains static. To see more of the headline results and some infographics summarising the key findings visit [www.schoolsportsurvey.org.uk](http://www.schoolsportsurvey.org.uk). Further discussion can also be found on the BBC news website (<http://bbc.in/16wLgpp>).

Select were asked to produce the survey weightings, a critical step in the analysis of any survey, which ensure that the results properly reflect the sports participation of school pupils in Wales. These weightings are used to account for non-response and imbalances in the sample where, for example, we might see a greater proportion of boys in the survey than we might see in the general population. These weightings correct the imbalances that inevitably occur in any survey and ensure that the results provide as accurate a representation of the sports participation of Welsh school pupils as possible.

## Our Services:

### Advice

Our statistical advice service offers detailed expert guidance on all areas of statistical analysis and interpretation to allow your staff to understand or perform their own statistical investigations.

### Analysis

Our statistical analysis service aims to identify and apply the most appropriate statistical tools to make best use of your data in addressing the questions that you need answering.



### Research

Our statistical research service extends the analysis service above to tackle problems that lie beyond the boundaries of current statistical know-how perhaps because of the inherent complexity of your data or simply because the usual underlying assumptions don't apply.

### Training

We provide training for statisticians and nonstatisticians alike and can cover any statistical topic from the applied end right through to cutting-edge methodological research.

### Data

We can source, collect, collate and cleanse data either simply for presentation direct to the client or for subsequent analysis.



### Surveys

Often the easiest and best method to obtain information you need from people is simply to ask them. We can conduct online, phone and face to face surveys starting from initial design through to final analysis.

### Making numbers work for you

If you would like more information on any of the Services that Select Statistics offer, please contact us on 01392 440426, email: [info@select-statistics.co.uk](mailto:info@select-statistics.co.uk) or complete the online contact form on our website:

[www.select-statistics.co.uk](http://www.select-statistics.co.uk)



## Developing Medical Decision Tools: Published Results!

Select recently worked with Dr Sarah Smailes and the Mid Essex NHS Trust to help analyse the results of their extubation study.

The decision to extubate intensive care patients is critical to their long-term recovery. Extubate too early and the patient may still have difficulties breathing whilst delaying extubation exposes patients to risks such as long term damage to their lungs and airways.

Dr Smailes identified that rather than using a subjective assessment of observations, clinicians would benefit from a medical decision tool when deciding whether to extubate a patient or not.

By recording data from patients over several years, together with the extubation outcome, we were able to help Dr Smailes identify the most important predictive factors for successful extubation. Combining these factors within a statistical model allows clinicians to predict the chance of a successful extubation for new patients. Not only does this improve the objectivity of the decision, but it also helps clinicians with less experience of making the right decisions for patients who are in their care.

Since completing this work, Dr Smailes has had the results of this study successfully published in the Journal of the International Society for Burn Injuries (<http://bit.ly/191QWQq>).

# The Importance of Probability and the Law

The second joint ExIStA and RSS South West Local Group seminar took place on the 11th October with invited speaker Norman Fenton, Director of Risk and Information Management Research at Queen Mary University of London and CEO of Agena Ltd. Norman specialises in quantitative risk assessment covering a range of applications including medical trials, financial services and predicting football scores but, for this seminar, he focussed on the fascinating application of law and legal reasoning.

Norman demonstrated that increasingly, forensic evidence in court has a statistical component, but that it is often poorly presented or misunderstood. This can result in fallacies of probabilistic reasoning and ultimately miscarriages of justice. One example is the prosecutor's fallacy, where prosecutors misuse probabilistic statements about the likelihood of finding a piece of evidence, for example a DNA match, to argue that the probability that the defendant is guilty is high. In reality, the prosecutors are often not taking into account the chance of making a DNA match at random when using a large database of DNA profiles as well as the possibility of errors occurring during the DNA collection and analysis process itself. If the prosecutor were to take these issues into account the reported probability of guilt is often substantially reduced.

To interpret these probabilistic statements correctly, Norman introduced the concept of using Bayesian statistics and, in particular Bayesian networks. These tools allow lawyers to combine information from expert witnesses and forensic evidence and to determine the overall probative value of the evidence. Of course, introducing these tools into the courtroom is not simple and there are still



many barriers to overcome including, for example, the complexity of court cases and ensuring the barristers, judges and, not least, the jury fully understand the probabilistic reasoning.

This was a fascinating seminar that gave the audience a glimpse into how important the correct use of probability is in the law to help avoid major miscarriages of justice. Norman used a number of high profile court cases (such as Sally Clark, Stephen Lawrence, Levi Bellfield and Barry George) to demonstrate that the types of fallacies he described are common and to explain how statisticians can help overcome them. Judging by the number of questions and discussion after the talk, it was certainly a great success with the audience! If you would like to watch the seminar in full, a video is available at our YouTube channel (<http://bit.ly/1eMDcKv>).

The Exeter Initiative for Statistics and its Applications (ExIStA) is a joint venture between Select Statistics and the University of Exeter. Established in 2011, ExIStA organises workshops and events that aim to bring together local statisticians to share skills and expertise. ExIStA is currently both organised and funded by Select. If you'd like to find out more about ExIStA, including details of our upcoming events, visit our website: [www.exista.org](http://www.exista.org) or contact Lynsey McColl: [lynsey@exista.org](mailto:lynsey@exista.org).

### Select Supports Q-step Research Grant

Select and ExIStA are pleased to support the University of Exeter's involvement in Q-Step, a £19.5 million programme designed to promote a step-change in quantitative social science training. Q-step includes fifteen universities across the UK delivering new undergraduate programmes aimed at increasing quantitatively-skilled social science graduates. Not only is the University of Exeter offering new BSc programmes, but they will guarantee work experience with industry-leading partners, offer increased support and training in industry-standard tools and host a dedicated undergraduate research conference. To assist the university with these goals, Select's Executive Director Steve Brooks will be a member of the Q-step advisory board. For more details of Q-step, see the University of Exeter's website: <http://bit.ly/1geqaZq>.

## Case Study: Statistical Sampling for Monitoring Call Centre Quality

Companies who operate call centres such as telesales, market research or utility companies all monitor the calls that their staff make to ensure that they comply with the relevant protocols. For example, telesales companies monitor calls to ensure that their staff are not mis-selling products, whilst utility companies monitor calls to ensure that their advisors are providing good customer service. Monitoring calls is therefore an important part of a quality control procedure, but it can be costly in terms of money, time and effort.

Statistical sampling techniques can be used to calculate the minimum number of calls that a company needs to monitor, whilst still ensuring accurate quality control results. With a small amount of information about the monitoring procedure (such as the size of the population of interest, the required confidence level and the time frame of interest), a sample size can be calculated. This provides the customer service managers with the minimum number of calls required to accurately monitor call quality.

Once the sample of calls has been selected and monitored, they can be used to estimate the proportion of total calls that pass the quality control procedure. Not only does the sample provide an overall estimate of quality, but it can also be used to identify if there are any particular patterns to calls that have not met the necessary standards. For example, subsequent analysis may highlight that the quality of calls reduces near to the end of shifts which might be rectified by shortening the length of shifts or introducing more breaks.

Monitoring the quality of calls made in call centres to ensure that they are of sufficient quality is a necessary, but potentially expensive task. By assessing the quality of a sample of the total calls made, management can reduce the cost of monitoring without sacrificing the accuracy of their results. Statistical models can also be used to help understand the causes of poor performance and to help improve future call quality in the most cost-effective manner.

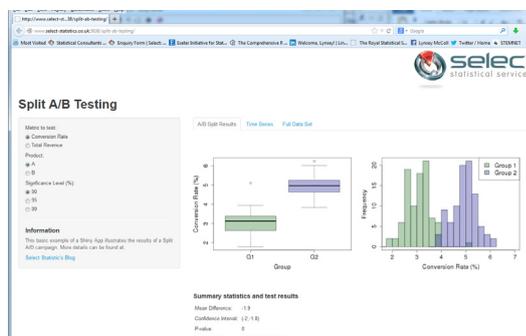
### Interested in more case studies?

Check out our website for more case studies in marketing, retail and many other areas, as well as details on the many statistical services that Select offers.

## Interacting with your data

At Select we regularly analyse data to help our clients gain key insights into their business. To enhance this process further we've been developing the capability to enable our clients to interact with their data via online web applications (Web Apps) which they can access anywhere and at any time.

These Web Apps create an interface that makes it easy for clients to interact with the models we develop and allows them to investigate how different scenarios impact the results. Using interactive graphics and tables, the Web Apps can also be an effective tool for clients to better understand the results and their implications as



well as helping them effectively communicate the results to their stakeholders.

To give you a flavour of what we can develop we've put together a simple example demonstrating split A/B testing, which you can read more about on our blog (<http://bit.ly/17Oxo3J>). If you would like to find out more about how we can help you interact with your data, then contact us on 01392 440426.

## Commando Challenge

The 23rd Marine Commando Challenge took place this October. Following some heavy downpours the week before, the sun came out too late to dry out the 10km course of tracks, tunnels and water-based obstacles which were muddier than ever. Peter's Pool, the Crocodile Pit and the infamous Sheep Dip were full of ice-cold, muddy water and the course stewards, all former Royal Marines, took great pleasure in subjecting the participations to an icy plunge.

As part of the 'Royal Maurens' Select's own Lynsey McColl was there to take part and face the grueling assault course. Together with Georgie and Gemma from Sparx and Grace from ATASS Sports they took third place on the podium in the female category.

The three teams that took part from Oxygen House together raised nearly £1,500 for the Devon Air Ambulance and the Royal Marines Charitable Trust.



## Focus on... Surveys

Surveys are an essential tool for collecting information on opinions, behaviours, preference and demographics. In business, customer satisfaction and B2B surveys are used to understand the needs of customers, employees and partner organisations and to help businesses adapt to changing demands. In market research, surveys are used to understand the preferences and behaviours of consumers in order to develop effective marketing strategies. Universities often carry out course evaluations and health professionals collect data through patient questionnaires to better understand the effect of specific treatments.

The key to the success of your survey lies in its design and analysis: a well-designed survey that is analysed properly will give you clear answers to the questions that drive your business or research.

The three key ingredients for a successful survey are:

1. **Survey Design:** what questions to ask, how the responses will be collected and what the survey will look like are all important elements that will directly impact the quality of your results.
2. **Sample Selection and Size:** how you sample from your population and how big the sample is are key to ensuring that your sample properly reflects the underlying population and will provide you with accurate results.
3. **Data Analysis:** you need to use the right statistical tools to ensure that you make the best use of your data and to make sure your conclusions reflect the views expressed.

By following these steps, we can help you:

- Save money, time and effort;
- Produce valid, reliable and useful results;
- Maximise response rates;
- Understand what the results really mean for you.

To find out how we can help design and analyse your surveys call us on 01392 440426.

See our next issue for Focus on: Health Care

## The Select Network

Select is supported by an extensive network of external consultants based at the UK's top Universities and research institutes and also by a community of specially-selected partner organisations offering skills and services that are likely to be of value to our clients. The Select Network provides us with an enhanced range of skills and expertise to deliver service and value to our clients. Details on how to register your interest in the network are provided in the box at the bottom of the page.



### Meet Kathy Seymour



Kathy is a freelance researcher and research consultant who has previously worked for various local authorities, an independent educational research organisation and a Russell Group University. Her experience and expertise covers both quantitative and qualitative survey methods and she has conducted social and educational research for a wide range of clients including schools, universities, health services, local authorities and community groups.

Kathy has considerable experience of designing, conducting and analysing qualitative research including focus groups, interviews and the analysis of texts such as blogs and social media postings. Kathy has a Masters in Research Methods and a PhD from the University of Nottingham's School of Education.

Would you like to join the growing Select Network?

If you are interested in joining the Select Network as a freelance consultant or would like more information, please contact us on: 01392 440426, email: [info@select-statistics.co.uk](mailto:info@select-statistics.co.uk) or complete the online contact form on our website: [www.select-statistics.co.uk](http://www.select-statistics.co.uk)

