

Student Newsletter



Your opinion matters

Is the content of this newsletter relevant to you?

Yes

No

Your feedback is valuable! [Email us](#) with your suggestions.


- PSI Events**
See what's happening in 2023.
- SIG Spotlight: Historical Data**
Learn about use of historical data in trials.
- Placement experiences**
Hear from previous students and managers.
- Undergraduate prize winners**
Meet our undergraduate prize winners.
- PSI Conference 2023**
Highlights from this year's PSI conference.
- Introduction to Industry Training (IIT)**
Discover the Introduction to Industry Training.

WELCOME

Welcome to our Autumn 2023 student newsletter aimed at providing you useful information and links to resources while you study a maths-related degree at University and start to think about future career options. PSI is a non-profit organisation run voluntarily by statisticians from industry. Our PSI Careers website can be found [here](#).

Just For Fun

Did you know...the last day of this year will be **123123**, in American format.



PSI Events

PSI offers a range of opportunities to learn about statistical techniques used in the Pharmaceutical industry, as well as valuable personable skills. Sessions range from a couple of hours to all day events. Upcoming events and how to register can be found on our [Events page](#).

PSI Careers: MEDMaths

Type of event

One-hour live webinar

Location

Online

Date and time

Wednesday 1st November 2023
13:00 - 14:00 GMT | 14:00 - 15:00 CET

Who is this event intended for?

All students studying Mathematics, Statistics, or a degree with high numerical content who would like to learn more about the career possibilities within medical research and how to take the first steps towards this field.

What is the benefit of attending?

PSI MEDMaths is our annual careers talk which offers an introductory presentation about how Mathematics and Statistics are applied in medical research, with time for questions. Find out how PSI can help students in their future careers.

Registration deadline:

Monday 30th October 2023

Register

PSI Medical Statistics Careers Event

Type of event

Half-day interactive event, including a live panel discussion and an exhibition session

Location

Cutlers' Hall, Sheffield

Date and time

Wednesday 29th November 2023
12:00 - 17:00 GMT

Who is this event intended for?

All students with an interest in the field of Medical Statistics, for example within pharmaceuticals, healthcare and/or medical research, and would like to take the next step in exploring this as a career option.

What is the benefit of attending?

PSI Medical Statistics Careers Event is an excellent opportunity to find out more about the types of opportunities available within Medical Statistics, talk to different organisations and make contacts for the future.

Registration deadline:

Wednesday 1st November 2023

Register

PSI Scientific Meeting: Patient-focused drug development

Date and time: Wednesday 18th 13:00-15:40 BST & Thursday 19th October 2023 13:30-16:10 BST

Location: Online

Cost: Free

Speakers from EMA, NICE, the pharmaceutical industry and those working with patients will give their perspective on the importance and practical aspects of selecting relevant for patients outcomes in the evaluation of clinical trials.

PSI Webinar(s): Causal inference in Clinical Trials

Date and time: Wednesday 6th AND Thursday 14th December 2023 | 13:30-16:00 GMT (both days)

Location: Online - please be advised that this is a two-part webinar and delegates will be required to attend Part 1 in order to attend Part 2.

Cost: Free

This will be a two-part webinar discussing Causal inference in Clinical Trials. Over the course of the sessions, a panel of 8 esteemed speakers will give an introduction to the topic, followed by a presentation of case studies & interactive panel discussion.

[PSI Career Young Virtual Meet](#)

Date and time: Tuesday 5th December 2023 | 12:00-13:00 GMT

Location: Online

Cost: Free

Who is this event intended for? New professionals - those with 5 years or less of experience in the industry (including students and placement students)

What is the benefit of attending? An opportunity to meet statisticians from across the pharmaceutical industry in a relaxed and informal setting.

[Book club](#)

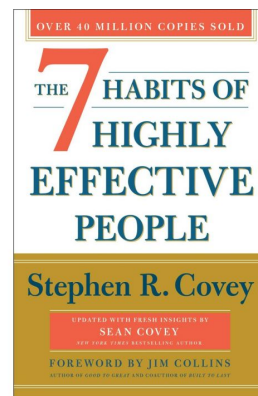
The PSI Book Club starts in the next round

The next book we are reading is "*The 7 Habits of Highly Effective People*" by Stephen R. Covey. This is a classic in the personal development genre. The first edition dates to 1989 and was updated and reissued in 2020. It was voted by the New York Times as "The No. 1 Most Influential Business Book of the Twentieth Century".

This book is fit for every career stage, from junior statisticians to the senior leadership team. Participants will be split into smaller discussion groups so members can network with each other and practice exercises to help implement their learnings.

The registration starts on the 18th of September.

Sign up for the [mailing list](#) to get a reminder or bookmark the [registration page](#)!



Medical Statistics Apprenticeship



Remember to keep checking our PSI Apprenticeship page for upcoming apprenticeship jobs. They are currently not released at set times, so take a look regularly if you are interested!

[Visit our Website](#)

Special Interest Groups (SIG)

PSI has several SIGs which provide a forum for members to discuss topics of mutual interest, keep updated on developments in a particular area of industry, to organise events on their specialist field and/or to collaborate on developing the science of that field. To see which SIGs are currently in place, and for further information on any of the SIGs, take a look at their pages on the PSI website: [SIGS \(psiweb.org\)](#)

In this newsletter, we have a spotlight on the historical data SIG.

SIG Spotlight: Historical Data

Many approaches for designing and analyzing clinical trials using historical (or other external study) data have been proposed in the recent past. For example, proposals have been made for bridging studies, the combination of randomized and non-randomized evidence, and also for more general problems such as across-phases

probability of success calculations. In addition, the ever-increasing number of patient registries and databases for routinely collected data, and recent data sharing initiatives (e.g., TransCelerate), further underline the importance of these approaches. However, there are still many open questions concerning the role which clinical trials that use such data can have in drug development. In our opinion, the three most important questions are:

- What is the state of the art regarding approaches to **incorporate historical data** into the formal design and analysis of clinical trials?
- Which **statistical methods** should we use to make historical and current data comparable?
- What are the regulatory requirements necessary for the **acceptance of historical data** in drug approval?

The scope of this SIG is to provide some answers to the above questions through a variety of activities. To find out more, look at the [PSI website](#).

Placement students in Medical Research

Many companies in the pharmaceutical and healthcare industry offer placement and internship opportunities – the majority of these are for students taking undergraduate degrees with the option of a year in industry, with some also offering short-term assignments for PhD students. These placements are a fantastic opportunity for students to gain confidence, build soft skills and apply their theoretical knowledge in the real world. The company and industry knowledge gained over the year makes a great additional to any CV, giving placement students a boost when applying for graduate roles after completion of their studies.

PSI have spoken to a number of students about their experiences of completing a placement year in 2022/23; view the video and written testimonials on the [PSI website](#) to find out a bit more about the benefits of completing a year in industry, what the students enjoyed most and tips for those looking to do a placement. New for this year, we also spoke to supervisors about the key benefits of employing placement students and the support provided during placements – again see the page linked above!

Thanks to all the students who provided feedback on their year, PSI wishes them the best of luck for their final year and beyond!

PSI Careers: Career Opportunities & Industrial Placements



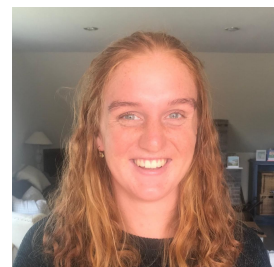
<https://www.psiweb.org/careers>



Undergraduate prize winners



Hello, my name is Emma, and I studied



an MSc in Mathematics and Statistics and Operational Research at Queens University Belfast. I have been awarded this prize for my master's project where I studied the use of spatial point processes to model transplant kidney cell positions. Outside of my studies I enjoy running and weight training; in fact, I completed my first half marathon shortly after finishing my final exams.

In secondary school I always had an interest in working in healthcare, however I much preferred mathematics to the other sciences and so pursued a maths degree, assuming that this closed the door to a career in medicine. However, in the final year of my degree I realised that I could use my love of statistics and data analysis to make a difference in medicine and biology. Through the study of modules such as Survival Analysis and my project modelling kidney cell positions to aid in kidney transplantation, I have become enthusiastic about using my skills within the life science sector. In fact, I am to begin working at Exploristics in September, a company that provides biostatistics services for clinical trials and studies.

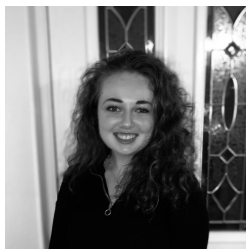
Thank you very much to PSI for this award. After all my hard work this has greatly increased my confidence in moving forward in this field.

Hi, my name is Isobel. I am very grateful and excited to have been awarded a PSI Undergraduate Student Prize for 2023.

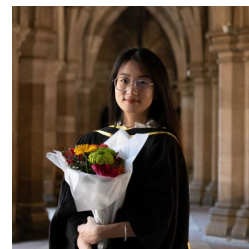
I was fortunate to gain hands-on experience in the pharmaceutical industry during my placement year at UCB working on COVID19 studies as well as wearable devices for patients.

My attendance and presentation at the PSI 2022 Conference provided me with an invaluable opportunity to delve deeper into the realm of medical statistics. This experience, coupled with my final year project in Medical Statistics during my undergraduate degree in Mathematics at the University of Bath, has further fuelled my passion for pursuing a career in this field. The focus of my project revolved around exploring the potential of novel adaptive designs in facilitating enrichment in clinical trials. I learnt how to simulate such trials and I really enjoyed showing how certain testing procedures control the Family Wise Error Rate in such trials.

I will begin studying for an MSc in Medical Statistics at the London School of Hygiene and Tropical Medicine in September. I have been granted a pre-doctoral fellowship from the National Institute for Health Research. Therefore, the year-long MSc will be followed by a year of research at the university. I am excited to continue learning about medical statistics, and look forward to continuing to be involved in the PSI community.



Hello! My name is Beth, I am incredibly grateful to have been awarded an undergraduate PSI prize for my final year project at Cardiff University. This project involved using Bayesian statistics to consider the effect of using pre-clinical data in dose-response models to identify a suitable dose in Phase I Oncology clinical trials. I am thankful for my time at Cardiff University where outside of studying I spent some of my university years as a member of the dance society.



Hello, my name is Zichun. I studied BSc Statistics at the University of Glasgow and graduated this year (2023) with a First-Class degree. Outside of studying, I enjoy playing tennis and jogging.

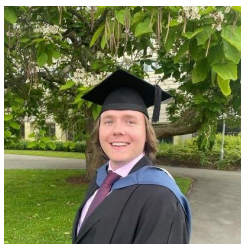
I appreciate that I won the PSI Undergraduate Student Prize for my final-year Statistics project 'Estimating changes in health inequalities across three diseases in England'. The aim of this project is to statistically analyse the health inequalities in England by

After the completion of the first two years of my degree, I took a year out on placement where I was fortunate in gaining a position at AstraZeneca within the Early Oncology statistics team. It was some of the work that I did on placement that led me onto the project I completed this year.

When starting my university, I was unsure on where I wanted to take my degree, only knowing that I wanted to do something I found fulfilling. I am pleased to now start my career in the pharmaceutical industry with hopes of being a medical statistician soon. I would like to take this opportunity to extend my thanks to those at both Cardiff University and AstraZeneca who have made my degree years so enjoyable and who made my final year project possible.

exploring the spatial patterns of risk across England for three major diseases: coronary heart disease, circulatory disease and cancer.

Winning this Prize means a lot to me. In fact, this was the first time I had done research related to medical statistics, and it gave me the opportunity to apply what I had learned, such as general linear models, Bayesian statistics, biostatistics, and spatial statistics, in real life. This process interested me a lot and I started to realise that it is possible for me to work as a statistician in the medical field in the future. Also, I have more confidence to study for a master's degree in Data Analysis at the Imperial College London in the coming year.



Hello, I am Sam and I'm a big Mario fan. There's nothing more relaxing after a long day than sitting on the sofa jumping around to the wonderful Nintendo music.

I graduated in 2023 from the University of Reading with a first-class degree studying a BSc in Mathematics and Statistics. I was quite late to finding out biostatistics was the field I wanted to go into, only realising halfway through my final year of studies. I was in a lecture learning about discriminant analysis, and we briefly spoke about how these methods could be used in the medical field. My granny had been a nurse all her life and always told me how rewarding it was to help and change people's lives.

Winning the PSI prize means so much to me as it has given me the confidence to pursue my dreams working in biostatistics by beginning a MSc in Medical Statistics. From this, I want to head into the world of clinical trials and work for contract research organisations.

How Statisticians are valued by non-Statisticians in the Pharmaceutical Industry

As a Statistician in the Pharmaceutical industry, you get to work with a lot of different people with different areas of expertise. Here, a Senior Medical Director expresses how Statisticians help them...



"I cannot overstate the importance of statisticians to the successful development of a new drug. In my experience, working in Early Clinical Development (in-human, Phase 1 and Phase 2 clinical trials), our statisticians are absolutely fundamental to ensure we can design a study that will answer the key questions without exposing participants to unnecessary risk. Statisticians are integral and valued members of our Clinical Programme Team and make a vital contribution to the clinical strategy build as well as to interpretation of the data that is generated by these studies. We would not be able to do our work without the contribution of our highly skilled statisticians."

**Dr Davinder Dosanjh, Senior Medical Director,
Early Respiratory and Immunology Clinical Development, AstraZeneca**

PSI Conference 2023

The 2023 PSI conference was record-breaking all round, with 618 delegates, 120 speakers across 40 sessions! The two "Career Young Statistician" sessions were a highlight, fostering networking and cutting-edge work. Couldn't attend? Catch up on the insightful talks [here](#).

More sessions from the conference are also available to watch on the [video-on-demand](#) page. Look for the videos with **PSI Conference 2023** in the title. Don't miss the thought-provoking keynote "[If You Can't Teach an Old Dog New Tricks, Can Old Dogs Teach Young Ones Old Tricks?](#)" and discover the very popular "[Non-technical TED Talks](#)", covering effective stats communication to learning from failures.

If you're interested in attending next year's PSI conference, which will be held in Amsterdam, Netherlands on 16-19th June 2024, find out more below! There is a Student Day Pass option available for Monday 17th June.



[Find Out More](#)

Student insights from the conference



It's the first conference I've been to so I'm really excited to be here! I really enjoyed all the talks so far, particularly the career young statistician session. Seeing more senior colleagues of mine presenting got me excited and inspired to be a presenter myself in the future. Also, it's been nice going around and chatting to all the different companies here. It's a good time to find out what kind of opportunities are available for graduates.

Emily Howard, University of Bath



There are loads of interesting presentations in this conference. I especially looked forward to the talk on use of external data as I did my university project on something similar so it's nice to have a consolidated understanding of this topic. The fact that there is accessible, and not just technical, content enables me to see its value.

Oswald Dallimore, Cardiff University

Introduction to Industry Training (ITIT)

The [Introduction to Industry Training \(ITIT\)](#) course is an introductory course for statisticians and statistical programmers new to the pharmaceutical industry. It provides an overview of the pharmaceutical industry and the complete drug development process, from the discovery of a drug, to marketing and patient access. Participants learn about the role data scientists play within the industry and the interactions we have with other disciplines.

The course comprises of six 2-day sessions covering the range of topics below:

Session 1 - Research - Roche (Basel, Switzerland)

The different functions within pre-clinical research are discussed in detail, including areas such

as target identification, high throughput screening, candidate selection, translational science and personalised healthcare. Participants are usually able to take a biology or chemistry laboratory tour.

Session 2 - Toxicology - Boehringer Ingelheim (Biberach, Germany)

This session explains what toxicology is and why it is needed in research and development of new compounds. There are several areas within toxicology, such as genetic and reproductive toxicology. Other topics covered include carcinogenicity, pharmacology and statistical approaches in toxicology studies.

Session 3 - Data Management & CROs - IQVIA (Reading, UK)

The DM part of the session covers database structure and design, procedures for entering data, data validation, data quality and data transfer. The CRO part of the session gives an overview of the role of a CRO, the history of CROs, interactions between pharma companies and CROs and the typical processes involved for a CRO when bidding for work.

Session 4 - Clinical Trials Bayer (Berlin, Germany)

This session focuses on the overall clinical development plan, with a focus on phases I-III trials. Key documents, roles and activities are described including trial protocols, statistical analysis plans, clinical study reports as well as the trial set-up process, monitoring and good clinical practice. Other topics covered can include conducting analysis, statistical programming and CDISC, operations, safety, regulatory affairs and medical writing.

Session 5 - Reimbursement AstraZeneca (Gothenburg, Sweden)

This session gives an overview of the process and modelling aspects of economic evaluation of medicines. The presentations explain the methods and measures used to help set the price of a drug and the process of health authority reimbursement is also discussed.

Session 6 - Marketing GSK (London, UK)

The marketing session is intended to give an overview of what happens to a drug after regulatory approval and reimbursement at its subsequent launch. It covers the role of market research, how this analysis of the market can improve the chances of a successful product launch and how the sales function works.

Testimonial

I was lucky enough to be able to participate in the 2022-23 ITIT training session and found the whole course extremely well run and very beneficial. My knowledge of the drug development process has expanded significantly, especially the very early stages before human clinical trials and after a drug has been approved. A highlight was the lab tours within both Session 1 and 2. The sessions were all in-person at different companies and the talks were lively and engaging and included workshops to help apply the knowledge that we had learnt. Additionally, the opportunity to meet and network with other statisticians and programmers at a similar stage in their careers was also invaluable. Four of the six sessions were abroad in Europe so it was exciting to travel to different cities and each session included a dinner and even a fun casino night for the last session.

I would like to express my gratitude to all of the PSI ITIT committee, host companies, and speakers for their work organising this training and educating a new generation of data sciences on the drug development process.



PSI student membership

PSI student membership is **free** to join and has many benefits during your journey to becoming a statistician in the pharmaceutical industry: [Join PSI \(psiweb.org\)](https://psiweb.org).

PSI run many webinars which are free to members (but cost for non-members), so as a free PSI Student member you can also join these events for free.

Job Vacancies

Many companies employing statisticians advertise their job vacancies on the [PSI website](https://psiweb.org). Career Opportunities are updated on a regular basis, and is always worth a look to see what options are available.

Follow us on social media | psiweb.org



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