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"We are a community dedicated to leading and promoting the use of statistics within the healthcare industry for the benefit of patients"



**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 Careers Schools Subteam

We would like to hear from you!

PSI Events

See what's happening in 2024.

PSI Conference 2024

Registration is now open!

PSI apprenticeship

Great news from universities!

MEDMathS and Careers Event

Highlights from our past student events.

WELCOME

Welcome to our Spring 2024 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

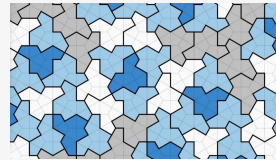
Did you know that a new shape has been recently discovered? It's called an Eistein and has solved the mathematical problem of finding a shape that can cover an infinite plane with a pattern that never repeats. Find more information [here](#).

SIG Spotlight: Biomarkers

Learn their use in clinical development.

The impact of Statisticians

How statistics improves patients' lives.



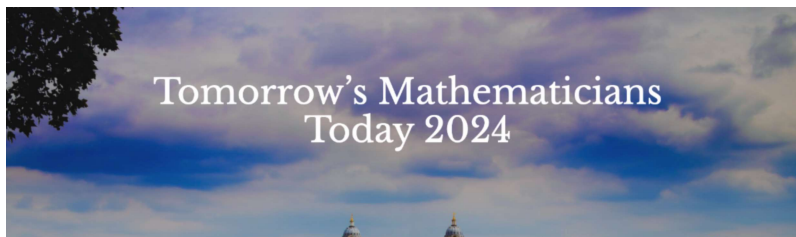
PSI Careers Schools Subteam would like to hear from you!

PSI Careers have recently launched a new Schools subteam – with the aim of increasing interest in maths, stats, and related university courses and future careers (particularly in medical statistics) among school students. We would really like to get any **feedback** from students (or lecturers) on the **support that they would have liked** to have had in hindsight that would have helped when **deciding upon a university course or gaining relevant experience?** This would help the PSI Schools subteam ensure their outreach and activities meet the needs of school students making future career decisions.

Please email careers@psiweb.org if you have any feedback to share. Thank you!

Also, if you are interested in **getting involved in STEM** activities and sharing your passion for maths and stats, take a look at our [Schools Outreach](#) and [Volunteering Opportunities](#) pages, to see if there is any volunteering work that might interest you.

Events



Date and time: Friday 8th March 2024 - Sunday 10th March 2024

Location: Online, with an in-person reception at the University of Greenwich on the evening of Friday 8th March

Cost: The conference is **free** to attend for mathematics undergraduates at UK universities.

Registration closes at midnight on Friday 1st March.

For more information and to register: [Tomorrow's Mathematicians Today 2024 - IMA](#)

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 Webinar: Open Source Software - is it really a free-for-all?

Date and time: Wednesday 17th April 2024 | 14:00-15:30 BST | 15:00-16:30 CEST

Location: Online via Zoom

Cost: Free

This webinar covers the use of R in a programming community, submissions to regulators using R, and also programming beyond R in C++ and Julia.

To register for this event, please click [here](#).

PSI Training Course: Introduction to Machine Learning

Date and time: Monday 22nd - Thursday 25th April 2024 | 09:00-12:30 BST (on all 4 days)

Location: Online via Zoom

Costs: please see [here](#) for prices and registration

Who is this event intended for? This course is aimed at clinical trial statisticians who are new to or with limited experience of machine learning.

What is the benefit of attending? Attendees will learn about a range of topics in machine learning, including practical sessions in R.

PSI Data Vis SIG: Wonderful Wednesdays

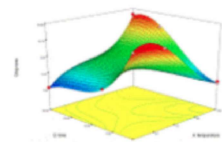
The PSI Data Vis Special Interest Group (SIG) holds monthly webinars to explore examples of **innovative data visualisations**. Participants have access to an **interesting dataset** every month, with the chance to **practice data viz coding skills** and **receive feedback from an expert panel**. We think this could especially benefit students on the learning curve for coding skills who have some spare time.

Please see [here](#) for more information. Previous sessions are available via [Video-on-demand](#).

Wonderful Wednesdays

Our monthly webinar explores examples of innovative data visualisations relevant to our day to day work. Each month a new dataset is provided from a clinical trial or other relevant example, and participants are invited to submit a graphic that communicates interesting and relevant characteristics of the data.

This is a good opportunity to develop your knowledge by thinking through a practical example, practicing how to apply graphics principles, and developing your coding skills. Or you could just attend the webinar, view the submitted graphs and listen to the panel discussion.



PSI Conference 2024



[Find Out More](#)

Join us at the PSI Conference 2024 in Amsterdam, Netherlands from Sunday 16th to Wednesday 19th June 2024.

Registration for the conference is now open. Click the button to see more details and register now!

There is a **Student Day Pass** option available for Monday 17th June. Do not miss out!

Updates from the PSI Medical Statistics Apprenticeship scheme

We have great news that the number of universities involved with the scheme is growing!

- Leicester are approved for a 2024 intake for Face-to-Face learning
- UCL are planning a 2024 intake for virtual learning
- LSHTM are hoping to be available for a 2025 start date for Face-to-Face learning
- Strathclyde (virtual) are still on board as well 😊

Please remember to keep checking our webpage below.



[Visit our Website](#)

SIG Spotlight: BIOMARKERS

The Biomarkers SIG has three main objectives:

- Establish advanced analytical methods to analyse biomarkers for clinical development
- Increase interaction with other disciplines (medicine, biology, academic research)
- Connect with other SIGs.

In 2023, the Biomarkers SIG hosted two PSI Webinars, presented a poster at the EFSPi Regulatory workshop and held a session at the annual PSI conference.

In February 2024, they will be collaborating with the **Data Visualization SIG**, as part of a **Wonderful Wednesday** edition leveraging a vaginal microbiome dataset (see EVENTS above!).

For more information, or to get involved, see this [webpage](#).

MEDMathS



medical genetics
computer science
biostatistics
actuarial science
statistics
mathematics
economics biomedicine
morse neuroscience
epidemiology
health data science

PSI CALC hosted the latest edition of our MEDMathS (Medicine Empowered by Data, Maths and Statistics) event on Wednesday 1st November 2023. This webinar is targeted at undergraduate and postgraduate students, aiming to:

- Introduce the world of medical statistics
- Provide an awareness of career opportunities that exist within medical statistics
- Demonstrate how PSI can help in pursuing such a career

Over 80 students attended from a wide range of backgrounds and were highly engaged with 20+ questions being submitted during the presentation! You can read a few examples of the questions below.

If you missed MEDMathS then don't worry – you can view a recording of the webinar on the PSI website [here](#) and we will be running it again in the autumn.

Q&As

Q: How can you start a career in medical statistics?

A: By studying an MSc or PhD in statistics, mathematics, data science or other relevant numerical-related degree; for programmers, a BSc is often sufficient. Attend the PSI careers event (link to last years: www.psiweb.org/careers/events/psi-careers-event) to learn more about available jobs and speak to companies within medical research.

Q: Are there placements in medical statistics and where can they be found?

A: There are plenty of opportunities to undertake placements within medical research. You can find information on companies offering industrial placement in medical statistics, and testimonials from students who previously completed such placements, on the [PSI placement website](http://www.psiweb.org/placement).

Q: Does PSI have online resources for continuing professional development?

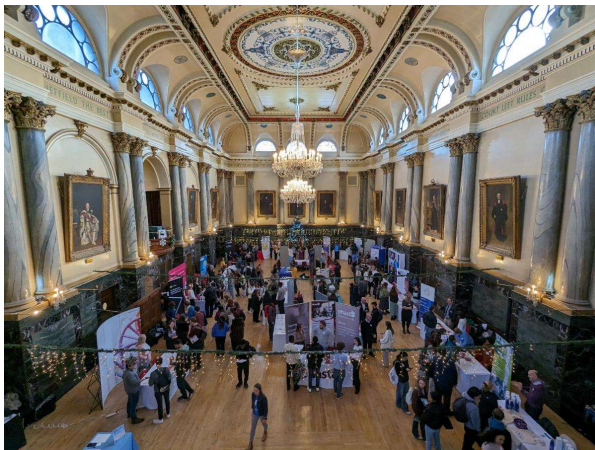
A: PSI offers a large suite of resources for its members via training courses, conferences, webinars, journal club, special interest groups. Most are recorded and can be accessed through the 'Video on Demand' library. Some courses are free, others are a reduced rate for members. Membership is free for students – visit <https://psiweb.org/members/join-psi>.

Student's feedback

"The hosts/presenters were very educated and well-spoken. They did an **excellent job of presenting** the material and answering any potential questions."

"All the necessary info delivered in a **simple and understandable** way. Very **practical advice** for Med stats careers."

PSI Careers Event



PSI Careers were delighted to travel to Sheffield for our 2023/2024 Medical Statistics Careers Event for students, held this year in the beautiful Cutler's Hall. As with previous events, it aims to showcase the range of careers available to you in the field of Medical Statistics.

The event kicked off with lunch followed by an introduction from the PSI vice-chair Chrissie Fletcher and the PSI Careers Universities subteam chair Amanda Darekar. We heard from New Starter to the industry Max Howard who is a biostatistician at Fortrea in Leeds. Max gave the students a great insight into a day in the life of a medical statistician – particularly as a new graduate. Following Max's excellent talk was the panel discussion with representatives from six organisations, each of whom had a wealth of experience in different types of roles within Medical Statistics: Stewart Ravenhall from Roche, Violeta Balinskaite from Medpace, Bethan Thomas from ICON, Patrik Atkinson from Veramed, Esther Herbert from Sheffield

Clinical Trials Unit and Laura Marsden from GSK. The panel shared thoughts and opinions about their work such as, what motivates them, what they find challenging about their job, their proudest achievements, what they wished they'd have known as a student and also answered questions from the audience.

As ever, the main highlight of the event was the chance for students to speak face-to-face with representatives from many different organisations including potential employers in the exhibitor session. The event featured 6 pharmaceutical companies, 8 Contract Research Organisations (CROs), 6 Clinical Trials Units (CTUs), 3 professional societies and 7 universities advertising postgraduate study opportunities, including the Medical Statistics apprenticeship. It was a real bonus for students to be able to speak directly with the company and university representatives, all of whom could share information about their own career paths and the different types of roles available within medical statistics, providing students with a wide range of perspectives about possible next steps.

Here are some reflections on the event from a couple of students who attended:



"I really enjoyed my time at the PSI Careers Event. The talks were a great way to learn more about the industry and the different experiences people had at different places / in different roles. I found it so beneficial to walk around the stands and listen to the many options I could take after finishing my BSc (e.g. graduate job, masters, or apprenticeship). It was also the perfect place to ask and have my questions answered".

Agota Bodoni, University of Reading

"The PSI Careers Event was a fantastic opportunity to hear about the experiences of different statisticians in the pharmaceutical industry, from a range of ages and backgrounds. I found it really interesting to learn about the different paths that can be taken to get into the industry, and the variety of roles that statisticians can have. It was also really great to be able to meet members of staff from different universities, who provided details on the post-graduate courses that they had to offer in medical statistics."



Josh Carlton, Cardiff University

If you missed out on the event, you can catch up with the recording of the talks and panel discussion that will be on the [PSI website](#). If you will still be a student next academic year, look out for the next PSI Medical Statistics Careers Event in late 2024.



Thanks to Phastar for sponsoring the event.

Recent media coverage

Research

JAMA | Original Investigation

Donanemab in Early Symptomatic Alzheimer Disease

The TRAILBLAZER-ALZ 2 Randomized Clinical Trial

Alzheimer's disease is the most common type of dementia. It is a progressive neurodegenerative disease that slowly destroys memory and thinking skills, and eventually,

the ability to carry out the simplest tasks.

Below are excerpts from paper describing a clinical trial that investigated Donanemab against placebo in patients with early symptomatic Alzheimer's disease. Examples of the areas where statisticians have been involved with the trial are included below.

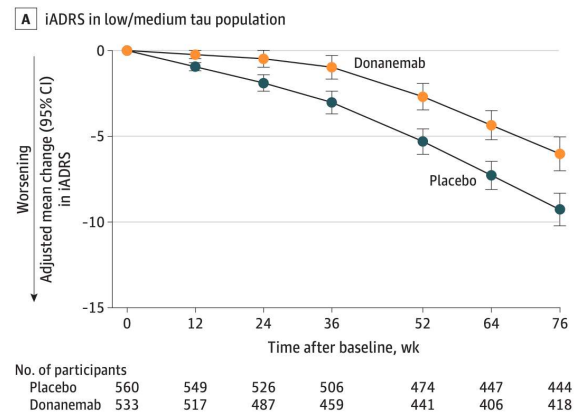


Figure 2. Integrated Alzheimer Disease Rating Scale (iADRS) and Sum of Boxes of the Clinical Dementia Rating Scale (CDR-SB) From Baseline to 76 Weeks

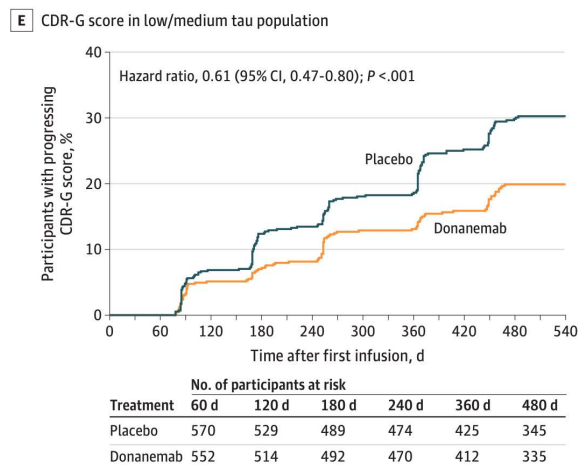


Figure 3. Brain Amyloid, Plasma Phosphorylated Tau 217 (P-tau217), and Hazard Ratios for Risk of Disease Progression

Randomisation and Intervention

Eligible participants were randomly assigned in a 1:1 ratio by a computer-generated sequence using interactive web response systems, with stratification by baseline tau categorization and enrolling sites; the randomization block size was 4. Randomized participants received either Donanemab (700 mg for the first 3 doses and 1400 mg thereafter) or placebo, administered intravenously every 4 weeks for up to 72 weeks.

Study Design

The powering and sample size determination of the trial was based on the low/medium tau population. With a sample size of approximately 1000 randomized participants in the low/medium tau population and an assumed 30% discontinuation rate, the NCS model provided greater than 95% power to achieve statistical significance at a 2-sided a level of .05.

Statistical Methodology

A prespecified gated testing scheme was used to control for study-wise type I error rate at 2-sided a level of .05. Clinical outcomes (except for CDR-SB) were primarily analyzed using an NCS2 model. The protocol-specified week value for each participant was used as a continuous variable to create NCS basis functions with knot locations at 0 weeks, the median observation time, and 76 weeks. The model restricted baseline estimates to be the same for treatment and placebo groups. The baseline score and each scheduled postbaseline score were dependent variables in the model.

Data Analysis

Most statistical analyses were done with SAS version 9.4 (SAS Institute). Some time-based progression analyses were analyzed with R Project version 4.3.0 (R Foundation).

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

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

"As a safety scientist working in Pharmacovigilance, I rely heavily on support from the project statistician, especially as it relates to evaluation of patient safety data and identification of potential adverse drug reactions. Statistical support is essential to ensure that



the strategy for data collection and reporting is appropriate to support analysis of all potential safety concerns identified for a project in development both at the study and program level. Data interpretation requires more than simply identifying a numerical difference. Support and guidance from the project statistician can help the team identify efficient ways to separate the “noise” from potentially clinically meaningful differences. The faith in my ability to deliver an accurate safety profile of a drug is definitely strengthened by the strong working relationships I've built with my colleagues from Biostatistics."

**Tara Barker, Senior Scientific Director,
Safety Evaluation and Risk Management, GlaxoSmithKline**

Reminders

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.

Keep your contact details up to date

If you are finishing your studies at the end of this academic year, please remember to change your email address to a personal one on your PSI account, so you don't miss important updates and continue to receive our regular emails. To edit your contact details, you can log into Glue Up and go to “My profile”: <https://app.glueup.com/my/profile/>.

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.

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