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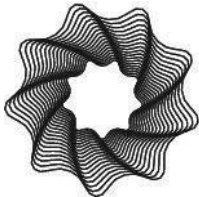
# Understanding physics graduate mobility to develop a regional employer engagement strategy

Alastair Buckley

Department of Physics and Astronomy

The University of Sheffield

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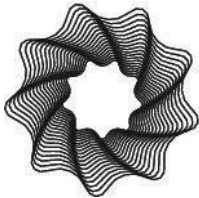
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# White Rose Industrial Physics Academy - WRIPA

Many of our most promising physics graduates turn away from industry because they don't know what it has to offer.

5 year old collaboration between companies and physics students from the universities of York, Sheffield, Hull, Nottingham and Leeds.

- Industrial Projects
- Placement support
- Technical skills development
- Employer engagement



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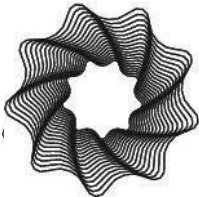
## WRIPA+ responding to... OfS Challenge fund - Industrial strategy and skills – support for local students and graduates

“Around 45 per cent of graduates responding to the 2015-16 Destinations of Leavers from Higher Education (DLHE) survey sought post-study employment in their home region.

Given uneven regional productivity, the variability of labour markets across the country, and constraints to mobility for some graduates, we recognise that successful outcomes may be at risk for graduates who seek post-study employment in areas with lower productivity and growth. We want to support choice for graduates and students and, as set out in the government’s industrial strategy, many regions need their skills and knowledge in order to thrive.

We are particularly interested to understand how providers can help improve employment outcomes for graduates through partnership working with employers and local agencies. “

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# Outline

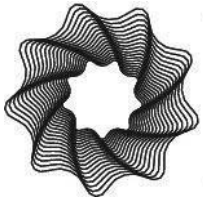
## Data

- Gross value added productivity - a good starting point?
- Mobility - what does this mean?
- Outcomes - analysing the geographic factors

Interventions - Our plans in WRIPA+

Outstanding questions

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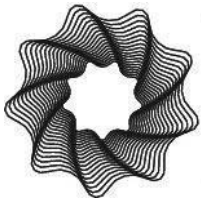


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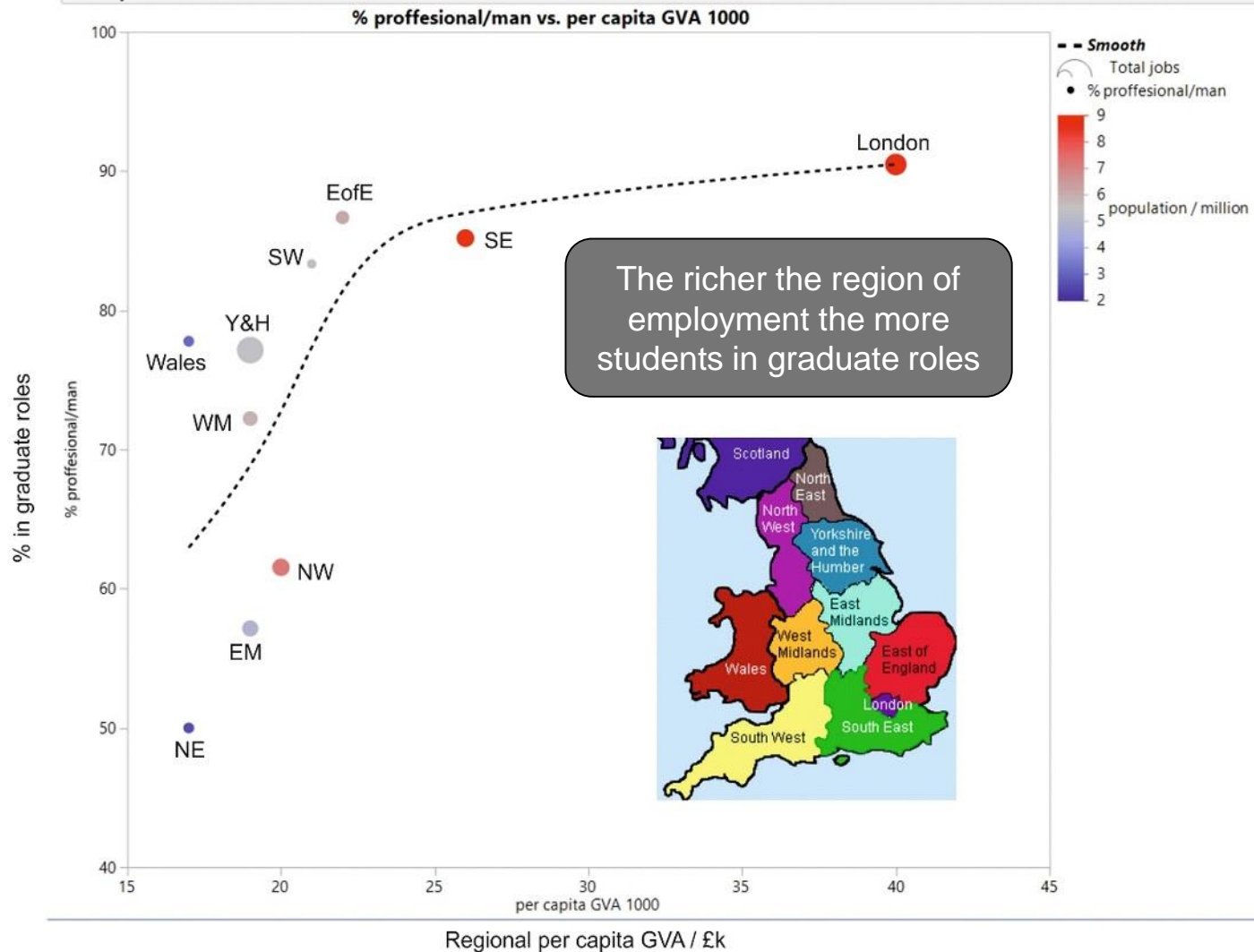


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Sheffield physics  
regional DLHE  
destination data.  
Excluding further  
study. 2011-2017.



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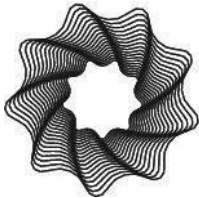
# Sheffield DLHE summary

- This analysis supports OfS statement
- Need to focus on regional support for employment
- Bear in mind that SCR has lowest GVA of any city region

But the analysis is at cohort level

There is no knowledge of where a student originates from

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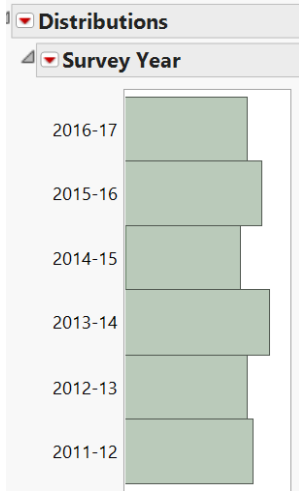
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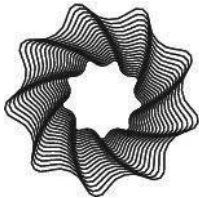
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# Longitudinal analysis: recruitment through to destination.



- DLHE survey data from 2011/12 to 2016/17. N = 294. No PhDs.
- Registration data linked individually to student list.
- Postcodes of home address, term address and employer address.
- Postcode look up with lat, long.
- Distances from home to university to work calculated and used as mobility proxy.
- Degree class, title, award.
- SOC code. Job title.
- Postcode look up with POLAR quintiles - measure of historical HE participation. 1=low and 5=high.

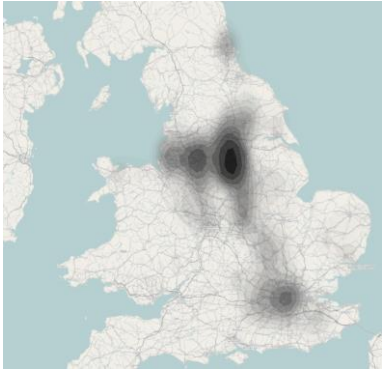


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Home location

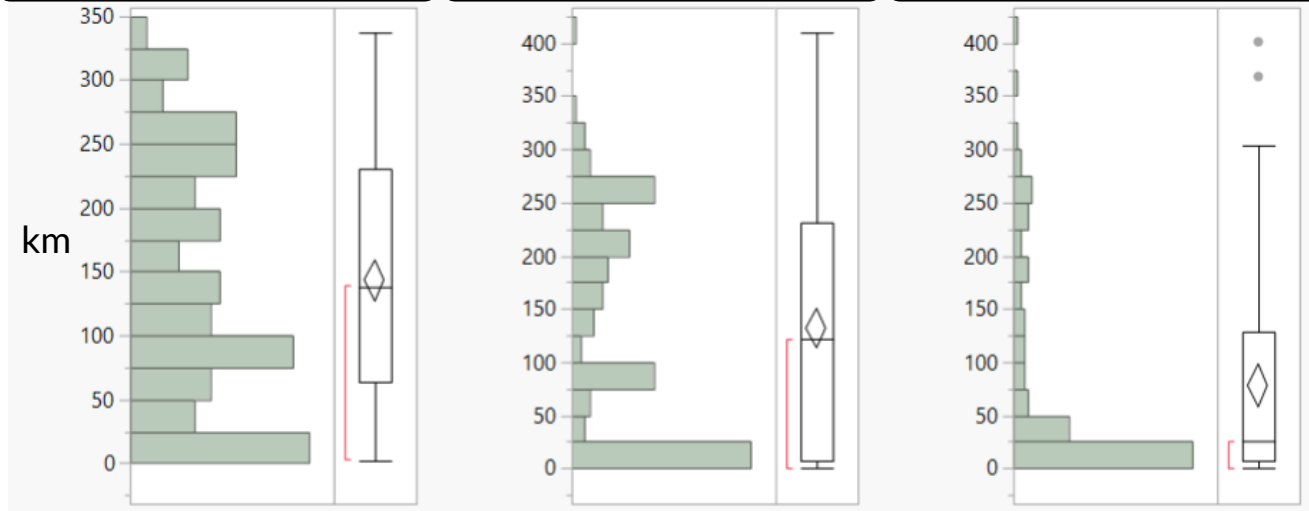
## Recruitment mobility

## Work mobility

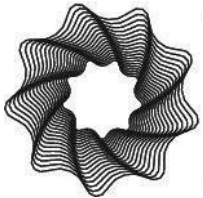
### Home to University

### University to work

### Home to work



- 64% of all students return to work within 50 km of home
- Much greater mobility in coming to university than in gaining employment.



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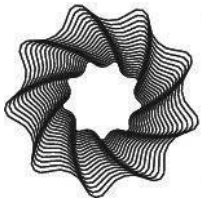




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Recruitment mobility vs work mobility.

Complex!  
Or simple?



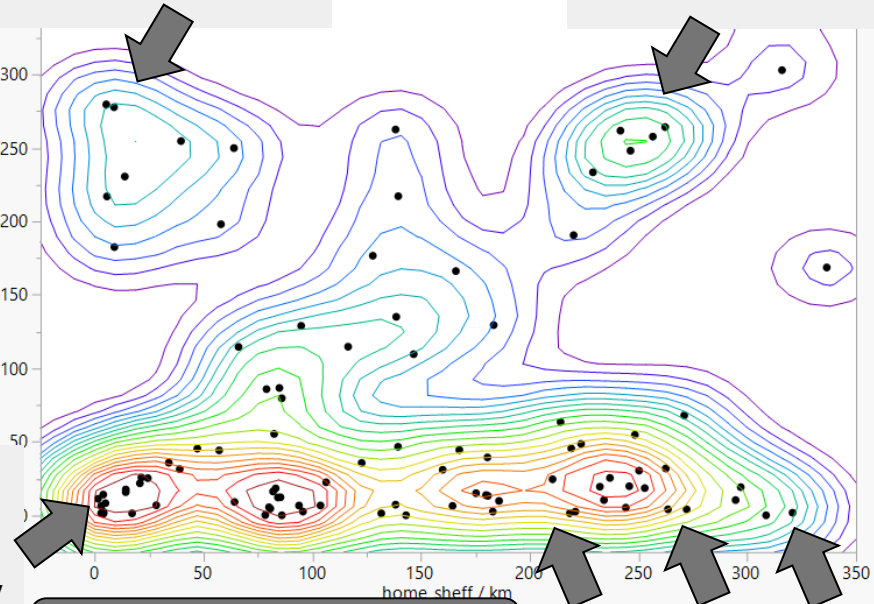
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These students come from near Sheffield and have moved near to London to work

home\_sheff / km

These students have come from London to Sheffield to study and stayed in Sheffield to work

Home to work / km



These students come from Sheffield and stay here to work

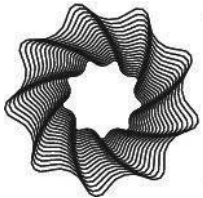
Home to University / km

These students have come to Sheffield to study and have gone home to work



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Mobility vs degree  
class



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# Mobility and graduate / technical

SOC codes converted to 1/0 coding for graduate roles and technical roles using DLHE scheme and “expert judgement” respectively.

SOC - standard occupational classification

1 = graduate role or technical role

0 = non graduate role or non technical role

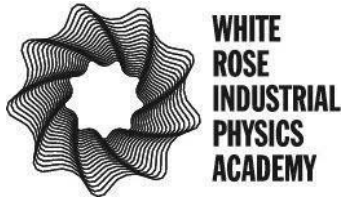
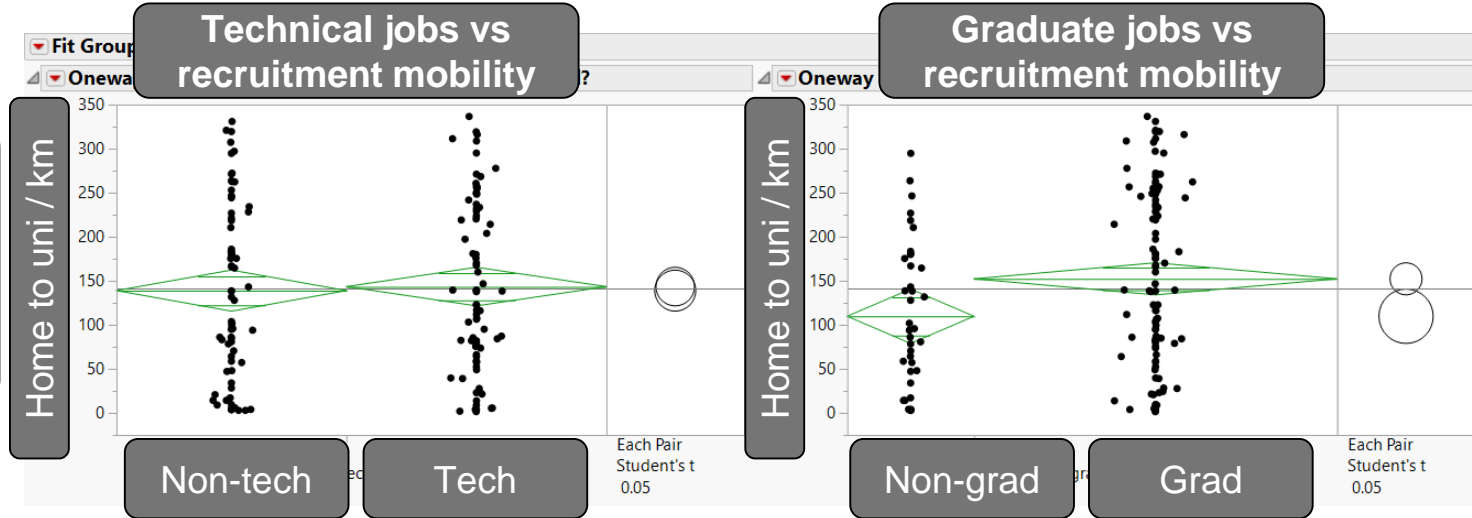
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Technical roles  
(~50%) are a  
subset of graduate  
roles (~75%).

# Recruitment mobility vs destination



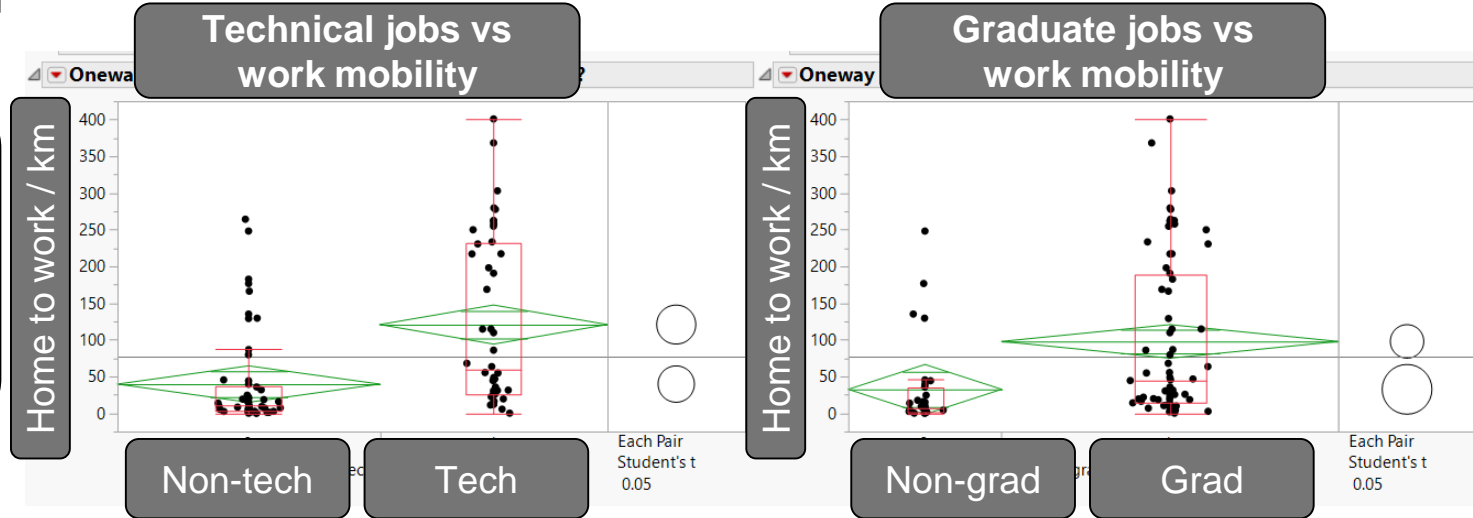
- No difference in recruitment mobility and **technical** destinations
- 50 km difference in recruitment mobility and finding a **graduate** level role.



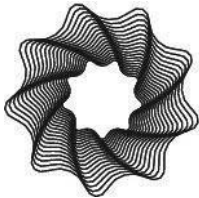
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# Work mobility vs destination

Technical roles  
(~50%) are a  
subset of graduate  
roles (~75%).



- Technical and graduate level destinations are strongly correlated with mobility from home to work.

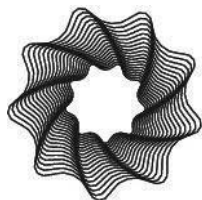


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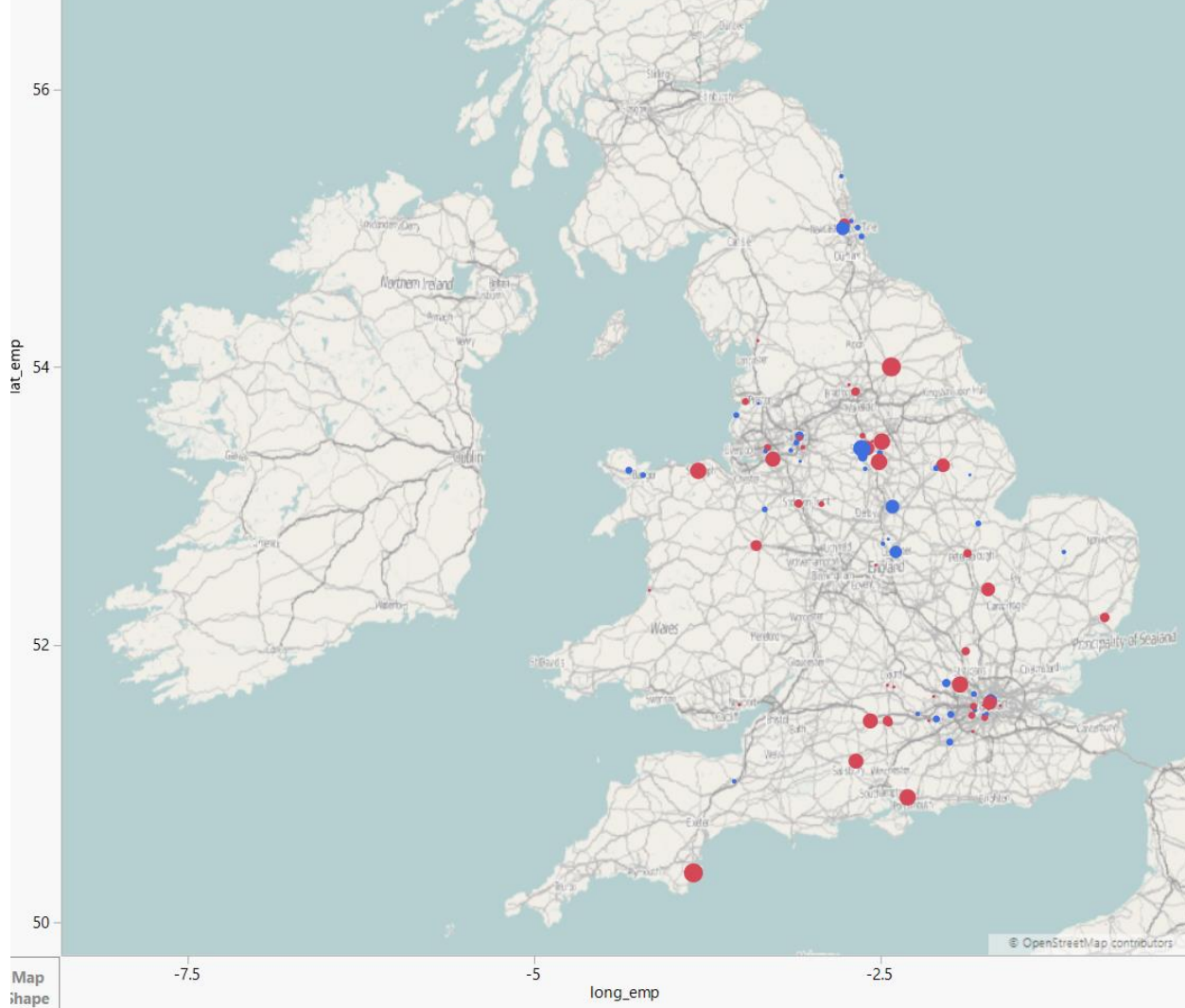


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Red are technical roles. Blue are non-technical. Technical roles are more geographically dispersed. Dot size is work mobility



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Group V

Map  
ihape

long\_emp

Freq

Page

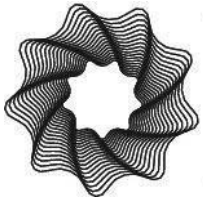


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# Summary

- 65% of Sheffield physics students return home to work.
  - These 65% of students are not work mobile.
  - Students that are work mobile get better jobs.
- 
- Students with 1st's and 2.1's get better jobs.
  - Students with 1st's are much more work mobile.
  - There is no link between recruitment mobility and degree class.
  - Students from lower POLAR quintiles are less mobile in coming to Uni.
  - There is no difference in work mobility depending on POLAR or gender.
  - There is no difference in the outcomes of students depending on gender or POLAR quintile. (But no progression data)
  - There is not enough data to say if industry or year abroad students are more mobile or get better jobs.
- 



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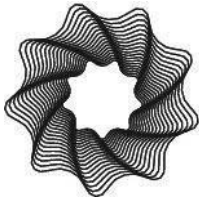
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# WRIPA+ interventions

Support students to be mobile.

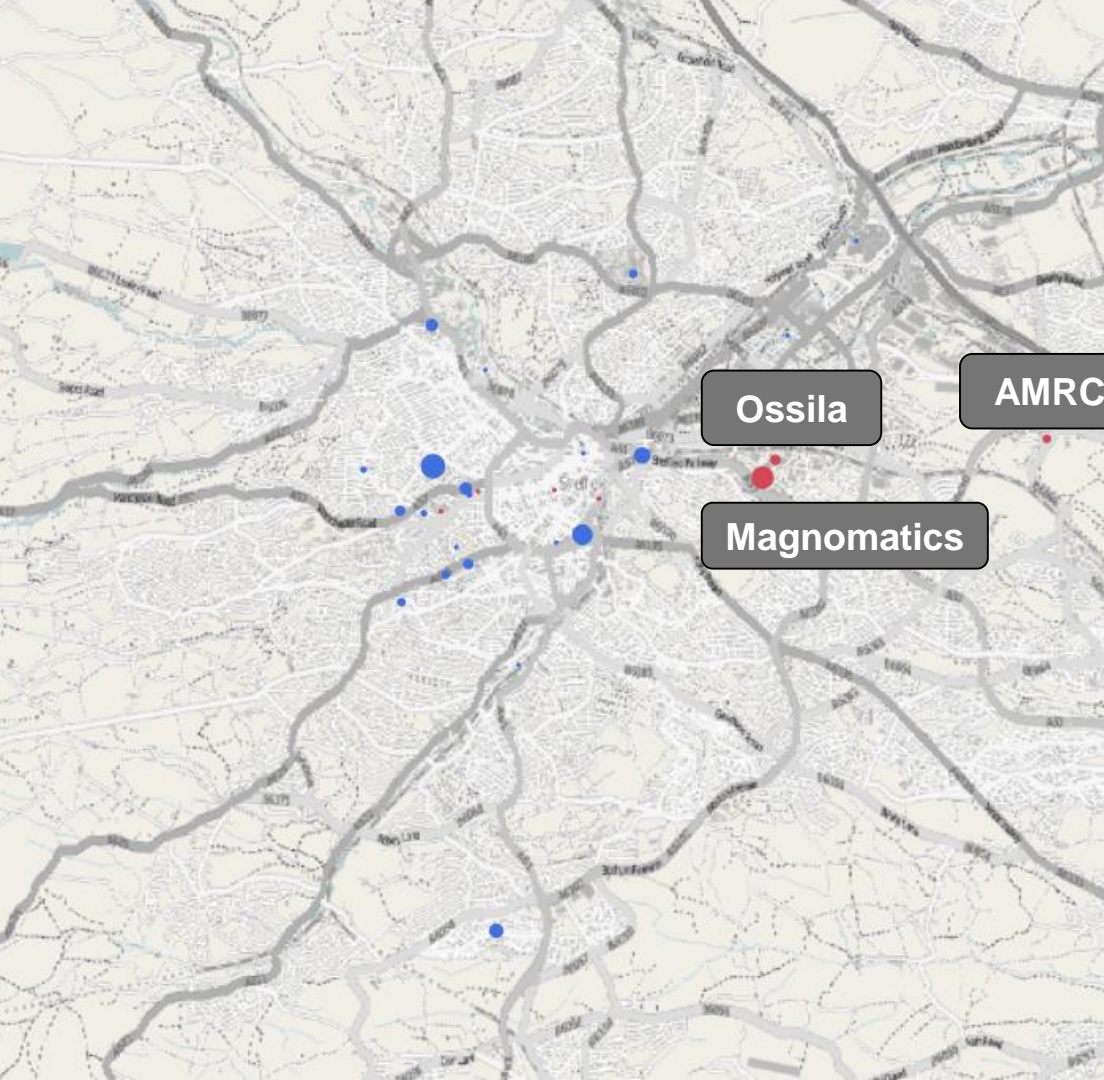
Build many more regional industrial relationships.

- Placements (long and short) & industrial projects
- Involving industry in curriculum delivery
- Travel and subsistence fund to help students work and study with industry.



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# WRIPA+

- Our research tells us there are ~2000 physics relevant companies in the Y&H region.
  - WRIPA has engaged with <<50 of them
  - Sheffield has engaged with <<20 of them
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# Discussion

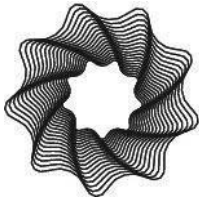
OfS are encouraging us to support students into local employment through local industrial engagement.

But our data tells us that supporting students to be mobile, and travel to work, will get them better jobs.

So our plans are to use our regional network to help do a bit of both - regional mobility and regional engagement - using our WRIPA network

If only we had a decent regional transport network...

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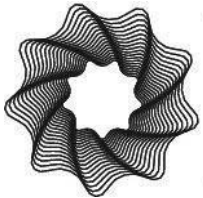


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# Any Questions?

[alastair.buckley@sheffield.ac.uk](mailto:alastair.buckley@sheffield.ac.uk)



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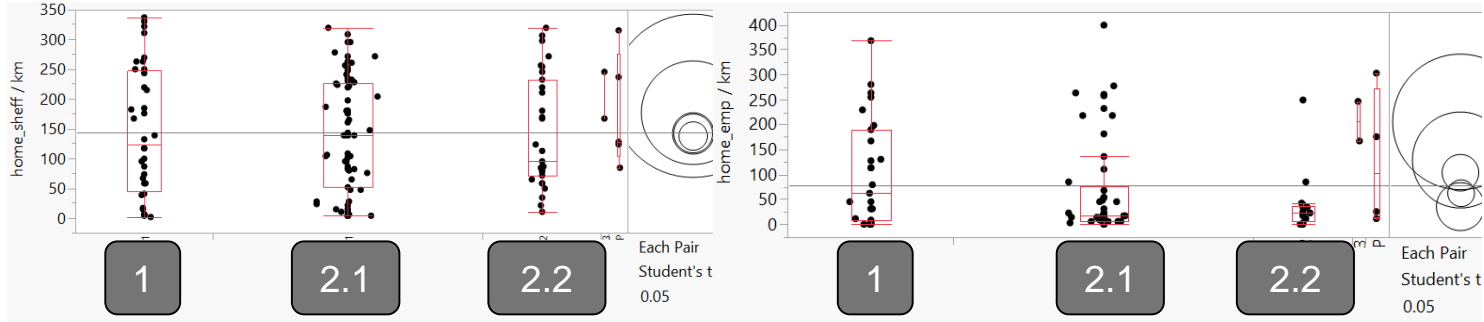
## Mobility vs degree class

Home to University

Recruitment mobility

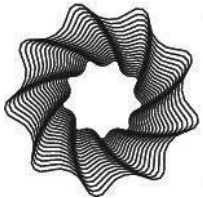
Home to work

Work mobility



1st class students are more work mobile

Recruitment mobility is not linked to degree class.



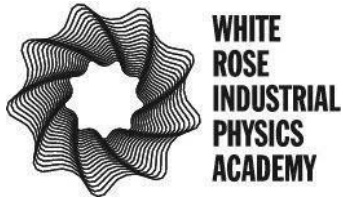
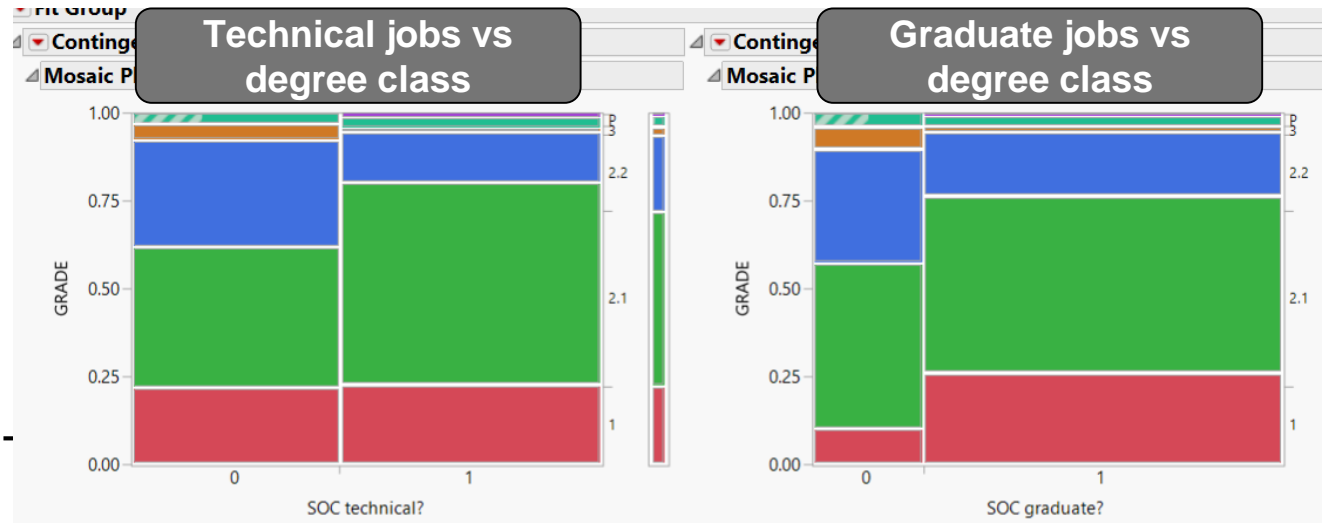
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# SOC coding vs degree class.

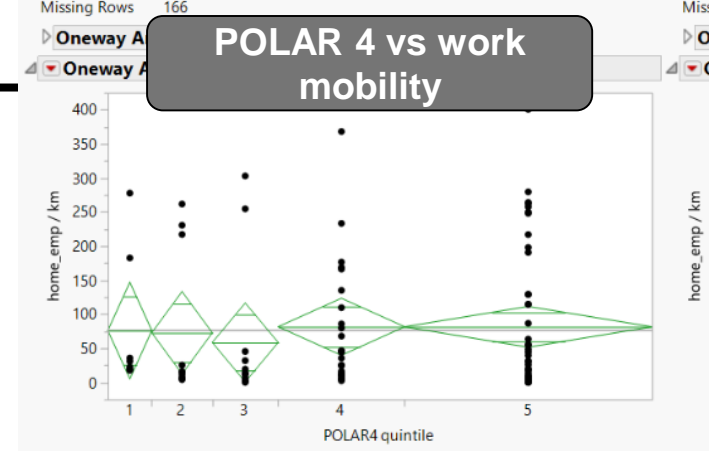
- More likely to go into technical role with a 2.1 or 1st.
- Twice as likely to get non-technical job with 2.2.
- Much more likely to get graduate role with 1st.
- Twice as likely to get non-graduate (and non-technical) role with 2.2 than 2.1.





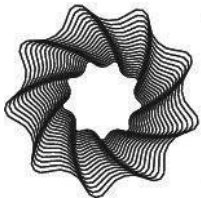
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- No difference in average work mobility... although...
- Students are either mobile (and move south) or are not and stay in Sheffield

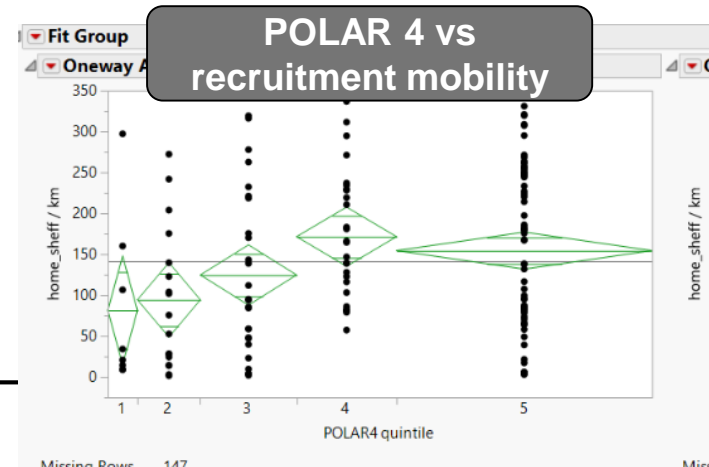


## POLAR quintiles vs mobility

- Students from lower POLAR quintiles come from closer to Sheffield



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Mr. Oliver Spenceley

Oliver initially joined Ossila back in May 2015 when he was an undergraduate student, and took on a part-time role manufacturing and processing equipment. He later moved on to a Design Engineering role and was awarded Student Employee of the Year - a national award - commercial impact at Ossila. He has since graduated from the University of Sheffield.

Hadi Olsson

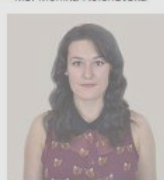
Hadi obtained a PhD from University of Sheffield in 2017. His area of research being in Robotics. He received his MSc Control and Systems Engineering from the University of Sheffield in 2010. He initially joined Ossila in 2012 with a part-time post and worked on various projects. In 2017 he took up a full-time role as an Electronics Engineer. He is currently working on various projects, and works on developing new products. During his free time, he enjoys playing football and watching the football.

Ms. Oluchi Emenike



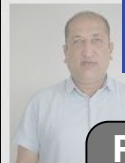
Oluchi is a part-time Customer Services Administrator at Ossila. She currently a PhD student at the University of Sheffield, who completed an MEng in Chemical Engineering in 2017. She was the Outreach Officer for the Women in Engineering Society Oluchi handles customer orders and enquiries, and assists with various projects. She is passionate about inspiring young women, she volunteers with the Foundation. In her spare time, she learns to dance, tries out new recipes, and reads lots of novels.

Ms. Monika Kolcheva



Monika is the Chief of Operations at Ossila. She is a University of Sheffield graduate with a degree in East Asian Studies, and is currently pursuing a Masters in Human Resources Management. She initially joined in July 2014 as a customer service administrator, utilising her knowledge in the foreign languages (including her native Bulgarian). Her current role involves effortlessly juggling multiple tasks - such as supervising the customer service team, stock purchasing, accounts, and day-to-day HR. Monika has Big Ideas all of the time, and loves creating multiple checklists in order to execute them. However, she loves it most when her team also has Big Ideas - and as a passionate leader, Monika strives to make their vision come true.

Mr. Jehanzeb Khan



# Ossila



Jehanzeb worked as a development support for a Chinese research and Precision Engineering Department Aerospace. At Ossila, his role in the synthesis of conjugated polymers and their purification for application LEDs, solar cells, and OPVs. In his spare time, Jehanzeb enjoys playing football and watching the football.

Mr. Tom Salter



Tom is a Product Manager at Ossila. He originally joined as Service Dispatch Assistant at the beginning of August 2016. By completing an MPhys degree in physics at the University of Sheffield, Tom's responsibilities include working with Rosia to field customer queries, as well as preparing and packing materials, consult other Ossila products to safely dispatch them to our customer works with Ossila's stock assistants to organise, maintain, stock levels. He also orders and prepares Ossila's range of substrates. In his spare time, Tom enjoys playing Rugby Sheffield team, hill walking, and mountaineering.

Dr. Max Reinhardt



Max joined Ossila in 2013 after a PhD in inorganic and materials chemistry from the University of Edinburgh, having worked on thin-film processing, small-molecule synthesis and crystal growth for OPV applications. In his role as Technical Sales Manager, Max helps customers with advanced product support and acts as a facilitator between the Operations and Development Teams. Max also leads the Technical Marketing Team, generating online content for improved user support and experience. In his spare time, Max enjoys bouldering, propagating plants and playing with other people's pets.

**Physics graduates: 5**  
**Chemistry: 4**  
**EEE/ACSE: 3**  
**Tourism: 1**  
**Law: 1**  
**IT: 1**  
**Business: 1**  
**Psychology: 1**  
**East Asian studies: 1**  
**Mechanical engineering: 1**

Ms. Rosanna Stewart



Rosanna is a Product Manager at Ossila, and she joined Ossila in 2014. Previously, she graduated from the University of Leeds with a degree in Chemical Engineering. Rosanna is responsible for equipment, such as the Spin Coater and the UV Coater. C becoming an expert in their manufacture. Her role involves more robust processes that can scale up with increasing customer and wider range of products on offer. She is also responsible for stock management systems, with the goal of enabling our manufacturing to meet customer demands.

Mr. Ian Firth



Ian graduated from The University of Sheffield with a Master's degree in Chemistry. Initially starting his career at Ossila with a part-time position on the workshop floor, Ian has risen to be Production Manager of the lab equipment in Ossila's catalogue. As such, Ian has built one of almost every type of equipment that we sell. He now focuses on ensuring that our equipment is ready to be shipped efficiently, without compromising on the quality that Ossila customers can expect.

### Research Team

If you have any technical questions about any Ossila products, or want some advice on fabrication and processes, please complete this contact form and a member of our Research Team will be happy to help.

Dr. Hunan Yi



Hunan is Ossila's organic chemist, specialising in polymers and materials synthesis, polymeric semiconductors, and pure conjugated polymers. Having achieved an MSc from Shanxi University in China, Hunan moved to St Andrews University to study towards his PhD in Organic Chemistry. He then moved to Sheffield in 2004. He then became a Postdoctoral Research Fellow at the University of Sheffield, before working with both the University of Sheffield and Ossila as a KTA associate in 2015.

Ms. Rosie Morgan



Rosie is Ossila's Exports Manager. She originally joined as a Customer Service Administrator in February 2016, after completing a degree in Law at Sheffield Hallam University. At Ossila, she tends to both new and existing customers, overseas shipping, and liaises with couriers (and other relevant parties) to facilitate the safe and efficient shipment of parcels. Her other responsibilities include daily administrative tasks and implementing her legal knowledge where possible. Outside of work, Rosie enjoys musical theatre, partaking in the occasional pub quiz, and having a drink or two while she is there.

Mr. Mark Gooch



**Sheffield graduates: 16**  
**Other locations: Leeds, Edinburgh, Karachi**

Dr. Lydia Heathcote



Lydia joined Ossila in 2013. She is an Electronic Engineer with a background in the development of instrumentation, mainly for test and measurement equipment. She was a Research Assistant at the University of Manchester's School of Electrical and Electronic Engineering, also obtained her PhD. She has industrial experience in the electronics industry, having worked as an RF (Radio Frequency) Design Engineer and SAW (Surface Acoustic Wave) Filter Design Engineer at Lucent Technologies and GEC Plessey Semiconductor.

Ms. Jenny Cheong



Jenny is a Customer Service Administrator at Ossila. She is responsible for ensuring the timely completion of customer enquiries and orders in the Operations department. She graduated from Sheffield Hallam University with a BSc in Tourism Management - where she also founded the SHSU Malaysian Society in 2015. A language enthusiast, Jenny is fluent in Mandarin, Cantonese, Hakka, and English. She is passionate about travelling and enjoys experiencing different cultures and their cuisines. During her free time, she enjoys reading, watching movies, and playing video games.

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