



MSc/PhD- Projects at Keele

Project-2

Evaluating the contributing factors in dementia in the UK's aging population

Dataset: UK Biobank

The dataset that provides up-to-date information about the prevalence of dementia among aging population in Great Britain will be used.

Your research project:

For MSc students: You will focus on a couple of contributing and/or confounding factors and will analyse the relevant population health datasets.

For PhD students: You will focus on more than a few contributing and/or confounding factors, will analyse this dataset, and develop your research with your supervisor's guidance to gradually become independent – this is to prepare you for an academic position (teaching or research e.g. postdoc or fellow). Additional experiments can be designed as per individual cases and based on student's achievements in the first two years of study (see below).

Methodology:

After a period of **literature review**, the researcher (MSc/PhD student candidate) will extract the **variables** from the dataset e.g. body mass index (BMI), the presence of dementia (e.g. Alzheimer's, Lewis Body dementia, etc), age, gender, educational qualifications, socioeconomic status, comorbidities (obesity, diabetes mellitus...), family history, occupation, etc (this list is not exhaustive).

Based on the **type** of variables, the relationship between **independent** and **dependent variables** will be investigated using an **appropriate statistical tests** e.g. logistic regression analysis, nested ANOVA, ANCOVA, etc as applicable All statistical tests will be performed in SPSS or Prism, but you will be given an opportunity to learn R should you wish to too.

Additional serological analysis and omics studies could be arranged in special circumstances and only if the PhD student is extremely successful in achieving all of their objectives by the end of second year of their project (this applies to PhD students only).

Scientific output:

Your research output will be presented internally (seminars/ internal conferences) and in a dissertation format i.e. final MSc/PhD report or thesis as applicable. If the MSc/PhD student

candidate is extremely successful, their findings can be presented in national / international conferences or could be published in a peer-reviewed journal.

It is expected from PhD candidates to have two or three publications by the time they graduate. This should positively help their employability.

Examples of research work & outputs:

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1. **Social engagement before and after dementia diagnosis in the English Longitudinal Study of Ageing.** DOI: [10.1371/journal.pone.0220195](https://doi.org/10.1371/journal.pone.0220195)
 2. **Hearing Impairment and Incident Dementia: Findings from the English Longitudinal Study of Ageing.** DOI: [10.1111/jgs.14986](https://doi.org/10.1111/jgs.14986)
 3. **The combined association of depressive symptoms and C-reactive protein for incident disease risk up to 12 years later.** DOI: [10.1016/j.jbbs.2020.01.010](https://doi.org/10.1016/j.jbbs.2020.01.010)
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Employability:

This type of research would benefit those who would enjoy working in clinic (neurology, geriatric, clinical research), as a population health researcher, or a big-data analyser. Additional training opportunities could be provided to PhD candidates to enhance their employability (TBD). As duration of MSc courses are rather short, students are encouraged to engage with their supervisor(s) sooner rather than later to be more productive in their research activities and output(s).