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## **Project description for forthcoming PhD position at Uppsala University, Sweden**

### ***Combining epidemiology with artificial intelligence to examine socioeconomic position and longitudinal risk factors trajectories in relation to complications of type 2 diabetes.***

Type 2 diabetes is an important public health challenge, which results in considerable morbidity and premature mortality in Sweden. Despite known socioeconomic inequalities in type 2 diabetes incidence and mortality, little is known about the relationship between socioeconomic position and *complications* of type 2 diabetes. Furthermore, how high-resolution, longitudinal trajectories of lifestyle and clinical risk factors are related to complications of type 2 diabetes is unclear, and if the addition of longitudinal risk factor trajectories can enhance prediction of complications of type 2 diabetes, or explain socioeconomic inequalities in complications of type 2 diabetes is unknown.

The aim of this project is to address these gaps in knowledge using high-quality, long-term data from the Swedish National Diabetes Register, in linkage with other national registers and cutting-edge methodologies in epidemiology and artificial intelligence, including group-based trajectory modelling, causal mediation analysis, and machine learning based risk prediction modelling.

This work is vital to enhance clinical understanding and risk prediction as well as to strengthen the basis for future interventions and healthcare planning, which will help reduce and prevent avoidable and unjust suffering and death and reduce the public health burden of complications of type 2 diabetes.

The PhD student will be based at EpiHubben which is a collaborative research environment within the Disciplinary domain of Medicine and Pharmacy at Uppsala University which aims to facilitate the development and exchange of epidemiological knowledge, expertise and ideas. The student will also be part of a research school at the Uppsala Diabetes Center.

For more information please contact Dr Hannah L Brooke ([Hannah.brooke@surgsci.uu.se](mailto:Hannah.brooke@surgsci.uu.se)) who is the PI for the project and will be the PhD student's main supervisor.