Demographic Modelling of Hospital Demand

3 GOOD HEALTH AND WELL-BEING
9 INDUSTRY, INNOVATION AND INFRASTRUCTURE
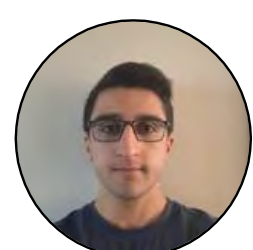11 SUSTAINABLE CITIES AND COMMUNITIES
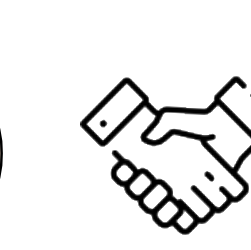
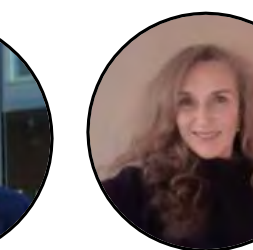Meghana Kshirsagar · Alison O'Connor · Gauri Vaidya · YuanYuan Chen · Bayan Nezamabad · Rose Galvin · Damien Ryan · Carrie Garavan · Fergal Cummins

Computer Science and Information Systems, University of Limerick

Ageing and Health research cluster, School of Allied Health, University of Limerick

Emergency Medicine, University Hospital Limerick

Elderly Population Growth and ED Impact

- The 65+ population has grown by **23% since 2016.**
- In **2024, 87,366** people visited the ED at **University Hospital Limerick (UHL)**; **6,062** left without completing treatment.
- **Over 50%** of adults aged **75+** presenting to the ED were **admitted to hospital.**

> A record 87,366 patients attended the ED in 2024, an increase of more than 10 per cent on the year before.
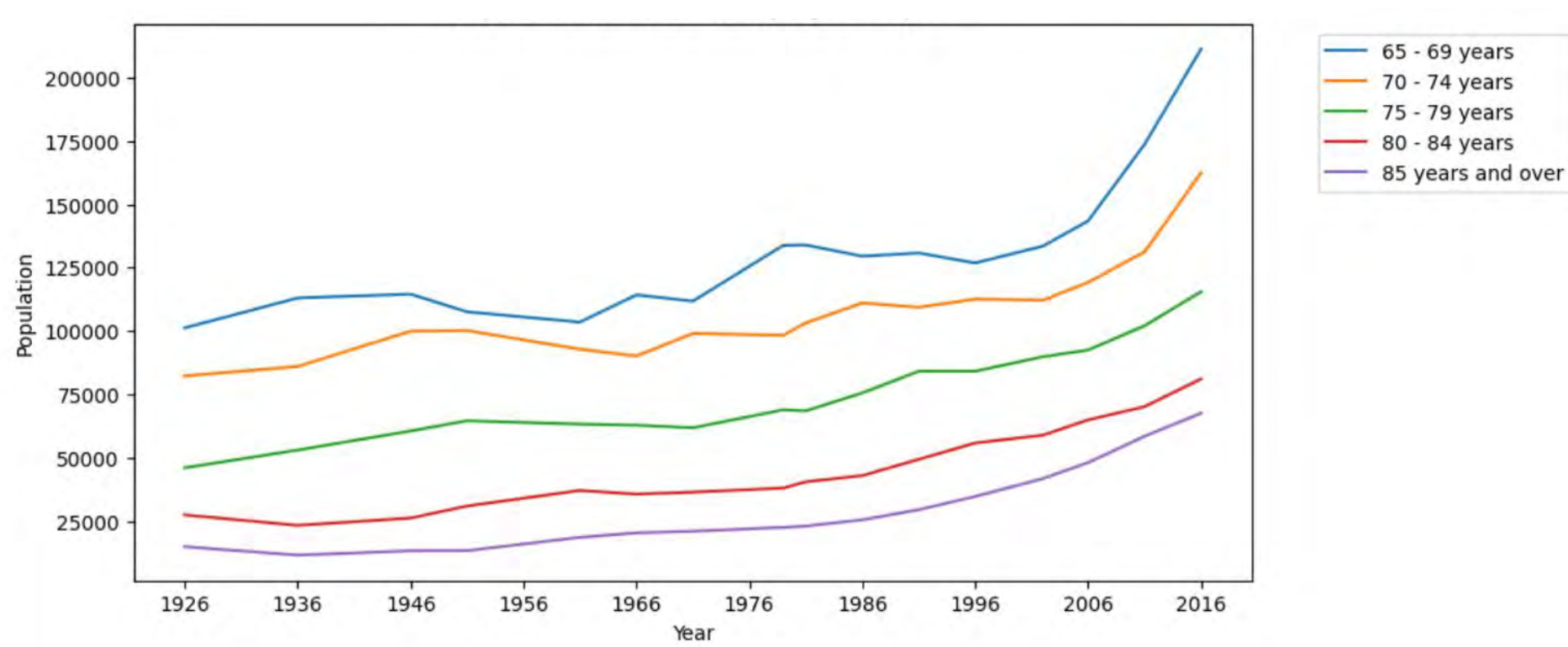> *University Hospital Limerick CEO Lan Carter, Limerick Post, March 2025*

> These are not just statistics, these are people deemed in need of a hospital bed and yet no bed was available to them.
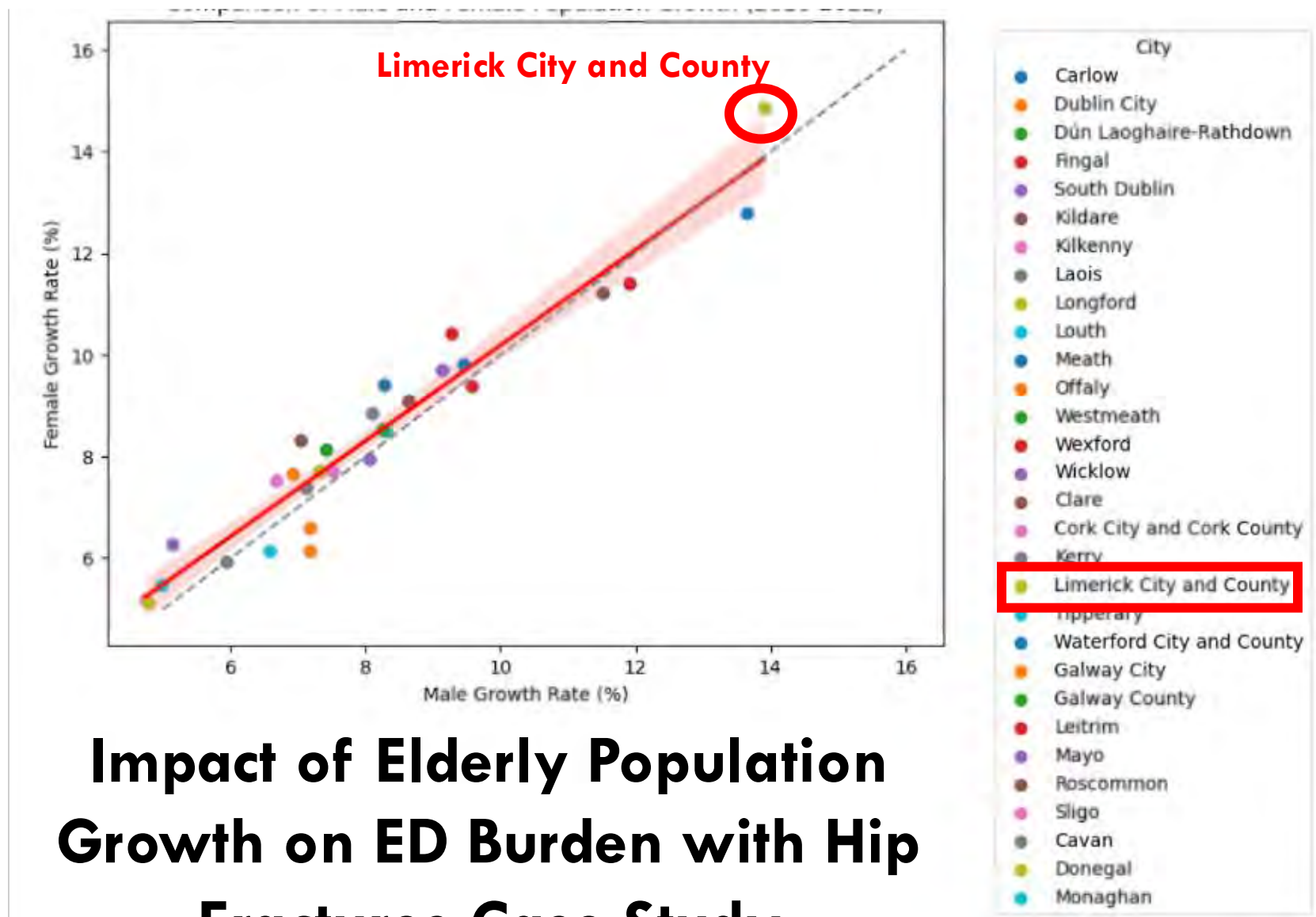> *Limerick TD Maurice Quinlivan, Limerick Post, March 2025*

Interactive Dashboard of Population Modelling

Planning Future Healthcare with Machine Learning and Demographic Modelling of Limerick's Aging Population
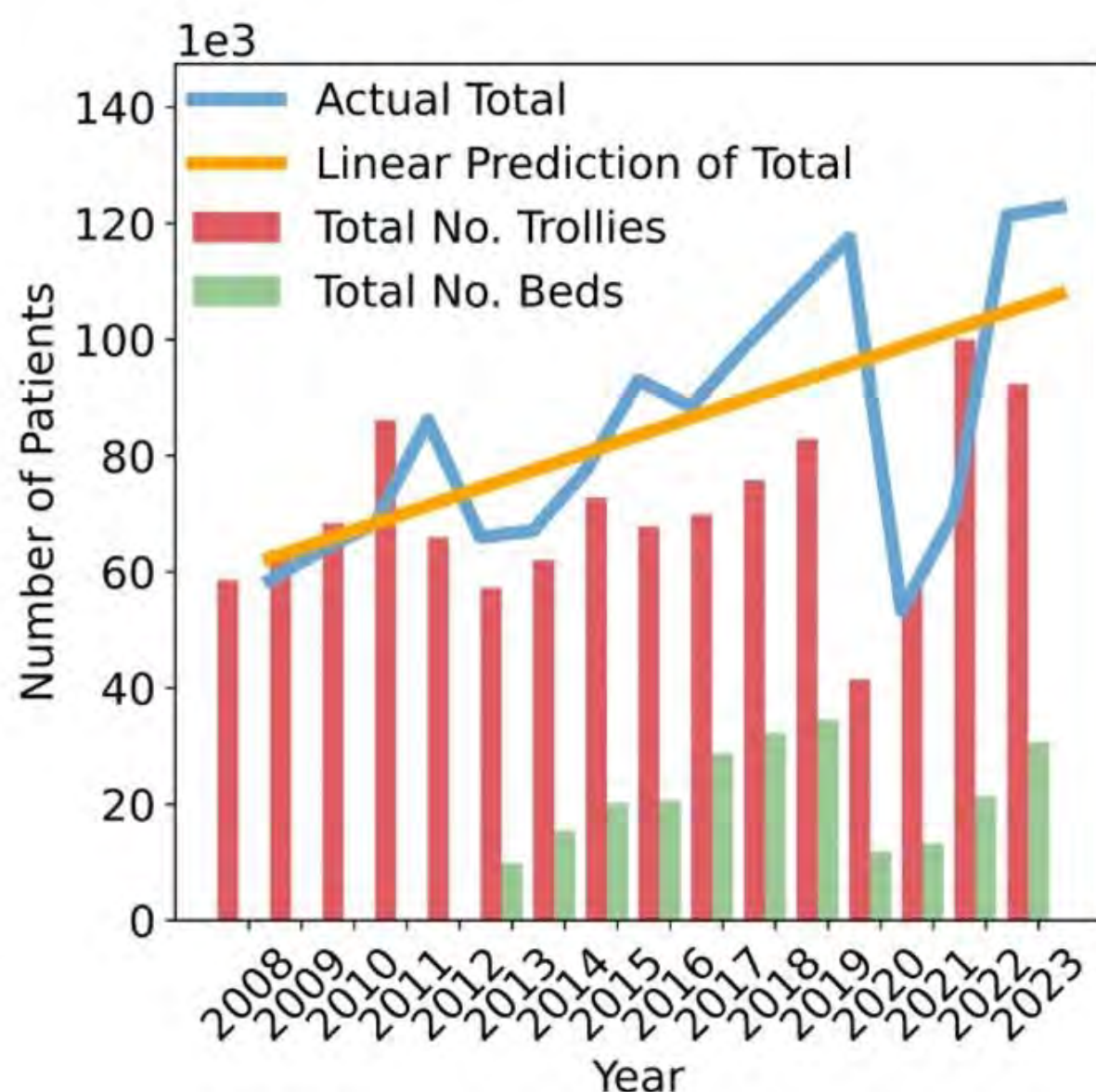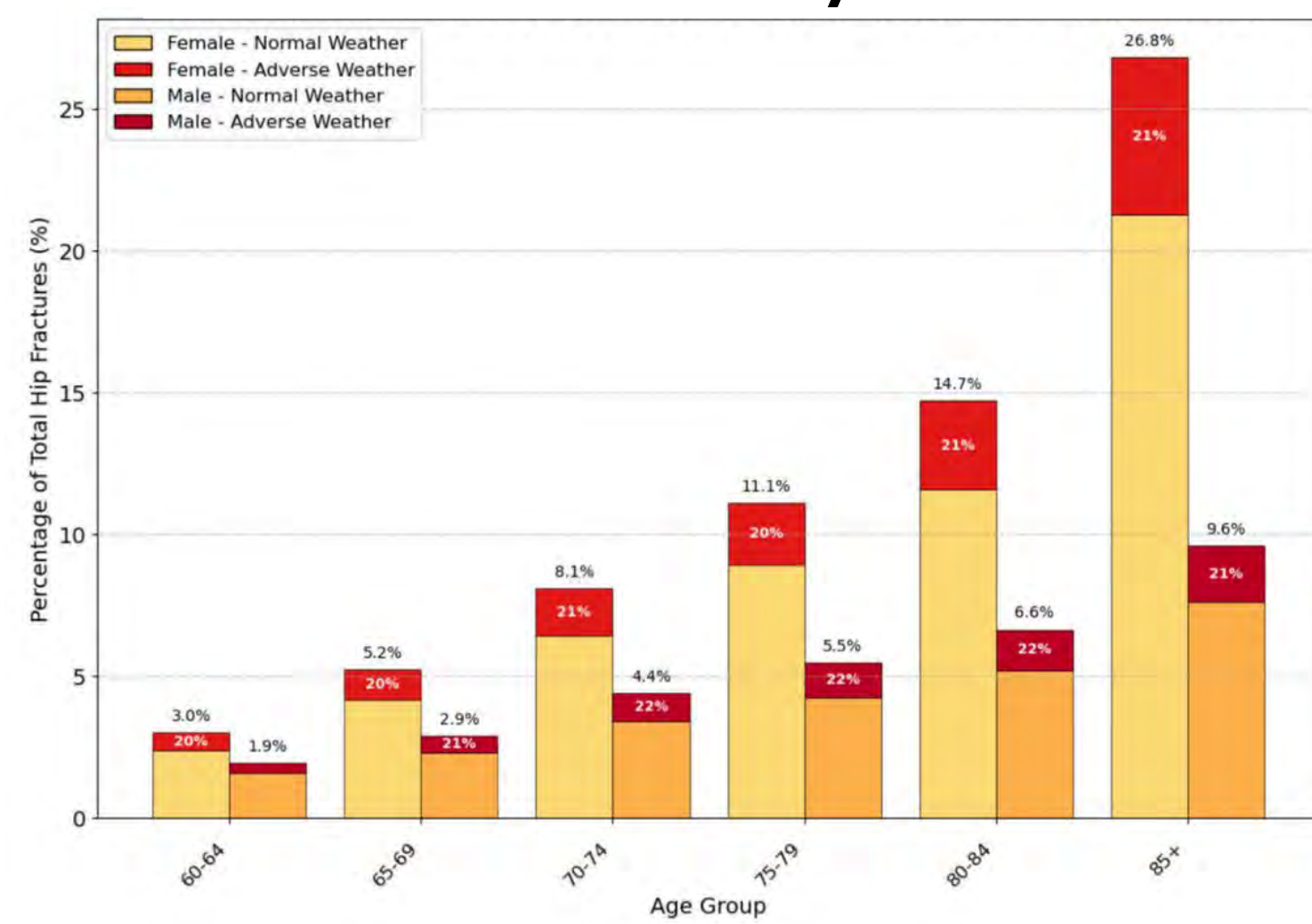
Aging Population Growth Over Time
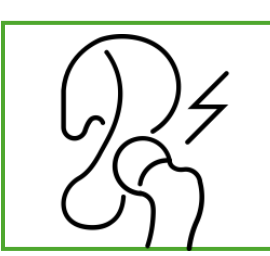

Male vs. Female Population Growth

Emergency Department (ED) Strain: Patient Wait Times
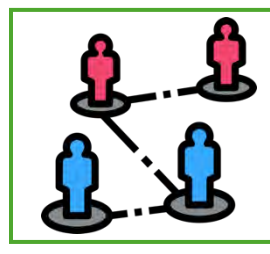

Impact of Elderly Population Growth on ED Burden with Hip Fractures Case Study

- Continuous rise in elderly populations
- Hip Fractures Most Common in the Elderly
- Tracking Population Changes to Forecast ED Visits Among Older Adults

Outcome

Timely and appropriate care for the elderly requires strong policy planning and efficient resource management to address the growing demands of an aging population.