

# A Shiny New Way to Evaluate Bowel Cancer Screening in Northern Ireland

Olivia Adair<sup>1</sup>, Felicity Lamrock<sup>1</sup>

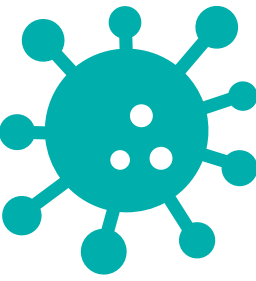
<sup>1</sup> Mathematical Sciences Research Centre, QUB

R for HTA Workshop, 9<sup>th</sup> June 2025

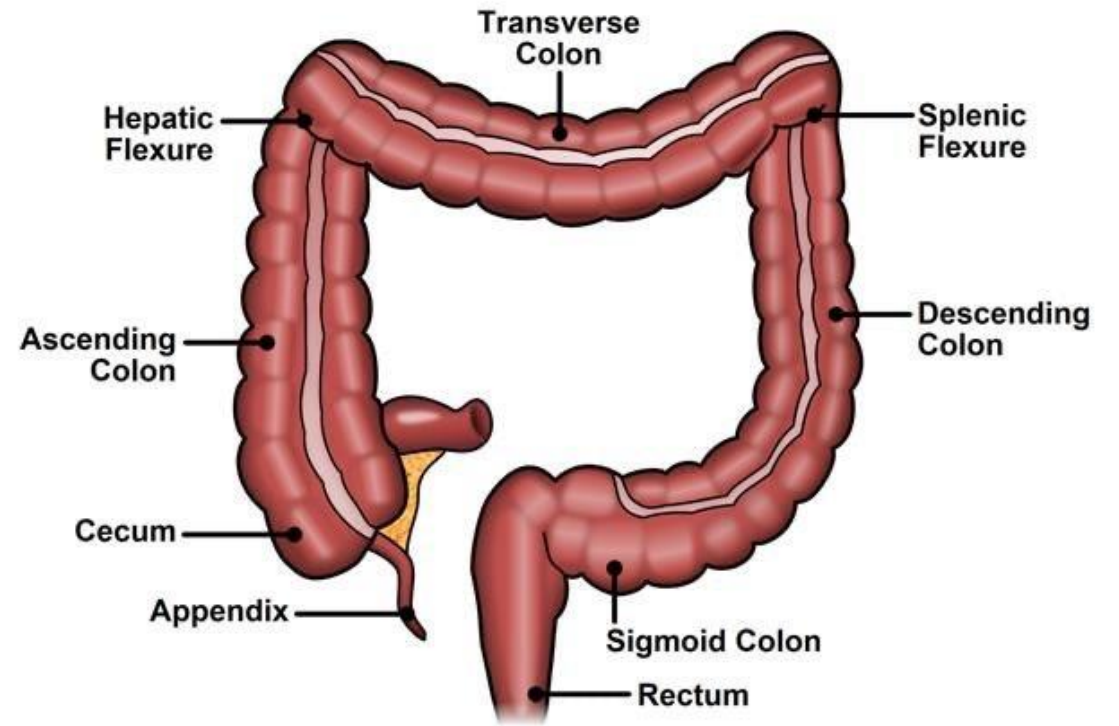
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# Background



- 4th most diagnosed cancer in Northern Ireland<sup>1</sup>.
- **Northern Ireland Bowel Cancer Screening Programme (NI BCSP)**
  - Biennial screening
  - 60-74 year olds
  - Faecal Immunochemical Test (120  $\mu$ g Hb/g)
- **UK National Screening Committee** – “Bowel cancer screening programmes should offer individuals between 50-74 years old ...”<sup>2</sup>.



**Figure 1:** Large intestine image

[1] : Northern Ireland Cancer Registry. “Colorectal cancer.” (2025), [Online]. Available: <https://www.qub.ac.uk/research-centres/nicr/> (visited on 20/02/2025).

[2]: UK National Screening Committee. “Adult screening - bowel cancer.” [Online]. Available: <https://view-health-screening-recommendations.service.gov.uk/bowel-cancer/> (visited on 12/103/2025).



# Objective

- Explore Alternative Screening Strategies:



- Starting Ages: 50, 52, 54, 56, 58, 60 years

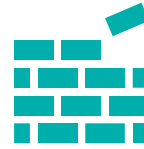


- FIT Thresholds: 120, 100, 80, 40, 20  $\mu\text{g Hb/g}$

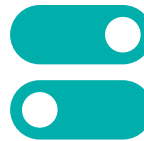
- Aims:



- Identify optimal screening strategies

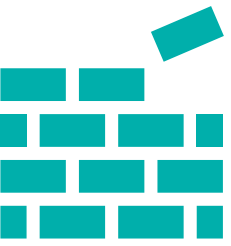


- Use a microsimulation model designed for the NI population



- Communicate findings via an interactive R Shiny Dashboard





# Modelling Approach



- Individual-level microsimulation



- Time-to-event modelling



- Bayesian calibration to real-world data



- Run on Kelvin2 High-Performance Computing cluster



# Output Metrics



- Capacity outputs:

- FIT invites,
- Positive FITs,
- Colonoscopies



- Economic outputs:

- Costs,
- QALYs
- ICERs



- Analyses Performed:

- Scenario Analysis
- OWSA
- PSA



# The challenge...



- Complex model outputs



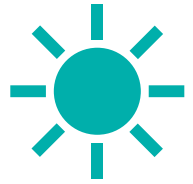
- Diverse stakeholders



- Need for actionable insights



# Dashboard Solution



- Transparency



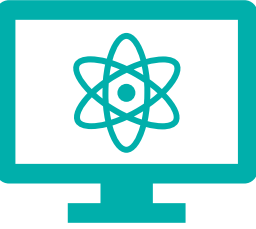
- Interactivity



- Communication

# Live demo!





# Lessons learned



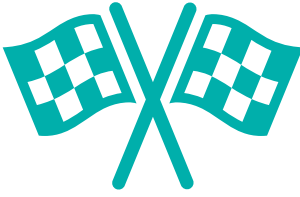
- Feedback shaped dashboard design



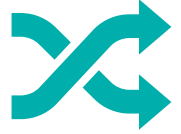
- Usability testing = better understanding



- Importance of early stakeholder involvement



# Conclusions



- Value of combining advanced modelling and intuitive tools



- Impact on policy and planning



- What's next?
  - Expanding age range
  - Integrating new data

# Thanks for listening!



Funders:

