

# Costing of colorectal cancer screening (topic presentation)

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Työn saa tallentaa ja julkistaa Aalto-yliopiston avoimilla verkkosivuilla. Muilta osin kaikki oikeudet pidätetään.

# Colorectal cancer (CRC)

- The second most common cancer for mortality in Finland.
- Develops in a colon or a rectum, nearly always via adenoma-carcinoma sequence:
  - Healthy cell -> benign tumor (adenoma) -> cancer
  - Can take years to develop
- Detecting CRC early can decrease incidence/mortality.

# Screening for CRC (1/2)

- Aims to reduce CRC mortality through early detection.
- Is more cost-effective than no screening.
- In 2004-2016, CRC screening in Finland employed guaiac-based fecal occult blood test (gFOBT).
  - No effect on CRC mortality was detected.

# Screening for CRC (2/2)

- Many studies suggest using faecal immunochemical test (FIT) instead of gFOBT.
  - Both aim to detect hidden blood from stool, but use different techniques.
  - FIT is more sensitive to detect CRC/adenomas, but more expensive.
- In April 2019, a new CRC screening programme using FIT was launched in Finland.

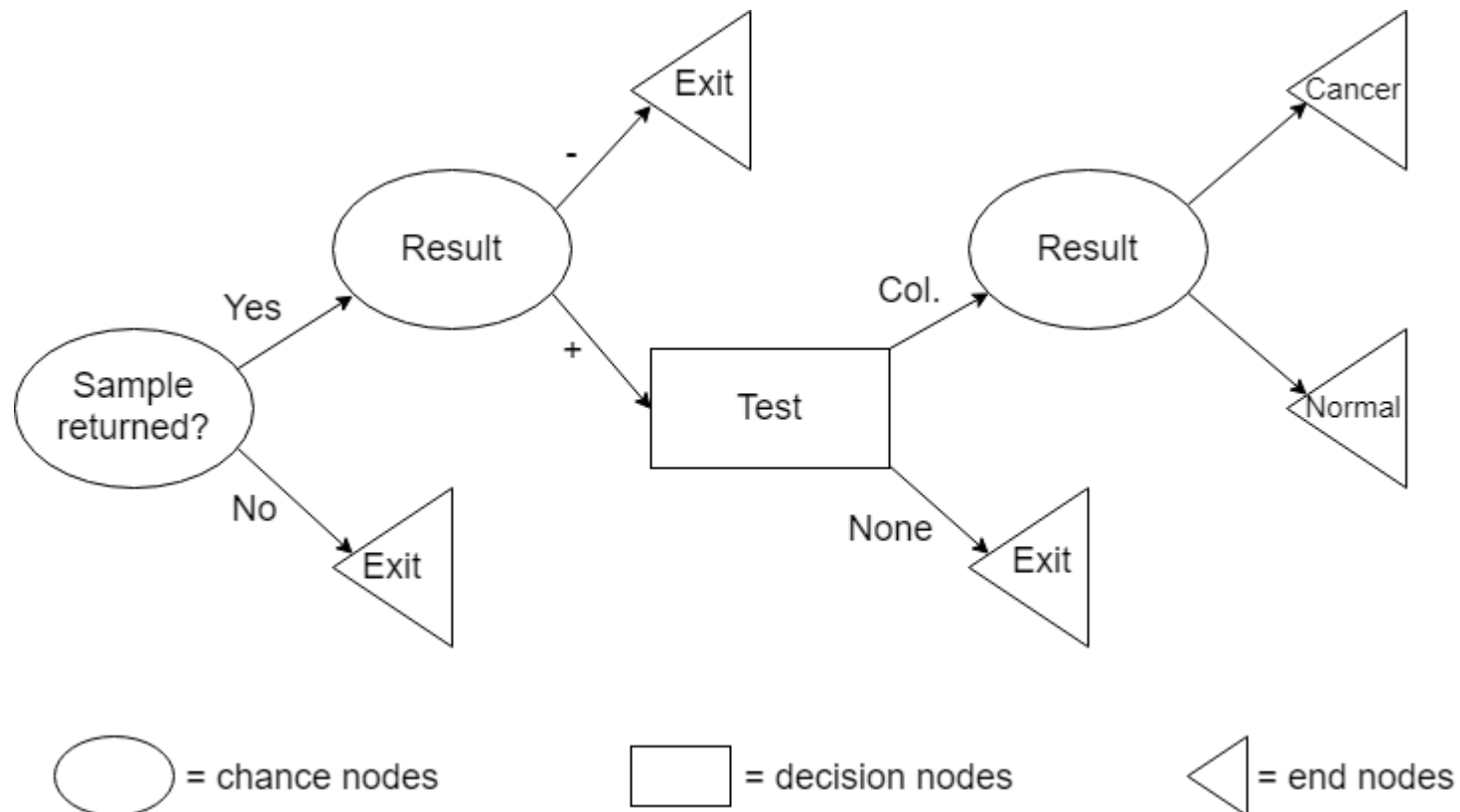
# Objectives

- To develop illustrative analysis in the costing of the new CRC screening programme.
- To explore visualization techniques.

# Limitations

- Only illustrative costs considered.
- Costs of the process provided by third-party-payer perspective (i.e. direct costs only).
- Simplified decision tree of the screening process:
  - Colonoscopy is the only option of further examinations.
  - No reinvitation, if the sample is not returned.

# Current sketch of a decision tree of the screening process



# Methods and tools

- Decision programming
  - Recently developed approach for solving multi-stage decision problems with uncertainties.
- Relevant costs/data from Finnish Cancer Registry and from other CRC screening programmes.
- Implementation in Julia.



# Resources

- Finnish Cancer Registry (<https://cancerregistry.fi/>)
- A. Salo, J. Andelmin and F. Oliveira. Decision Programming for Multi-Stage Optimization under Uncertainty, manuscript, 2019.

# Schedule

14/06/2019	Topic presentation
06/2019	Literature review and familiarizing with the methods
07-08/2019	Writing the thesis and implementing the model
During autumn 2019	Presenting the results and finishing the thesis