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Potential global loss of life expected due to COVID-19 disruptions to organised colorectal cancer screening

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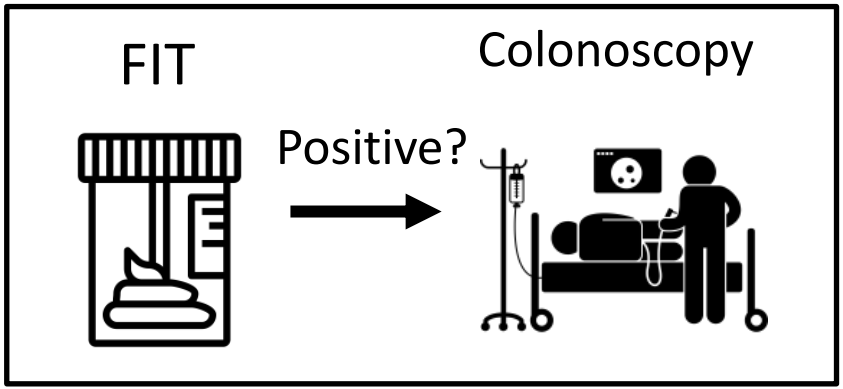
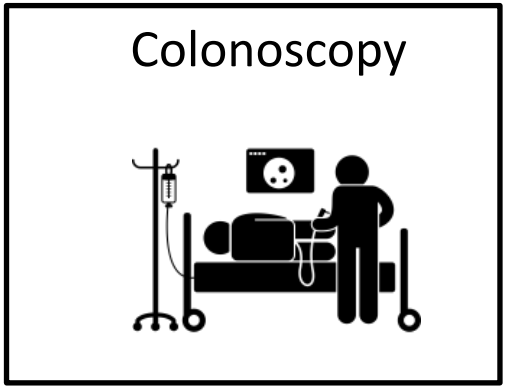
Colorectal cancer screening

Faecal-based testing



Colonoscopy-based



During COVID-19 pandemic:

- Temporarily pause
- Decreases in screening

Aim:

Provide global model-based estimates of additional CRC cases and deaths due to decreases in organised screening in 2020 and quantify the impact of catch-up screening

Methods

Review

Country-level organised screening program data

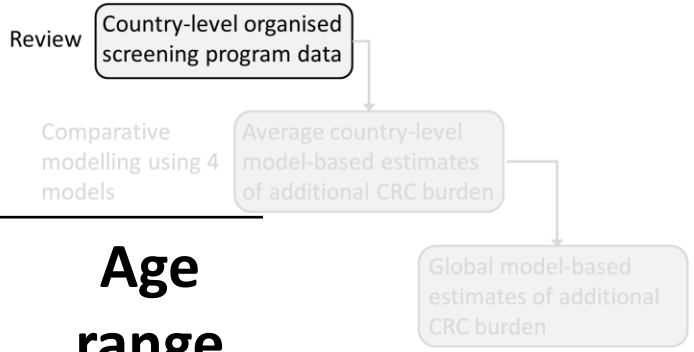
Comparative modelling using 4 models

Average country-level model-based estimates of additional CRC burden

Global model-based estimates of additional CRC burden

Review

Obtained data:

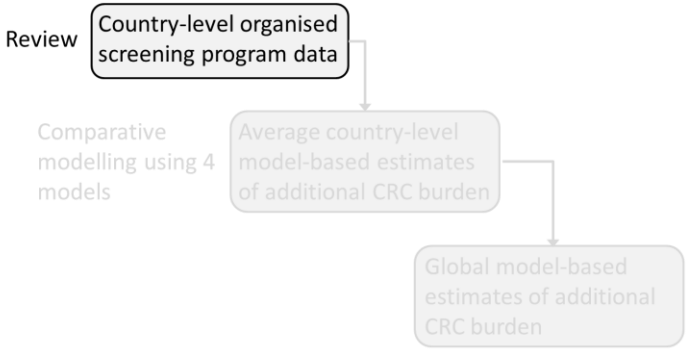


Screening category	Test	Frequency	Age range
1	FIT	Annual	50-74
2	FIT	Biennial	50-69
3	FIT	Biennial	50-74
4	FIT	Biennial	60-69
5	Colonoscopy	Every 10 years	50-70

Review

Obtained data:

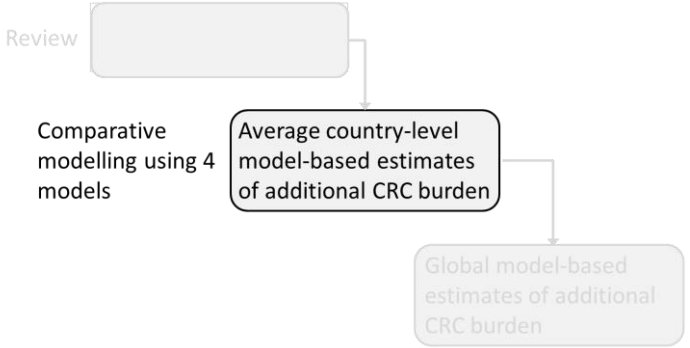
- Test
- Frequency
- Screening age range
- Participation rates pre-pandemic
- Participation rates during pandemic
  - Unavailable? Statistically imputed



Country-level aggregated estimates

4 microsimulation models

- ASCCA (the Netherlands)
- MISCAN-Colon (the Netherlands)
- OncoSim (Canada)
- Policy1-Bowel (Australia)



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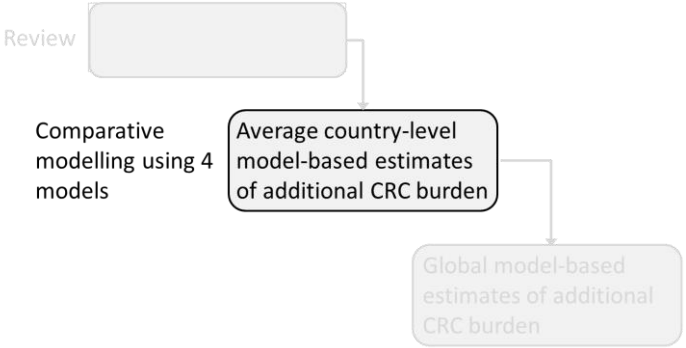

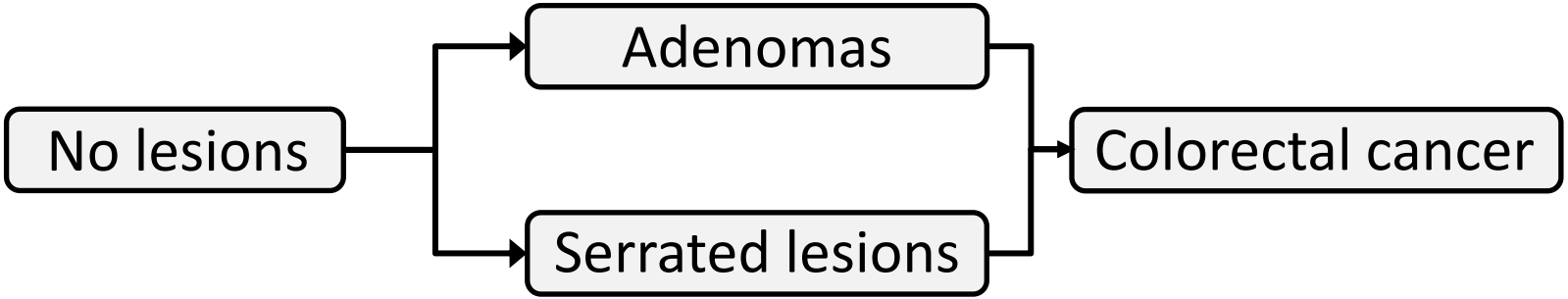

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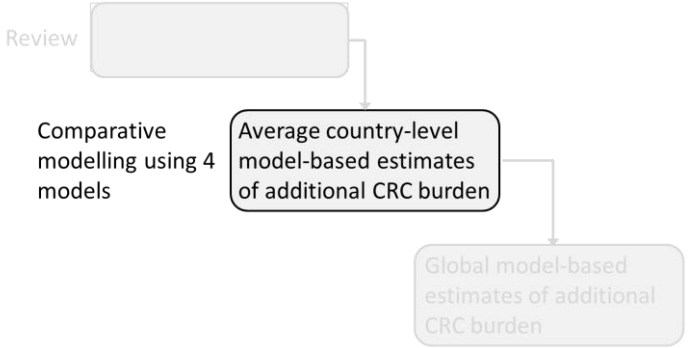

3 Scenarios:

Usual screening 2020

Screening decrease in 2020

Screening decrease in 2020 & catch-up in 2021

Country-level aggregated estimates

3 Scenarios:

Usual screening 2020

Screening decrease in 2020

Screening decrease in 2020 & catch-up in 2021

Outcomes:

- Excess CRC cases/deaths due to screening decreases
- Adjusted with WHO population projections & Globocan age-standardized rates of CRC burden

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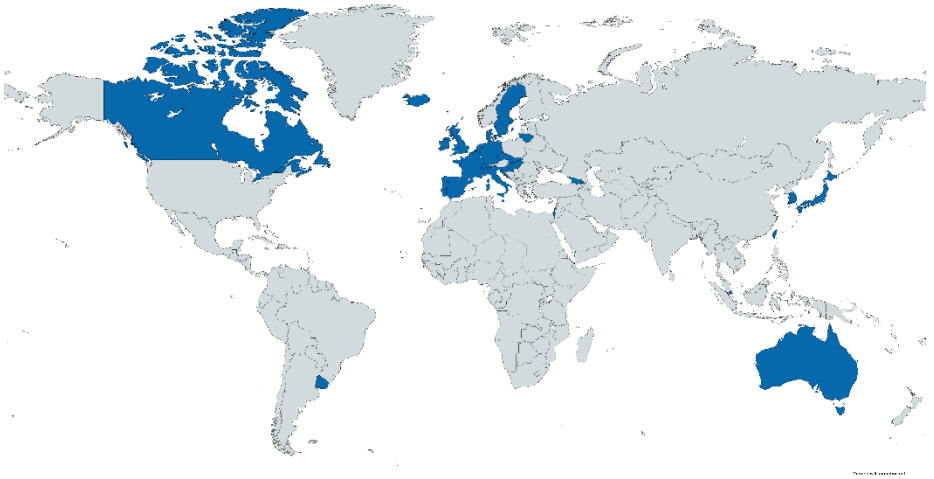
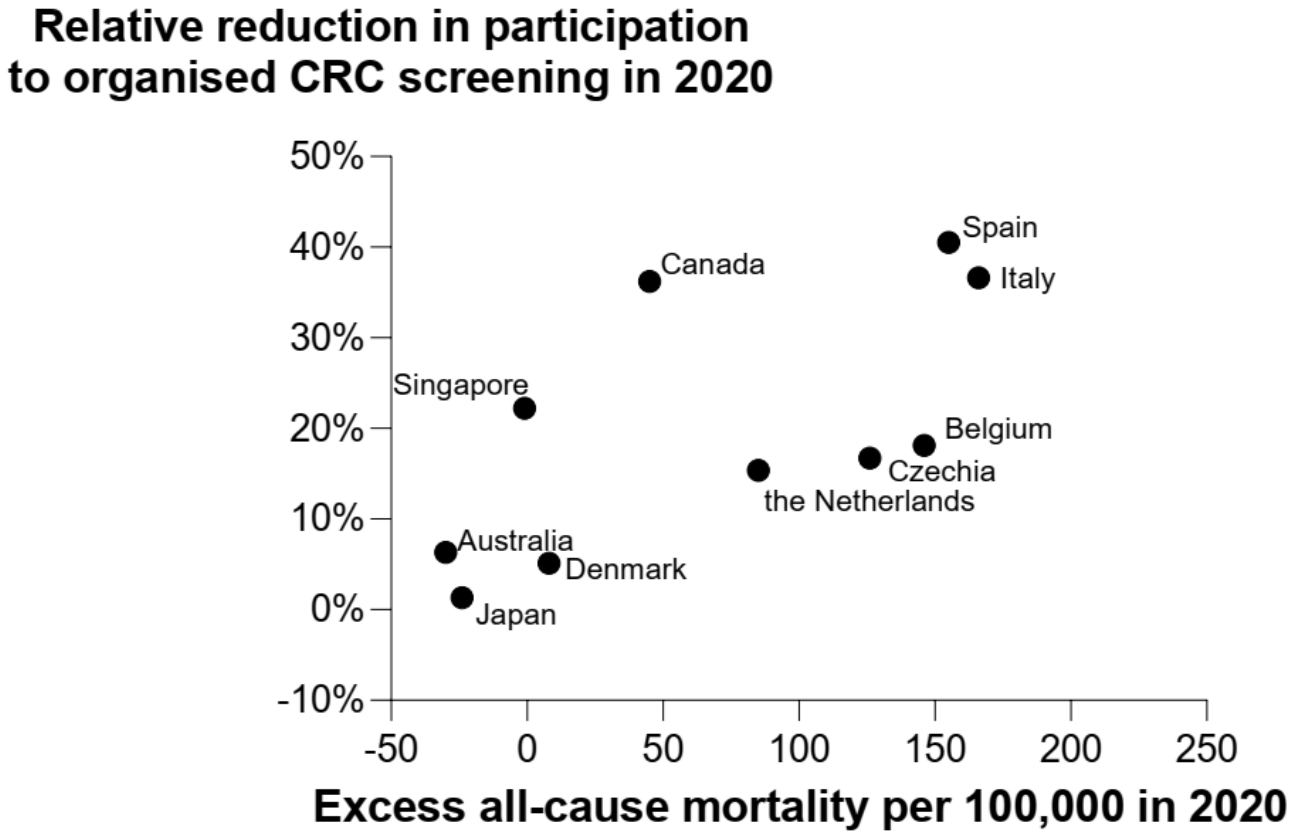
Global model-based estimates of additional CRC burden

Results - review

Included countries & regions	
Test	FIT
Interval	Annual/biennial
Age range	Start: 40-60 End: 54-80
Pre-2020 participation rates	14-75%



Relative decreases in participation



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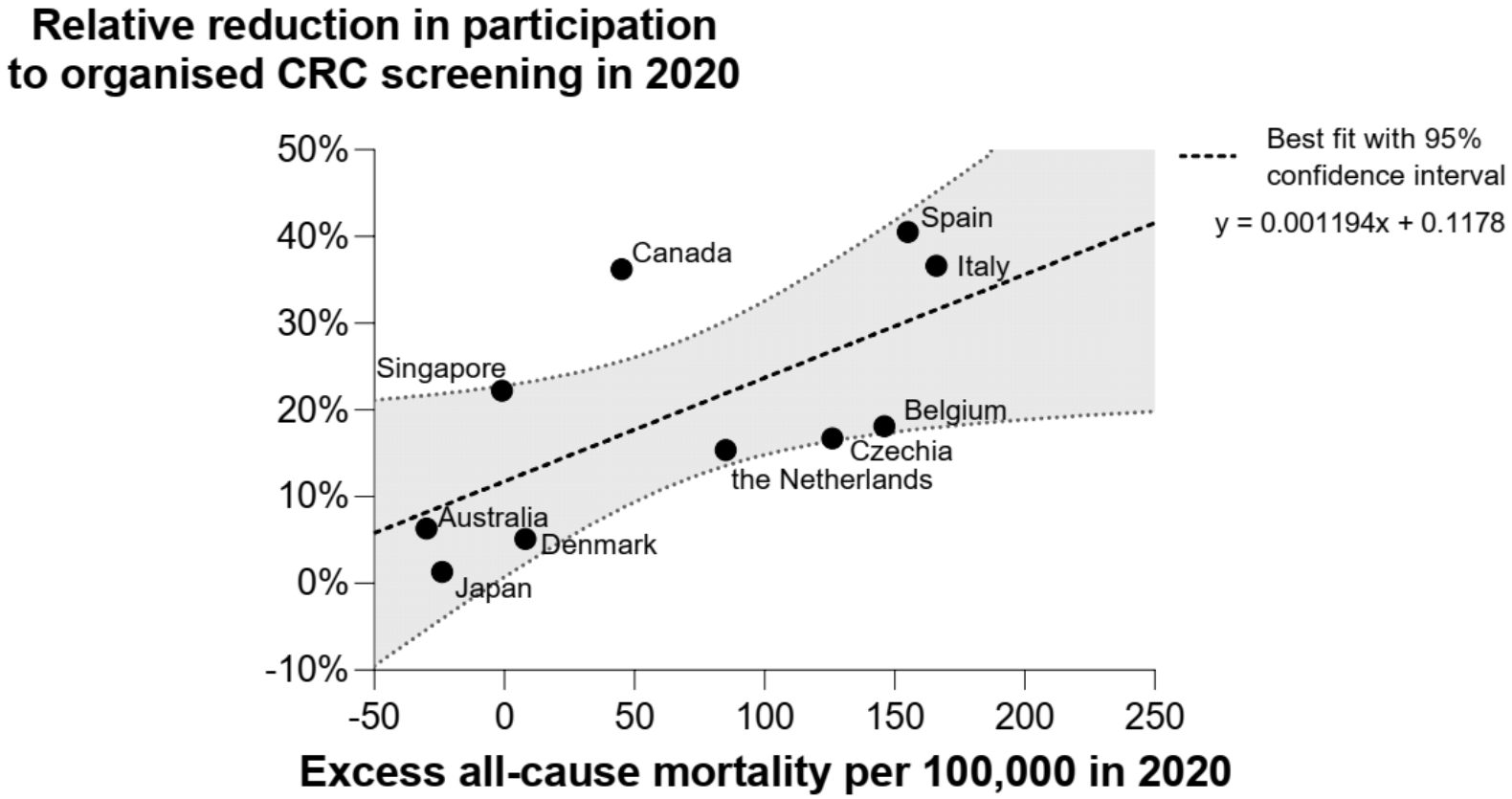
Relative decreases in participation



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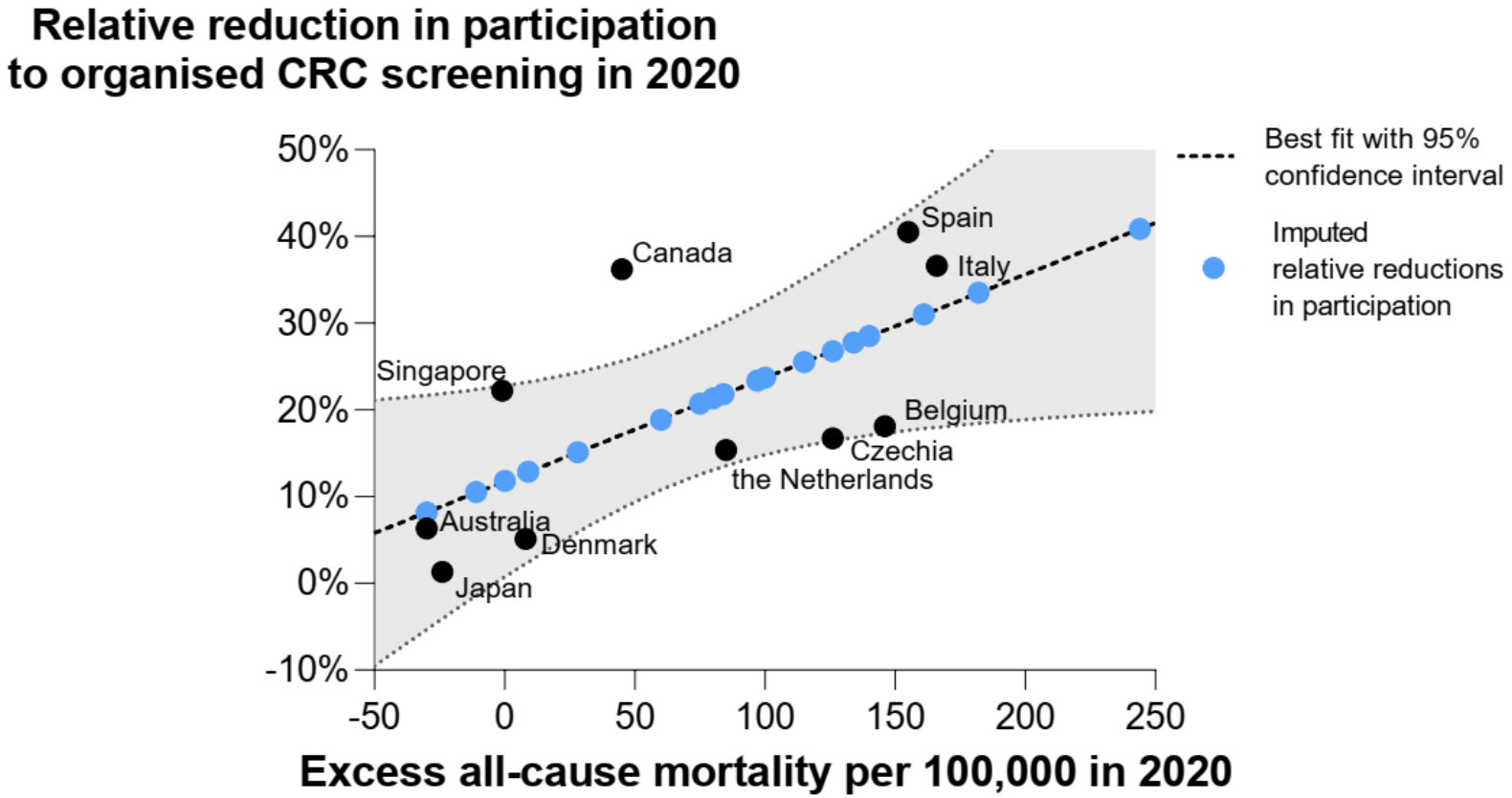

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Results – long-term CRC burden

- Global deficit of 7.4 million faecal screens

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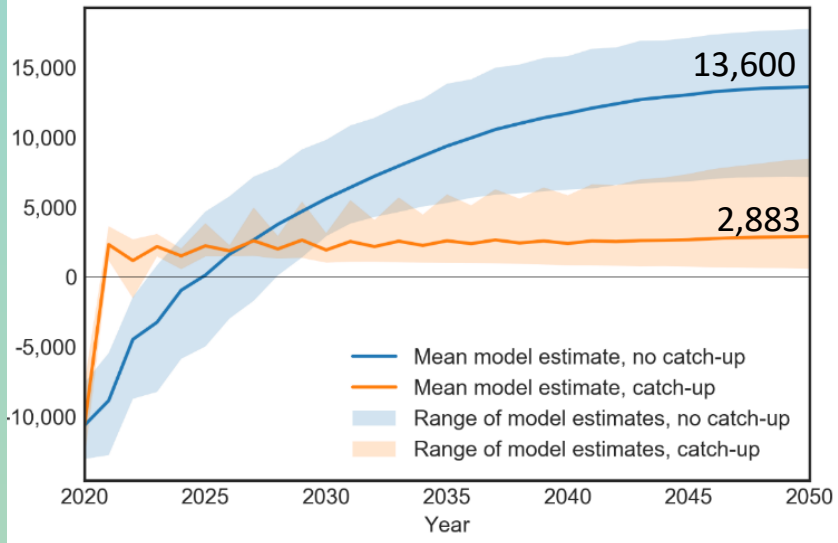
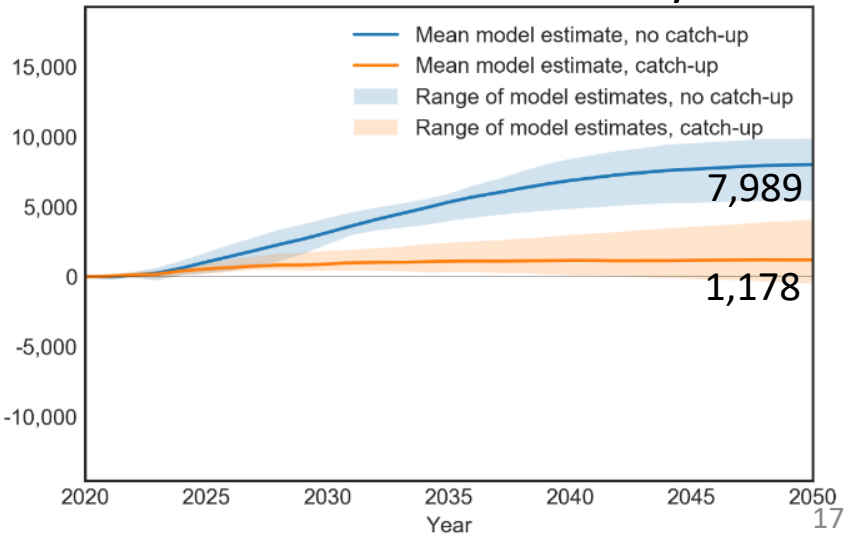
Additional CRC incidence



Additional CRC mortality



Results – long-term CRC burden

- Global deficit of 7.4 million faecal screens

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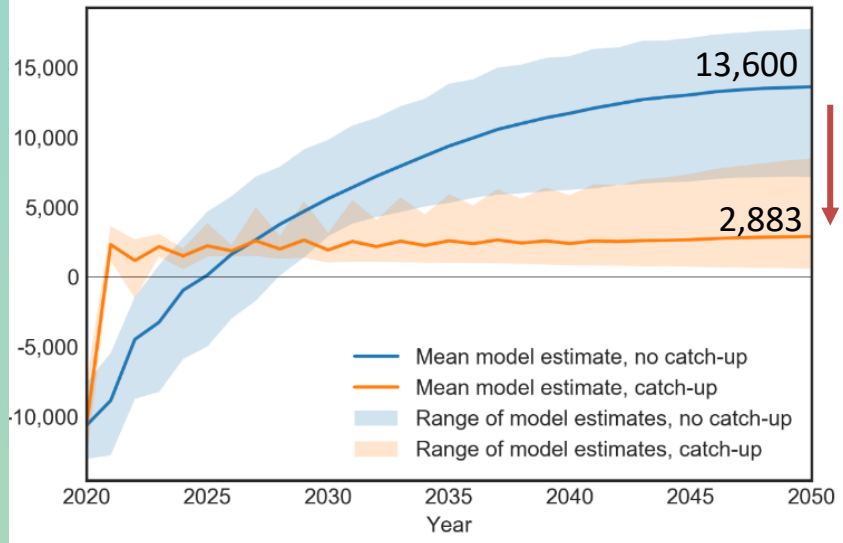
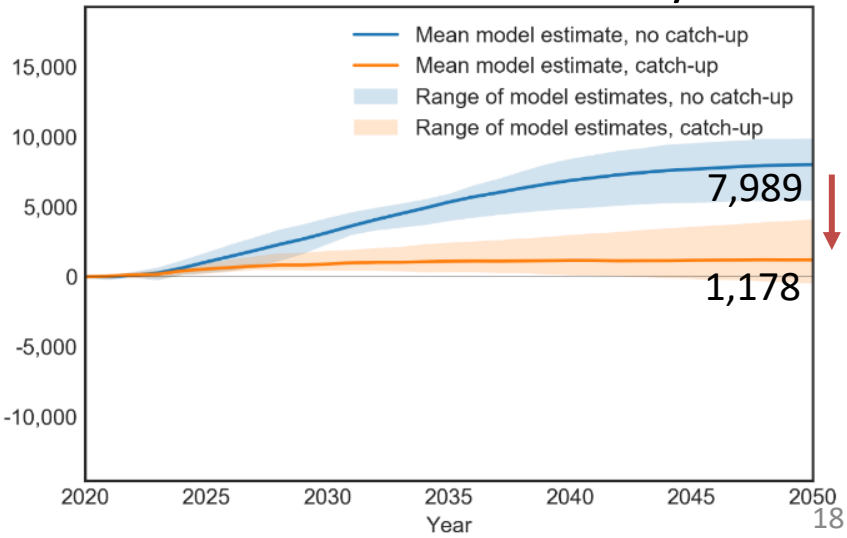


Additional CRC mortality



Conclusion

- Findings show possible global impact of screening decreases in 2020 over 2020-2050.

- Catch-up screening should be strongly encouraged, where health resources can be allocated.

Acknowledgements

I-PaRCS (formerly the COVID-19 and Cancer Global Modelling Consortium (CCGMC; www.ccgmc.org)

ICSN International Cancer Screening Network
The Daffodil Centre
A partnership between Cancer Council and The University of Sydney
UICC global cancer control
International Agency for Research on Cancer
World Health Organization
CANADIAN PARTNERSHIP AGAINST CANCER
PARTENARIAT CANADIEN CONTRE LE CANCER

"Improving healthcare through medical decision modeling"

We use modeling for:

- Evaluation of cancer screening programs
- Health economics
- Predictions for decision support
- Patient-level micro-simulations
- Personalization of treatment regimes
- Optimization of trial design

Thank you for your attention

For more information visit www.decisionmodelingcenter.nl
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