

P1.014: Potential benefits and harms of a national low-dose CT lung cancer screening program in France

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INTRODUCTION

In France, 26% of adults currently smoke cigarettes and thus lung cancer remain a major public health burden.^{1,2}

In 2026, France launched a pilot lung cancer screening program to guide the development of national program by 2030.

Study goal: To estimate the long-term benefits, harms, and efficiency of alternative lung cancer screening eligibility criteria, providing evidence to inform France's national screening policy.

METHODS

Design

Microsimulation modeling approach using an established CISNET lung cancer model^{3,4} adapted to the French population.

Study population

French adults aged 30-99, reflecting national patterns of smoking and other lung cancer risk factors in 2020.⁵

Scenarios (32 total)

12 pack-year-based, 12 risk-model-based, 6 NELSON-like, and 2 French pilot criteria. Screening starts at 50 and ends at 74 or 80, following the French pilot schedule (2 annual screens then biennial screening).

Study outcomes

Benefits: lung cancer deaths averted and life-years gained.

Harms: false positives and overdiagnosis
Outcomes assessed over 20 years.

Sensitivity analysis

Annual screening; limiting screening to those with ≥ 5 years life expectancy

DISCUSSION AND CONCLUSION

Risk-model-based approaches would be more efficient at preventing lung cancer deaths and saving life-years compared with the current French pilot criteria and pack-year and NELSON-like criteria.

Extending screening to age 80 may increase benefits but also overdiagnosis, while requiring ≥ 5 years of life expectancy for screening would preserve most benefits and reduce overdiagnosis.

As screening in France progresses from a pilot to a national program during 2026-2030, the results from this study can support consideration of potentially more efficient strategies, including the use of risk prediction models for eligibility.

REFERENCES & ACKNOWLEDGEMENTS

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RESULTS

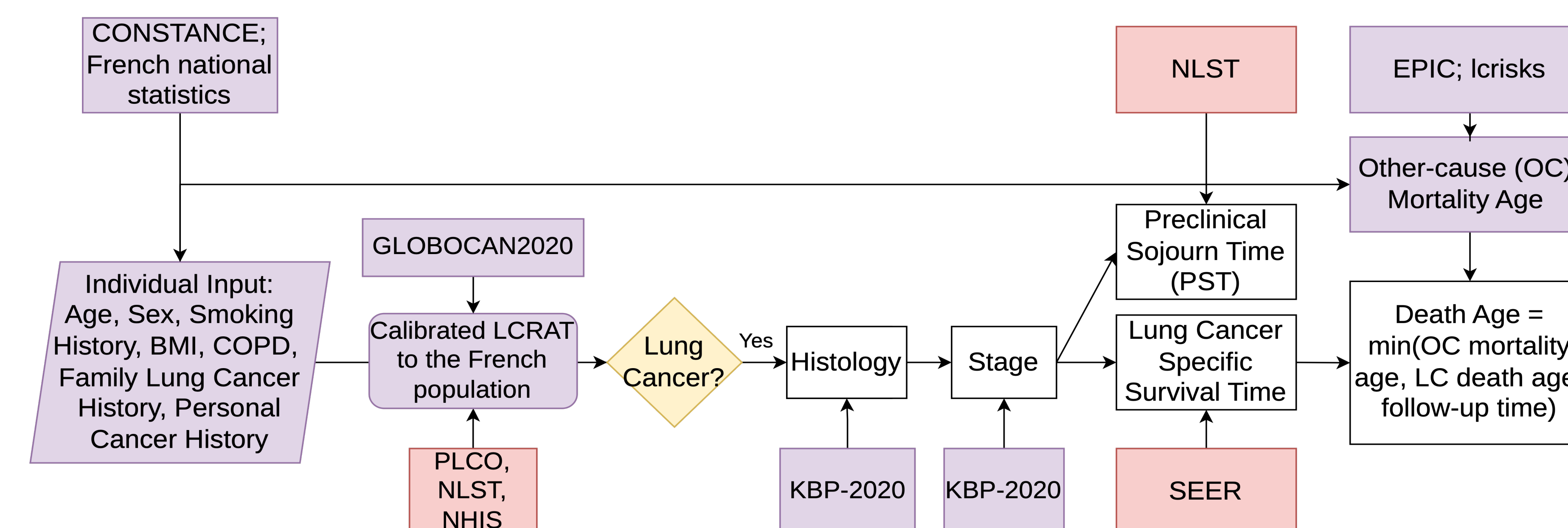


Figure 1. Flowchart of the French lung cancer natural history model (LuCID-France)

- The LuCID-France model reproduced observed age- and sex-specific patterns of lung cancer incidence, lung cancer mortality, and all-cause mortality in France.
- Over 20 years, French pilot criteria would require 45.3 million LDCT screens, preventing 90,500 lung cancer deaths and gaining 822,000 life-years.
- Risk-based criteria with 0.8% PLCOm2012 risk cut-offs outperform the pilot criteria, with 1.9 million fewer screens, 7,800 more lung cancer deaths averted and 51,500 more life-years gained, but increasing overdiagnosis rate by 0.3%.
- Screening to age 80 or annual screening increase benefits but also overdiagnosis. Limiting screening to those with ≥ 5 -year life expectancy would preserve most benefits while reducing overdiagnosis by $>60\%$.

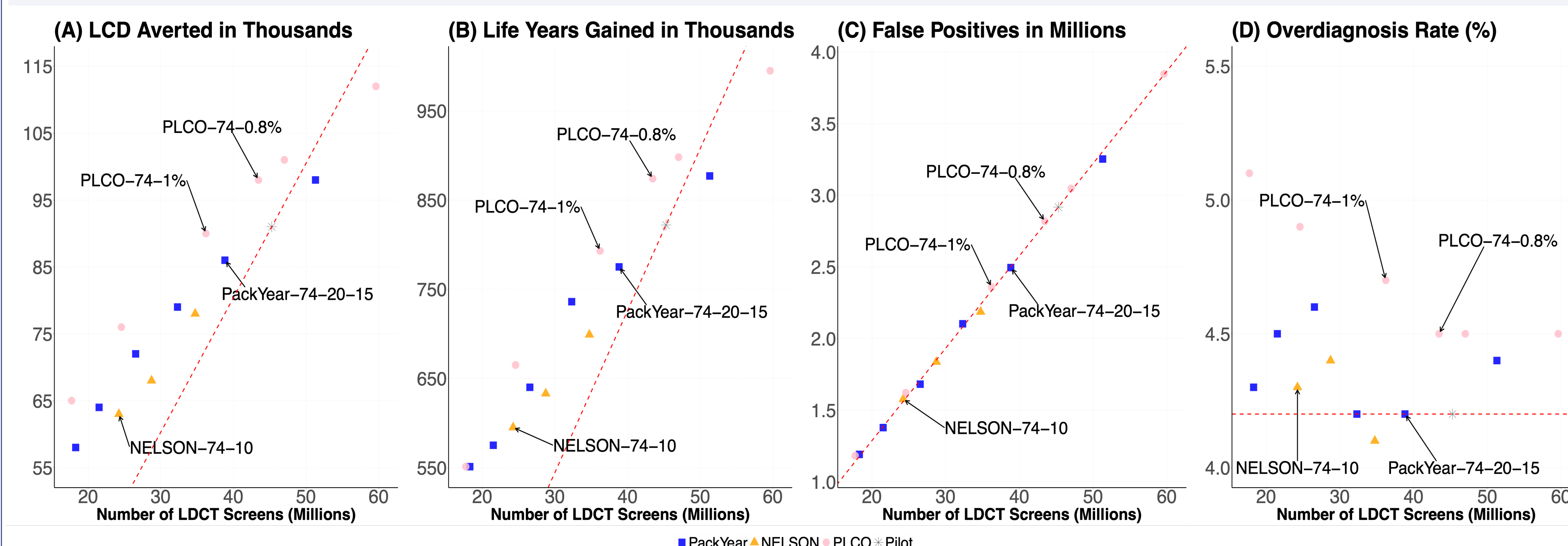


Figure 2. Number of low-dose computed tomography (LDCT) screens vs. lung cancer deaths (LCD) averted and life years gained (Panels A and B) and number of false-positive and overdiagnosed rates (Panels C and D) for screening scenarios with ending age at 74