

Recruitment strategies for lung cancer screening; A randomized trial in the 4-IN-THE-LUNG-RUN study

C. van der Aalst¹ ; J. Hubert¹; I. van Den Bosch¹; R. Kaaks²; V. Katzke²; J. Espinas³; MO. Cabrera³; U. Pastorino⁴; G. Sozzi⁴; Taube C⁵; G. Garcia⁶; JW. Gratema⁷; A. Schmitz⁸; S. Oudkerk⁹; M. van Leeuwen¹⁰; D. Baldwin¹¹; S. Janes¹²; K. ten Haaf¹; M. Oudkerk¹³ ; H. de koning¹ (1) Public Health, Erasmus University Medical Center, Rotterdam, Netherlands; (2) German Cancer Research Center, Heidelberg, Germany; (3) Catalan Institute of Oncology, Barcelona, Spain; (4) Istituto Nazionale dei Tumori, Milano, Italy; (5) University Hospital Essen, Germany; (6) Gustave Roussy, Paris, France; (7) Gelre, Apeldoorn, Netherlands; (8) Antoni van Leeuwenhoek, Amsterdam, Netherlands; (9) Link2Care, Bilthoven, Netherlands; (10) NijSmellinge, Drachten, Netherlands; (11) University of Nottin, Notting, United Kingdom; (12) University of London, London, United Kingdom; (13) iDNA, Groningen, Netherlands

BACKGROUND:
Low-dose CT (LDCT) screening reduces lung cancer mortality in high-risk populations. Current smokers and individuals with lower socioeconomic status (SES) are disproportionately represented among those at high risk, although these people are less likely to participate in screening programs. More tailored approaches, incorporating SES- and sex-specific preferences, may improve risk-based selection and program effectiveness.

OBJECTIVE:
To evaluate different recruitment strategies for identifying and engaging high-risk individuals eligible for lung cancer screening within the 4-IN-THE-LUNG-RUN study.

METHODS:
336,860 Dutch individuals aged 60-79 years were randomised to one of three recruitment strategies (Figure 1):
1) Standard paper invitation
2) Standard online invitation
3) Tailored online invitation
! Participants from outside the screening regions could also self-enrol online.
Eligibility criteria → men or women, aged 60-79 years, with a very high risk for developing lung cancer, reflected by:
1) Current or former smokers with ≥35 pack-years who quit smoking <10 years ago, or
2) $PLCO_{m2012}$ 6-yr risk ≥2.6%

Figure 3 – Proportion of respondents who were eligible (%)

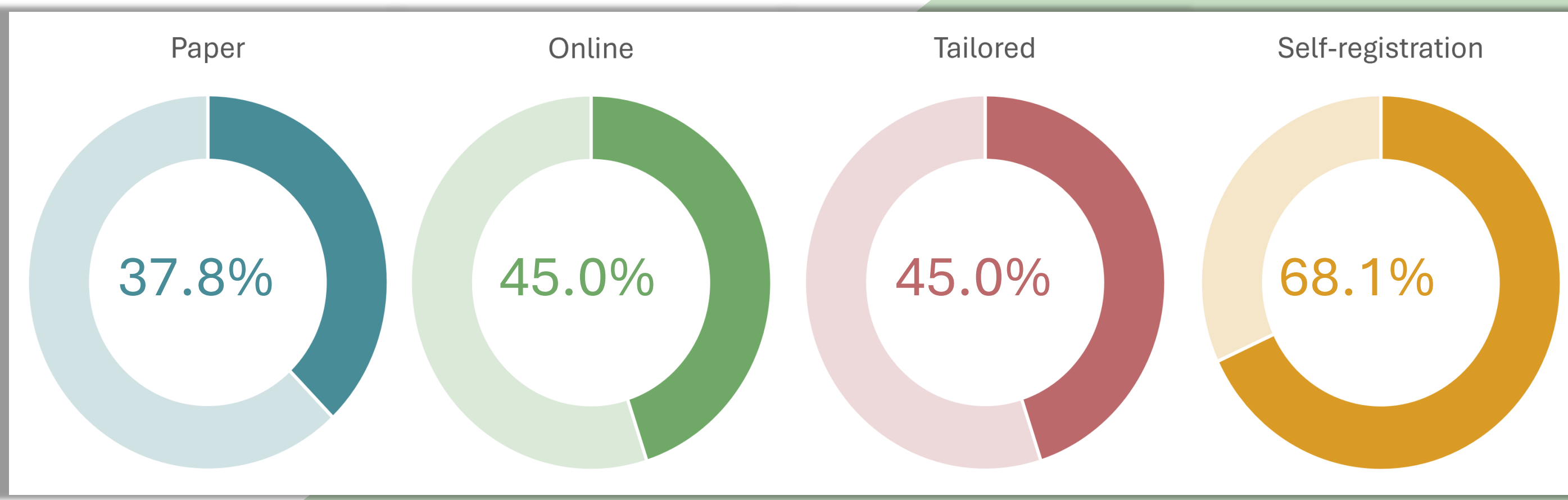


Figure 4 – Overall proportion of eligible participants by SES

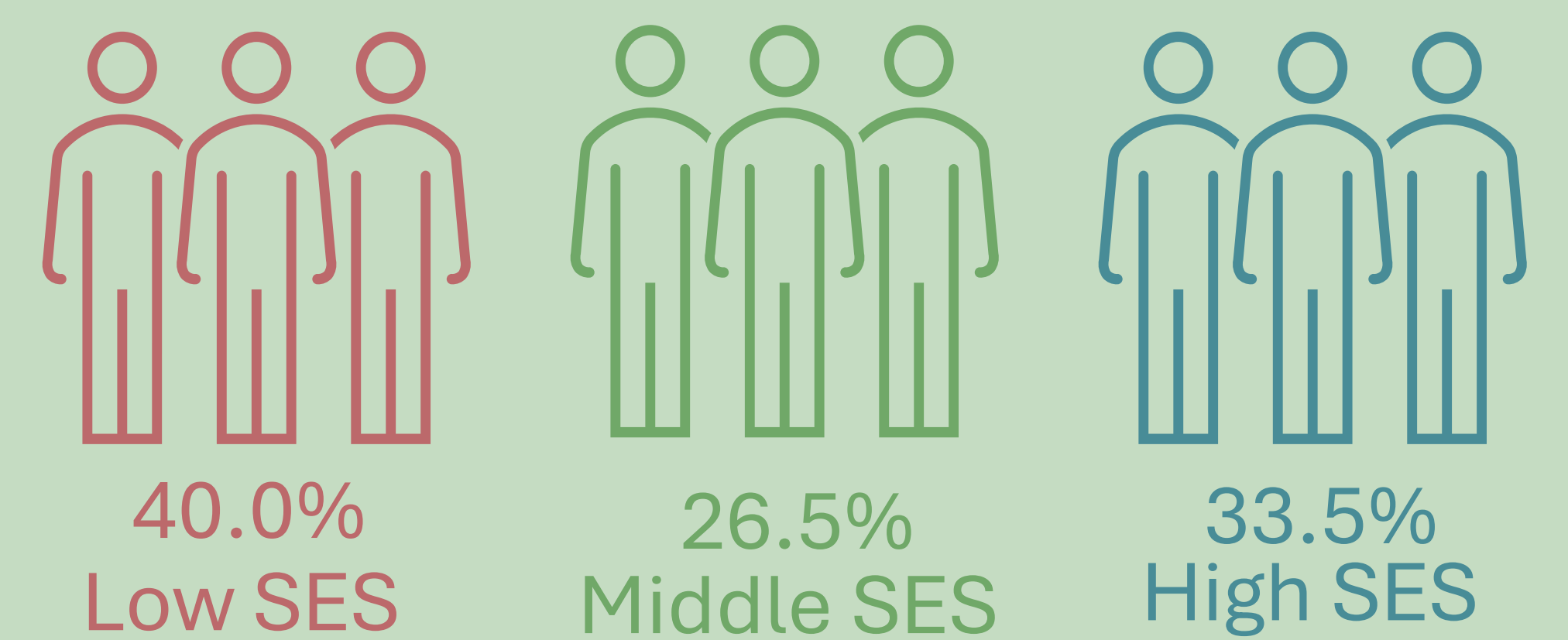


Figure 1 – Recruitment methods

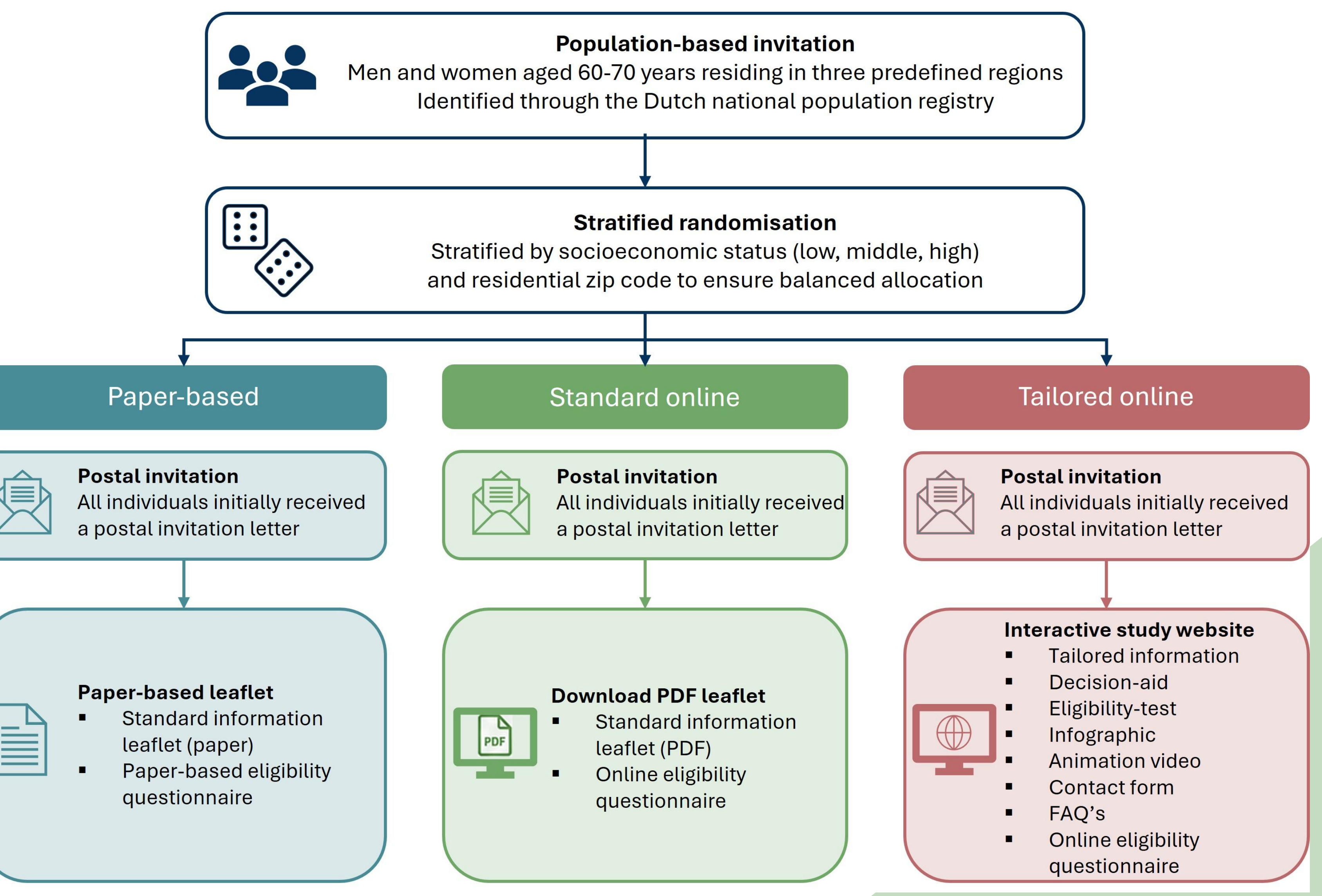
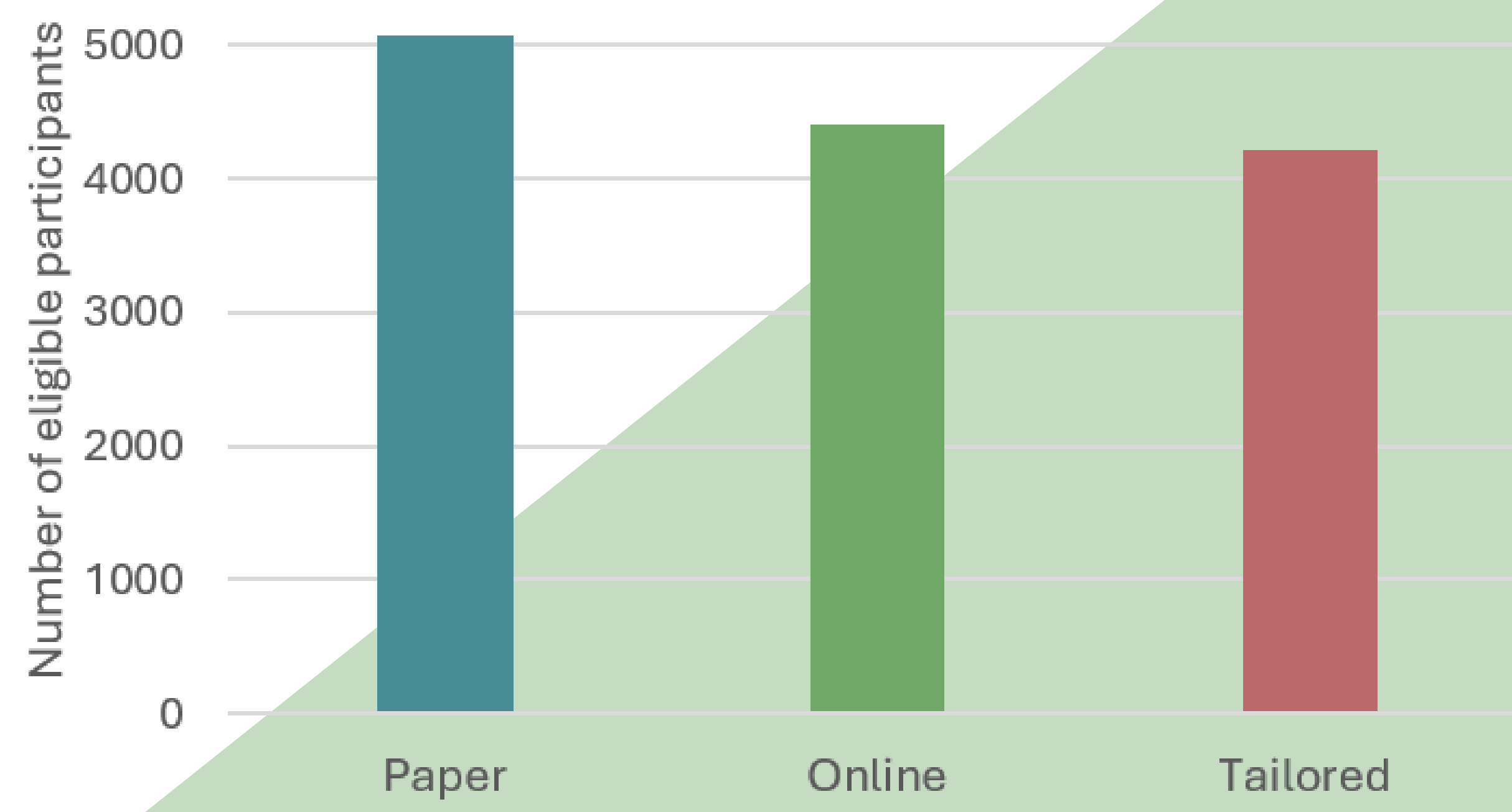


Figure 2 – Absolute number of eligible participants (N)



RESULTS:
✓ 35,755 (10.6%) individuals responded
✓ 15,840 (44.3%) were eligible for screening
✓ Paper group versus online group(s)
* Highest absolute number of eligible participants (Figure 2)
* Lowest proportion of eligible participants (Figure 3)
✓ Highest proportion of eligible participants in lowest SES group (Figure 4)
✓ Comparable gender distribution across recruitment strategies (52% men vs. 48% women)

CONCLUSION:
Online recruitment strategies are highly feasible and potentially more cost-effective in a population at high risk for developing lung cancer, often including individuals who are more likely to smoke and have a lower SES, as compared to a paper-based recruitment. However, retaining a paper-based recruitment option remains essential to ensure inclusive and equitable access, particularly as national lung cancer screening programmes are implemented.

WHY DOES 4-ITLR MATTER?
Optimising recruitment strategies could improve the efficiency of future lung cancer screening programmes.