



Disparities in Lung Cancer Screening: The Impact of Smoking Behavior on Eligibility

Jonathan Joasil^a, Joan Perez^a, Ashwin Kulshrestha^a, Tara Ivic-Pavlicic^b, Emanuela Taioli^{a,b,c}, Raja Flores^a, Stephanie Tuminello^{a,b,c}

Icahn School of Medicine at Mount Sinai, New York, NY: ^aDepartment of Thoracic Surgery; ^bInstitute for Translational Epidemiology, ^cTisch Cancer Center

BACKGROUND

LDCT screening reduces lung cancer mortality, yet uptake remains low and disparities in screening eligibility and access persist.

Differences in smoking intensity and duration across demographic groups may contribute to these disparities.

OBJECTIVE

To examine how smoking intensity and duration vary across demographic groups, assess their relationship with screening eligibility, and evaluate whether alternative eligibility criteria improve capture of early-stage lung cancer

METHODS

Design: Retrospective observational study of **995 adults** who underwent resection for primary lung cancer



Eligibility criteria compared:

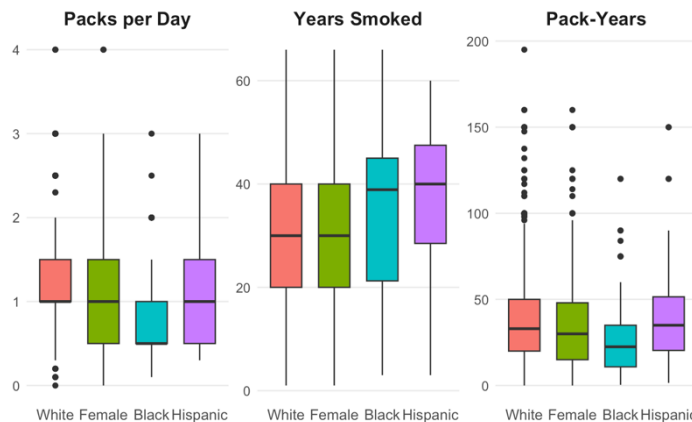
1. AATS/USPSTF (period-specific)
2. One PPD (≥ 1 pack/day)
3. Upper 75th (smoking $\geq 75\%$ of lifetime)
4. 20 YS (≥ 20 years smoking)

Linear regression: demographics $\rightarrow$ smoking behaviors

Logistic regression: demographics $\rightarrow$ odds of eligibility

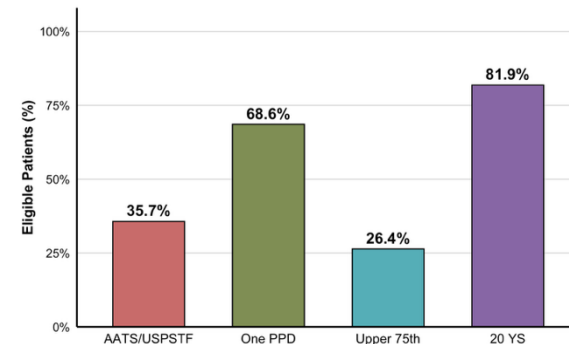
RESULTS

Smoking Behaviors Differ Across Demographic Groups



Early-Stage Disease Capture

Differences remain pronounced amongst early-stage cases



CONCLUSIONS



Smoking intensity and duration differ across demographic groups and influence lung cancer screening eligibility



Incorporating duration-based criteria may expand screening eligibility among female and racial/ethnic minority populations and increase early-stage lung cancer detection

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Background

- Lung cancer remains the leading cause of cancer-related death in the United States and worldwide, with substantially better survival when diagnosed at an early stage.
- LDCT screening reduces lung cancer mortality, but screening uptake remains low despite expanded eligibility criteria.
- Racial and ethnic disparities in screening eligibility and screening receipt persist, in part because some populations tend to smoke fewer cigarettes per day over longer periods.
- Smoking intensity and duration may therefore influence which patients are captured by current packyear-based eligibility criteria.

Objective

To examine how smoking intensity and duration influence lung cancer screening eligibility across demographic groups and whether alternative eligibility criteria could improve the inclusivity of screening.

Methods

Design and population

- Retrospective observational study of **995 current and former smokers** who underwent surgical resection for primary lung cancer at Mount Sinai Hospital from March 2012–June 2022.
- Smoking history and clinical variables were obtained from a prospectively maintained thoracic surgery database and supplemented by EHR abstraction.

Eligibility definitions

Patients were classified using:

- **Period-specific AATS/USPSTF criteria**
- **One PPD:** ≥ 1 pack/day
- **Upper 75th:** smoking duration $\geq 75\%$ of lifetime
- **20 YS:** ≥ 20 years of smoking

Analysis

- Linear regression evaluated demographic associations with smoking behaviors.
- Logistic regression evaluated demographic associations with screening eligibility.
- Early-stage disease capture was compared across eligibility definitions.