



## 2026 World Conference on Lung Cancer

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### **Precision LDCT Screening Beyond Smoking Criteria: Early-Stage Lung Cancer Detection Among Occupational and Environmental Risk Groups in Taoyuan, Taiwan**

**Chieh-Ying Yeh**

Senior Specialist

Department of Public Health, Taoyuan City Government, Taiwan

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## WHY TAOYUAN

- 2.35 million residents
- A major industrial hub in Taiwan
- Diverse occupational and environmental exposures



# INTRODUCTION

- ✓ **High Non-Smoker Burden:** Lung cancer remains the leading cause of cancer death in Taiwan. Over **70% of female lung cancer patients are never-smokers**.
- ✓ **National Screening Baseline:** National program covers individuals with heavy smoking history or 1st-degree family history.
- ✓ **Taoyuan Expanded Vision:** Launched in 2023, broadening eligibility to **14 additional high-risk groups** exposed to environmental and occupational carcinogens.

Goal: Identify early-stage lung cancers among high-risk populations not fully captured by conventional screening criteria.

# METHODS

## Study period

March 2023 to May 2024

## Participants

30,633 individuals

## Screening modality

Low-dose computed tomography (LDCT)

## Eligibility criteria :

Taoyuan City residents aged  $\geq 40$  years who met at least one of four high-risk categories :



### 1. Tobacco Exposure

Heavy smokers (aged 40–49)

\* Health Promotion  
Administration's lung cancer  
screening targets heavy smokers  
aged 50–74 years



### 2. Medical and Family History

personal history of pulmonary TB  
or breast cancer within 10 years.

2nd-degree family history of lung  
cancer or early-onset family  
cancer history (aged 40–44/49).



### 3. Occupational Risks

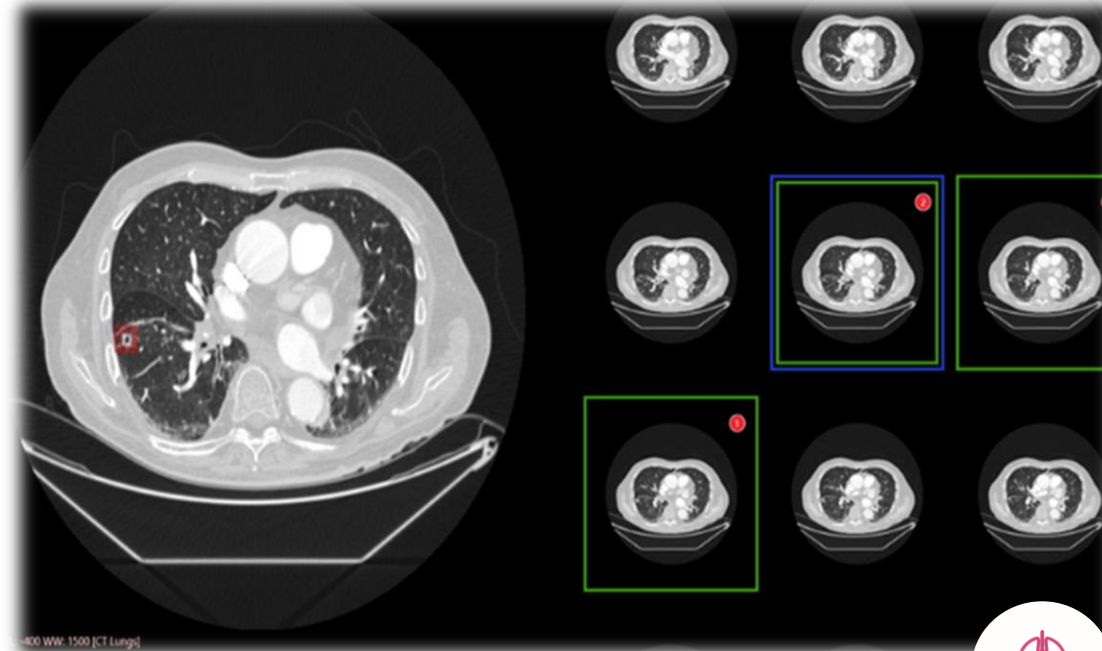
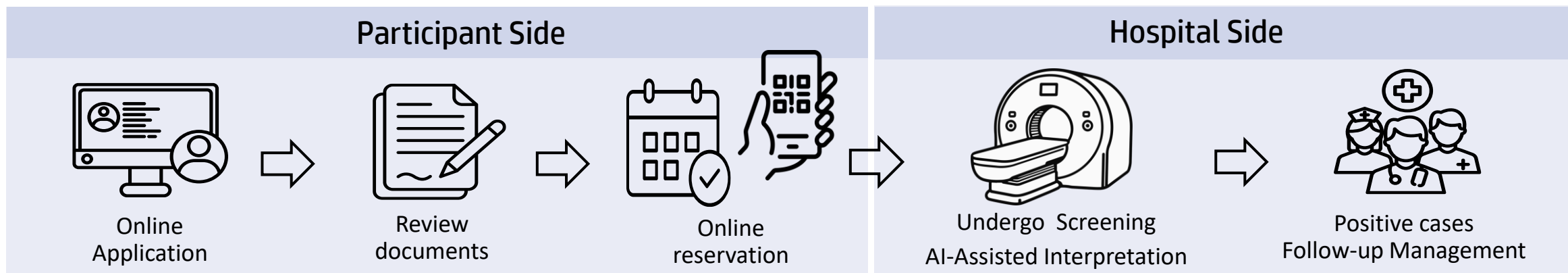
Police officers, firefighters,  
industrial park workers, and  
chemical exposure personnel.



### 4. Environment & Fumes Exposure

Residents in high PM2.5 industrial  
zones, commercial kitchen chefs,  
and temple workers exposed to  
incense.

## Screening process :



# RESULTS

**Positive screening result : Lung-RADS categories 3, 4A, 4B, or 4X**

**30,633**

**TOTAL SCREENED**  
Mar 2023 – May 2024

**7.14%**

**POSITIVE RATE**  
2,187 Cases (Lung-RADS  $\geq 3$ )

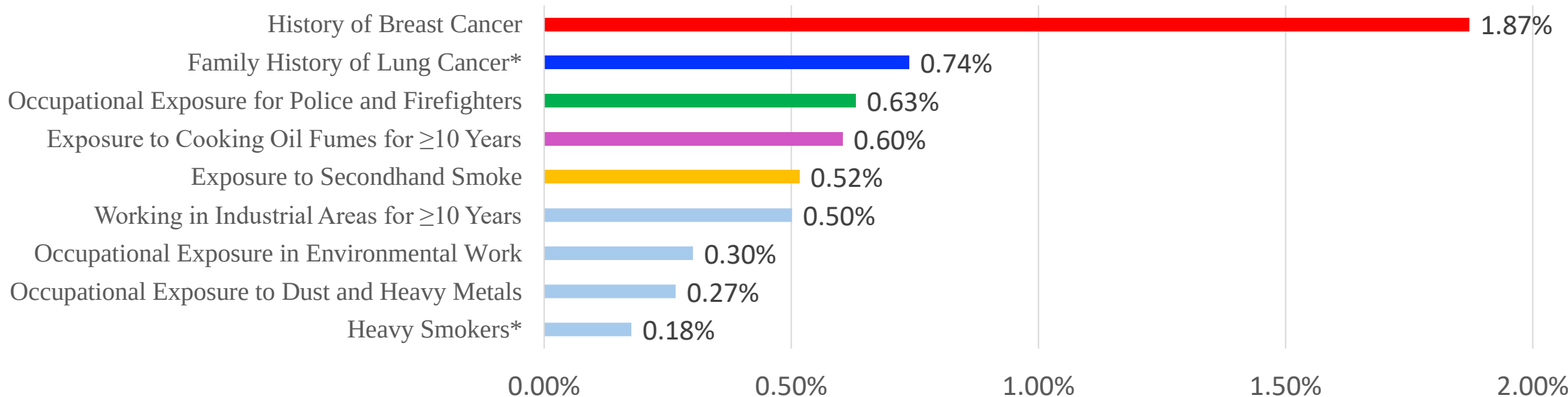
**136**

**CONFIRMED CANCERS**  
Pathologically verified

**0.44%**

**DETECTION RATE**  
PPV: 6.2%

## Detection Rate

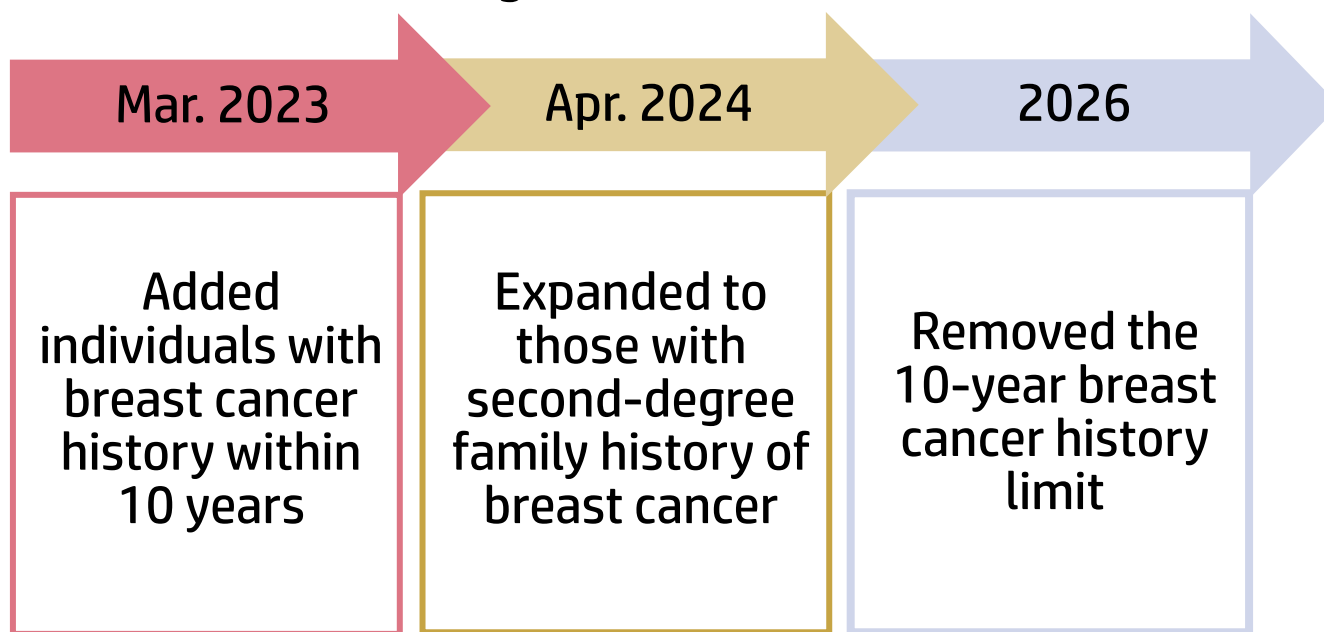


**\*Family history of lung cancer:** National screening eligibility is men aged 45–74 or women aged 40–74 with a family history of lung cancer (before 2025: men 50–74 or women 45–74). This figure includes only participants aged 40–44 years in Taoyuan City's expanded screening program (before 2025: men 40–49 or women 40–44).

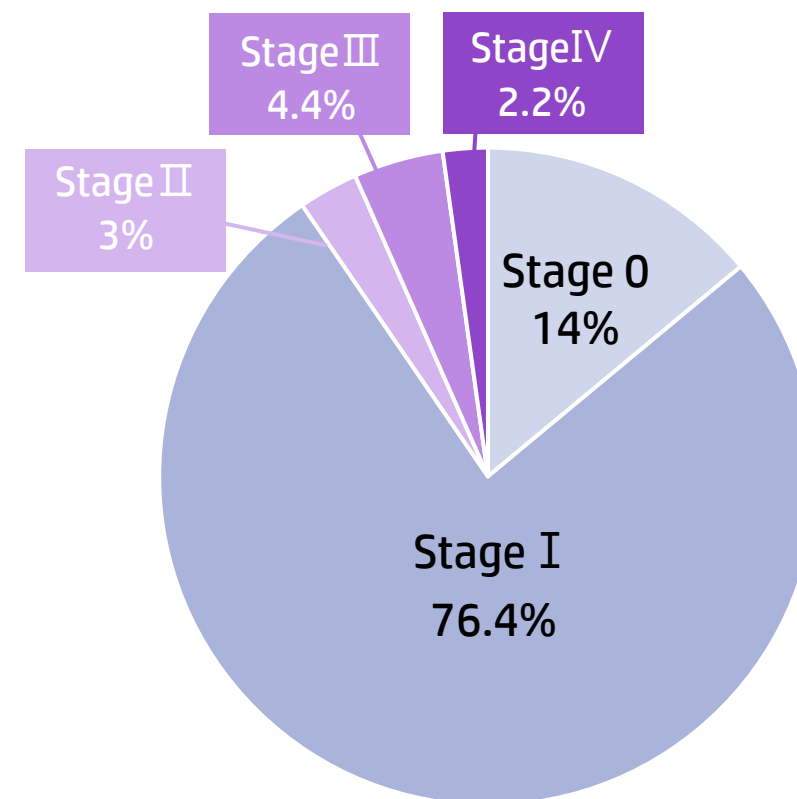
**\*Heavy smokers:** Health Promotion Administration's lung cancer screening targets heavy smokers aged 50–74 years. This figure includes only heavy smokers aged 40–49 years in Taoyuan City's expanded screening program.

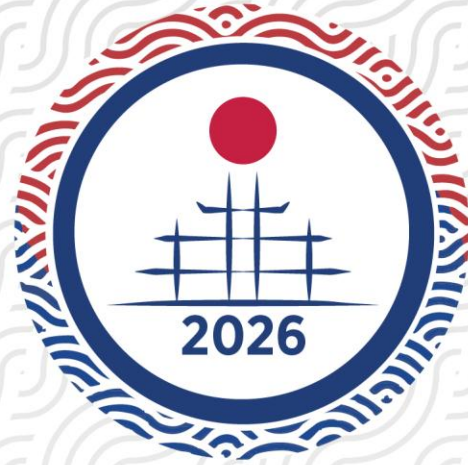
# DISCUSSION AND CONCLUSION

- **Gender Differences in Lung Cancer Risk**
- **Major Risk Factors Associated with Lung Cancer**
- **Detection**
- **Risk-Based Screening**



- 90.4% detected at early stages





# Thank You.●

Email: 10015242@mail.tycg.gov.tw

Science Without Boundaries: **Uniting the World Against Thoracic Cancer**