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Epidemiologic Trends and Risk Factor Transitions in Adolescent and Young Adult Lung Cancer in East Asia, 1990–2023

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Disclosures

CONFLICTS OF INTEREST

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ARTIFICIAL INTELLIGENCE (AI) USE DISCLOSURE

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East Asia bears the highest global burden of AYA lung cancer

BACKGROUND

- Lung cancer in adolescents and young adults (aged 15–49) is biologically and clinically distinct.
- Regional estimates mask marked heterogeneity across economies with divergent health systems, tobacco control and pollution exposure.
- Risk profiles are shifting: tobacco control has matured in some countries while ambient, occupational and metabolic exposures rise in others.

METHODS

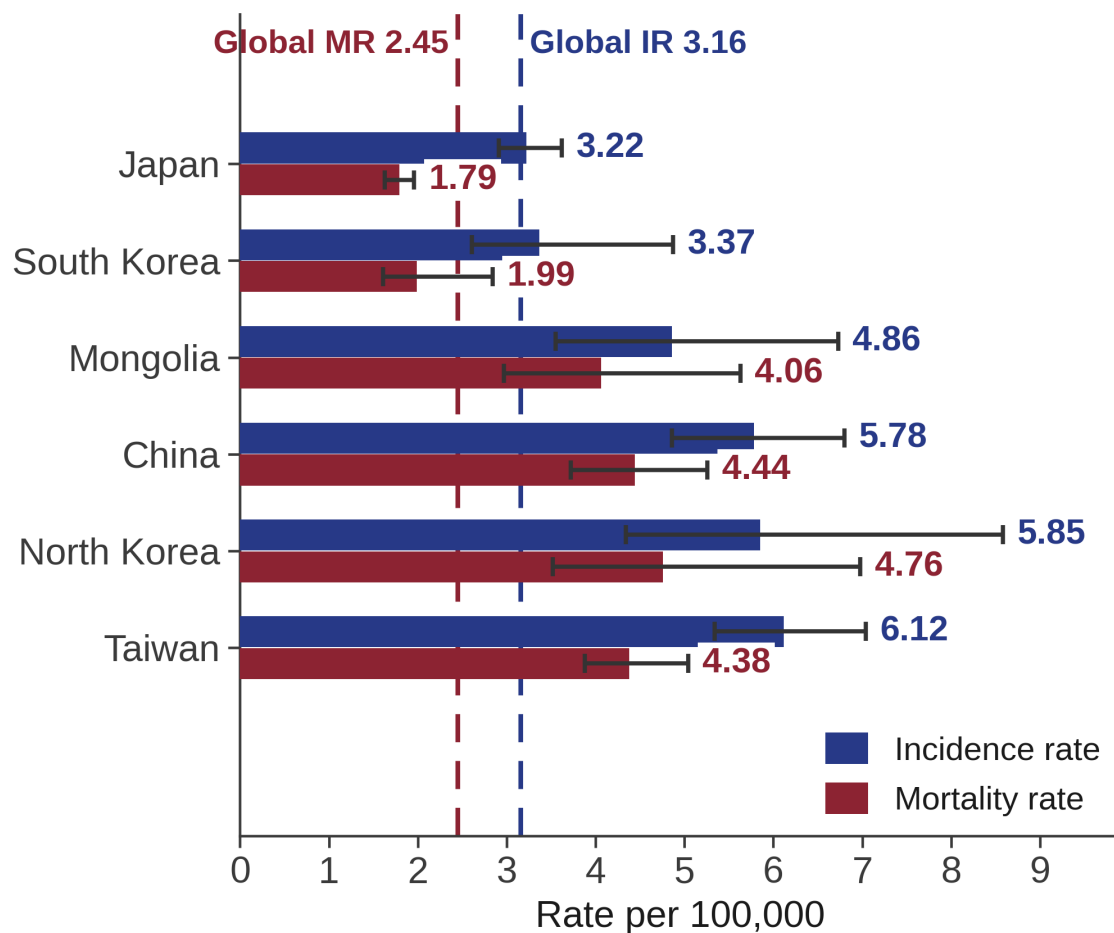
Data	Global Burden of Disease Study 2023, 1990–2023
Population	Ages 15–49 in China, Japan, South Korea, North Korea, Taiwan, Mongolia; global comparator
Measures	Incidence and mortality per 100,000 person-years; risk-attributable mortality
Analysis	Percentage change 1990–2023 with 95% UIs, stratified by sex

Objective: describe the contemporary burden, temporal trends and risk-factor transitions of AYA lung cancer across East Asia, 1990–2023.

Limitations: GBD modelled estimates, least certain for North Korea and Mongolia. Stage at diagnosis, histology, molecular subtype and treatment access are unavailable; risk-factor data are population-level rather than individual-level; and national estimates mask subnational variation.

High burden throughout East Asia

BURDEN, 2023 whiskers are 95% UIs



EVERY LOCATION ABOVE THE GLOBAL RATE

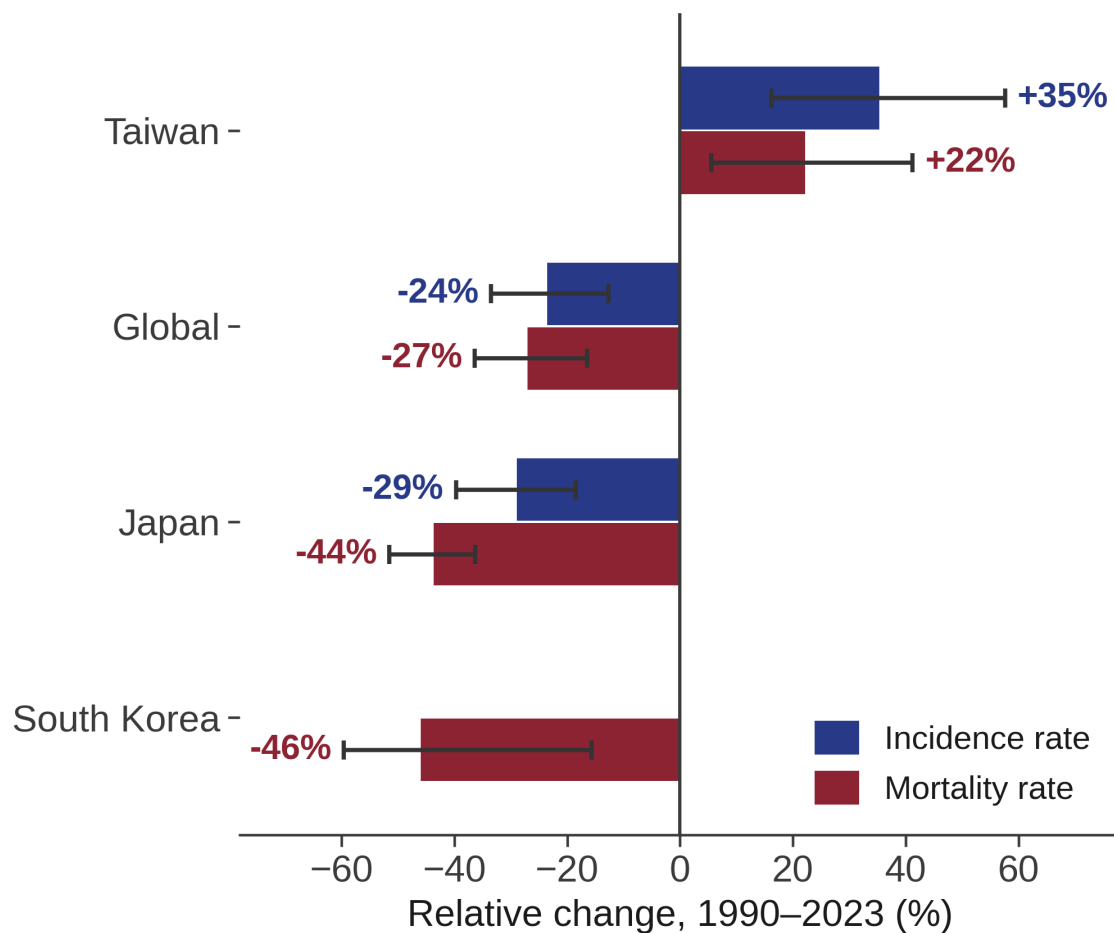
Incidence exceeded the global rate of 3.16 per 100,000 in all six locations — highest in Taiwan (6.12), North Korea (5.85) and China (5.78).

Mortality exceeded the global rate of 2.45 everywhere except Japan (1.79) and South Korea (1.99).

Male incidence peaked in Mongolia (7.34), roughly double the global male rate; female incidence peaked in Taiwan (5.45) against a global female rate of 2.41.

Only Taiwan is rising

CHANGE, 1990–2023 whiskers are 95% UIs; only changes excluding zero shown



DIVERGENT TRAJECTORIES

↓ **Japan and South Korea** — mortality fell 43.7% and 46.0%.

↑ **Taiwan** — the only location rising significantly in both incidence (+35.3%) and mortality (+22.2%).

↑↓ **China** — no significant net change, peaking in 2001 before a sustained decline.

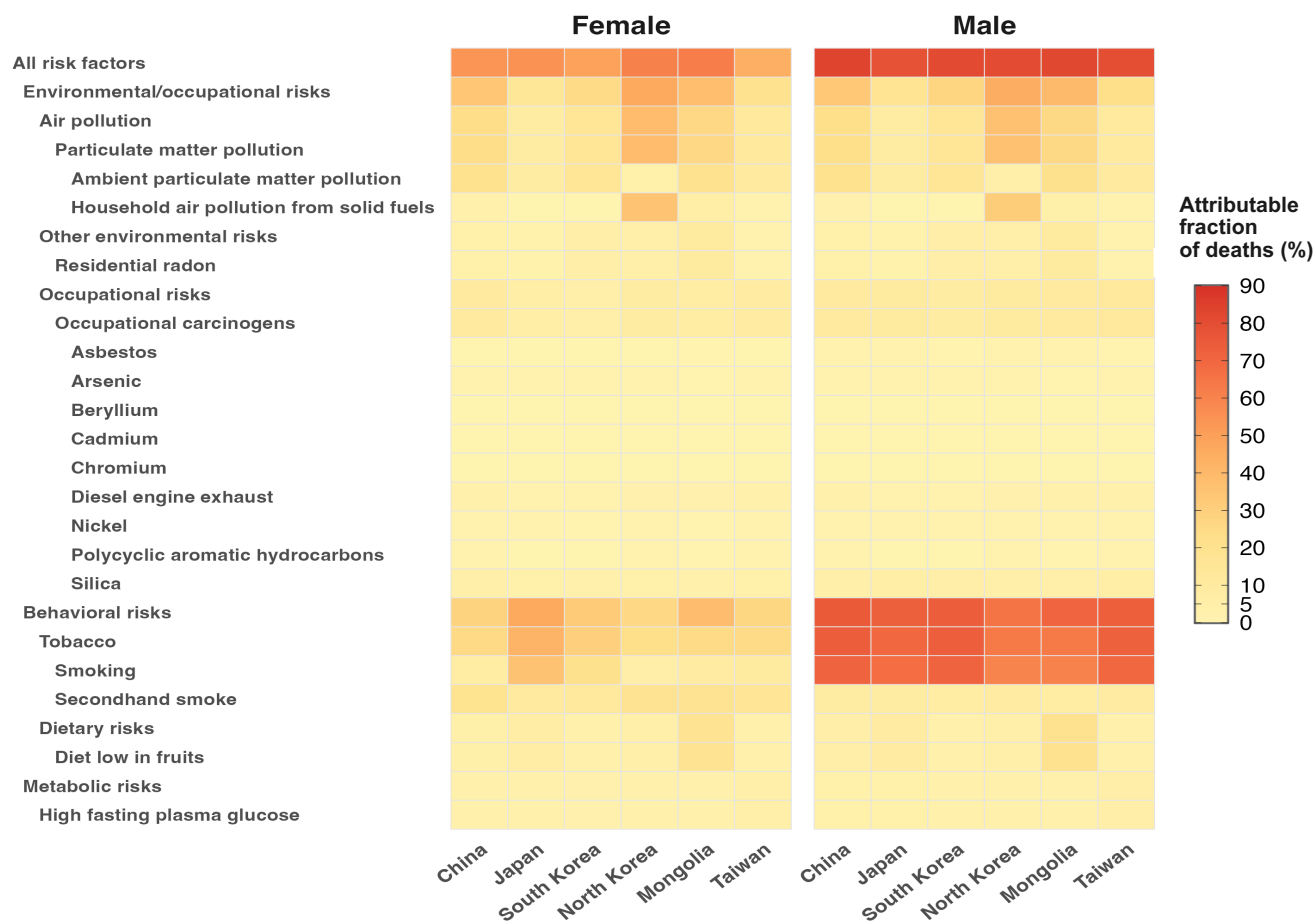
Increases are sex-specific: male incidence +88% in Mongolia; female incidence +94% in North Korea and +53% in Taiwan. No location showed a significant decline in female incidence.

Tobacco dominates the 2023 risk profile

ATTRIBUTABLE FRACTION, 2023

AYA lung cancer mortality attributable to risk factors

East Asia, 2023 (percent attributable, ages 15...49)



WHAT THE PANEL SHOWS

Modifiable risks — 78.2–83.6% of male and 43.9–62.0% of female attributable deaths.

Tobacco — the dominant band in males (63.2–73.8%), far lower in females (22.6–42.5%).

Household solid fuels — still 31.3% of male and 35.2% of female attributable deaths in North Korea, and only there.

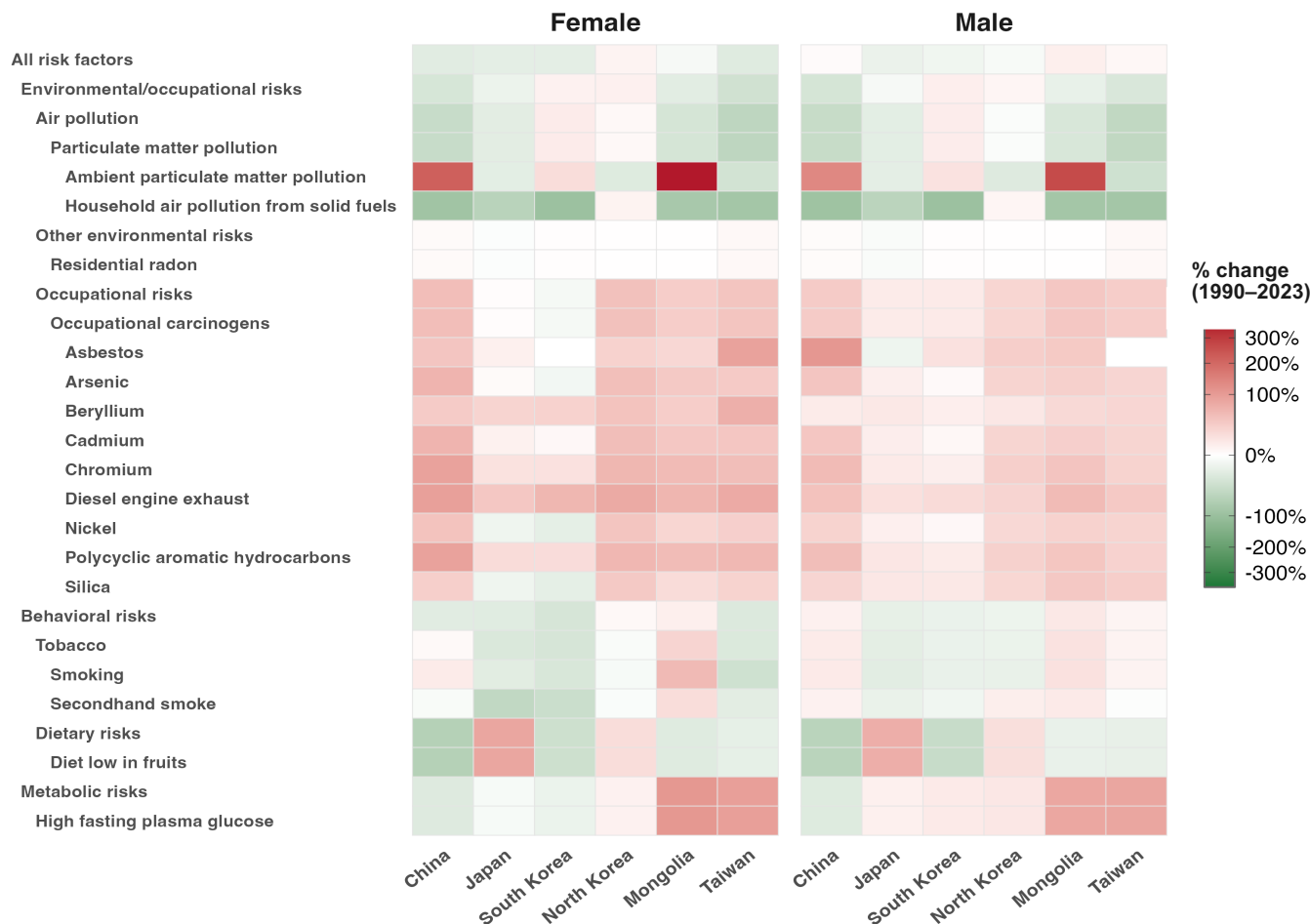
Air pollution — 7.7–38.8% across the region, widest of any risk factor.

The 2023 profile is the starting point; the next slide shows how it moved.

A risk transition beyond tobacco

RISK-FACTOR CHANGE, 1990–2023

Lung cancer risk-factor % change in East Asia (1990 to 2023)



WHAT CHANGED, 1990–2023

↑ **Ambient particulate matter** — the largest increases of any risk factor: Mongolia +267% (M) / +363% (F), China +137% / +220%.

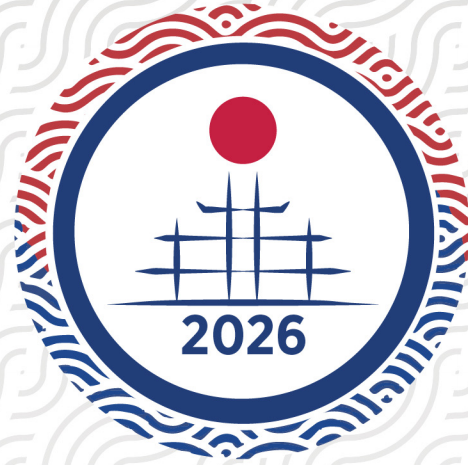
↓ **Household solid fuels** — substantial declines almost everywhere; still 31–35% of attributable deaths in North Korea.

↑ **Occupational carcinogens** — increased in China, North Korea, Mongolia and Taiwan, outside Japan and South Korea.

↑↓ **Tobacco** — still dominant in males (63–74% of attributable deaths), but falling in Japan and South Korea while rising in China and Mongolia.

Four trajectories, one region: Japan & South Korea ↓ · China ↑↓ · Taiwan ↑ · Mongolia & North Korea ↑

Prevention and early detection must be location- and sex-specific and extend beyond smoking history alone.



Thank You.

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