

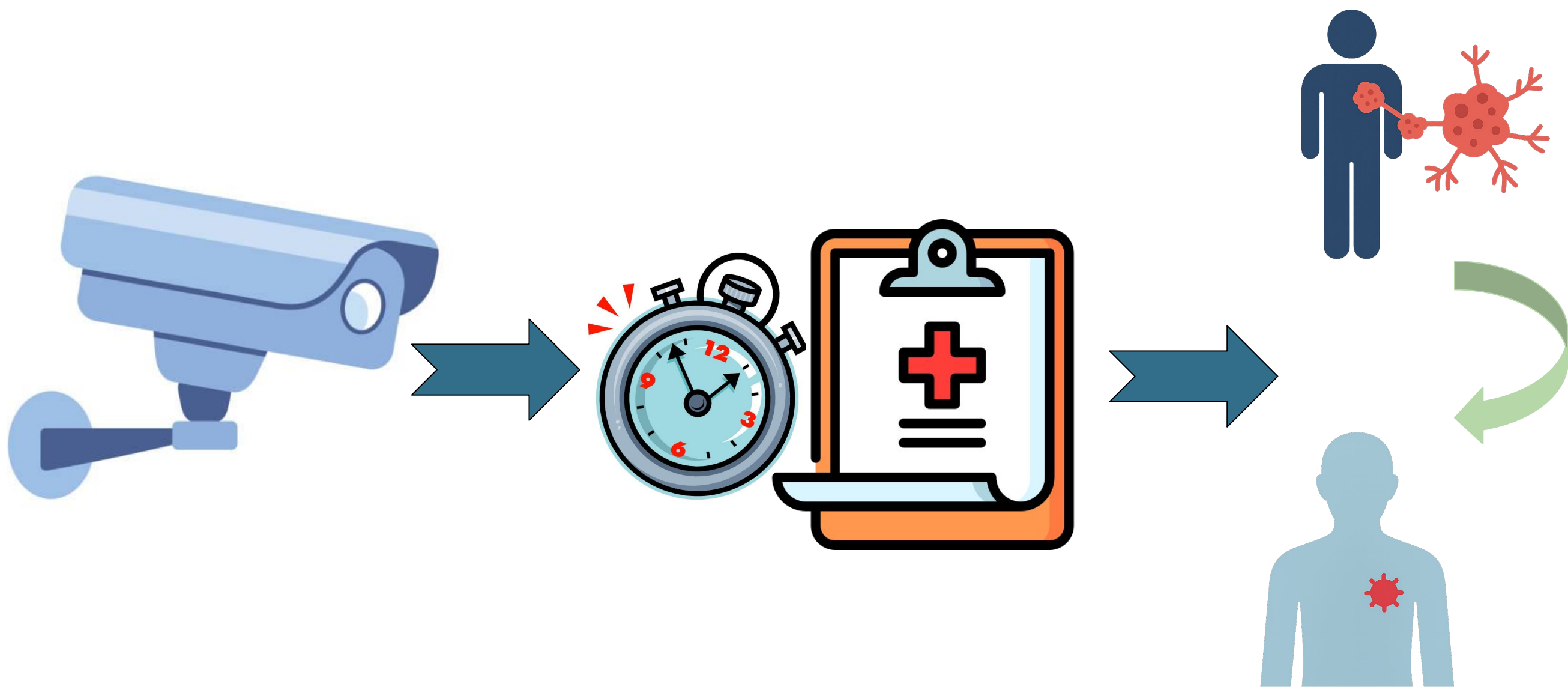
Does Cancer Surveillance Outperform Lung Cancer Screening? Evidence of Stage Migration in Second Primary Lung Cancers

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Surveillance → Earlier Stage at Diagnosis → Stage Migration

Rates of Secondary Lung Cancer are Rising

- NSCLC = leading cause of cancer death; 5-yr survival 28%.
- Long-term cancer survivors: up to 20% develop an SPLC.
 - Survivors undergo routine surveillance imaging



Does Surveillance Detect SPLC's Earlier?

- Tumor ≤3 cm: 57.2% SPLC vs 43.8% first NSCLC ($p<0.001$).
- Stage I: 42.2% SPLC vs 27.7% first NSCLC ($p<0.001$).
- SPLC patients more often ≥71 years (56.9% vs 42.1%, $p<0.001$).
- Sublobar resection (all tumors): 30.5% vs 20.4% ($p<0.001$).

- **Data:** NCDB, 2010–2021

- **Population:** Adults with NSCLC.

- **Groups:** 1st-primary vs.2nd -primary lung cancer.
- **Variables:** Demographics, tumor size/stage, comorbidities, treatment type.
- **Outcomes:** Stage at diagnosis, treatment patterns, overall survival (OS).

Analysis: Chi-square, logistic regression, Kaplan-Meier, Cox regression.

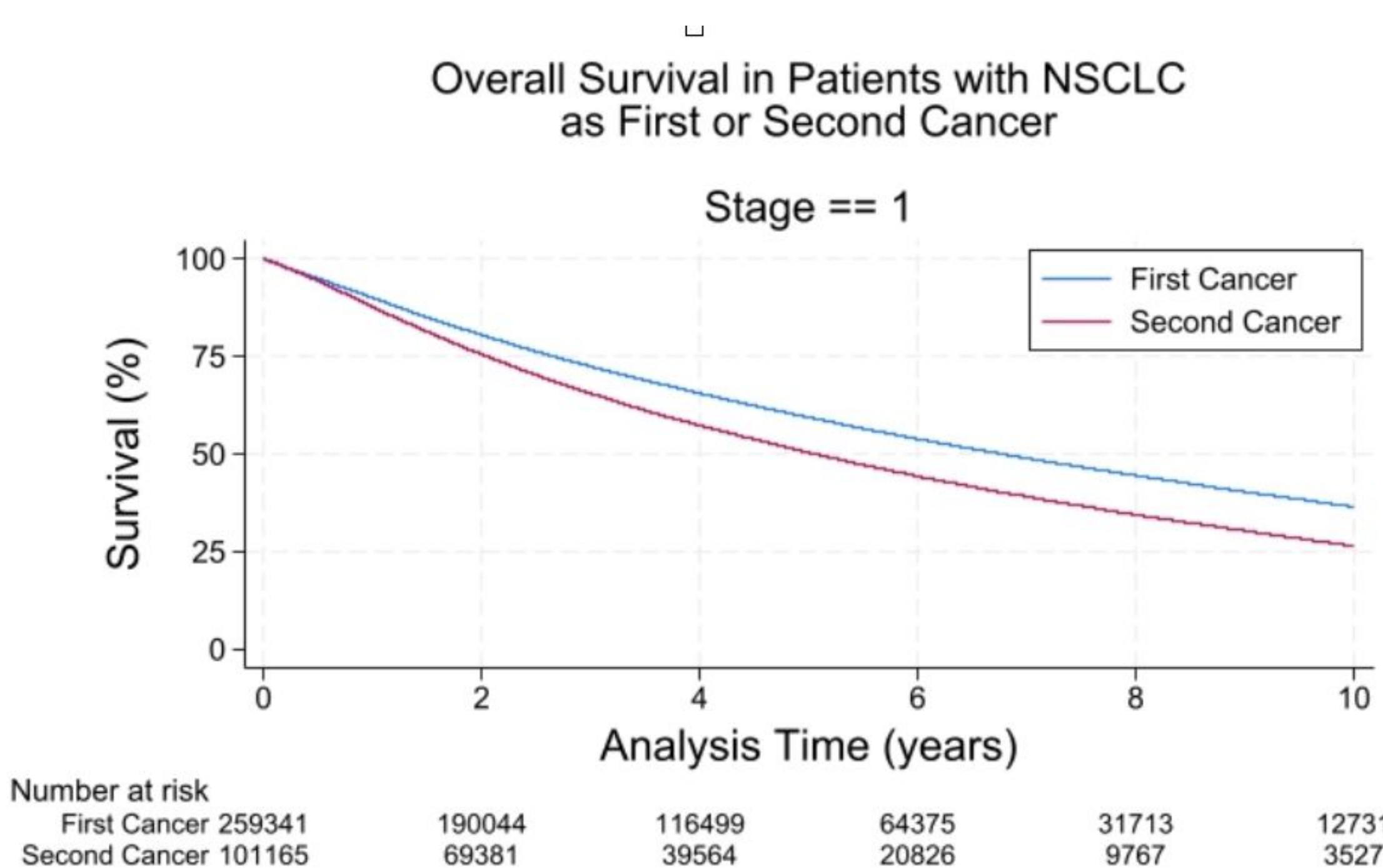
Stage Migration Occurs, Yet Outcomes are Worse?

- SPLC patients **older**, more **comorbid**, more often treated with **sublobar** resections.
- Earlier stage at presentation likely driven by surveillance imaging.
- Despite stage migration, undertreatment or physiologic limitations may influence outcomes.

Broader Screening May Replicate Early Stage Advantage; Next Steps

- LDCT screening remains underutilized (~16% uptake).
- Stage migration in survivors highlights the benefit of imaging.
- Broader LDCT use in high-risk, cancer-naïve patients could extend this early-stage advantage.

Acronym	Definition
NSCLC	Non–Small Cell Lung Cancer
SPLC	Second Primary Lung Cancer
LDCT	Low-Dose Computed Tomography
NLST	National Lung Screening Trial
NELSON	Nederlands–Leuvens Longkanker Screenings Onderzoek (Dutch–Belgian Lung Cancer Screening Trial)
USPSTF	U.S. Preventive Services Task Force
NCDB	National Cancer Database
AJCC	American Joint Committee on Cancer
OS	Overall Survival
CSS	Cause-Specific Survival
NOS	Not Otherwise Specified
HR	Hazard Ratio
CI	Confidence Interval



Variable	First NSCLC (%)	SPLC (%)
Tumor ≤3 cm	43.8	57.2
Stage I	27.7	42.2
Sublobar (all tumors)	20.4	30.5
Sublobar (≤2 cm)	31.6	43.3

Total N: First NSCLC = 1,038,495; SPLC = 266,458

Stage I SPLC patients present earlier but have worse survival %