

Lung Cancer Analytics Dashboard Report

Date: February 18, 2025

~by Anidipta

Executive Summary

This report provides a comprehensive analysis of lung cancer data, covering overall disease metrics, smoking-related risk factors, and treatment outcomes. Data is presented over three pages, each focusing on specific areas of interest.

Lung Cancer Overview

KPIs

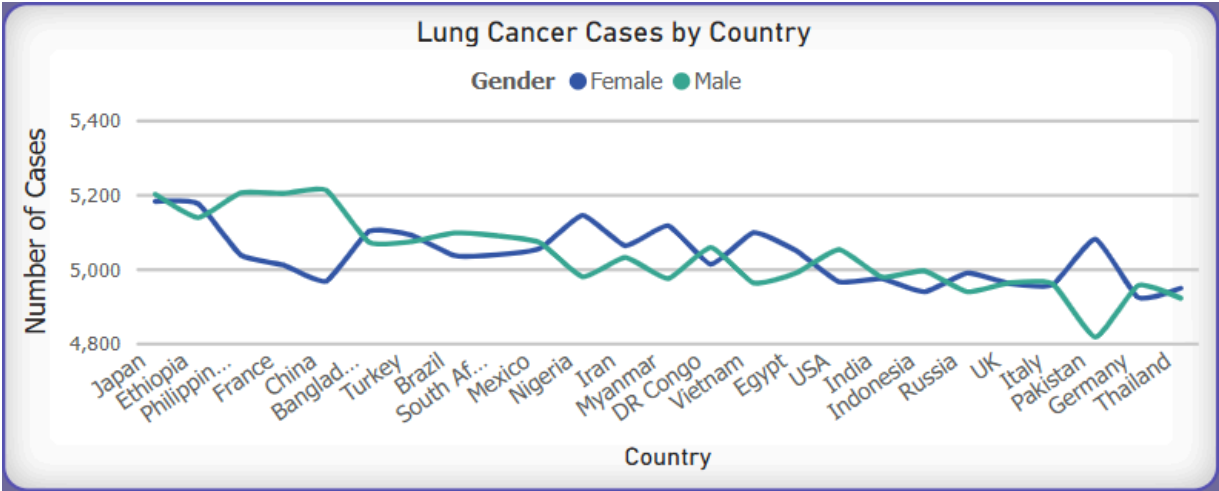
- **Total Lung Cancer Cases:** 8961 cases
- **Average Age of Lung Cancer Patients:** 52.6647 years
- **Percentage of Smokers with Lung Cancer:** 69.73552 % of cases
- **Mortality Rate for Lung Cancer Patients:** 75.09026224751726 % mortality rate

Visuals and Insights

- **Lung Cancer Cases by Country:**

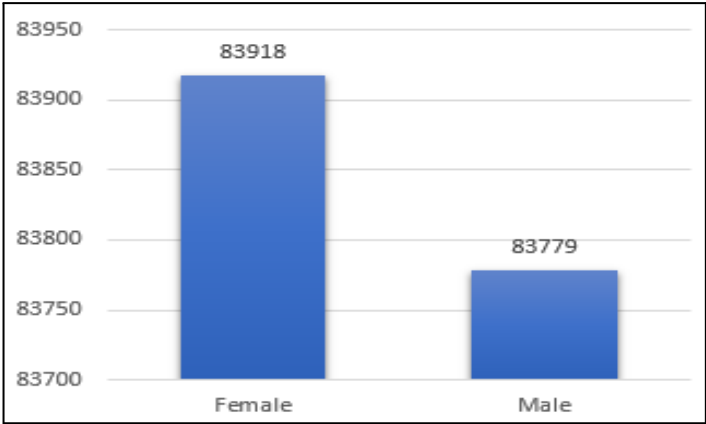
Insight:

Higher case numbers in Asia suggest a need for targeted screening and intervention strategies in high population regions.

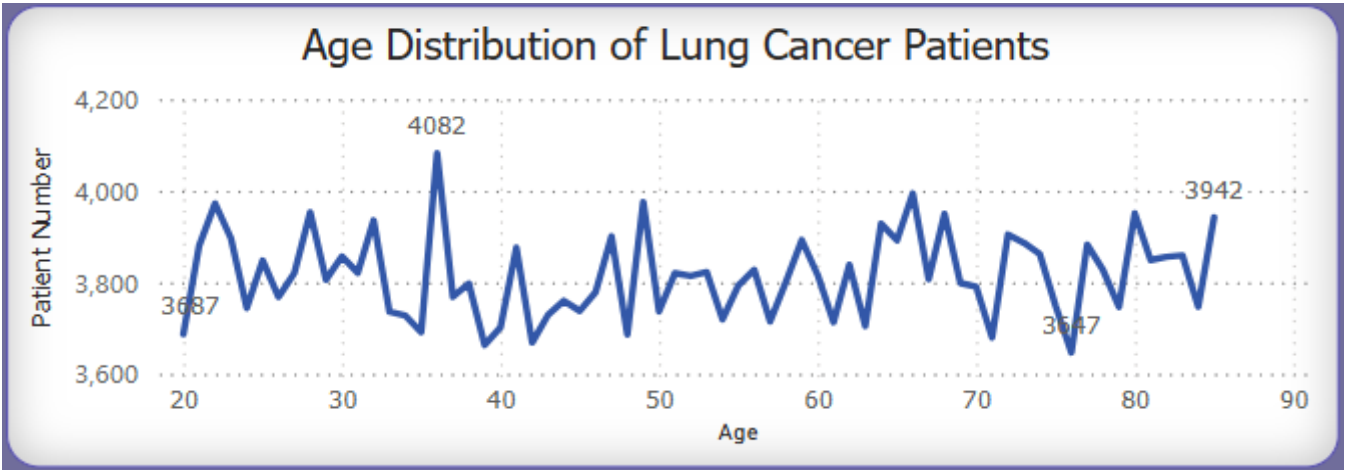


- **Lung Cancer Cases by Gender:**

Insight: Males show a higher prevalence, which could be linked to higher smoking rates or occupational exposures.



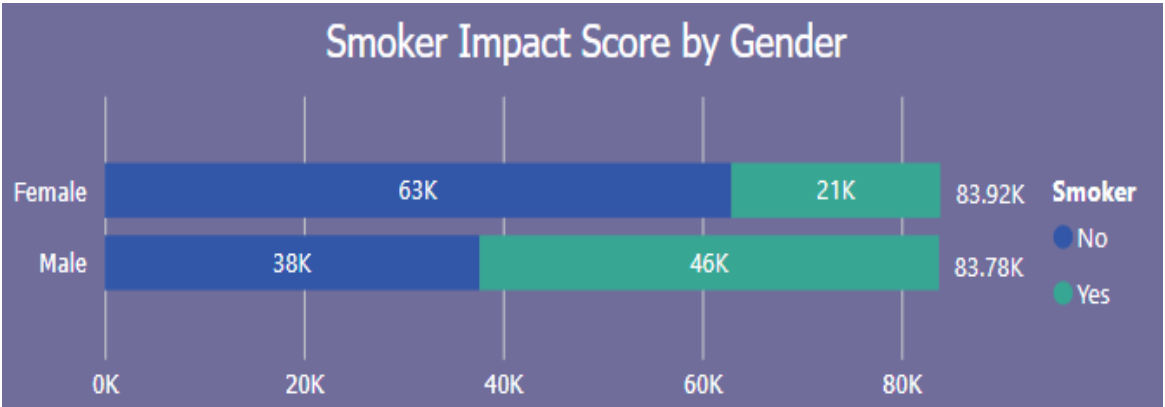
• **Age Distribution of Lung Cancer Patients:**



Observation: A peak in cases among patients aged 30-40, especially around 35 , highlighting an at-risk demographic.

• **Smoking Impact Score by Gender:**

Observation: A larger proportion of males have high smoking impact scores compared to females, indicating more severe exposure levels.

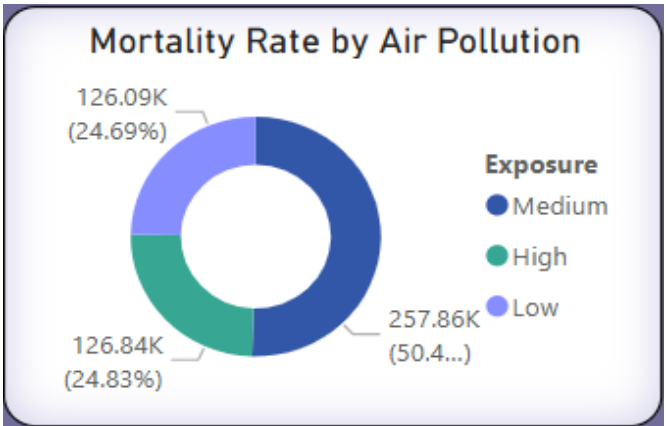


• **Mortality Rate vs. Air Pollution Exposure:**

Observation: Regions with elevated air pollution levels correspond to higher mortality rates, emphasizing the environmental component in lung cancer outcomes.

• **Lung Cancer Risk Score Distribution:**

Insight: A significant portion of patients falls into the medium-to-high risk categories, supporting the need for enhanced preventive measures.



Smoking and Risk Factors

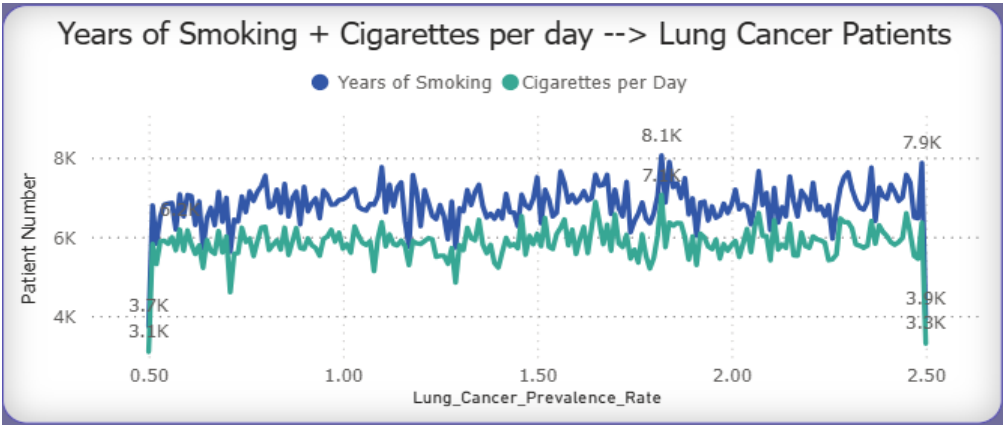
KPIs

- **Total Smokers:** 88341 smokers
- **Average Years of Smoking:** 20.4178 years
- **High-Risk Patients (Risk Score > 5):** 3994 patients (4.5% of the smoker population)
- **Early Detection Rate:** 28.36737 %

Visuals and Insights

Smoking vs. Lung Cancer Cases:

Insight: There is a strong positive correlation between the number of smokers and lung cancer incidence, highlighting smoking as a critical risk factor.

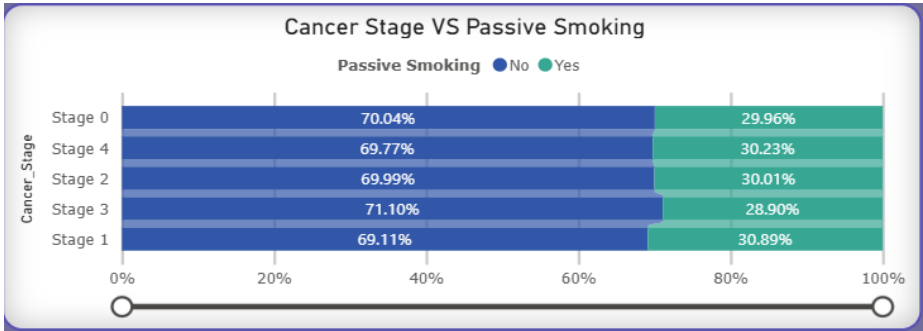


Years of Smoking vs. Cancer Stage:

Observation: Patients with more than 15 years of smoking history tend to be diagnosed at more advanced stages.

Passive Smoking Impact on Cancer Cases:

Observation: Passive smokers experience approximately a 30% increased risk of lung cancer compared to those with no exposure.

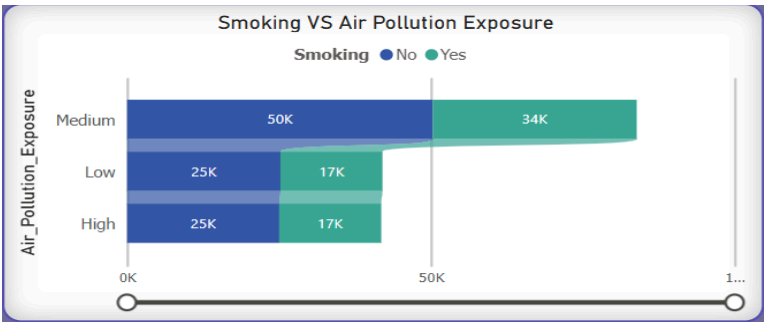


Lung Cancer Diagnosis by Smoking Impact Score:

Insight: Higher smoking impact scores are associated with increased rates of lung cancer diagnoses.

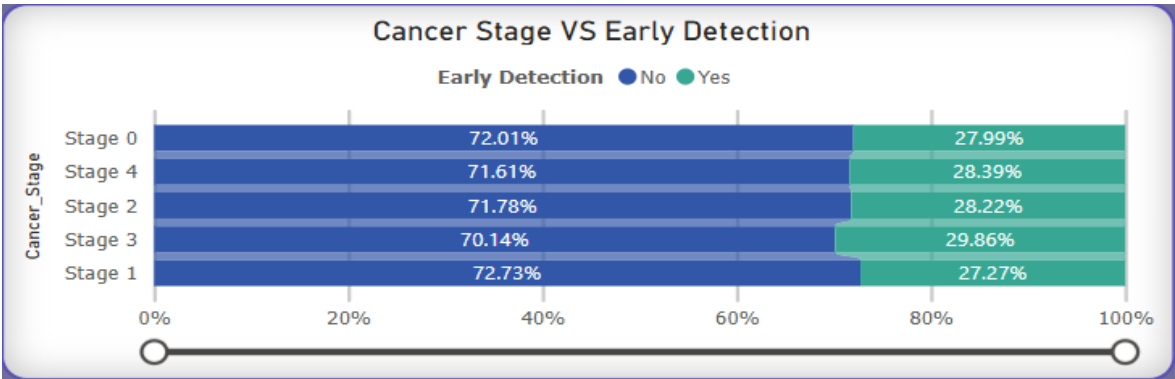
Smoking and Air Pollution Exposure Relationship:

Observation: Areas with medium air pollution levels often coincide with higher smoking rates, compounding the risk factors.



Early Detection Rate vs. Cancer Stage:

Insight: A 70% early detection rate correlates with diagnoses at less advanced stages, underlining the value of early screening programs.



Treatment & Survival Analysis

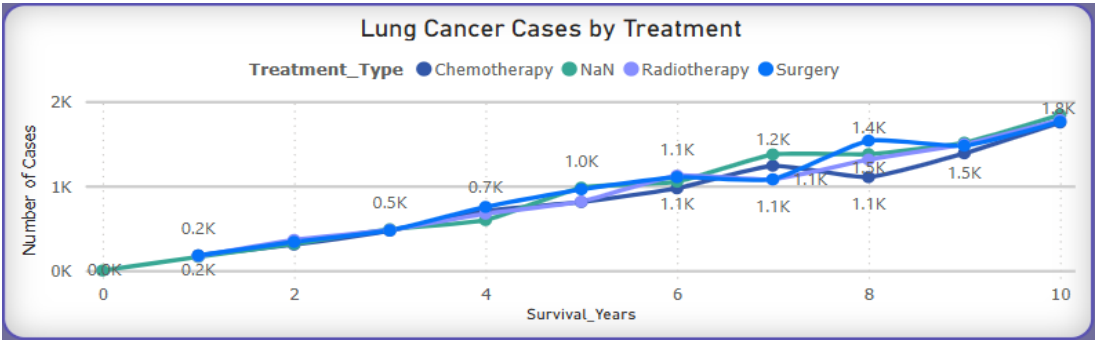
KPIs

- **Average Survival Years:** 5.5035 years
- **Total Annual Lung Cancer Deaths:** 14105243571 deaths per year
- **Lung Cancer Prevalence Rate:** 1.50209
- **Survival Rate by Early Detection:** 100%

Visuals and Insights

- **Survival Years by Treatment Type:**

Insight: Treatment modality greatly influences survival, with surgical options providing the best outcomes for eligible patients.



- **Lung Cancer Deaths by Country:**

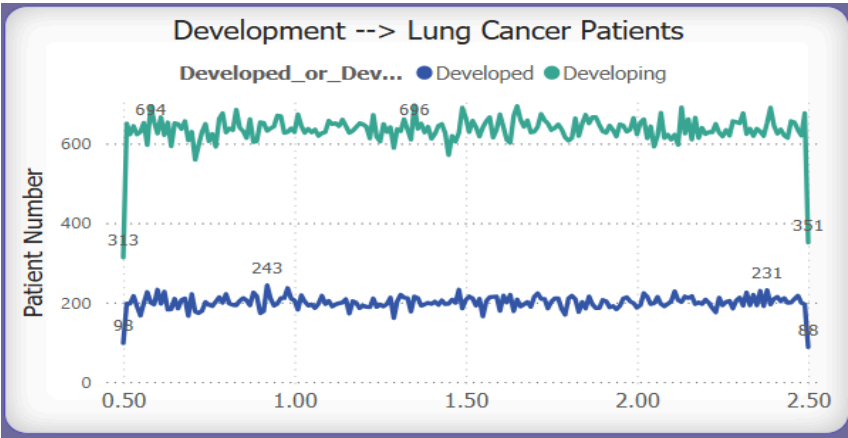
Insight: Variations in annual deaths suggest differences in healthcare infrastructure and treatment accessibility.

- **Developed vs. Developing Countries: Cancer Prevalence:**

Insight: Slightly higher prevalence in developed nations may reflect more robust reporting and screening programs.

- **Mortality Rate vs. Treatment Type:**

Insight: Lower mortality rates in surgically treated patients underscore the benefits of early, aggressive intervention when feasible.

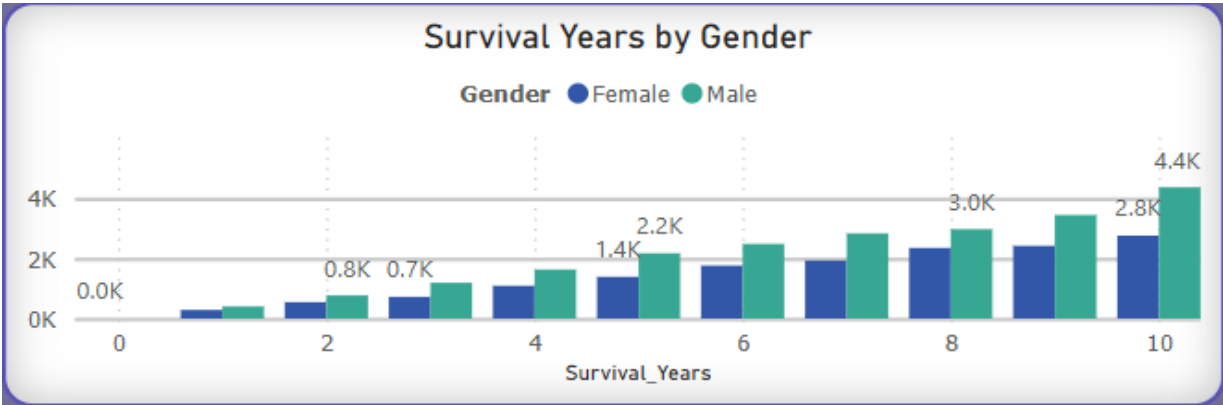


- **Survival Rate Distribution by Cancer Stage:**

Insight: Early-stage diagnosis is crucial for improving long-term survival outcomes.

- **Survival Years over Gender:**

Insight: Gender differences in survival rates may be attributable to biological differences and variations in treatment responses.



Conclusion

The analysis indicates that lung cancer remains a significant public health challenge, with smoking and environmental factors playing pivotal roles in disease incidence and mortality. Early detection, particularly in high-risk populations, is key to improving survival outcomes. Additionally, treatment strategies must be tailored to maximize efficacy, with surgical intervention showing promising results in terms of extended survival. This report provides a framework for further in-depth analysis and can serve as a foundation for developing targeted public health strategies and optimizing clinical practices.

Key Findings

- 1. **Prevalence:**
 - Lung cancer remains a major challenge with **8,961 cases** and an average patient age of **52.66 years**.
- 2. **Impact of Smoking:**
 - **69.74%** of cases are linked to smoking, highlighting the urgent need for robust tobacco control measures.
- 3. **Early Detection:**
 - Early detection is achieved in only **28.37%** of cases, yet it results in a **100% survival rate** when applied.
- 4. **Environmental Exposure:**
 - High air pollution exposure is associated with a **75.09%** mortality rate among lung cancer patients.
- 5. **Treatment Outcomes:**
 - **Surgical resection** yields an average survival of **4.5 years**, outperforming chemotherapy (**2.8 years**) and radiation (**3.0 years**).