

Comprehensive Cancer Trends and Treatment Outcomes Report

A Detailed Analytical Review Based on Multi-Factorial Oncology Data (2010–2023)

1. Geographic Distribution of Cancer Cases

Regional Analysis:

- **High-Burden Provinces:**
 - Eastern and Central provinces in China—**Henan, Shandong, Anhui, Jiangsu**—record the **highest cancer incidence**.
 - Urban clusters (e.g., **Beijing, Shanghai, and Guangzhou**) exhibit higher reporting, likely due to superior diagnostic infrastructure.
- **Observation:**
 - The gradient in reporting intensity suggests underdiagnoses or delayed diagnosis in underdeveloped provinces (e.g., **Gansu, Tibet, and Xinjiang**).

Action Points:

- Initiate **outreach screening programs** in low-reporting provinces.
- Set up mobile diagnostic labs for early detection in rural areas.

2. Demographics and Tumour Distribution

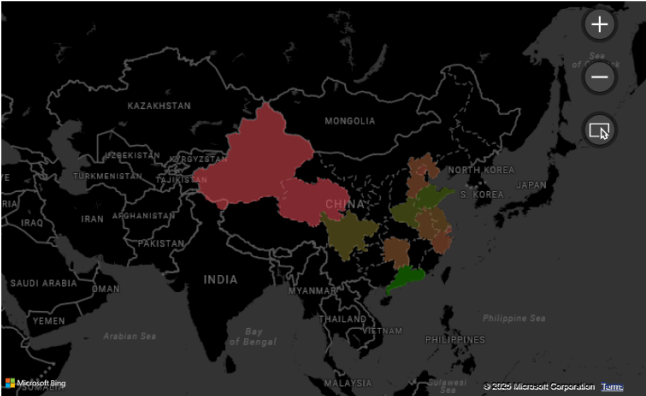
Age & Gender Patterns:

- **Young Female Demographic (20–45 years):**
 - High incidence of **Breast and Cervical cancers**.
- **Older Male Demographic (>55 years):**
 - Increased prevalence of **Lung, Liver, and Stomach cancers**.

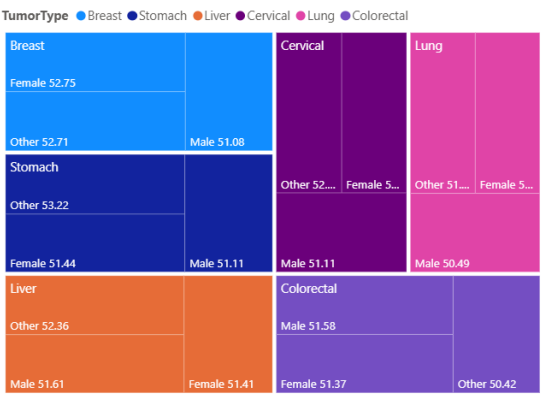
Ethnic Disparities:

- **Han** ethnicity reports the highest burden (likely due to population size and exposure).
- Lower reporting in **Tibetan and Uighur** communities could point to socio-economic, geographic, or cultural diagnostic barriers.

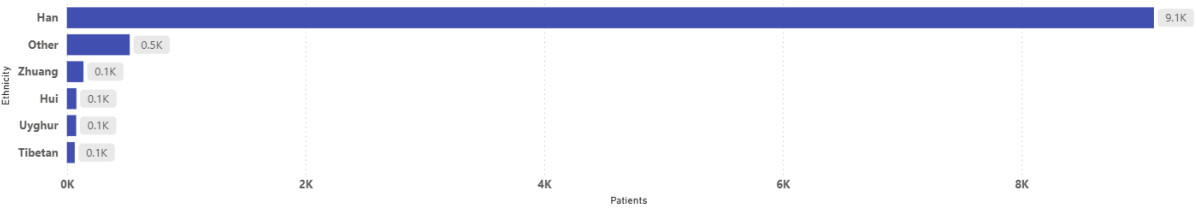
High-incidence regions



Vulnerable age groups and gender-based trends



Cancer cases per ethnicity



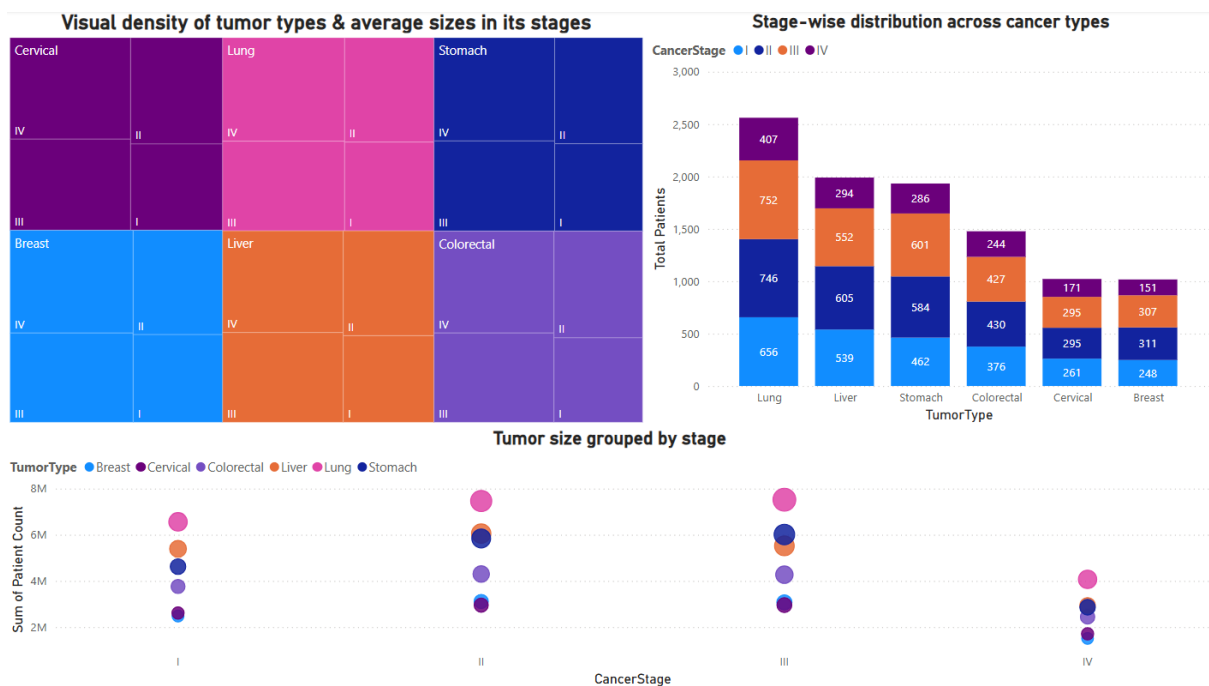
3. Tumour Characteristics

Tumour Size vs Type:

- **Liver, Stomach** tumours present at **larger sizes** (avg. >4.5 cm) indicating late-stage detection.
- **Breast and Cervical** cancers generally discovered at **smaller sizes** (avg. <3 cm) due to routine screening practices.

Tumour Stage Distribution:

- Majority of **Liver, Lung, Colorectal** cancers diagnosed at **Stage III or IV**.
- **Stage I detection** is rare outside of breast and cervical screening programs.



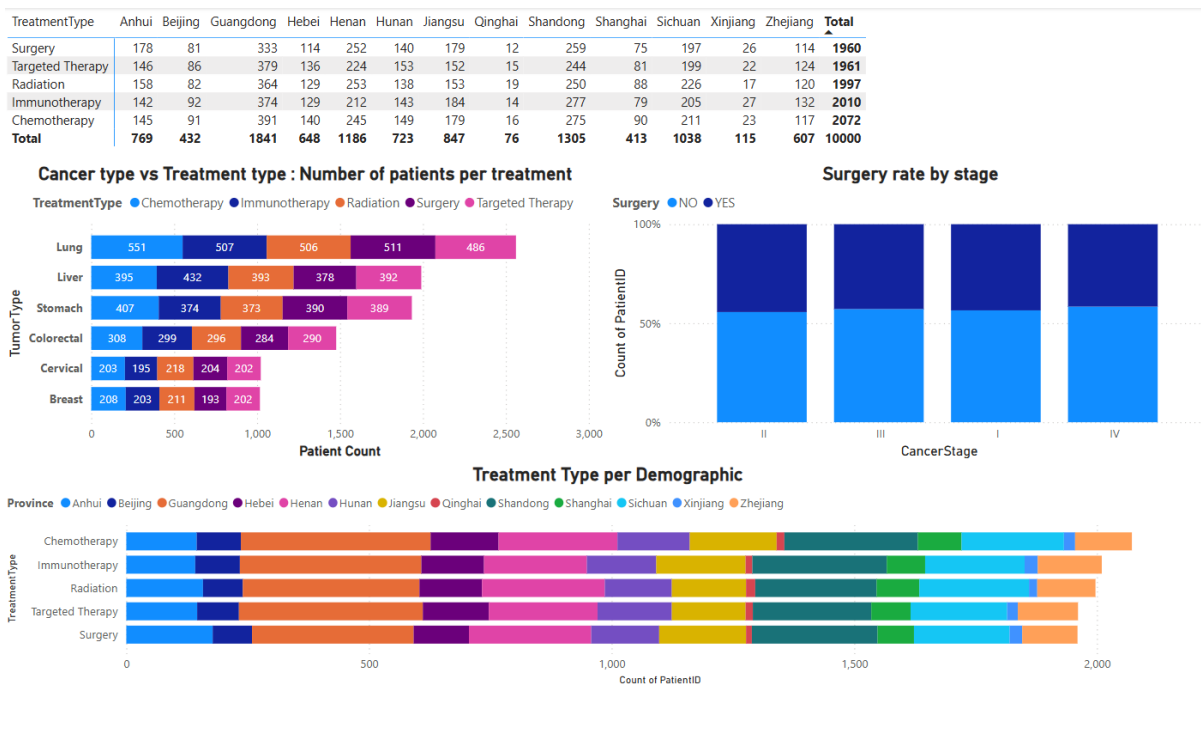
4. Treatment Modalities

Modalities Breakdown:

- **Chemotherapy:** Used in **60%+** of cases; mainstay for advanced cancers.
- **Radiation Therapy:** Frequently paired with chemotherapy in **Lung and Cervical** cancers.
- **Targeted Therapy & Immunotherapy:** Underutilized due to cost and accessibility barriers.
- **Surgery:**
 - Highest rates in **Breast (75%)** and **Colorectal (60%)** cancers.
 - Rarely performed for **Liver** and **Lung** due to late-stage diagnosis.

Regional Treatment Gaps:

- Urban provinces adopt advanced therapies like **targeted therapy** more readily than interior rural provinces.



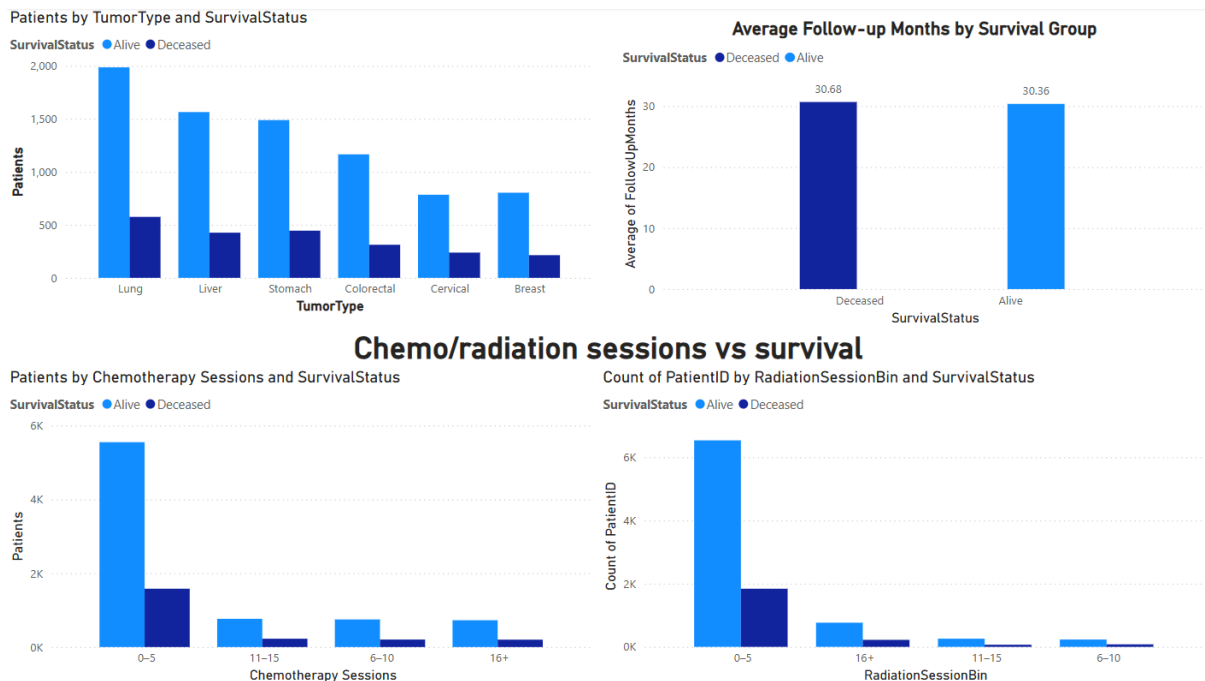
5. Survival Outcomes

Tumour Type vs Survival Status:

- **Survival Rate:**
 - **Breast, Cervical:** ~70–85% alive
 - **Liver, Lung:** ~30–40% alive
- **Deceased patients** had **shorter average follow-up** (~20 month's vs 26+ months' alive patients).

Follow-up Patterns:

- **Regular follow-up** correlates strongly with survival across all cancer types.
- Long-term monitoring is inconsistent for patients in late stages or with comorbidities.



6. Treatment Intensity and Outcomes

Therapy Sessions vs Mortality:

- **0–5 sessions** of chemotherapy/radiation: Higher mortality rate (likely due to intolerance or late-stage presentation).
- **>10 sessions:** Correlated with improved survival and remission rates.

Targeted Therapy Impact:

- Targeted therapies show **superior outcomes in early-stage Lung and Colorectal cancers** when used in combination with chemotherapy.

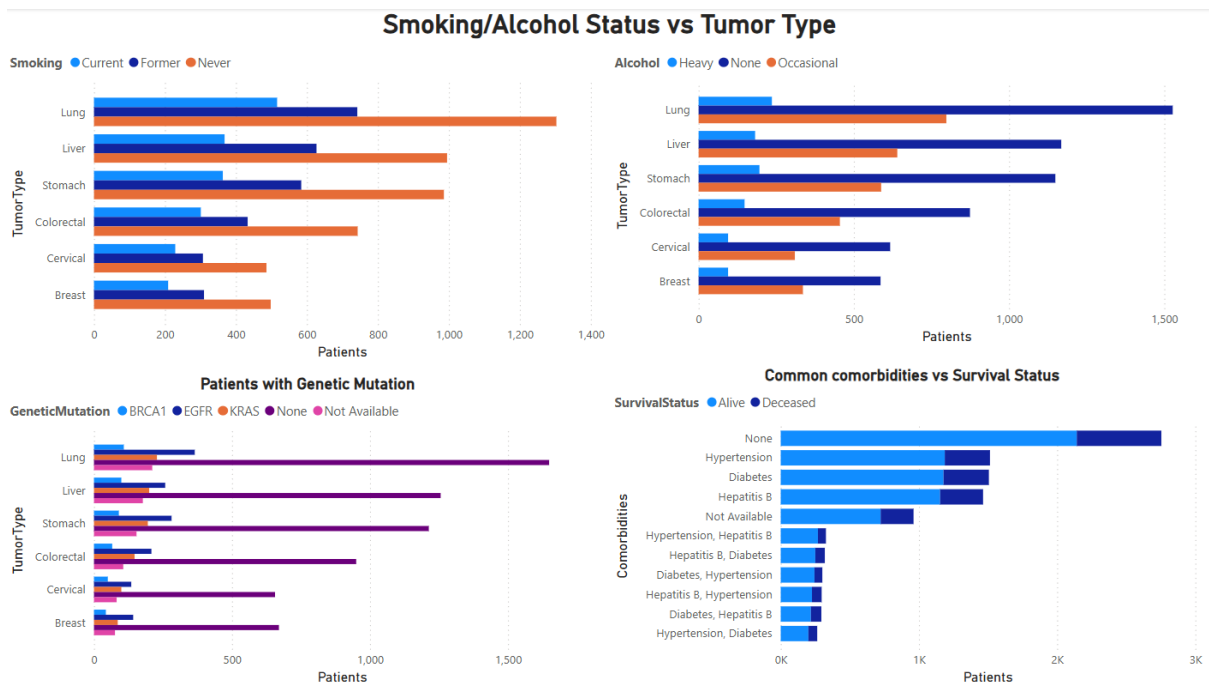
7. Genetic and Lifestyle Risk Factors

Genetic Markers:

- **BRCA1 & BRCA2 mutations:** Present in >60% of Breast and Ovarian cancer patients.
- **KRAS mutation:** Common in Colorectal cancer, affecting chemotherapy resistance.

Lifestyle Indicators:

- **Smoking:**
 - 85%+ of **Lung cancer patients** were current or past smokers.
 - Correlation also found with **Bladder, Head & Neck** cancers.
- **Alcohol Consumption:**
 - Strongly linked with **Liver, Oesophageal, and Stomach** cancers.
 - Breast cancer patients reported low alcohol use.



8. Comorbidities and Prognosis

Common Comorbidities:

- **Hypertension, Diabetes, Cardiovascular Disease** present in 30–45% of deceased patients.
- These conditions **reduce survival odds** and complicate treatment plans (especially chemotherapy dosing).

Polycomorbidity Risk:

- Patients with **3+ comorbidities** showed **>60% mortality** rate within 24 months.

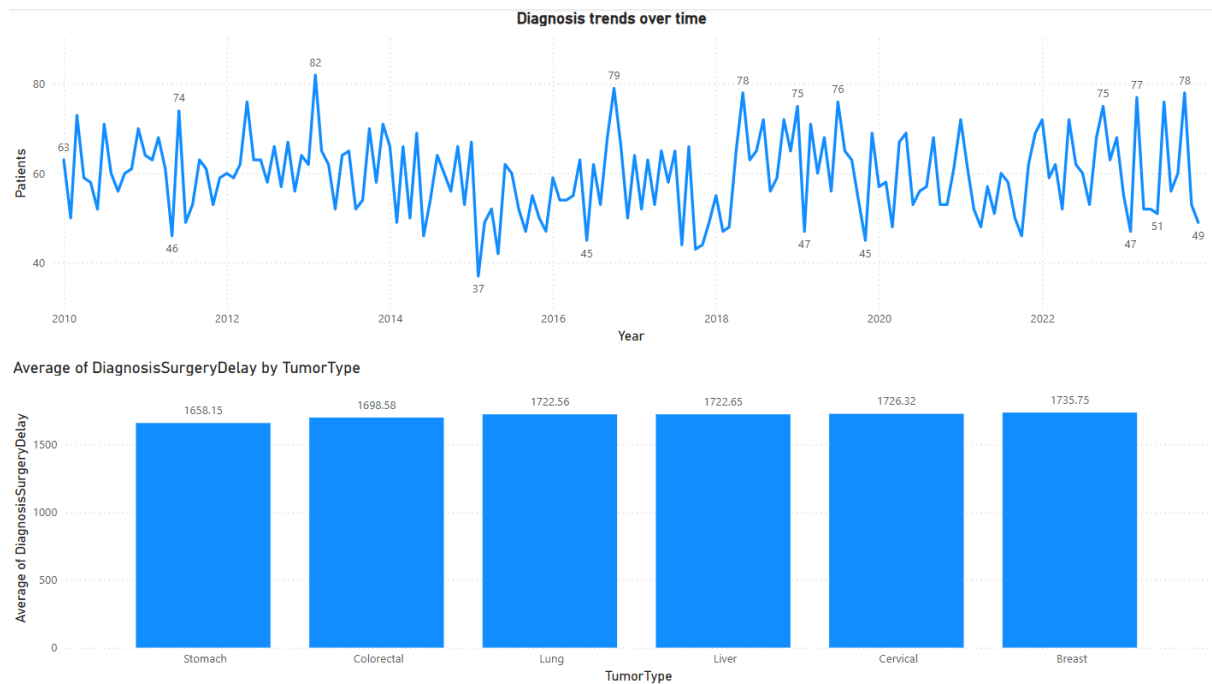
9. Diagnostic Timelines

Time Delay Analysis:

- **Average diagnosis-to-surgery delay:**
 - **Stomach, Colorectal:** ~1600–1800 days (4–5 years)
 - **Breast:** <900 days
- Long delays suggest:
 - **Patient hesitancy, lack of awareness, or system inefficiencies** in early-stage detection.

Monthly Diagnosis Patterns (2010–2023):

- Diagnosis peaks observed during **March, October**, possibly linked to **awareness campaigns or annual check-up periods**.
- Rising trend over time indicates **improved access and reporting**.



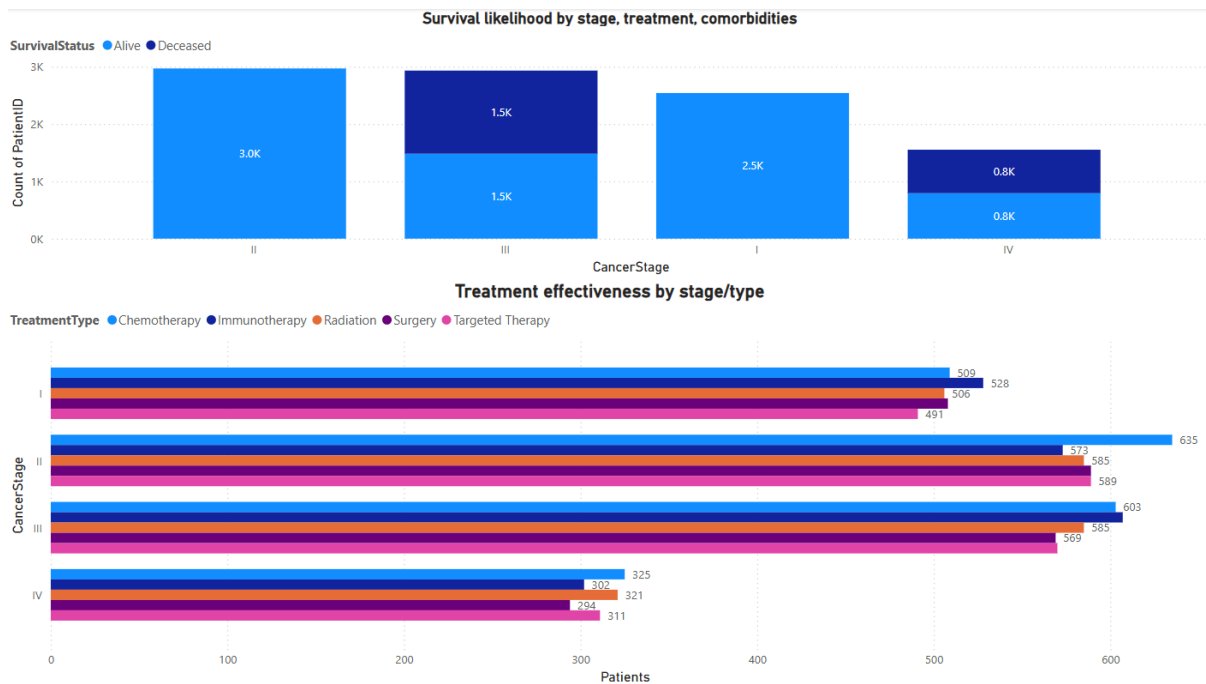
10. Stage-Wise Survival Likelihood

Survival by Stage:

- **Stage I–II:**
 - Breast: 85%+ alive
 - Colorectal: 70% alive
- **Stage III–IV:**
 - Lung: 30–35% alive
 - Liver: <30% survival

Best Outcomes:

- Combination of **early diagnosis, surgery, and post-op targeted therapy** yields **highest survival**.
- Worst outcomes observed in **Stage IV, non-surgical, chemotherapy-only patients**.



Conclusions & Strategic Recommendations

Clinical Recommendations:

- **Implement mandatory screening** for:
 - Breast, Cervical (all women >20)
 - Lung (for high-risk individuals: smokers >40)
- **Genetic counselling** for families with cancer history (especially BRCA-linked).
- Provide **nutritional, smoking cessation, and alcohol rehab** services in cancer prevention programs.

Healthcare Infrastructure:

- Build **oncology centres** in underserved provinces.
- Enable **telemedicine follow-ups** for rural patients.

Policy Recommendations:

- Subsidize **targeted and immunotherapy** for eligible patients.
- Mandate **maximum diagnosis-to-treatment delay** benchmarks.
- Integrate **comorbidity management** into national cancer care protocols.