

Evaluation of Lung Cancer Risk Factors

By: Savanna, Ken, Sam, Ewelina, Berenice

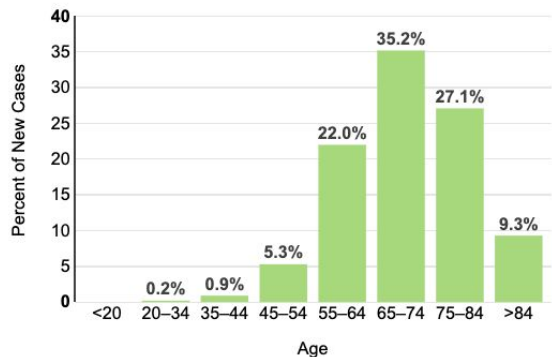




Project Summary

- Used a de-identified set of lung cancer patients with risk factors and symptom data
- Total of 1000 patients
- Dataset used to generate hypotheses regarding risk factor prevalence in subgroups
- Subgroups:
 - Gender
 - Age
- Main Risk Factors reviewed:
 - Smoking Habits
 - Alcohol Use
 - Obesity
 - Genetic Risk
 - Air Pollution

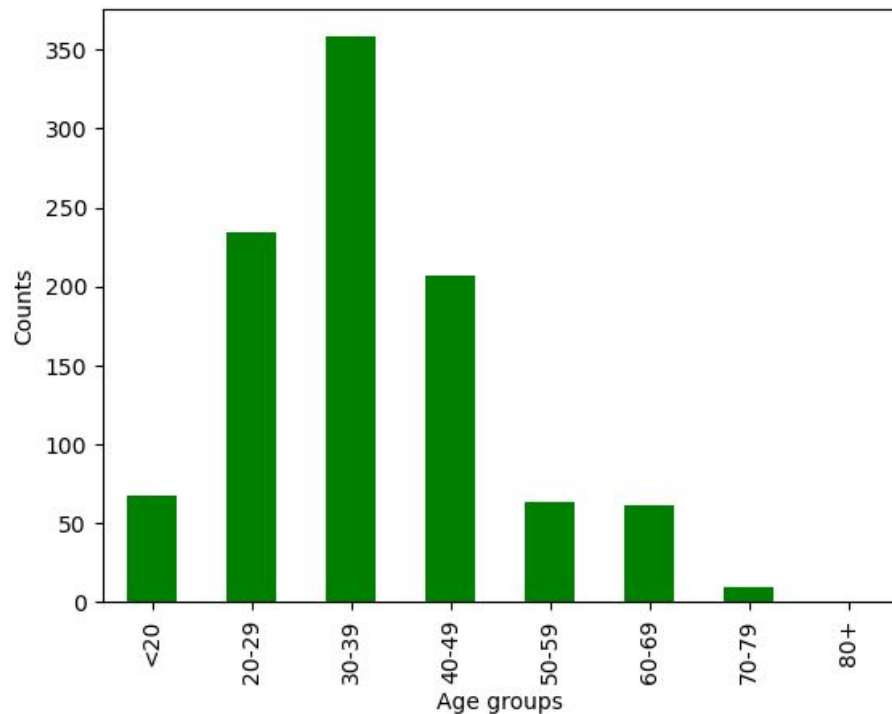
Age distribution SEER v. dataset



Lung and bronchus cancer is most frequently diagnosed among people aged 65-74.

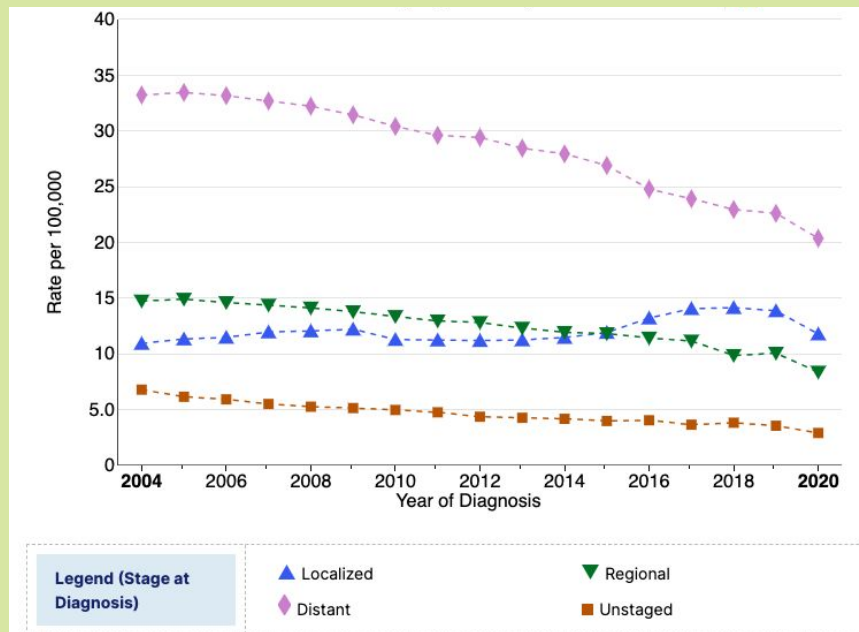
Median Age
At Diagnosis

71

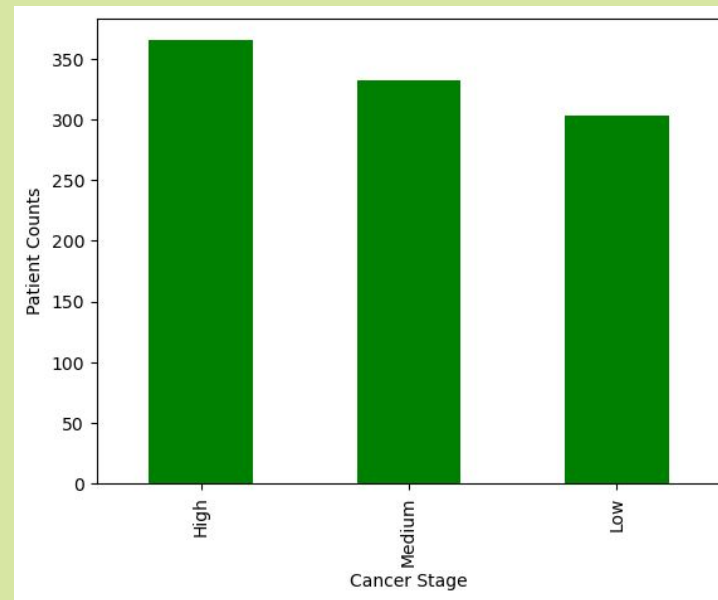


Source: SEER Cancer Stat Facts: Lung and Bronchus.
<https://seer.cancer.gov/statfacts/html/lungb.html>

Cancer stage distribution: SEER v. dataset



Source: SEER Age-adjusted incidence rates
<https://seer.cancer.gov/statistics-network/explorer/application.html>



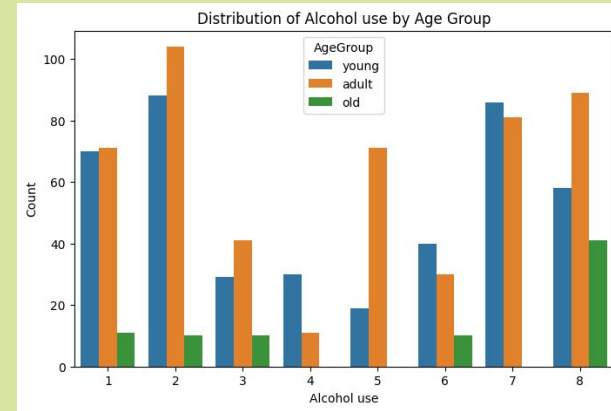
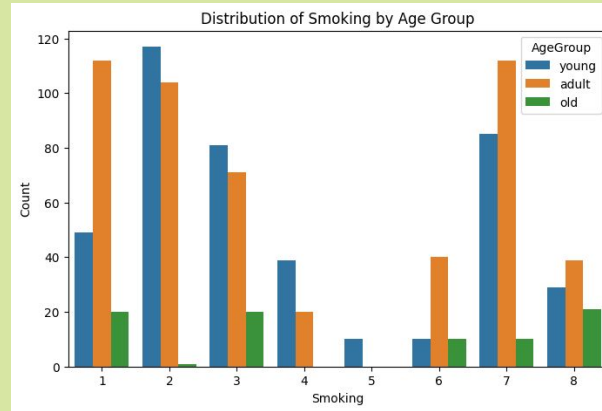
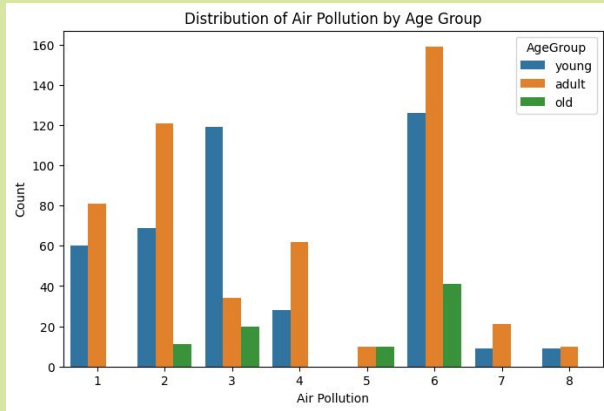


Research Questions

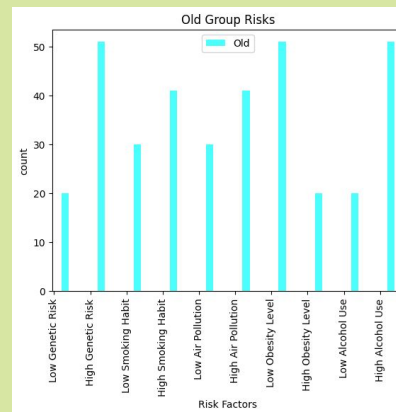
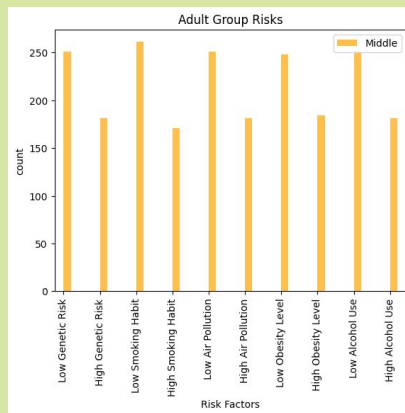
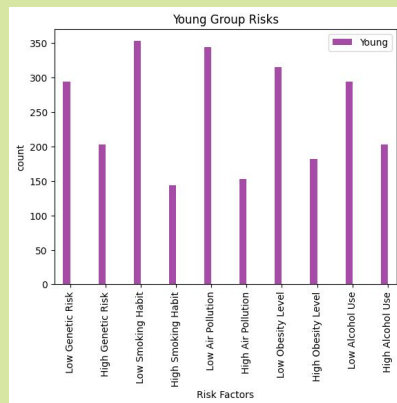
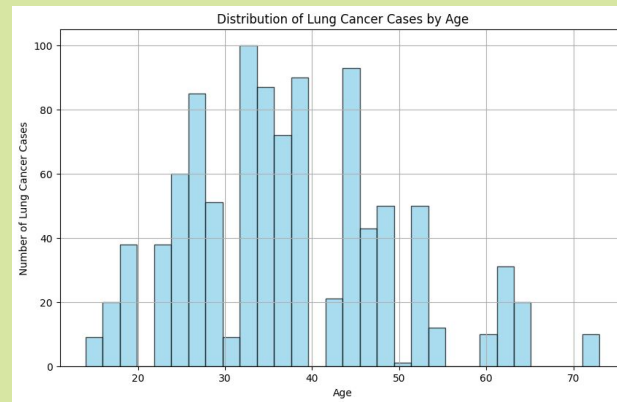
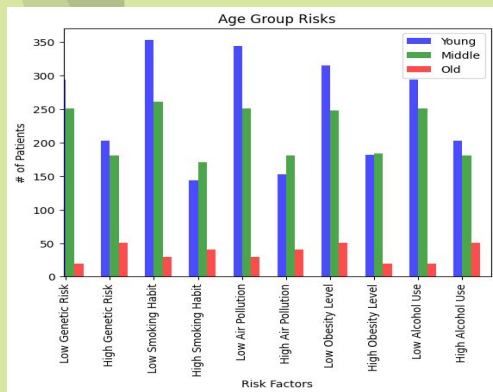
1. How do the risk factors differ for different age groups of patients?
2. How do the risk factors differ for male vs female patients?
3. What is the relation of pollution to the level of cancer in patients?
4. What is the relation of smoking habits to the level of cancer in patients?

1. How do the risk factors differ for different age groups?

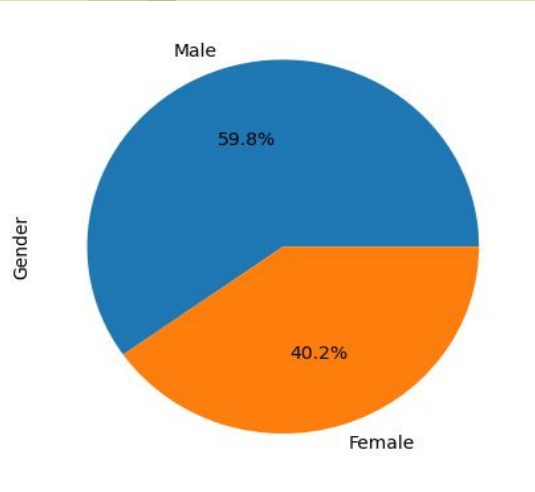
- The adult group exhibited a higher prevalence of 'High Risk' behaviors, including alcohol use, exposure to air pollution, and genetic predisposition. It's important to note that the older group was considerably smaller, leading to a relatively smaller concentration of high-risk behaviors compared to the other groups



- Overall, these findings indicate distinct age-related patterns in cancer, particularly concerning alcohol use, smoking behavior, and exposure to air pollution. It appears that middle-aged and older individuals exhibit higher rates of risk factors and lung cancer incidence.



2. How do the risk factors differ for gender?

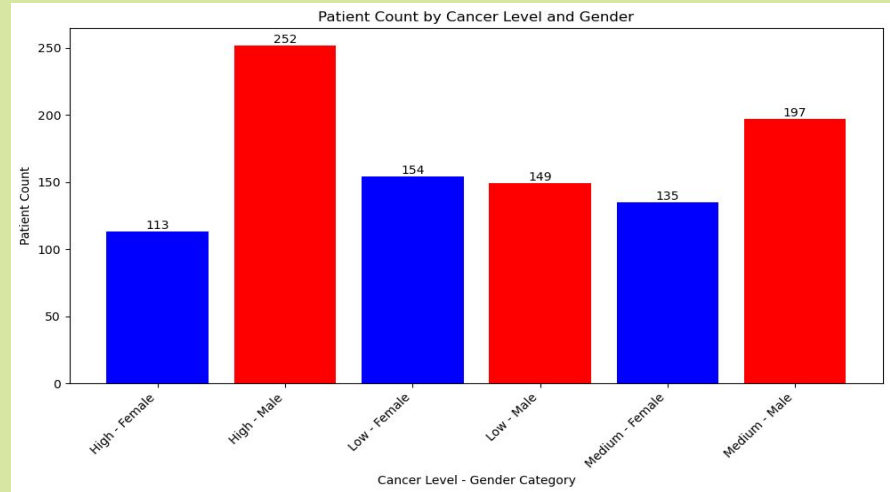


There were more men than women in the dataset.

Male - 598

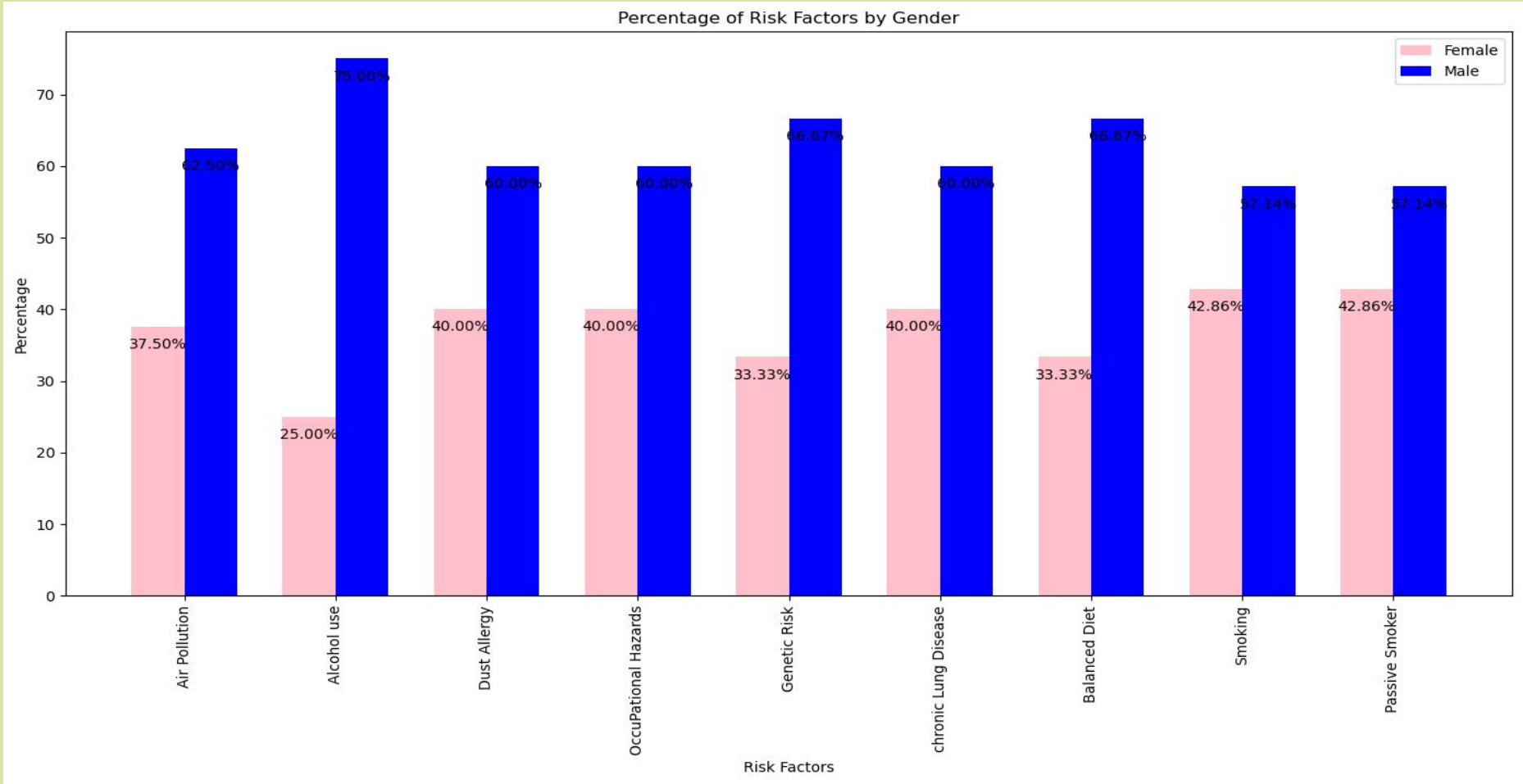
Female - 402

Men have higher levels of cancer and females had lower levels of cancer

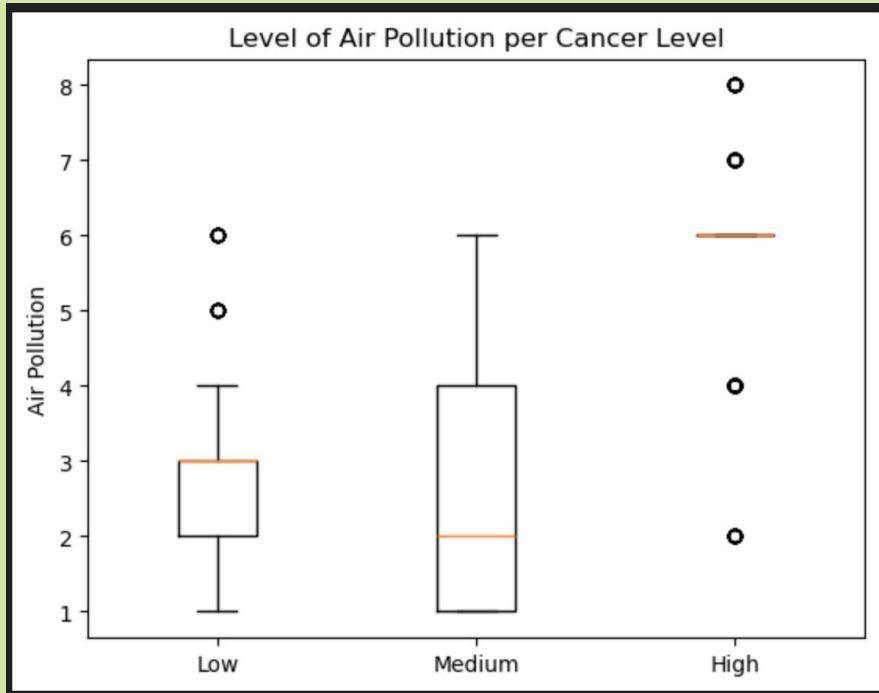


Men's risk factors tended to be higher

Risk factors based on gender

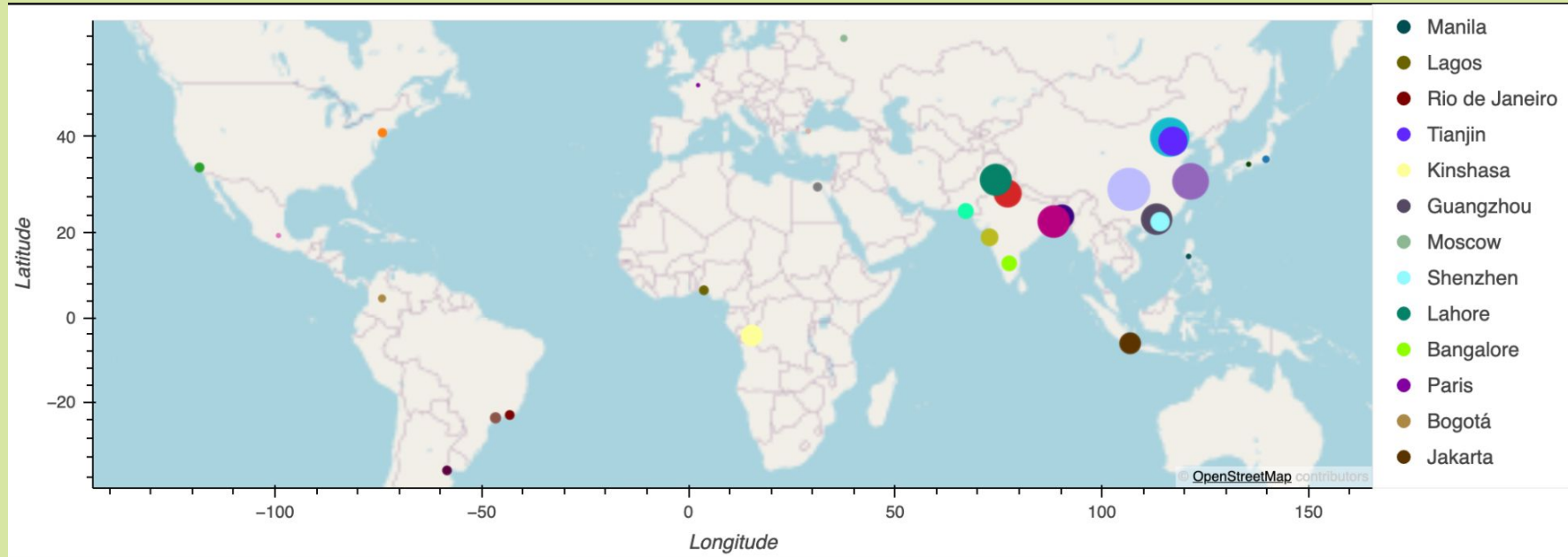


3. What is the relation of air pollution to level of cancer?



- The relationship of level of air pollution and level of cancer was positive.
- There were only a few cases where the high levels of cancer had lower than a value of 5 for pollution, and the opposite for the Low and Medium levels of cancer.
- Overall average for level of air pollution was 3.38
- Low level of cancer pollution average: 2.6
- Medium level of cancer pollution average: 2.9
- High level of cancer pollution average: 5.7

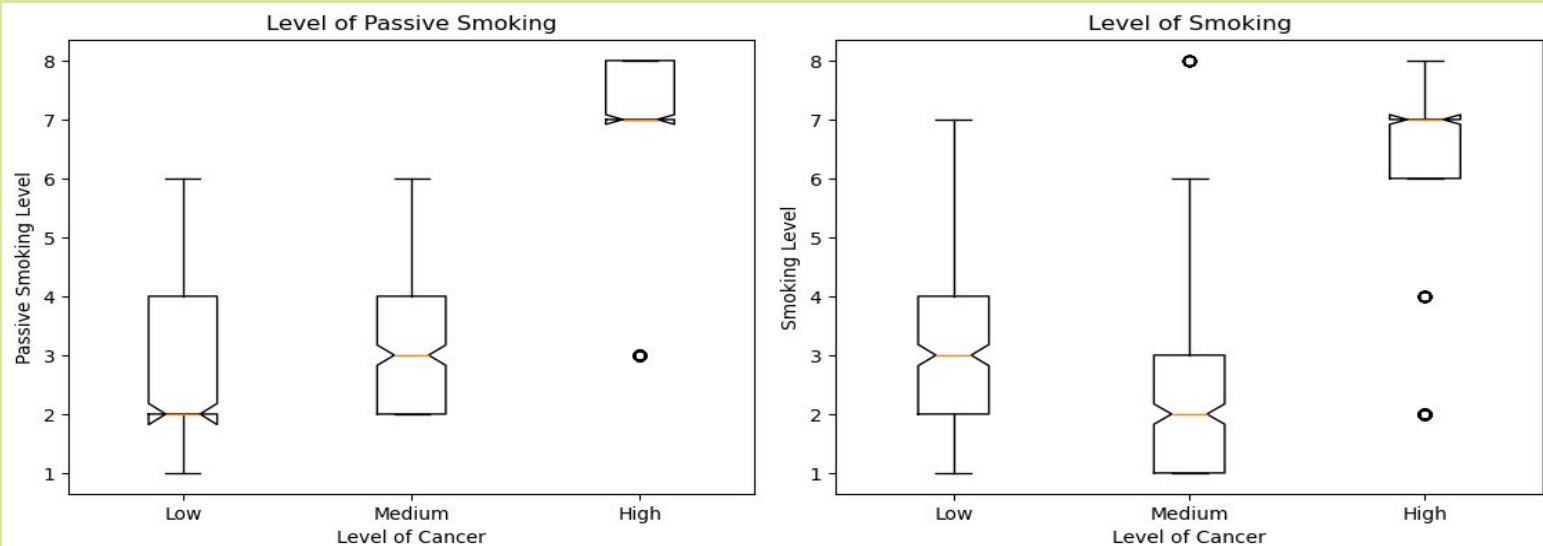
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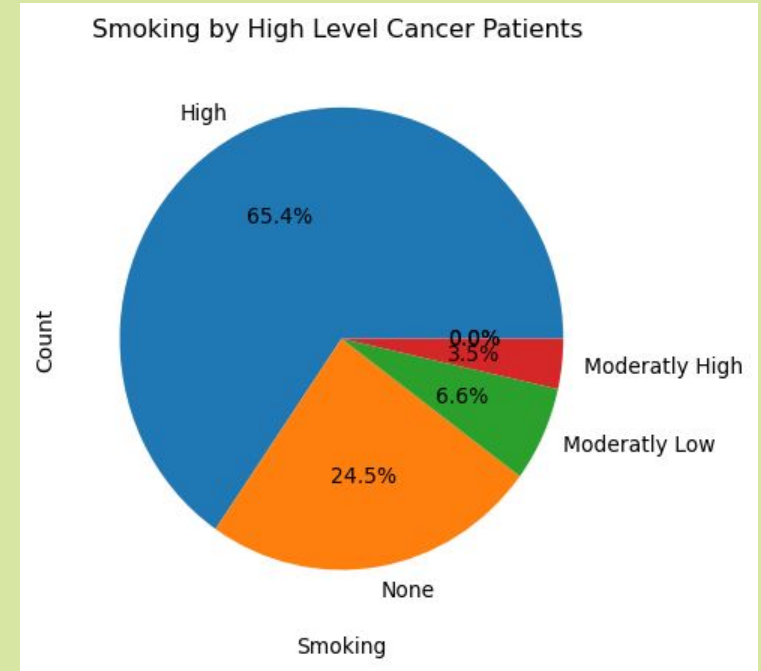
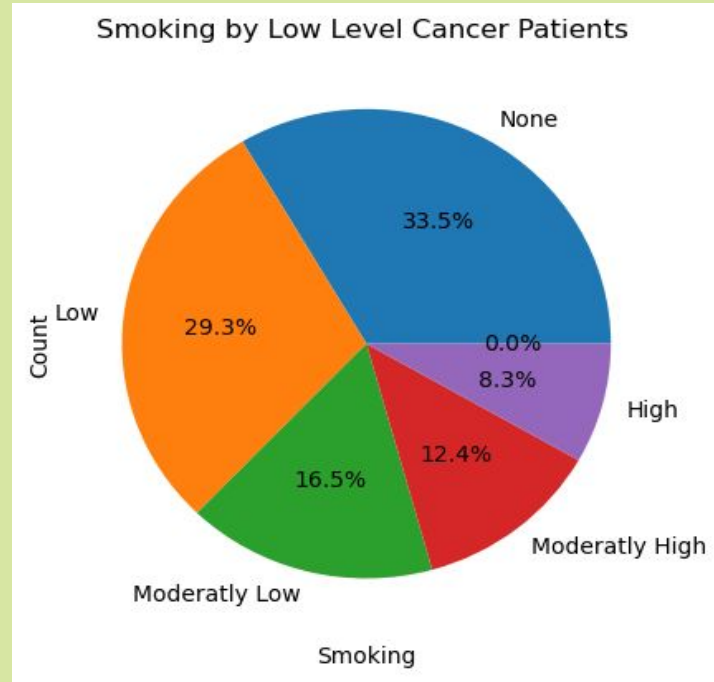
Bubble size determined by current level of PM2.5 per major city.

4. What is the relation of smoking habits to level of cancer?

- Higher levels of smoking lead to higher levels of cancer



4. What is the relation of smoking habits to level of cancer?





Conclusion

Our findings found that men, and older people tended to have riskier behaviors and higher levels of cancer. Living in cities with high air pollution and smoking greatly affected the level of cancer in the patients.