Demographic Predictors of Lung Cancer Risk Among Patients with Idiopathic Interstitial Lung Disease: A Population-Based Cohort Study Using *All of Us* Research Program Data

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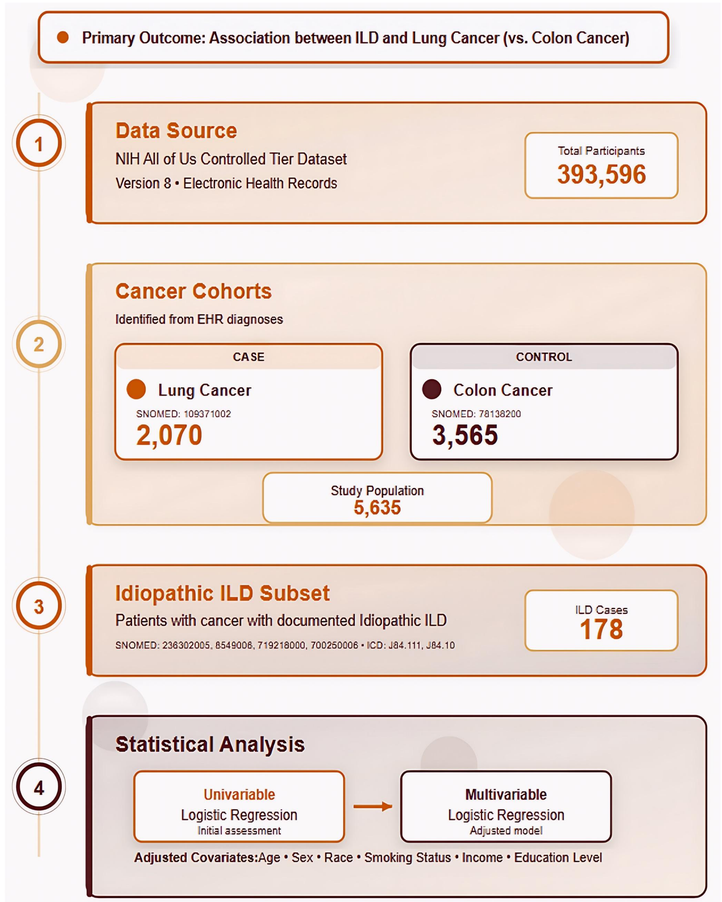
INTRODUCTION

- Interstitial lung disease (ILD) is a collection of heterogeneous conditions characterized by lung inflammation and scarring[1]
- The pathogenesis of ILD shares similar molecular mechanisms with lung cancer and creates a tumor-promoting environment
- ***Objective*: To investigate the association between idiopathic ILD and lung cancer in the large, and diverse U.S. population *All of Us* database**

METHODS



RESULTS

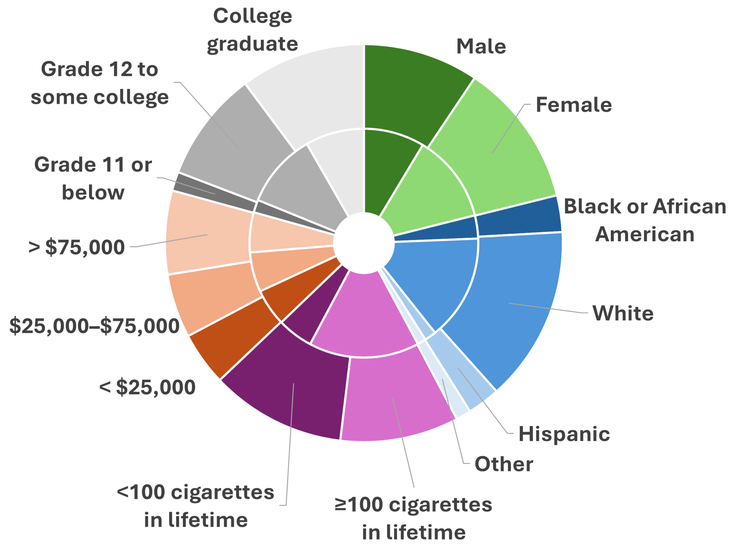


Figure 1: Nested Donut Chart showing sociodemographic data between Lung Cancer and colon cancer.

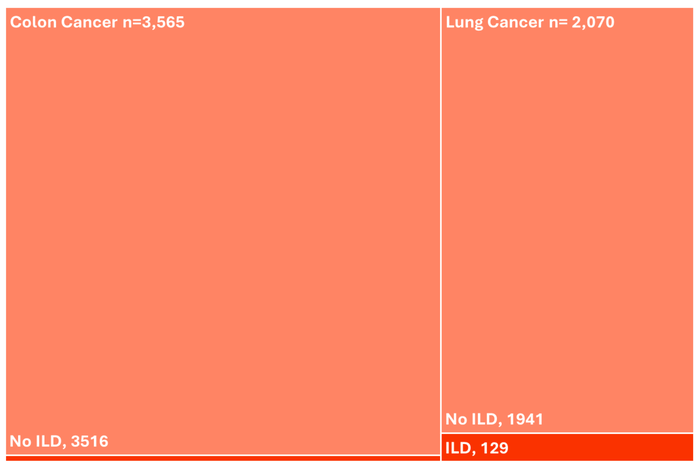


Figure 2: Mosaic plot illustrating the distribution of idiopathic ILD among lung cancer and colon cancer [OR 4.77; 95% CI: 3.41-6.66]. Additionally, 94.6% (122 out of 129) of lung cancer cases in the group with ILD occurred in patients with the pulmonary fibrosis subtype (idiopathic or unspecified)

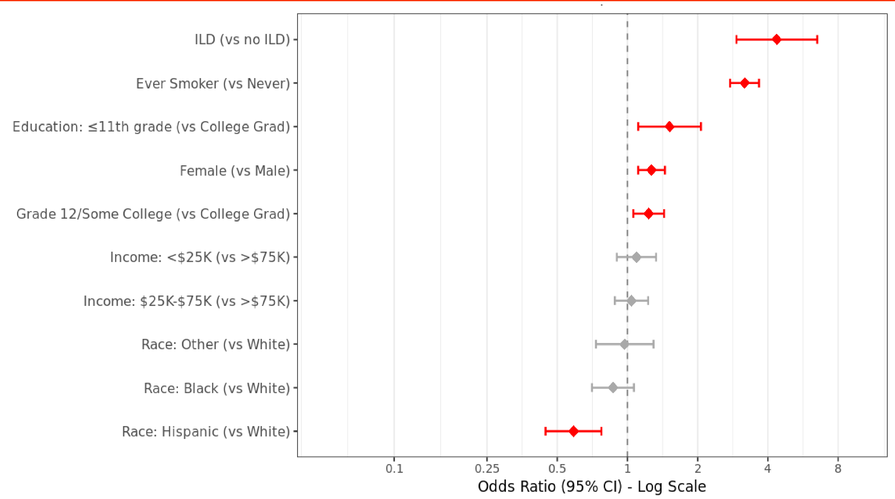


Figure 3: Logistic regression model of adjusted odds ratios for demographic and clinical variables associated with lung cancer compared to colon cancer. ILD was an independent risk factor for lung cancer [aOR 4.37; 95% CI: 2.94-6.51; p < 0.0001]. Other risk factors for lung cancer were smoking [aOR 3.18; 95% CI: 2.75-3.66; p < 0.0001], female sex [aOR 1.27; [95% CI: 1.11-1.45; p = 0.0004], and lower education levels.

References

DISCUSSION

- **This study replicates the finding from prior studies that ILD is associated with an increased risk of lung cancer,** but within the diverse population of the *All of Us* dataset, extending the generalizability of ILD as a risk factor in pulmonary carcinogenesis[2,3]
- **Notably, even after accounting for smoking and other potential confounders, ILD remained a strong independent predictor of lung cancer**, suggesting that ILD may independently drive carcinogenesis

CONCLUSION

- ILD significantly increases lung cancer risk, independent from other risk factors including smoking.
- Our findings support implementing and testing preventive strategies, including education, smoking cessation, and routine low-dose CT screening, for individuals with ILD

We gratefully acknowledge *All of Us* participants for their contributions, without whom this research would not have been possible. We also thank the National Institutes of Health's *All of Us* Research Program for making available the participant data and cohort examined in this study.