

Do place-based factors including socioeconomic status, rurality and physical access attenuate disparities in lung cancer screening adherence?

Introduction

- Lung cancer screening (LCS) is associated with a 20-26% reduction in lung cancer mortality in high-risk individuals, though this is highly dependent on adherence to follow-up
- Longitudinal follow-up in LCS is sub-optimal in clinical care settings
- Previous studies suggest racial disparities in adherence, which may be partially mediated by socioeconomic status and access to screening sites

The objective of this study is to comprehensively understand patient-level and place-based factors associated with annual lung cancer screening adherence.

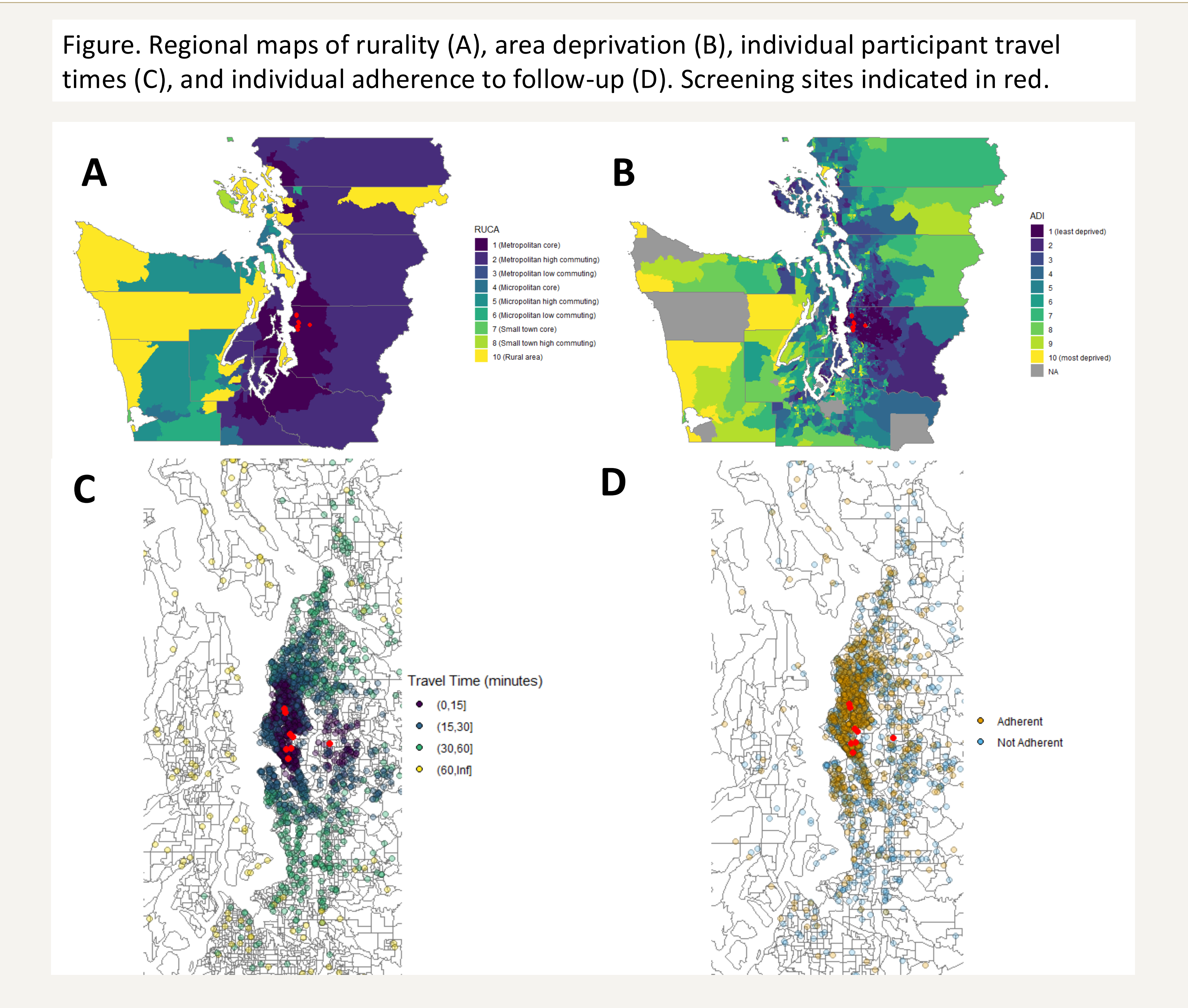
Methods

- Retrospective cohort study of a multisite lung cancer screening program in Seattle, WA, USA
- Participants include those who are eligible for LCS by USPSTF criteria and who had a normal LCS exam (Lung RADS 1 or 2) between April 2021 and September 2024
- Participants were followed through August 2025
- Adherence was defined as a repeat chest CT at 11-15 months
- Analysis was conducted using weighted logistic regression models with inverse probability of censoring weights to account for differences in available follow-up.
- Models were adjusted for confounding factors including: sex, age, race, ethnicity, smoking status, pack-years, comorbidity, insurance type, in-system primary care and previous LCS exam
- **Place-based factors of interest in these models included:**
 - **Rurality** (measured by census trace Rural-Urban Community Area)
 - **Socioeconomic Stats (SES)** (measured by neighborhood level Area Deprivation Index)
 - **Access** (measured by traffic-aware road-network travel time)

This study was funded by the National Institutes of Health / National Cancer Institute (R01CA284032). The study does not necessarily reflect the views of the NIH or the US government.

Table 1. Multivariable logistic regression model for LCS adherence.			
Variable	OR	(95% CI)	P-value
Race			0.006
White	(ref)		
Black or African American	0.55	(0.39-0.80)	0.001
ADI state decile (block group level)			0.026
1 (least deprived)	(ref)		
2	1.09	(0.84-1.41)	0.53
3	1.16	(0.87-1.54)	0.32
4	0.99	(0.68-1.46)	0.97
5	0.64	(0.42-0.96)	0.031
6 - 7	0.97	(0.65-1.44)	0.87
8 - 10 (most deprived)	0.66	(0.40-1.11)	0.12
RUCA code			0.44
Metropolitan core (1)	(ref)		
Metropolitan high/low commuting (2-3)	0.77	(0.46-1.27)	0.31
Micropolitan / small town / rural (4-10)	0.68	(0.29-1.60)	0.38
Traffic-aware travel time, per 2-fold increase	0.98	(0.89-1.08)	0.69

Table 2. Demographic Characteristics (n=2280)	
Variable	Value
Age, years	64 (59 - 69)
Male sex	1421 (62%)
Race	
White	1755 (77%)
Black or African American	198 (9%)
Asian	169 (7%)
Other	92 (4%)
Unknown	66 (3%)
Ethnicity	
Hispanic or Latino	81 (4%)
Not Hispanic or Latino	2082 (91%)
Unknown	117 (5%)
Insurance status	
Commercial	685 (30%)
Medicare	1179 (52%)
Medicaid	381 (17%)
Self-pay	28 (1%)
Other	7 (0.3%)
Empaneled with a PCP	
Yes, in-system	1561 (68%)
Yes, out-of-system	637 (28%)
No	82 (4%)
Smoking history	
Current	1035 (45%)
Former	1090 (48%)
Unknown	155 (7%)
Pack-years	30 (20 - 40)
<20	345 (15%)
20-30	382 (17%)
≥30	768 (34%)
Unknown	785 (34%)
First LCS episode	1633 (72%)



Conclusions

- Greater area deprivation is associated with lower adherence to LCS follow-up
- Place and access-based factors do not appear to attenuate the association between race and adherence to follow-up
- Interventions are needed to support patients at high risk for loss-to-follow-up