Factors Impacting Lung Cancer Screening Adherence in the RMRVAMC Lung Precision Oncology Program

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Background

- Lung cancer is the leading cause of cancer death in the US and worldwide.[1]
- Veterans face higher lung cancer risk due to greater tobacco use and carcinogen exposure.[2]
- Rural populations have higher lung cancer rates[7,8], and rural veterans are less likely to complete annual LDCT. [9]
- Centralized lung cancer screening programs have been shown to improve adherence.[13,14,19,20]
- Adherence rates have been found to be between 35% and 82%.[13,14,15,16,17]
- The Rocky Mountain VA's new program offers a chance to assess factors influencing adherence.

Methods

- This analysis utilized LPOP program data and chart reviews.
- Patients enrolled from March 2021 to June 2023 were included.
  - The 2021 start date reflects updated LCS guidelines (age 50-80, >20 py) and COVID-19 vaccine availability.
- Adherence was assessed by comparing the interval between CT scans to the recommended Lung-RADS follow-up period (Table 1).
- The model adjusted for covariates including scan count, gender, ethnicity, age, smoking status, urbanicity, and Lung-RADS score.
- All statistical analyses were performed using R Statistical Software.

Lung-RADS	Primary Model	Liberal Model
0	Repeat	Repeat
1	10-15 months	10-24 months
2	10-15 months	10-24 months
3	4-9 months	4-12 months
4A	1-5 months	1-6 months
4B	0-5 months	0-6 months

Table 1. Two models for guidelines on patient follow-up after a scan

Results

- Out of 1,085 distinct participants, 351 participants who had at least one post-baseline scan had a mean age of 65.3 years, 91% were male (reflecting the Veteran population), 58% were current smokers, and 13.4% resided in rural areas.
- A total of 185 (17%) were referred but unenrolled from the program. Lost to follow-up was the primary reason, accounting for 39% of unenrolled participants. (Figure 1)
- The median time between the enrollment date and the first CT scan was 55 days (IQR: 29–116 days).
- Urban residents had 68% lower odds of adhering to the lung cancer screening program than rural residents (OR 0.32; 95% CI 0.16-0.62; p < 0.001).
- Each additional screening scan was associated with a 41% decrease in the odds of continued participation in the program (OR 0.59; 95% CI 0.43-0.81; p < 0.001).
- There was increased adherence odds for patients with a Lung-RADS score of 4 (OR 3.31; 95% CI 1.04-10.54; p=0.043).
- Found a significant difference in patients' adherence behavior between scan two and scan 3 (p-value < 0.001) (Figure 2).
- Among 1,085 enrolled patients, lung cancer was detected in 12 at the baseline scan (1.12% prevalence). At the first follow-up (second CT scan) of 409 patients, 3 new cases were identified (0.73% incidence).
- Of the adenocarcinoma and SCC detected, 8 (61%) were stage I and 3 (23%) were stage II. Only 2 people were diagnosed with stage III and stage IV.
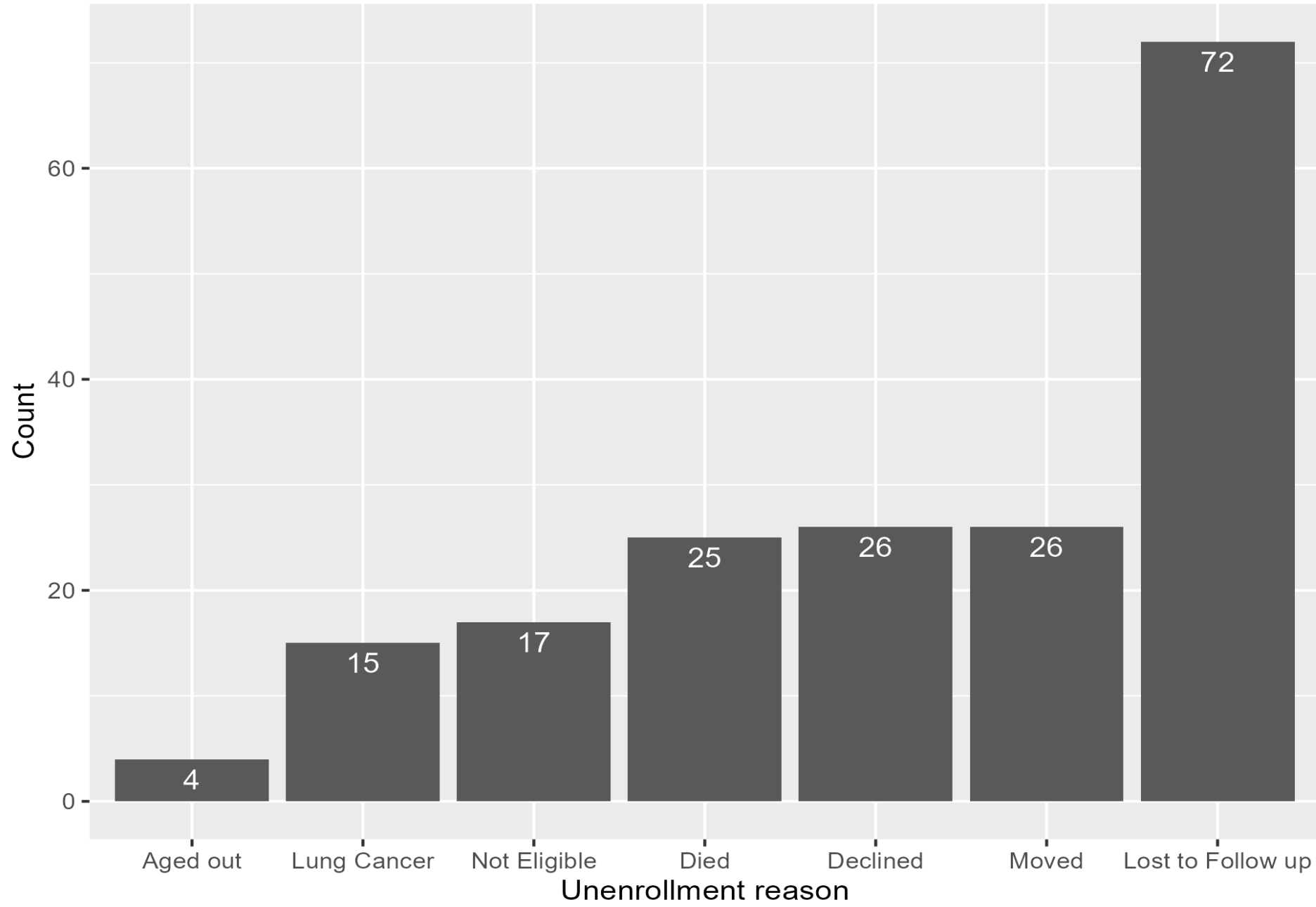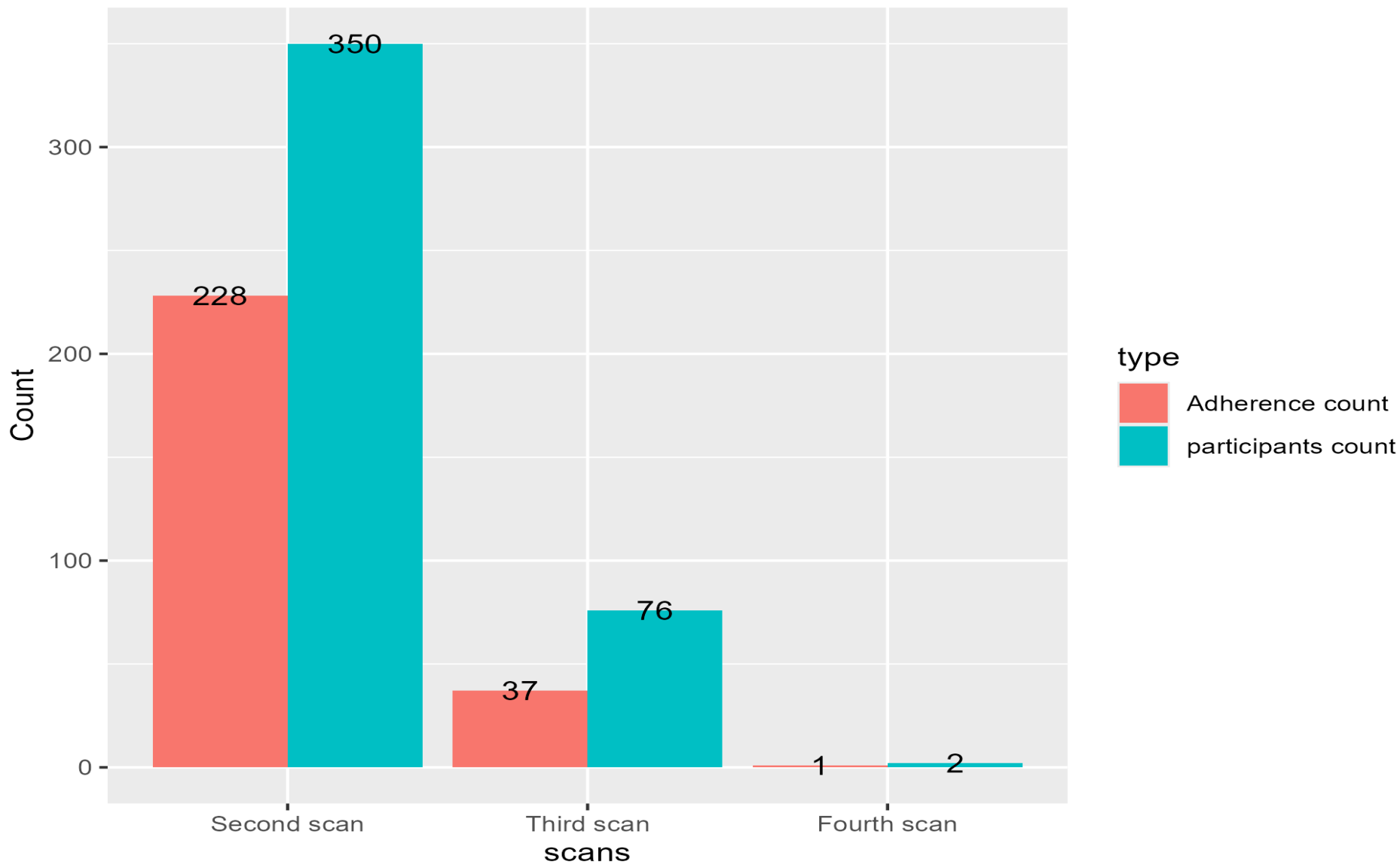

Figure 1. Distribution of Unenrollment Reasons

Figure 2. Bar plot of adherence and participants per scans

Discussion

- Despite limited access to care, in our study, rural veterans had higher adherence possibly due to stronger reliance on VA healthcare or better outreach.
- For urban veterans, socioeconomic challenges, housing instability, and difficulty navigating complex systems could impede participation.
- Negative association between screening frequency and adherence suggests challenges in long-term engagement, likely due to logistics, patient fatigue, or perceived lower need after negative results on a prior scan.
- Patients with higher-risk findings may prioritize their follow-up scans while patients with lower-risk findings may perceive less urgency.
- Targeted interventions, including patient education, tailored follow-ups, and risk-based communication, are essential to improve long-term screening adherence and reduce urban-rural disparities.

References

Disclosures

- No disclosures or conflicts of interest