

Racial Disparities in Stage at Lung Cancer Diagnosis and Overall Survival in Louisiana

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Background

- Lung cancer accounts for ~20% of all US cancer deaths and is the leading cause of cancer deaths in Louisiana ranking 10th among lung cancer-specific mortality rates in the US.
- Black patients face higher rates of late-stage diagnosis than White patients.
- Louisiana shows notable racial disparities in lung cancer stage and trends.

Objectives

- We examined the racial disparities in stage at lung cancer diagnosis and overall survival, and whether the differences varied by stage at diagnosis, accounting for demographic and clinical determinants

Methods

- A retrospective cohort of 14,944 lung cancer cases from Louisiana (2015–2021) was obtained from the Louisiana Tumor Registry.
- Descriptive and bivariate analyses, logistic regression for stage at diagnosis, with Cox-Regression, and Kaplan–Meier survival analysis for survival differences assessment.

Results

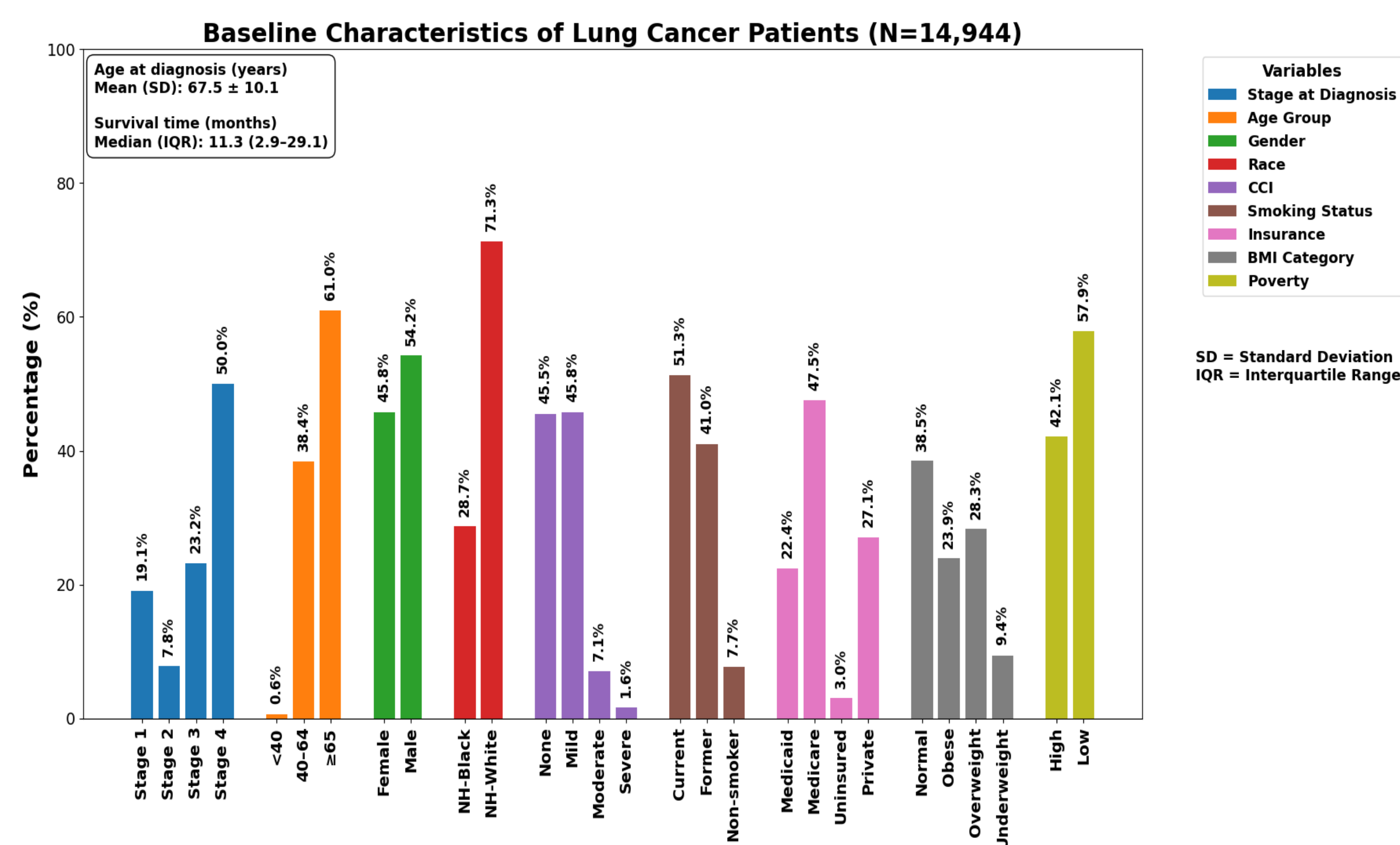


Fig 1: Participants' Demographics and Clinical Characteristics

Table 1: Bivariate Analysis Stage at Lung Cancer Diagnosis (N = 14,944)					
Variable	Stage 1 n (%)	Stage 2 n (%)	Stage 3 n (%)	Stage 4 n (%)	p-value
Race					
NH-Black	724 (25.4)	339 (29.2)	1061 (30.6)	2164 (29.0)	<0.0001*
NH-White	2126 (74.6)	821 (70.8)	2404 (69.4)	5305 (71.0)	
Gender					
Female	1513 (53.1)	509 (43.9)	1599 (46.2)	3227 (43.2)	<0.0001*
Male	1337 (46.9)	651 (56.1)	1866 (53.9)	4242 (56.8)	
Body Mass Index					
Normal	1000 (35.1)	407 (35.1)	1310 (37.8)	3032 (40.6)	<0.0001*
Obese	856 (30.0)	298 (25.7)	887 (25.6)	1529 (20.5)	
Overweight	825 (29.0)	361 (31.1)	964 (27.8)	2077 (27.8)	
Underweight	169 (5.9)	94 (8.1)	304 (8.8)	831 (11.1)	
Insurance Status					
Medicaid	485 (17.0)	251 (21.6)	818 (23.6)	1793 (24.0)	<0.0001*
Medicare/Other	1523 (53.4)	581 (50.1)	1628 (47.0)	3370 (45.1)	
Uninsured	57 (2.0)	24 (2.1)	92 (2.7)	274 (3.7)	
Private	785 (27.5)	304 (26.2)	927 (26.8)	2032 (27.2)	
Comorbidity Index					
None	1133 (39.8)	468 (40.3)	1507 (43.5)	3694 (49.5)	<0.0001*
Mild	1425 (50.0)	568 (49.0)	1665 (48.1)	3184 (42.6)	
Moderate	236 (8.3)	92 (7.9)	243 (7.0)	488 (6.5)	
Severe	56 (2.0)	32 (2.8)	50 (1.4)	103 (1.4)	
Smoking Status					
Current	1335 (46.8)	565 (48.7)	1856 (53.6)	3910 (52.4)	<0.0001*
Former	1244 (43.6)	498 (42.9)	1444 (41.7)	2947 (39.5)	
Non-smoker	271 (9.5)	97 (8.4)	165 (4.8)	612 (8.2)	
Age at diagnosis					
<40 years	22 (0.8)	9 (0.8)	16 (0.5)	43 (0.6)	<0.0001*
40–64 years	883 (31.0)	378 (32.6)	1382 (39.9)	3093 (41.4)	
≥65 years	1945 (68.3)	773 (66.6)	2067 (59.7)	4333 (58.0)	
Poverty level					
High	1132 (39.7)	485 (41.8)	1499 (43.3)	3171 (42.5)	0.0297*
Low	1718 (60.3)	675 (58.2)	1966 (56.7)	4298 (57.5)	

*Significant at p < 0.05; n = counts

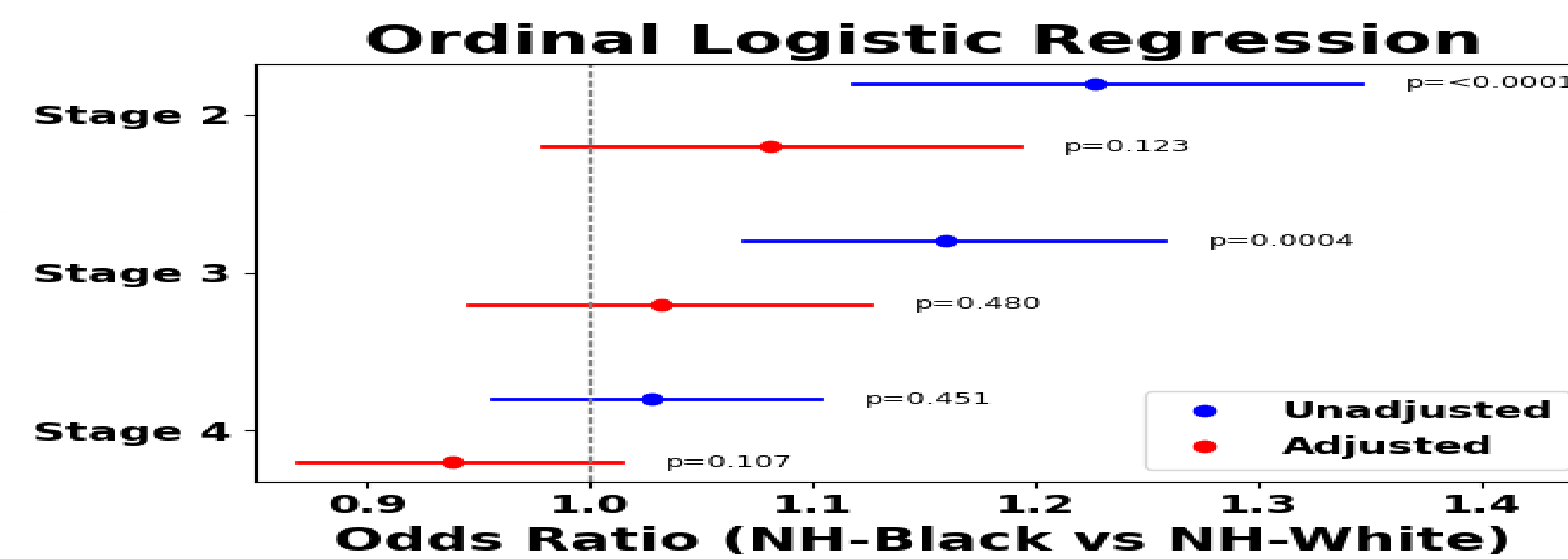


Fig 2: Forest plots: Racial Disparities in Stage at Lung Cancer Diagnosis

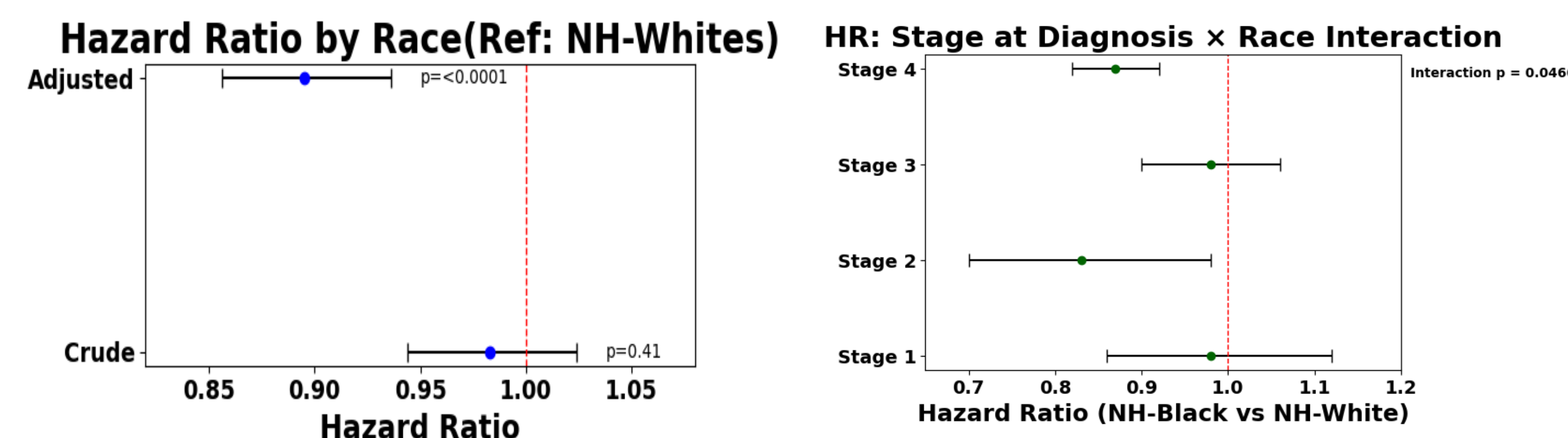


Fig 3: Forest plots: Racial Disparities in Overall Survival after Lung Cancer Diagnosis

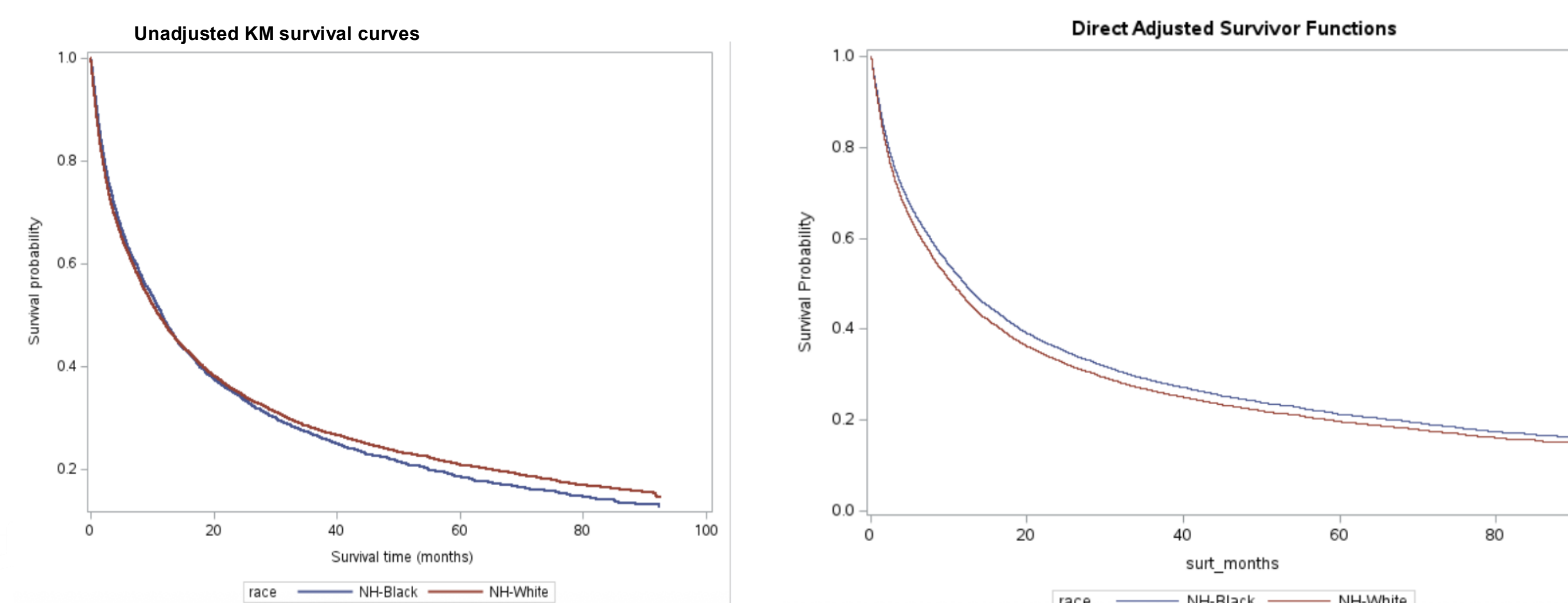


Fig 4: Kaplan-Meier Survival Curves for Overall Survival Time from Diagnosis to Last Contact

Discussion

- Late-stage diagnosis drives mortality: 50% diagnosed at Stage IV and 23% at Stage III; mortality risk rises sharply (Stage IV HR 5.87; Stage III HR 2.65 vs Stage I).
- Racial differences in stage were confounded: NH-Black patients initially showed higher odds of Stage II (OR 1.23) and Stage III (OR 1.16), but these disparities disappeared after adjustment.
- Structural factors shape stage at diagnosis: Insurance, smoking, Body Mass Index (BMI), comorbidity index, age, gender, and neighborhood poverty level were all strongly associated with stage (all p < 0.0001).
- Survival differences were stage-specific: Crude survival showed no racial difference (HR 0.98, p = 0.14), but adjusted models favored NH-Black patients (HR 0.90, p < 0.0001), with improved survival at Stage II (HR 0.83) and Stage IV (HR 0.87).

Conclusions & Future Steps

- Racial differences in lung cancer outcomes were largely explained by structural factors, with adjusted models showing no disadvantage for NH-Black patients and stage at diagnosis remaining the key driver of mortality.
- Enhance early detection strategies, including equitable access to screening, diagnostic follow-up, and culturally tailored outreach in high-risk communities.
- Incorporate multilevel and longitudinal approaches to understand better how structural inequities shape lung cancer trajectories from diagnosis through survivorship.

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