

Real-World Survival and Predictors of Mortality in Aggressive Hematologic Malignancies Amid Therapeutic Advancement and Healthcare Disruption: A Population-Based SEER Study

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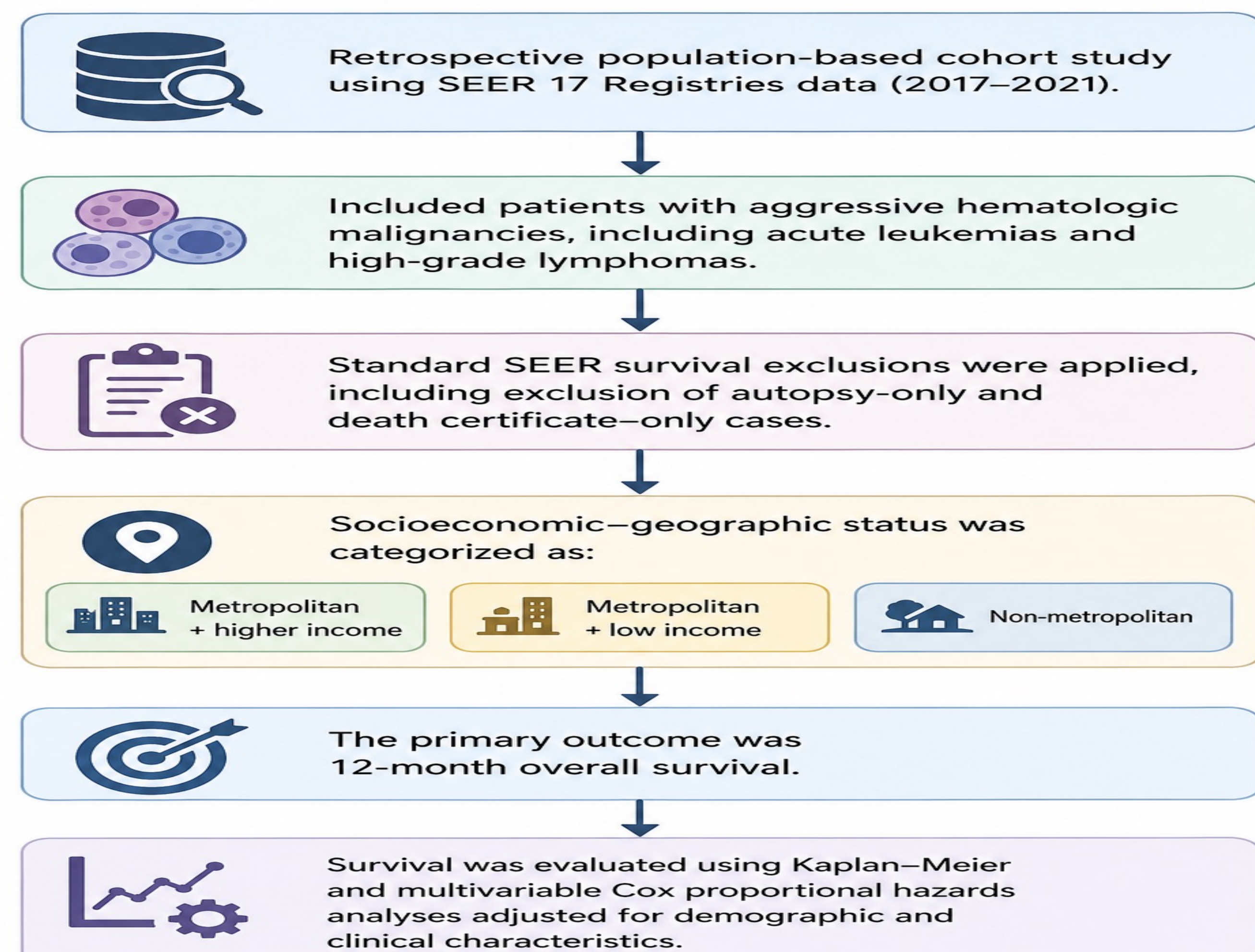
Background¹⁻⁷

- Aggressive hematologic malignancies remain associated with substantial mortality despite therapeutic advances.
- Prior studies have shown disparities in cancer outcomes by socioeconomic and geographic factors, yet it remains unclear whether these inequities persist across aggressive hematologic malignancies at the population level.

Objective

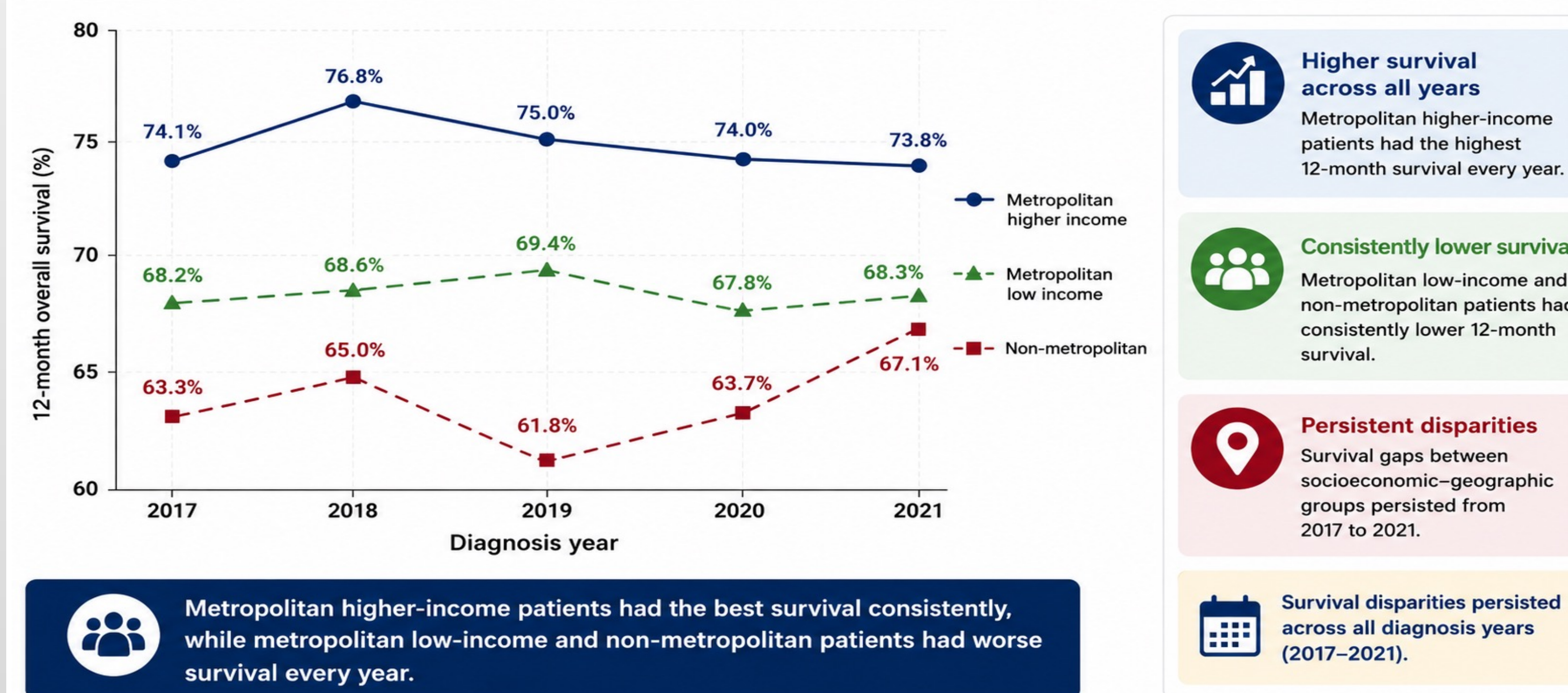
- To evaluate socioeconomic-geographic disparities and temporal trends in 12-month overall survival among patients with aggressive hematologic malignancies diagnosed between 2017 and 2021.

Methods⁸⁻¹⁵



Results

Figure 1. Trends in 12-Month Overall Survival by Socioeconomic-Geographic Status (2017-2021)



Metropolitan higher-income patients had the best survival consistently, while metropolitan low-income and non-metropolitan patients had worse survival every year.

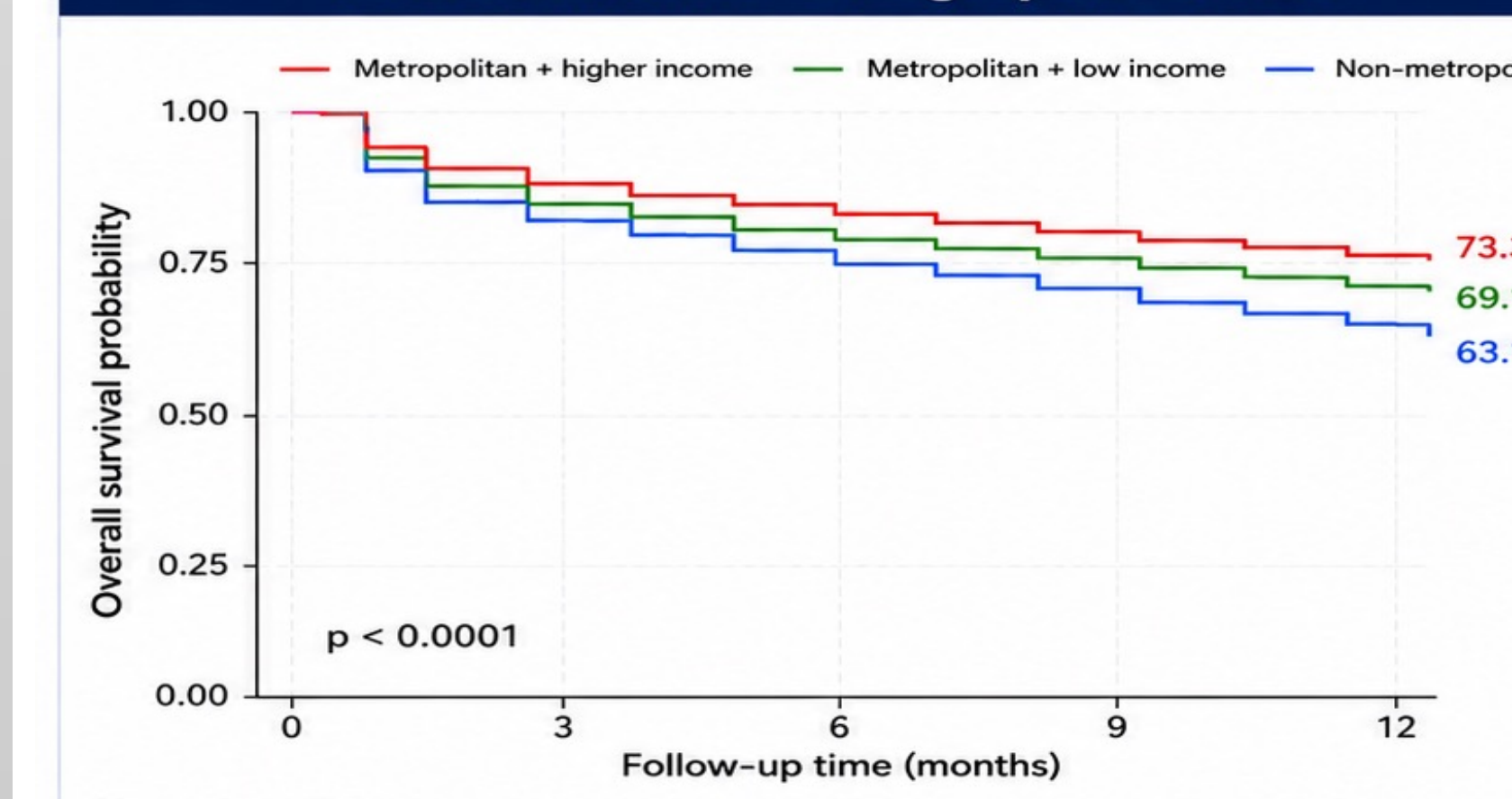
Higher survival across all years
Metropolitan higher-income patients had the highest 12-month survival every year.

Consistently lower survival
Metropolitan low-income and non-metropolitan patients had consistently lower 12-month survival.

Persistent disparities
Survival gaps between socioeconomic-geographic groups persisted from 2017 to 2021.

Survival disparities persisted across all diagnosis years (2017-2021).

Figure 2. 12-Month Overall Survival by Socioeconomic-Geographic Status

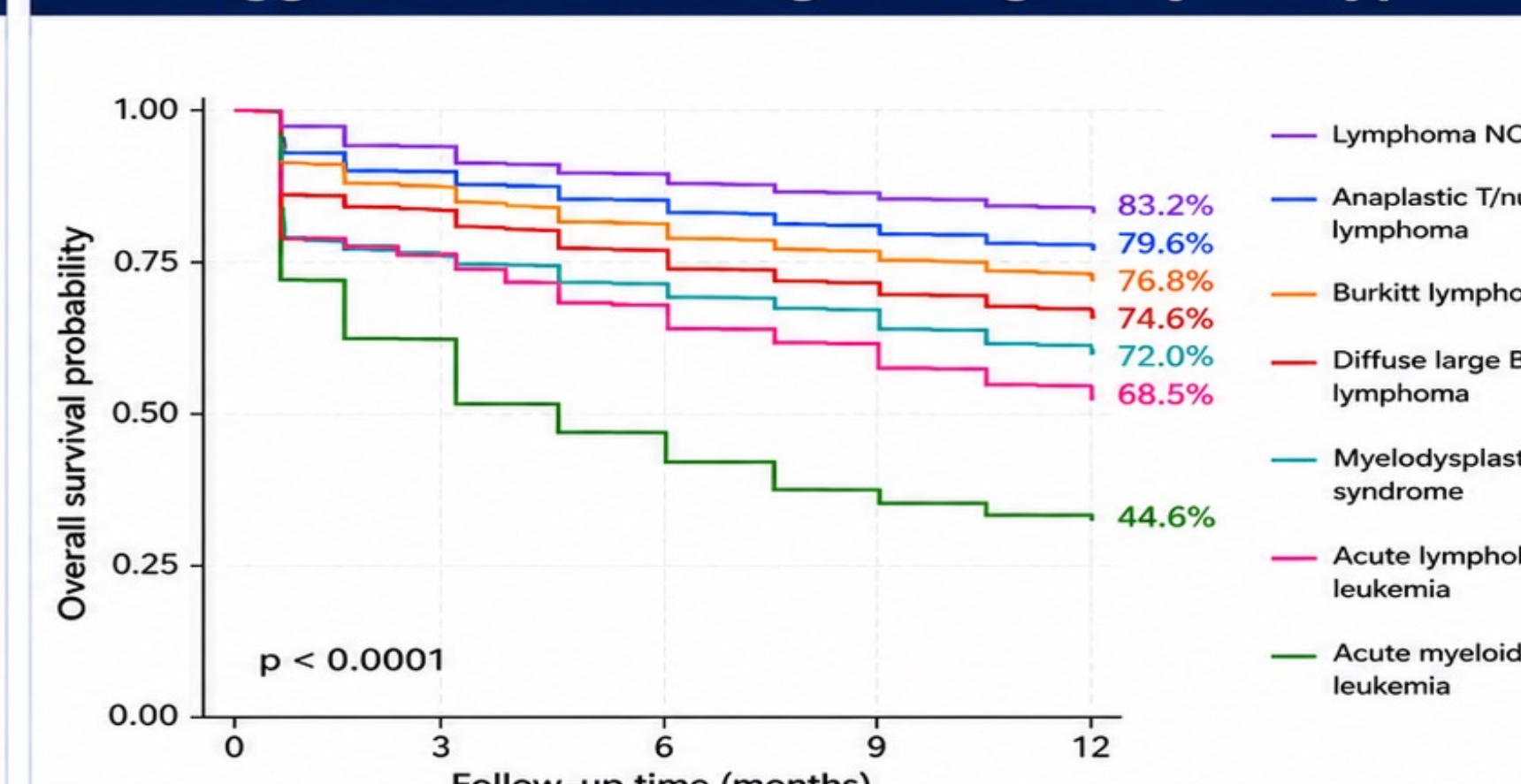


Number at risk	0 months	3 months	6 months	9 months	12 months
Metropolitan + higher income	23,442	19,932	18,670	17,600	16,709
Metropolitan + low income	13,672	11,263	10,425	9,798	9,265
Non-metropolitan	4,011	3,203	2,932	2,727	2,584

Survival was highest among metropolitan higher-income patients and lowest among non-metropolitan patients throughout 12 months.

Significant socioeconomic-geographic disparities in 12-month overall survival persisted ($p < 0.0001$).

Figure 3. 12-Month Overall Survival by Aggressive Hematologic Malignancy Subtype



Survival varied substantially by malignancy subtype. Acute myeloid leukemia had the lowest 12-month survival, while lymphoma NOS had the highest.

Key takeaways

- Socioeconomic-geographic status and malignancy subtype were strongly associated with 12-month overall survival.
- Targeted strategies are needed to reduce disparities and improve outcomes among vulnerable populations.

Table 2. Adjusted Cox proportional hazards model for 12-month overall survival among patients with aggressive hematologic malignancies

Characteristic	HR	95% CI	p-value
Socioeconomic-geographic status			<0.001
Metropolitan + higher income (Reference)	1		
Metropolitan + low income	1.17	1.12, 1.22	
Non-metropolitan	1.31	1.24, 1.39	
Unknown	0.78	0.38, 1.62	
Diagnosis year			0.4
2017 (Reference)	1		
2018	0.97	0.92, 1.03	
2019	0.99	0.94, 1.05	
2020	1.03	0.97, 1.09	
2021	1.01	0.96, 1.07	
Age group			<0.001
15-44 (Reference)	1		
45-54	1.59	1.43, 1.77	
55-64	2.27	2.07, 2.50	
65-74	2.93	2.63, 3.26	
75+	5.54	5.07, 6.04	
Sex			<0.001
Female (Reference)	1		
Male	1.15	1.11, 1.19	
Race			<0.001
White (Reference)	1		
Black	1.22	1.14, 1.31	
Asian/Pacific Islander	1.17	1.11, 1.24	
American Indian/Alaska Native	1.39	1.11, 1.73	
Unknown	1.10	1.04, 1.16	
Aggressive malignancy subtype			<0.001
Diffuse large B-cell lymphoma (Reference)	1		
Acute lymphoblastic leukemia	1.72	1.56, 1.89	
Acute promyelocytic leukemia	1.29	1.08, 1.54	
Acute myeloid leukemia	2.67	2.53, 2.79	
Burkitt lymphoma	1.81	1.53, 2.15	
Anaplastic T/null-cell lymphoma	0.75	0.69, 0.81	
Lymphoma NOS	0.38	0.36, 0.41	
Myelodysplastic syndrome	0.57	0.54, 0.61	
Chemotherapy			<0.001
Not/Unknown (Reference)	1		
Yes	0.48	0.46, 0.51	
Radiation			<0.001
Other/Unknown (Reference)	1		
Any radiation	0.48	0.44, 0.52	
Time to treatment initiation			<0.001
0-14 days (Reference)	1		
>14 days	0.62	0.60, 0.66	
Unknown	1.12	1.04, 1.20	

Table 1. Baseline characteristics by socioeconomic-geographic status

Characteristic	Overall N = 41,155 ^a	Metropolitan + higher income N = 23,442 ^a	Metropolitan + low income N = 13,672 ^a	Non-metropolitan N = 4,011 ^a
Diagnosis year				
2017	9,331 (22%)	4,182 (18%)	4,317 (32%)	832 (20%)
2018	8,809 (22%)	4,204 (17%)	4,621 (34%)	722 (18%)
2019	7,058 (17%)	4,477 (20%)	3,555 (26%)	714 (18%)
2020	7,717 (19%)	5,049 (22%)	3,776 (28%)	892 (22%)
2021	6,190 (20%)	5,440 (23%)	1,903 (14%)	847 (21%)
Age group				
15-44	5,462 (13%)	3,135 (13%)	1,945 (14%)	373 (9%)
45-54	4,274 (10%)	2,452 (10%)	1,466 (11%)	354 (8%)
55-64	7,971 (19%)	4,432 (19%)	2,407 (18%)	792 (20%)
65-74	10,739 (26%)	5,976 (25%)	3,549 (26%)	1,187 (30%)
75+	12,769 (31%)	7,454 (32%)	4,005 (29%)	1,305 (33%)
Sex				
Female	17,874 (43%)	10,253 (43%)	6,095 (45%)	1,717 (43%)
Male	23,281 (57%)	13,189 (57%)	7,577 (55%)	2,294 (57%)
Race				
American Indian/Alaska Native	257 (0.6%)	101 (0.4%)	83 (0.6%)	43 (1.1%)
Asian/Pacific Islander	4,822 (12%)	3,845 (17%)	893 (6%)	44 (1.1%)
Black	2,849 (6.9%)	1,103 (4.7%)	1,495 (11%)	251 (6.3%)
Unknown	7,221 (18%)	3,892 (17%)	3,079 (23%)	250 (6.2%)
White	26,066 (63%)	14,461 (62%)	11,522 (84%)	3,423 (85%)
Rurality				
Metropolitan	37,314 (90%)	23,442 (100%)	13,672 (100%)	4,011 (100%)
Non-metropolitan	4,011 (9.7%)	0 (0%)	0 (0%)	0 (0%)
Income category				
Higher income	23,811 (57%)	23,442 (100%)	0 (0%)	141 (3.5%)
Low income	17,342 (42%)	0 (0%)	13,672 (100%)	3,870 (96%)
Aggressive malignancy subtype				
Acute lymphoblastic leukemia	1,972 (4.8%)	1,103 (4.7%)	724 (5.3%)	141 (3.5%)
Acute myeloid leukemia	6,191 (15%)	3,402 (15%)	2,112 (15%)	677 (17%)
Acute promyelocytic leukemia	673 (1.6%)	341 (1.5%)	298 (2.2%)	74 (1.8%)
Anaplastic T/null-cell lymphoma	3,462 (8.4%)	2,042 (8.7%)	1,138 (8.3%)	282 (6.5%)
Burkitt lymphoma	490 (1.2%)	280 (1.2%)	187 (1.4%)	41 (1.0%)
Diffuse large B-cell lymphoma	6,646 (16%)	5,494 (23%)	5,537 (40%)	1,609 (40%)
Lymphoma NOS	6,180 (15%)	3,706 (16%)	1,900 (14%)	574 (14%)
Myelodysplastic syndrome	5,316 (13%)	3,054 (13%)	1,842 (14%)	417 (10%)
Chemotherapy				
Not/Unknown	15,429 (37%)	8,711 (37%)	5,157 (38%)	1,557 (39%)
Yes	25,726 (63%)	14,731 (63%)	8,515 (62%)	2,454 (61%)
Time to treatment initiation				
>14 days	141 (0.3%)	74 (0.3%)	49 (0.4%)	18 (0.4%)
0-14 days	3,596 (8.7%)	2,068 (8.8%)	1,237 (9.0%)	351 (8.8%)
Unknown	37,418 (91%)	21,360 (91%)	12,386 (91%)	3,642 (91%)
Vital status				
Alive	23,857 (58%)	14,421 (62%)	7,737 (57%)	2,044 (51%)
Dead	17,298 (42%)	9,021 (38%)	6,295 (46%)	1,967 (49%)

Discussion¹⁶⁻²⁹



Key Finding

Socioeconomic-geographic disparities in survival persist among patients with aggressive hematologic malignancies. After adjustment for demographic, clinical, and treatment factors, patients in low-income metropolitan and non-metropolitan areas had 17% and 31% higher mortality, respectively, compared with those in higher-income metropolitan areas.



Comparison with Literature

- Consistent with prior studies demonstrating worse cancer outcomes among socioeconomically disadvantaged and geographically underserved populations.
- Extends existing evidence to multiple aggressive hematologic malignancies in a contemporary, population-based cohort.



Possible Explanations

- Limited access to specialized hematologic oncology care and clinical trials
- Delays in diagnosis and treatment initiation
- Fewer supportive care resources
- Transportation, financial, and social barriers impacting continuity of care



Clinical & Policy Implications

- Targeted interventions are needed to improve access to high-quality hematologic oncology care in underserved areas.
- Expansion of tele-oncology, patient navigation, and supportive services may help reduce disparities.
- Policy-level efforts should address structural barriers driving inequities.



Take-Home Message

Survival disparities in aggressive hematologic malignancies are strongly influenced by socioeconomic-geographic status, highlighting the need for equity-focused strategies beyond advances in treatment.



Future Directions: Future work should identify modifiable barriers across the care continuum and evaluate targeted interventions aimed at reducing disparities in this vulnerable population.

Conclusion

- Despite major therapeutic advances in hematologic oncology, persistent socioeconomic-geographic survival disparities highlight the need for equitable access to specialized cancer care and supportive health services for vulnerable populations with aggressive hematologic malignancies.

Financial Disclosure

- All authors of this research have nothing to disclose. Presented at ISPOR 2026. May 17-20, 2026, Philadelphia, USA. **References (QR code)**

