

# Lack of Equity in Clinical Outcomes in Blacks and Hispanics with NSCLC

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# Lung Cancer in Hispanics

- We will have 130,000 deaths in the US in 2022, and more than 60,000 deaths per year in Latin America (LATAM).
- Hispanics are the largest minority group in the US (18% of the population), and there are more than 20 countries with Hispanic populations in LATAM.
- Disparities in the diagnosis and clinical outcomes of Hispanic patients with lung cancer compared with Non-Hispanic White (NHW) patients are well documented.
  - ❖ Hispanics have disadvantages in social determinants of health: access to care, health insurance, cultural differences, and immigration status.
  - ❖ There are also genetic and other biological differences (like EGFR frequency)
  - ❖ Hispanics in LATAM have some extra hardships; most of them live in countries classified as low- and middle-income countries.

# Lung Cancer in Hispanics

- Compared with the NHW population in the US:
  - \*\* Hispanics tend to have more SDOH, and cultural factors
  - \*\* 24% live below the poverty line
  - \*\* 35% have less than high school education
  - \*\* One third had no health insurance and reported not having a consistent doctor.
- Although Hispanics in the US have an overall lower incidence for all cancers, they generally experience greater health disparities because of structural, sociodemographic, psychosocial factors; however, they have a better overall survival (OS) than other minorities: the so-called **Hispanic Health Paradox (HHP)**.

**Aizer AA, et al. Cancer 120:1532-1539, 2014**

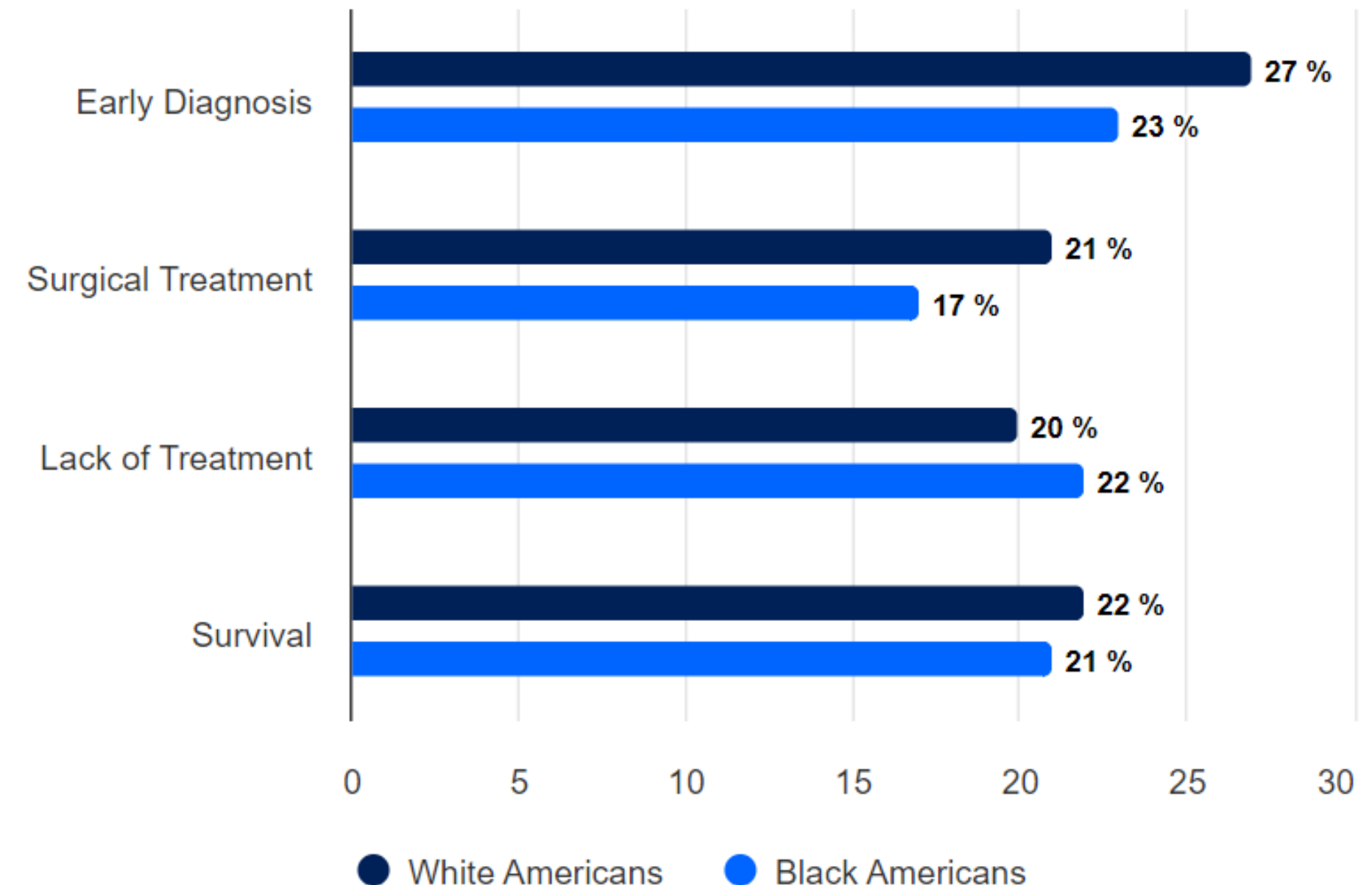
**Lin JJ, et al. Ann Am Thorac Soc 11:489-495, 2014**

# Lung Cancer in Black Patients

Black patients with lung cancer were:

- 15% less likely to be diagnosed early
- 19% less likely to receive surgical treatment
- 10% more likely to not receive any treatment
- 12% less likely to survive five years compared to white Americans.

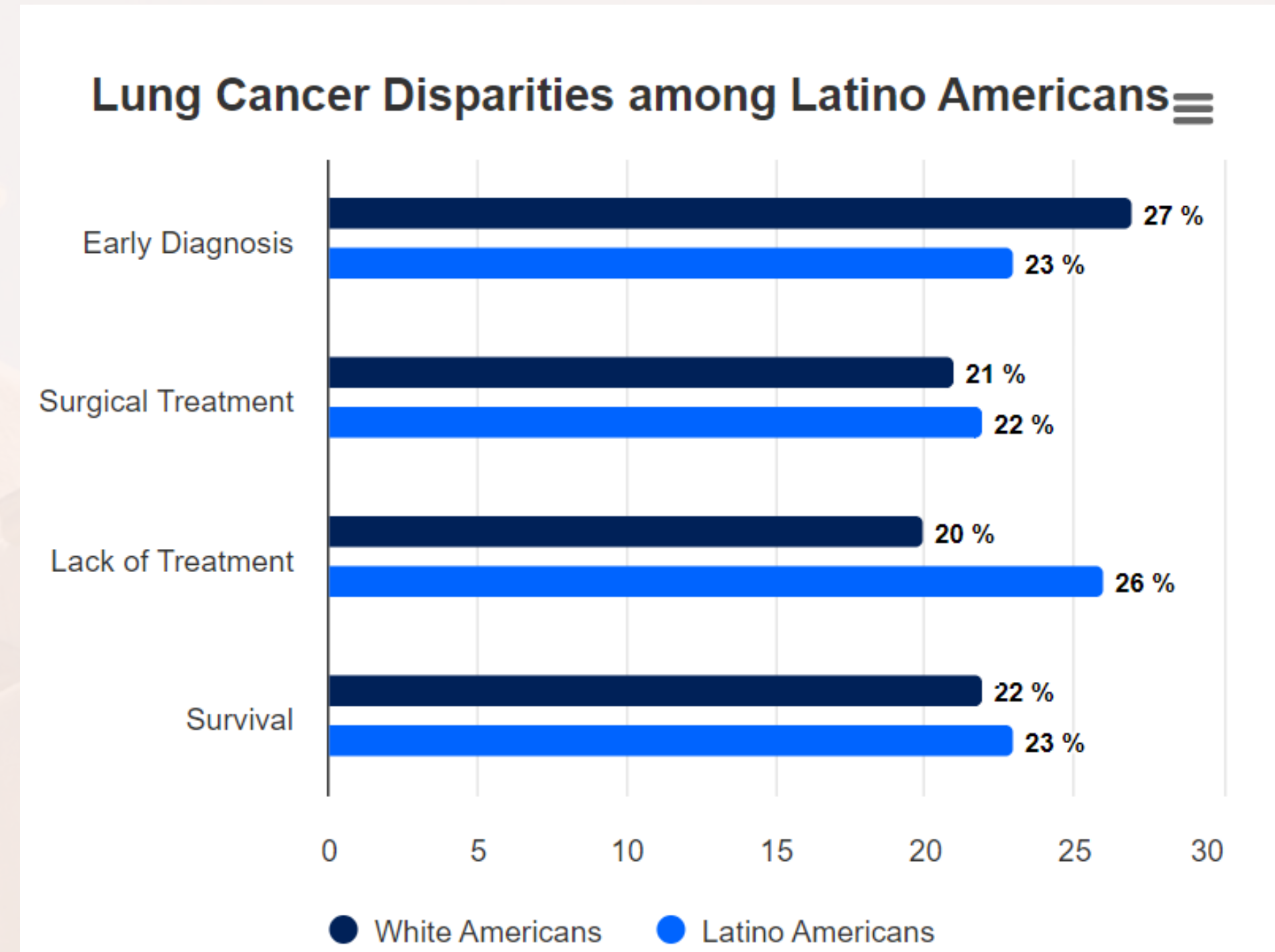
## Lung Cancer Disparities among Black Americans



# Lung Cancer in Hispanics

Latino Americans with lung cancer were:

- 15% less likely to be diagnosed early
- Equally likely to receive surgical treatment
- 28% more likely to not receive any treatment
- 25% less likely to survive five years compared to white Americans.



# Lung Cancer Screening

## RESULTS

	NCCN Eligible		P-value	USPSTF Eligible		P-value
	Yes (%)	No (%)		Yes (%)	No (%)	
<b>Race</b>						
African American	56.9	43.1	0.206	38.5	61.5	0.496
White, Asian, other	65.6	34.4		43.8	56.2	
<b>Ethnicity</b>						
Hispanic/LatinX	52.0	48.0	0.201	20.0	80.0	<b>0.027</b>
Non-Hispanic/LatinX	65.0	35.0		44.4	55.6	

Table 2: NCCN and USPSTF screening eligibility criteria in difference races and ethnicities

	Screening Eligible		P-value
	NCCN (%)	USPSTF (%)	
<b>African American</b>	56.9	38.5	<b>0.0029</b>
<b>Hispanic/LatinX</b>	52.0	20.0	<b>0.0001</b>

Table 3: NCCN and USPSTF screening eligibility rates amongst AA and H/L

# Early Stage and Different Surgical Outcomes

- Fewer Hispanics and Blacks undergoing surgery than NHW.
- Blacks exhibiting a reduced likelihood of surgical treatment and subsequently lower OS compared to NHW (26.4% vs. 34.1%,  $P < 0.001$ ).
- Similar disparities in Hispanics, with lower OS and surgical rates than NHW (54.2% vs. 64.2%,  $P = 0.008$  and 83% vs. 86%,  $P = 0.003$ )
- Blacks tend to experience treatment delays, averaging 6.7 days from diagnosis to surgery which can lead to a 3.2% decrease in OS for patients who delay surgery for a week.
- According to the American Lung Association's (ALA) 2022 lung cancer statistics, Hispanics have better survival rates than NHW, while Blacks have worse survival rates

Bach PB et al. New England Journal of Medicine. 1999;341(16):1198-1205.

UNC 2022. from: <https://unclineberger.org/news/intervention-reduces-disparities-in-timing-of-lung-cancer-surgery-between-black-and-white-patients/>.

ALA. 2022. Available from: <https://www.lung.org/research/state-of-lung-cancer/racial-and-ethnic-disparities>.

# Gene Expression Profile: IASLC LATAM Group

- Lynch et al, identified clinical, demographic, and regional predictors of EGFR&KRAS testing among Medicare beneficiaries with lung cancer (2011-13). There was a 19.7% increase in the rate of EGFR testing; however, Hispanics were less likely to be tested.
- Raez et al, performed a genomic analysis of 492 patients with NSCLC finding that Hispanics living in the US have a higher rate of EGFR mutations (25%) than NHW patient's historic rates (15%) while the frequencies of other genetic aberrations (ALK, ROS-1, and KRAS) were similar.
- Arrieta et al, (CLICAP) have shown that EGFR mutation frequencies have varying rates among Hispanics from LATAM countries (15% in Argentina, 20% in Brazil, 25% in Mexico, and 55% in Peru)
- This genomic disparity favors Hispanics who have a better chance of survival than NHW patients; maybe, this can help to explain the Hispanic Paradox?

**Lynch JA et al. BMC Cancer 18:306, 2018**

**Raez LE et al. J Thorac Oncol 11:S176, 2016**

**Arrieta O et al. J Thorac Oncol 6:1955-1959, 2011**



# Immunotherapy

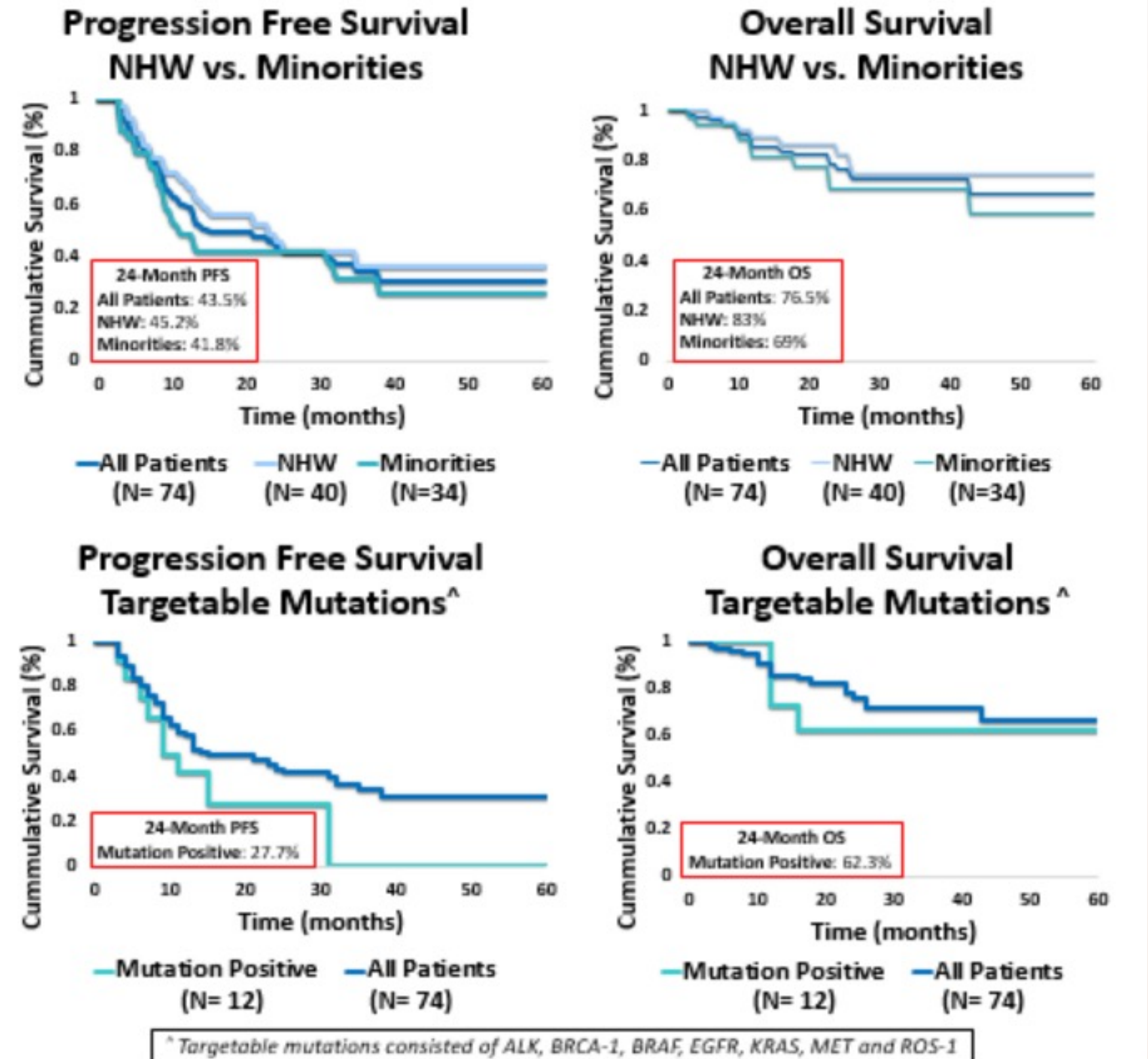
- Most of the IO registration trials were done in the US/Europe, and they did not include anybody or enrolled a minimal number of Hispanics.
- Raez et al; reported data from 256 Hispanics with NSCLC treated with IO as 2<sup>nd</sup> line in LATAM and US compared with 180 NHW controls, finding no difference in outcomes (PFS and OS).
- Cardona et al; included 296 Hispanic patients from the US and LATAM with NSCLC treated IO in 1<sup>st</sup>, 2<sup>nd</sup> or 3<sup>rd</sup> line; median OS was 19.9 months compared with historical data from NHW patients; IO proved to be superior in terms of OS but not PFS.
- Despite the fact that biological speaking, the outcomes of Hispanics seem to be better or similar to NHW patients; other factors, mainly in Hispanics in LATAM, do not allow them to have these benefits because of lack of access, creating substantial disparities in outcomes.

**Raez LE et al. J Clin Oncol 37, 2019 (suppl; abstr e18109)**

**Cardona AF et al. J Thor Oncol 14:S984-S985, 2019**

# Immunotherapy

- Patients treated in the PACIFIC trial were only 2% Blacks and ?% Hispanics.
- Data from our study offers evidence to suggest that among patients with stage III NSCLC treated with Immunotherapy after chemotherapy and radiation: NHW have superior PFS and OS when compared to Hispanic & Black patients.



# What are Social Determinants of Health (SDOH)?



Conditions of an individual's **living, learning, and working** environments that affect one's health risks and outcomes.



Recognized as **important predictors in clinical care** and positive conditions are associated with **improved patient outcomes and reduced costs**.

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## Review Social Determinants

### ♥ Social Determinants of Health ↗

Expand All Collapse All

👤 Social Connections ↗  
Dec 13 2021: **Socially Isolated**

🚬 Tobacco Use ↗  
Jan 12 2022: **Medium Risk**

☁️ Depression ↗  
Jan 12 2022: **At risk**

🏃 Physical Activity ↗  
Dec 13 2021: **Insufficiently Active**

🚗 Transportation Needs ↗  
Dec 13 2021: **No Transportation Needs**

🎓 Caregiver Education and Work ↗  
Not on file

🔪 Violence ↗  
Not on file

🍷 Alcohol Use ↗  
Dec 13 2021: **Not At Risk**

💰 Financial Resource Strain ↗  
Dec 13 2021: **Low Risk**

⚡ Stress ↗  
Dec 13 2021: **Stress Concern Present**

🍴 Food Insecurity ↗  
Dec 13 2021: **No Food Insecurity**

🏠 Housing Stability ↗  
Dec 13 2021: **Low Risk**

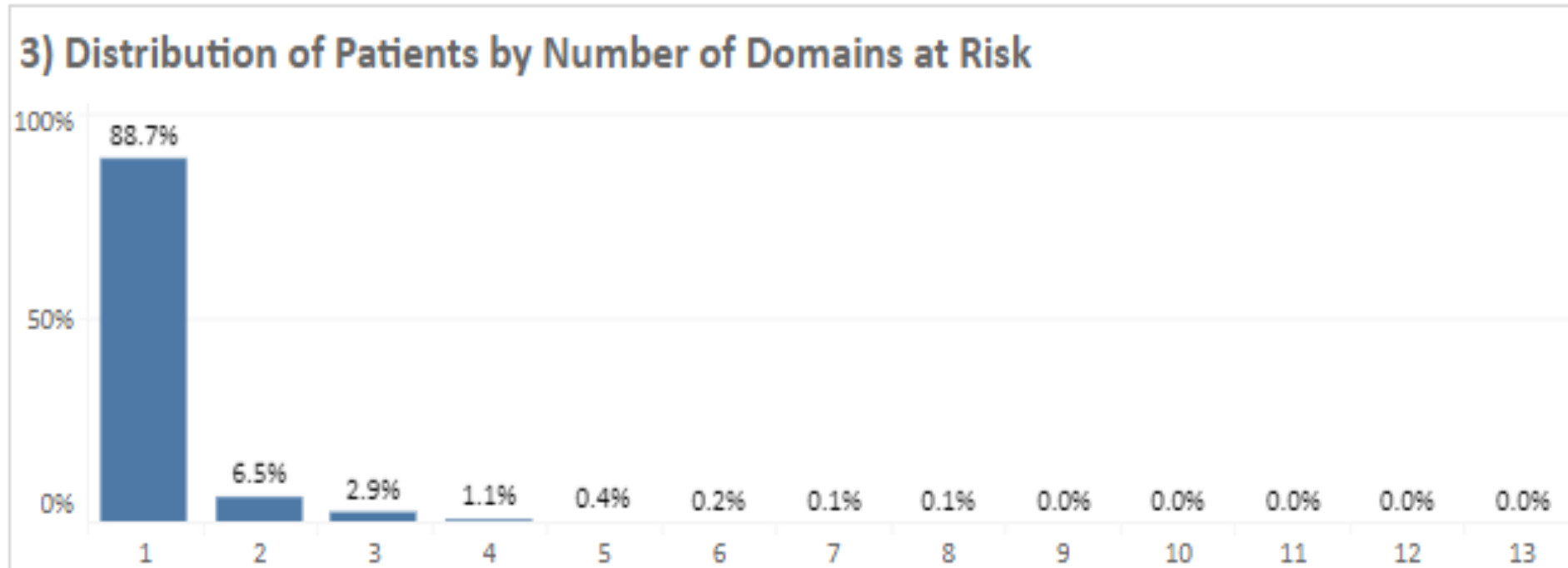
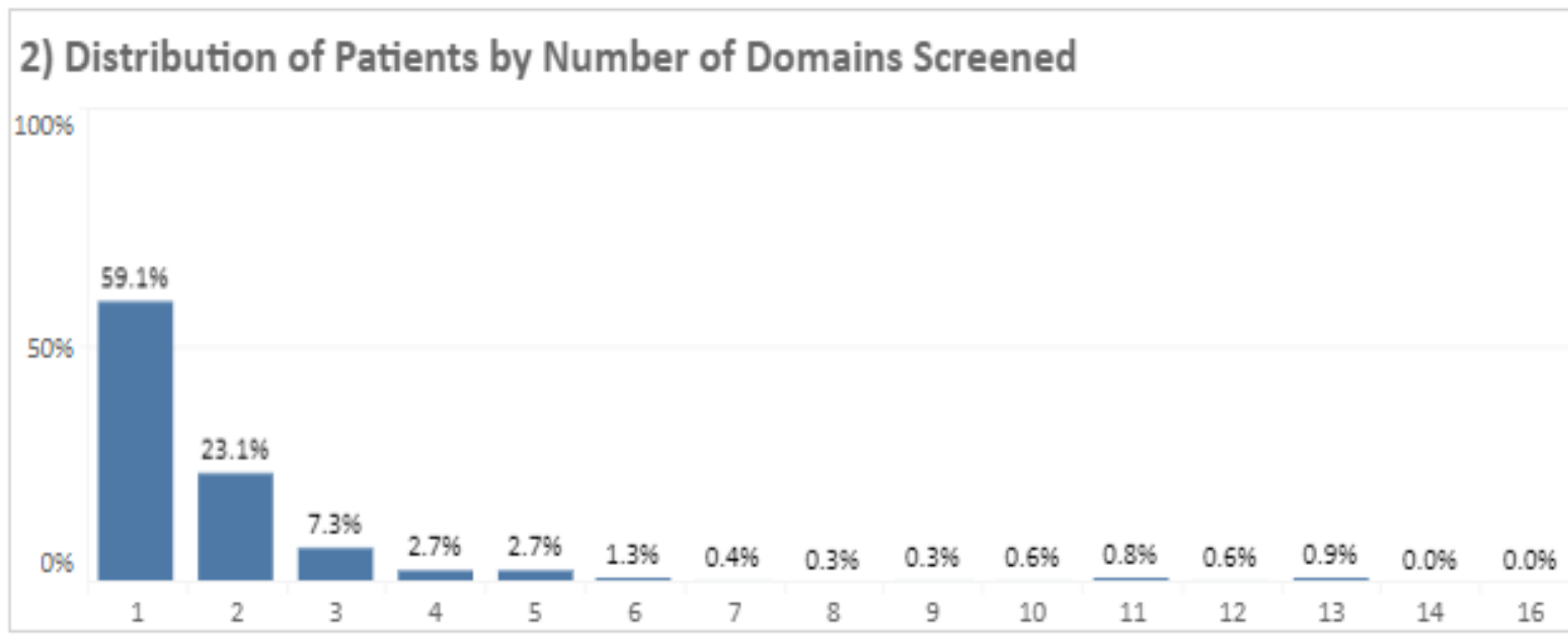
❤️ Caregiver Health ↗  
Not on file

Find community resources

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<b>1) Summary</b>	Patients Screened for At Least 1 Domain <b>370,450</b>	At Risk Patients <b>95,009</b>	Patients with 4+ Domains at Risk <b>1,892</b>	Avg Domains Screened per Patient <b>2.0</b>	Avg Domains at Risk per Patient <b>1.2</b>
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### 4) Percentage of Patients At Risk by Domain

Domain	At Risk (Count)	At Risk (%)	Total Screened (N)
Tobacco Use	79,416	22.5%	352,423
Depression	2,186	1.9%	115,304
Interpersonal Safety	980	2.0%	49,360
Transportation Needs	841	2.2%	37,731
Food Insecurity	1,860	5.0%	36,851
Postpartum Depression	5,739	18.3%	31,340
Financial Resource Strain	2,204	8.7%	25,367
Housing Stability	1,655	7.8%	21,164
Physical Activity	8,792	67.9%	12,940
Alcohol Use	470	3.9%	12,195
Stress	2,204	18.1%	12,186
Social Connections	5,984	62.6%	9,558
Caregiver Education & Work	1,440	17.6%	8,203
Caregiver Health	362	4.6%	7,867
Safety and Environment	10	3.4%	297
Adolescent Substance Abuse			64
Adolescent Education & Socialization	52	91.2%	57
Child Education	22	48.9%	45

# Conclusions

- Significant disparities in Blacks and Hispanics with lung cancer care exist in the US
- Hispanics might have some biological advantages not well understood yet that created the Hispanic paradox and they tend to smoke less.
- Higher frequency of EGFR mutations gives Hispanics an advantage in the genomic profile that can be easily erased because of the lack of adequate biomarker testing in the US and LATAM and the lack of targeted therapy access to the Hispanics in LATAM.
- IO outcomes appear to be worse in Blacks and Hispanics with LANSCLC treated with SOC.
- More data are needed regarding molecular testing in Hispanics, access to target therapy, and immunotherapy in the US and abroad. This situation will not improve unless more Blacks and Hispanics get enrolled in clinical trials, and these are performed in areas where they live.
- We need to incorporate SDOH to measure how the clinical outcomes are affected in real life.