A Unique Approach to Precision Medicine: Racial Disparities in Non-Small Cell Lung Cancer (NSCLC) Biomarker Testing
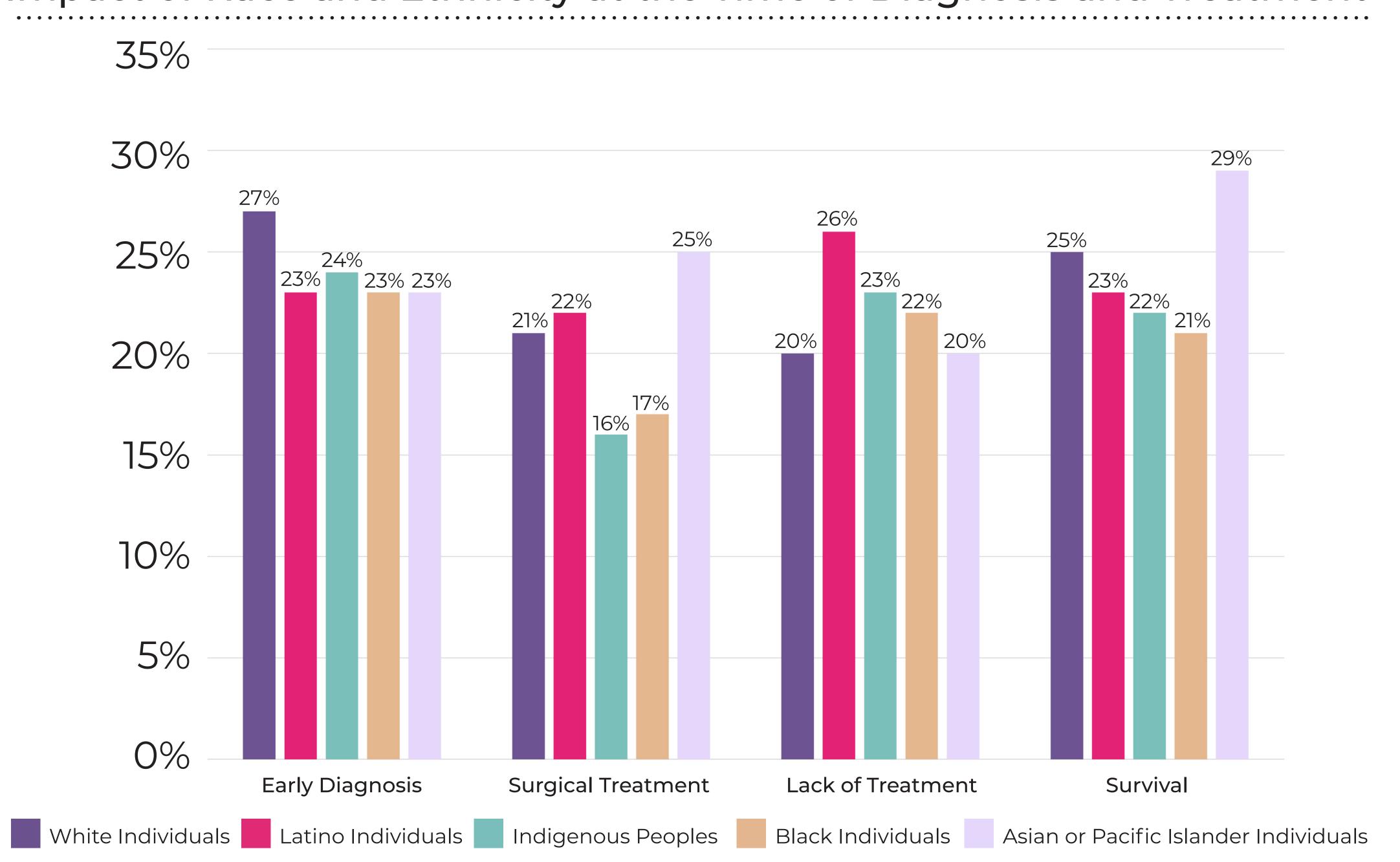
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PurpleLab HEALTHCARE ANALYTICS

BACKGROUND

- Healthcare is evolving into precision medicine or what the FDA refers to as personalized medicine[1]. This targeted approach is critical for organizations like pharmaceutical, life science, health plans, and providers to have the tools needed to make safer decisions for their patient populations.
- Precision medicine can assist clinicians, help them make more informed decisions regarding available treatment options, and improve patient outcomes.
- According to the American Lung Association, people of color with lung cancer face worse outcomes compared to their white American counterparts[2].

OBJECTIVE

Determine if a racial disparity exists in biomarker testing for NSCLC (non-small cell lung cancer) patients.

METHODS

PurpleLab created a crosswalk (mapping) that leveraged laboratory testing codes from Quest Diagnostics and Labcorp --> mapped them to current procedural terminology (CPT) codes.

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The clinical team reviewed biomarkers listed in the FDA biomarker drug labeling table and linked them to the appropriate medications that biomarkers target based on diagnosis (ICD10) and CPT codes.
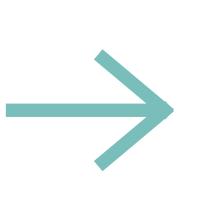
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PurpleLab reviewed CPT claims for the respective biomarkers for NSCLC including ALK, EGFR, BRAF, KRAS G12C, ROS1, MET, NTRK, RET, ERBB2 (HER2), and PD-L1[3].

Open/Closed Claims January 2022 through April 2024; Adults (males/females) 18 years and older.
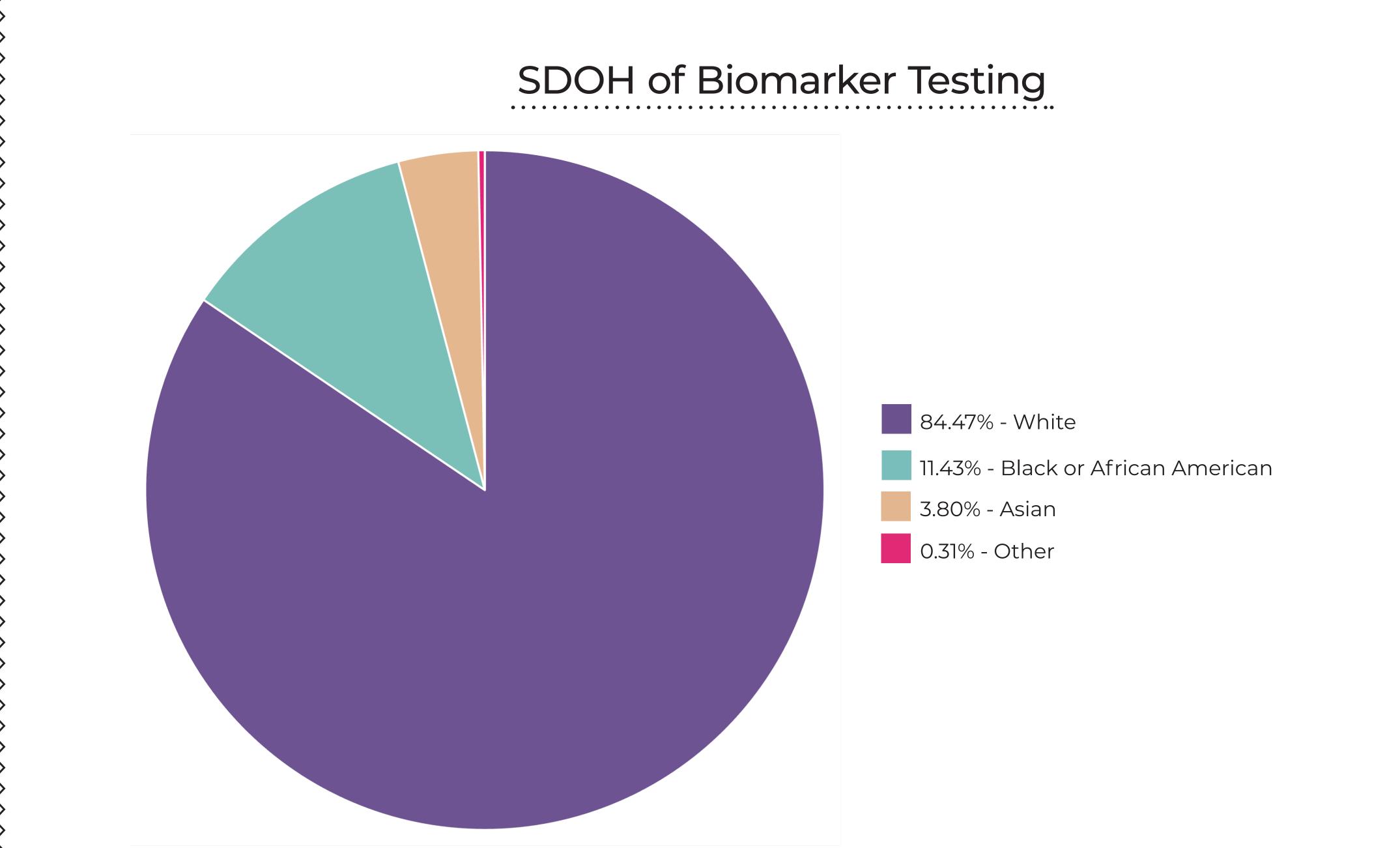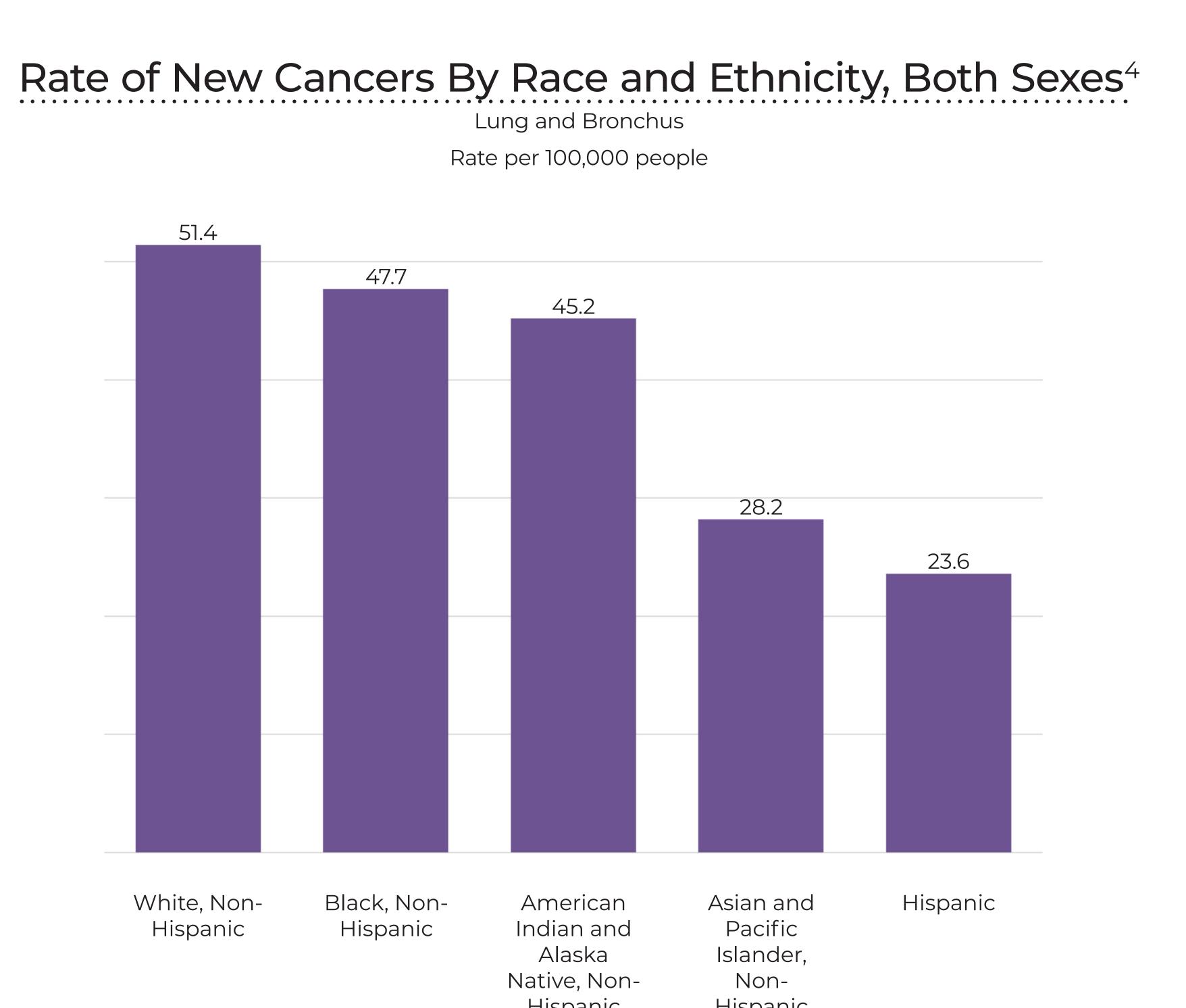
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Biomarker testing claims, from the PurpleLab database were compared to U.S. Cancer Statistics (USCS) Data Visualizations incidence rate per 100,000 people for lung and bronchus cancers[4].

Impact of Race and Ethnicity at the Time of Diagnosis and Treatment[2]

Legend: White Individuals, Latino Individuals, Indigenous Peoples, Black Individuals, Asian or Pacific Islander Individuals

	White	Latino	Indigenous	Black	Asian or Pacific Islander
Early Diagnosis	27%	23%	24%	23%	23%
Surgical Treatment	21%	22%	16%	17%	25%
Lack of Treatment	20%	26%	23%	22%	20%
Survival	25%	23%	22%	21%	29%

RESULTS

According to the PurpleLab claims database 1,913,773 individuals had an associated CPT claim for biomarker testing for NSCLC. Of those with known SDOH data, 84.5% of the patients were White; 11.4% Black or African American; 3.8% Asian and 0.3% listed their race as Other.

Per U.S. Cancer Statistics (USCS), the rate of new cancers by race per 100,000 people for lung and bronchus cancer were; 51.4 White, Non-Hispanic; 47.7 Black, Non-Hispanic; and 28.2 Asian and Pacific Islander, Non-Hispanic.

SDOH of Biomarker Testing

- 84.47% - White
- 11.43% - Black or African American
- 3.80% - Asian
- 0.31% - Other

Rate of New Cancers By Race and Ethnicity, Both Sexes[4]

Lung and Bronchus Rate per 100,000 people

Race/Ethnicity	Rate
White, Non-Hispanic	51.4
Black, Non-Hispanic	47.7
American Indian and Alaska Native, Non-Hispanic	45.2
Asian and Pacific Islander, Non-Hispanic	28.2
Hispanic	23.6

CONCLUSIONS

- Given the incidence rate for new lung and bronchus cancers among Whites and Blacks are similar (51.4 and 47.7, respectively), the biomarker test is disproportionately given to White patients, thus a potential testing disparity exists.
- Currently no specific diagnosis code for NSCLC exists. PurpleLab leveraged CPT, ICD and Pharmacy codes (NDC, HCPCS), which when combined serve as a proxy for precision medicine for NSCLC.
- Further research is needed to test additional methods and strategies of communication to non-white patients to increase biomarker testing.
- Additional work needs to be done to increase SDOH reporting for underrepresented groups.

REFERENCES

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