

Leveraging Real World Data to Generate Social Determinants of Health Insights

NCPF Workshop: Biological Effectors of Social Determinants of
Health in Cancer: Identification and Mitigation
March 20, 2024

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Flatiron Health

Disclosures

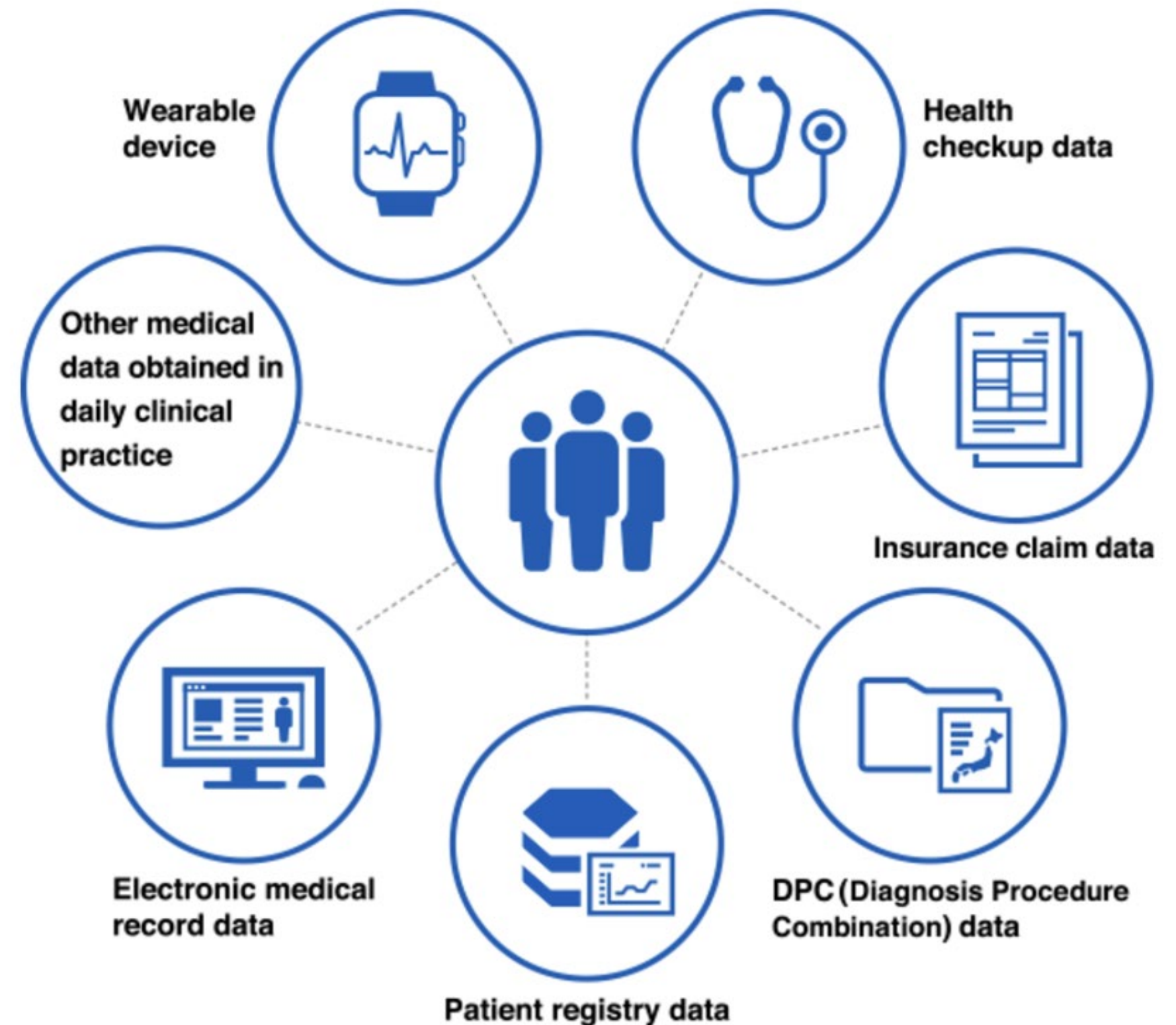
Employed at Flatiron Health, Inc., an independent subsidiary of the Roche Group and stock ownership in Roche.

Agenda

- Definition and types of Real World Data (RWD)
- Why integrate social determinants of health (SDOH) with electronic health record (EHR) data?
- Incorporating SDOH into Flatiron's EHR data
- Conclusion and recommendations

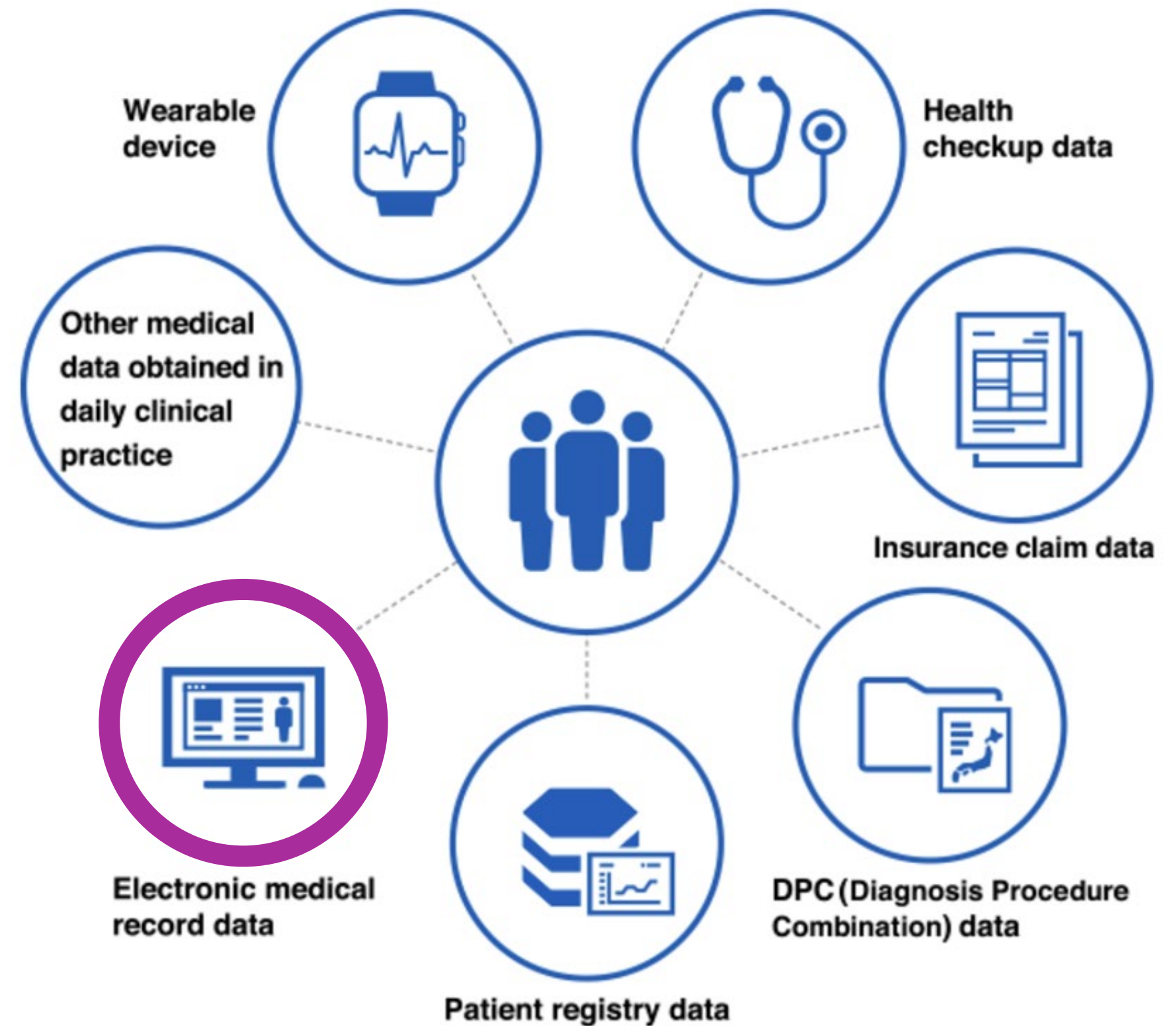
Real World Data (RWD)

Data relating to patient health status and/or the delivery of health care routinely collected from a variety of sources



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Sources of SDoH Data

Individual-level

EHR

e.g., language preference & insurance

Patient-reported

e.g., SDoH questionnaire

Non-EHR

e.g., credit and consumer data

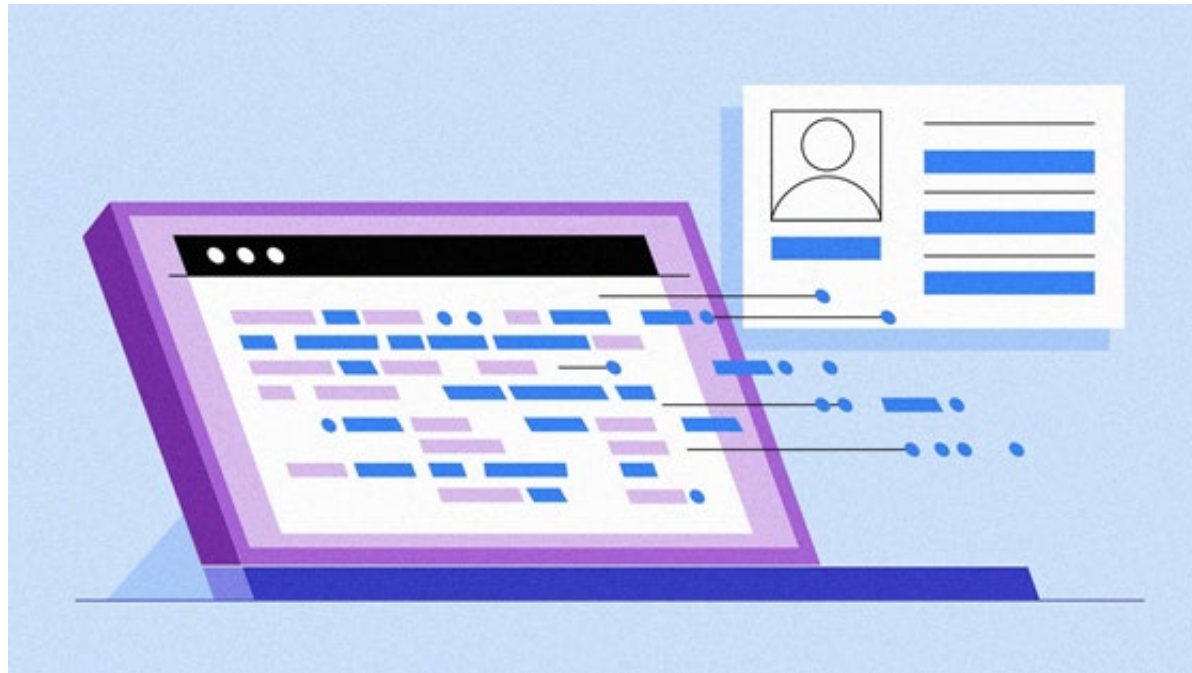
Provider & site-level

e.g., patient-provider racial/ethnic concordance; disproportionately serve POC, distance to clinic

Area-level

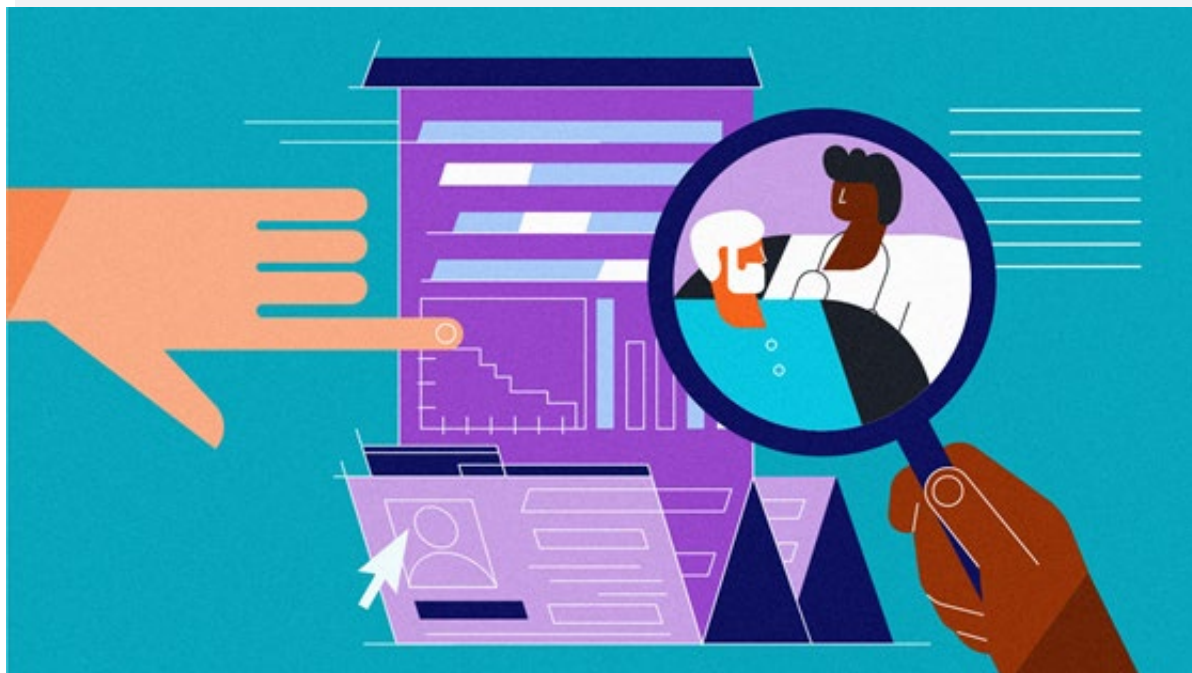
e.g., racial/ethnic segregation, municipal & state-level policies affecting health

Why Integrate SDOH and EHR Data?



Clinical detail

Electronic Health Record data contain depth and breath of clinical detail not found in other data sources (e.g., tumor biomarkers)



SDOH & inequities tumor biology

Opportunities to assess the contribution of SDOH to racial/ethnic differences in predictive and prognostic biomarkers

Quick Facts About Flatiron Health

OUR MISSION

To improve and extend lives by learning from the experience of every person with cancer.

3M
patient records

available for research,
80% from community
practices

>200
community
cancer centers

including 2,000 doctors
partner with Flatiron Health

800
sites of care

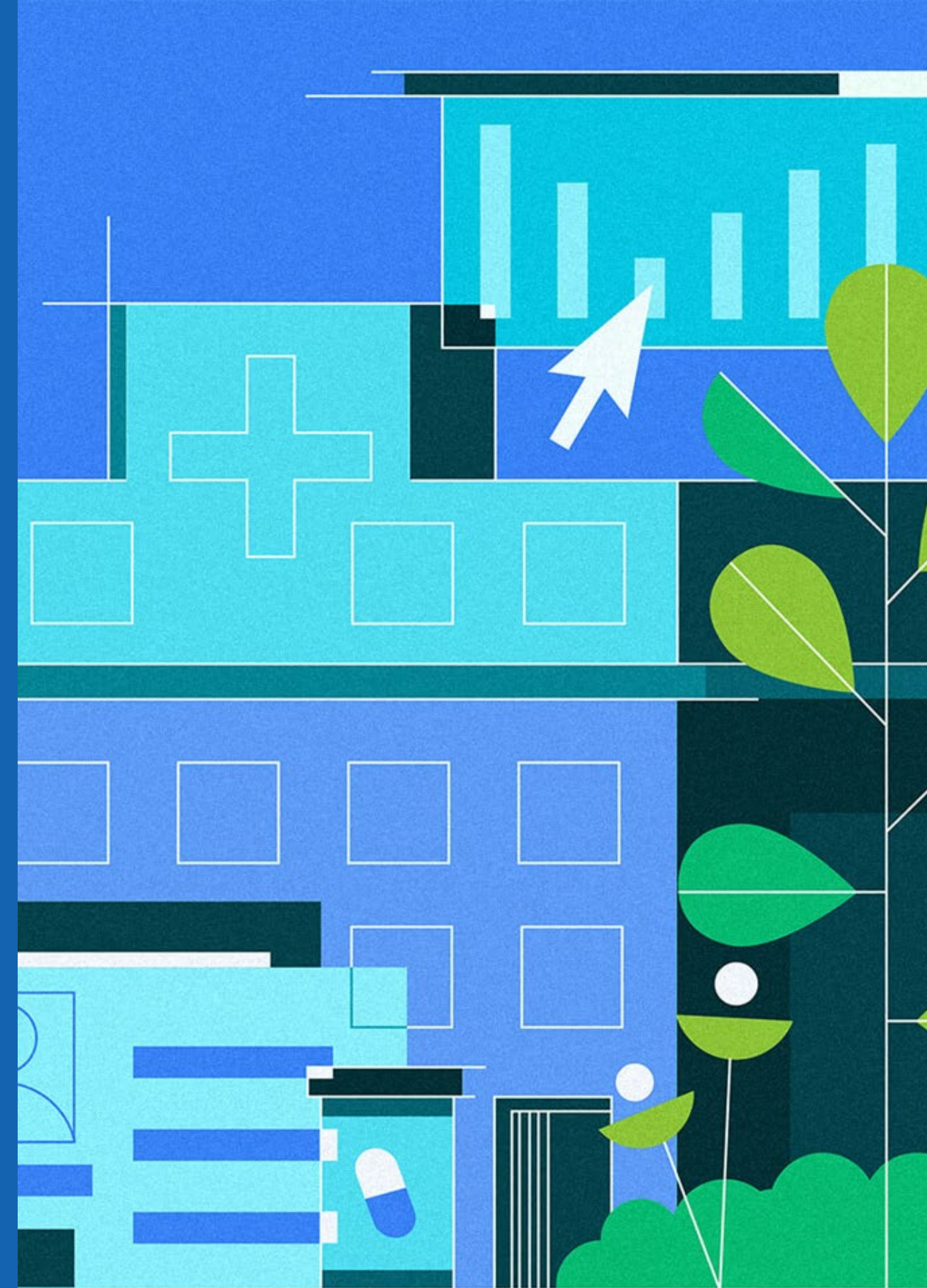
use Flatiron's
OncoEMR software

8
academic centers

partner with Flatiron Health
on outcomes research and
quality improvement

Integrating SDOH with Flatiron RWD

- Linked area-level SDOH data to Flatiron's RWD as part of our comprehensive approach to advancing cancer health equity
- Conducting research examining the impact of area-level SDOH on a range of outcomes using RWD



Recent Flatiron Publications Leveraging SDOH Data

HEALTH ECONOMICS, OUTCOMES, AND POLICY RESEARCH: HEALTH ECONOMICS, POLICY, AND OUTCOMES JANUARY 01 2023 Abstract A049: Racial/ethnic and socioeconomic inequities in clinical trial participation among US community oncology patients, 2011-2021 FREE Jenny Guadamuz; Ronac Mamtani; Xiaoliang Wang; Cleo A. Ryals; Ivy Altomare; Alemseged A. Asfaw; Wendy Camelo Castillo; Harlan Pittell; Gregory S. Calip; Somnath Sarkar Check for updates + Author & Article Information Cancer Epidemiol Biomarkers Prev (2023) 32 (1_Supplement): A049. https://doi.org/10.1158/1538-7755.DISP22-A049	JNCI Cancer Spectrum, 2023, 7(5), p1 https://doi.org/10.1093/jncics/p Advance Access Publication Date: September Socioeconomic status and inequities in treatment initiation and survival among patients with cancer, 2011-2022 Jenny S. Guadamuz , PhD,^{1,2,3*} Xiaoliang Wang, MPH, PhD,¹ Cleo A. Ryals, PhD,¹ Rebecca A. Miksad, MD, MPH,^{1,4} Jeremy Snider, MPH, PhD,¹ James Walters, BA,¹ Gregory S. Calip , PharmD, MPH, PhD^{1,3} ¹Flatiron Health, New York, NY, USA ²Division of Health Policy and Management, University of California, Berkeley, School of Public Health, Berkeley, CA, USA ³Department of Biostatistics, University of California, Berkeley, School of Public Health, Berkeley, CA, USA ⁴California School of Medicine, University of California, San Francisco, San Francisco, CA, USA	Measures of Neighborhood Structural Racism and Overall Survival Among Patients with Metastatic Breast Cancer AUTHOR(S) Pittell H¹, Calip G², Pierre A³, Ryals C³, Guadamuz J³ ¹Flatiron Health, Great Neck, NY, USA, ²Flatiron Health, Chicago, IL, USA, ³Flatiron Health, New York, NY, USA OBJECTIVES: Structural racism (SR) — macro-level forces that perpetuate racial/ethnic inequities — influences cancer outcomes. Here we assessed several neighborhood SR measures as indicators of racial and economic segregation and examined their concordance as predictors of survival among patients with metastatic breast cancer (mBC). METHODS: This retrospective study used the nationwide (US-based) Flatiron Health electronic health record-derived de-identified database, focusing on patients diagnosed with mBC from January 2011 to October 2022. Patients were linked to census tract-level data from the American Community Survey. We examined four neighborhood-level SR measures (%Black, Yost Index, Index of Concentration at the Extremes (ICE), and Structural Racism Indicator (SRI)); categorized as population-weighted quintiles, ranging from lowest to highest SR). To assess concordance, we (1) examined real-world overall survival inequities using different SR measures (Cox proportional hazards models adjusted for age, ECOG performance status, and stage); and (2) examined Pearson correlation coefficients between SR measures.
Abstract Introduction: Most patients receive clinical trial participation information through health (SDOH), (CSD, proxy for community practice electronic health patients (≥ 18 years) the cancer type examined inequities area-level SDOH	Check for updates Original Reports Equity in Cancer Care 6 Sociodemographic Inequities in Telemedicine Use Among US Patients Initiating Treatment in Community Cancer Centers During the Ongoing COVID-19 Pandemic, 2020-2022 Jenny S. Guadamuz, PhD, MSPH^{1,2,3} ; Xiaoliang Wang, PhD, MPH¹ ; Trevor J. Royce, MD, MS, MPH^{1,4} ; and Gregory S. Calip, PhD, PharmD, MPH^{1,3} DOI https://doi.org/10.1200/OP.23.00144 ABSTRACT PURPOSE Although telemedicine was seen as a way to improve cancer care during the coronavirus disease (COVID-19) pandemic, there is limited information regarding inequities in its uptake. This study assessed sociodemographic factors associated with telemedicine use among patients initiating treatment for 20 common cancers. METHODS This retrospective cohort study used deidentified electronic health record-derived patient data from a nationwide network of community cancer practices, linked to area-level Census information. We included adults (age 18 years and older) who initiated first-line systemic cancer treatment between March 2020 and December 2022 (follow-up through March 2023). Exposures include race/ethnicity, insurance status, and area-level social determinants of health (eg, block group socioeconomic status [SES]). The outcome was telemedicine use within 90 days after treatment initiation. Associations were examined using ACCOMPANYING CONTENT Data Supplement Accepted August 24, 2023 Published September 25, 2023 JCO Oncol Pract 00:1-9 © 2023 by American Society of Clinical Oncology View Online Article	HEALTH SERVICES RESEARCH AND QUALITY IMPROVEMENT 6511 Mediators of racial/ethnic inequities in clinical trial participation among US patients with cancer, 2011-2022. Jenny Guadamuz, Xiaoliang Wang, Ivy Altomare, Gregory Sampang Calip; Flatiron Health, New York, NY Background: In 2024, the US Food & Drug Administration will require drug sponsors to implement plans to improve racial/ethnic diversity in clinical trials. While minoritized populations are less likely to participate in cancer trials, it is unknown whether social determinants of health (SDOH) explain these inequities. Here we identified SDOH factors that contribute to racial/ethnic inequities in clinical trial participation among patients with 22 solid and blood cancers. Methods: This retrospective study used the nationwide Flatiron Health electronic health record-derived de-identified database of adult patients with cancer (2011-2022). Area-level SDOH (e.g., predominant race/ethnicity [proxy for segregation]) contextualizing where patients live were defined using the American Community Survey tract data. Patients were followed from cancer-specific diagnosis to clinical study drug receipt (proxy for trial participation), death, or last recorded activity. Associations of race/ethnicity and SDOH factors on trial participation were assessed using Cox proportional hazards models adjusted for clinical factors (diagnosis year, age, sex, performance status, stage, and cancer type). To elucidate which SDOH explain racial/ethnic inequities, mediation analysis was performed using nonlinear multiple additive regression trees models. Results: This study included 233,556 patients (median age: 68 years, 50.0% women; 65.6% non-Latinx [NL] White, 8.5% NL Black, 5.0% Latinx). Black and Latinx patients were more likely to live in marginalized areas (i.e., disproportionately minoritized, low socioeconomic status, limited English proficiency, and low vehicle ownership) than White patients. Overall, 4.9% of patients participated in trials. Fewer patients from community practices or in marginalized neighborhoods participated in trials. Black (3.4%: hazard ratio [HR] 0.55, 95% confidence interval [CI]: 0.51- 0.60)

Association between measures of structural racism and metastatic breast cancer



ABOUTGET INVOLVEDMEMBERSHIPMANAGE PROFILECAREERS

JOIN/RENEW

HEOR RESOURCESSTRATEGIC INITIATIVESEVENTSEDUCATIONPUBLICATIONSMEMBER GROUPS

Measures of Neighborhood Structural Racism and Overall Survival Among Patients with Metastatic Breast Cancer

AUTHOR(S)

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OBJECTIVES: Structural racism (SR) — macro-level forces that perpetuate racial/ethnic inequities – influences cancer outcomes. Here we assessed several neighborhood SR measures as indicators of racial and economic segregation and examined their concordance as predictors of survival among patients with metastatic breast cancer (mBC).

Measure of Structural Racism: Index of Concentration at the Extremes (ICE)

Two dimensional measure of race and income developed to measure racialized -economic segregation

- Distinguishes between the “most privileged” and “least privileged” populations in an area
- Example: high-income non-Latinx [NL]-White vs. low-income NL-Black households

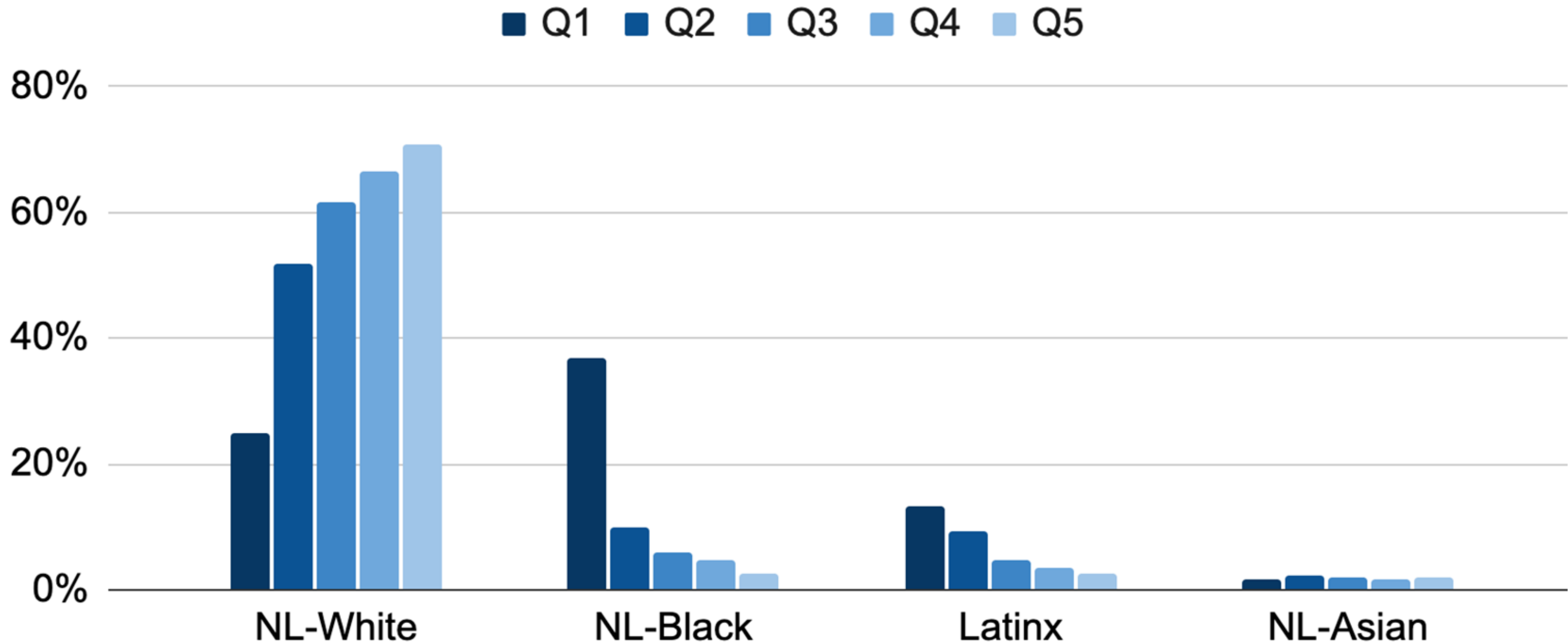
Data from the American Community Survey

- Tract level measure of race/ethnicity and household income

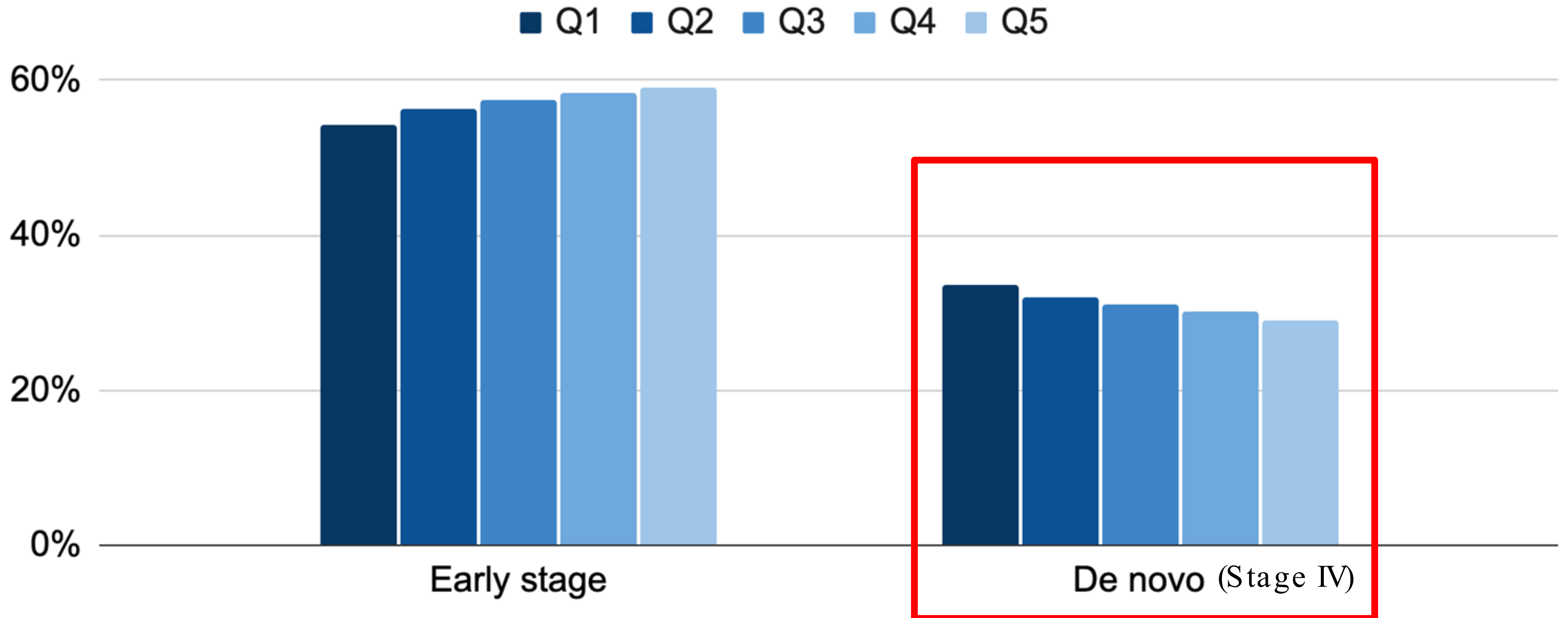
Categorized as population -weighted quintiles (Q1 -Q5)

- Q1 = Least privileged
- Q5 = Most privileged

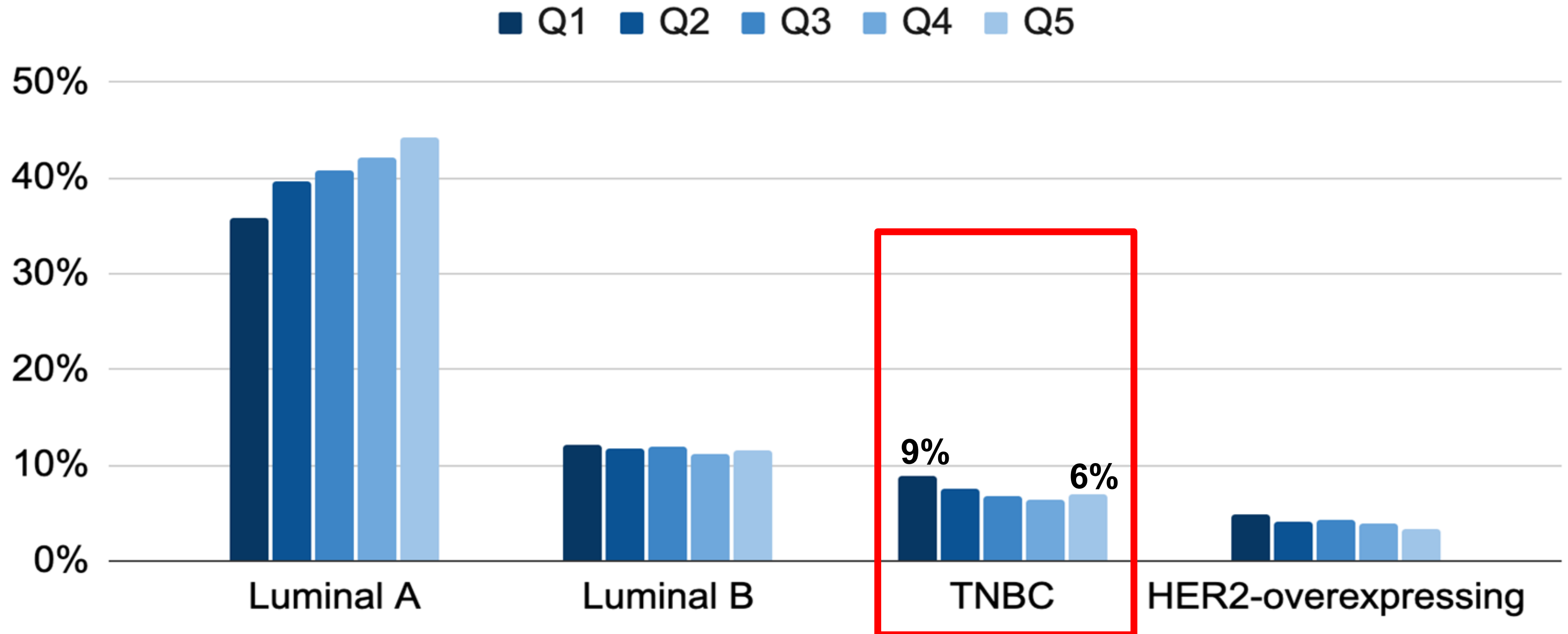
Race/ethnicity differed between those from the **least privileged (Q1)** and **most privileged (Q5)** areas



Patients from the **least privileged (Q1)** areas had the highest share of de novo stage IV breast cancer

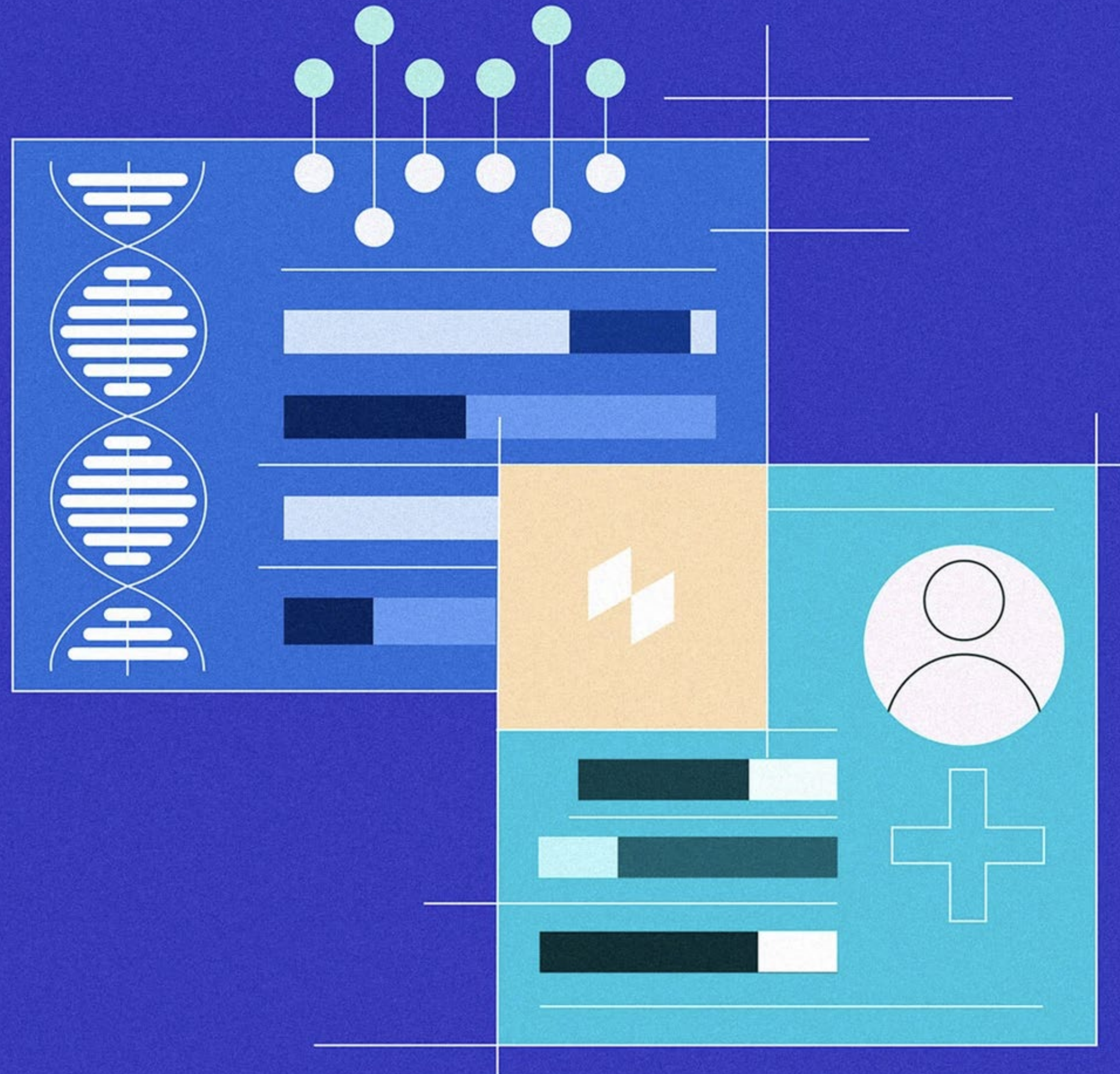


Molecular subtype differed between those from the **least privileged (Q1)** and **most privileged (Q5)** areas



Future Opportunities

- Collecting individual-level SDOH - health related social needs at the point of care (CMS Enhanced Oncology Model)
- Evaluating SDOH alongside Clinico-genomic data (i.e., biomarkers, treatment, outcomes)



Conclusion and Recommendations

- Understanding complex relationship between SDOH and cancer biomarkers important for developing interventions to address inequities
- High quality EHR data provide important source for timely research on biological effectors of SDOH in cancer
- Given move towards precision medicine and pace of new more targeted cancer treatments, addressing underlying social drivers of more aggressive disease and treatment safety and efficacy is critical for mitigating inequities