Navigating Social Determinants of Health to Improve Patient Access

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Agenda

- What are Social Determinants of Health (SDOH)?
- How can SDOH be measured?
- Why are SDOH important?
- Case study: Incorporating SDOH into RWE Studies
- Application: SDOH and Oncology

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What are Social Determinants of Health (SDOH)?

- Nonmedical factors that influence health
- Conditions in the environments where people are born, live, learn, work, play, worship, and **age** that affect a wide range of health, functioning, and quality-of-life outcomes and risks
- Estimated to drive up to **80%** of health outcomes

1 https://health.gov/healthypeople/priority-areas/social-determinants-health
2 Greer ML, Garza MY, Sample S, Bhattacharyya S. Social Determinants of Health Data Quality at Different Levels of Geographic Detail. *Stud Health Technol Inform*. 2023;302:217-221. doi:10.3233/SHTI230106.

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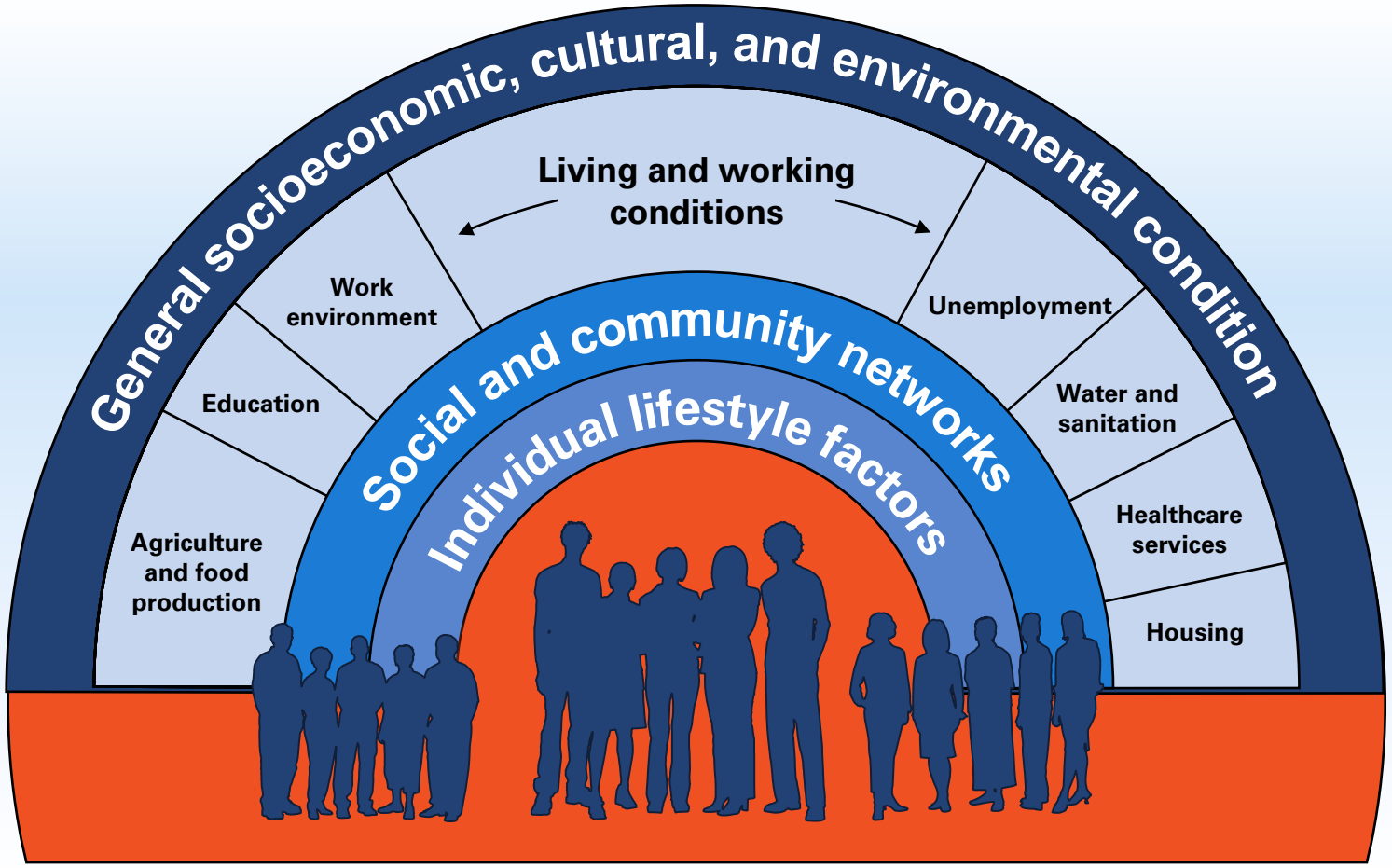
SDOH Influence All Aspects of a Person's Life.



Social Determinants of Health

Determinants include

- Age, sex, ZIP3
- Race and ethnicity
- Socioeconomic status
- Income/wealth
- Net worth
- Financial risk
- Education
- Behavioral/lifestyle
- Marital status/children
- Household size
- Occupation
- Media, TV, internet, print usage
- Interests and activities

Optimal for

- Health disparities and inequities
- Underrepresented and underserved populations

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Why are SDOH Important?

Addressing SDOH is critical for achieving health equity

- Health equity is the state in which everyone had the opportunity to attain their highest level of health
- SDOH are key drivers of health inequities

SDOH drive health outcomes

- Estimated to drive up to 80% of health outcomes
- Greater impact on health than genetics or access to health care

SDOH top priority for government agencies

- SDOH one of the three focus areas of Healthy People 2030
- 2023 HHS SDOH call to action

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Health Equity: A Top Priority for Government Agencies and Payers; Manufacturers Are Just Scratching the Surface

A **health disparity** is an avoidable and unfair difference in health status, incidence, prevalence, mortality, or burden of disease between specific segments of the population.

Health disparities can have broad consequences for the economy and quality of life. They account for $42 billion in lost productivity per year, not including additional economic losses due to premature deaths.

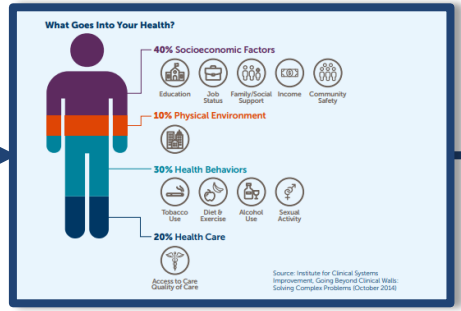
Health disparities can lead to a state of **health inequity**.

"**Health equity**" broadens the disparities concept by asking, "Why are some populations at greater risk of illnesses and preventable deaths than others?"

Inequities in the US health system cost approximately $320 billion today ($1,000 per person) and by 2040 could eclipse $1 trillion ($3,000 per person) in higher health care spending, lost productivity, and premature death.

The answer leads to a deeper analysis and exploration of the root causes or **social determinants of health (SDOH)** contributing to inequities.

SDOH are the conditions in which people are born, grow, live, work, and age.



It has been estimated SDOH can drive up to as much as 60% to 80% of health outcomes.

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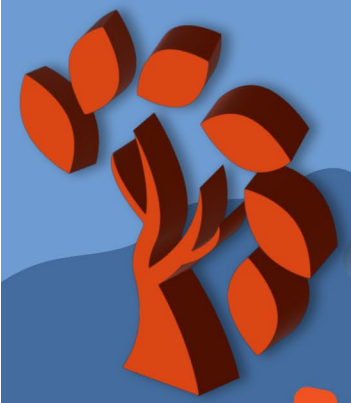
How Can We Measure SDOH?



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SDOH Can be Assessed Across Multiple Levels for Individuals

Individual

Characteristics of the individual

Household

Characteristics of the household in which individual resides

Area-based

Characteristics of the area where an individual lives

Most specific ← → **Less specific**

SDOH can be captured across all three levels and incorporated into research

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Individual and Household SDOH Measures

How to measure

- Incorporate questions about individual or household in surveys or
- Capture questions in patient chart
- ICD-10-CM Z-codes
- Link secondary data sources

Race
Age
Employment
Education
Marital Status
Behaviors

Considerations

- Most specific
- Customizable
- Resource intensive

Household Size
Language
Household Income
Internet Access

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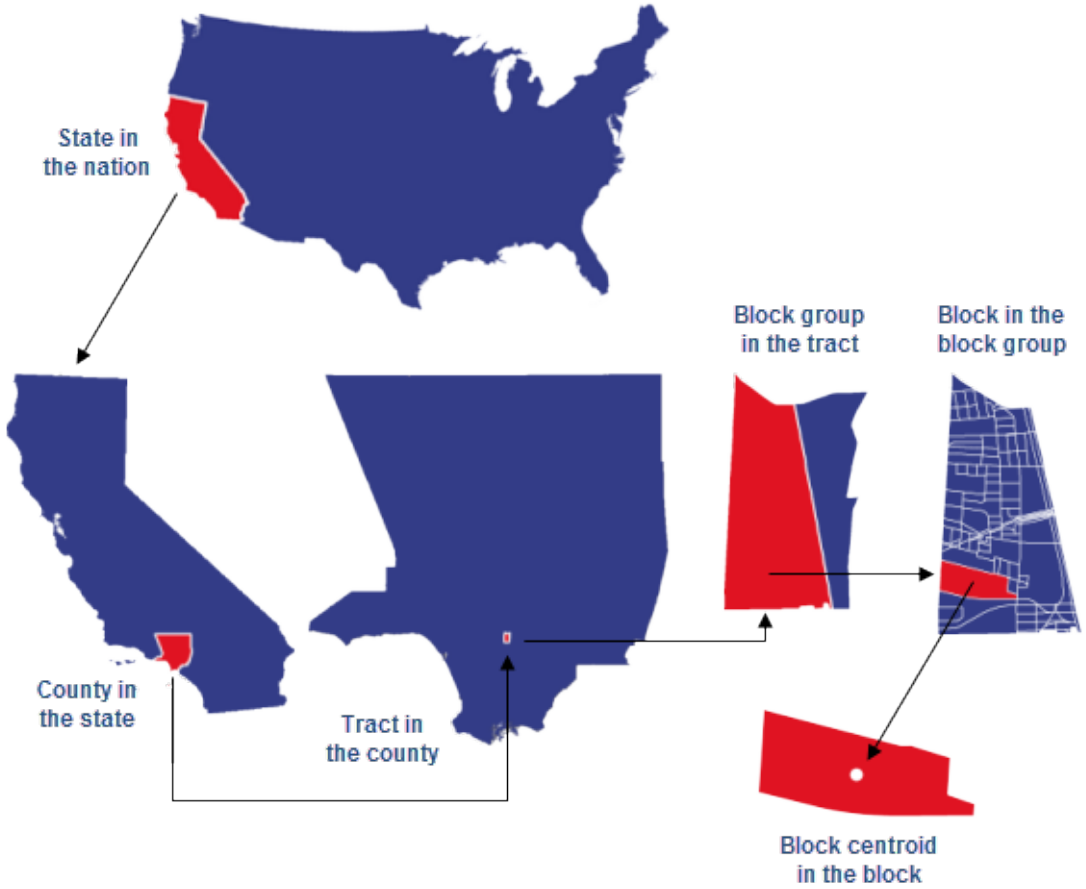
Area-Level SDOH Measures

- Shaped by underlying structural factors in a defined geographic area
- Publicly available
- Assessed at different geographical levels
- Can be linked to individual level clinical data based on address

Considerations

- Publicly available
- Wide range of measures
- Less resource intensive
- Less specific than individual measures
- Geography level dependent on address component(s) available



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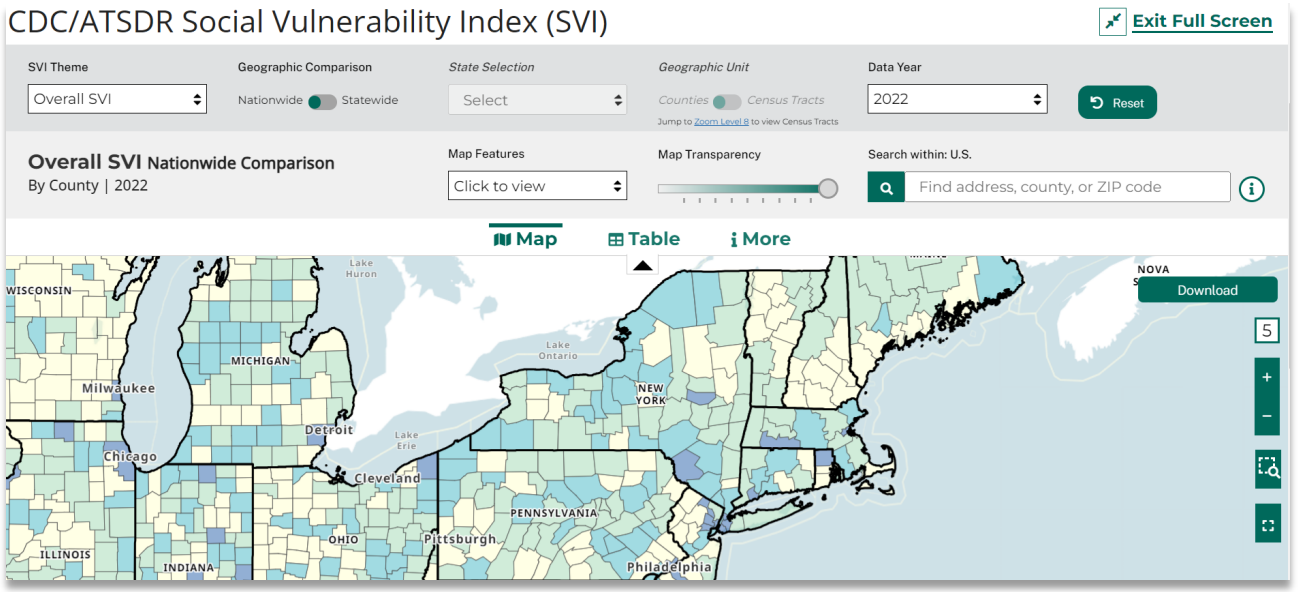
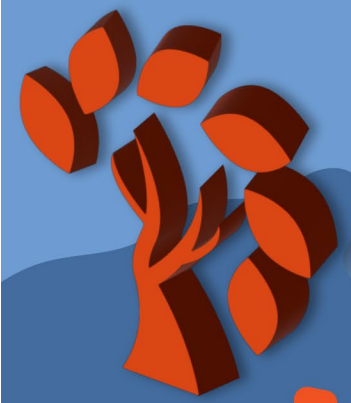
Area-Level SDOH Measures Cover a Wide Range of Topics

- US Census and American Community Survey
  - % of residents living below poverty line
  - % of residents by race/ethnicity
  - % with access to transportation
  - % vacant homes
  - Avg household size
- US Environmental Protection Agency
  - Air Pollution Levels
- Center for Disease Control and Prevention
  - Social Vulnerability Index (SVI)
- Neighborhood Atlas
  - Area Deprivation Index (ADI)



Case Studies

Linking SDOH characteristics to EMR disease cohorts



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Purpose

- Link individual and household-level SDOH characteristics to select electronic medical record (EMR) disease cohorts
  - Human immunodeficiency virus (HIV)
  - Chronic kidney disease (CKD)
  - Heart Failure (HF)
  - Type 2 Diabetes (T2DM)
  - Metastatic prostate cancer (mPC)
- Identify traditionally unavailable SDOH measures for inclusion in real-world data analysis

Methods

- Utilized two data sources: EMR encounter records and SDOH data from CY 2022
  - SDOH: 189,576,979
  - EMR Problems Table: 14,703,672
- Identified patients with the disease states of interest from the EMR
  - ICD-10-CM, ICD-9-CM, and SNOMED codes
- Patients in each disease cohort were matched to those in the SDOH database using unique anonymized patient identifiers.
- A patient was classified as having “overlapped”
  - if the patient had a record in SDOH

    and
  - a record in the problems table for one of the requisite disease states
  - on or before December 31, 2021

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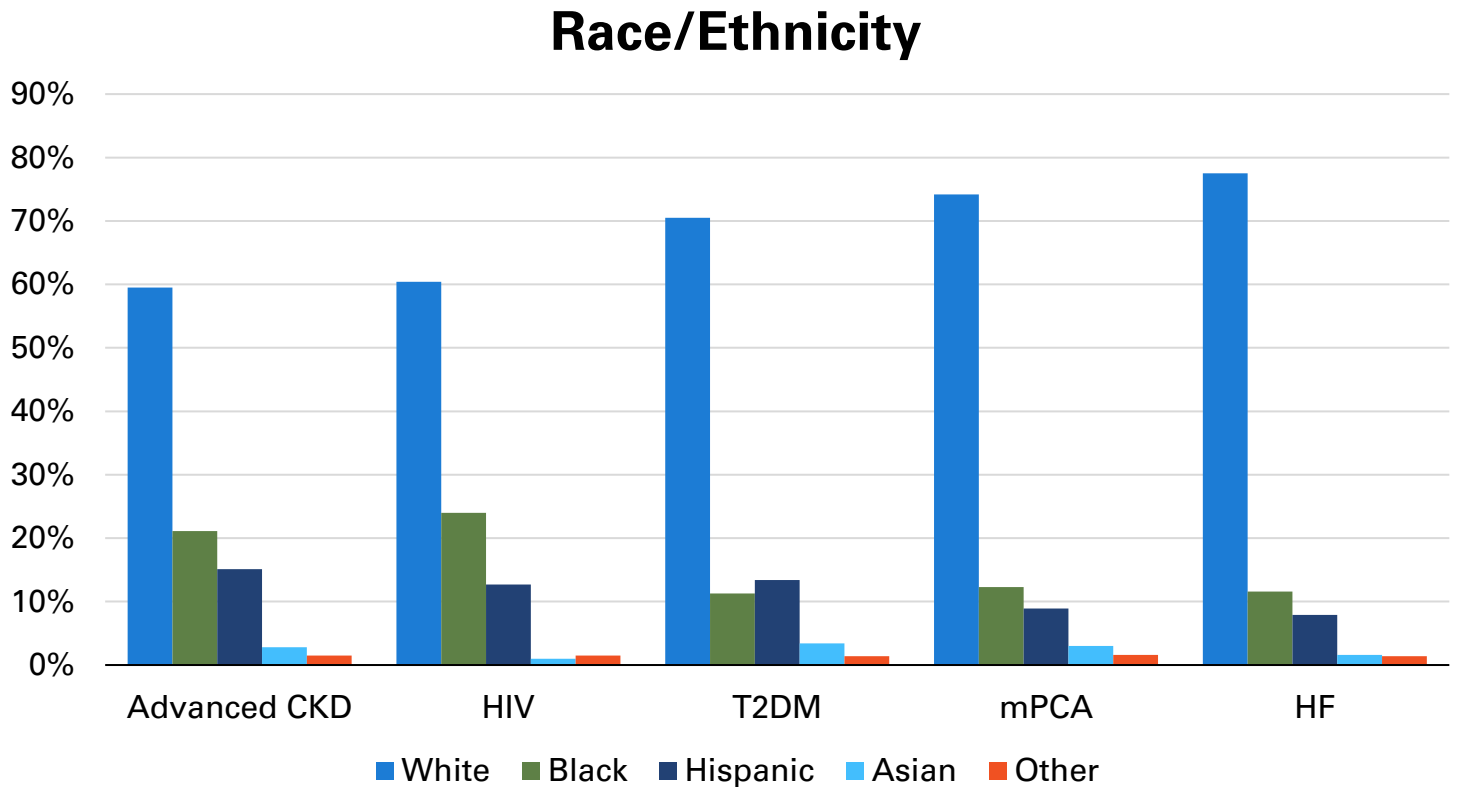
Demographics Differ Across Disease Cohorts



Cohort	Age Mean (SD)	% Male
CKD, Advanced	72.3 (13.8)	48.3%
T2DM	64.5 (14.0)	43.6%
HF	72.3 (13.8)	43.7%
HIV	51.2 (14.4)	65.1%
mPC	75.5 (9.3)	96.6%

- Racial diversity greatest among patients with advanced CKD or HIV and lowest among those with mPC or HF
- HIV patients younger, while mPC patients older
- CKD, T2DM, HF patients more likely to be female

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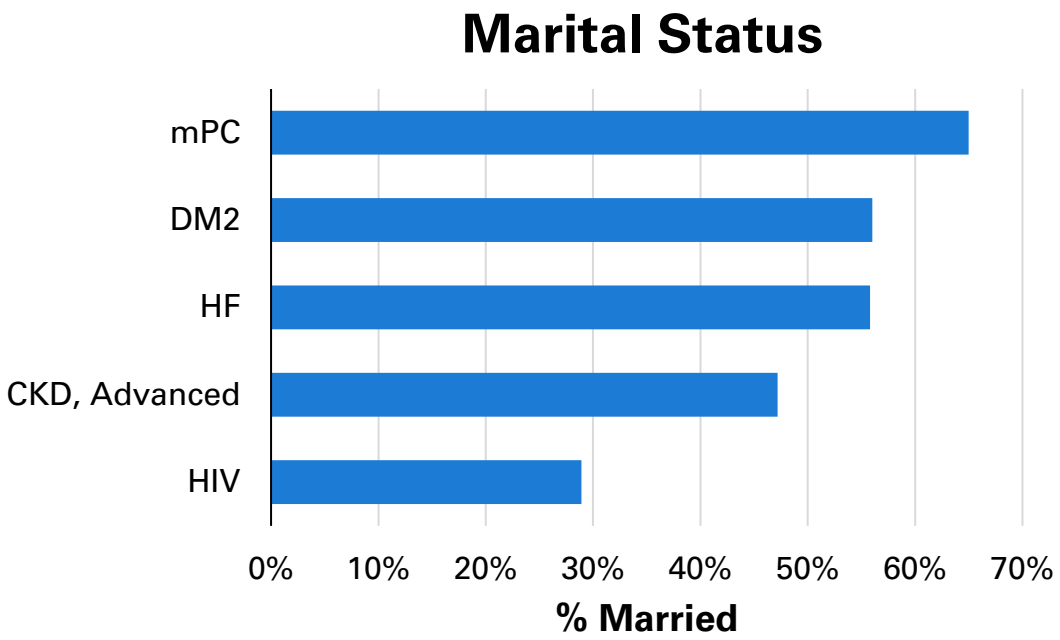
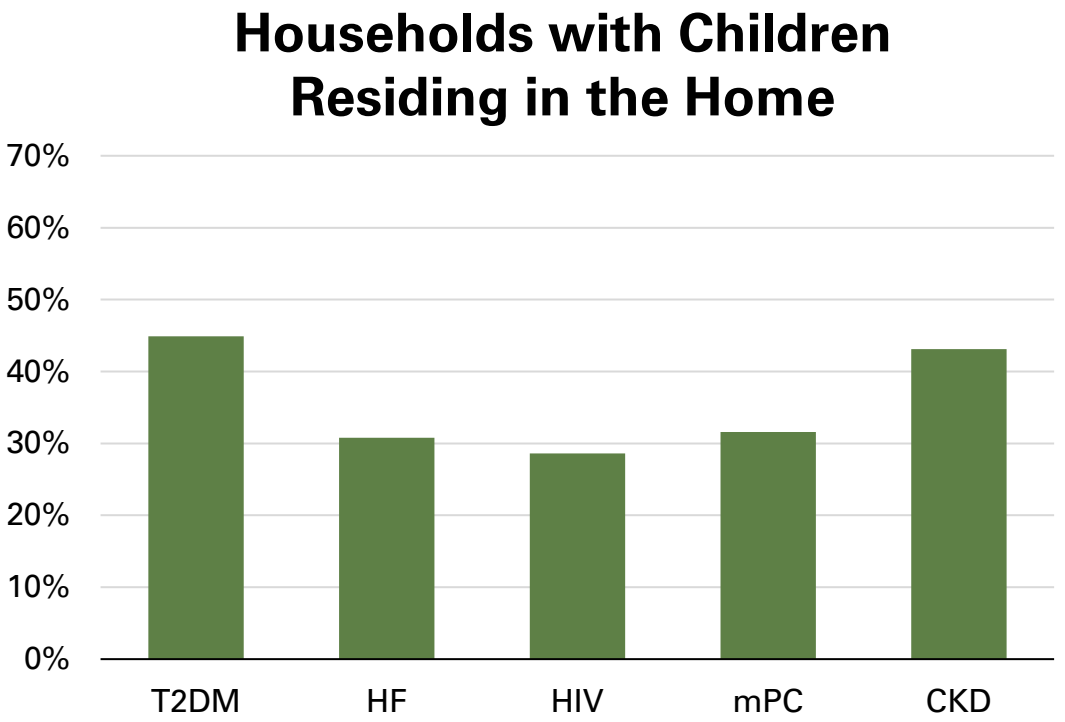
Household Characteristics Can be Measured Using SDOH Data Sources



	Household Size, mean (SD)
T2DM	2.8 (1.3)
CKD	2.7 (1.3)
HF	2.4 (1.2)
HIV	2.0 (1.2)
mPC	2.5 (1.1)



- The majority of mPC, DM2, HF patients were married
- T2DM and CKD patients were most likely to have children in the home, and the largest mean household size

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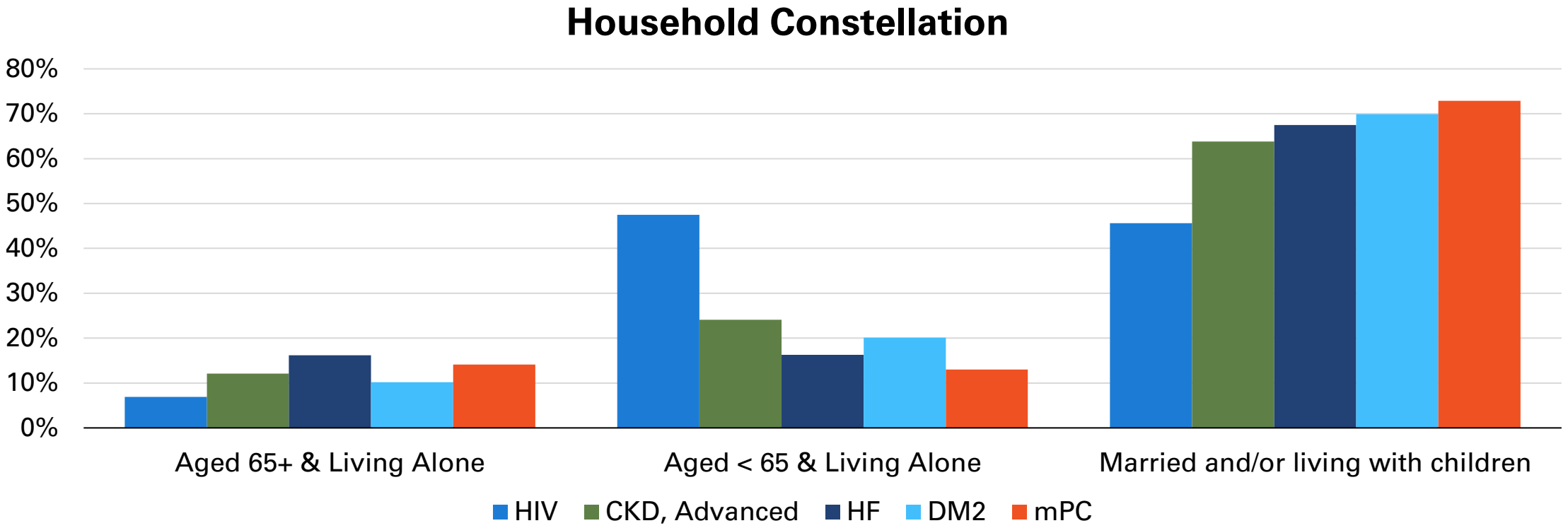
Composite Household Measures Help Identify Populations Who May be More Likely to Need Additional Assistance Managing Their Disease



- **HIV patients are most likely to be single living in a household without children**
- **HF and mPC patients are most likely to be aged 65+ and living alone**

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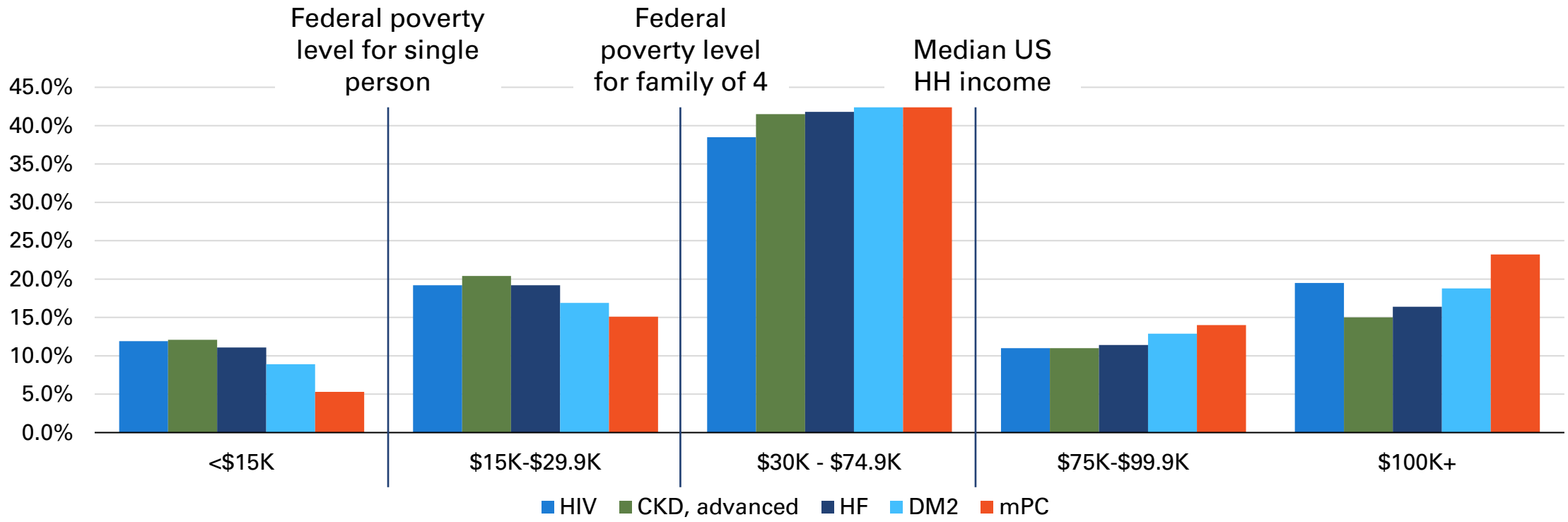
Most Patients Have Annual Household Income At or Below The 2022 US Median Household Income ($74,580)



- **mPC patients were most likely to have an annual household income >$100k**
- **HIV, advanced CKD, HF patients had the lowest annual household income**

1 https://www.census.gov/library/publications/2023/demo/p60-279.html#:~:text=Real%20median%20household%20income%20was,and%20Table%20A%2D1).
2 https://www.healthcare.gov/glossary/federal-poverty-level-fpl/

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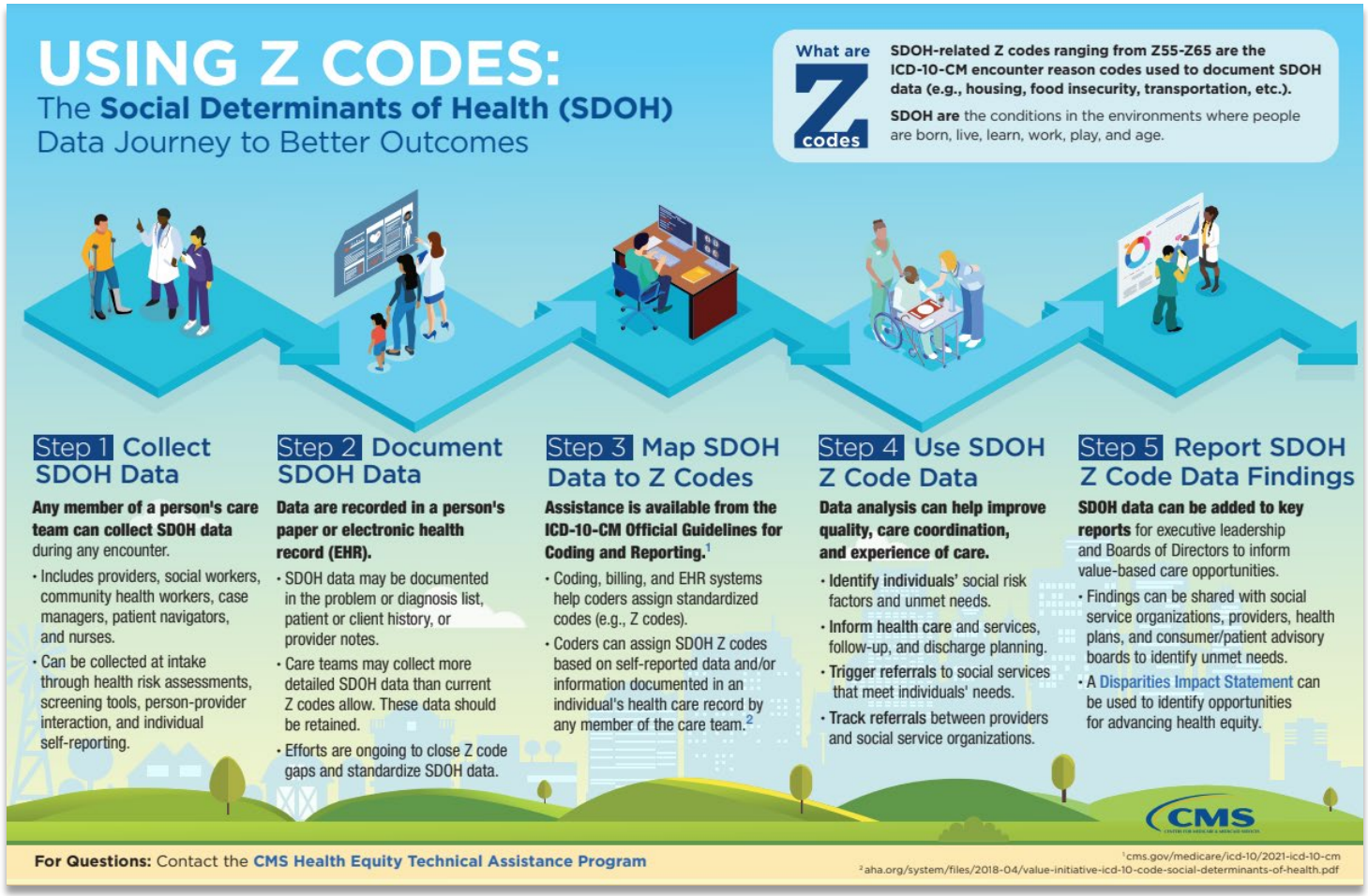
SDOH Measures Available in Claims and EMR Data: ICD-10-CM Z-Codes



- Z-codes ("reason codes"): non-reimbursable, non-medical factors that may influence a patient's health status
- Availability began Oct 2016
- Z55-Z65 termed "SDOH" factors
- Slow adoption but increasing as providers better understand documentation requirements and their benefits
- Currently required by some state Medicaid programs and other payers to measure provider performance and patient eligibility for benefits related to health equity

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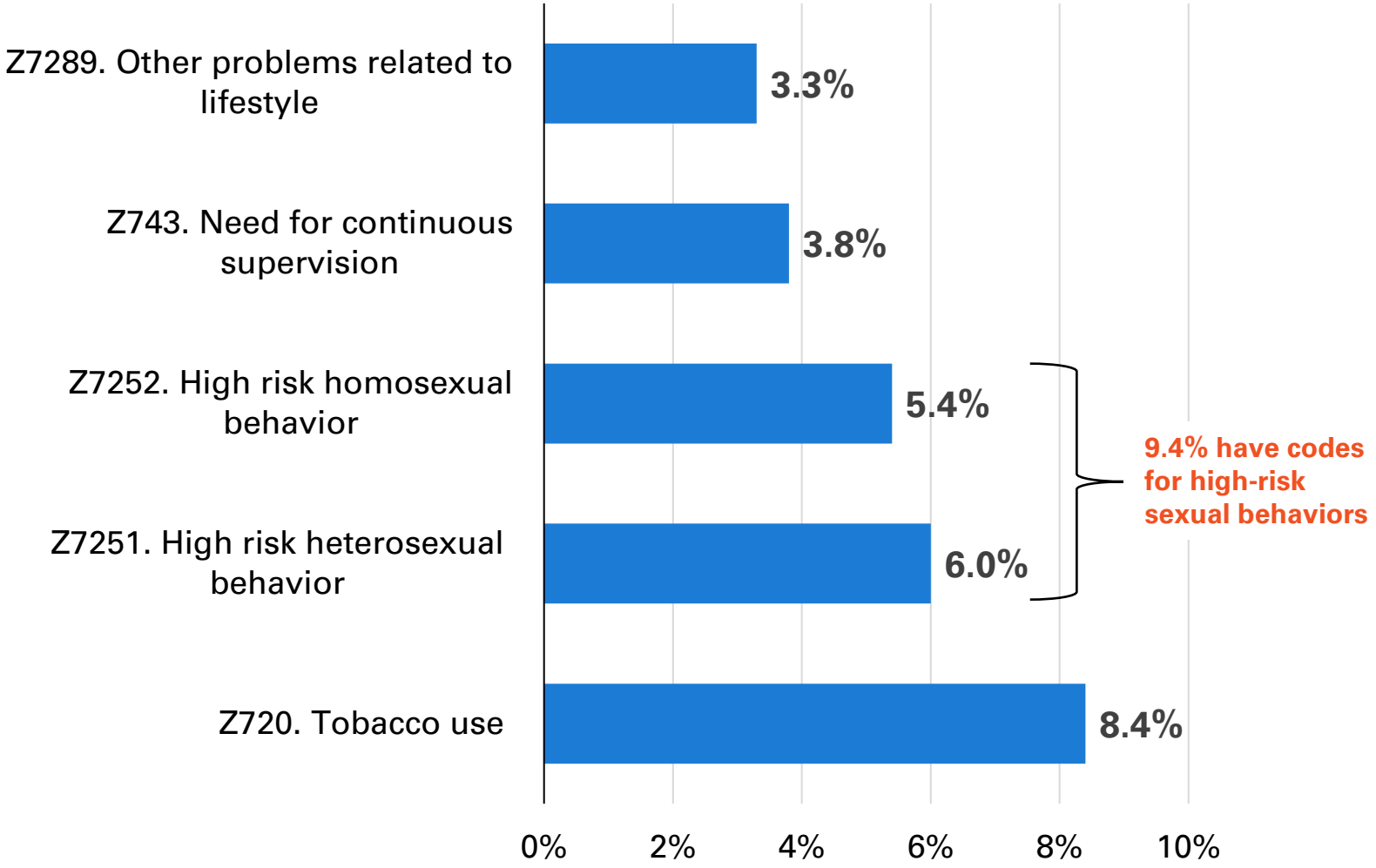
Closed Claims-SDOH Linked HIV Patients: Top 5 Z-Codes

Closed Claims/SDOH HIV Cohort, n = 69, 897



Z-codes are found in closed claims more than in the EMR

- **Closed claims: 25% of HIV patients**
- **EMR: 7% of HIV patients**

- **Absence of Z-Code ≠ Absence of Factor**
- **Count may allow for subset analyses**
- **Could be combined with SDOH measures to fill in missing data**

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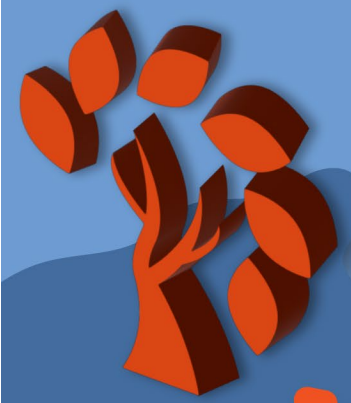
Application: SDOH and Oncology



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SDOH Impacts All Aspects of Oncology Care

Screening/Diagnosis

- Lack of insurance
- Proximity to screening center
- Language barriers

Treatment

- Communication
- Proximity to Center of Excellence
- Lag/lack of data to drive choices

Clinical Trials

- Distrust of medical system
- Few trials in rural areas
- Comorbidities

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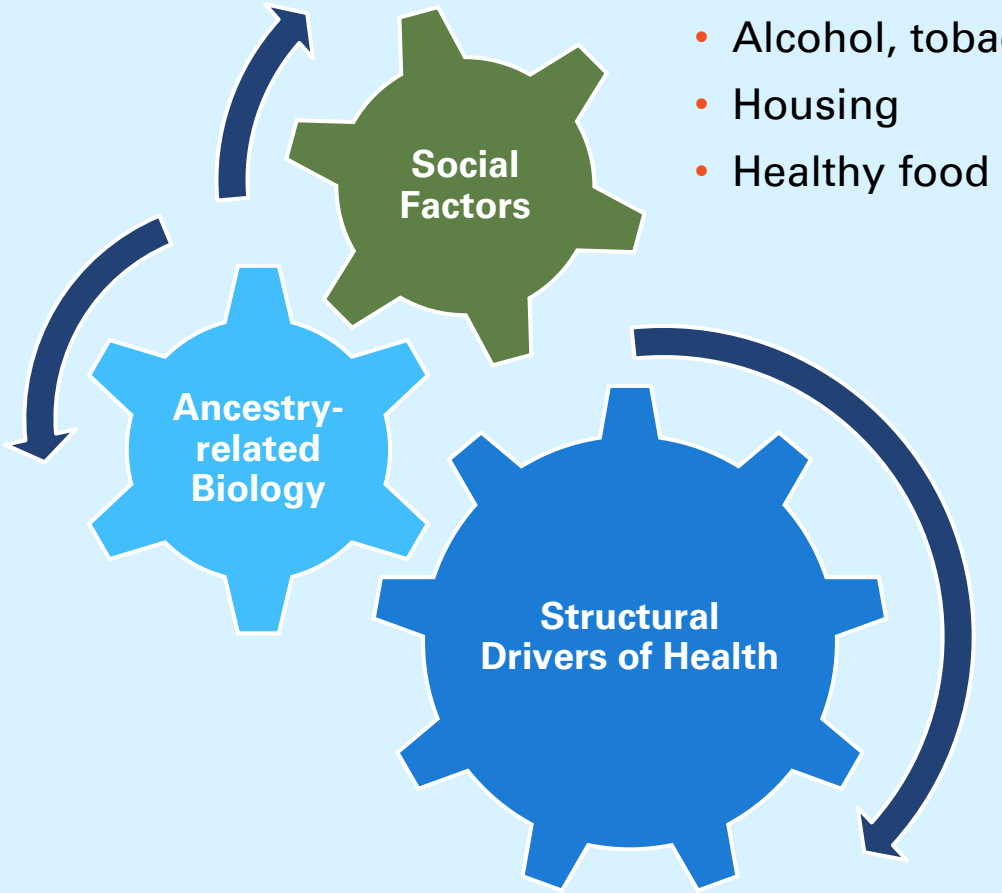
Biological Factors of Disease Add Complexity

- Inherited biomarkers
- Mental health
- Co-morbidities



- Alcohol, tobacco use
- Housing
- Healthy food

- Discrimination
- Insurance status
- Transportation

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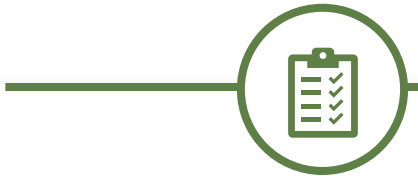
Screening and Early Detection Improve Survival, Yet Approximately Half of Cancers are Detected in Advanced Stages

American Indian and Native Alaskan tribes **53% less likely** to have a cancer screening center **within 200 miles**



Asians reporting **lower quality of patient-provider education** were **26% less likely** to receive recommended colon cancer screening compared to non-Hispanic whites

Rates of breast and colorectal cancer screening in age-eligible patients are **50% lower** for **uninsured patients** than for insured

Source: Disparities in Cancer Screening and Early Detection, ACSCAN, 2021

Cancer Disparities Progress Report, AACR, 2024

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Treatment is Often Delayed and/or Inadequate Based on Current Standards

Black men with metastatic prostate cancer who are Hispanic or from South/Central America are 83% and 48%, respectively, **more likely to experience treatment delays** compared with non-Hispanic white men

Black women with triple negative breast cancer are 18% **less likely to receive guideline-adherent treatment** compared to white women – Hispanic women are 13% less likely

Among patients with early-stage lung cancer living in neighborhoods with the lowest socio-economic status, a **15-minute increase in public transit time** to treatment was associated with a 39% **increase in the risk of undertreatment**

Spanish-speaking patients with breast cancer experience an 80% higher likelihood of **delay in treatment compared to English-speaking patients**

Source: Cancer Disparities Progress Report, AACR, 2024.
Disparities in Cancer Screening and Early Detection, ACSCAN, 2021

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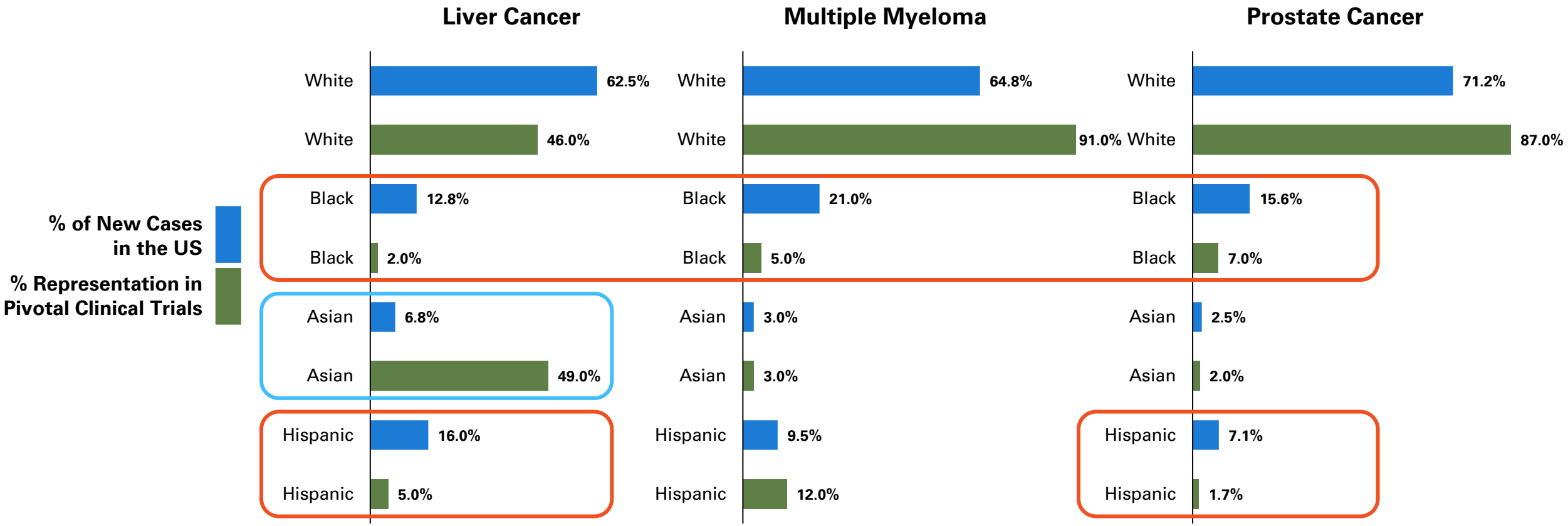
Racial and Ethnic Minority Patients are Underrepresented in Recent Cancer Clinical Trials



Source: Cancer Disparities Progress Report, AACR, 2024.

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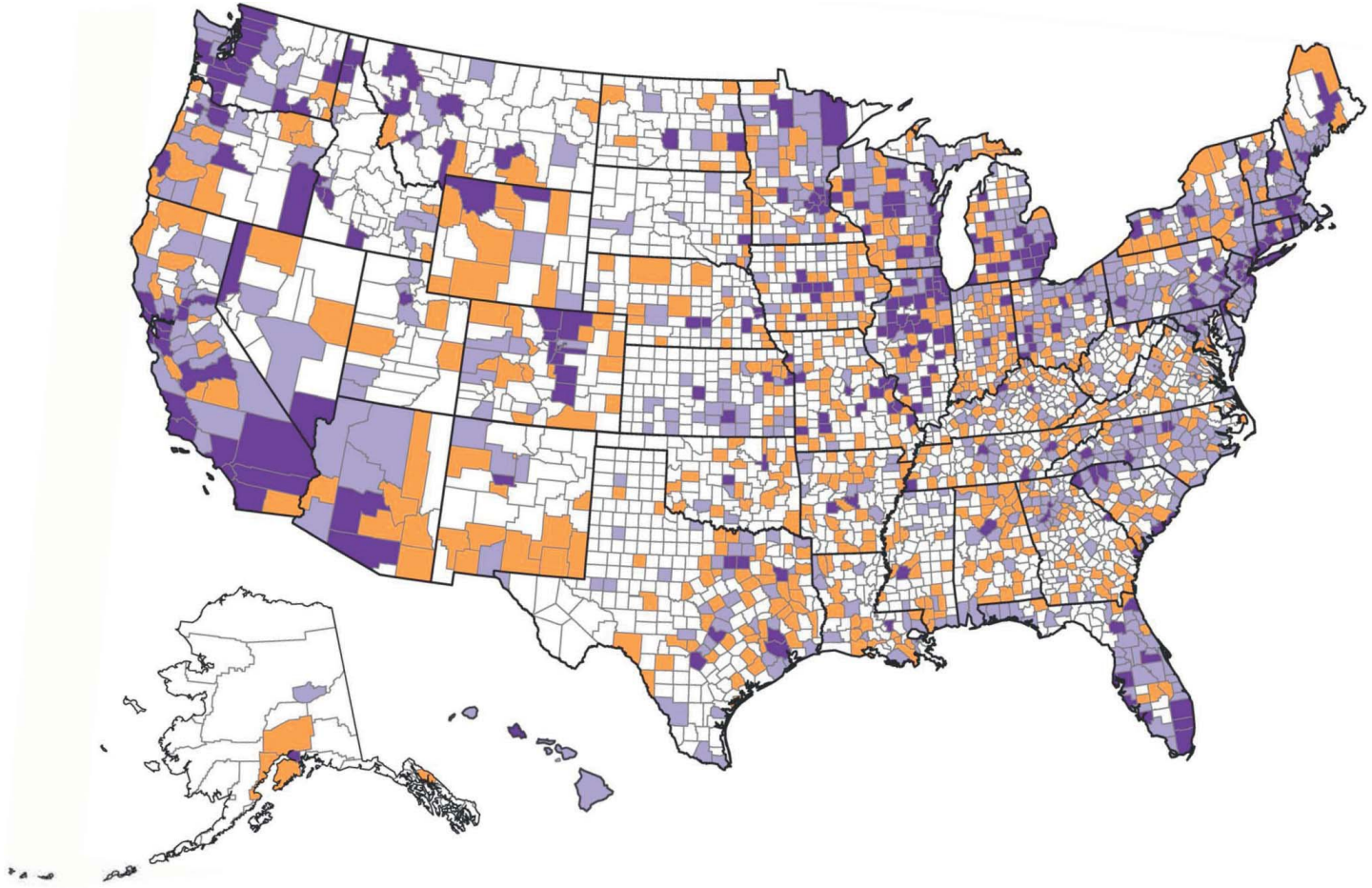
Significant Geographic Disparities Exist in Clinical Trial Availability



Legend	Counties	(%)	100,000 People Age ≥55 years	(%)	Land Area (square miles)	(%)
No trials-no oncologists	1,593	(51)	87	(9)	1,958,451	(55)
No trials-oncologists	618	(20)	92	(10)	653,822	(19)
1-99 trials	656	(21)	316	(33)	600,336	(17)
100+ trials	276	(9)	450	(48)	320,431	(9)
Total	3,143	(100)	945	(100)	3,533,041	(100)

Kirkwood MK et al. *JCO Oncol Pract*. 2024.

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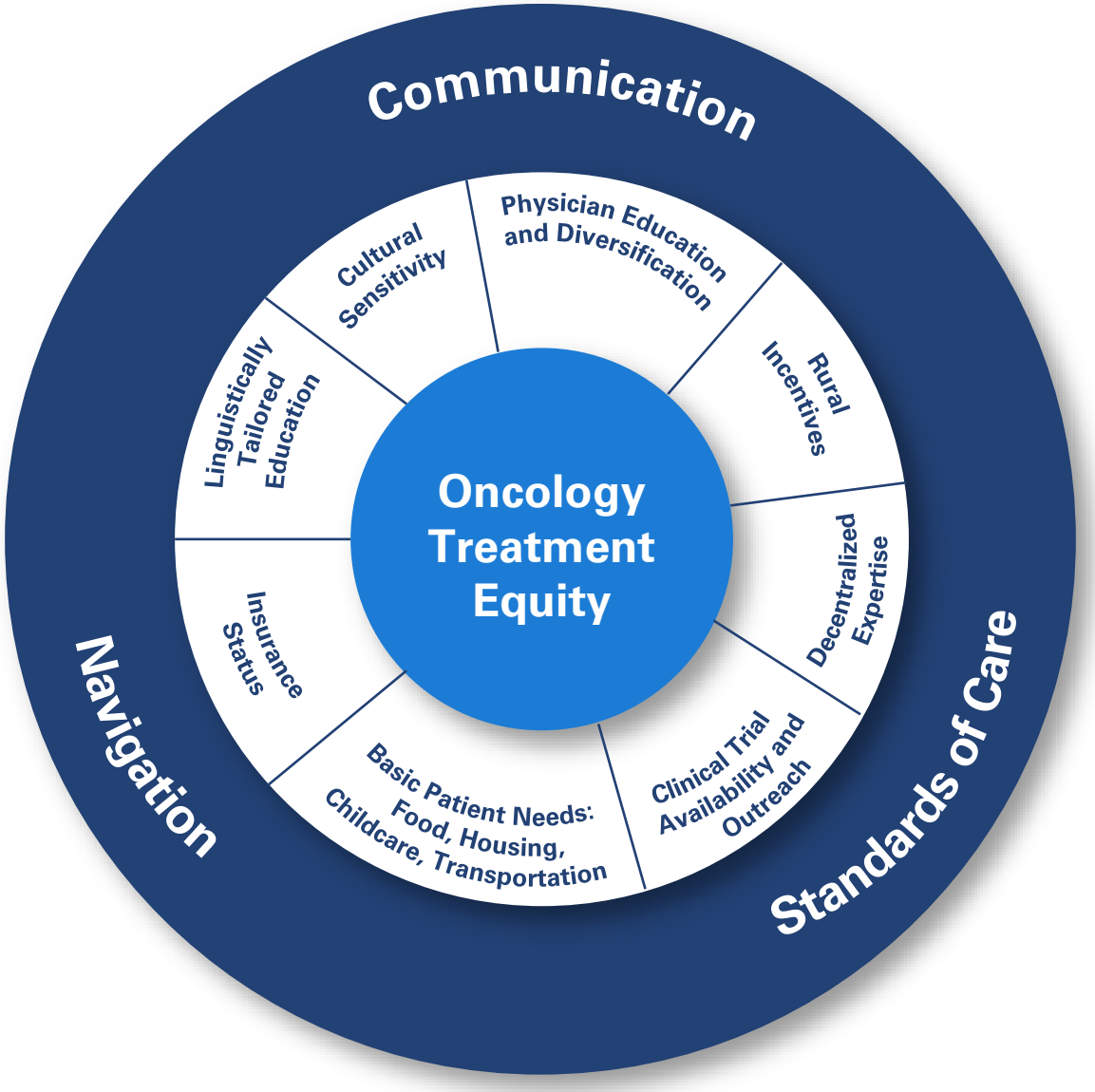
Approaches to Reduce the Impact of SDOH on Oncology Care



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Government and Private Sector Recognize the Need– Change Will Take Time

CDC's Social Determinants of Health Framework **Fall 2021**

Healthy People 2030

U.S. Department of Health and Human Services | OASH Office of Disease Prevention and Health Promotion

The OCE Equity Program

Generating Evidence for Diverse Populations in Oncology

March 2023

UNDERSTANDING AND ADDRESSING DRIVERS OF CANCER DISPARITIES

AACR American Association for Cancer Research

JAMA Network

Social Determinants of Health and the Availability of Cancer Clinical Trials in the United States

Social Determinants of Health and Disparities in Cancer Care for Black People in the United States

ASCO Publications

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Final Considerations

Incorporating SDOH data can provide new insights into disease-specific cohorts

Can be included in propensity score models to remove biases or included as independent variables in analytic models to measure association with measure of interest.

Composite measures and interactions can be derived to provide deeper insights into SDOH factors that may influence care patterns and outcomes.

As with analysis of any real-world data source, critical to understand the underlying population represented to put findings into the correct context.

Ongoing investment in system and behavior changes to improve equity in oncology care will positively impact health overall.

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Client Work and Presentations

Work with Clients

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IRA in 2025: What Changed and What Do Manufacturers Need to Consider Going Forward?

Panelists

Chris Schott

Partner, Latham & Watkins

Samantha Jouin

Founder, Way Forward Advisory

Thursday, January 23, 2025
12:00 PM to 1:00 PM Eastern

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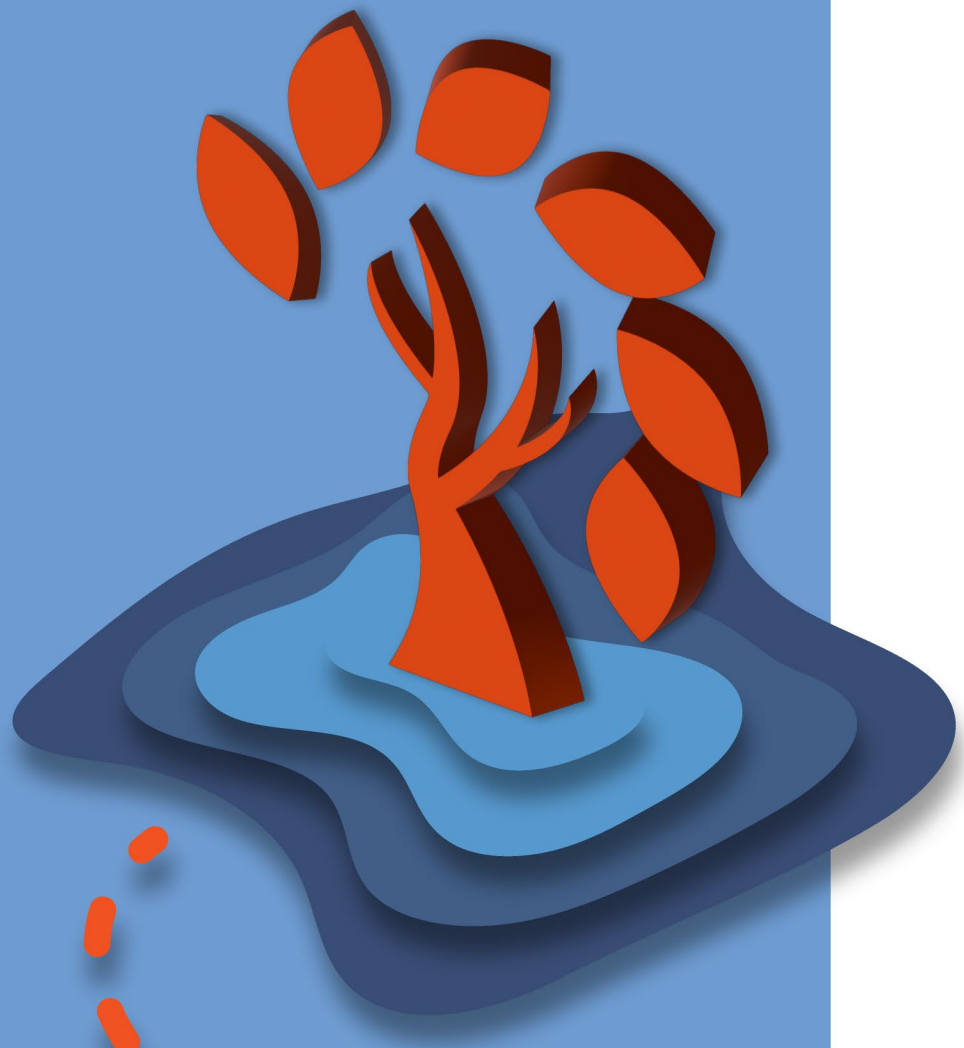

Thank you!

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