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THE LATINO CANCER INSTITUTE
Connect. Convene. Advocate.

The Latino Cancer Institute

7th Annual National Friday Forum Series

Sept 12th, Oct 3rd, Oct 24th

You Are In The Waiting Room

Hour One

Keynote: Luis Arturo Valdez, PhD, MPH
Drexel University, PA

Lisa Goldman Rosas, PhD, MPH
Stanford School of Medicine, CA

Hour Two

Luis Carvajal-Carmona, PhD, University of California, Davis

María Constanza Camargo, PhD, MS, MHA
National Cancer Institute (NIH/NCI), MD

Enrique Velazquez-Villarreal, MD, PhD, MPH, MS
City of Hope, Duarte Cancer Center, CA

Hour Three

Leticia Nogueira, PhD, MPH, American Cancer Society (ACS)

Catherine Metayer, MD, PhD
University of California, Berkeley

Katherine A. McGlynn, PhD, MPH
National Institutes of Health (NIH/NCI), MD

October is Breast & Liver Cancer Awareness Month

THE LATINO CANCER INSTITUTE
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Addressing an Unanswered Burden – Latino Men's Health & Cancer

October 3rd, 2025

HEALTH IS WEALTH

Raise Awareness

Discover Risks

Aims

Gain Awareness of Latino Men's Cancer Burden

Increase Research

Increase Latino-Focused Clinical Trials

Promote Latino Male Researchers

"Breast cancer" Google searches were found to be 36.7% (95% CI, 34% - 39%) more frequent than "prostate cancer" per month from 2009-2019.

https://www.researchgate.net/publication/349291406_Using_Google_Trends_and_Twitter_for_Prostate_Cancer_Awareness_A_Comparative_Analysis_of_Prostate_Cancer_Awareness_Month_and_Breast_Cancer_Awareness_Month

Latino Men and Breast Cancer

Spain – BRCA2 germ-line mutations in Spanish male breast cancer patients (pub Jan 2000)

- Screened DNA from 11 affected men and 6 women with breast cancer (BC) who had an affected male relative (father or brother)
- There is an association between BRCA2 mutations and male breast cancer, especially in those with a family history of BC.
- High prevalence of BRCA2 mutations among males should be considered when estimating risk for female relatives.

Authors recommend all new male cases of BC should be regarded as being possibly inherited and should be fully investigated.

BRCA2 germ-line mutations in Spanish male breast cancer patients
O Díez, J Cortés, M Domènech, C Pericay, J Brunet, C Alonso, M Baiget Affiliations * PMID: 10690392
•DOI: 10.1023/a:1008339009528 2000 Jan. https://pubmed.ncbi.nlm.nih.gov/10690392/

Mexico – Multi-Center Series 2025, clinical characteristics of male patients with breast cancer.." (pub Feb 2025)

49 Latino men - mean dx age ~65

- ~22% stage IV at diagnosis
- ~12% triple-negative, high-grade tumors common
- ~8% pathogenic BRCA among those tested
- Notable endocrine resistance rates –

Authors call for deeper molecular profiling

Clinical characteristics of male patients with breast cancer in the Latino population
Carlos González-Nuñez, Alejandro Mohar, Nancy Reynoso-Noverón, Rosa María Alvarez-Gómez, Yanin Chavarri-Guerra, Sergio Aguilar-Villanueva, Raúl Guzmán-Trigueros, Areli Velázquez-Martínez, Talia Weaman-Ostrosky, Fanny Porras-Reyes, Alexandra Garcilazo, Claudia Arce, Juan Enrique Bargallo-Rocha, Paula Cabrera-Galeana Affiliations *PMID: 39470849 *DOI: 10.1007/s10549-024-07525-1 https://pubmed.ncbi.nlm.nih.gov/39470849/2025Feb

All Cancer Sites – Incidence and Mortality for Hispanic/Latino Males and Females

Incidence (2018-2022)

- Hispanic Males: ~ 372.3 per 100,000
- Hispanic Females: ~ 357.6 per 100,000

Mortality (2019-2023)

- Hispanic Males: ~ 124.4 per 100,000
- Hispanic Females: ~ 93.2 per 100,000

SEER DATA

Current U.S. Rates for Hispanic/Latino Men and Women

Source: American Cancer Society Facts and Figures for Hispanic Latino People 2024-2026

Incidence (2017-2021)

- **Lung & bronchus:** Men **33.6** | Women **24.6**
- **Skin (melanoma):** Men **5.1** | Women **5.0**
- **Leukemia (acute lymphocytic*)**: Men **6.0** | Women **4.7**
- **Colorectal (colon & rectum):** Men **38.2** | Women **27.5**
- **Liver & intrahepatic bile duct:** Men **20.3** | Women **8.7**
- **Stomach:** Men **11.4** | Women **9.8**
- **Gallbladder:** Men **1.3** | Women **2.4**

Mortality (2018-2022)

- **Lung & bronchus:** Men **19.4** | Women **11.1**
- **Skin (melanoma):** Men **0.8** | Women **0.5**
- **Leukemia (acute lymphocytic*)**: Men **0.7** | Women **0.6**
- **Colorectal:** Men **13.4** | Women **8.5**
- **Liver & intrahepatic bile duct:** Men **12.6** | Women **6.1**
- **Stomach:** Men **5.7** | Women **3.8**
- **Gallbladder:** Men **0.5** | Women **1.0**

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University of California, Berkeley

Katherine A. McGlynn, PhD, MPH
National Institutes of Health (NIH/NCI), MD

Coming Up

October 24th

Building the Latino Medical Student/Physician Pipeline! Cristhian Gutierrez Huerta, Latino Medical Student Association (Chicago) & Dr. Elena Rios, National Hispanic Health Foundation (Washington, D.C.)

HEALTH IS WEALTH

Housekeeping

- Keep your cameras off, and mic on mute
- Use the Chat Box for questions for our speakers
- Various documents also found in the Chat Box
- All the presentations are being recorded. Slides and recordings will be available after Nov.1st

PARA ESPAÑOL

- En los controles de su reunión/seminario web en la parte inferior de su pantalla, haga clic en "Interpretación" y elija español.
- Si no ve el ícono de Interpretación en los controles de su reunión/seminario web,
- haga clic en el ícono "Más" y seleccione Interpretación de la lista.
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Interpreters

Fabiola Rivera Ramirez

Maria Esperanza Outeirino-Feijoo

Claudia Schalesky

About Machismo – Moderate to Strong Influence

Which TLCI Forum topics interest you most? (Select up to 3)

Answer Choice	0% 100%	Number of Responses	Responses Ratio
Prostate cancer in Latino men		7	43%
Role of machismo in health behaviors		11	68%
Liver cancer		4	25%
Lifestyle factors		10	62%
Colorectal cancer		4	25%
Stomach (gastric) cancers		2	12%
Environmental cancer risks		7	43%
Financial impact of cancer		5	31%
Lung cancer and vaping prevention		3	18%
AI and health technology		6	37%
Mental health and psychosocial support		10	62%
Other		0	0%
	Total Responses	**16**	**100%**

How much do you think machismo influences Latino men's health-seeking behavior?

Answer Choice	0% 100%	Number of Responses	Responses Ratio
No influence		0	0%
Little influence		0	0%
Moderate influence		5	31%
Strong influence		11	68%
Not sure		0	0%
	Total Responses	**16**	**100%**

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* Small sample size – 16 respondents

Keynote:

Breaking Down Machismo: What Happens When Old Scripts Meet New Realities

Luis Arturo Valdez, PhD, MPH

Assistant Professor, Community Health and Prevention,
Founder of the Ganas Health Initiative, Drexel University,
Dornsife School of Public Health, PA

Breaking Down Machismo: What Happens When Old Scripts Meet New Realities

Luis Arturo Valdez, PhD, MPH
Assistant Professor, Dornsife School of Public Health, Drexel University
GANASHEALTH.org

THE ‘MARLBORO MAN’

What does it mean to “be a man”?

THE "MAN BOX"

DON'T CRY

BE TOUGH

DON'T BE 'LIKE A WOMAN'

BE STRONG

BE INDEPENDENT

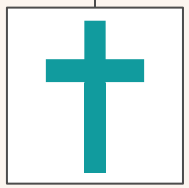
“MACHISMO” A LEGACY OF COLONIZATION, CATHOLICISM, AND PATRIARCHY

Reinforced the patriarchal family structure, shaping ideals of authority, provision, and control.

COLONIZATION

Spanish conquest imposed rigid gender hierarchies.

RELIGION



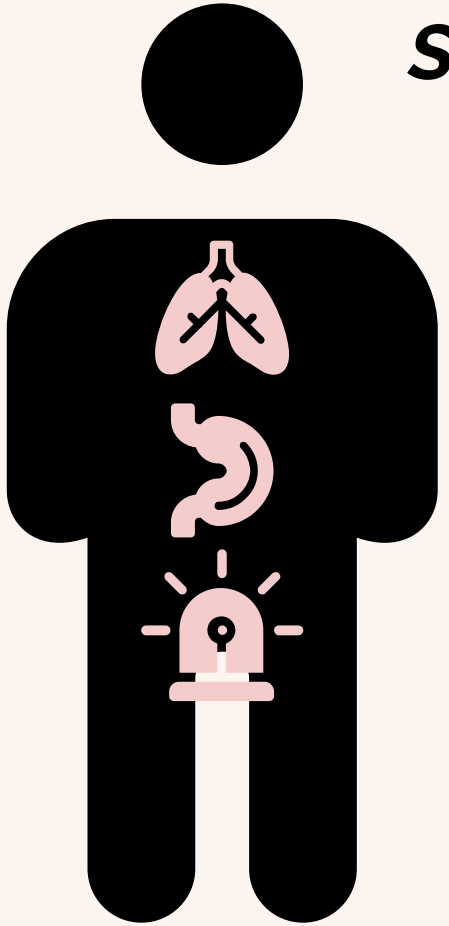
PATRIARCHY

Rewarding male dominance, stoicism, and breadwinning as “proofs” of manhood.

THE HEALTH COSTS:

WHEN MACHISMO BECOMES A PRESSURE COOKER

PATRIARCHY AND CANCER:
SILENCE BECOMES DEADLY



Avoidance of preventive care: fewer screenings for prostate, colorectal, and lung cancer.

Later-stage diagnosis: higher mortality in Latino men.

Cultural + structural barriers: machismo + low access = deadly delays.

Smoking & masculinity: marketed as toughness → increased lung cancer risk.

SO WHAT?

1. More than a stereotype
2. How do we “bring men in”?
3. Setting the stage for behavior change

MORE THAN A STEREOTYPE

THE WATER WE (ALL) SWIM IN

ENTERING A REFLEXIVE PROCESS:

RETHINKING HOW WE SEE MEN

“BRINGING MEN IN”

MEETING MEN WHERE THEY ARE

INTERROGATING THE BAR:

THE STANDARDS WE SET, SHAPE THE MEN WE SEE

THE GANAS HEALTH INITIATIVE

GENDER-TRANSFORMATIVE HEALTH

GANAS: Group-based, culturally grounded

Tackles stress, masculinity, health behaviors

Builds community + supports multiple behavior change

CALLS TO ACTION

FROM REFLECTION TO ACTION

Reflect: Question our assumptions about men

Disrupt: Challenge stereotypes and silence

Build: Create spaces for men's growth and care

Partner: Support TRANSFORMATIVE work

Obesity in America, An Escalating Crisis

THE TREND:

In just 6 years, states with severe obesity (≥35%) more than tripled –

- 2018: 7 states
- 2024: 23 states (Midwest & South hit hardest)

THE DISPARITY:

Communities of color face the greatest burden –

- Black adults: 38 states at ≥35%
- Hispanic adults: 34 states at ≥35%

THE REALITY:

All U.S. states and territories now have adult obesity rates above 20%, with only Colorado and D.C. still below 25%

Addressing the Triple Threat: Meeting Latino Men Where They Are

Lisa Goldman Rosas, PhD, MPH

Associate Professor, Department of Epidemiology and Population Health, Stanford School of Medicine Food for Health Equity Lab, Co-Director of Community-Engaged Research, Office of Cancer Equity, Stanford Cancer Institute, CA

Addressing the Triple Threat: Meeting Latino Men Where They Are

Lisa Goldman Rosas, PhD MPH

Associate Professor, Department of Epidemiology and Population Health & Department of Medicine (Primary Care and Population Health)

Latino Cancer Institute 2025 Men's Health Forum

Triple Threat: Obesity, Diabetes, and Cancer

Obesity: Latino men have the highest prevalence compared to men of all other racial/ethnic groups

Diabetes: Latino men have a higher prevalence compared to white men

Cancer: Obesity increases risk for 13 cancers; liver cancer disproportionately impacts Latino men

American Cancer Society

Cancer Facts & Figures

for Hispanic/Latino People 2024-2026

Incidence, 2017-2021		Male	
	Hispanic	White	Rate Ratio
Acute lymphocytic leukemia	6.0	3.7	1.59
Breast (female)			
Colon & rectum[a]	38.2	40.1	0.95
Gallbladder	1.3	0.7	1.94
Kidney & renal pelvis	23.6	24.3	0.97
Liver & intrahepatic bile duct	20.3	11.2	1.81
Lung & bronchus	33.6	63.9	0.53
Melanoma	5.1	38.1	0.13
Non-Hodgkin lymphoma	20.5	24.2	0.85
Oral cavity & pharynx	10.8	20.7	0.52
Ovary			
Pancreas	13.1	15.8	0.83
Prostate	92.9	114.5	0.81
Stomach	11.4	7.1	1.60
Uterine cervix			
Uterine corpus			
All sites	**378.5**	**513.0**	**0.74**

Mortality, 2018-2022		Male	
	Hispanic	White	Rate Ratio
Acute lymphocytic leukemia	0.7	0.4	1.68
Breast (female)			
Colon & rectum	13.4	15.2	0.88
Gallbladder	0.5	0.3	1.56
Kidney & renal pelvis	4.7	5.3	0.88
Liver & intrahepatic bile duct	12.6	8.4	1.50
Lung & bronchus	19.4	41.2	0.47
Melanoma	0.8	3.8	0.22
Non-Hodgkin lymphoma	5.4	6.9	0.79
Oral cavity & pharynx	2.4	4.3	0.56
Ovary			
Pancreas	9.7	13.2	0.73
Prostate	15.4	18.1	0.85
Stomach	5.7	2.8	2.04
Uterine cervix			
Uterine corpus			
All sites	**126.8**	**179.0**	**0.71**

Addressing the Triple Threat

- Research to identify effective intensive lifestyle interventions has been based primarily on research with non-Latinx white women
- A systematic review documented only 546 Latino men (4%) among 15,356 participants in behavioral weight loss intervention trials

The HOMBRE Trial

Hombres con **O**pciones para **M**ejorar su **B**ienestar y **R**educir **E**nfermedades crónicas

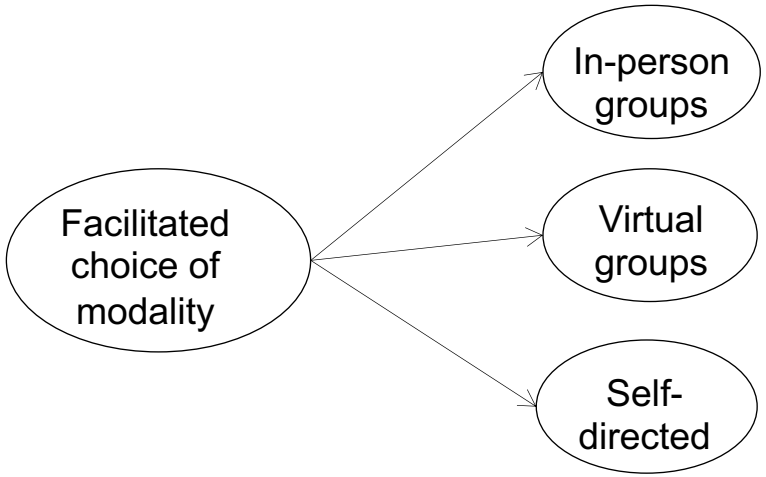
The HOMBRE Trial

424 Latino men:
- BMI 27+
- Pre-diabetes and/or metabolic syndrome

Minimal intensity

HOMBRE

- 18 month follow-up
- Primary outcome: Proportion of men who achieve 5% weight loss



Qualitative interviews according to RE-AIM with participants, health coaches, and staff

HOMBRE

Facilitated choice of modality

- In-person groups
- Virtual groups
- Self-directed

Group sessions

Group sessions on zoom

Online videos

HOMBRE

Table 1. Session delivery options in the HOMBRE (Hombres con Opciones para Mejorar su Bienestar y Reducir Enfermedades Crónicas) intervention.

Characteristics	Videoconference	Web-based videos	In person
Description	• A bilingual, bicultural coach facilitated weekly sessions on a videoconferencing platform (Zoom)	• Men were given access to prerecorded web-based videos of coach-facilitated group sessions	• A bilingual, bicultural coach facilitated weekly sessions at the clinic where men were recruited

HOMBRE: Participants

Table 1. Baseline participant characteristics overall and by treatment group[a]

Characteristic		HOMBRE (n=212)	Minimal Intensity (n=212)
Age, year[b]		47.0 ± 11.8	47.1 ± 12.1
Age category, %			
	18-<45	45.8	44.8
	45-<65	46.7	49.1
	65+	7.5	6.1
Education, %, n=207, 202			
	High school/GED or less	22.7	17.8
	Some college	25.6	28.2
	College graduate	29.5	32.2
	Post college	22.2	21.8
Preferred language, %, n=207, 203			
	English	85.5	85.7
	Spanish	14.5	14.3

HOMBRE: Outcomes

Table 2. Primary and secondary outcomes

Outcome measures	Unadjusted mean change ± SD: HOMBRE Intervention	Unadjusted mean change ± SD: Minimal Intensity	Adjusted mean treatment difference (95% CI)[a]	P value[a]
Primary outcome[b]				
At least 5% weight loss from baseline, no. (%), n =186, 180				
18 months	51 (27.4)	37 (20.6)	7.2 (-1.8, 17.0)	0.13
Posthoc exploratory outcome				
Weight change from baseline, kg				
6 months	-2.78 ± 5.45	-1.79 ± 6.10	-1.20 (-2.23, -0.17)	**0.02**
12 months	-2.77 ± 6.47	-1.56 ± 7.00	-1.10 (-2.10, -0.11)	**0.03**
18 months	-2.46 ± 6.60	-1.67 ± 6.16	-1.01 (-2.06, 0.05)	0.06

Intervention choice

Table 2. Baseline characteristics overall and by initial choice of intervention delivery (N=200).

Characteristic	All	Videoconference (n=56)	Web-based videos (n=62)	In-person group (n=82)	*P* value
Demographic					
Age (years), mean (SD)	47.3 (11.8)	45.6 (10.9)[a]	45.4 (11.4)[a]	50.0 (12.3)[b]	.03
Income (US $; n=167), n (%)					.02
<75,000	49 (29.3)	8 (16)[a]	14 (25.9)[a,b]	27 (42.9)[b]	
75,000-<150,000	53 (31.7)	17 (34)[a]	17 (31.5)[a,b]	19 (30.2)[b]	
≥150,000	65 (38.9)	25 (50)[a]	23 (42.6)[a,b]	17 (27)[b]	
Education (n=195), n (%)					.03
High school, GED[c], or less	45 (23.1)	7 (12.7)[a]	12 (19.7)[a,b]	26 (32.9)[b]	
Some college	49 (25.1)	12 (21.8)[a]	19 (31.1)[a,b]	18 (22.8)[b]	
College graduate	58 (29.7)	17 (30.9)[a]	21 (34.4)[a,b]	20 (25.3)[b]	
More than college	43 (22.1)	19 (34.5)[a]	9 (14.8)[a,b]	15 (19)[b]	
Language[d], n (%)					<.001
English	142 (71)	48 (85.7)[a]	61 (98.4)[b]	33 (40.2)[c]	
Spanish	58 (29)	8 (14.3)[a]	1 (1.6)[b]	49 (59.8)[c]	
Acculturation score, mean (SD)	3.4 (0.9)	3.7 (0.6)[a]	3.6 (0.7)[a]	3.1 (1.0)[b]	<.001

HOMBRE outcomes

Table 5. Weight change by initial and final choice of intervention delivery (N=200).

Weight change[a]	Initial intervention choice, mean (SD)			Final intervention choice, mean (SD)		
	Videoconference (n=56)	Web-based videos (n=62)	In-person group (n=82)	Videoconference (n=45)	Web-based videos (n=77)	In-person group (n=78)
Weight change at 6 months from baseline (kg)	−3.9 (6.1)[b]	−0.3 (3.7)	−4.3 (5.3)[b]	−4.8 (5.7)[b]	−0.4 (4.3)	−4.4 (5.3)[b]
Weight change at 12 months from baseline (kg)	−3.4 (7.9)	−1.0 (4.8)	−4.1 (6.0)[c]	−4.5 (8.0)[c]	−0.6 (4.8)	−4.2 (6.1)[c]
Weight change at 18 months from baseline (kg)	−3.8 (8.4)[d]	−0.9 (4.6)	−3.3 (6.0)[d]	−4.8 (8.6)[c]	−0.8 (4.6)	−3.2 (6.2)[d]

The flexibility of the intervention was frequently mentioned in interviews

"…I think given my schedule, having the flexibility to either do it yourself at your own pace, meaning on demand, versus having to stick to a schedule, it's pretty helpful, actually.."

"…think it's very appealing, because depending on your lifestyle or how busy you are, you are provided three options, which I think is very flexible.."

Lessons Learned

Latino men can be engaged in lifestyle interventions to address the triple threat!

Offering choice was a key feature for men

Two-thirds of men chose a technology-mediated option

Men who chose one of the coach-facilitated methods lost more weight than those who chose the online videos

What You Told Us: Survey Insights

Complexity Mindset

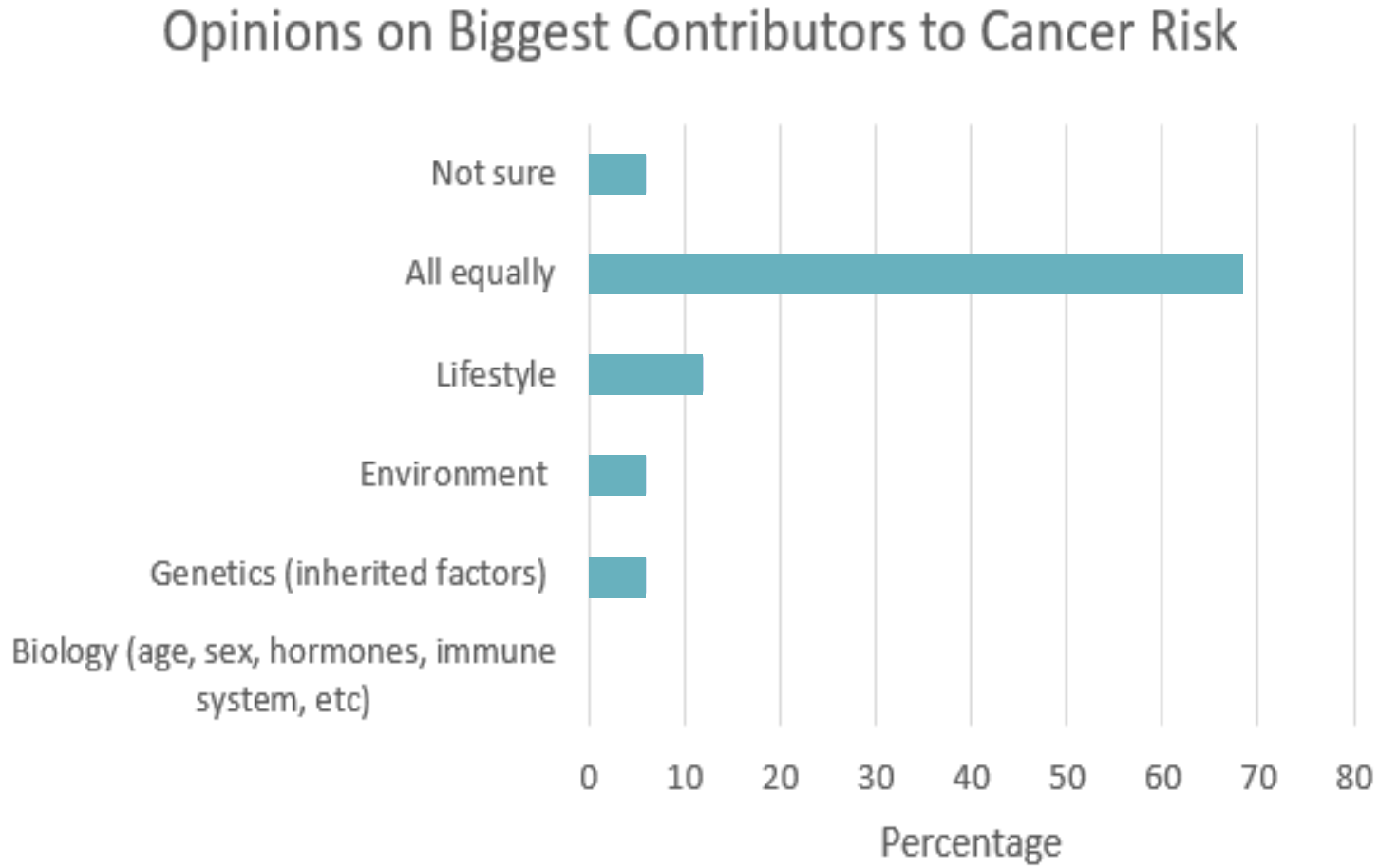
68%: All factors equally contribute to cancer risk

No Consensus on Genetics/ Opinion Split

31%: A little influence
31%: Moderate influence
25%: Strong influence
12%: Not sure

AI: Informed but Cautious

81%: Use Chat GPT
37%: Bias Concerns
25%: Inequality
68%: Want - Equity



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Hispanic / Latinos are nation's second-largest racial or ethnic group after non-Hispanic whites

*From CENSUS 2023

Hispanics make up 19.2% of the U.S. population or 65.2 Million people*

Largest Subpopulations*

Mexican	58.9%
Central American	10.3%
Puerto Rican	9.3%
South American	7.3%
Cuban	3.8%
Dominicans	3.8%

** From CDC

In 2023, an estimated 194,500 U.S. Hispanics were diagnosed with cancer

1 in 5 Latino deaths due to cancer. Source ACS

In 2023

An estimated 50,000 Hispanics died from the disease

16.8% of Hispanics/Latinos (of any race) had *no health insurance* coverage compared to 5.3% of non-Hispanic whites.
51.5% of Hispanics/Latinos (of any race) had *private health insurance coverage*, compared to 74.1% of non-Hispanic whites.
37.9% of Hispanics/Latinos had *public health insurance*, compared to 36.1% of non-Hispanic whites.

Colorectal Cancer in Latino Populations: A Focus on Men and Emerging Challenges

Luis Carvajal-Carmona, PhD

Associate Vice Chancellor, Office of Academic Diversity Cancer Genetics Researcher, Professor, Dept of Biochemistry and Molecular Medicine, Co-Director of Community Engagement Program, Clinical and Translational Science Center; Principal Investigator, Carvajal-Carmona Lab University of California, Davis

Colorectal Cancer in Latinos: Emerging Challenges

Luis G Carvajal-Carmona, PhD

Associate Vice Chancellor and
Professor of Biochemistry and Molecular Medicine

University of California, Davis

Colorectal cancer in Latinos

Figure 2. Leading Sites of New Cancer Cases and Deaths among Hispanic People – 2021 Estimates

Estimated New Cases*

Males			Females		
Prostate	17,600	22%	Breast	28,100	29%
Colon & rectum	9,000	11%	Uterine corpus	7,900	8%
Lung & bronchus	6,800	7%	Colon & rectum	7,500	8%
Kidney & renal pelvis	5,900	7%	Thyroid	5,300	7%
Liver & intrahepatic bile duct	4,800	6%	Lung & bronchus	5,800	6%
Non-Hodgkin lymphoma	4,700	6%	Non-Hodgkin lymphoma	4,200	4%
Leukemia	3,700	5%	Kidney & renal pelvis	3,800	4%
Urinary bladder	3,300	4%	Leukemia	2,900	3%
Pancreas	2,800	3%	Pancreas	2,900	3%
Oral cavity & pharynx	2,500	3%	Uterine cervix	2,700	3%
All sites	80,200	100%	All sites	96,400	100%

Estimated Deaths

Males			Females		
Lung & bronchus	3,200	13%	Breast	3,100	14%
Colon & rectum	2,700	11%	Lung & bronchus	2,300	10%
Liver & intrahepatic bile duct	2,600	11%	Colon & rectum	2,000	9%
Prostate	2,400	10%	Pancreas	1,900	8%
Pancreas	1,900	8%	Liver & intrahepatic bile duct	1,500	7%
Stomach	1,200	5%	Ovary	1,200	5%
Leukemia	1,000	4%	Uterine corpus	1,200	5%
Non-Hodgkin lymphoma	1,000	4%	Stomach	1,000	4%
Kidney & renal pelvis	800	3%	Leukemia	800	4%
Brain & other nervous system	800	3%	Non-Hodgkin lymphoma	800	4%
All sites	23,800	100%	All sites	22,700	100%

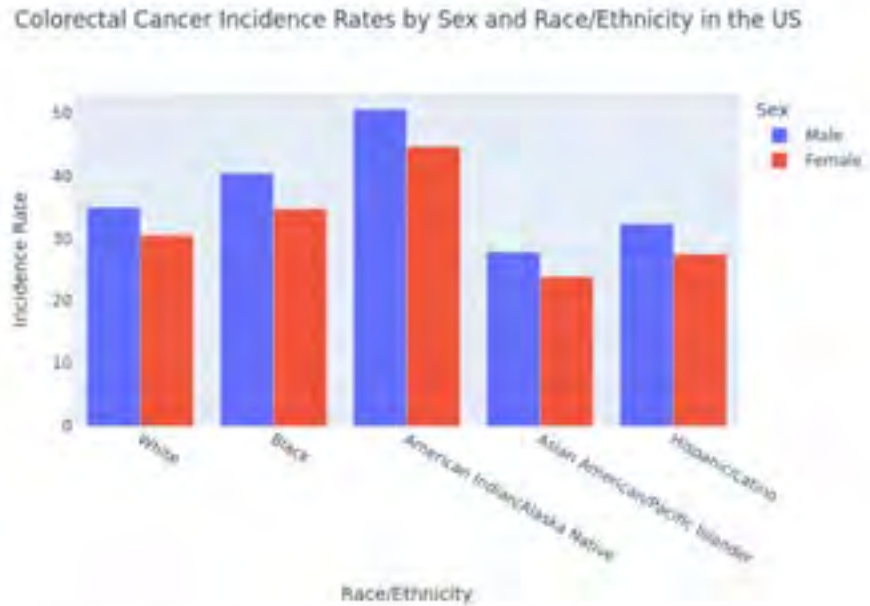
*Estimates exclude basal and squamous cell skin cancers and in situ carcinoma except urinary bladder. Estimates do not reflect the impact of the COVID-19 pandemic on cancer cases or deaths (see Sources of Statistics, page 31, for more information).

Latino CRC Epidemiology

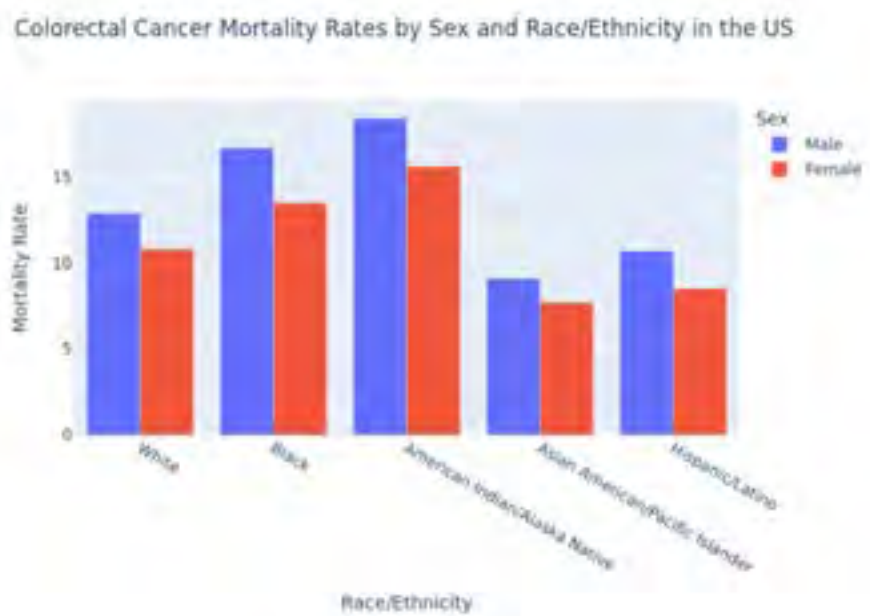
Measure	Male	Female	Total
Incidence(per 100K)	32.3	27.5	30.0
Mortality (per 100K)	10.7	8.5	9.7
Number of Cases	9,800 (8.2%)	8,700 (7.2%)	18,500 (15.4%)
Number of Deaths	3,250 (7.2%)	2,550 (5.7%)	5,800 (12.9%)

Source: American Cancer Society, Cancer Facts & Figures for Hispanic/Latino People 2024–2026

Colorectal Cancer Incidence Rates by Sex and Race/Ethnicity



Colorectal Cancer Mortality Rates by Sex and Race/Ethnicity



CRC Disparities in Latinos

- Over 56% of Latino patients are diagnosed at Stage III or IV, which is higher than White and Asian populations.
- Lower screening rates (49% vs. 58%)

Why Do U.S. Cancer Health Disparities Exist?

Complex and interrelated factors contribute to cancer health disparities in the United States. Adverse differences in many, if not all, of these factors are directly influenced by structural and systemic racism. The factors may include, but are not limited to, differences or inequalities in:

ENVIRONMENTAL FACTORS

- Air and water quality
- Transportation
- Housing
- Community safety
- Access to healthy food sources and spaces for physical activity

BEHAVIORAL FACTORS

- Tobacco use
- Diet
- Excess body weight
- Physical inactivity
- Adherence to cancer screening and vaccination recommendations

SOCIAL FACTORS

- Education
- Income
- Employment
- Health literacy

CLINICAL FACTORS

- Access to health care
- Quality of health care

CULTURAL FACTORS

- Cultural beliefs
- Cultural health beliefs

PSYCHOLOGICAL FACTORS

- Stress
- Mental health

BIOLOGICAL AND GENETIC FACTORS

merican Association for Cancer Research (AACR) Cancer Disparities Progress Report 2020

Drivers of Disparities

- Structural and Systemic Barriers
- Lower Screening Rates
- Genetic/Molecular Differences
- Cultural and Psychosocial Factors
- Environmental and Social Determinants

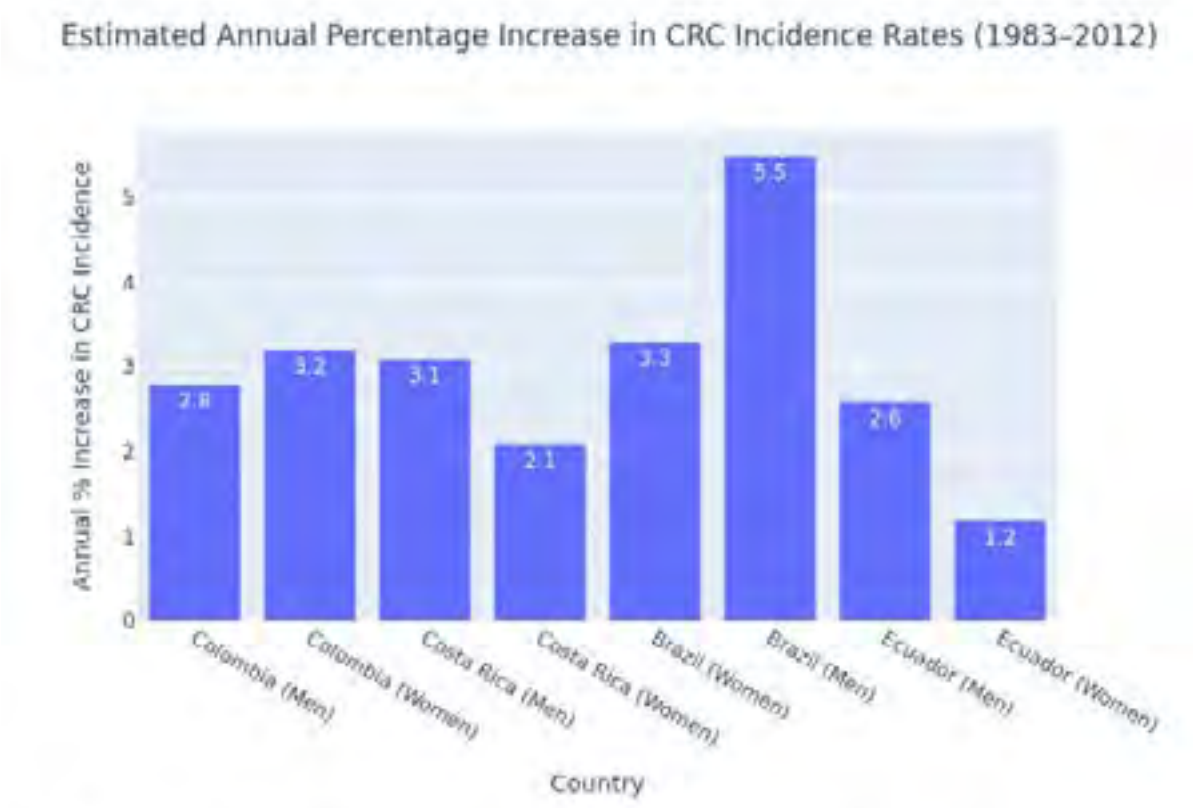
Uncovering multilevel drivers of cancer disparities among Latinos in the United States

Amelie G. Ramirez[1*], Edgar Munoz[1], Lorna Rodriguez-Rodriguez[2], Leon Bernal-Mizrachi[3], Jose Aron Lopez[4], Paulo S. Pinheiro[5], Barbara Segarra-Vasquez[5], Gregory Talavera[6], Luis G. Carvajal-Carmona[6], Adolfo Diaz Duque[1], Cliff Despres[1] and Edward J. Trapido[5]

CRC in Latin America: The role of Westernization

- **Diet:** Increased intake of red and processed meats, sugar, and refined grains
- **Lifestyle:** Sedentary habits, urban living, and decreased physical activity
- **Healthcare Access:** Delayed diagnoses and limited screening in middle-income countries
- **Socioeconomic Changes:** Rising HDI associated with increased CRC mortality due to lifestyle shifts

CRC in Latin America: The role of Westernization



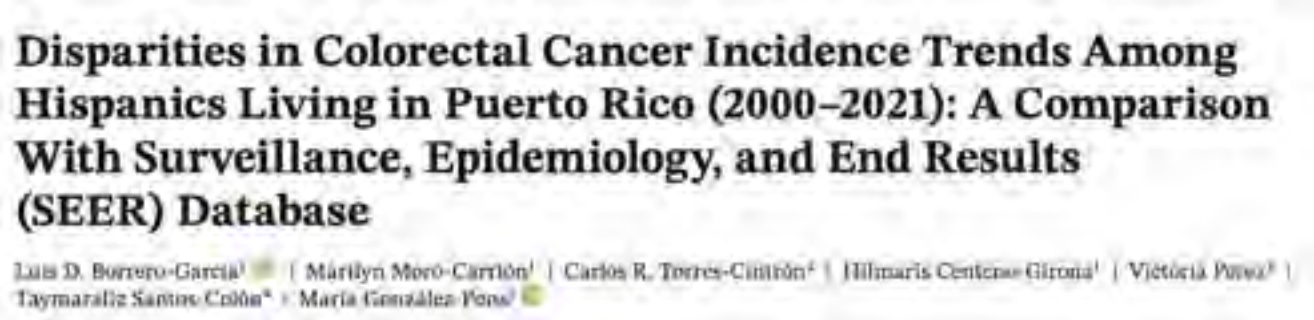
Sources:
1. Curado MP et al. (2016). Cancer incidence in five continents: Volume X. IARC.
2. Sierra MS et al. (2016). Cancer patterns and trends in Central and South America. Cancer Epidemiology, 44(Suppl 1), S23–S42.
3. Muzi C D et al. (2023). Trends in colorectal cancer mortality in Latin America: A 30-year analysis. PLOS One.

Early-onset CRC in US Latinos

- Early-onset CRC (EO-CRC) is high among U.S. Latinos, accounting for 17% of all CRC cases.

- Puerto Ricans had the highest incidence (12.18 per 100,000) and the highest increase in incidence trend (AAPC = 2.68, 95% CI: 1.83–3.51).

- The study emphasizes the ethnic diversity within Latinos and highlights the importance of disaggregated Latino cancer epidemiology data.



Disparities in Colorectal Cancer Incidence Trends Among Hispanics Living in Puerto Rico (2000–2021): A Comparison With Surveillance, Epidemiology, and End Results (SEER) Database

Luis D. Borrero-García[1] | Marilyn Moró-Carrión[1] | Carlos R. Torres-Cintrón[2] | Hilmaris Centeno-Girona[1] | Victoria Pérez[3] | Taymarailiz Santos-Colón[4] | María González-Pons[5]

Machismo-related barriers for screening

- Stigma and fear around procedures like colonoscopy
- Perceived threat to masculinity (e.g., vulnerability, invasiveness)
- Health minimization (the belief that men should not seek help)
- Concerns about sexual identity in relation to invasive procedures
- Lack of culturally sensitive communication from providers

Why should we focus on CRC screening?

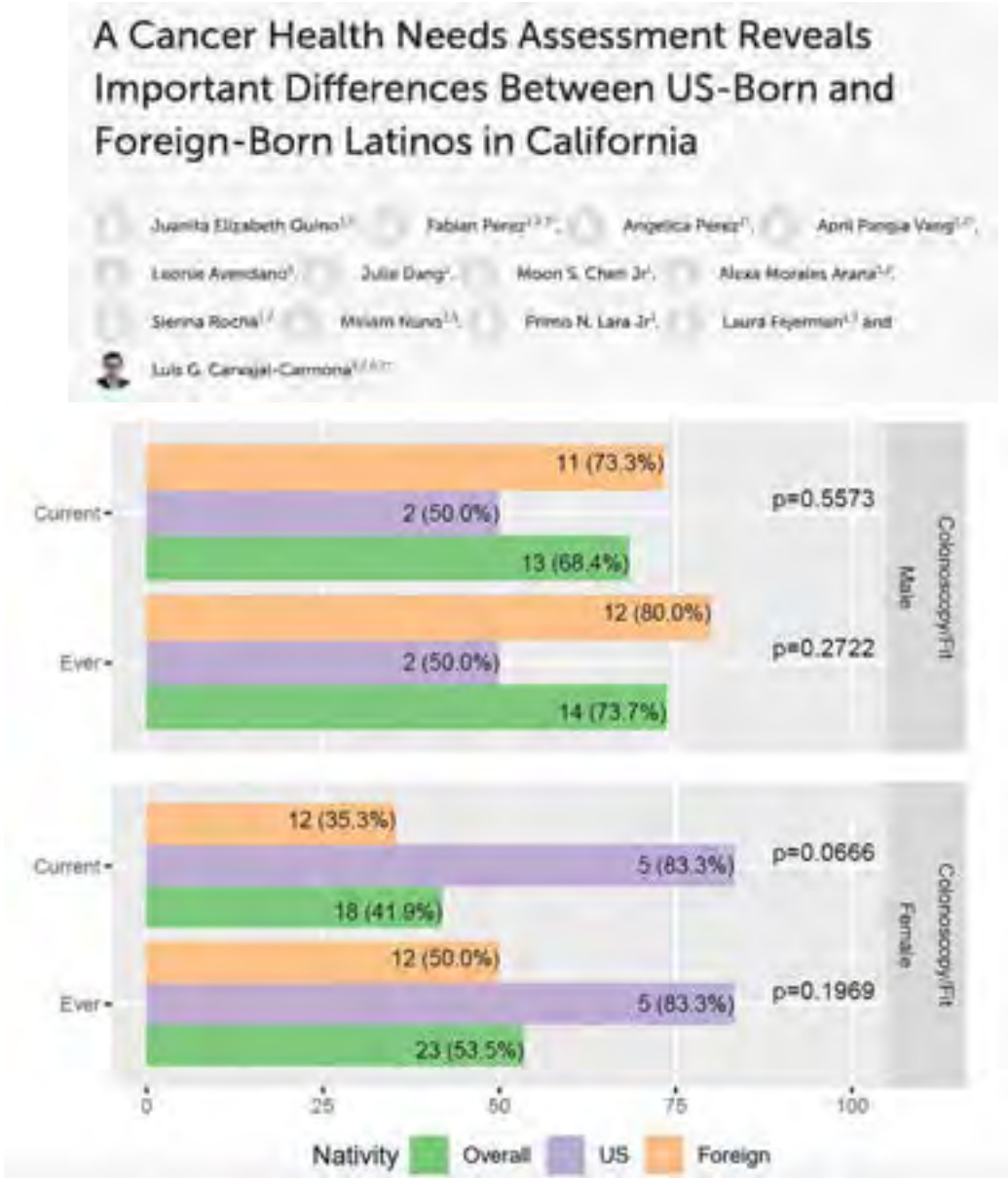
Table 2. Estimates of Current and Increased Use of US Preventive Services Task Force–Recommended Cancer Screenings Over the Lifetime of Study Cohort, United States, 2018

Preventive Service	Current Use, %[a]	Current Impact (Deaths Prevented)[b]	Incremental Impact (Deaths Prevented) With Increased Screening	
			Increase Screening by 10 Percentage Points[b]	Increase Screening to 90%[b]
Breast cancer screening of 50-year-old women until the age of 74	78.3	10,179	1,300	1,521
Cervical cancer screening of 21-year-old women until the age of 65	79.9	27,166	3,400	3,434
Colorectal cancer screening of 50-year-old adults until the age of 75	67.7	74,470	11,000	24,530

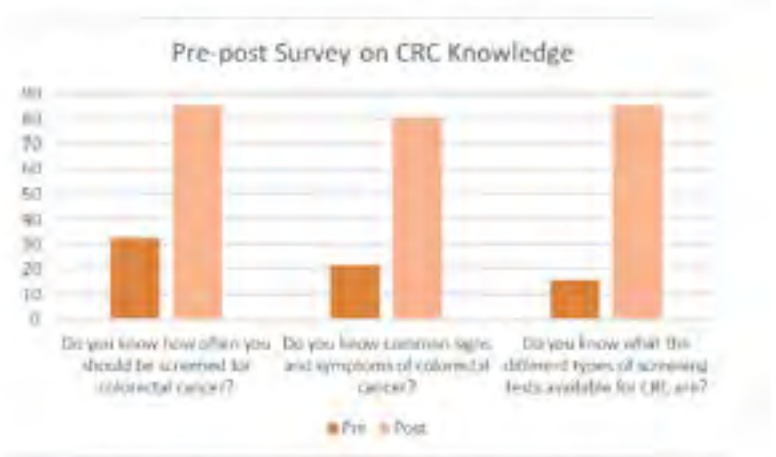
[a] Source: Behavioral Risk Factor Surveillance System Prevalence and Trends Data (7).
[b] Model-based estimates by authors.

Source: Krishna et al, Prev Chronic Dis, 2020

CRC screening in California Latinos



We implemented a culturally- and linguistically-appropriate model for CRC education in farmworker communities.



The figure above describes the top 3 questions observed with highest pre to post difference in knowledge gained from participants who took part in the survey after receiving colorectal cancer education through the inflatable colon.

900
Community members reached

173
CRC knowledge Surveys collected

>40
Community organizations participated

Poverty increases CRC mortality

Table 2. Comparisons of 2007–2011 cancer mortality rates for the entire United States versus counties defined by persistent poverty.

	Nonpersistent poverty (ref)		Persistent poverty			Unadjusted difference		Adjusted difference	
	Mean	SE	Mean	SE	% Diff	Est.	*P*	Est.	*P*
All cancer types	179.3	0.6	201.3	1.8	12.3	22.0	<0.0001	8.3	<0.0001
Lung and bronchus	52.3	0.3	60.9	1.0	16.5	8.6	<0.0001	2.9	<0.001
Colorectal	17.1	0.1	20.1	0.3	17.7	3.0	<0.0001	1.7	<0.0001
Breast	21.6	0.2	24.1	0.5	11.9	2.6	<0.0001	0.9	0.10
Prostate	22.8	0.2	28.2	0.7	24.0	5.5	<0.0001	1.1	0.08
Cervical	2.5	0.1	3.7	0.2	50.1	1.2	<0.0001	0.4	0.07
Oropharyngeal	2.5	0.0	3.2	0.1	29.6	0.7	<0.0001	0.1	0.38
Stomach	2.9	0.0	4.1	0.2	43.2	1.3	<0.0001	0.4	0.01
Liver and intrahepatic bile duct	5.0	0.1	6.3	0.2	27.6	1.4	<0.0001	0.5	<0.01

Note: Cancer mortality rates are expressed as deaths per 100,000 people per year except breast and cervical cancers (deaths per 100,000 females per year) and prostate cancer (deaths per 100,000 males per year). Two-sample *t* tests were used to estimate unadjusted differences in cancer mortality rates for counties not in persistent poverty (reference category) versus counties in persistent poverty, and multivariate linear regressions were used to estimate adjusted differences in cancer mortality rates. Adjusted models controlled for county-level metropolitan status; Census region; percentage of residents who are female, non-Hispanic black, Hispanic, with a bachelor's degree or higher, and unemployed; and median household income.
Abbreviations: Diff, difference; Est., estimate; ref, reference; SE, standard error.

Table from Moss et al, CEBP, 2020, doi: 10.1158/1055-9965.EPI-20-0007

We are studying the impact of income support programs on CRC patterns

Upstream Research Center

ABOUT OUR WORK MEET THE TEAM PILOT GRANTS FELLOWSHIPS

Research Project 2: CalEITC and Colorectal Cancer

The Center is also evaluating the impact of increased income support through the Earned Income Tax Credit (EITC). The project will estimate the effect of the 2015 CalEITC expansion policy on colorectal risk factors. The examination of these effects in California is notable because the state has one of the most generous EITC policies for lower-income individuals and having a social security number is no longer required to receive benefits, opening eligibility up to non-US citizens with an Individual Taxpayer Identification Number (ITIN).

Investigators

Luis E. Carvajal-Carmona, PhD
Associate Vice Chancellor, Office of Academic Diversity, UC Davis; Founding Director, Latinos United for Cancer Health Advancement and Center for Advancing Cancer Health Equity, UC Davis Comprehensive Cancer Center; Co-director, Community Engagement Program, UC Davis Clinical and Translational Science Center

Project Lead

David Rehkopf, Sc.D., MPH
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Project Lead

Patricia Rodriguez Espinosa, PhD
Core Associate Leader, Stanford Alzheimer's Disease Research Center; Associate Director of Research, Stanford School of Medicine Office of Community Engagement

Scarlett Lin Gomez, PhD
Co-Leader, Cancer Control Program, UCSF Helen Diller Family Comprehensive Cancer Center

Michael Potter, MD
Director, San Francisco Bay Collaborative Research Network; Director, CTSI Research Infrastructure Network and Team Science Programs; Family physician and researcher, UCSF

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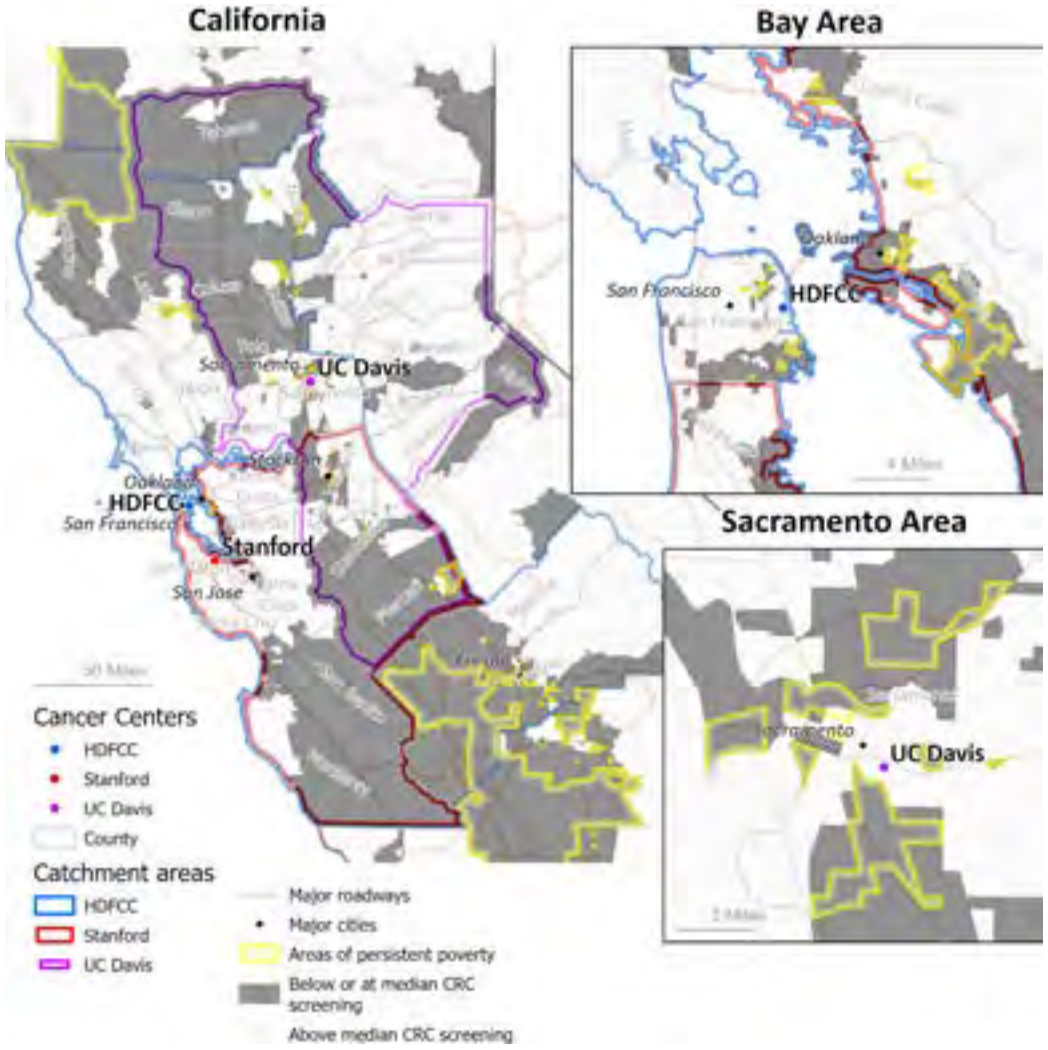
Associate Director, Community Engagement, Stanford Center for Population Health; Co-Director of Community-Engaged Research, Office of Cancer Health Equity, Stanford Cancer Institute; Faculty Director, Office of Community Engagement, Stanford School of Medicine

Maxwell Bang, PhD
Postdoctoral Scholar, Stanford Department of Sociology

Persistent Poverty Map

- The risk of dying from cancer is greatly influenced by your zip code.
- If you live in a poor neighborhood, you face cancer death rates that are 12% higher than if you live in a wealthy neighborhood.



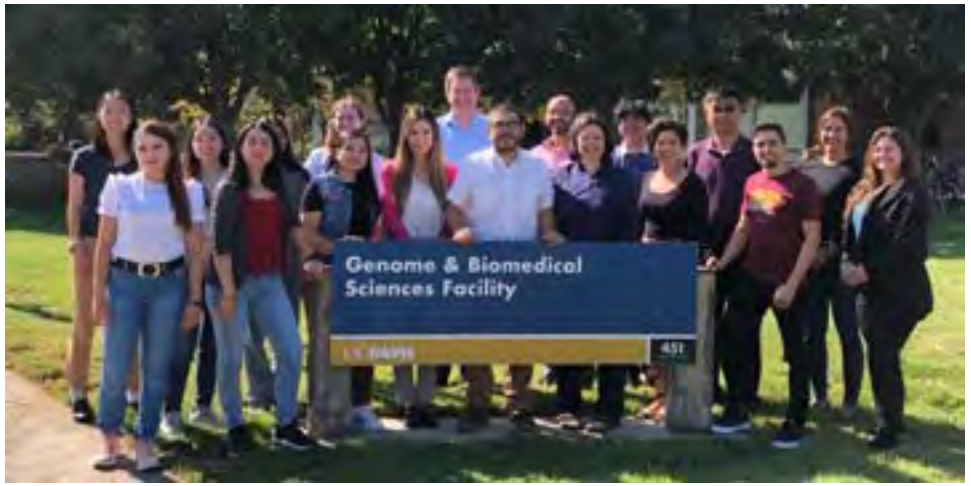
Thanks to Scarlet Gomez for providing the figure

Concluding Remarks

- CRC is major driver of cancer incidence, mortality and disparities in Latinos
- CRC is highly preventable, but screening rates remain stubbornly low
- Effective interventions to increase screening require holistic approaches
- Men have low screening rates, interventions addressing sex-specific barriers need to be implemented

Acknowledgements

The Health Equity Leadership, Science and Community Laboratory (The LCC Lab)



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- NIH/NCI:
  - R01CA223978 (DCCPS)
  - R21CA199631 (CRCHD)
  - U54CA233306 (CRCHD)
  - U54CA283766 (CRCHD)
  - U54CA280911 (DCCPS)
  - D43CA260869 (Global Health)
  - Diversity (Cuellar-Vitte, Diaz, Halmai, Morales, Quino, Vang) and Administrative (Global health, CRCHD) Supplements
- Gilead, Genentech
- Our collaborators and trainees

Health is Wealth – Cancer's Economic Toll

- 46% skip recommended treatments due to cost concerns
- Latino cancer survivors face 2 to 3x higher healthcare costs
- 71% of survivors carry medical debt
- Financial impact reverberates through families and communities
- $8.8 billion lost annually in productivity due to Latino cancer deaths

THE LATINO CANCER INSTITUTE
Connect. Convene. Advocate.

*American Cancer Society Cancer Action Network. (2022). "The Costs of Cancer in the Hispanic/Latino Community." Available at: https://www.fightcancer.org/sites/default/files/coc_hispanic_final.pdf

Costs of Early vs Late Diagnosis of Prostate Cancer

A Latino man's lifetime economic contribution is ~$2.17 million
Based on a $48,000 annual wage (average annual salary for a Latino male) over a 45-year career

Scenario	Treatment & Estimated Work Absence	Healthcare Cost	Lost Wages Calculation (Absence x Annual Income)	Total Loss on U.S. Economy (Lost Wages x New Prostate Cancer Cases Annually)
Early Detection and Care	3-month absence, then full return to work until retirement	$27,500	0.25 x $48,240 = $12,060	$12,060 x 12615 patients = $152.1 million
Late Detection and Care	6-month absence, then forced to retire 10 years early	$77,000	(0.5 + 10) x $48,240 = $506,520	$506,520 x 7699 patients = $3.9 billion
No Intervention / Early Death	Death occurs with 20 years of potential work life remaining	$0	20 x $48,240 = $964,800	$964,800 x 2586 patients = $2.5 billion

Presentation by Matthew "Mateo" Banegas, PhD, UCSD
Sept 12th, Forum 1

The Enigmatic Male Predominance of Gastric Cancer

María Constanza Camargo, PhD, MS, MHA

DCEG Women Scientist Advisor's Mentoring and Leadership Award (2022), Senior Investigator, Metabolic Epidemiology Branch, National Cancer Institute (NIH/NCI), MD

The enigmatic male predominance of gastric cancer

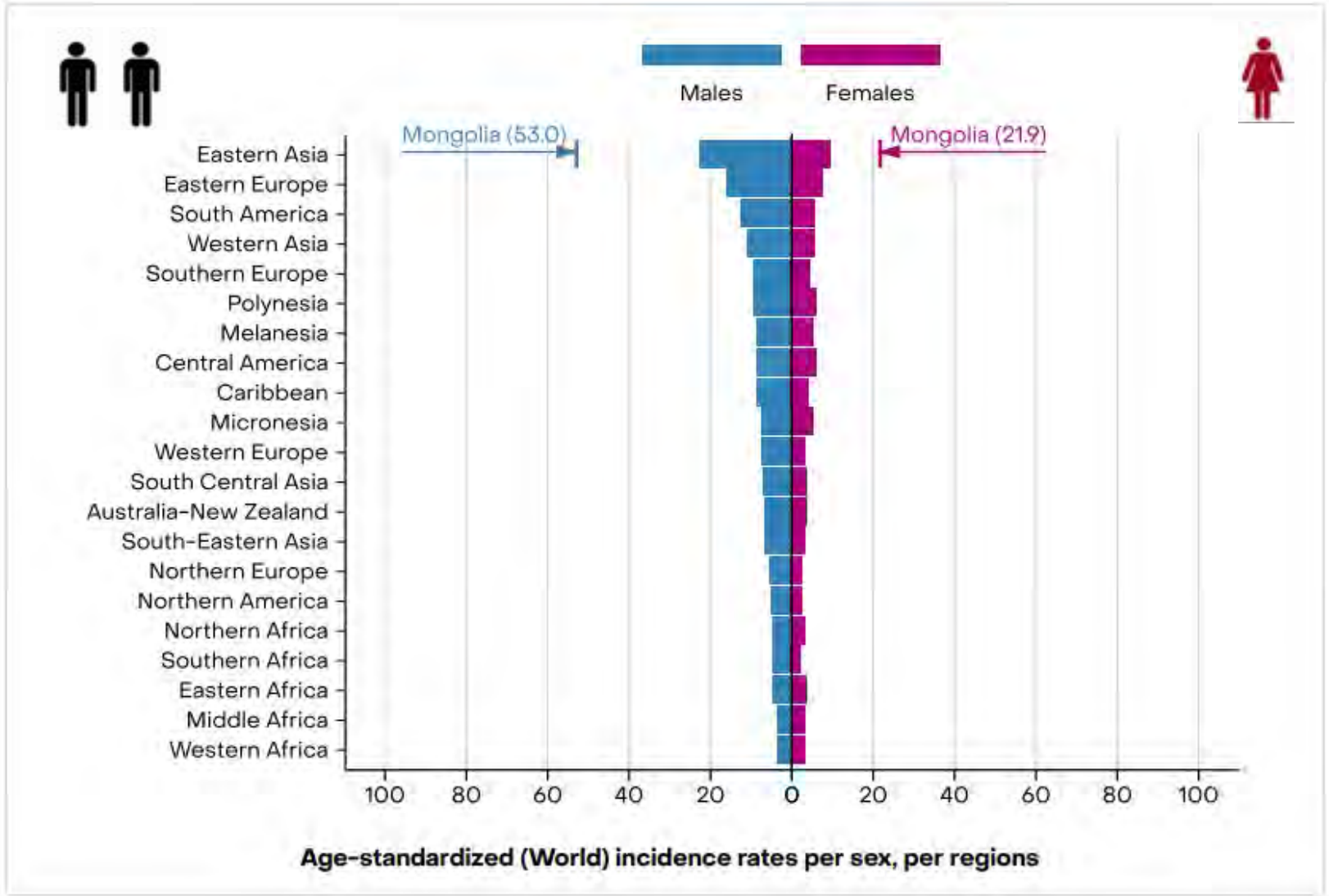
Maria Constanza Camargo
Senior Investigator
Division of Cancer Epidemiology and Genetics

NIH NATIONAL CANCER INSTITUTE

October 3, 2025

Key Messages

- Gastric cancer shows a clear male predominance.



Data source: **GLOBOCAN 2022**
Graph production: **IARC**
http://gco.iarc.fr/today
World Health Organization

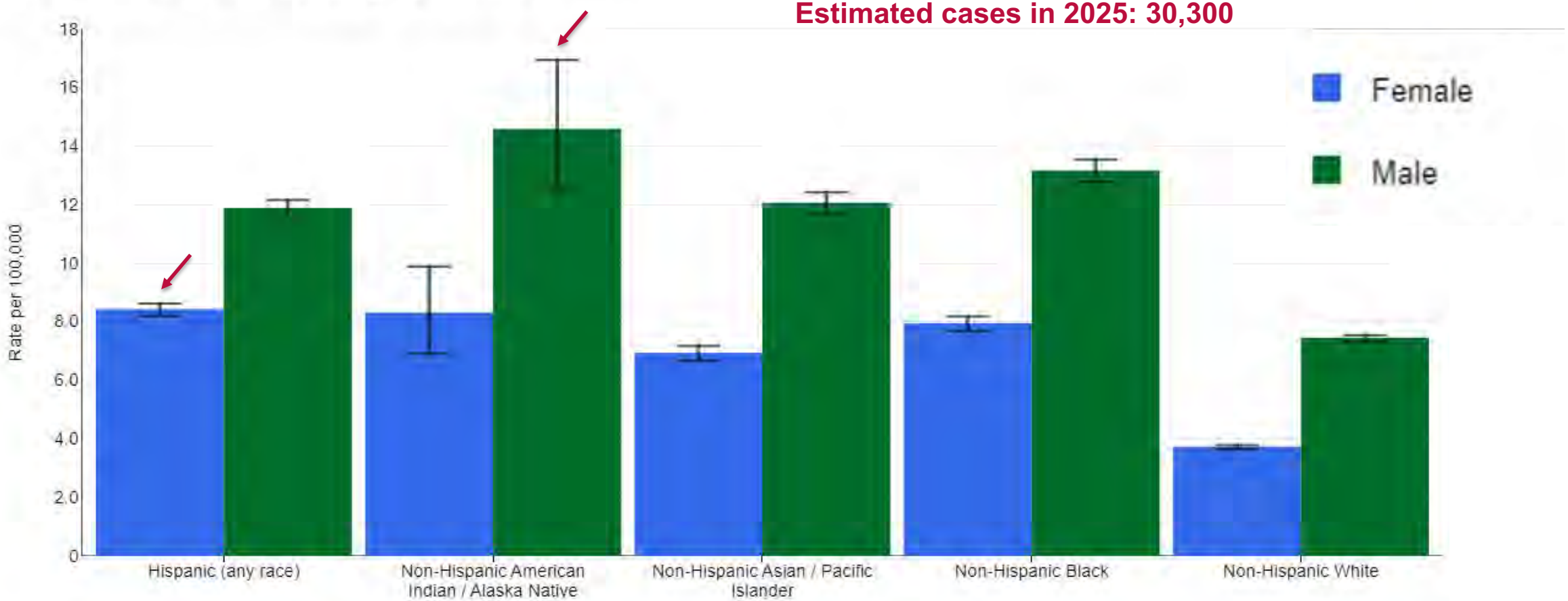
International Agency for Research on Cancer
World Health Organization

Key Messages

- Gastric cancer shows a clear male predominance.
- There are persistent racial and ethnic disparities in gastric cancer incidence, mortality and survival in the United States.

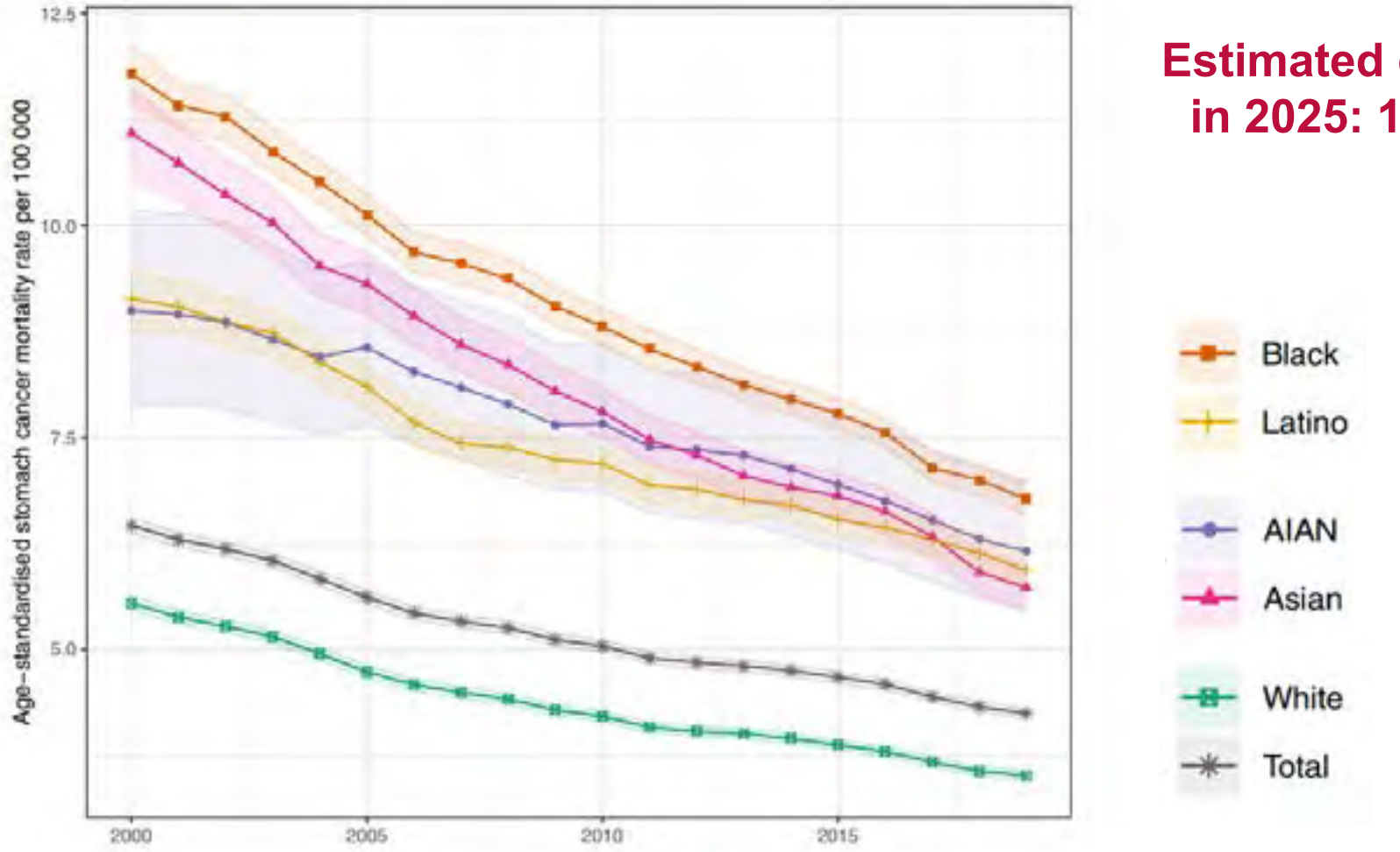
Stomach
SEER 5-Year Age-Adjusted Incidence Rates, 2017-2021
By Race/Ethnicity and Sex, All Ages, All Stages

Estimated cases in 2025: 30,300



Data Source:
• SEER Incidence Data, November 2023 Submission (1975-2021), SEER 22 registries [https://seer.cancer.gov/registries/terms.html].
Methodology:
• Rates are per 100,000 and are age-adjusted to the 2000 US Std Population (19 age groups - Census P25-1130).
Race/Ethnicity Coding:
• For more details on SEER race/ethnicity groupings, please see Race and Hispanic Ethnicity Changes [https://seer.cancer.gov/seerstat/variables/seer/race_ethnicity/]
• Rates for American Indians/Alaska Natives only include cases that are in a Purchased/Referred Care Delivery Area (PRCDA).
• Incidence data for Hispanics and Non-Hispanics are based on the NAACCR Hispanic Latino Identification Algorithm (NHIA).
Cancer Site Coding:
• See SEER*Explorer Cancer Site Definitions [https://seer.cancer.gov/statistics-network/explorer/cancer-sites.html] for details about the cancer site coding used for SEER Incidence data.
Created by https://seer.cancer.gov/statistics-network/explorer on Sat May 11 2024.

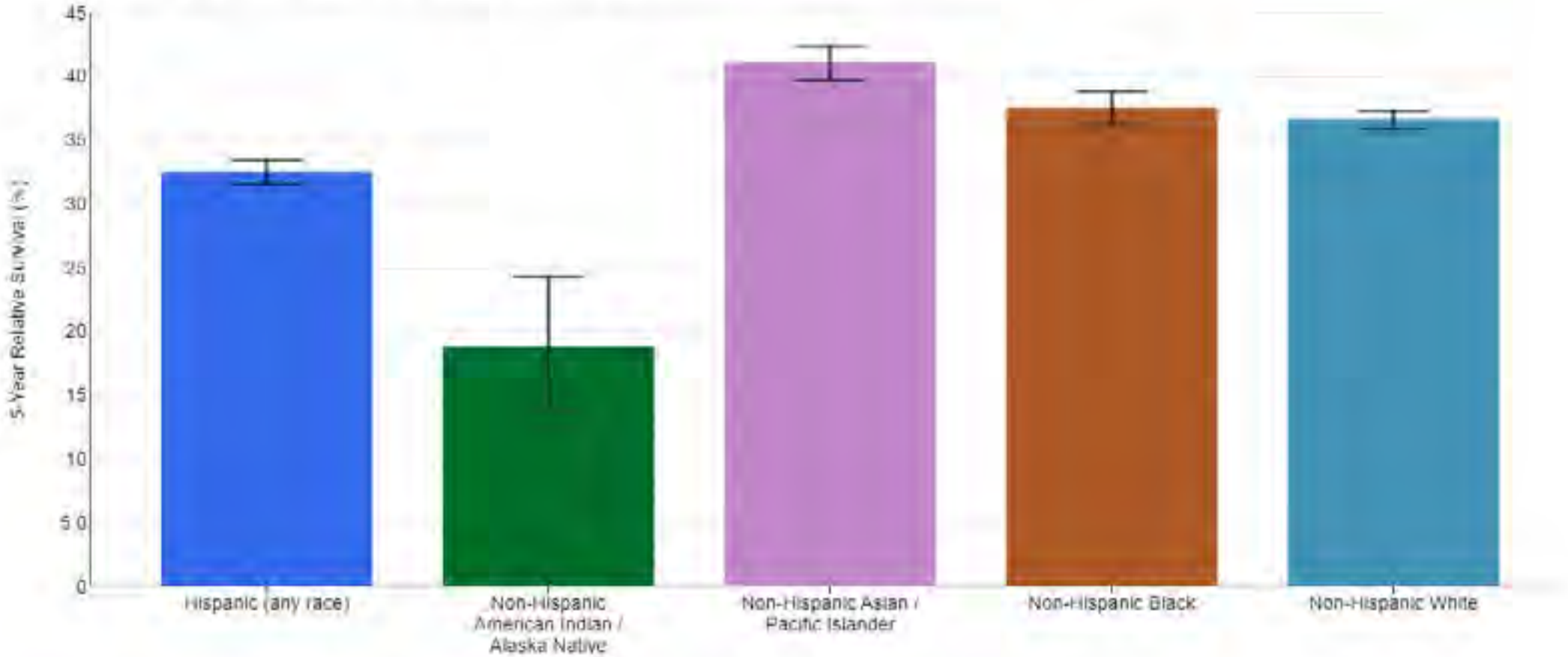
National age-standardized gastric cancer mortality rates, 2000-2019, by year and racial and ethnic group



Estimated deaths in 2025: 10,870

GBD US Health Disparities Collaborators. Lancet Reg Health Am. 2023.

Stomach
SEER 5-Year Relative Survival Rates, 2014-2020
By Race/Ethnicity, Both Sexes, All Ages, All Stages



5-Year Relative Survival

37.9%

2015-2021

Data Source:
- SEER Incidence Data, November 2023 Submission (1975-2021), SEER 22 registries (https://seer.cancer.gov/registries/terms.html) (excluding Illinois and Massachusetts)
- Expected Survival Life Tables (https://seer.cancer.gov/expsurvival) by Socio-Economic Standards

Methodology:
- The five-year survival rates are calculated using monthly intervals.

Race/Ethnicity Coding:
- For more details on SEER race/ethnicity groupings, please see Race and Hispanic Ethnicity Changes (https://seer.cancer.gov/seerstat/variables/seer/race_ethnicity/)
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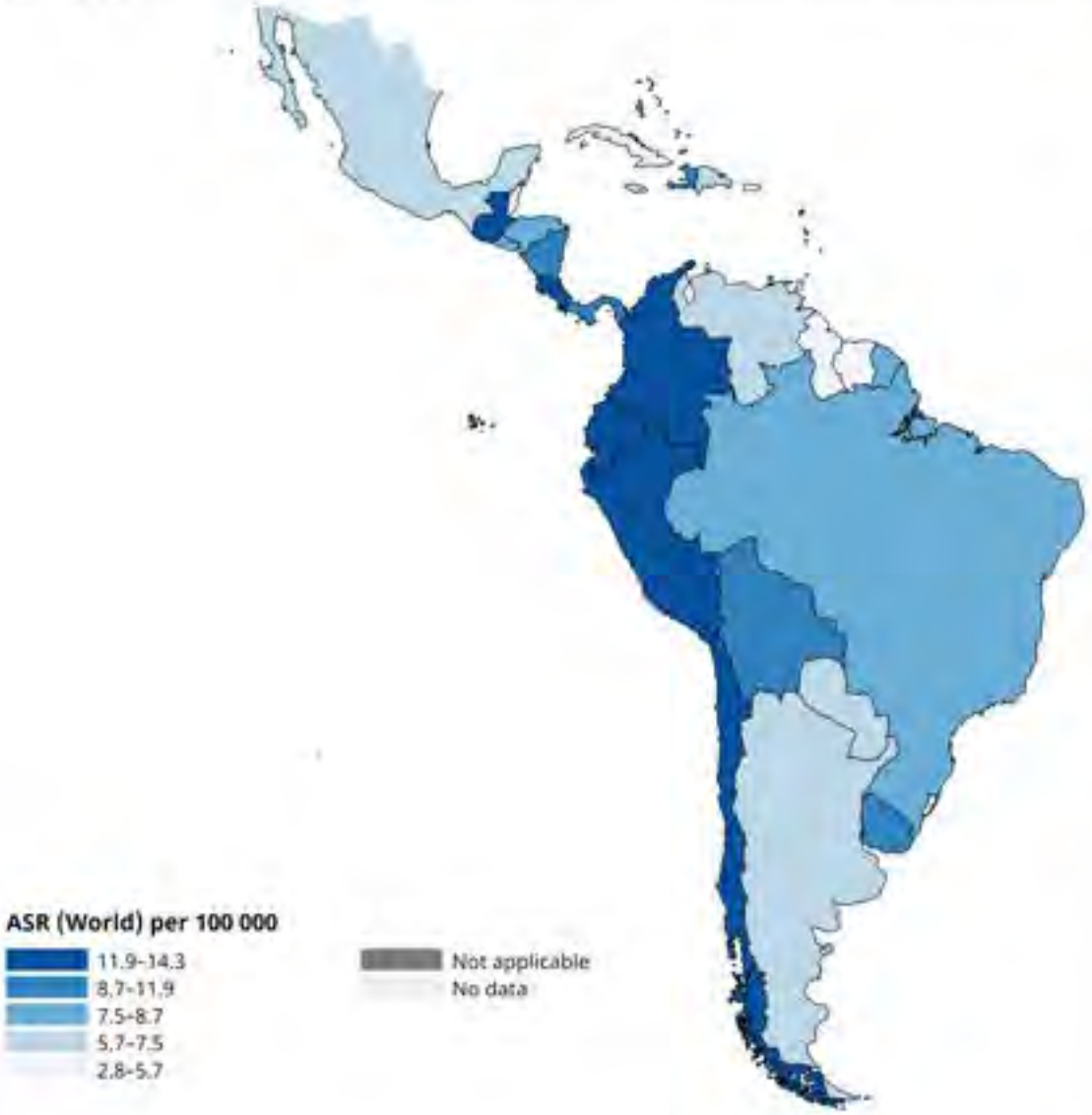
Cancer Site Coding:
- See SEER*Explorer Cancer Site Definitions (https://seer.cancer.gov/statistics-network/explorer/cancer-sites.html) for details about the cancer site coding used for SEER incidence data.

Created by https://seer.cancer.gov/statistics-network/explorer on Sat May 11 2024

Age-Standardized Rate (World) per 100 000, Incidence, Both sexes, in 2022

Stomach



Population	ASR (W)
Peru	14.3
Chile	14.2
Costa Rica	14.0
Colombia	12.9
Ecuador	12.8
France, Guadeloupe	12.3
Guatemala	12.2
France, Martinique	10.8
Haiti	9.9
Uruguay	9.2
Nicaragua	9.1
Panama	8.8
Bolivia	8.7
French Guyana	8.6
Honduras	8.6
Saint Lucia	8.6
El Salvador	8.2
Bahamas	7.7
Brazil	7.6
Venezuela	7.5
Jamaica	6.9
Argentina	6.7
Paraguay	6.4
Mexico	6.3
Dominican Republic	6.2
Cuba	5.6
Barbados	5.0
Belize	4.8

Population	ASR (W)
Suriname	4.6
Guyana	4.5
Trinidad and Tobago	4.0
Puerto Rico	2.8

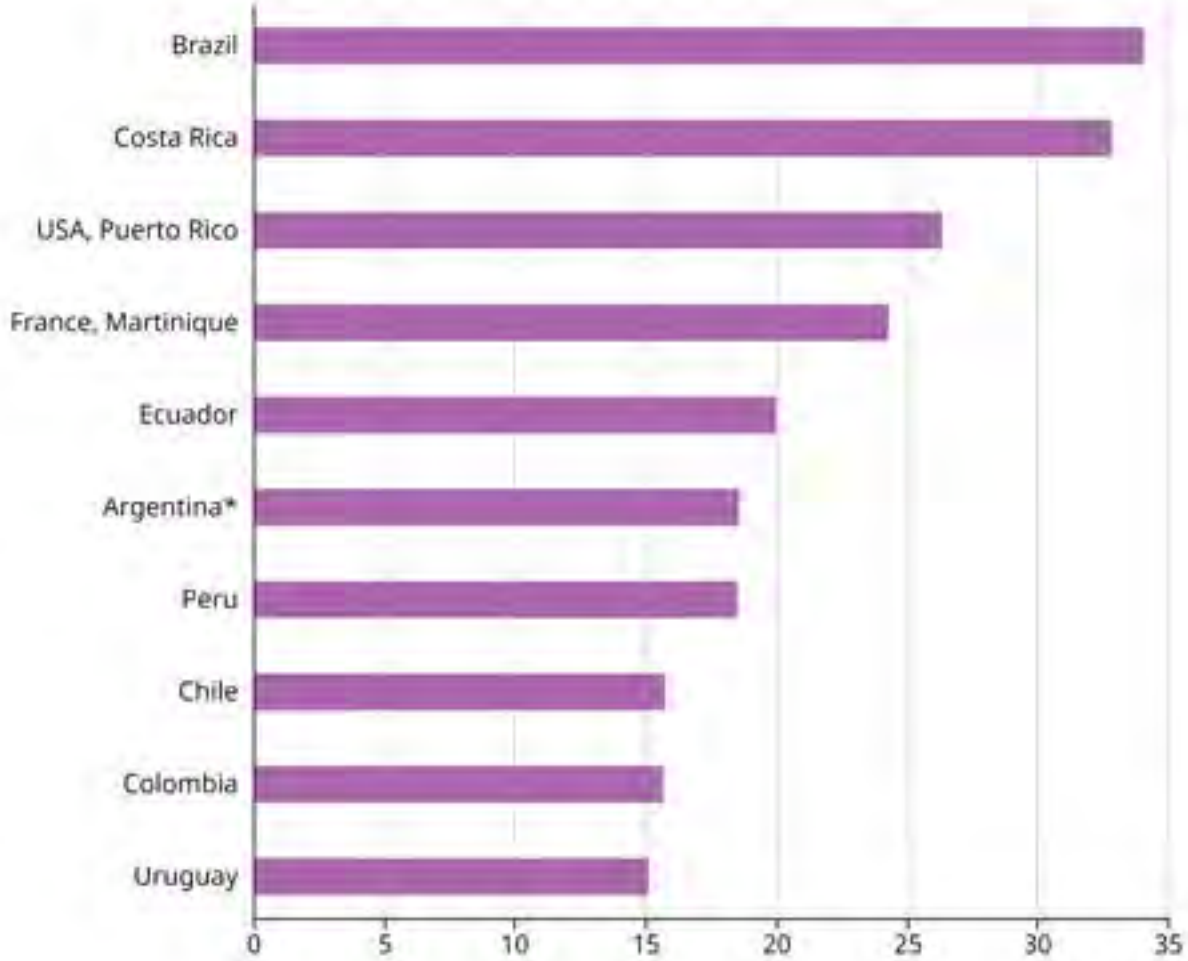
Cancer TODAY | IARC
https://gco.iarc.who.int/today
Data version: Globocan 2022 (version 1.1) - 08.02.2024

International Agency for Research on Cancer
World Health Organization

Observed survival, 5-year, both sexes, cases diagnosed 2008–2012

Stomach, Latin America, Observed survival

** Median survival estimate for the country*



Key Messages

- Gastric cancer shows a clear male predominance.
- There are persistent racial and ethnic disparities in gastric cancer incidence, mortality and survival in the United States.
- Chronic *Helicobacter pylori* infection is the primary cause of gastric cancer, and there is a persistently high prevalence in some populations.

H. pylori was responsible for ~80% of new gastric cancer cases

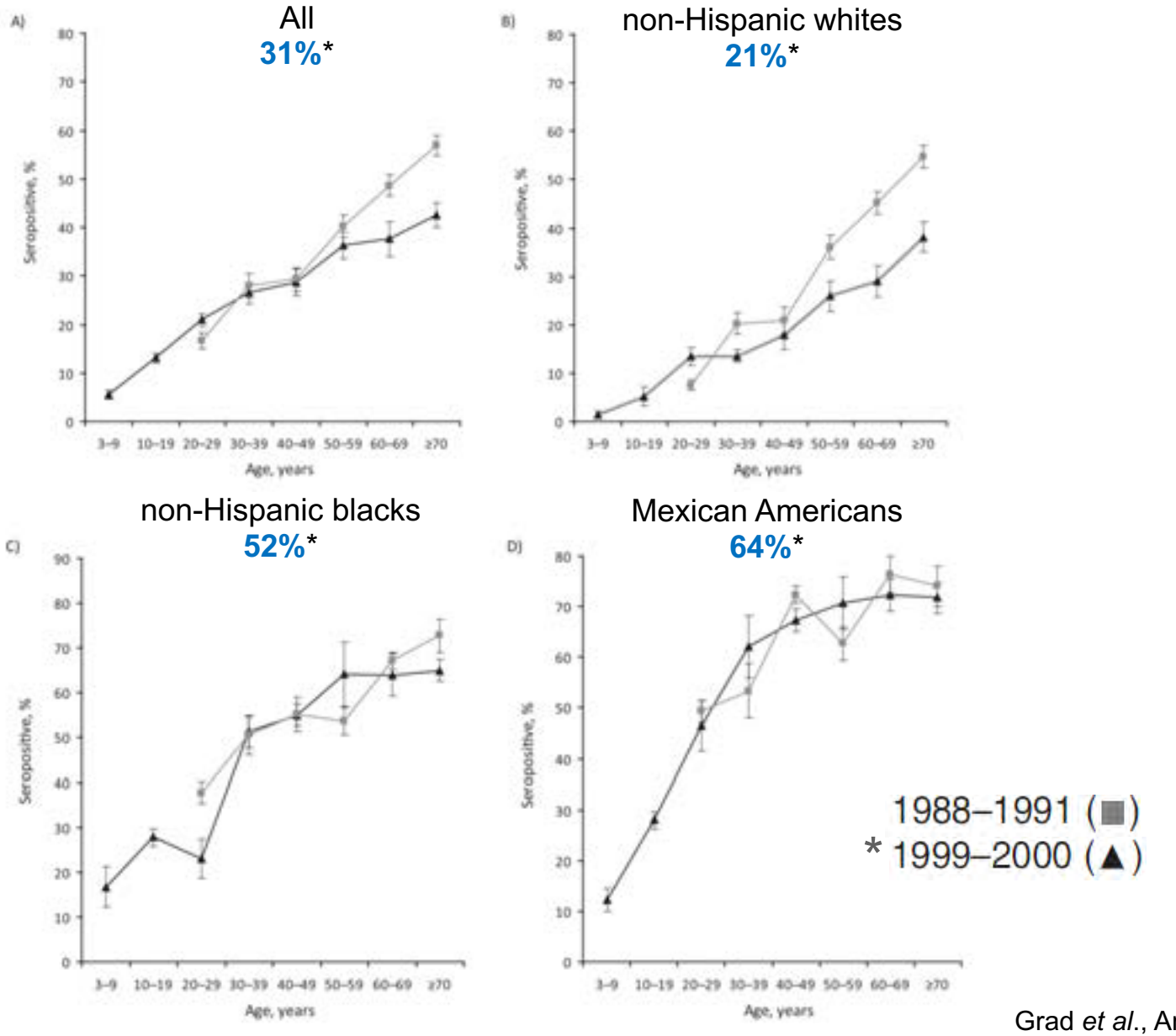
	Total		
	New cases	New cases attributable to infectious pathogens	
Helicobacter pylori			
Non-cardia gastric cancer	850 000	760 000	90%
Cardia gastric cancer	180 000	36 000	20%
Non-Hodgkin lymphoma of gastric location	22 000	16 000	72%

de Martel *et al.,* Lancet Glob Health 2020

61% of **cardia** cancer cases in East Asia could be attributable to *H. pylori* infection.

Han *et al.,* Helicobacter 2023

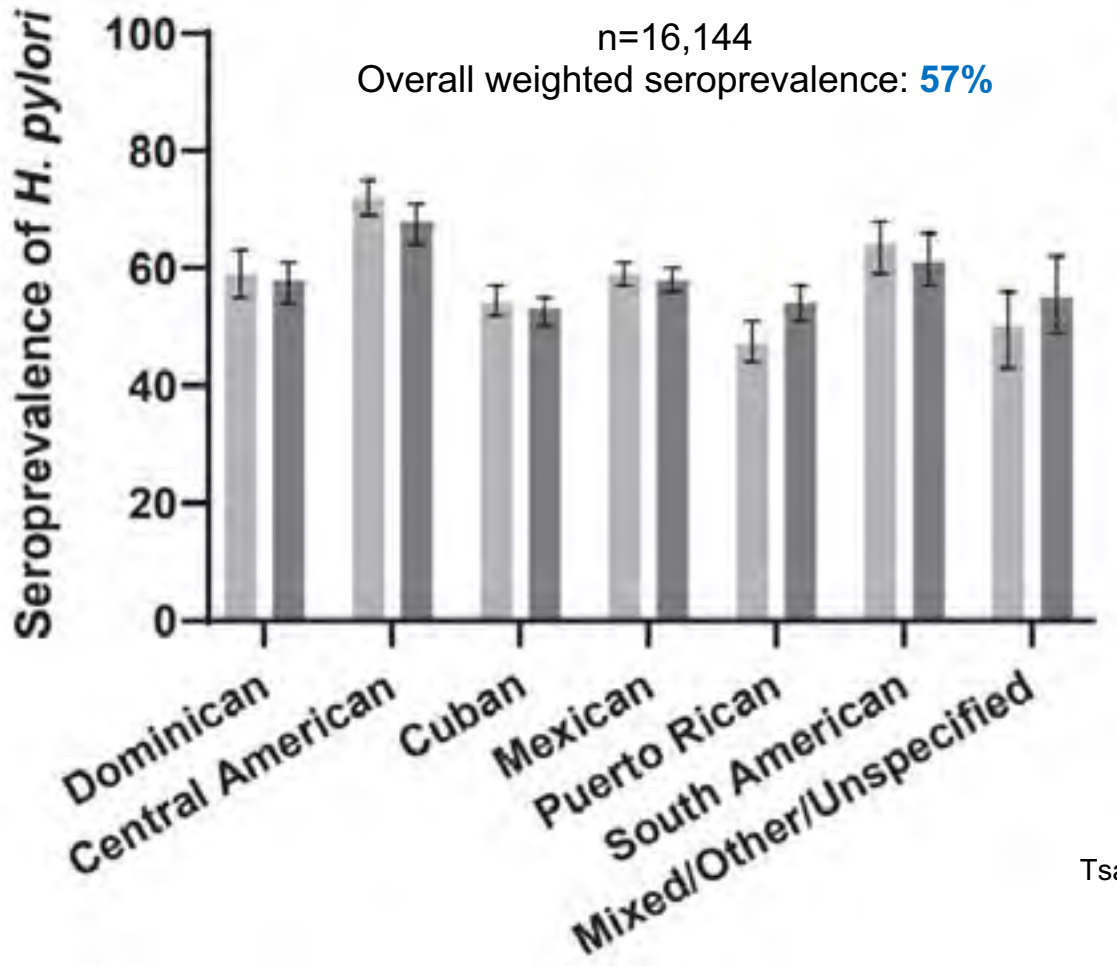
H. pylori seropositivity by age in the US population, NHANES



Grad *et al.*, Am J Epidemiol 2012

Seroprevalence and Determinants of *Helicobacter pylori* Infection in the Hispanic Community Health Study/Study of Latinos

Sabrina H. Tsang,* M. Larissa Avilés-Santa,‡ Christian C. Abnet,* Maximo O. Brito,§ Martha L. Daviglus,‖ Sylvia Wassertheil-Smoller,¶ Sheila F. Castañeda,# Sharon Minnerath,** Gregory A. Talavera,# Barry I. Graubard,* Bharat Thyagarajan,** and M. Constanza Camargo*



n=16,144
Overall weighted seroprevalence: **57%**

Age-adjusted only
Fully-adjusted*

*seroprevalence higher in:
older age
males
↓ education
non-US born
smoking
↑ missing teeth
↓ doctor visits
↓ ferritin level
hepatitis A seropositivity

Tsang *et al*., Clin Gastroenterol Hepatol 2021

Seroprevalence and determinants of *H. pylori* infection in the Hispanic Community Health Study/Study of Latinos (n=16,144)

Overall weighted seroprevalence: **38%**

Overall weighted seroprevalence: **62%**

Tsang *et al*., Clin Gastroenterol Hepatol 2021

Key Messages

- Gastric cancer shows a clear male predominance.
- There are persistent racial and ethnic disparities in gastric cancer incidence, mortality and survival in the United States.
- Chronic *Helicobacter pylori* infection is the primary cause of gastric cancer, and there is a persistently high prevalence in some populations.
- While lifestyle factors contribute, a significant portion of the male excess in risk is unexplained and likely due to biological factors.

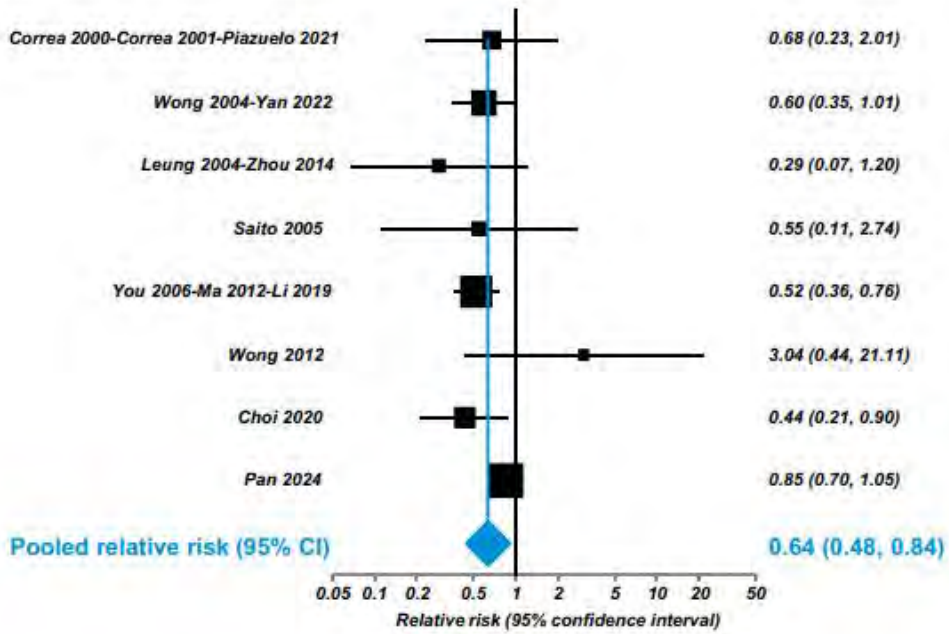
Risk Factors More Common in Men

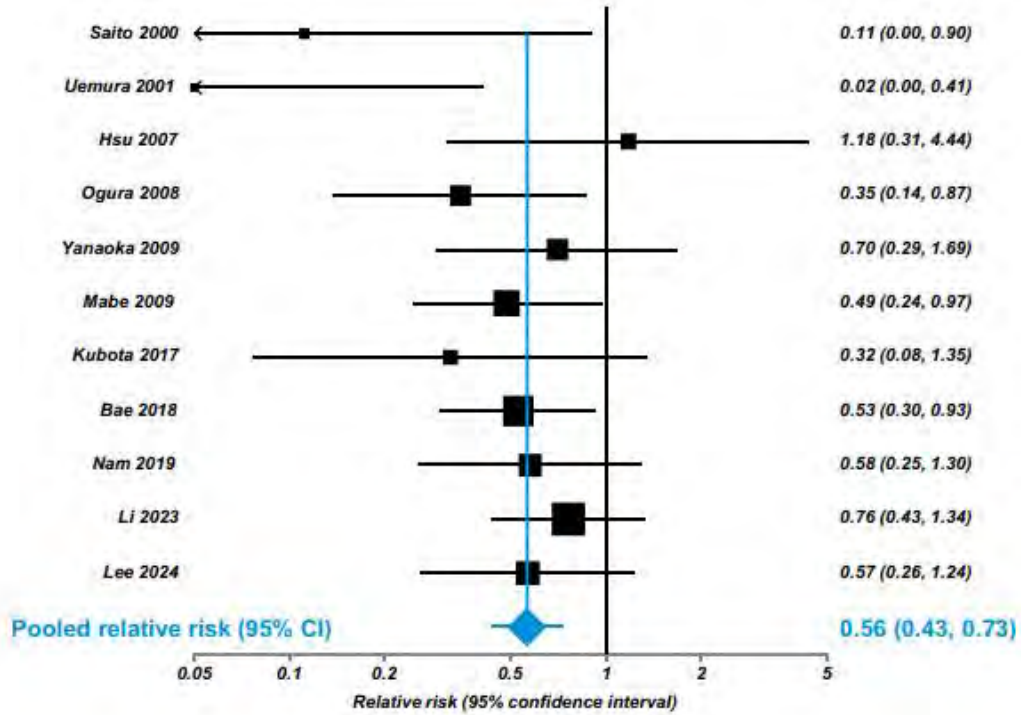
- *H. pylori* infection: Men, both adults and children, have a slightly higher prevalence.
- Smoking and alcohol: Men exhibit greater intensity of smoking and alcohol consumption.
- Dietary factors: Men tend to have diets higher in salt, smoked foods, and processed meats.

Key Messages

- Gastric cancer shows a clear male predominance.
- There are persistent racial and ethnic disparities in gastric cancer incidence, mortality and survival in the United States.
- Chronic *Helicobacter pylori* infection is the primary cause of gastric cancer, and there is a persistently high prevalence in some populations.
- While lifestyle factors contribute, a significant portion of the male excess in risk is unexplained and likely due to biological factors.
- Gastric cancer is largely preventable.

Eradication Therapy to Prevent Gastric Cancer in *Helicobacter pylori*-Positive Individuals: Systematic Review and Meta-Analysis of Randomized Controlled Trials and Observational Studies





Gastroenterology 2025;169:261–276

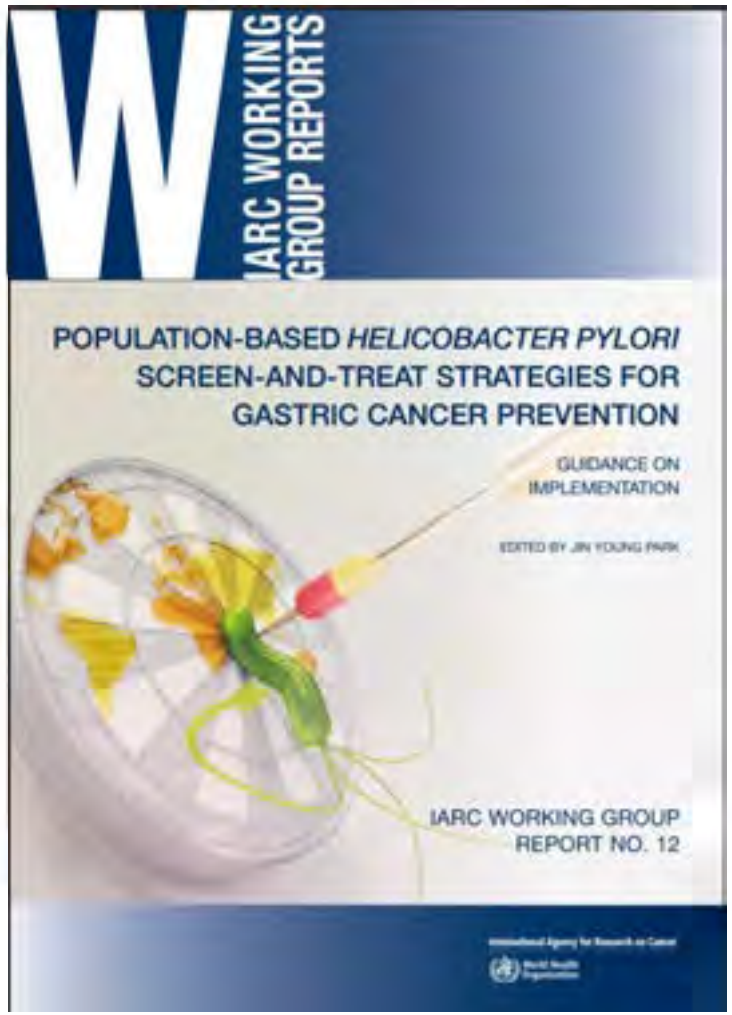
PAHO Pan American Health Organization World Health Organization American Region

Latin America and the Caribbean Code against Cancer

Learn how to help prevent cancer in yourself and your family

12. Infection from ***Helicobacter pylori*** **bacteria can cause stomach cancer.** Check with health professionals to find out if you might benefit from screening and treatment for this bacterial infection.

Herrero *et al*., Cancer Epidemiol 2023; Camargo *et al*., Lancet Reg Health Am 2023



Population-Based *Helicobacter pylori* Screen-and-Treat Strategies for Gastric Cancer Prevention: Guidance on Implementation

IARC Working Group Reports, Volume 12

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2025

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Commentary

A summary of the National Cancer Institute Think Tank on Advancing Gastric Cancer Prevention

M. Constanza Camargo, PhD, MS, MHA*,[1], Christian C. Abnet, PhD, MPH[1], Jeremy L. Davis, MD[2], Cecilia Monge, MD, MPH[2], Tram Kim Lam, PhD, MPH[3], Satish Gopal, MD, MPH[4], Matthew Young, PhD[5], Phil Daschner, MS[6], Tiffany A. Wallace, PhD[7], Luz María Rodríguez, MD[5], Philip E. Castle, PhD, MPH[1,5], Asad Umar, DVM, PhD[5], Ellen Richmond, MS[5]

Research opportunities in the US and other low- and moderate-risk countries include testing the usability of early detection and prevention strategies with existing evidence of effectiveness and efficiency in high-risk East Asian countries.

Research

JAMA | Original Investigation

Screening for *Helicobacter pylori* to Prevent Gastric Cancer
A Pragmatic Randomized Clinical Trial

Yi-Chia Lee, MD, PhD; Tsung-Hsien Chiang, MD, PhD; Han-Mo Chiu, MD, PhD; Wei-Wen Su, MD; Kun-Ching Chou, MD; Sam Li-Sheng Chen, PhD; Amy Ming-Fang Yen, PhD; Jean Ching-Yuan Fann, PhD; Sherry Yueh-Hsia Chiu, PhD; Shu-Lin Chuang, PhD; Yi-Ru Chen, MSc; Shih-Dian Chen, MD; Tsung-Hui Hu, MD, PhD; Yi-Jen Fang, MD, PhD; Ming-Shiang Wu, MD, PhD; Tony Hsiu-Hsi Chen, PhD; Yen-Po Yeh, MD, PhD; for the Collaborators of Taiwan Community-based Integrated Screening Group

EDITORIAL

Fecal Immunochemical Test and *Helicobacter pylori* Stool Antigen Co-Testing
A Potential Approach for Gastric Cancer Screening

M. Constanza Camargo, PhD, MSc, MHA

JGH Gastroenterology and Hepatology

JGHF

doi:10.1111/jgh.15280

ENDOSCOPY

Opportunistic upper endoscopy during colonoscopy as a screening strategy for countries with intermediate gastric cancer risk

Joel Wen Liang Lau,* Mark Junn Wei Khoo,† Xue Hao Leong,† Tian Zhi Lim,* Asim Shabbir,‡ Khay Guan Yeoh,§,¶ Calvin Jianyi Koh§ and Jimmy Bok Yan So‡,¶

*Department of Surgery, †Division of General Surgery (Upper Gastrointestinal Surgery), Department of Surgery, ‡Division of Gastroenterology and Hepatology, Department of Medicine, National University Hospital, and §Yong Loo Lin School of Medicine, National University of Singapore, Singapore

cancers

MDPI

Article

Prevalence of Abnormalities at Tandem Endoscopy in Patients Referred for Colorectal Cancer Screening/ Surveillance Colonoscopy

George Triadafilopoulos

ELSEVIER

Available online at ScienceDirect

Elsevier Masson France EM|consulte

ORIGINAL ARTICLE

Systematic upper endoscopy concomitant with colonoscopy performed within the colorectal cancer screening program: Impact on the patients' management

Orianne Planade[a], Brigitte Dessomme[b], Nicolas Chapelle[a], Marine Verdier[a], Emilie Duchalais[a], Lucille Queneherve[a], Marc Le Rhun[a], Emmanuel Coron[a], Jean-Francois Mosnier[c], Tamara Matysiak-Budnik[a,*], Yann Touchefeu[a]

ELSEVIER

Best Practice & Research Clinical Gastroenterology

Cost-effectiveness of upper endoscopy for gastric cancer screening and surveillance in Western populations

N.E.A. Kapteijn[a,*], D.T. Milder[b], I. Lansdorp-Vogelaar[b]

Updated and New Clinical Guidelines in the US

ACG Clinical Guideline: Treatment of *Helicobacter pylori* Infection

William D. Chey, MD, FACG[1], Colin W. Howden, MD, FACG[2], Steven F. Moss, MD, FACG[3], Douglas R. Morgan, MD, MPH, FACG[4], Katarina B. Greer, MD, MSEpi[5], Shilpa Grover, MD, MPH[6] and Shailja C. Shah, MD, MPH[7]

Am J Gastroenterol 2024;119:1730–1753. https://doi.org/10.14309/ajg.0000000000002968; published online September 4, 2024

CME

ACG Clinical Guideline: Diagnosis and Management of Gastric Premalignant Conditions

Douglas R. Morgan, MD, MPH, FACG[1], Juan E. Corral, MD, MPH[2], Dan Li, MD[3,4], Elizabeth A. Montgomery, MD[5], Arnoldo Riquelme, MD[6], John J. Kim, MD, FACG[7], Bryan Sauer, MD, MSc, FACG[8] and Shailja C. Shah, MD, MPH[9,10]

Am J Gastroenterol 2025;120:709–737. https://doi.org/10.14309/ajg.0000000000003350

Quality Indicators for Upper GI Endoscopy

Rena Yadlapati, MD, MSHS, FACG[1], Dayna Early, MD, FACG[2], Prasad G. Iyer, MD, MSc, FACG[3], Douglas R. Morgan, MD, MPH, FACG[4], Neil Sengupta, MD, MPH, FACG[5], Prateek Sharma, MD, FACG[6] and Nicholas J. Shaheen, MD, MPH, MACG[7]

Am J Gastroenterol 2025;00:1–23. https://doi.org/10.14309/ajg.0000000000003252

Call to action

- To raise gastric cancer awareness.
- To build a far-reaching and well-funded national research agenda addressing prevention and control strategies.

Division of Cancer Epidemiology and Genetics (DCEG)

Join our fellowship training program!

Get started at dceg.cancer.gov

NATIONAL CANCER INSTITUTE

DCEG's mission is to discover the causes of cancer and inform the means of prevention through epidemiological and genetic research.

Using Artificial Intelligence

What do you primarily use AI for? (Select all that apply)

Answer Choice	0% 100%	Number of Responses	Responses Ratio
Research/literature review		7	43%
Writing assistance		9	56%
Data analysis		1	6%
Patient/client communication		0	0%
Grant applications		0	0%
Translation services		3	18%
Health information searches		4	25%
Educational content creation		6	37%
Not applicable		5	31%
Other		0	0%
	Total Responses	16	100%

61% - Using AI a year or less

53% - Very or somewhat comfortable using AI

92% - Algorithmic bias, equal access, few Latinos in AI development, data privacy

* Small sample size – 16 respondents

Making AI Work for You: The Benefits and Risks of Using Artificial Intelligence for Health Questions

Enrique Velazquez-Villarreal, MD, PhD, MPH, MS

Physician-Scientist and Computational Geneticist, Expertise in Multi-Omics Research, Assistant Professor, Department of Integrative Translational Sciences, City of Hope, Duarte Cancer Center, CA

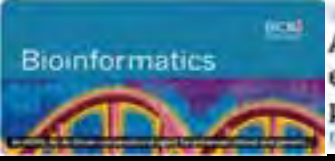
City of Hope
Velazquez Villarreal Lab

The Latino Cancer Institute TLCI's Forum Series - Oct. 3rd, 2025.
Latino Men's Health - Spotlighting Cancer, An Unanswered Burden.

Making AI Work for You: The Benefits and Risks of Using Artificial Intelligence for Health Questions

Enrique Velazquez-Villarreal,
MD, PhD, MPH, MS

Assistant Professor
Department of Integrative Translational Sciences
City of Hope, Comprehensive Cancer Center



AI-HOPE: An AI-Driven conversational agent for enhanced clinical and genomic data integration in precision medicine research

Outline

- AI revolution
- Conversational AI-Agent
- Build Latino-Focused CRC AI
- Benefits & Risks of Using AI for Health Questions
- “SAFE STEPS”

AI

AI-HOPE-TGFbeta: A Conversational AI Agent for Integrative Clinical and Genomic Analysis of TGF-β Pathway Alterations in Colorectal Cancer to Advance Precision Medicine

International Journal of Molecular Sciences

From Mutation to Prognosis: AI-HOPE-PI3K Enables Artificial Intelligence Agent-Driven Integration of PI3K Pathway Data in Colorectal Cancer Precision Medicine

frontiers About us

Frontiers in Artificial Intelligence

Conversational AI Agent for Precision Oncology: AI-HOPE-WNT Integrates Clinical and Genomic Data to Investigate WNT Pathway Dysregulation in Colorectal Cancer

cancers

Decoding the JAK-STAT Axis in Colorectal Cancer with AI-HOPE-JAK-STAT: A Conversational Artificial Intelligence Approach to Clinical–Genomic Integration

medRxiv THE PREPRINT SERVER FOR HEALTH SCIENCES

BMJ Yale

Conversational Artificial Intelligence for Translational Precision Medicine: Integrating Social Determinants of Health, Genomics, and Clinical Data with AI-HOPE-PM

medRxiv THE PREPRINT SERVER FOR HEALTH SCIENCES

Artificial intelligence for precision oncology: AI-HOPE-MAPK uncovers clinically actionable MAPK alterations in colorectal cancer

medRxiv THE PREPRINT SERVER FOR HEALTH SCIENCES

Precision Oncology Through Dialogue: AI-HOPE-RTK-RAS Integrates Clinical and Genomic Insights into RTK-RAS Alterations in Colorectal Cancer

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Artificial Intelligence Agent: AI-HOPE-TP53 Enables Pathway-Centric Analysis of TP53-Driven Molecular Alterations in Colorectal Cancer Precision Oncology

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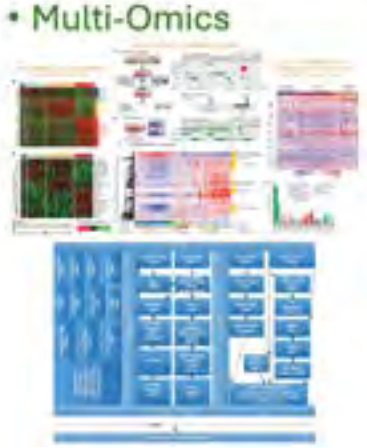
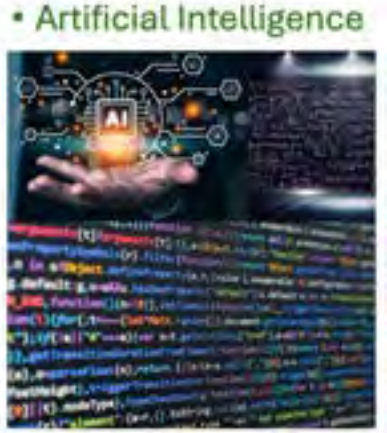
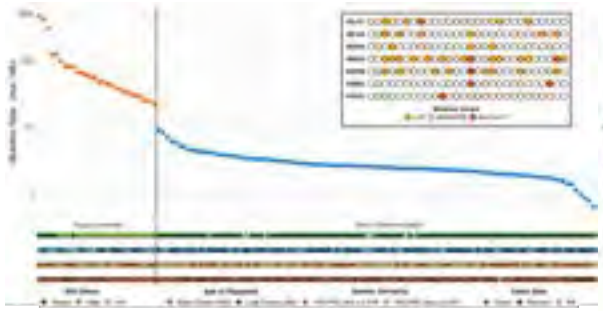
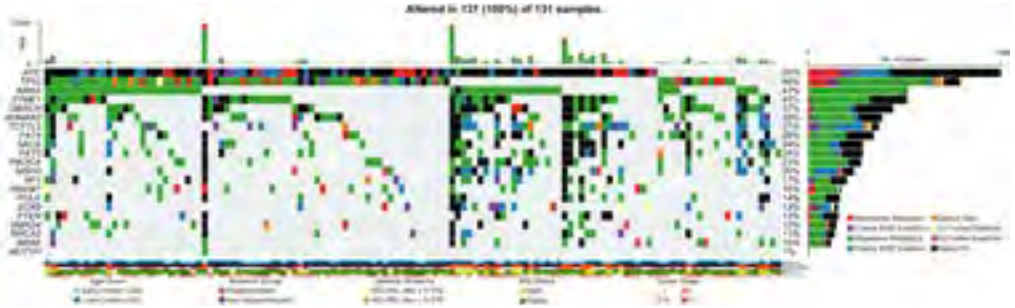
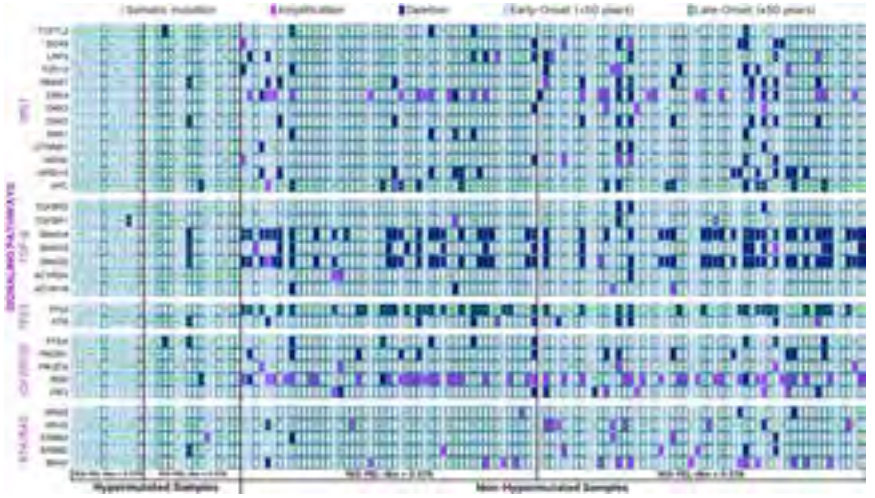
- Molecular Characterization of Colorectal Cancer
- **AI-Agents Development**
- Precision Oncology for CRC

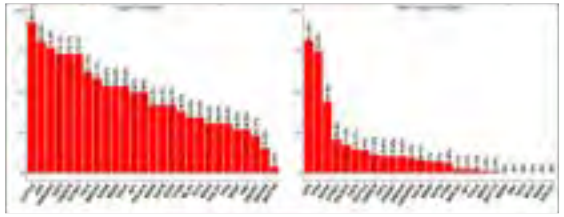


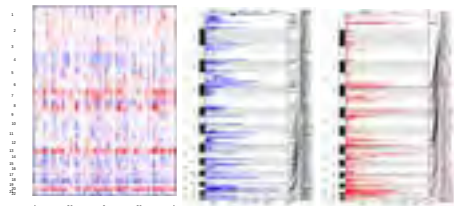


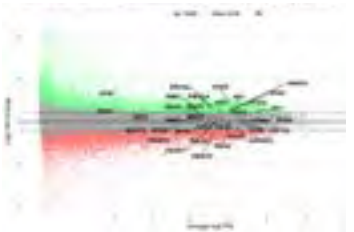


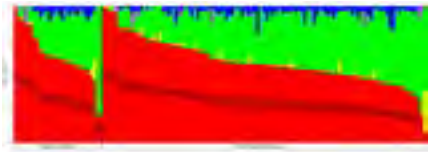


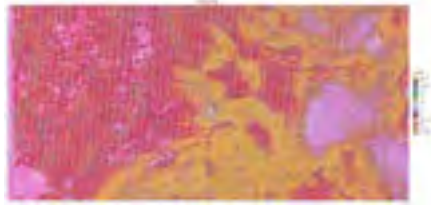


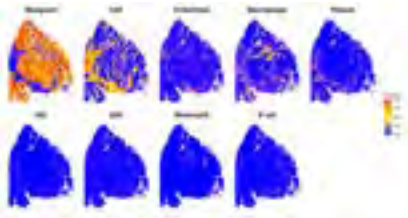


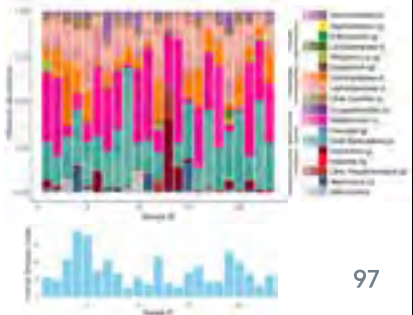












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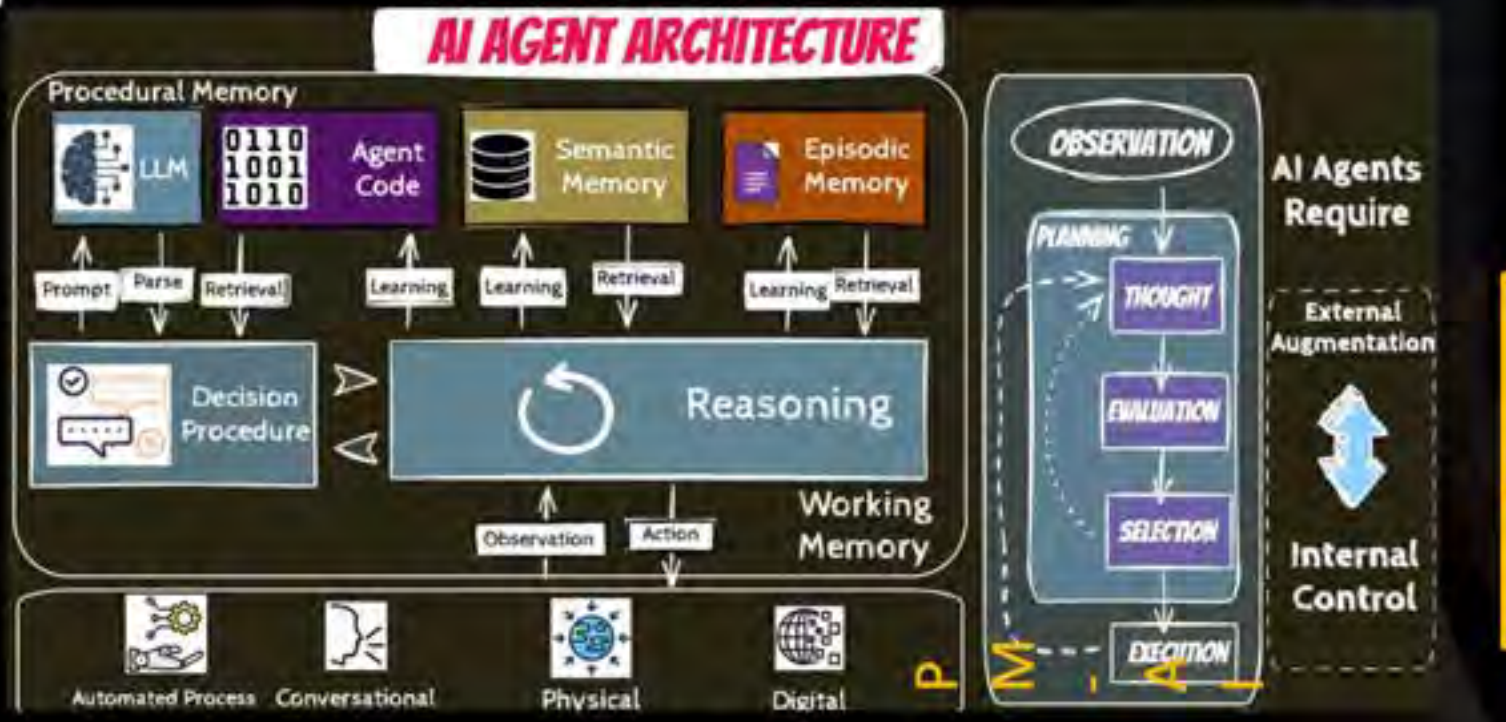
AI Revolution

2017	2020	2022	2023	2024	2025
Google paper "Attention is all you Need"	GPT 3 – Open AI	GPT 3.5 – ChatGPT	LLaMA ChatGPT-4	GPT O1 – Reasoning Thinking	Vibe coding Era LlamaCon



AI Agents Require

External Augmentation

Internal Control

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Conversational Artificial Intelligence

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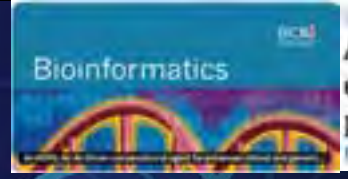
AI AGENT



AI-HOPE: An AI-Driven conversational agent for enhanced clinical and genomic data integration in precision medicine research

AI-HOPE

First ARTIFICIAL INTELLIGENCE AGENT combining Clinical and Genomic data for Precision Oncology Research

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Why This Matters

AI is a helper, not a doctor

- A family story: using questions + doctor visits to solve a health issue
- AI helped us organize symptoms and questions
- The doctor did the testing and treatment
- Lesson: Use AI to prepare; decisions happen with your clinician

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AI for Health in 60 Seconds

What AI can do

- Explain health words in simple terms
- Help make a list of questions for your visit
- Point to trusted sources (CDC, NIH, ACS)

AI for Health in 60 Seconds

What AI cannot do

- Diagnose you or replace screening/tests
- Know your full medical history
- Be right 100% of the time

Why Build AI for Latino Men & CRC?

The need

- Latino men face later diagnoses and barriers to care
- Many studies don’t include enough Latino data
- Language and access matter

Why Build AI for Latino Men & CRC?

The goal

- Make information relevant and bilingual
- Help men prepare for better clinic visits
- Close gaps in screening and follow-up

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How Our CRC AI Helps

- Plain language approach
- Uses published research and guidelines to teach & guide
- Focuses on questions Latino men actually ask
- Offers Spanish/English explanations
- Flags limits and says when to see a clinician

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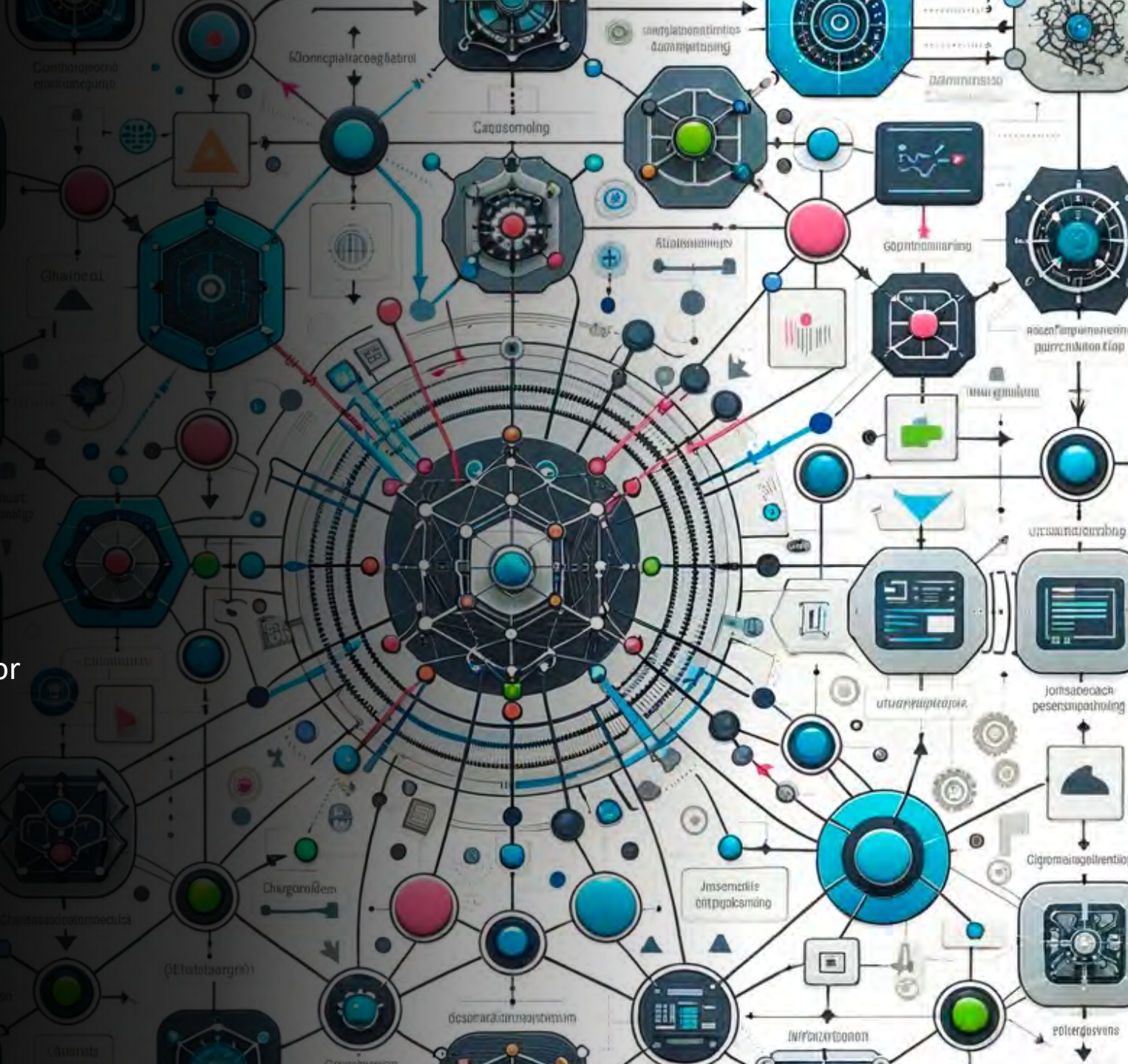
How Our CRC AI Helps

Limits

- Data can be incomplete or biased
- Always verify with a trusted source or your doctor



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What We're Learning About Latino Men & CRC

High-level takeaways

- Screening gaps: many men start too late or skip follow-up
- Symptoms often go unreported (stigma, work, access)
- Diversity within "Latino": Mexican, Puerto Rican, Central/South American, etc.

What We're Learning About Latino Men & CRC

Biology we monitor

- Tumor signals tied to inflammation/immune response
- Genetic tests/biomarkers can guide treatment—ask your doctor

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What This Means for Your Care

Screening basics

- Most adults: start talking about screening at 45 (earlier with family history or symptoms)
- Tests: FIT stool test or colonoscopy—ask which is right for you

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What This Means for Your Care

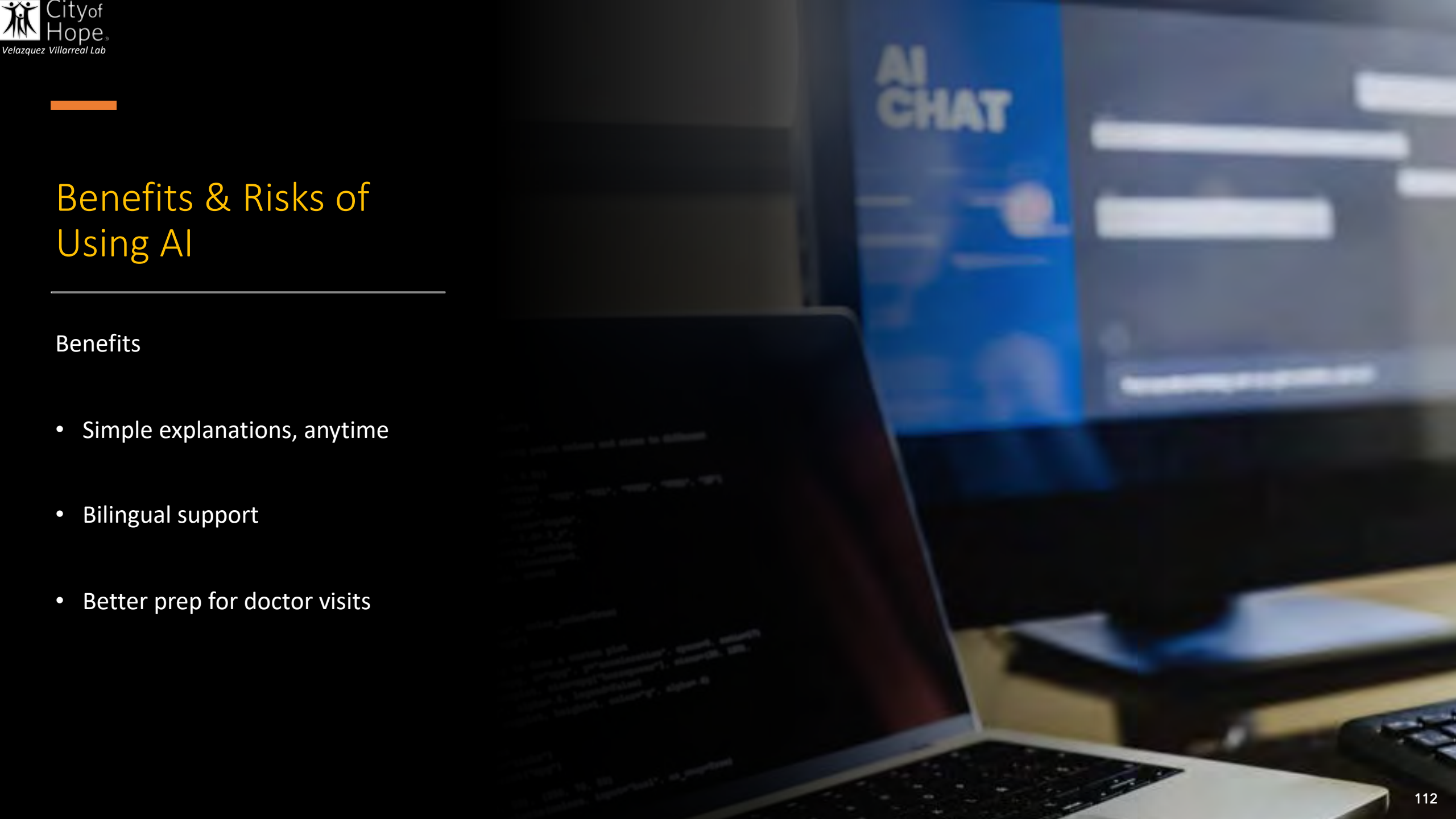
If diagnosed

- Ask about biomarker testing and clinical trials
- Bring a family member or friend to appointments

Benefits & Risks of Using AI

Benefits

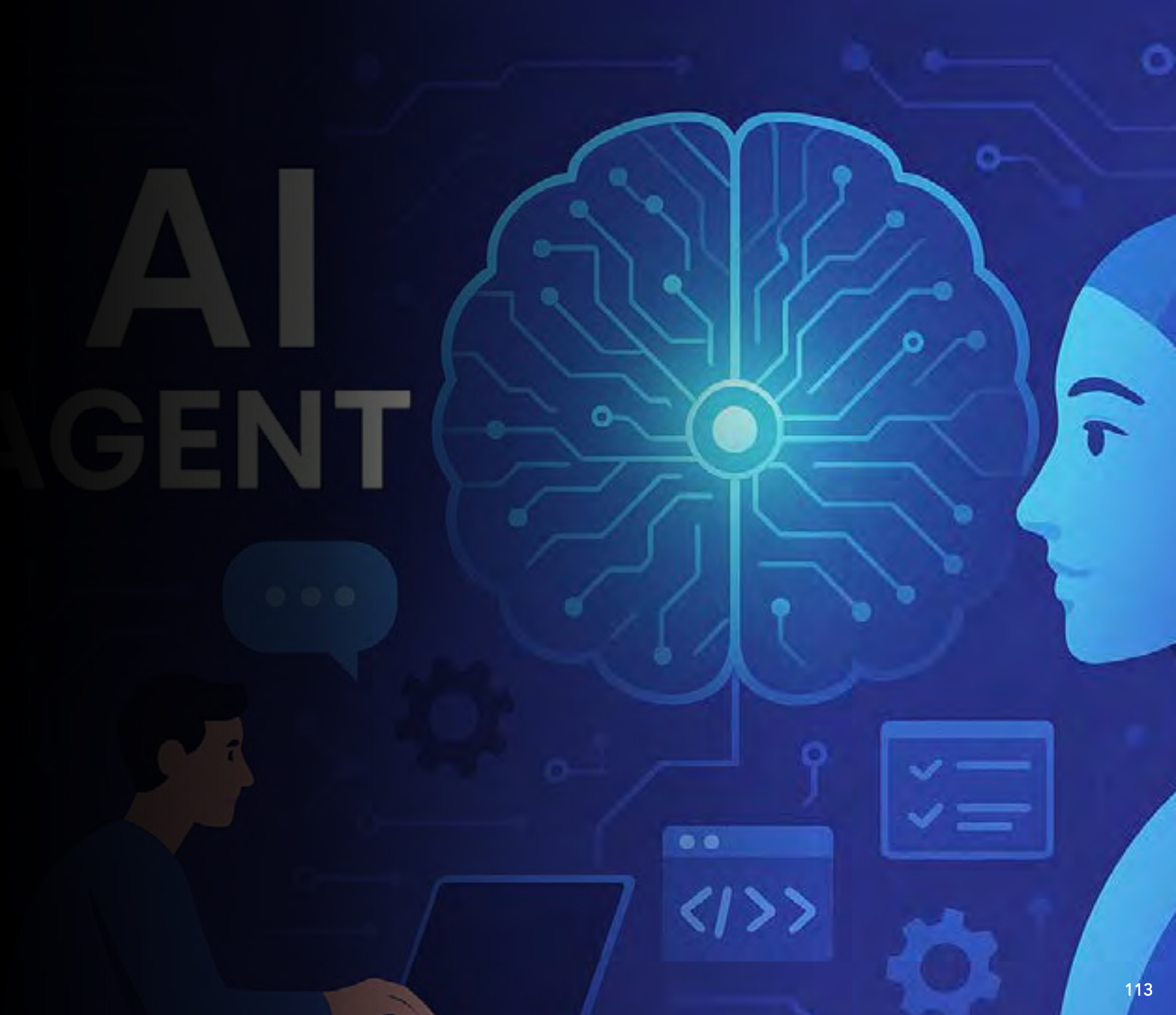
- Simple explanations, anytime
- Bilingual support
- Better prep for doctor visits



Benefits & Risks of Using AI

Risks

- Wrong/outdated answers
- Bias in data
- Privacy concerns



Benefits & Risks of Using AI

Stay safe

- Check the source
- Don’t share sensitive IDs
- Confirm with your clinician

SAFE STEPS

S — State your goal

- "I'm 47. Should I get screened for colon cancer?"

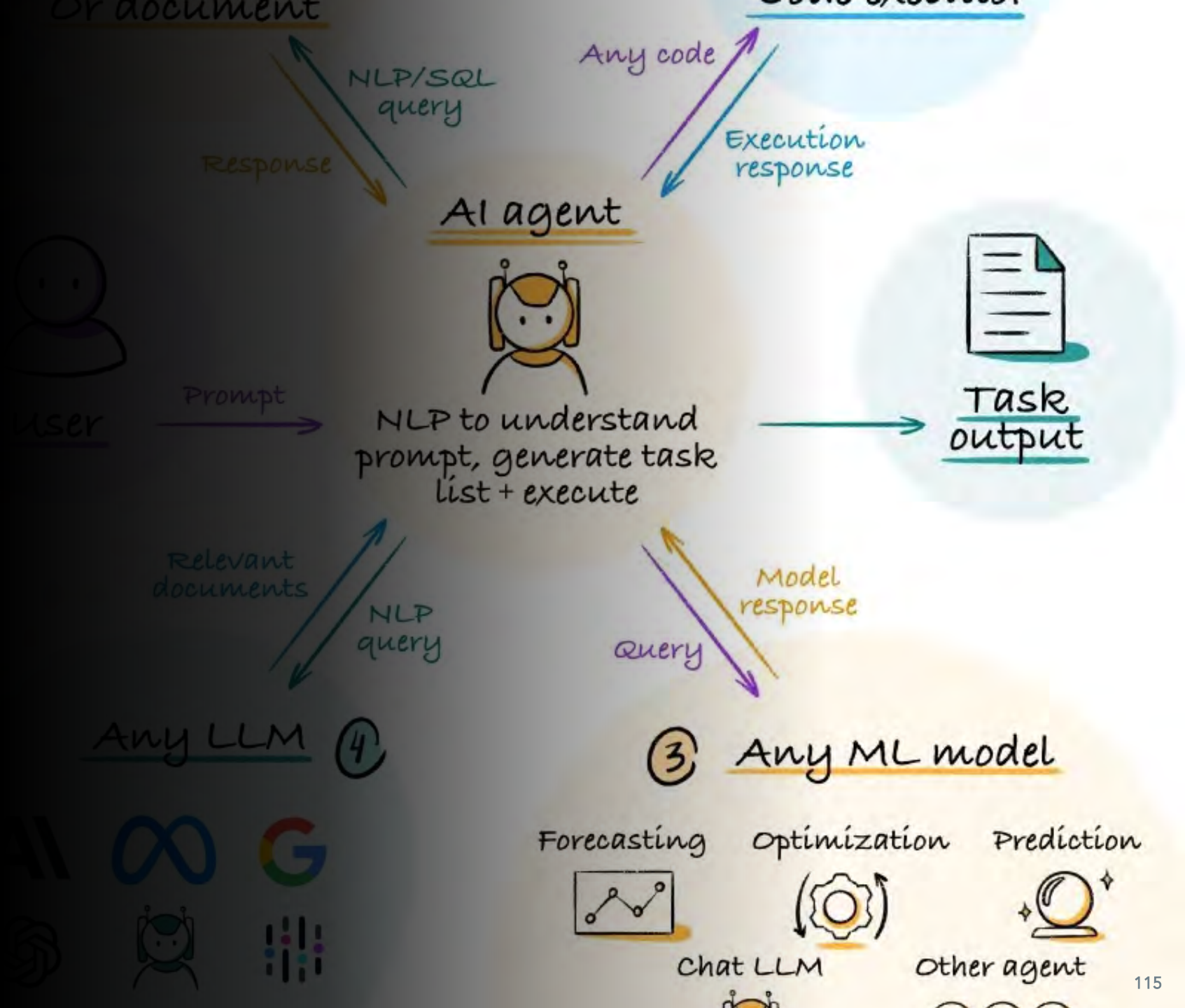
A — Add basics (no IDs)

- Age, family history, symptoms in simple words

F — Find sources

- "List the sources you used." Look for CDC/NIH/ACS/hospital sites

- E — Explain back
- "Explain like (Personalize…) (in Spanish, please)."



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SAFE STEPS

S — Show next steps

- “Give me 3 questions to ask my doctor.”

T — Time check

- “Is this info updated this year?”

E — Example prompts

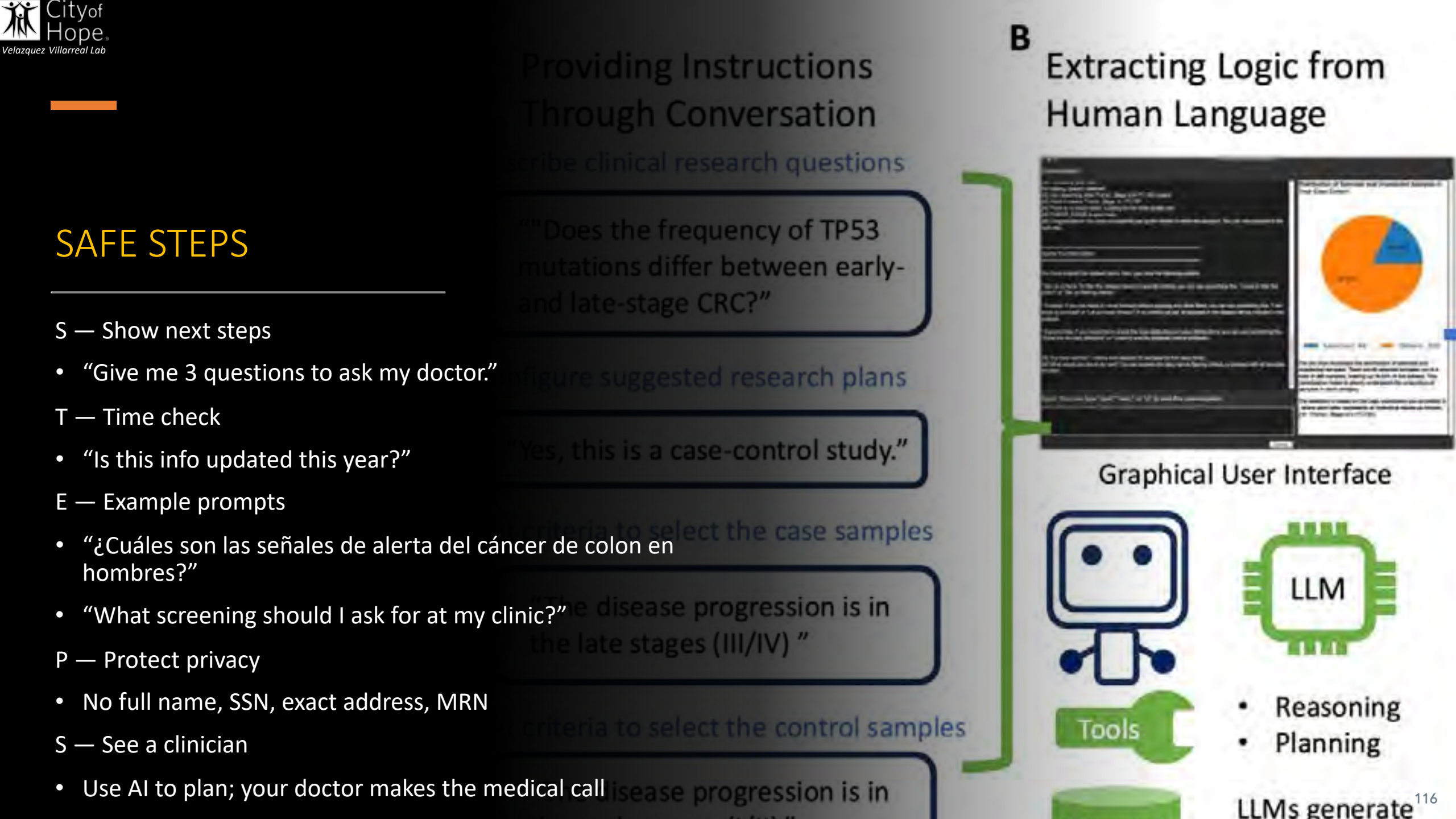
- “¿Cuáles son las señales de alerta del cáncer de colon en hombres?”
- “What screening should I ask for at my clinic?”

P — Protect privacy

- No full name, SSN, exact address, MRN

S — See a clinician

- Use AI to plan; your doctor makes the medical call



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Mini-Demo

Try this at home

- “I’m a 48-year-old Latino man with no family history. Should I be screened for colon cancer? Explain in simple words and list your sources.”

Mini-Demo

What to look for

- Clear answer, simple language
- Sources from CDC/NIH/ACS or major hospitals
- Reminder to see a clinician

Three Calls to Action

- Get screened / bring a buddy
  - If you're 45+ (or have symptoms/family history), talk to your doctor this month
- 2. Use AI wisely
  - Follow SAFE STEPS; verify sources; take your questions to the clinic
- 3. Build equity together
  - Ask for Spanish materials, join research, and support Latino scientists/entrepreneurs

Q&A / Resources

Ask me anything

- CRC screening, symptoms, how to ask AI safely

Trusted resources

- CDC • NIH/NCI • American Cancer Society • Major academic centers • **Velazquez-Villarreal Lab – City of Hope**

Remember

- AI helps you prepare; your clinician guides your care

Thank you!

The Latino Cancer Institute is Published in Cancer Causes and Control, June 6th 2025

"It's time for institutional systems—academic, public health, and government entities—to put aside biased views of community helplessness, and instead embrace them as equal partners, budgets and all."

1398 accesses as of Sept 30

Toxic Work, Warming World: Why Latino Men Face Higher Cancer Risks

Leticia Nogueira, PhD, MPH

Scientific Director, Surveillance Prevention
& Health Services Research (SPHeRe)
American Cancer Society, FL

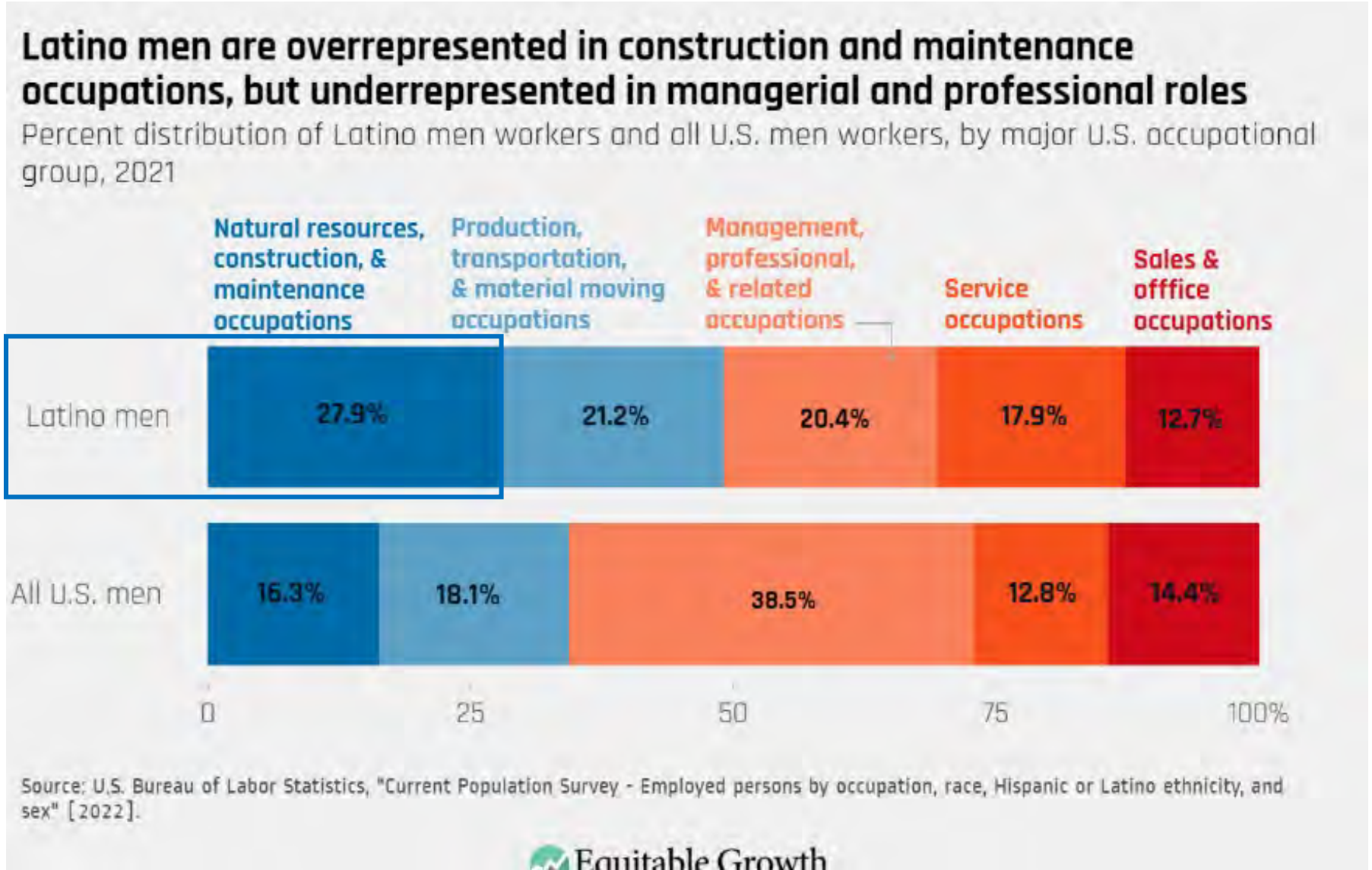
Toxic Work, Warming World: Why Latino Men Face Higher Cancer Risks

Leticia M. Nogueira, PhD MPH

cancer.org
https://www.nih.gov/climateandhealth

Toxic Work

Latino men are overrepresented in occupations with high exposure to carcinogens



American Cancer Society

Occupational Exposure to Environmental Hazards

Latino men are overrepresented in occupations with high exposure

https://grist.org/labor/farmworkers-face-harsh-conditions-now-theyre-eyeing-a-pay-cut/

- Pesticides
- Extreme heat

https://www.cpwr.com/wp-content/uploads/DataBulletin-December2024.pdf

- Asbestos
- Lead
- Silica
- Fumes
- Extreme heat

https://grist.org/labor/fast-food-workers-dangerous-heat-inside-restaurants/

- Fumes
- Extreme heat

American Cancer Society

Discriminatory Policies and Practices

Perpetuate disproportionate exposure to environmental hazards

New Deal Labor Laws

- Excluded farmworkers and domestic workers from basic labor protections

Immigration Status

- H-2A visas tie legal status to employer sponsorship

Worker Protection Standard

- Allows agricultural practices that would not be tolerated on other industries

American Cancer Society

Residential Exposure

Discriminatory policies and practices allow siting of polluting infrastructure near Latinx communities

Bullard, Robert D., Mohai, Paul, Saha, Robin, Wright, Beverly. 2007. Toxic Wastes and Race at Twenty: 1987-2007

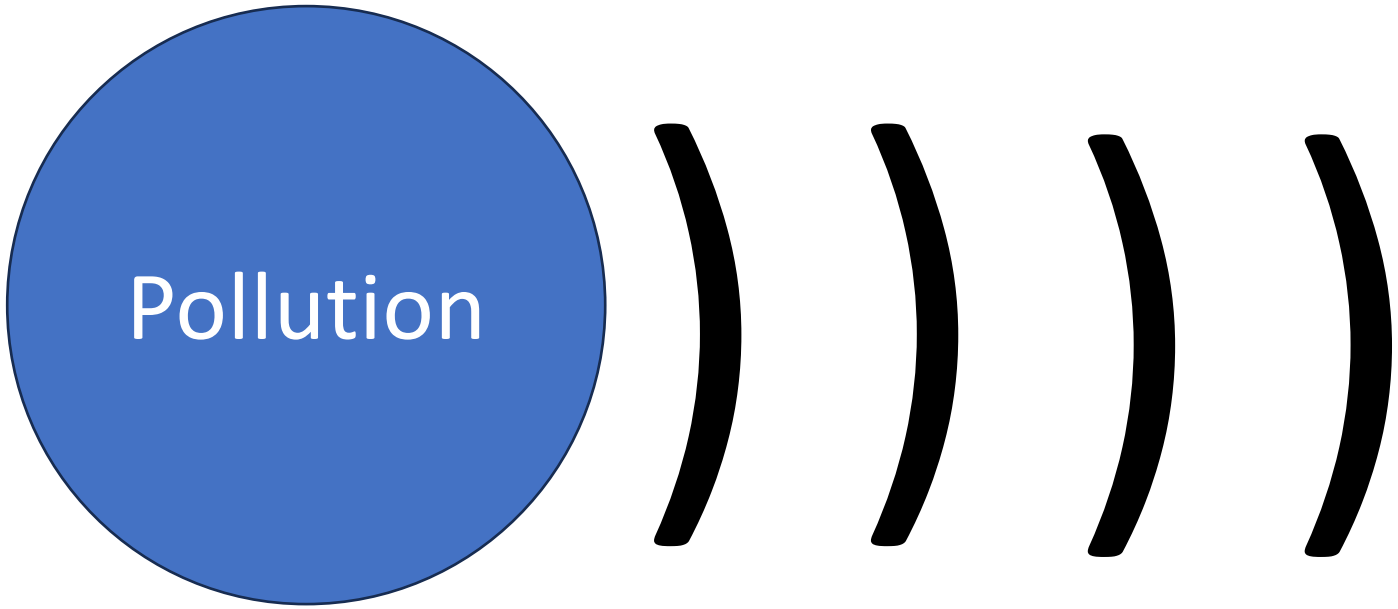
Disproportionate exposute to pollution has been extensevely documented

Foundational for the Environmental Justice movement

American Cancer Society

Spillover Effect

Discriminatory policies and practices that put Latinx communities at higher risk drive exposure to environmental hazards in the entire population



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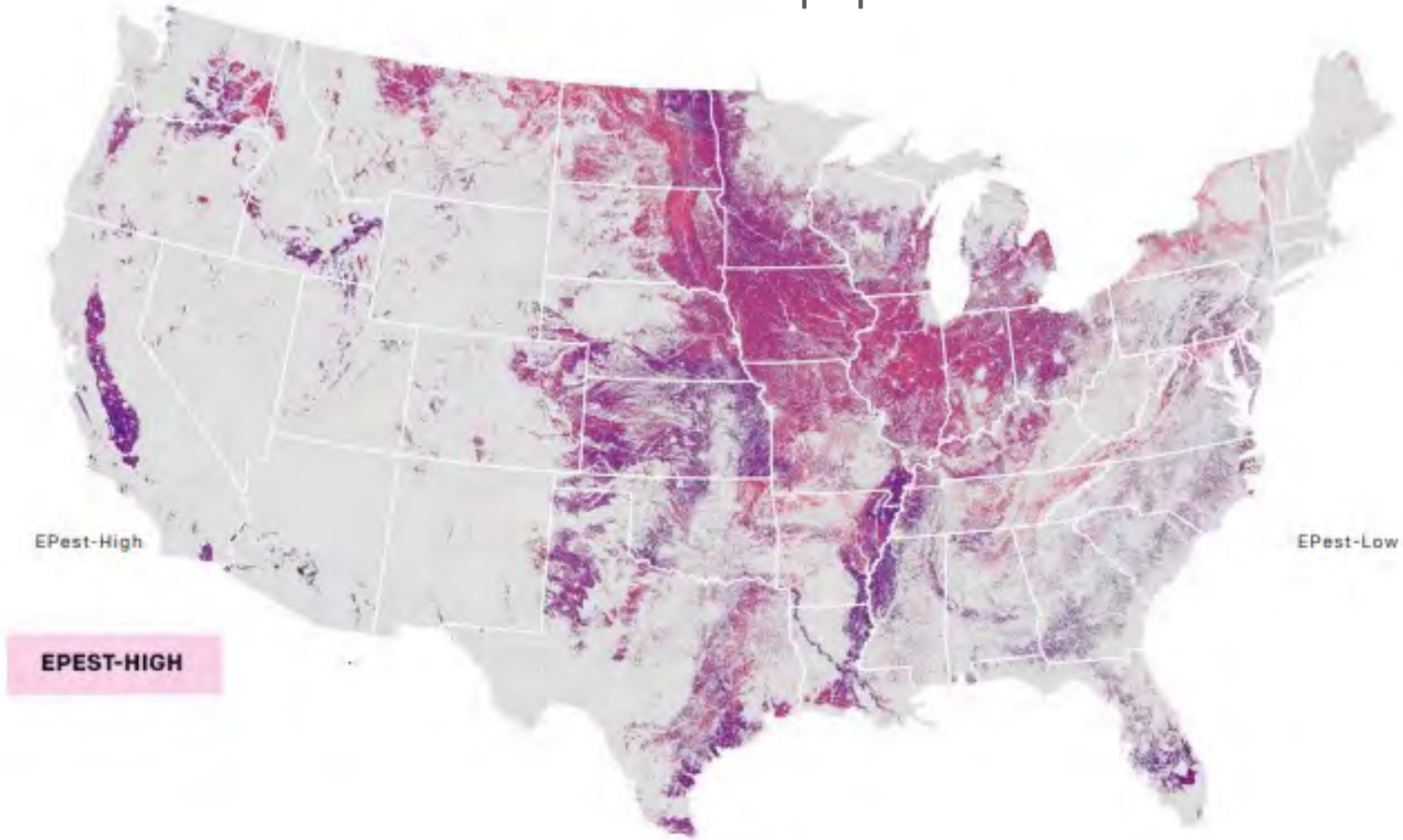
Pesticide Exposure

Discriminatory policies and practices that put Latinx communities at higher risk drive exposure to environmental hazards in the entire population



https://earthjustice.org/feature/organophosphate-pesticides-maps

Exposure to Carcinogens

Cancer clusters along the Houston Ship Channel

Houston Ship Channel

Waterway surrounded by ~600 oil and natural gas processing plants

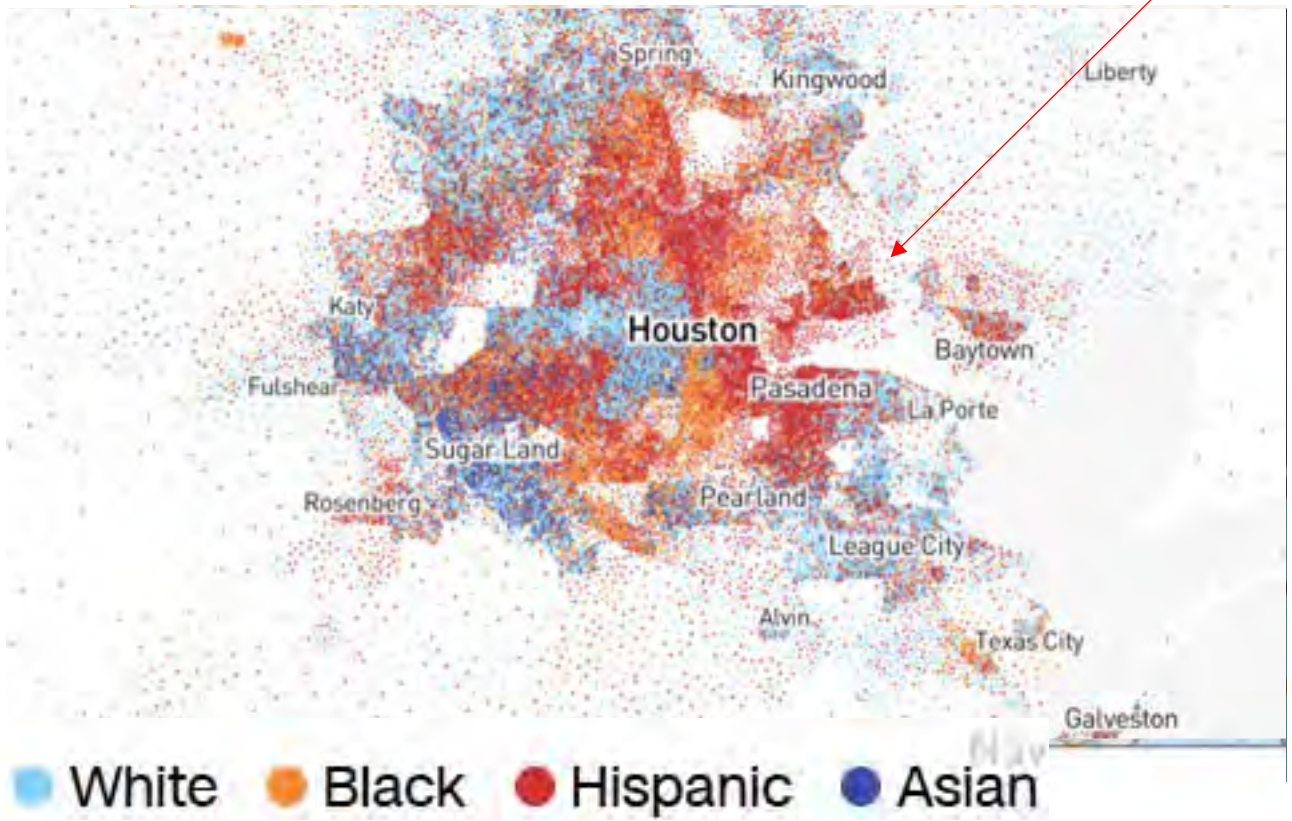
https://projects.propublica.org/toxmap/

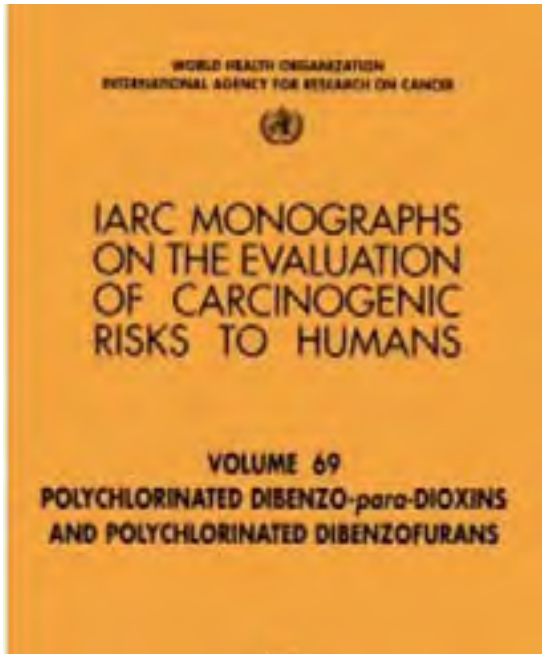
Exposure to Carcinogens

Cancer clusters along the Houston Ship Channel

Houston Ship Channel

Impaired





Dioxins

PCBs

TCEQ map showing areas where the water has been deemed “impaired” due to high levels of pollutants

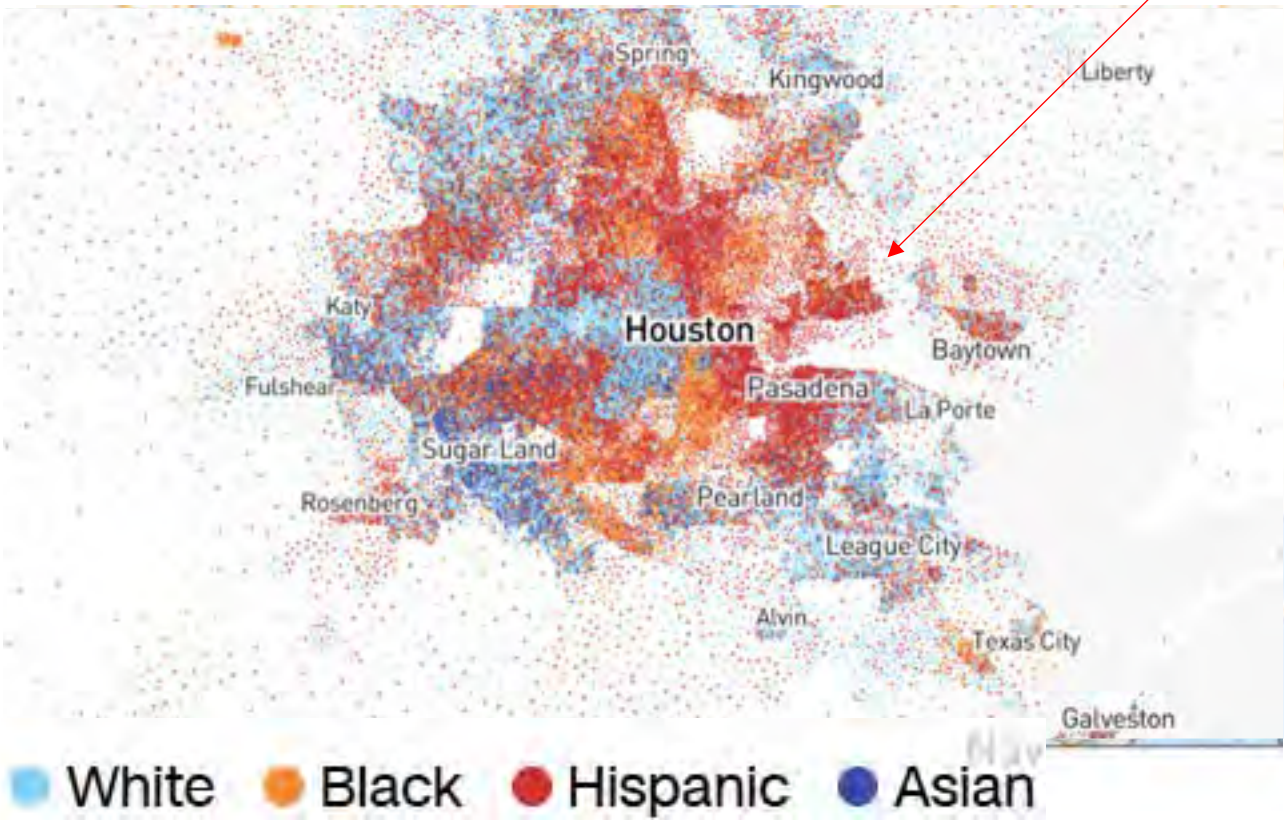
https://www.tceq.texas.gov/downloads/water-quality/tmdl/houston-ship-galveston-bay-fish-consumption-assessment-26/26-dioxin-source-characterization-2020-11-20-final.pdf

Exposure to Carcinogens

Cancer clusters along the Houston Ship Channel

Houston Ship Channel

Impaired



https://www.amnestyusa.org/wp-content/uploads/2024/01/WEB-Petrochemical-The-cost-of-doing-business-v3.pdf

SACRIFICE ZONE

According to the United Nations Special Rapporteur on human rights and the environment: "A sacrifice zone can be understood to be a place where residents suffer devastating physical and mental health consequences and human rights violations as a result of living in pollution hotspots and heavily contaminated areas."[8]

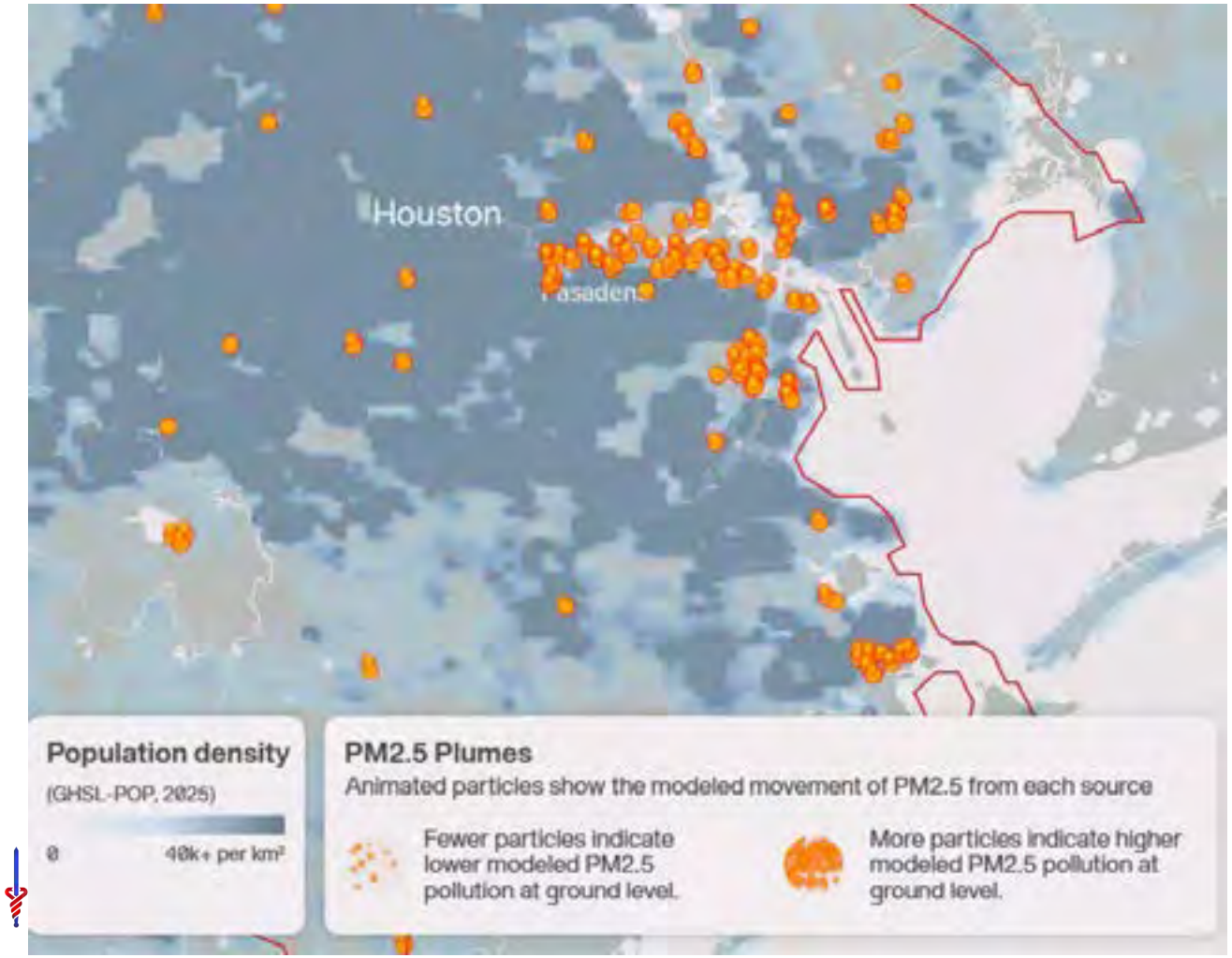
American Cancer Society

https://www.tceq.texas.gov/downloads/water-quality/tmdl/houston-ship-galveston-bay-fish-consumption-assessment-26/26-dioxin-source-characterization-2020-11-20-final.pdf

CLIMATE TRACE

Spillover Effect

Dissipation of air pollution from petrochemical facilities along the Houston Ship Channel



While communities in “Sacrifice Zones” are disproportionately exposed to pollution

As long as these injustices are allowed

People of all beackgrounds will continue to be exposed to hazardous pollutants

Spillover Effect

Water and soil pollution from petrochemical facilities along the Houston Ship Channel

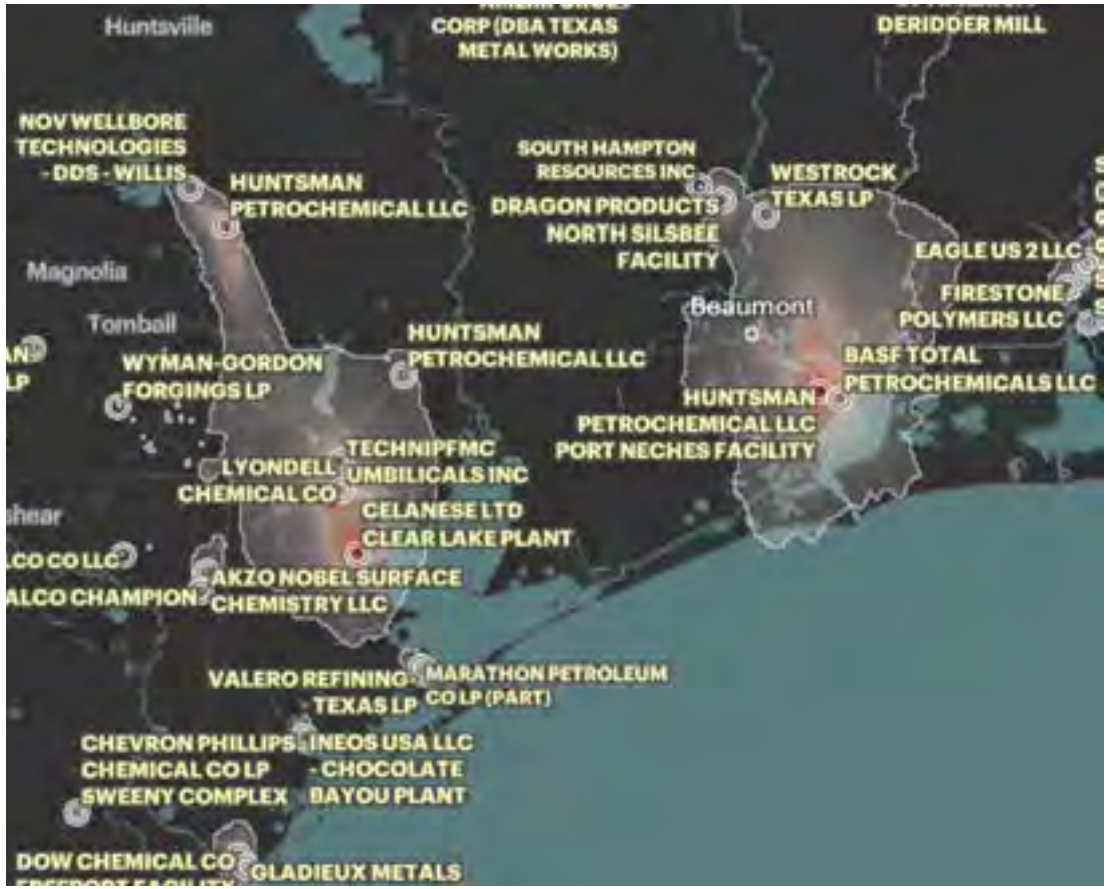
Flooding along the Houston Ship Channel in the aftermath of Hurricane Harvey

https://www.amnestyusa.org/wp-content/uploads/2024/01/WEB-Petrochemical-The-cost-of-doing-business-v3.pdf

Spillover Effect

Water and soil pollution from petrochemical facilities beyond the Houston Ship Channel

https://www.air-worldwide.com/models/tropical-cyclones/Hurricane-Harvey-s-Lasting-Legacy--Flood/



https://projects.propublica.org/toxmap/

Hurricane Harvey

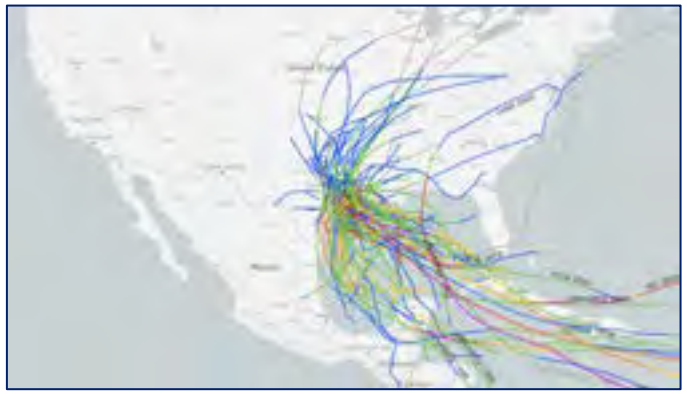
Flooding hit areas previously assumed to be safe

https://www.nytimes.com/2017/12/02/us/houston-flood-zone-hurricane-harvey.html

https://www.amnestyusa.org/wp-content/uploads/2024/01/WEB-Petrochemical-The-cost-of-doing-business-v3.pdf

Warming World

Climate-driven disasters



Historical Hurricane Paths, Houston TX

https://coast.noaa.gov/hurricanes/#map=4/32/-80

Previous hurricanes paths going through Houston

Hurricane Harvey

Changing frequency and behavior of extreme weather events makes it harder for communities to prepare and respond to increasingly unpredictable circumstances

X

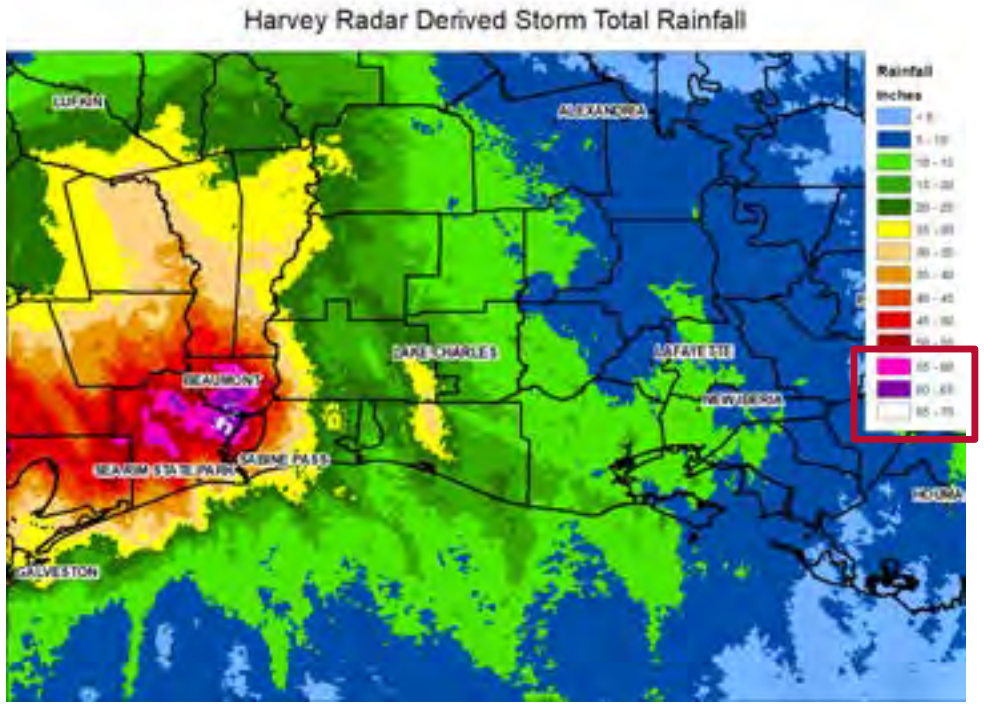
Especially concerning for medically vulnerable populations

American Cancer Society

Nogueira LM, Yabroff KR, Bernstein A. *Climate change and cancer*. CA Cancer J Clin. 2020 Jul;70(4):239-244.

Warming World

Climate Change alters the behavior of extreme weather events



Rainfall over Houston during Hurricane Harvey
National Oceanic and Atmospheric Administration (NOAA)

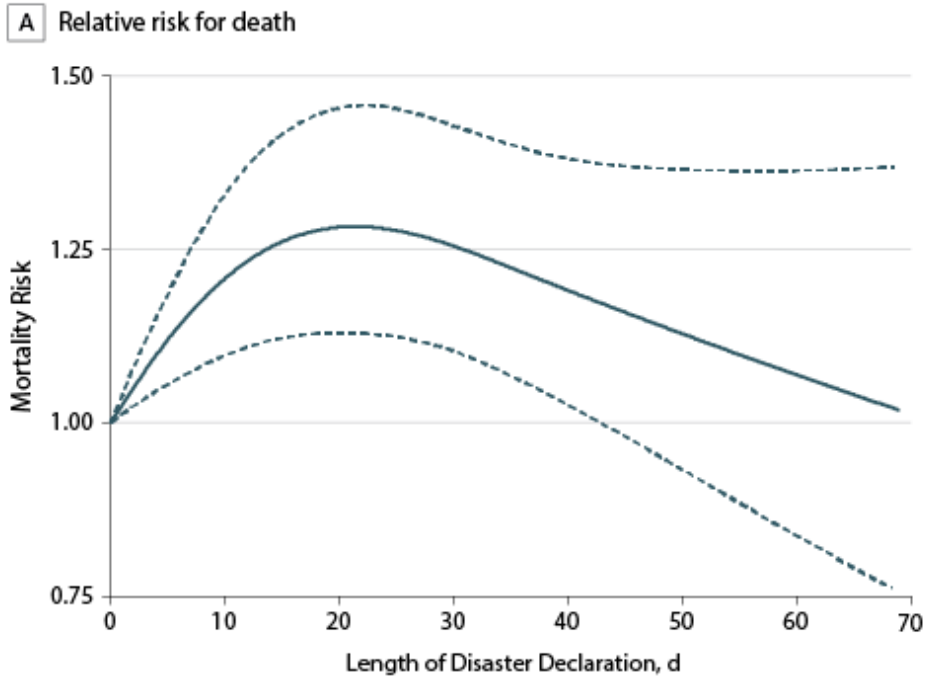
Warmer air holds more water vapor, which increases the water capacity of hurricanes

Kossin JP. *A global slowdown of tropical-cyclone translation speed*. Nature. 2018;558:104-107
Emanuel K. *Assessing the present and future probability of Hurricane Harvey's rainfall*. Proc Natl Acad Sci U S A. 2017;114:12681-12684

Impact of Hurricanes on Cancer Patients

Disruptions in access to care and worse survival

Figure. Association Between Length of Hurricane Disaster Declaration and Risk of Death in Patients With Lung Cancer Undergoing Radiation



Nogueira LM, Sahar L, Efstathiou JA, Jemal A, Yabroff KR. *Association Between Declared Hurricane Disasters and Survival of Patients With Lung Cancer Undergoing Radiation Treatment*. JAMA. 2019;322: 269-271.

Disruptions in Access to Care

Climate-driven disasters

Mountainous region, far away from the coast, previosuly considered a “climate haven”

CNN Health

IV bags in short supply across US after Hurricane Maria

https://www.cnn.com/2018/01/16/health/iv-bag-shortage

CNN Health

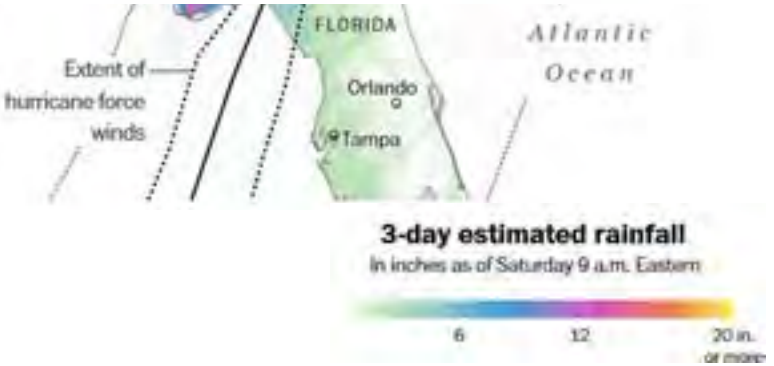
US hospitals strained by IV fluid supply limits after Helene hit production site

https://www.cnn.com/2024/10/09/health/iv-fluid-shortage-hospitals-hurricane-helene

JAMA

CLIMATE CHANGE AND HEALTH

Threats of Weather Disasters for Drug Manufacturing Facilities in the US



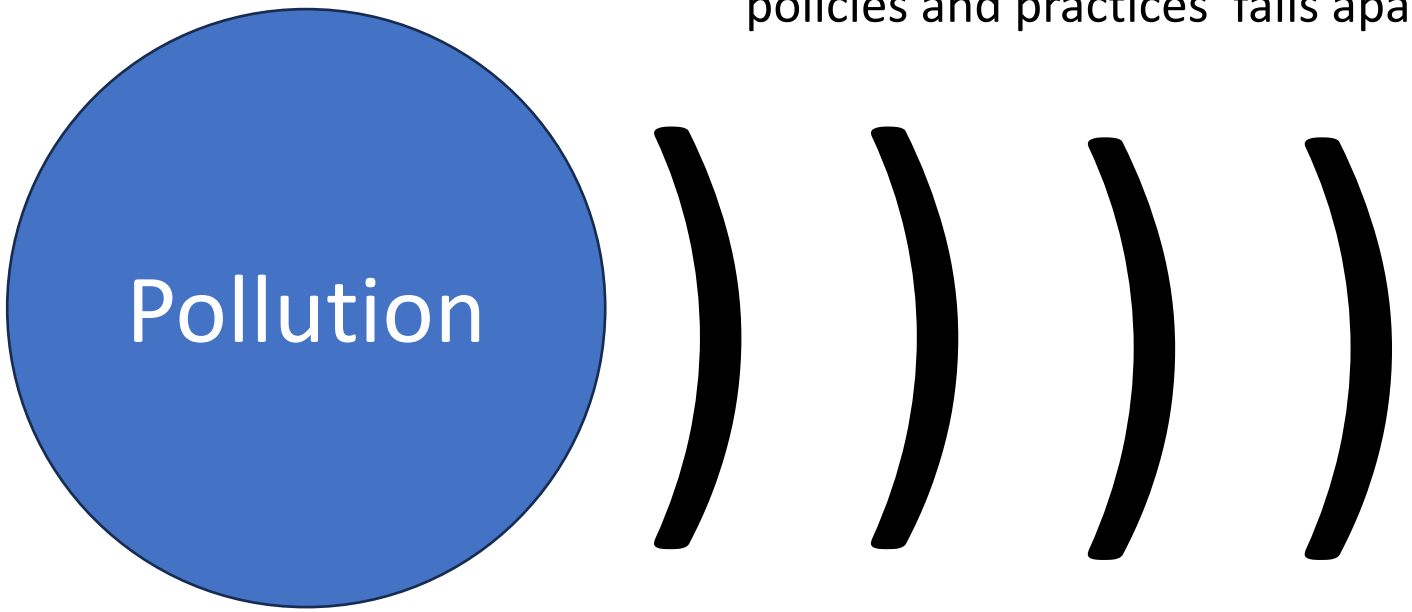
American Cancer Society

Shahzad M, Nogueira LM, Wagner A. *Threats of Weather Disasters for Drug Manufacturing Facilities in the US*. JAMA. Published online August 20, 2025. doi:10.1001/jama.2025.13843

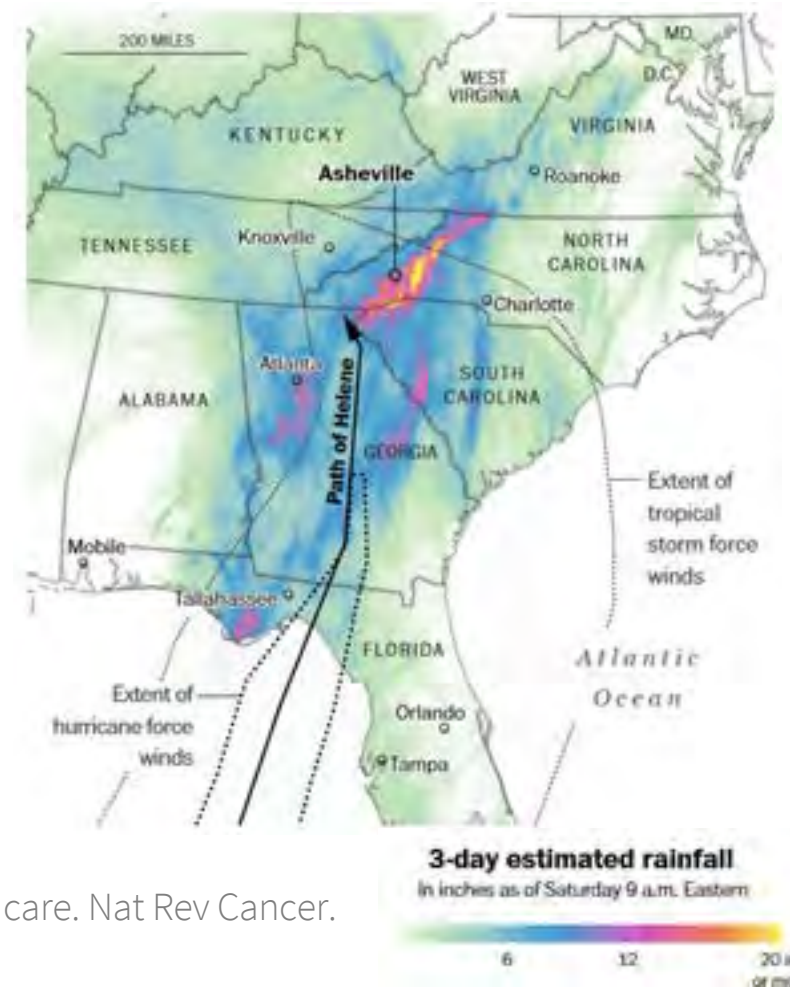
No Climate Havens

Climate-driven disasters impact people in places previously thought to be safe

"Us versus Them" narrative that is the premise for discriminatory policies and practices falls apart



Hurricane Helene



American Cancer Society

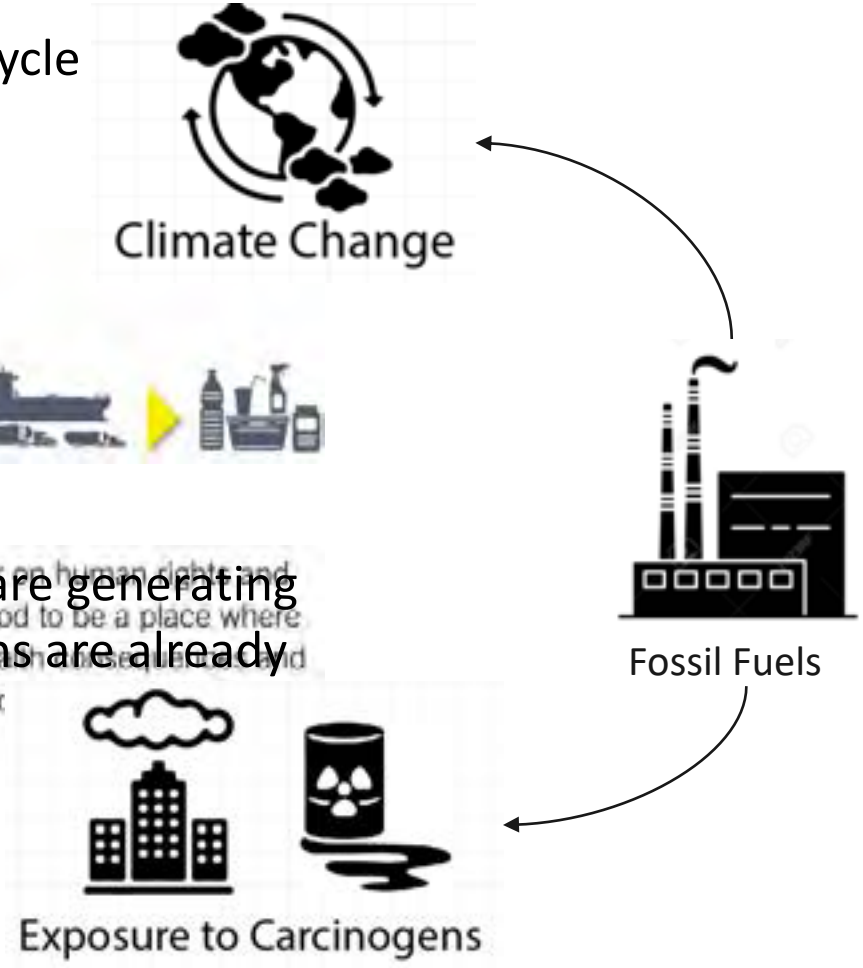
Nogueira LM, Salas RN. No climate havens: the expanding threat of climate change to cancer care. Nat Rev Cancer. Published online August 14, 2025. doi:10.1038/s41568-025-00867-y

Valuable Knowledge and Solutions

Expertise of communities impacted first and worst by environmental hazards

Each step in the fossil fuels' lifecycle has detrimental health consequences

Places where lived experiences are generating valuable knowledge and solutions are already being forged



https://www.amnestyusa.org/wp-content/uploads/2024/01/WEB-Petrochemical-The-cost-of-doing-business-v3.pdf

Valuable Knowledge and Solutions

Expertise of communities impacted first and worst by environmental hazards

Usual data sources won't capture detrimental health outcomes in medically underserved areas

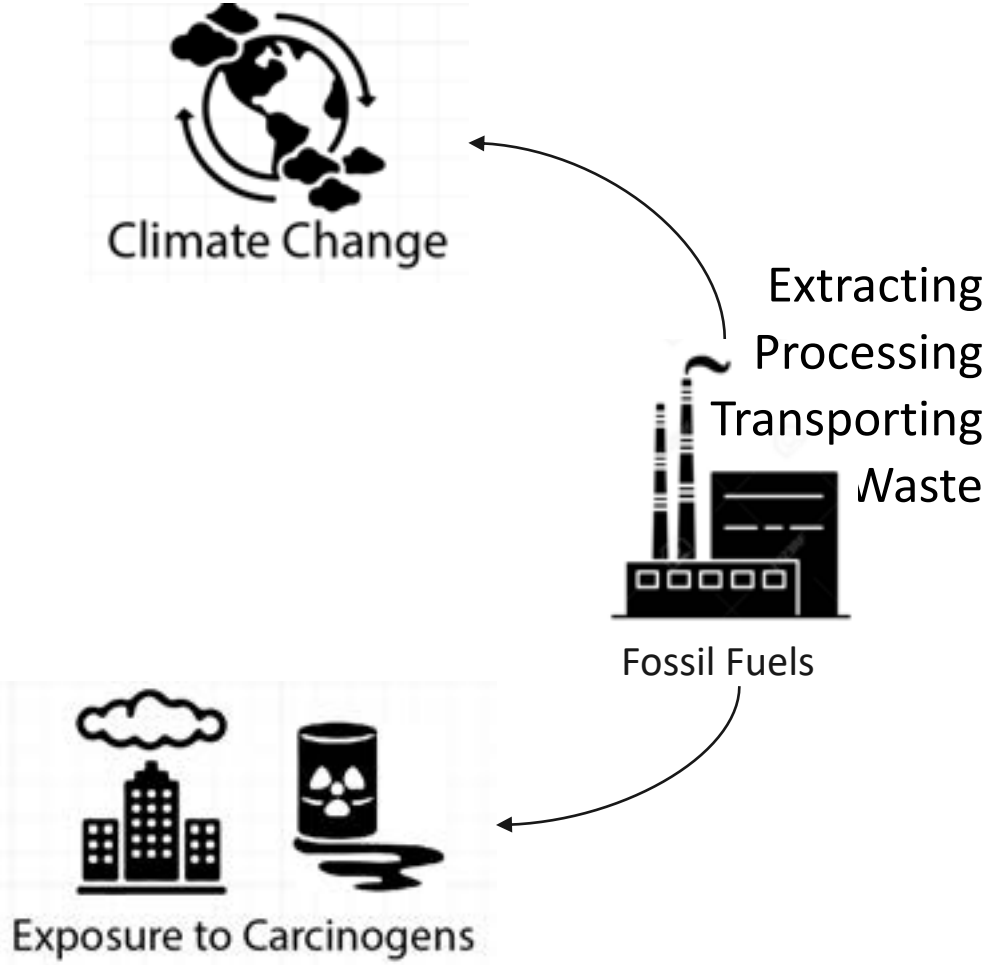
https://grist.org/project/accountability/wilmington-california-oil-gas-setbacks/

Communities living in proximity to fossil fuel extraction, processing, and waste management sites have been documenting detrimental health consequences for decades

American Cancer Society

Reliance on Fossil Fuels

Shared cause of climate change and rise in exposure to carcinogens



Nogueira LM, Crane TE, Ortiz AP, D'Angelo H, Neta G. *Climate Change and Cancer*. Cancer Epidemiol Biomarkers Prev. 2023 May 15:OF1-OF7.
https://climateandhealthalliance.org/wp-content/uploads/2025/09/C2G-Report-low-_res-English.pdf

What is one thing I can do?

What is *the next* thing I can do?

Local Solutions

Find your next action

What brings you joy?

What are you good at?

What work needs doing?

https://www.getitright.earth/climatevenn

Local Solutions - Permits

Find your next action

VIRGINIA MERCURY

EPA United States Environmental Protection Agency

...tory board denies ... or

Environmental Impact Statement (EIS) Database

denies-mountain-valley-pipeline-compressor-station-permit/

Environmental Impact Statement (EIS) Database | US EPA

AP

MOMS clean air FORCE

ECOMADRES

...North Dakota

https://apnews.com/article/south-dakota-carbon-dioxide-pipeline-665a20269d43d4aff5944969f869bb03

https://www.momscleanairforce.org/ecomadres/

Reuters

Louisiana judge cancels air permits for

EARTHJUSTICE

BECAUSE THE EARTH NEEDS A GOOD LAWYER

...permits for plastics plant | Reuters

Action Alerts

Save the quiet for the wilderness. In the public arena, we roar.

https://earthjustice.org/action/alerts

Hawaii State Legislature

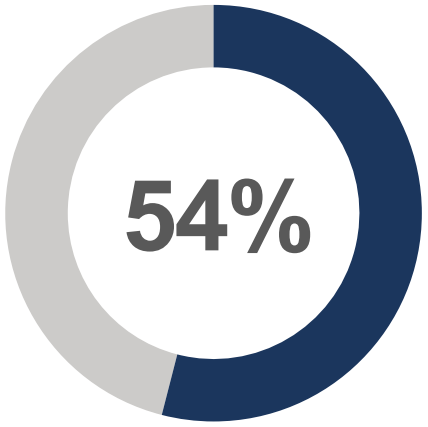
Hawaii Advances Pesticide Restrictions for Kauai

https://www.courthousenews.com/hawaii-advances-pesticide-restrictions-for-kauai/

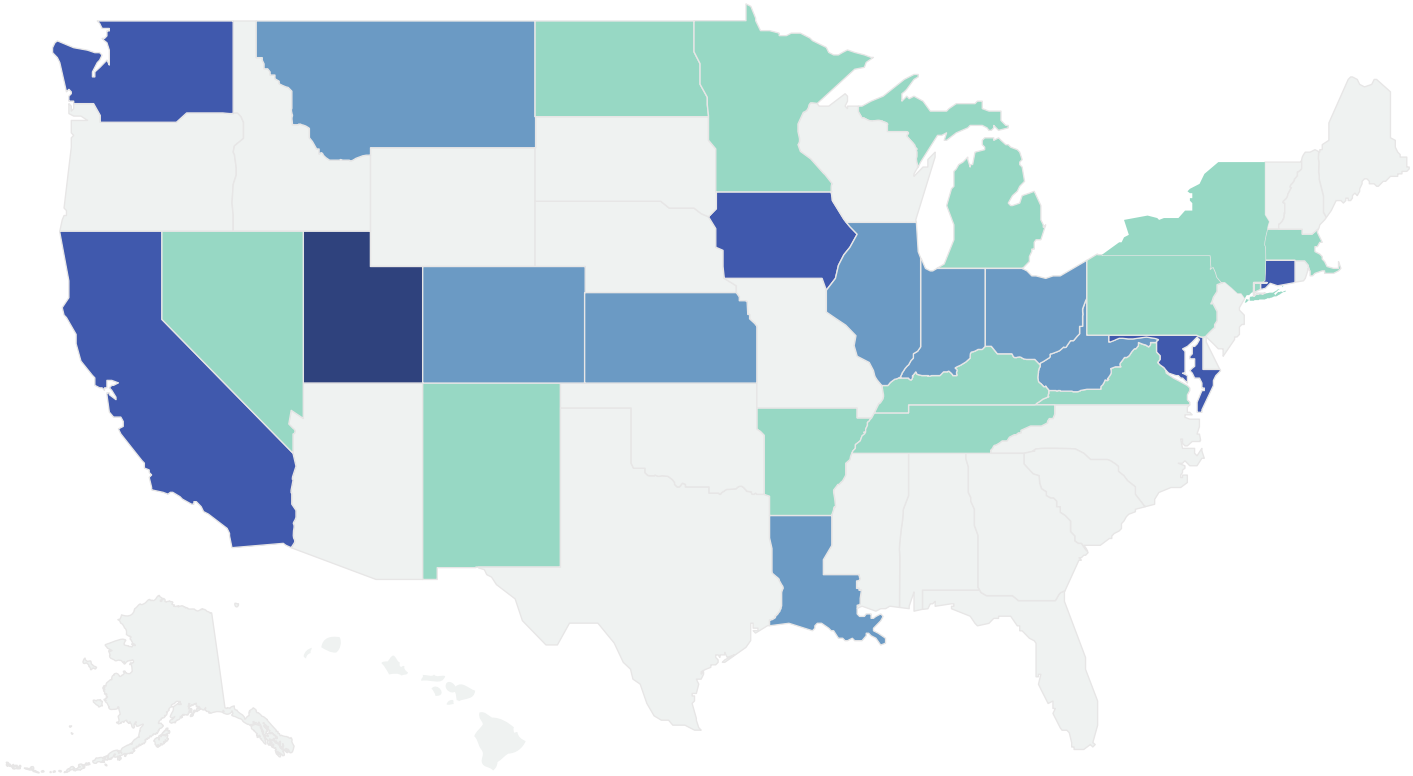
American Cancer Society

Local Solutions

Cumulative benefits



Number of climate-relevant strategies mentioned in each Comprehensive Cancer Control Plan



American Indian Cancer Foundation

District of Columbia

Federated States of Micronesia

Northern Mariana Island

Northwest Portland Area Indian Health Board

Puerto Rico

Republic of the Marshall Islands

Alaska Tribal Health System

South Puget Intertribal Planning Agency

https://www.cdc.gov/comprehensive-cancer-control/about/index.html

E. Food System

Washington
Increase sustainable community gardens in underserved areas.

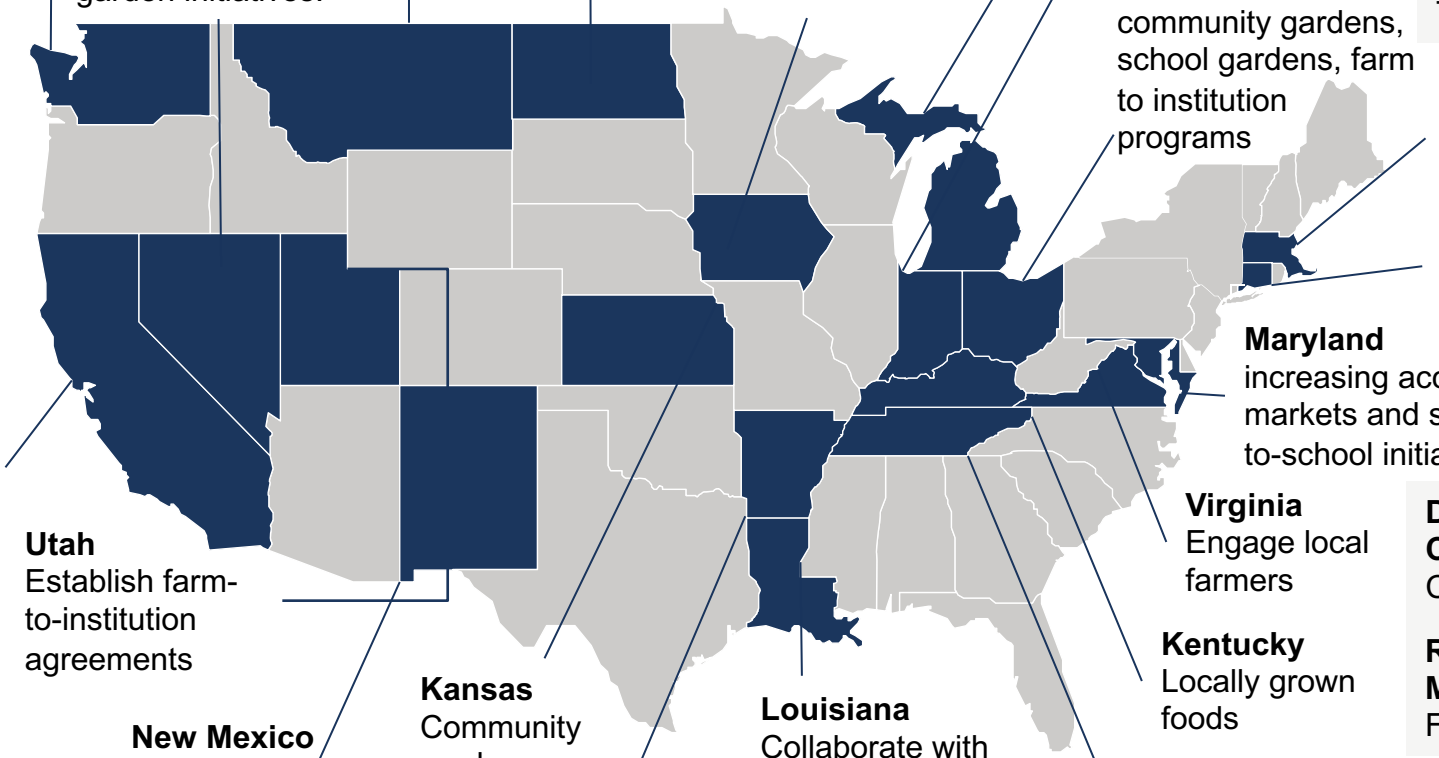
Northwest Portland Area Indian Health Board
Traditional and subsistence foods

Federated States of Micronesia
Let Local Food Be Your Medicine

California
minimally processed foods

Alaska Tribal Health System
Inclusion of traditional foods

South Puget Intertribal Planning Agency
Traditional and tribal gardens



Montana
Support indigenous and locally grown food and home gardening.

Nevada
Promote and support community garden initiatives.

North Dakota
Promote and support community and home gardens.

Iowa
Gardens and farmers' markets

Michigan
establishment of farmers markets

Indiana
farm to institution

Ohio
community gardens, school gardens, farm to institution programs

American Indian Cancer Foundation
Inclusion of traditional foods

Northern Mariana Island
Traditional foods

Massachusetts farm-to school initiatives

Connecticut
avoidance of heavily processed foods.

Maryland
increasing access to farmers' markets and supporting farm-to-school initiatives.

Utah
Establish farm-to-institution agreements

New Mexico
supports sustainable local food systems

Kansas
Community gardens

Arkansas
farmers' markets

Louisiana
Collaborate with farmers and farmers' markets

Virginia
Engage local farmers

Kentucky
Locally grown foods

Tennessee
Farm to School

District of Columbia
Community

Republic of the Marshall Islands
Farmers' Markets

Puerto Rico
Farmers market and locally grown foods

American Cancer Society

Local Solutions - Agriculture

Cumulative benefits

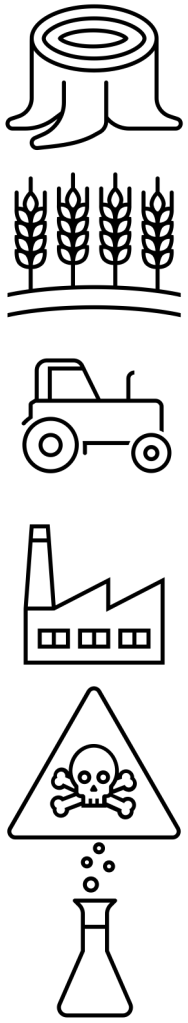
Environmentally Responsible Food = Healthy Food

- Manufacture
- Shipment
- Waste

Industrialized Food System

High environmental impact

- Land clearing
- Monocultures
- Heavy machinery
- Processing
- Packaging
- Herbicides, pesticides, fertilizers
- Additives



Nogueira LM, Sakka R, Jovanovic C. A recipe for a disaster: food, climate change, and cancer. Cancer Causes Control. 2025 Apr 18. doi: 10.1007/s10552-025-01996-3. Epub ahead of print. PMID: 40251324.

Identify Potential Partners

Focus on solutions with cumulative benefits

What do we want to accomplish?

Who else would care about this

Just Transition Alliance

LOS JARDINES INSTITUTE

AGRICULTURE • LITERACY • COMMUNITY

The Farmworker Association of Florida, Inc.

coming clean

Union of Concerned Scientists

The Nature Conservancy

CFE

CANCER FREE ECONOMY NETWORK

Blood Cancer United

INDIGENOUS ENVIRONMENTAL NETWORK

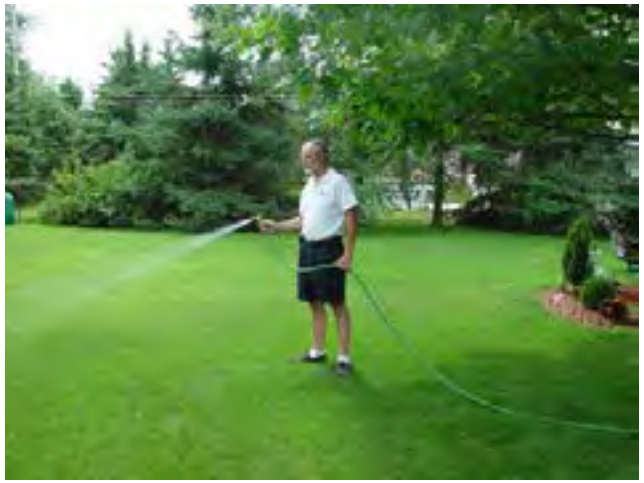
Parkinson's Foundation

THE EDIBLE SCHOOLYARD PROJECT

American Cancer Society

Spillover Effect

Consequences of discriminatory policies and practices



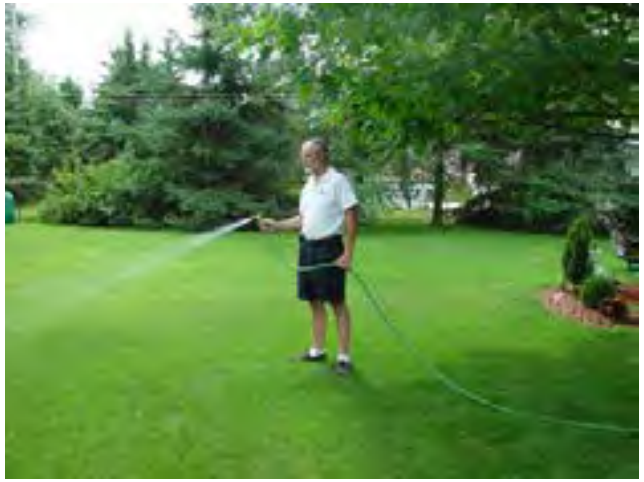
Lawn maintenance rules restrict subsistence gardening

Restrictive covenants for ground cover incentivize use of carcinogenic pesticides

Grass is the most commonly irrigated plant, responsible for 1/3 of residential water consumption

Spillover Effect

Consequences of discriminatory policies and practices



Lawn maintenance rules restrict subsistence gardening

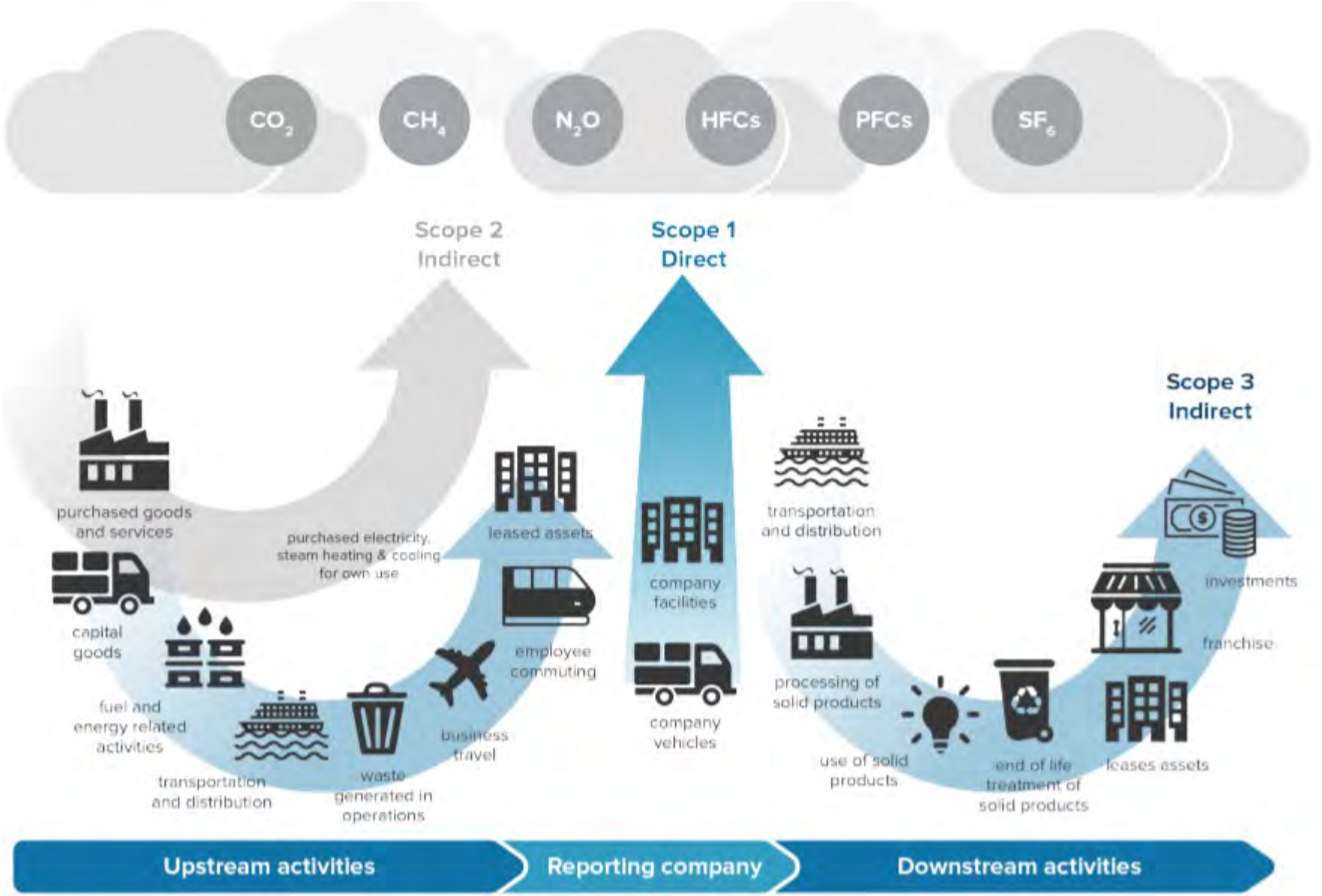
Restrictive covenants for ground cover incentivize use of carcinogenic pesticides

The Hill

Colorado bans use of gas-powered lawn equipment by state agencies starting 2025

State agencies in Colorado will be banned from using certain gas-powered lawn equipment during the summer, according to a new rule adopted...

Healthcare and Research Emissions



Three Choices with Climate Change

We all can contribute to solutions

Environmentally responsible sustainability efforts

Mitigation

Emergency preparedness and response efforts

Adaptation

Document ongoing suffering and increase awareness to incentivize action

Solutions

“

Give me a lever long enough, and I shall move the world.

Archimedes

”

American Cancer Society

Thank You

Leukemia in Latino Children

Catherine Metayer, MD, PhD

Adjunct Professor, Epidemiology and Biostatistics
Principle Investigator, California Childhood Leukemia Study, University of California, Berkeley

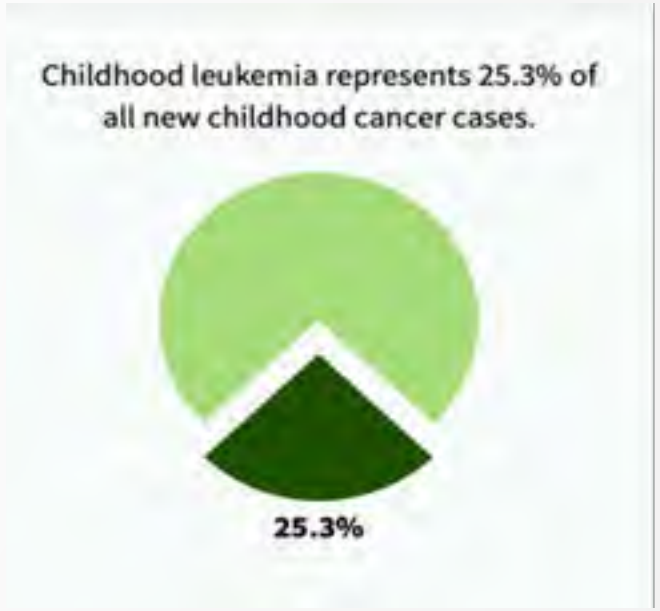
Leukemia in Latino Children

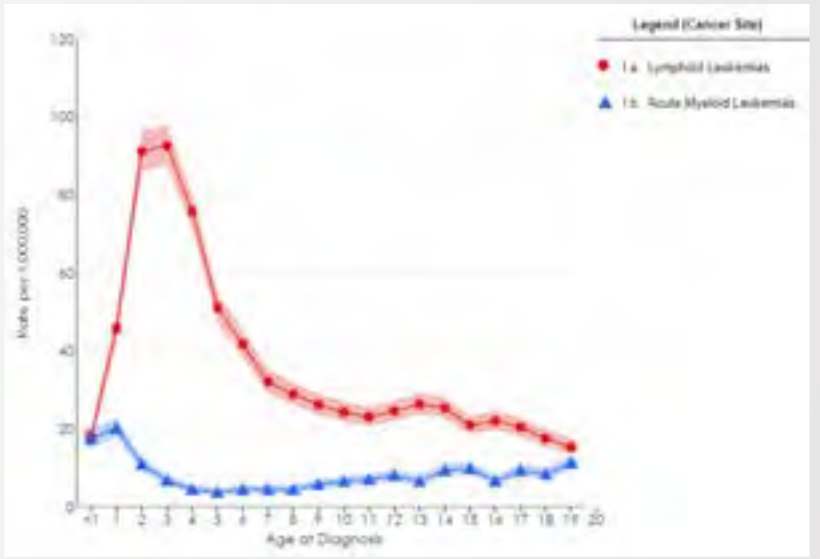
The Latino Cancer Institute

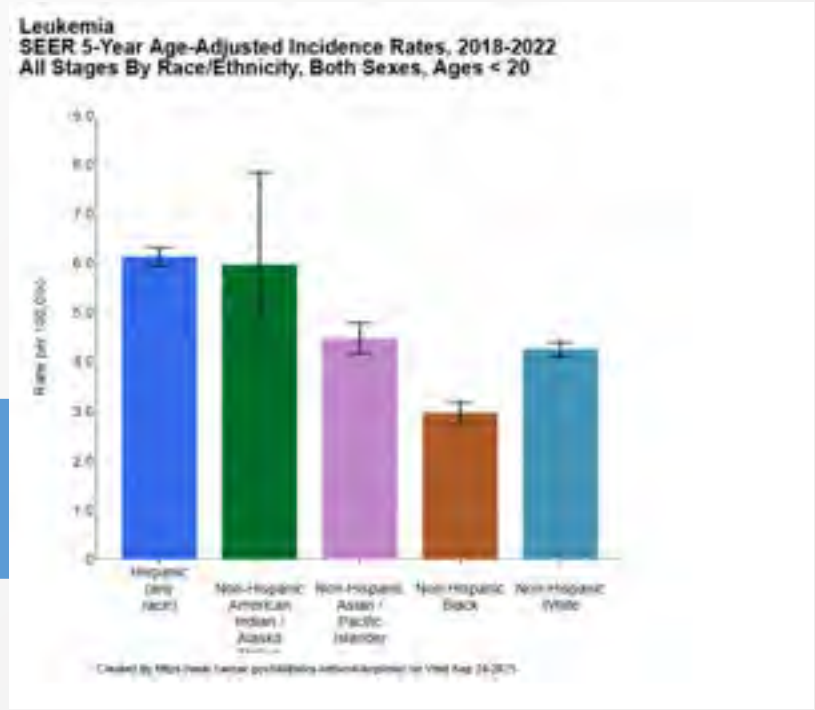
Webinar | October 3rd, 2025

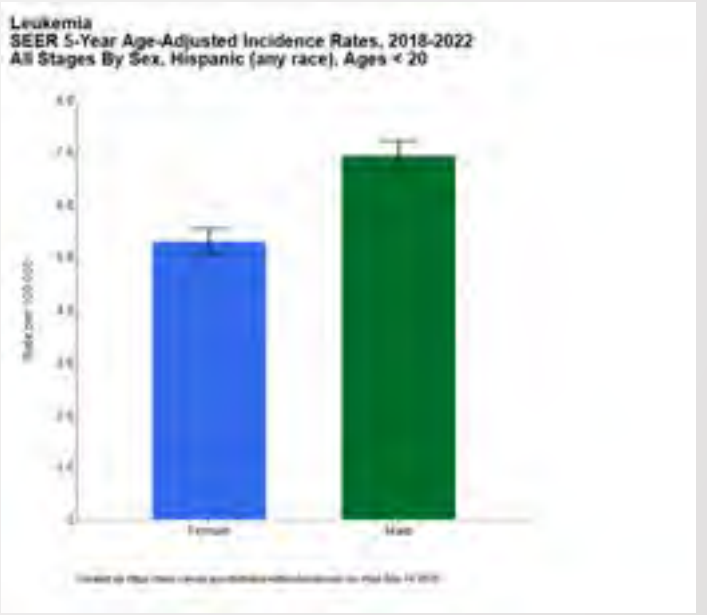
Catherine Metayer, MD, PhD, University of California Berkeley

Facts about Childhood Leukemia

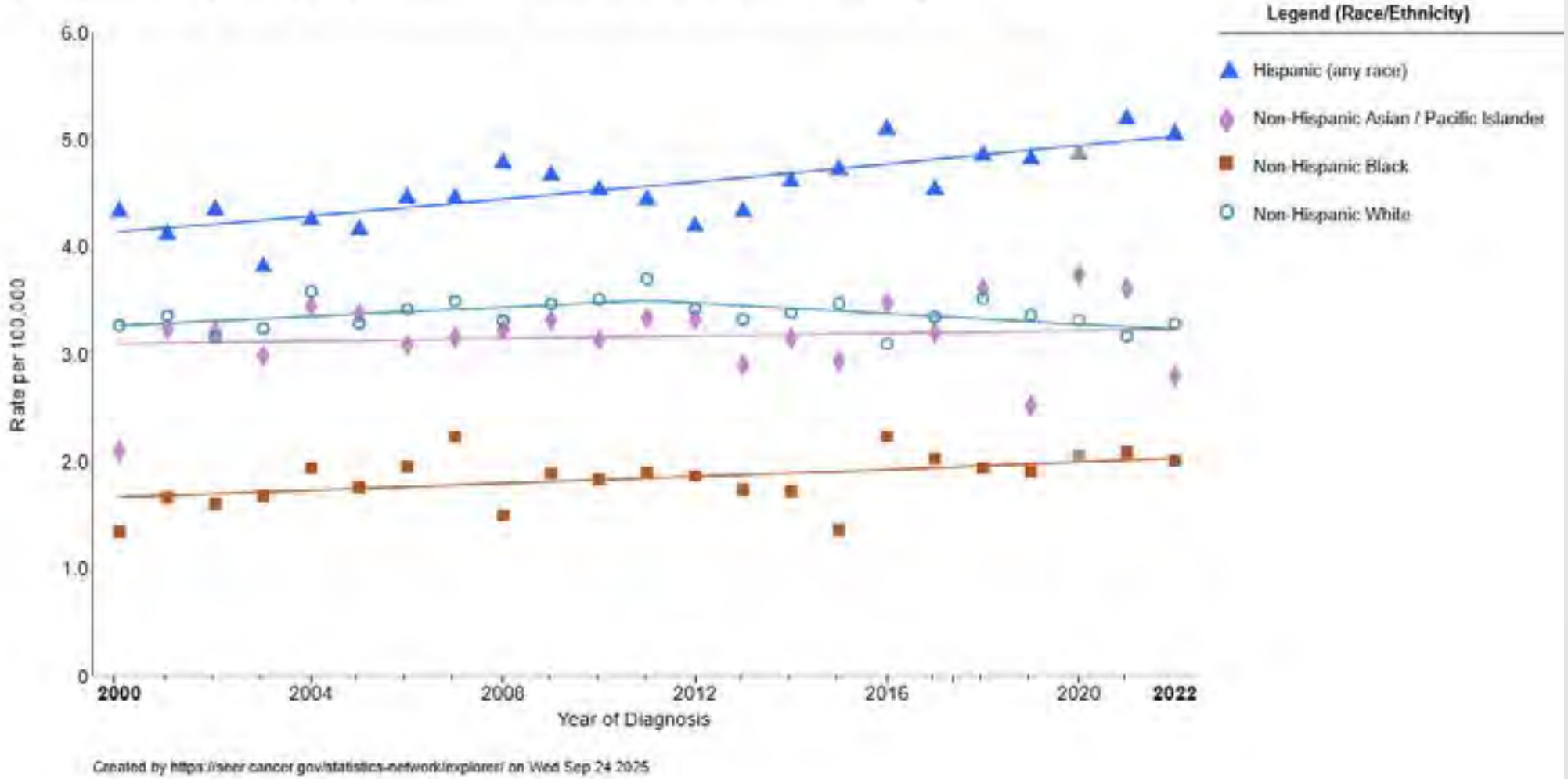








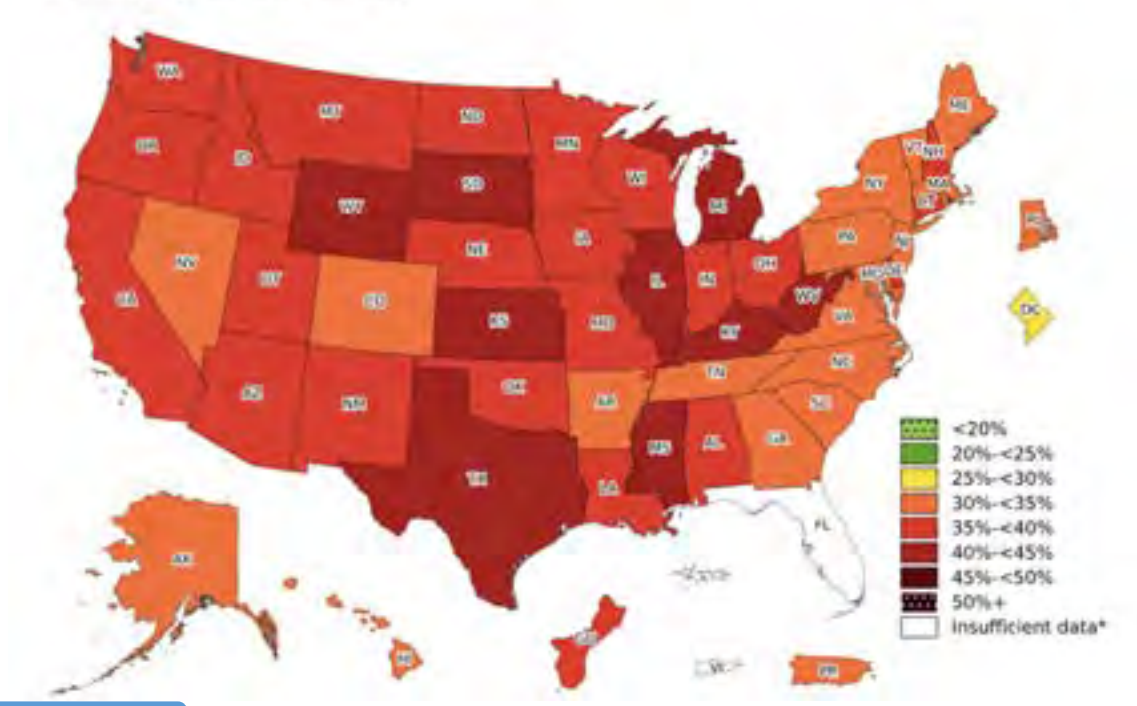
Acute Lymphocytic Leukemia (ALL)
Recent Trends in SEER Age-Adjusted Incidence Rates, 2000-2022
By Race/Ethnicity, Delay-adjusted SEER Incidence Rate, Both Sexes, Ages < 20



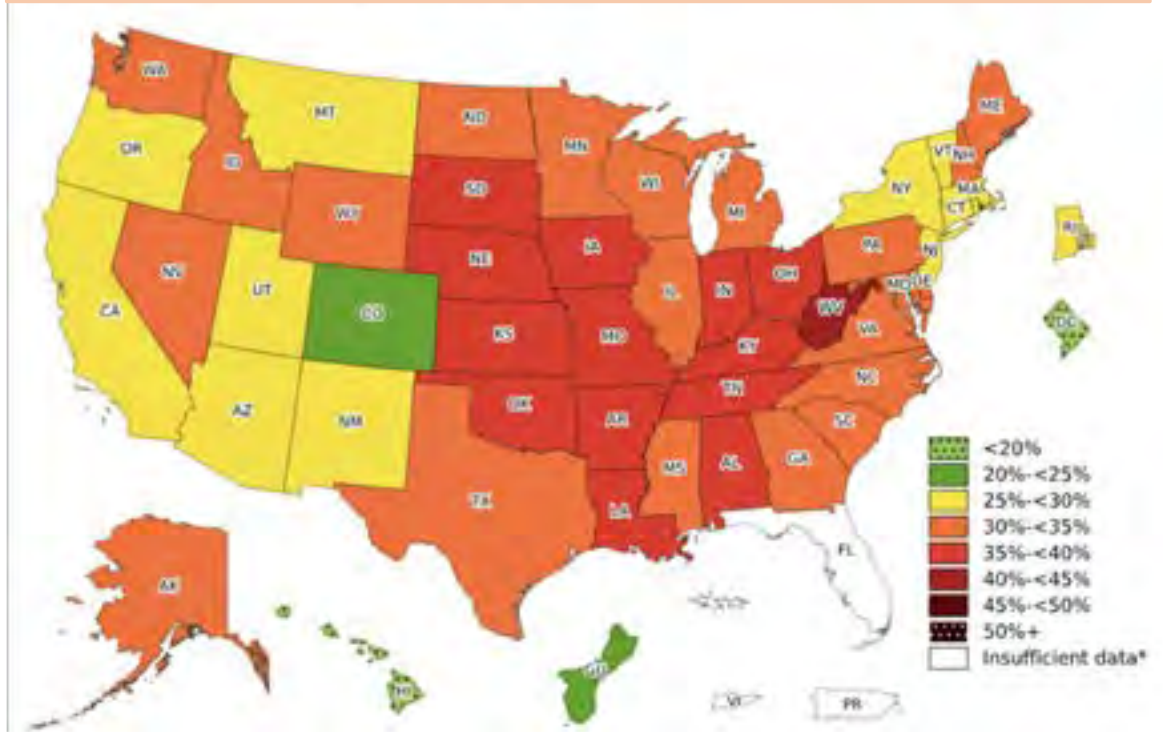
Clues to Explain Increasing trends of Childhood Leukemia

- Lifestyle--diet
- Environmental exposures
- Immune function /microbiome
- Socioeconomic status
- Gene – Environment interaction

Hispanic adults



Non-Hispanic White adults



Prevalence of obesity by US state (2020-2022)
Highly impacted Latinx communities

Source: https://www.cdc.gov/obesity/data/prevalence-maps.html

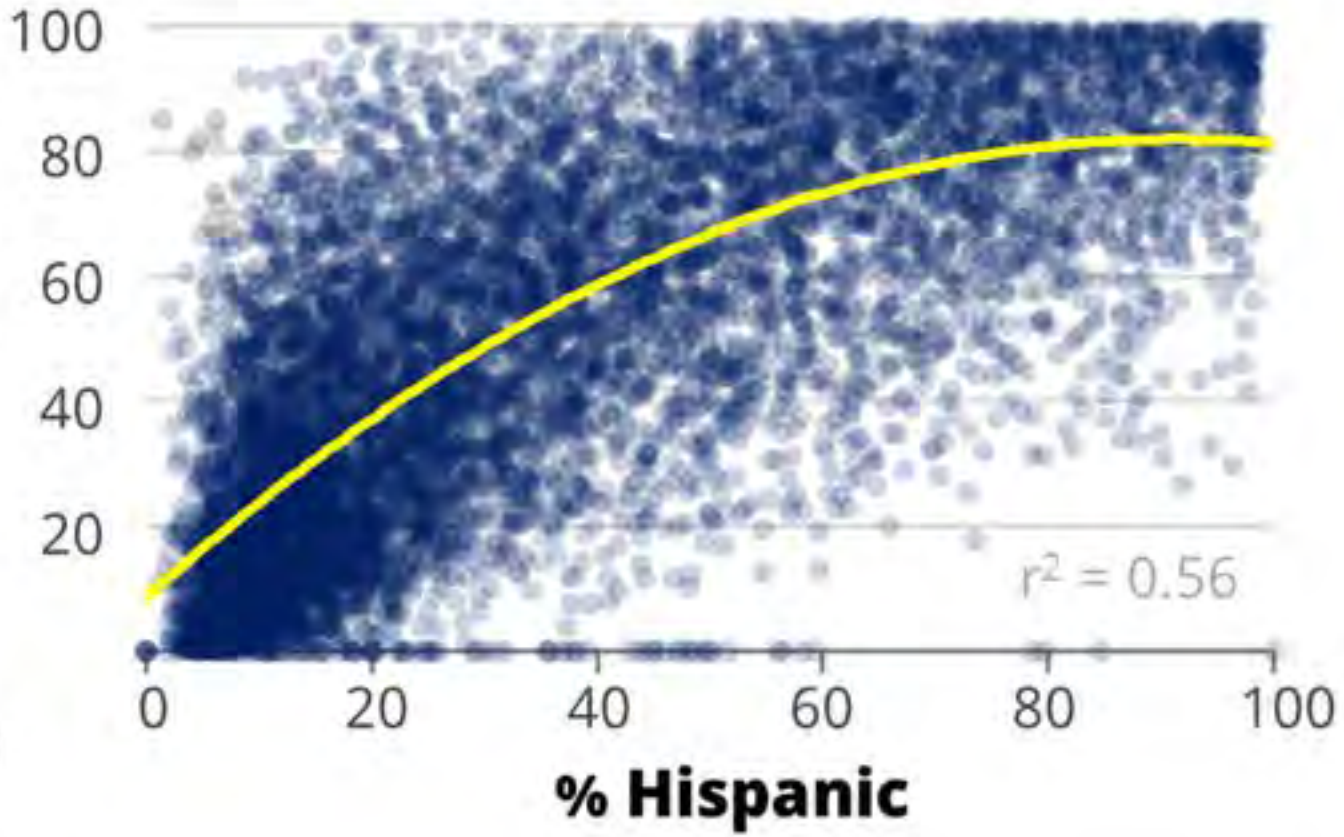
Latino communities are burdened with pollution, socioeconomic disadvantages.

CalEnviroScreen 3.0 scores for California census tracts versus the percent of families who identified as being Hispanic.

CES Score

CalEnviroScreen scores are based on 19 indicators of pollution and 7 population characteristics.

DATA SOURCE: California Office of Health Hazard Assessment

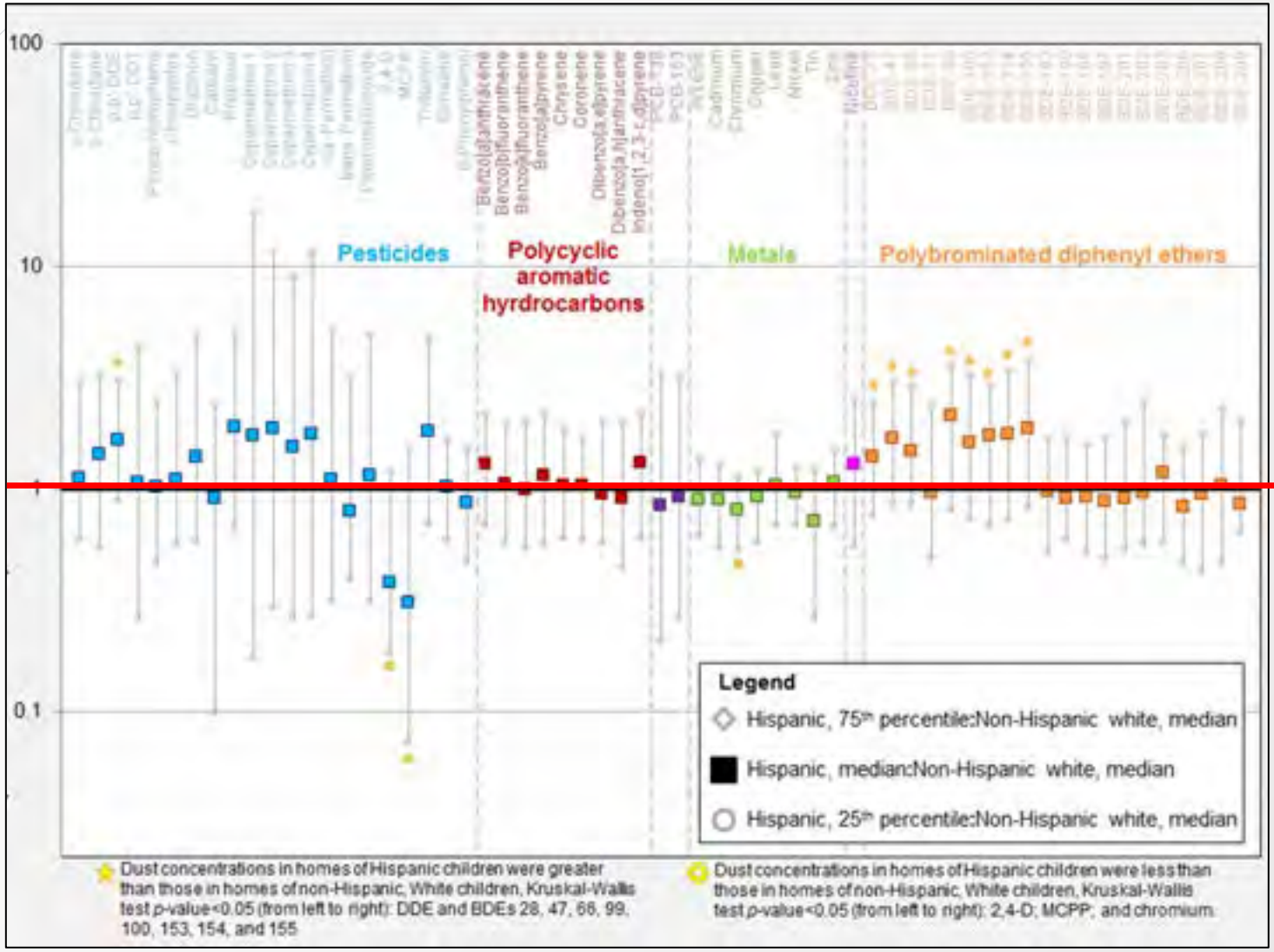


Higher Levels of Chemicals in Latino Households in California

Latino homes

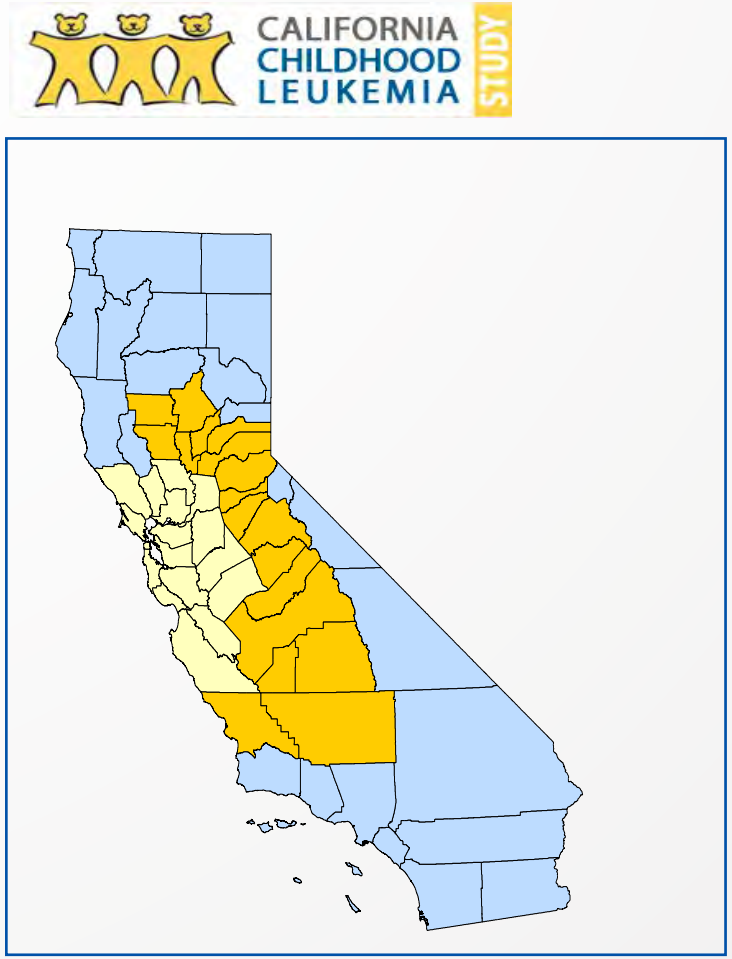
vs.

non-Latino white homes



Source: Metayer – California Childhood Leukemia Study, unpublished

Local & Global Research



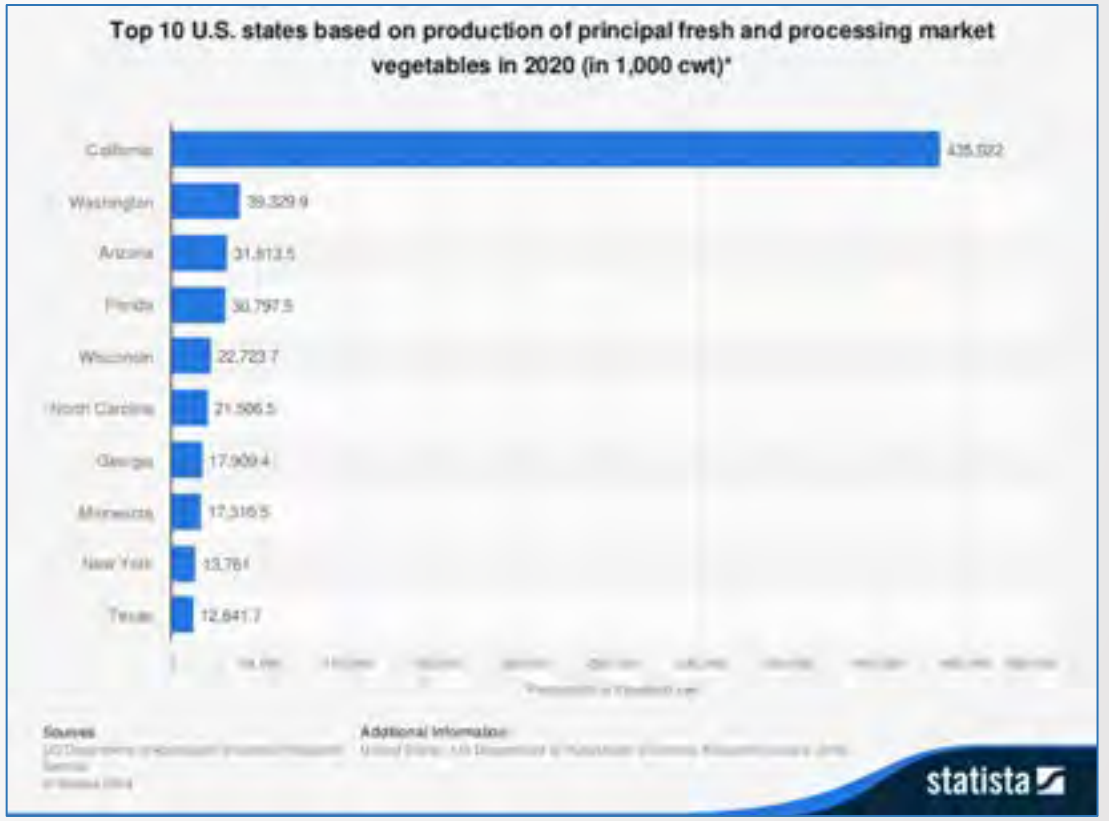
Risk Factors of Childhood Leukemia

- Immune regulation/infections
- Fetal growth
- Ionizing and non-ionizing radiation
- Environmental exposures
- Diet and supplements
- Genetics
- Epigenetics

Chemicals are known to cause cancer in adults

Genotoxic
Oxidative stress
inflammation
immunotoxic

Parental Occupational Exposures to Pesticides

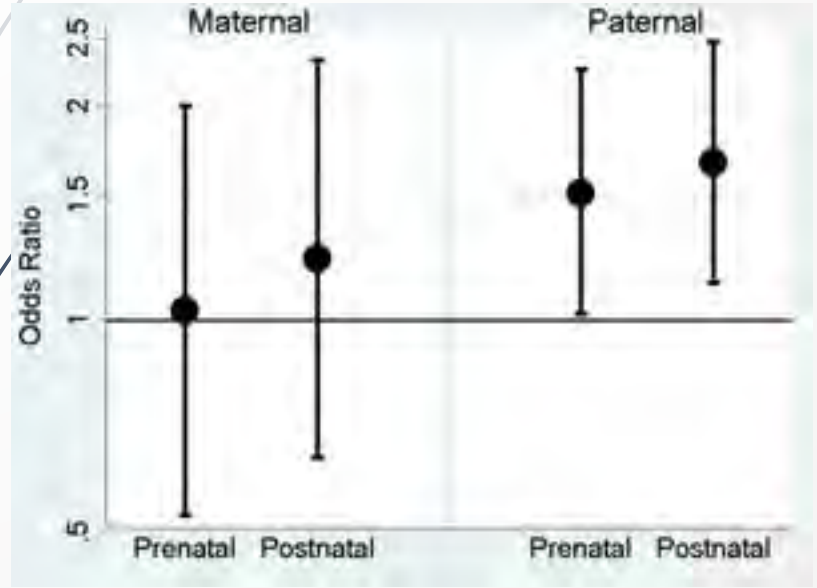


California employs 27% of nation's farmworkers and **the majority are Latinos**

Occupational Exposures to Pesticides and Childhood Acute Lymphoblastic Leukemia

CALIFORNIA CHILDHOOD LEUKEMIA STUDY

Childhood Cancer & Leukemia International Consortium



Adjusted for child's sex, age, ethnicity, mother's race and household income.

Source: Gunier, Env Research (2017)

- Pooled original data for **~8,000 cases and ~14,000 controls**
- Maternal exposure – pregnancy **OR=1.01 (0.78-1.30)**
- Paternal exposure – periconception **OR=1.20 (1.06-1.38)**

Source: Bailey, Int J Cancer, 2014

Dust is an Important Route of Exposure

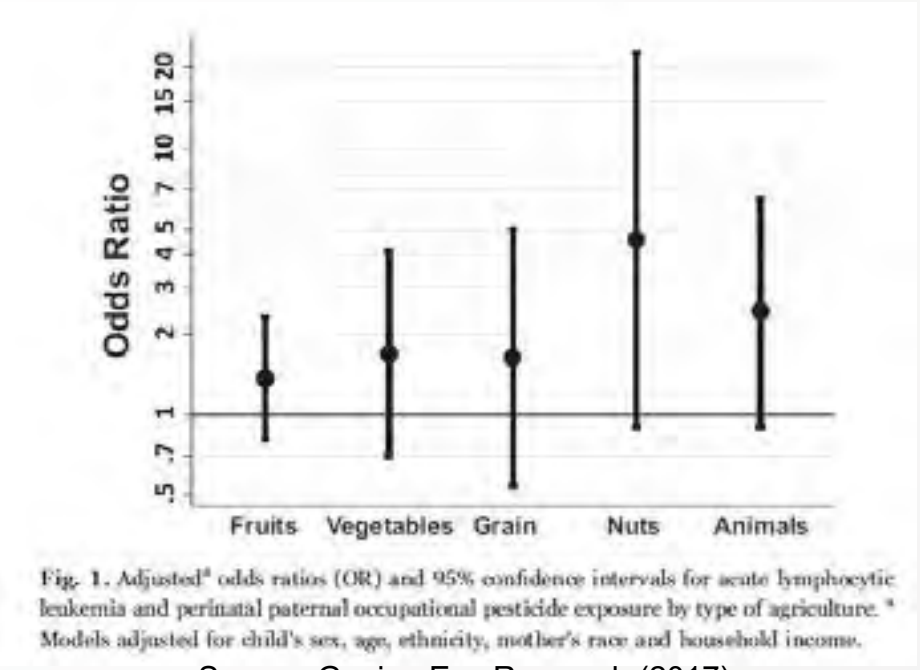
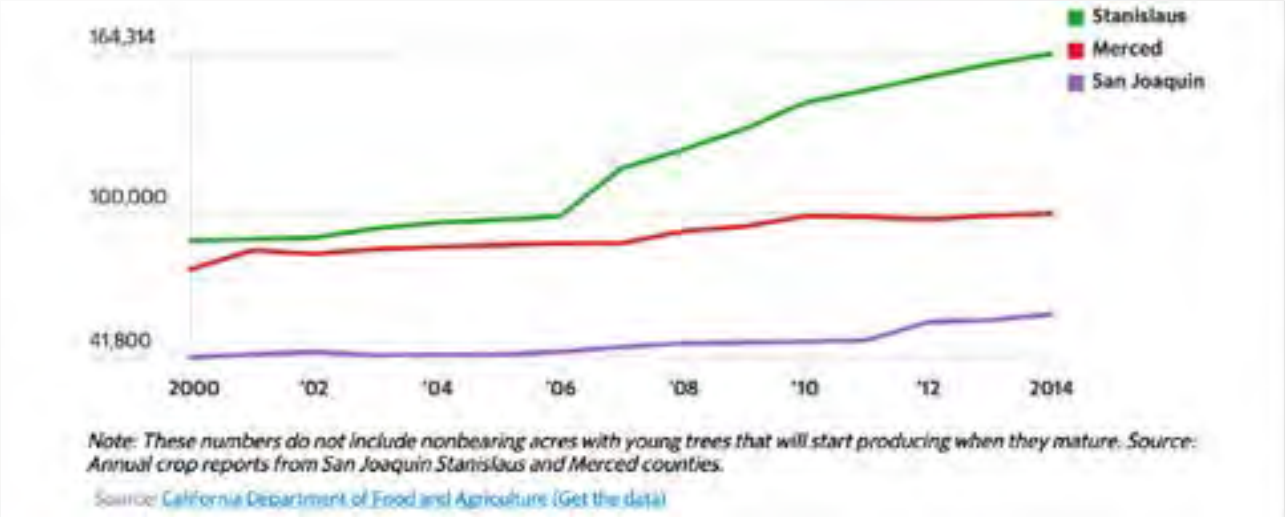


Fig. 1. Adjusted[a] odds ratios (OR) and 95% confidence intervals for acute lymphocytic leukemia and perinatal paternal occupational pesticide exposure by type of agriculture. [a] Models adjusted for child's sex, age, ethnicity, mother's race and household income.

Source: Gunier, Env Research (2017)

Source: Mother Jones and the Foundation for National Progress Photographer Matt Black



Paternal Occupational Exposures to Organic Compounds & Childhood ALL

Positive associations for **Latino Fathers only**

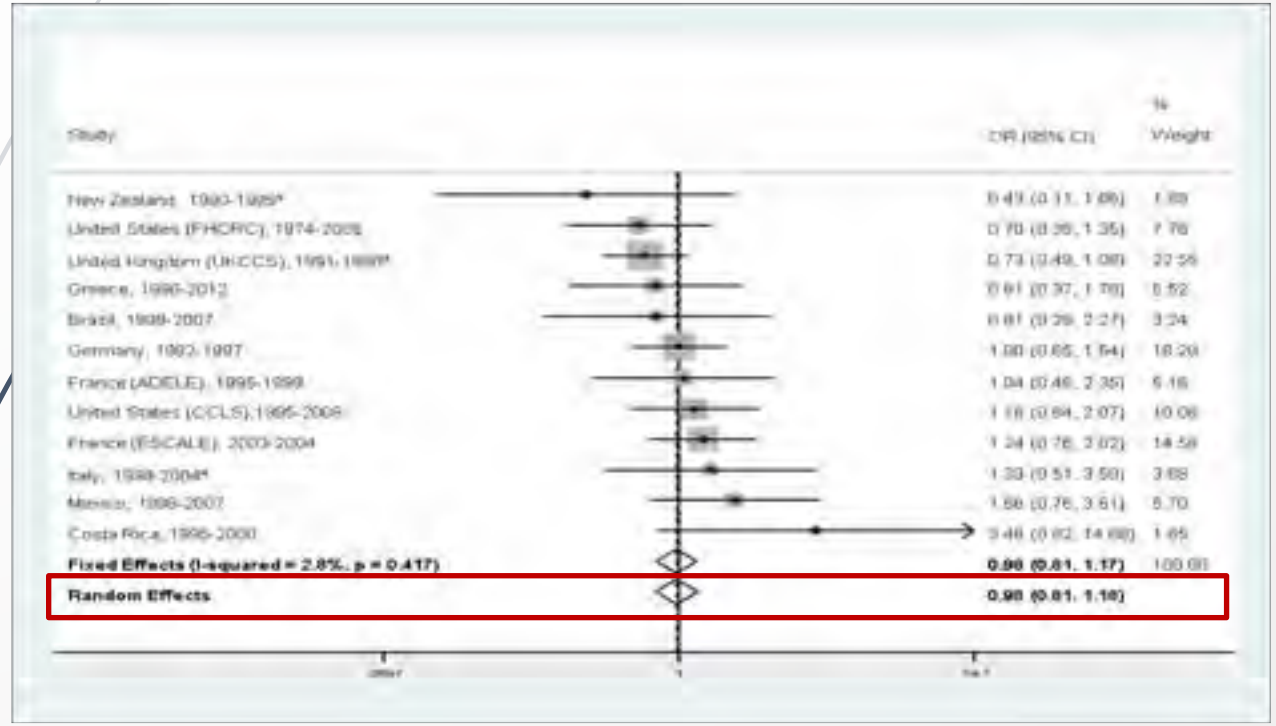
Expert exposure assessment	Cases	Controls	OR*	95% CI
Any organic compounds	**107**	**102**	**1.72**	**(1.22-2.44)**
-- Benzene	30	20	2.03	(1.11-3.70)
-- Chlorinated hydrocarbons	31	17	2.53	(1.36-4.71)
Combustion exhaust/PAHs	**64**	**56**	**1.70**	**(1.16-2.57)**

* OR adjusted for child's age at diagnosis/reference date, sex, maternal race, and household annual income

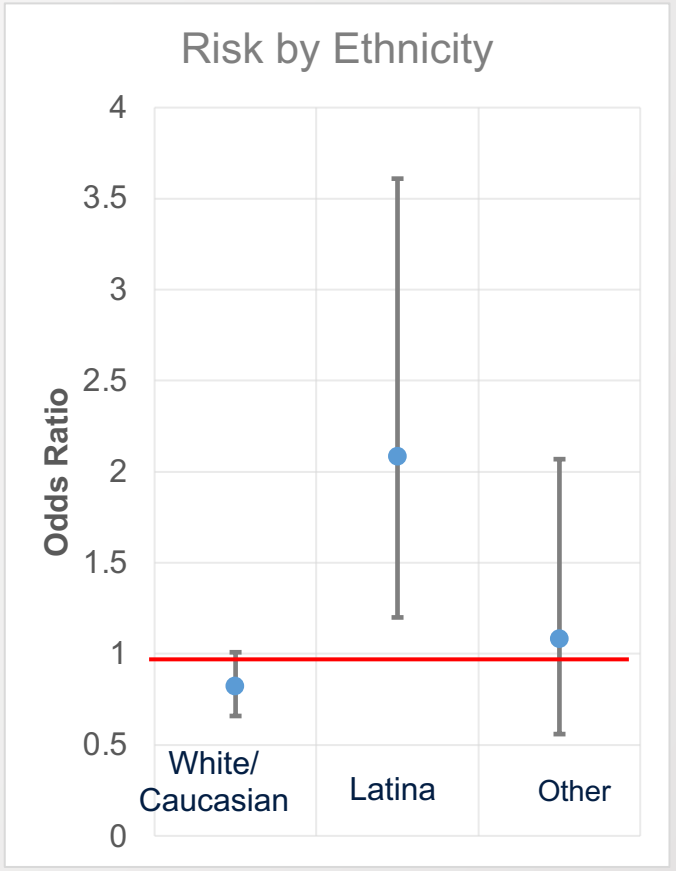
Source: Metayer, Env Research (2016)

Maternal Smoking during Pregnancy and Childhood Acute Myeloid Leukemia

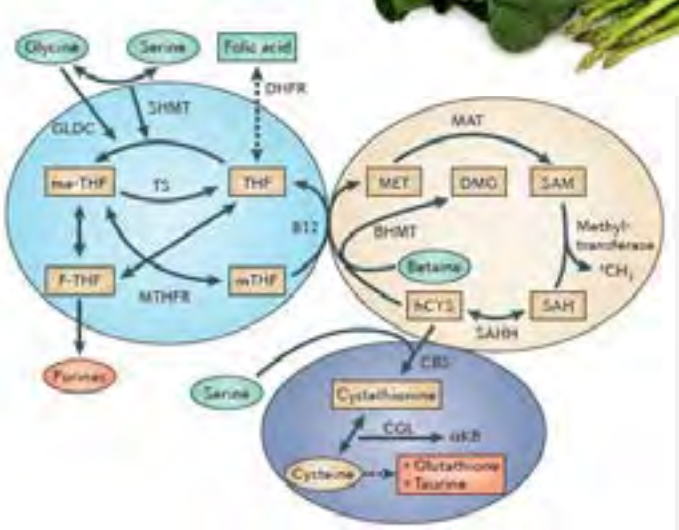
Childhood Cancer & Leukemia International Consortium



Source: Metayer, AJE, 2016



Sources of Folate Vitamins



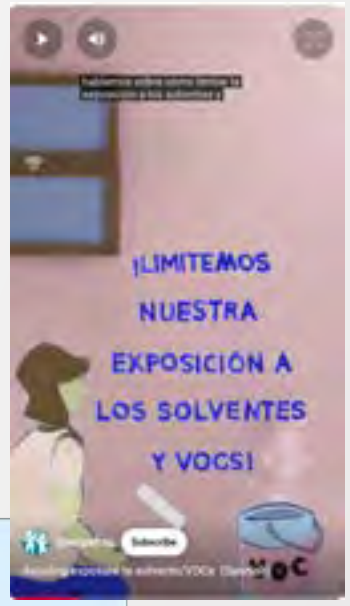
Prenatal Vitamin/Folate Supplement and Childhood Acute Lymphoblastic Leukemia

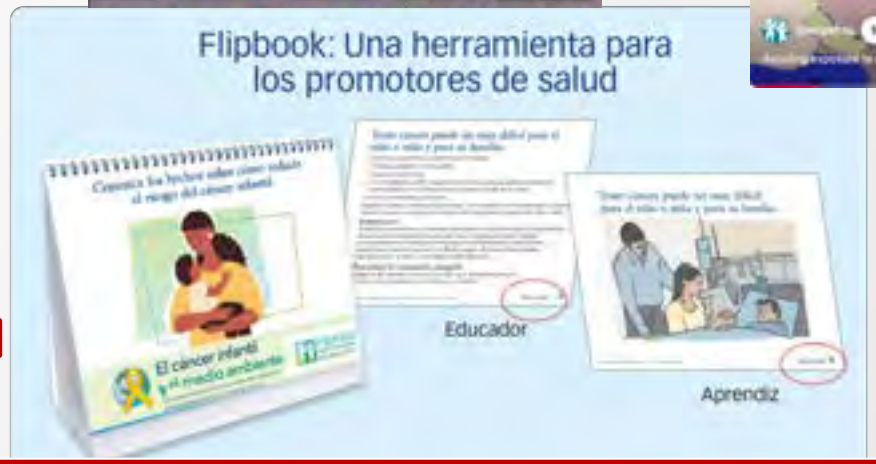
Intake	Latina mothers 234 cases, 296 controls	Non-Latina whites 265 cases, 374 controls
None	Ref.	Ref.
Moderate intake	1.12 (0.44-2.84)	1.25 (0.75-2.07)
High intake	0.36 (0.17-0.74)	0.76 (0.50-1.16)

Conditional logistic models adjusted for father's education, mother's education, household income, maternal age at child's birth, and nutrient intake from food. N= number of discordant pairs/triplets *For folic acid, moderate intake is >0 & <600 µg and high intake is ≥600 µg. For vitamins B12, B6, and riboflavin, moderate intake is >0 & <5 µg B12 and <1.5 mg B6 and riboflavin, and high intake is ≥5 µg B12 and ≥1.5 mg B6 and riboflavin.

Source: Singer, Cancer Causes Control, 2016

Research Translation & Outreach to Families, Community Health Workers & Clinicians





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THANK YOU – QUESTIONS?

Rising Rates of Testicular Cancer in Latino Men

Katherine A. McGlynn, PhD, MPH

Senior Investigator, Metabolic Epidemiology Branch,
National Cancer Institute (NIH/NCI)

Rising rates of testicular cancer in Latino men

Katherine A. McGlynn, MPH, PhD
Division of Cancer Epidemiology and Genetics
National Cancer Institute

NIH NATIONAL CANCER INSTITUTE

October 3, 2025

Most commonly occurring cancers in males in the U.S. all ages

1	Prostate
2	Lung and Bronchus
3	Colon and Rectum
4	Urinary Bladder
5	Melanoma of the Skin
6	Kidney and Renal Pelvis
7	Non-Hodgkin Lymphoma
8	Oral Cavity and Pharynx
9	Leukemia
10	Pancreas
11	Liver and Intrahepatic Bile Duct
12	Stomach
13	Myeloma
14	Esophagus
15	Thyroid
16	Brain
17	Tongue
18	**Testis**
19	Larynx
20	Tonsil

SEER-21 Registries, 2022

Most commonly occurring cancers in males in the U.S. ages 15-44 years

1	**Testis**
2	Lymphoma
3	Colon and Rectum
4	Non-Hodgkin Lymphoma
5	Melanoma of the Skin
6	Thyroid
7	Leukemia
8	Kidney and Renal Pelvis
9	Brain
10	Oral Cavity and Pharynx

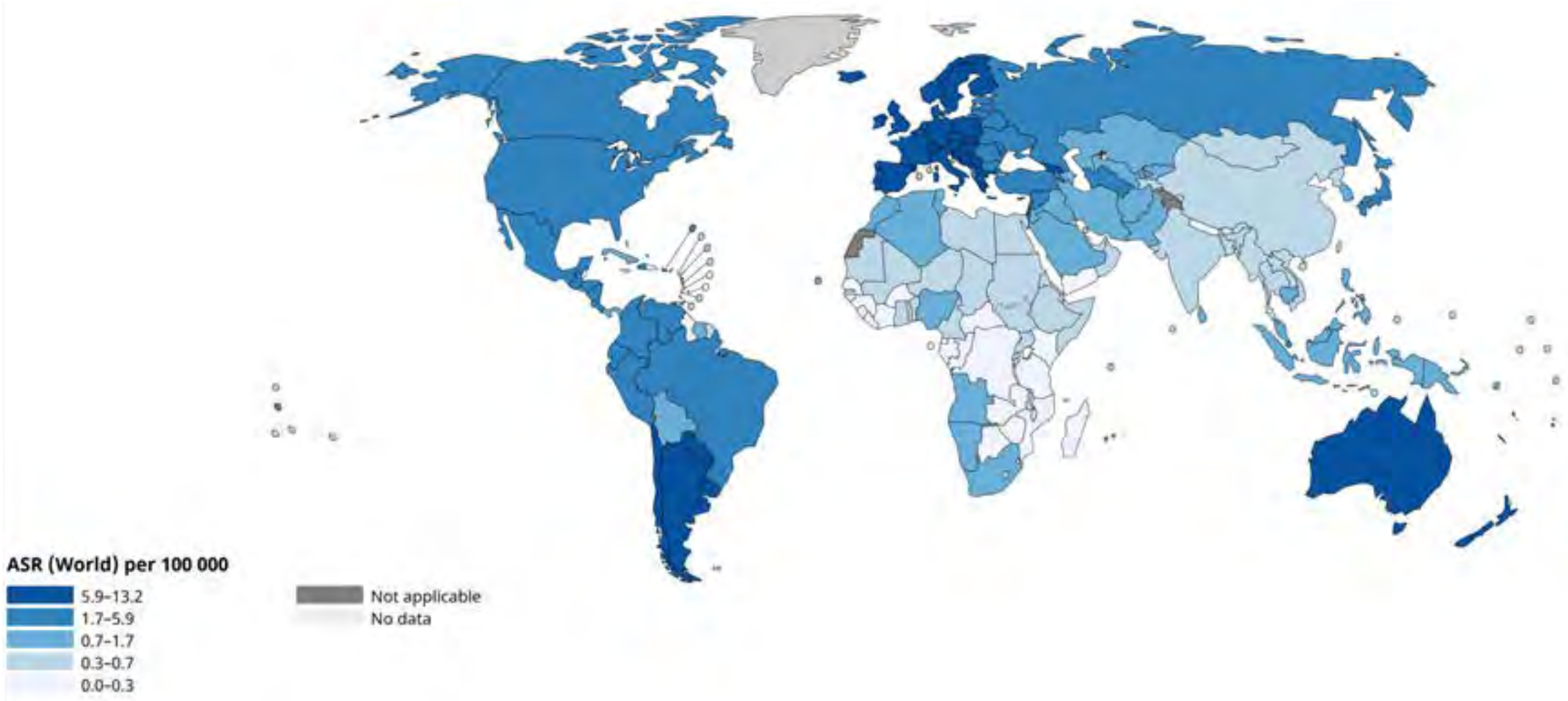
SEER-21 Registries, 2022

Most common cancers in males 15-39 yrs

	WORLD	Europe	North America	Latin America	Oceania	Asia	Africa
1	Thyroid	**Testis**	**Testis**	**Testis**	**Testis**	Thyroid	Kaposi sarcoma
2	**Testis**	Melanoma	Colorectum	Leukaemia	Melanoma of skin	Leukaemia	Liver
3	Leukaemia	Hodgkin lymphoma	Thyroid	NHL	Colorectum	Oral cavity	NHL
4	NHL	Brain	NHL	Brain	NHL	Colorectum	Colorectum
5	Colorectum	NHL	Leukaemia	Thyroid	Hodgkin lymphoma	Brain	Leukaemia
6	Brain	Thyroid	Hodgkin lymphoma	Colorectum	Leukaemia	Liver	Hodgkin lymphoma
7	Liver	Leukaemia	Brain	Hodgkin lymphoma	Thyroid	NHL	Brain
8	Oral cavity	Colorectum	Melanoma	Prostate	Brain	Lung	Prostate
9	Hodgkin lymphoma	Kidney	Kidney	Stomach	Kidney	**Testis**	Nasopharynx
10	Lung	Lung	Lung	Lung	Lung	Nasopharynx	Stomach
							Oesophagus
							Lung
							Testis

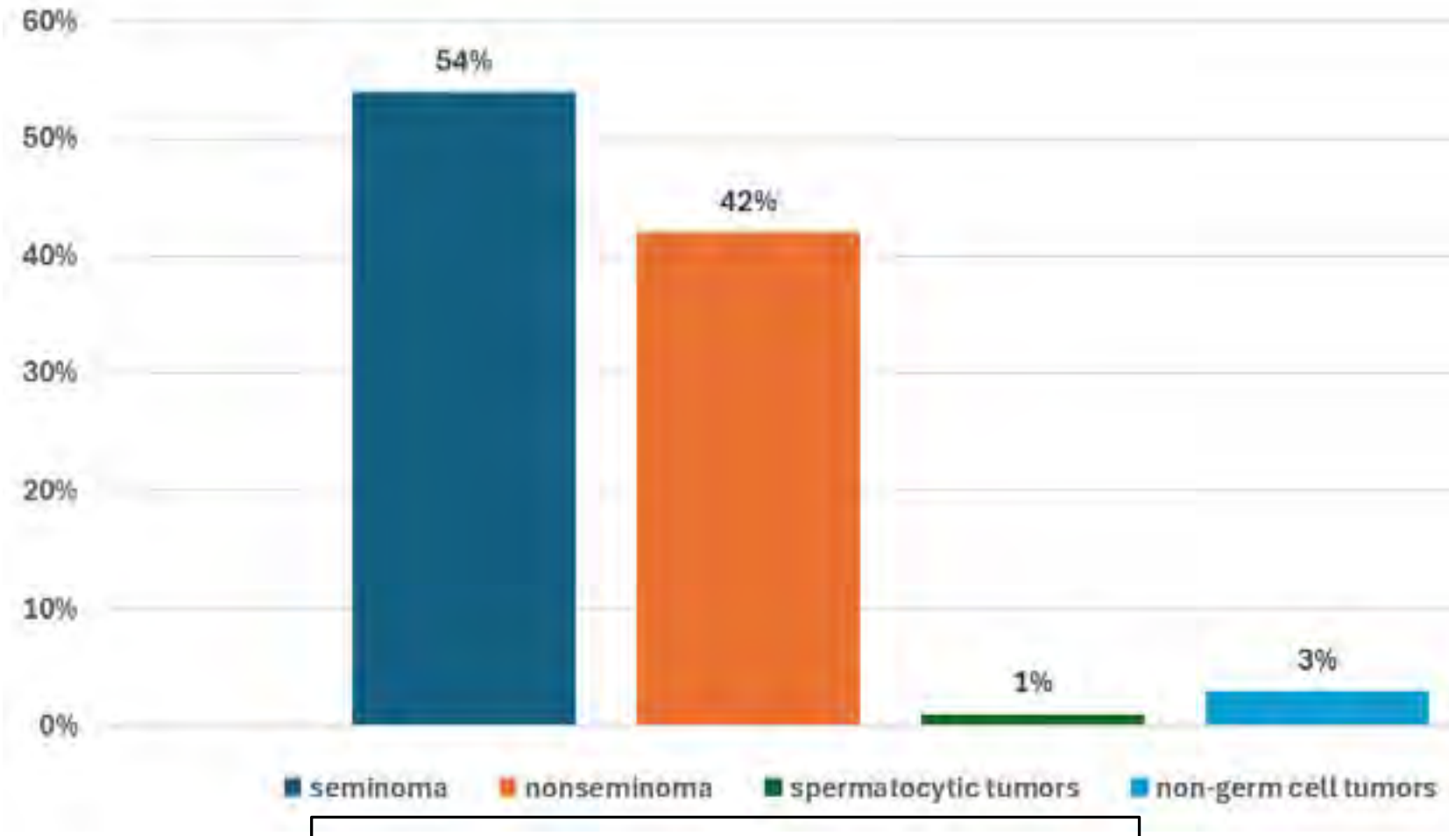
Globocan 2022; https://gco.iarc.who.int/today

Testicular cancer incidence



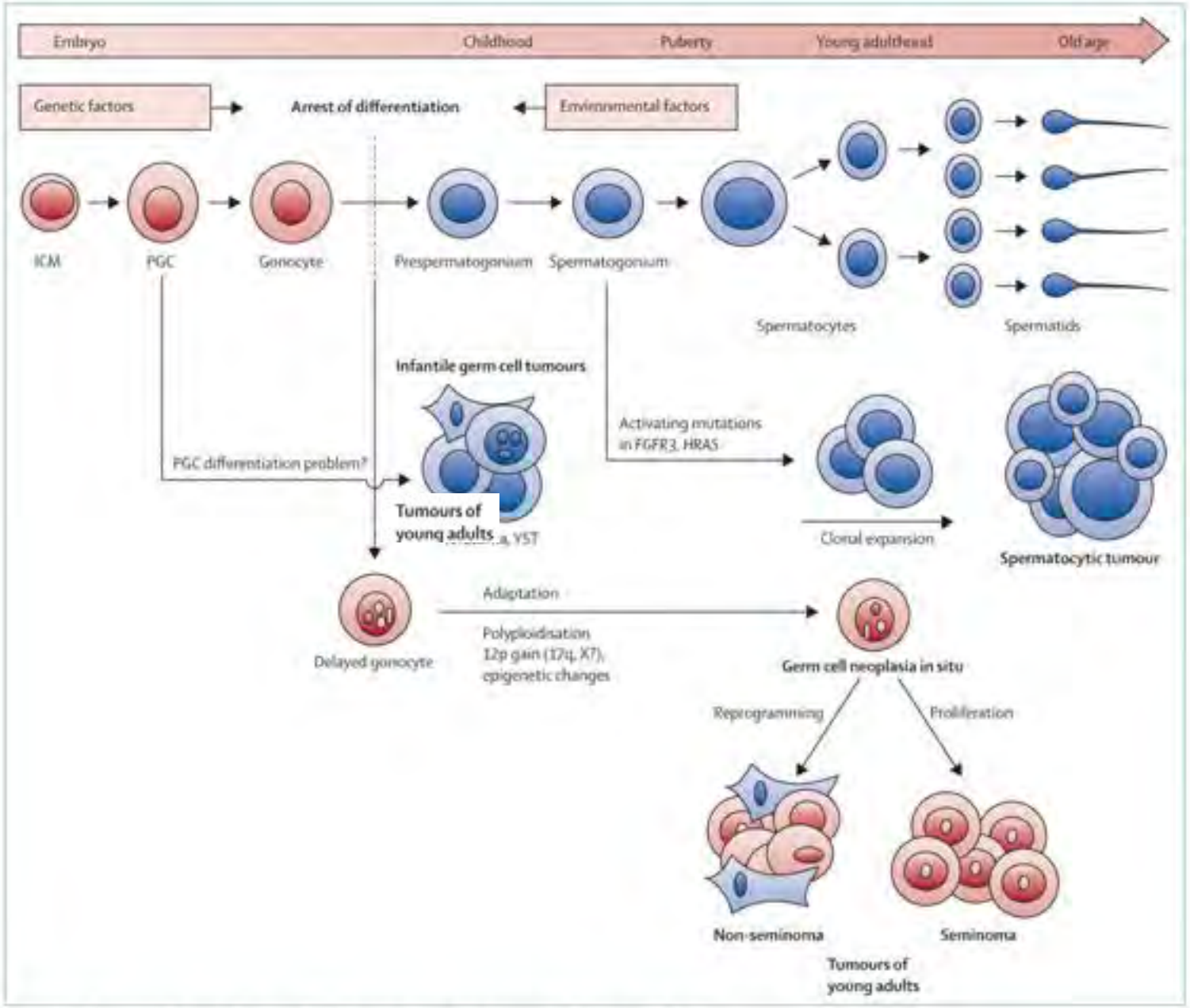
Globocan 2022; https://gco.iarc.who.int/today

Testicular cancer histology



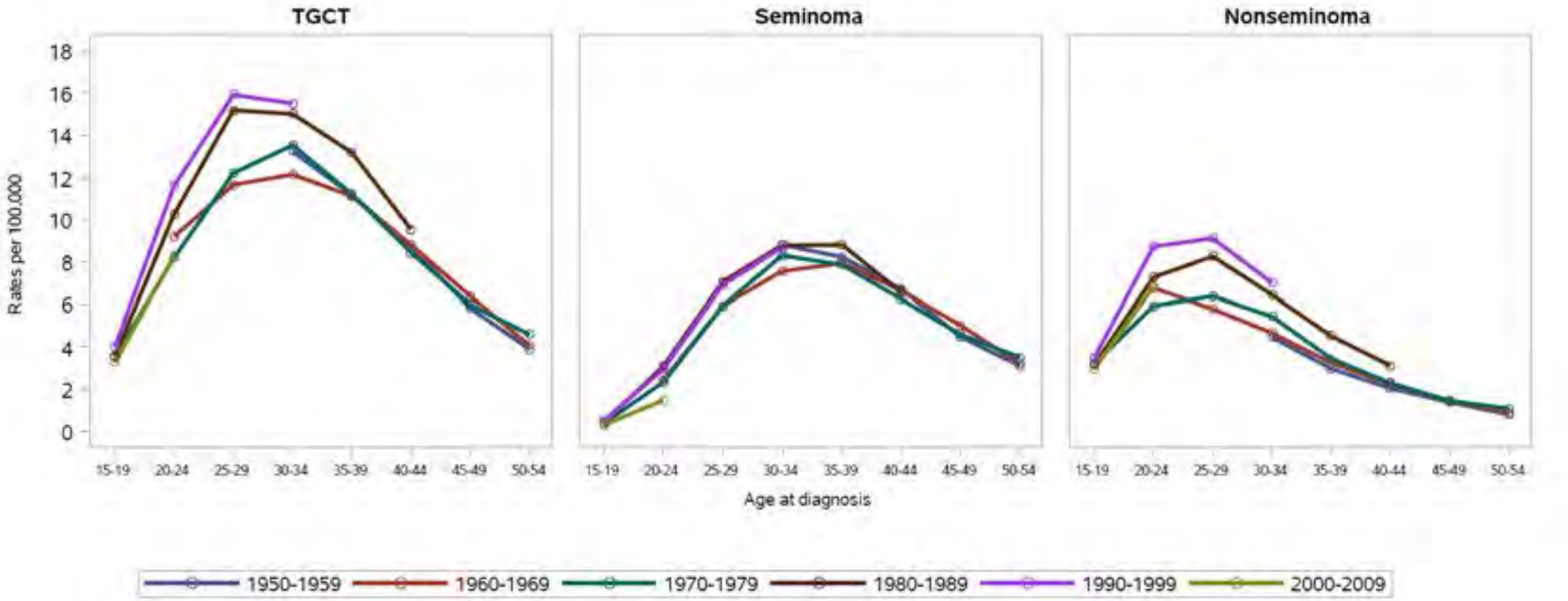
Testicular Germ Cell Tumors

In utero origin of TGCT



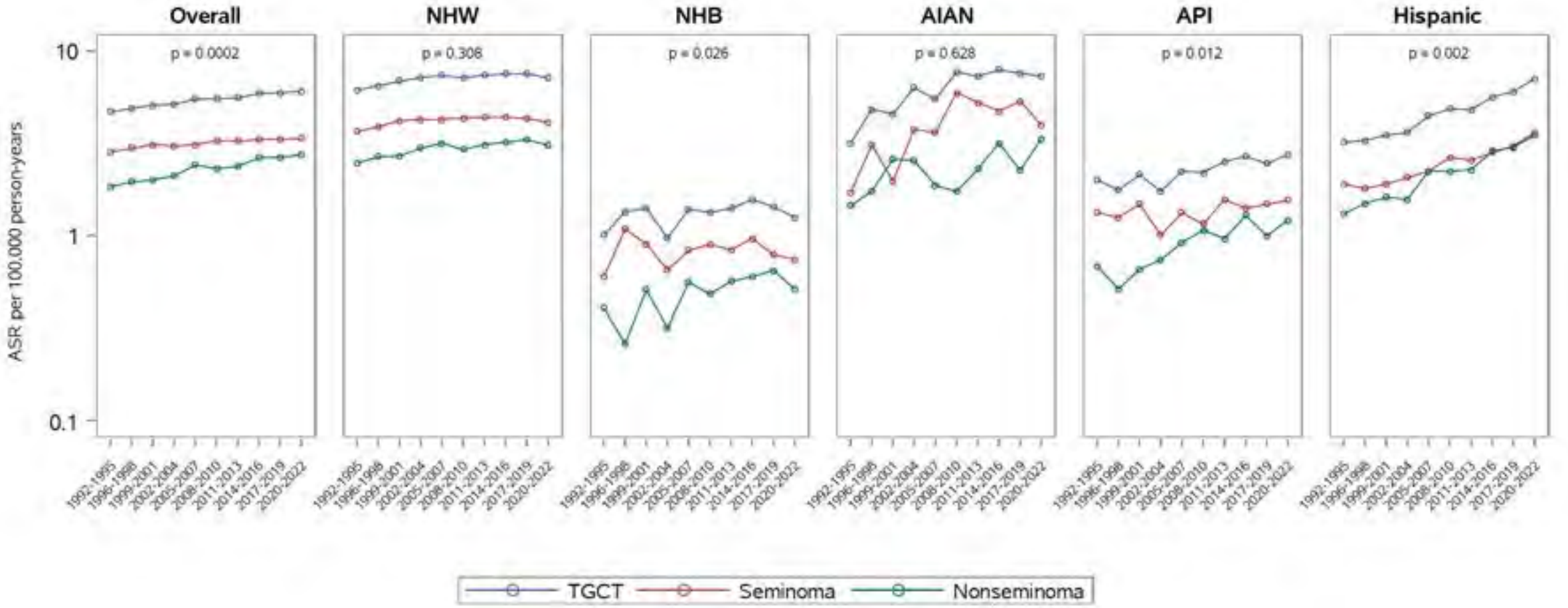
Rajpert-De Meyts, Lancet 2016;387:1762-74

TGCT incidence rates by age



SEER-12 registries, 1992-2022

TGCT incidence rates in U.S. males by race and ethnicity



SEER-12 registries, 1992-2022

TGCT incidence by median age at diagnosis, 2020-2022

Median age at diagnosis

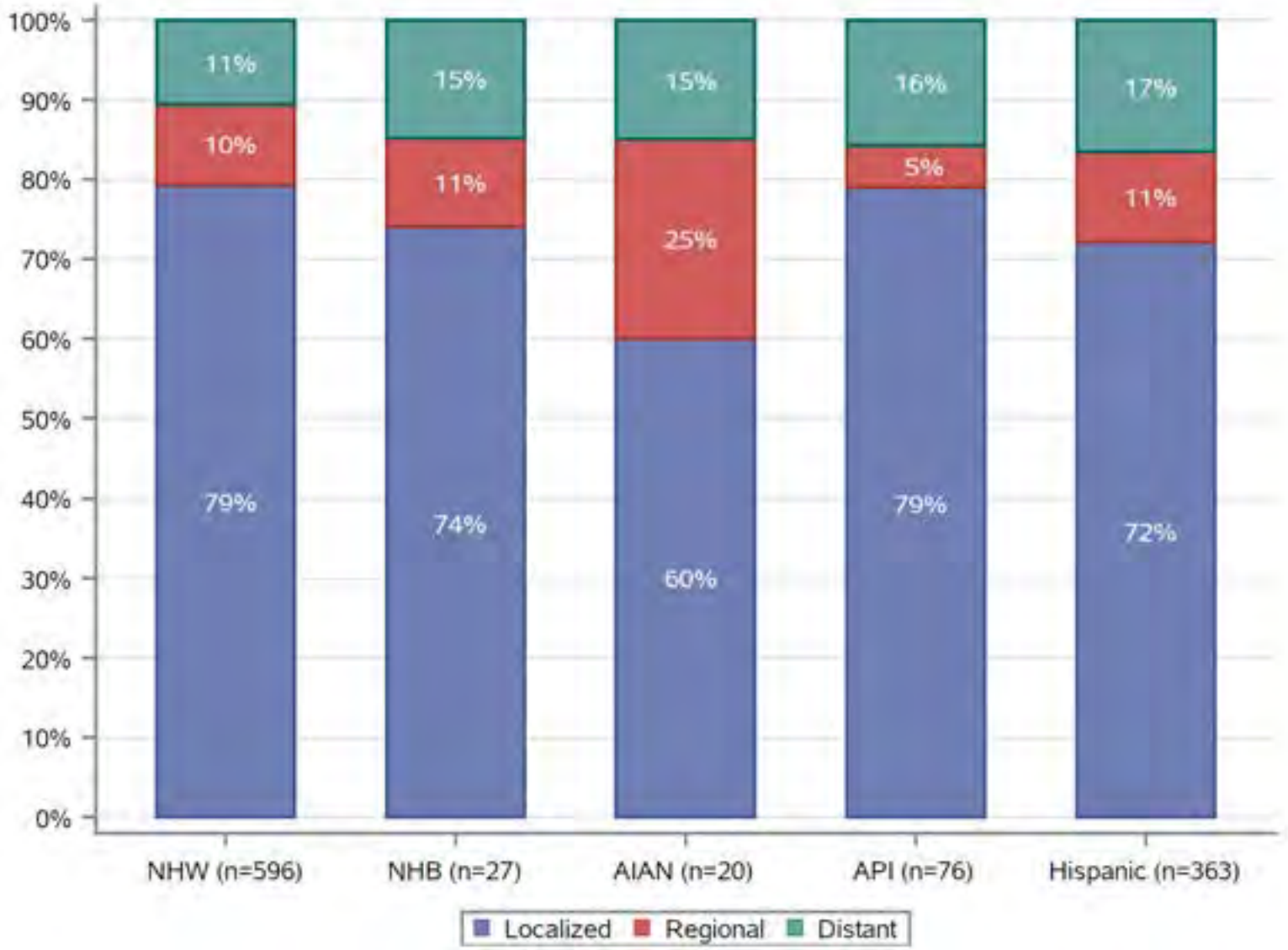
	TGCT	Seminoma	Nonseminoma
Overall	33	36	29
Non-Hispanic White	35	38	31
Non-Hispanic Black	35.5	37	30
Am Indian/Alaska Native	30	37	24
Asian/Pacific Islander	32	36	29
Hispanic	**29**	**33**	**26**

Median age of men

Overall	37.7
Non-Hispanic White	44.0
Non-Hispanic Black	34.3
Am Indian/Alaska Nat	27.0
Asian	37.0
Pacific Islander	25.4
Hispanic	**30.1**

SEER-12 registries, 1992-2022

TGCT incidence by stage at diagnosis, 2022



SEER-12 registries, 1992-2022

TGCT relative 5-year survival for diagnoses in 2016-2017

	Percent five-year survival		
	TGCT	**Seminoma**	**Nonseminoma**
Overall	95.6	98.3	92.4
Non-Hispanic White	97.1	98.5	94.8
Non-Hispanic Black	86.2	93.0	80.2
American Indian/Alaska Native	95.6	92.2	100.0
Asian/Pacific Islander	93.8	96.7	90.5
Hispanic/Latino	**92.7**	**97.9**	**88.8**

SEER-12 registries, 1992-2022

Risk associations for TGCT

- Part of the Testicular Dysgenesis Syndrome:
  - Cryptorchidism (undescended testis)
  - Hypospadias (urethra opening on the underside of the penis)
  - Impaired spermatogenesis
  - TGCT
- Personal or family history of TGCT
- Low birthweight
- Shorter gestational age
- Being a twin
- Taller stature
- Cannabis
- Perfluorooctanoic acid (PFOA)
- Organochlorine pesticides

Calls to action

- Men (15-44 years): practice monthly exams
- Parents: inform sons if they were born with cryptorchism or hypospadias
- Researchers: bank biosamples for future studies

October 24th, 2025

Breast Cancer Awareness Month

Coming up on the next

Friday Forum Series

Cristhian Gutierrez Huerta, 6th-year Medical Student, National President, LMSA

Elena Rios, MD, MSPH, MACP, President, National Hispanic Health Foundation

Eric J. Small, MD
Medical Oncologist, UCSF
President, ASCO

Javier Rosario, Licensed Clinical and Oncology Social Worker, Blood Cancer United (LLS)

Pat Levitt, PhD
Chief Scientific Officer and Director, Saban Research Institute, Children's Hospital of LA

Francisco Cartujano-Barrera, MD
Assistant Professor, Dept Public Health Sciences, University of Rochester

Ysabel Duron, BA
TLCI Executive Director

HR 1. Cristhian Gutierrez Huerta, 6th Year MD/PhD Student, Elena Rios, MD, MSPH, MACP

HR 2. Eric Small, MD, Javier Rosario, LCSW, QS, OSW-C, Miriam Juarez-Vargas, BA

HR 3. Pat Levitt, PhD , Francisco Cartujano-Barrera, MD, Ysabel Duron, BA

SURVEY

Before you leave be sure to take our post-Forum survey.
We want to know your thoughts.

ENGLISH

SPANISH

THANK YOU!

The Latino Cancer Institute Friday Forum Series Team

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THANK YOU

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