

Driving Improvements in Population Health and Substance Use Disorders: *How Far Upstream?*

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McGovern Award Plenary

11/4/2021

Disclosures

- NuTopia (consulting re PBS script)

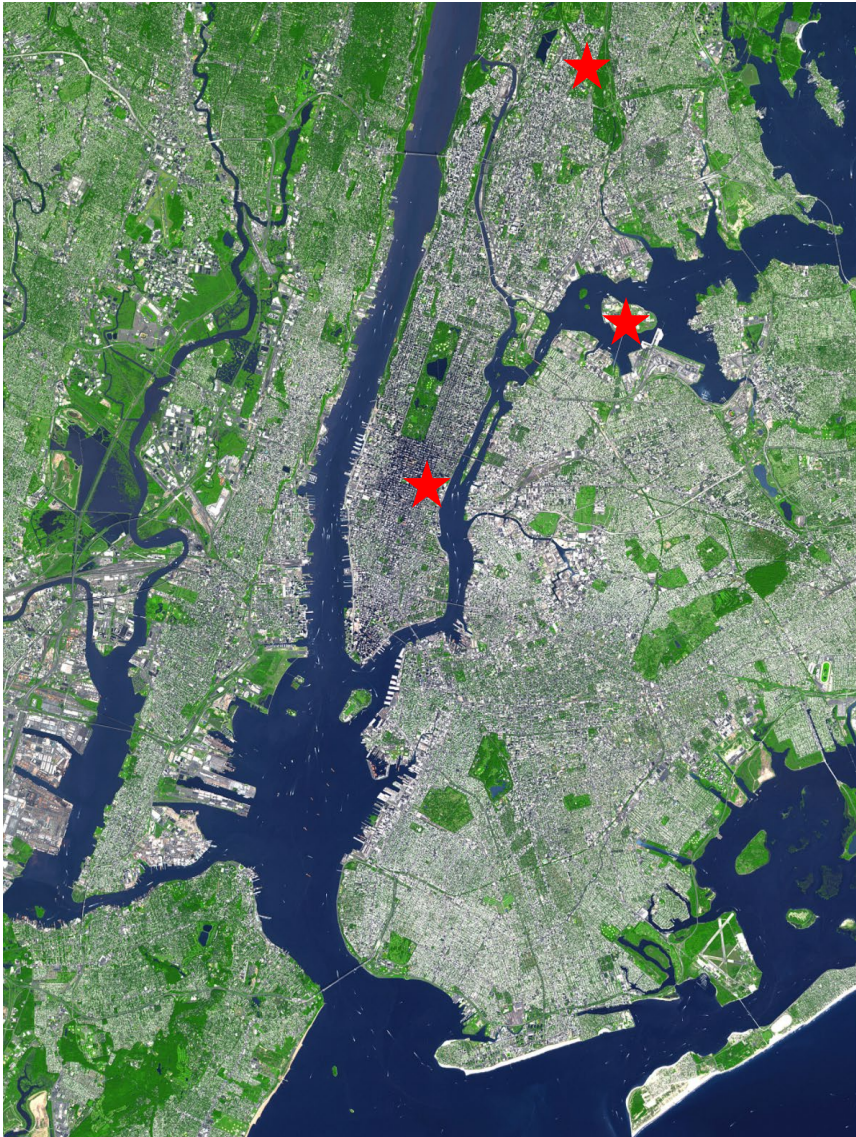
Research support

- NIDA
- Robert Wood Johnson Foundation
- PCORI / PCRF
- Robin Hood Foundation

A traveler's story

- First half of career: care and care delivery for persons with OUD, HIV/AIDS, TB – and related research
- Drawn to population health: its scale and focus on upstream drivers in the production of health
- But, few familiar faces! Almost totally new terrain.
- How's that?
- Discover that these worlds share some important paradigms.
- How to strengthen bridges between them?

My NYC circuit



Riker's Island

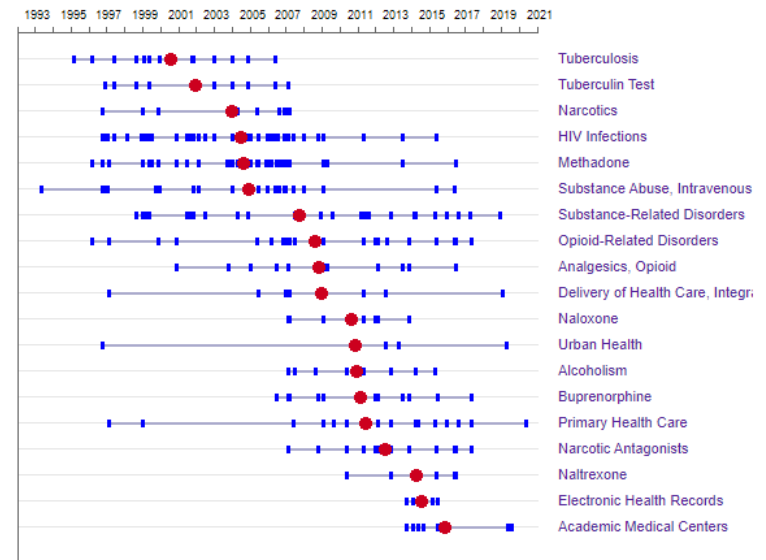
Bellevue/NYU

Montefiore/Einstein

- MMTP/SATP
- HIV - Amb Care Network
- Div of Substance Abuse

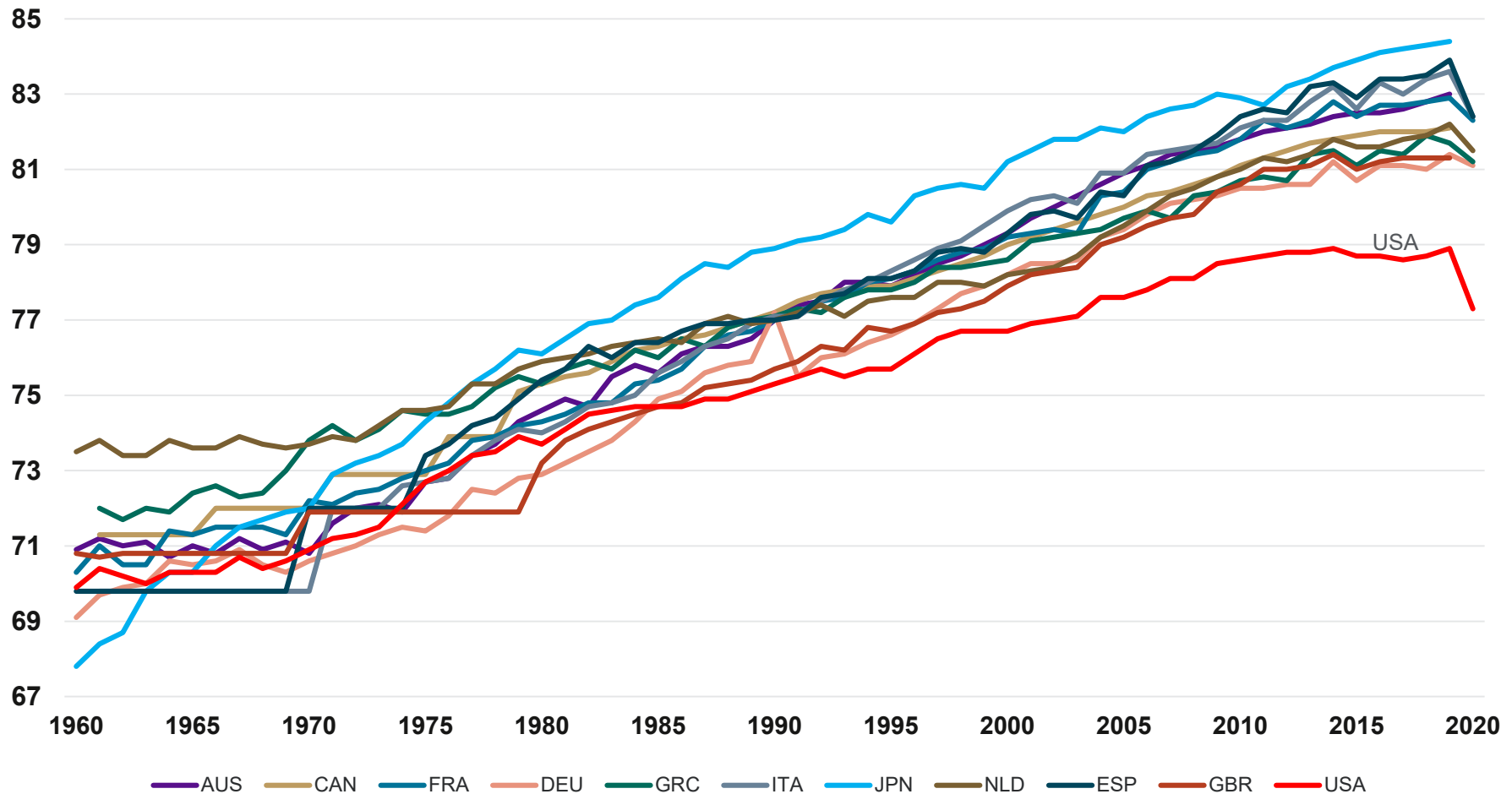
NYU

- Div of General Internal Medicine
- Dept of Population Health

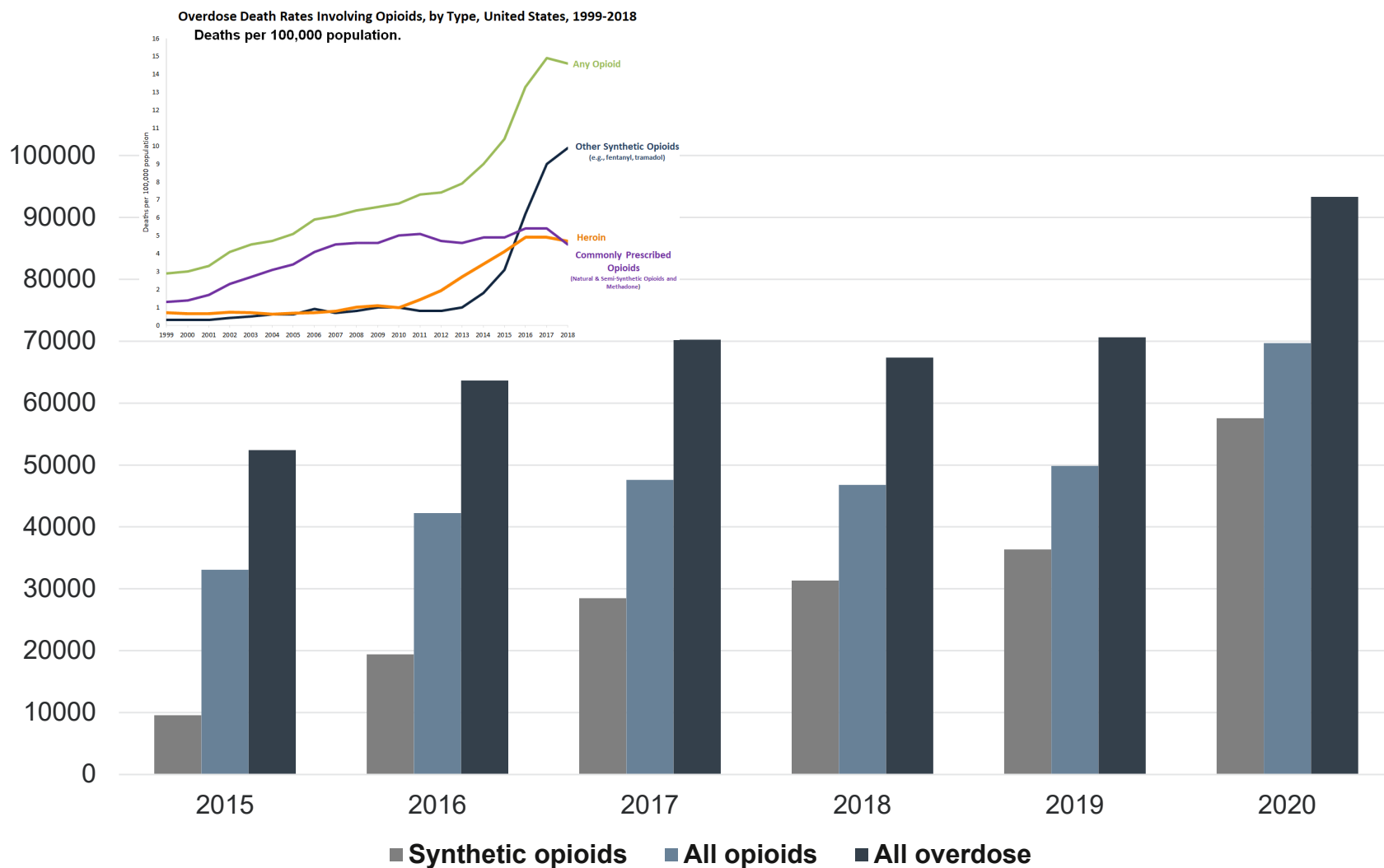


Life Expectancy is Declining in the US

Life expectancy at birth, selected high-income countries, 1960-2020



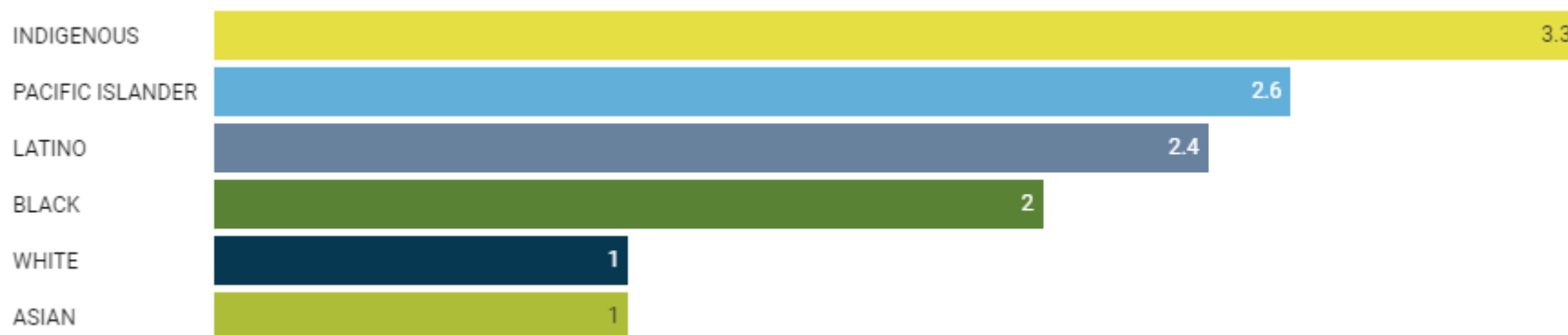
Drug-Involved Overdose Deaths, US: 2015-2020



Opioid-related deaths, selected OECD countries, 2011 - 2016

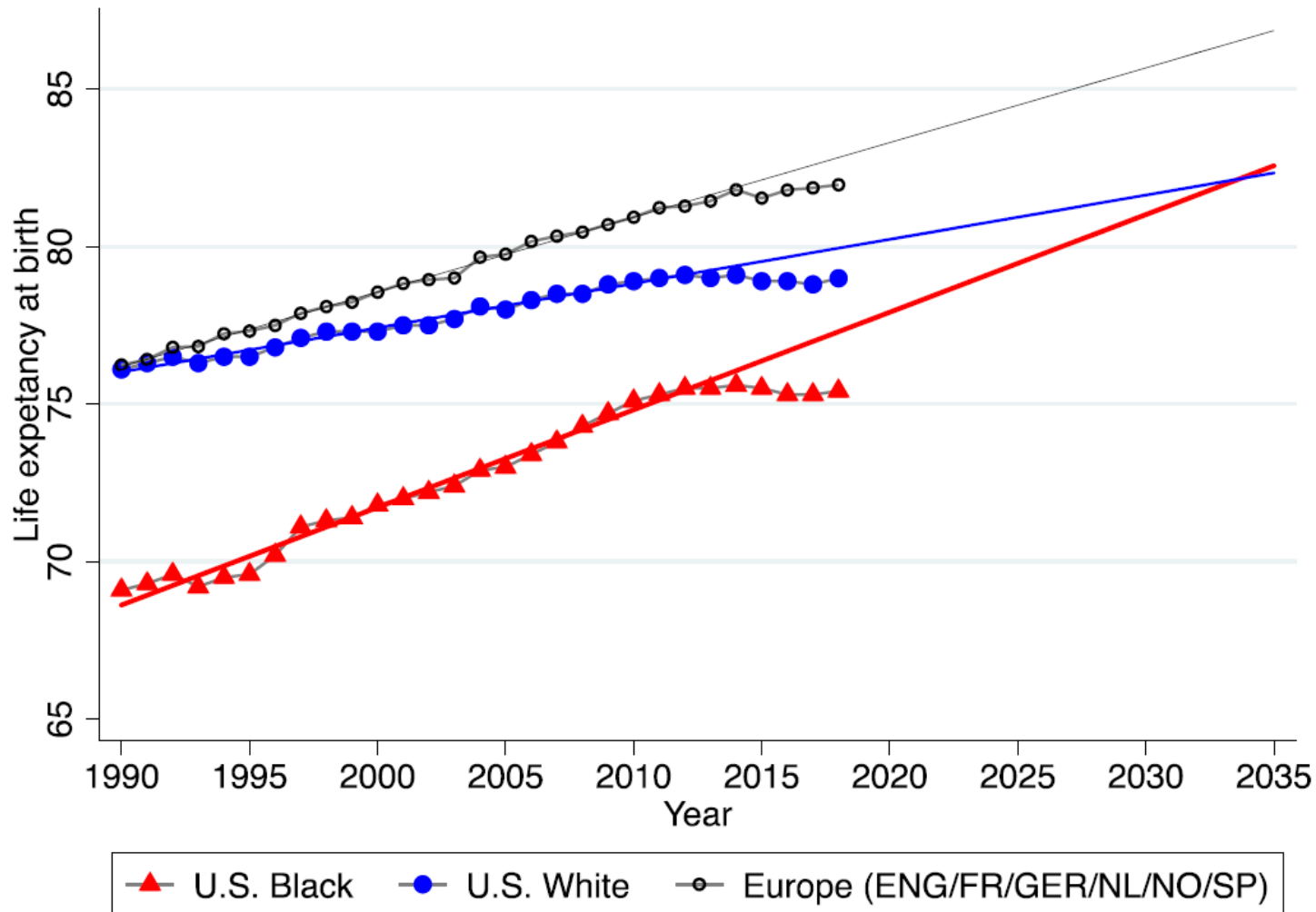


Relative risk of mortality from COVID in US, age-adjusted

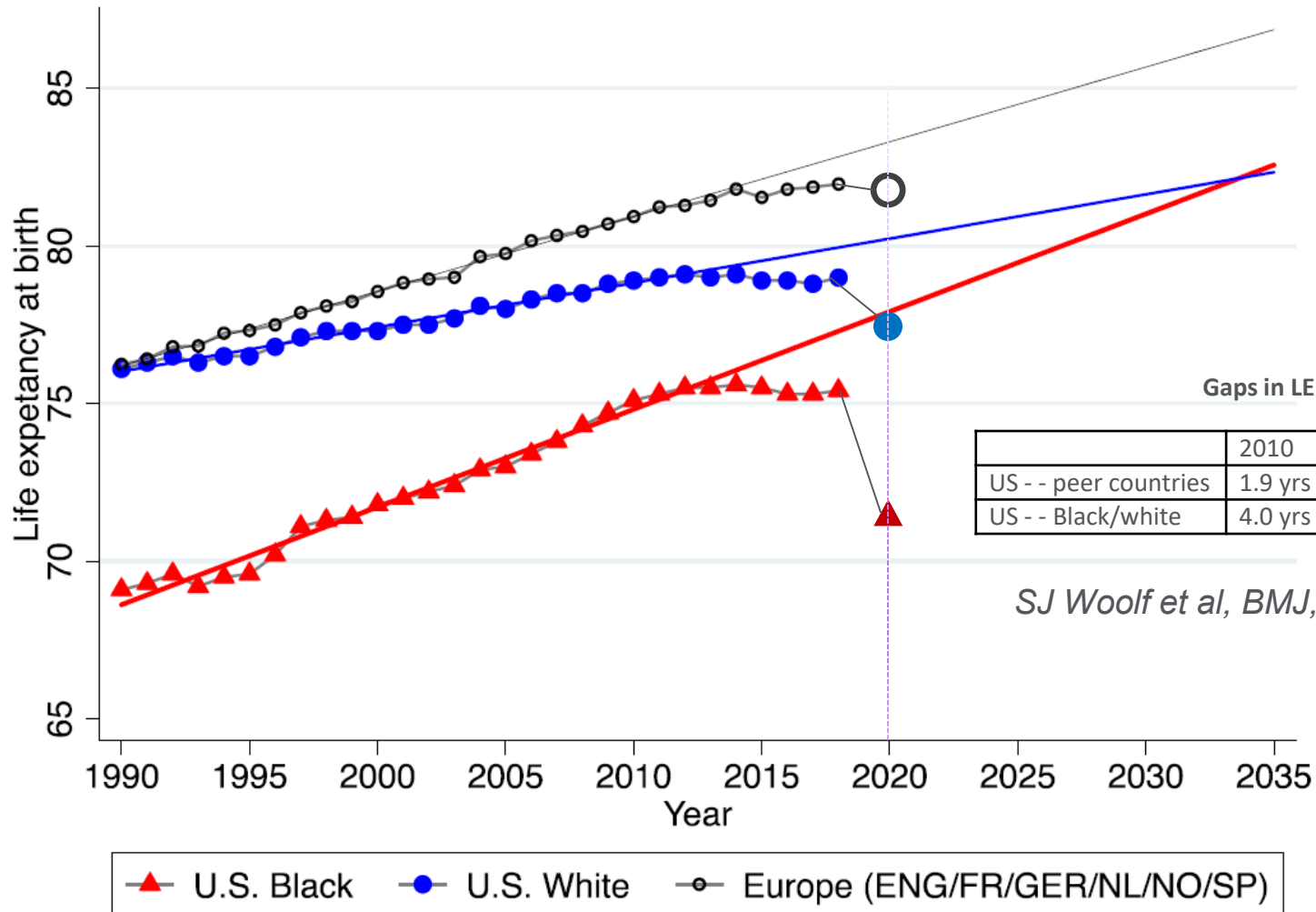


APM Research Lab (through 3/21)

Life expectancy for Black Americans, White Americans, and six European countries, extrapolated to 2035 fitting a linear trend through 1990-2012



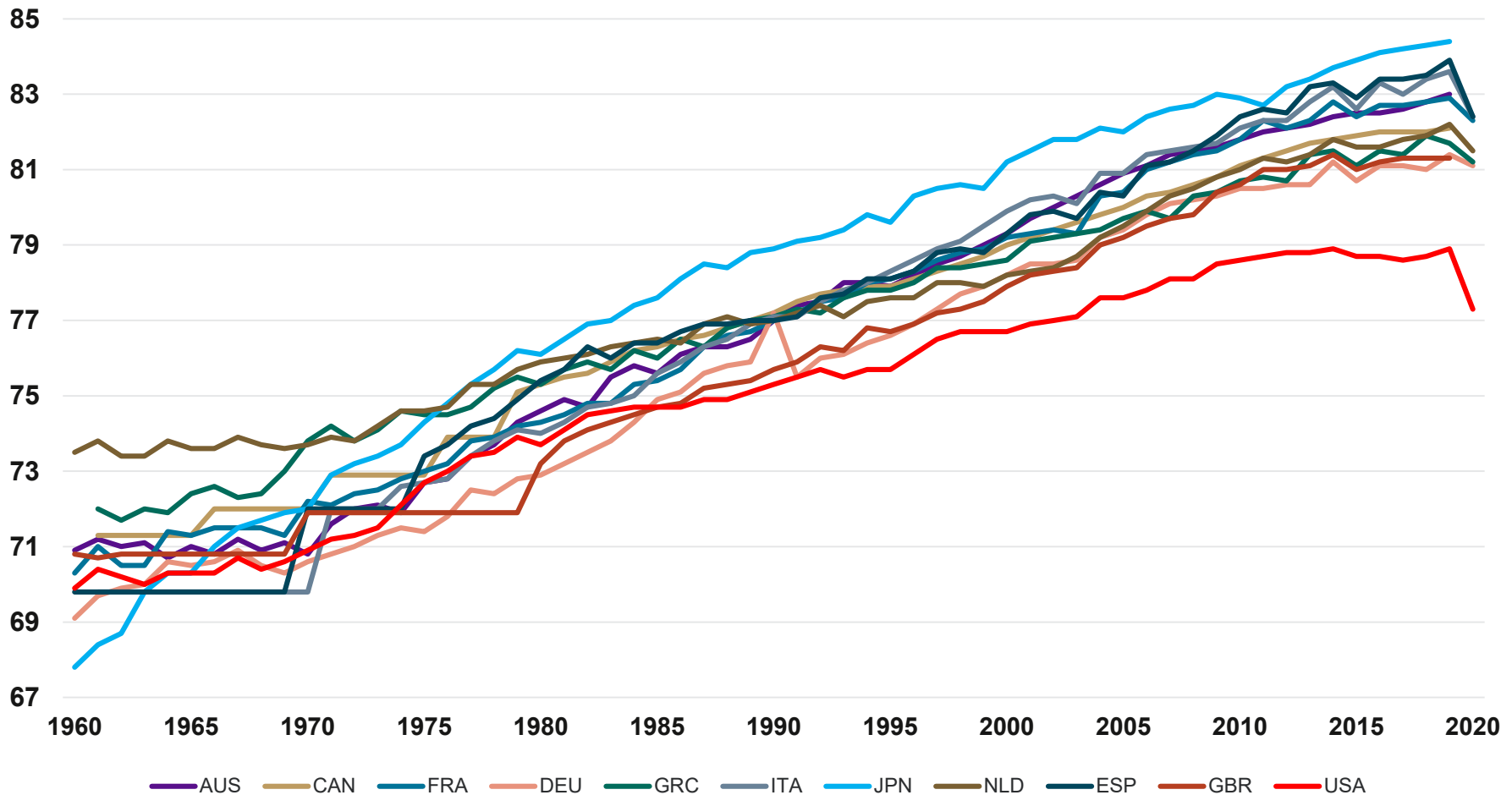
Impact of COVID-19 on life expectancy for Black Americans, White Americans, and European countries, 1900 - 2020



H Schwandt et al, NBER, 2021

Life Expectancy is Declining in the US

Life expectancy at birth, selected high-income countries, 1960-2020



What produces health SUD?

Proportional Contribution to Premature Death

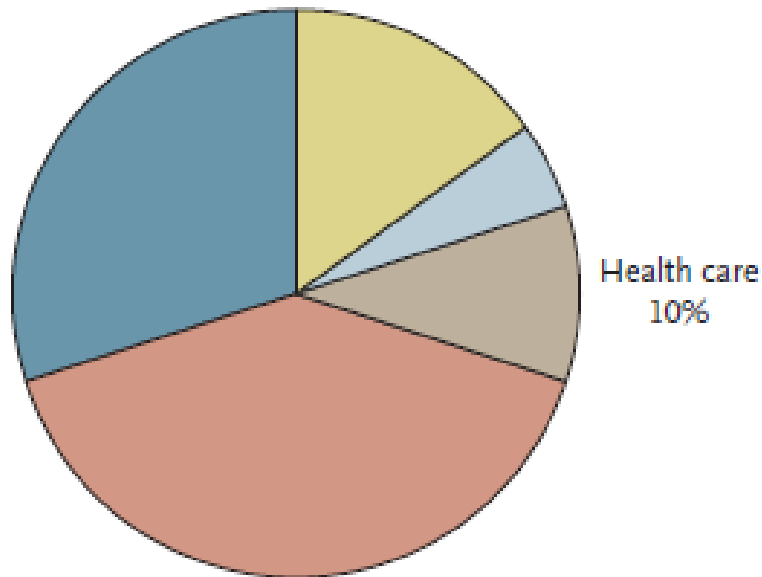


Figure 1. Determinants of Health and Their Contribution to Premature Death.

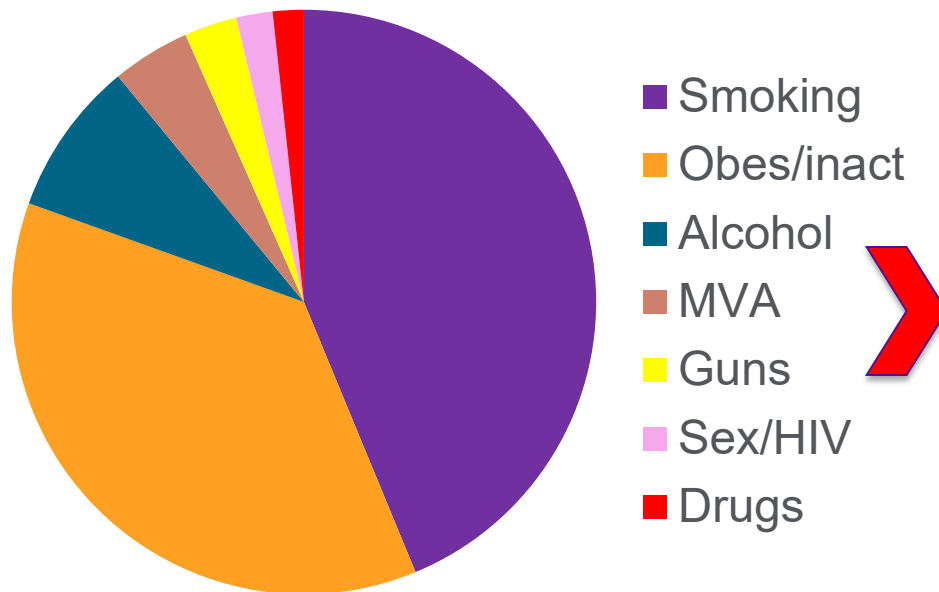
Adapted from McGinnis et al.¹⁰

- Social circumstances
- Environmental exposure
- Genetic predisposition
- Behavioral patterns
- Socioeconomic status
- Racism

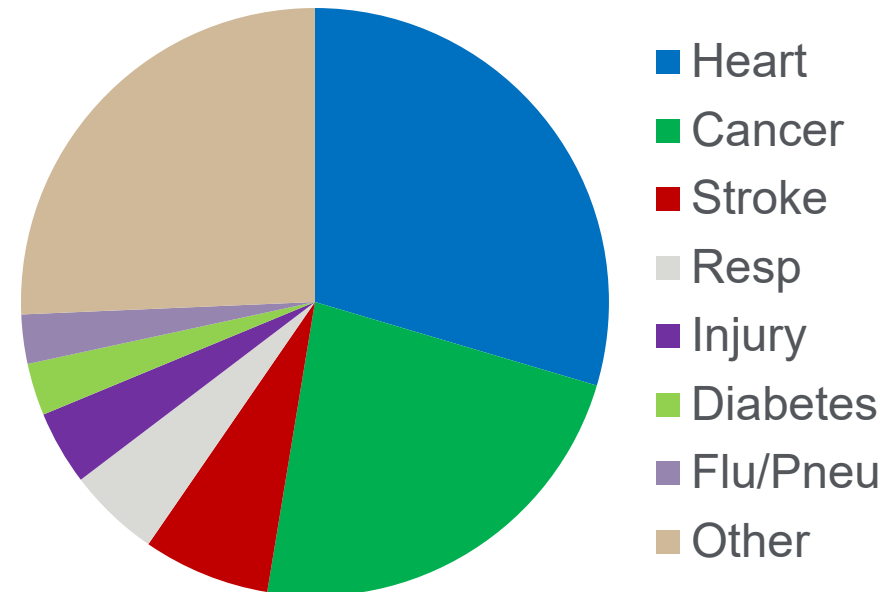
Adapted from Schroeder
NEJM 2007

Mortality, USA - Year 2000: Diagnosed vs. behavioral causes

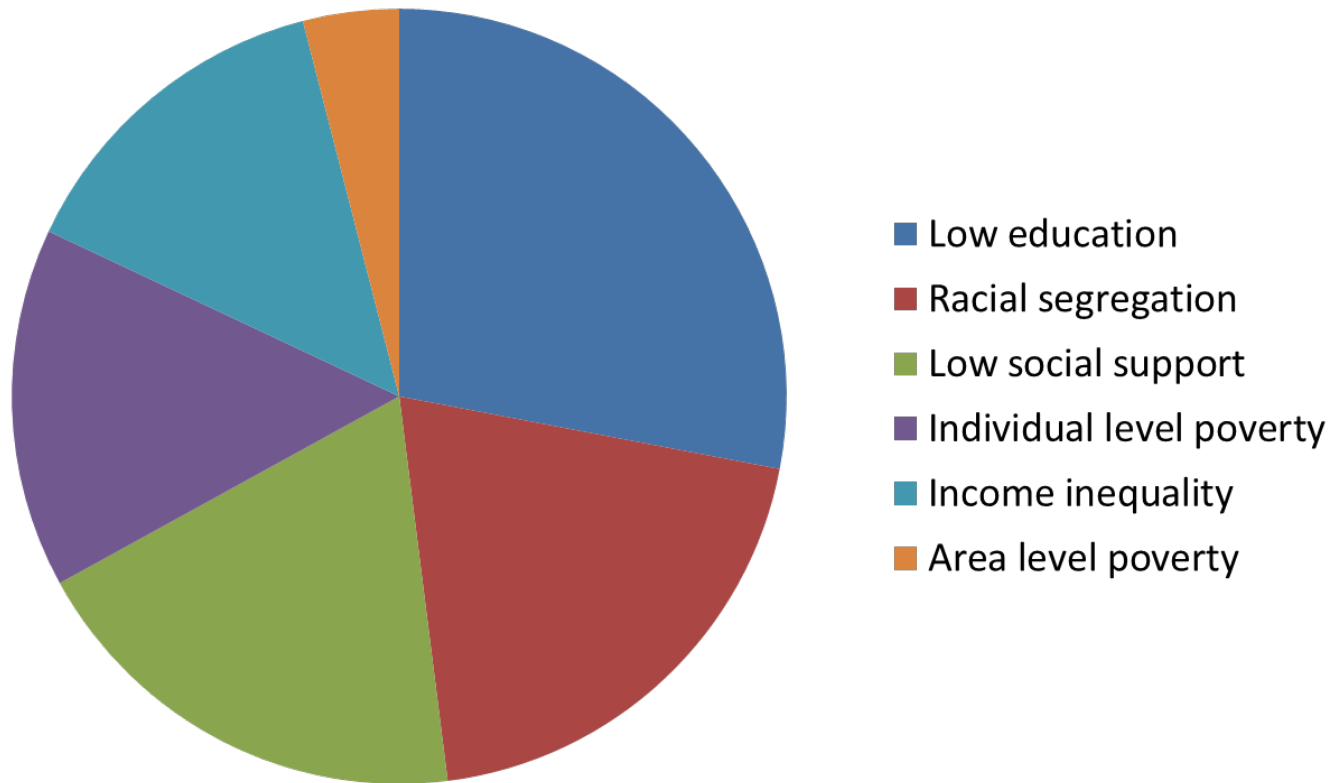
Underlying Behavioral Causes
N = 1.2 million



Diagnosed Causes
N = 2.4 million

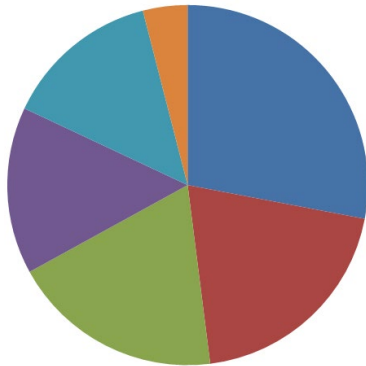


Estimated Deaths due to social conditions in the US, 2011



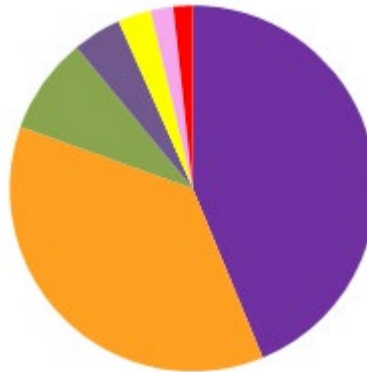
So – which is it?

SDH



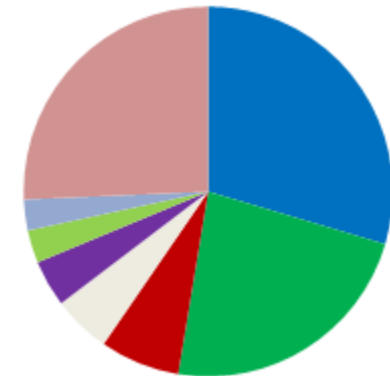
- Low education
- Racial segregation
- Low social support
- Individual level poverty
- Income inequality
- Area level poverty

Behavior



- Smoking
- Obes/inact
- Alcohol
- MVA
- Guns
- Sex/HIV
- Drugs

Disease

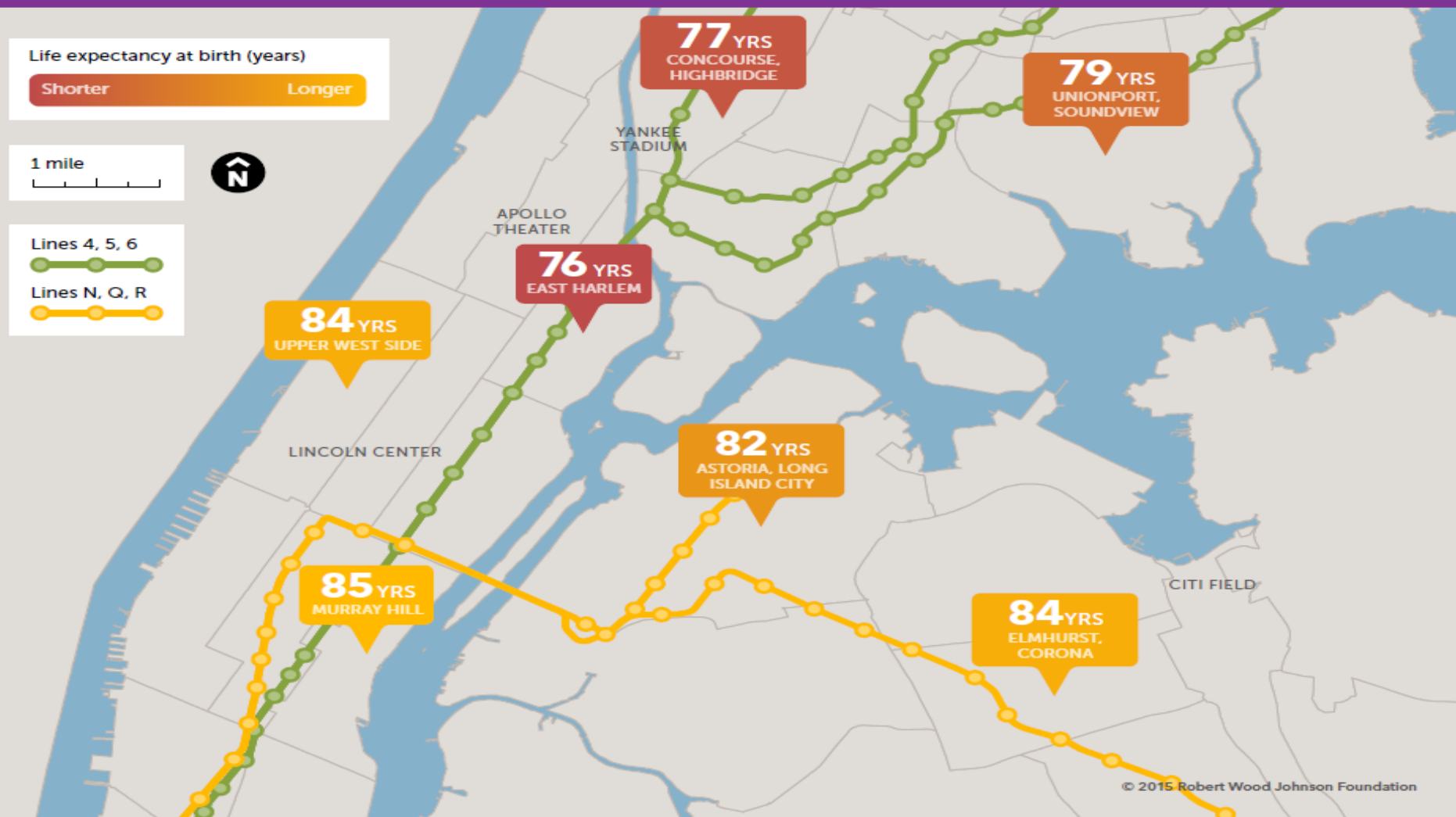


- Heart
- Cancer
- Stroke
- Resp
- Injury
- Diabetes
- Flu/Pneu
- Other

Short Distances to Large Gaps in Health

Follow the discussion

#CloseHealthGaps



Fundamental Causes of Health Inequities

- Association persists despite radical changes in risk factors and disease

SES (Phelan & Link, 1995)

Embodies an array of resources (money, knowledge, prestige, power, beneficial social connections) that protect health no matter what mechanisms are relevant at any given time

Racism (Phelan & Link, 2015)

“racism, largely via inequalities in power, prestige, freedom, neighborhood context, and health care, also has a fundamental association with health independent of SES”

From cause to outcome: pathways

Fundamental cause	Exposure	Risk (example)	General mechanism	Proximal mechanism	Health outcome
Racist drug policies	- Over-policing, incarceration	- Violent injury - Death			- Violent injury - Death
		- Social disruption - Sustained stress - Etc	- Chronic HPAA activation	- Up-reg cortisol & inflammatory response - Reward dysreg	- CVD - SUD
Low SES	- Food insecurity - Marketing of SSB, hi-fat foods	- ↑ dietary risk	- Metabolic syndrome	Infusion of lipids, sugars	- CVD
Low SES	- Low wage employment	- Lack capital (\$400) for emergencies - Inability to afford Rx, attend med appts	- Lack of preventive care - Medication “nonadherence”	Undermining effective Tx (for CVD, SUD, etc)	- CVD - SUD
Racist zoning policies	- Redlining → chronic disinvestment	- Hollowed-out support for early childhood	- Poor readiness on K entry - High ACEs	Lifecourse impact through all of the above	- CVD - SUD

Or, replace outcome with:
CA, LBW, maternal mortality, depression...

Redlining: *Richmond, VA*

A

High demand areas with room for new residential growth. Lenders were “willing to make their maximum loans” in these “hot spots during good times or bad.

B

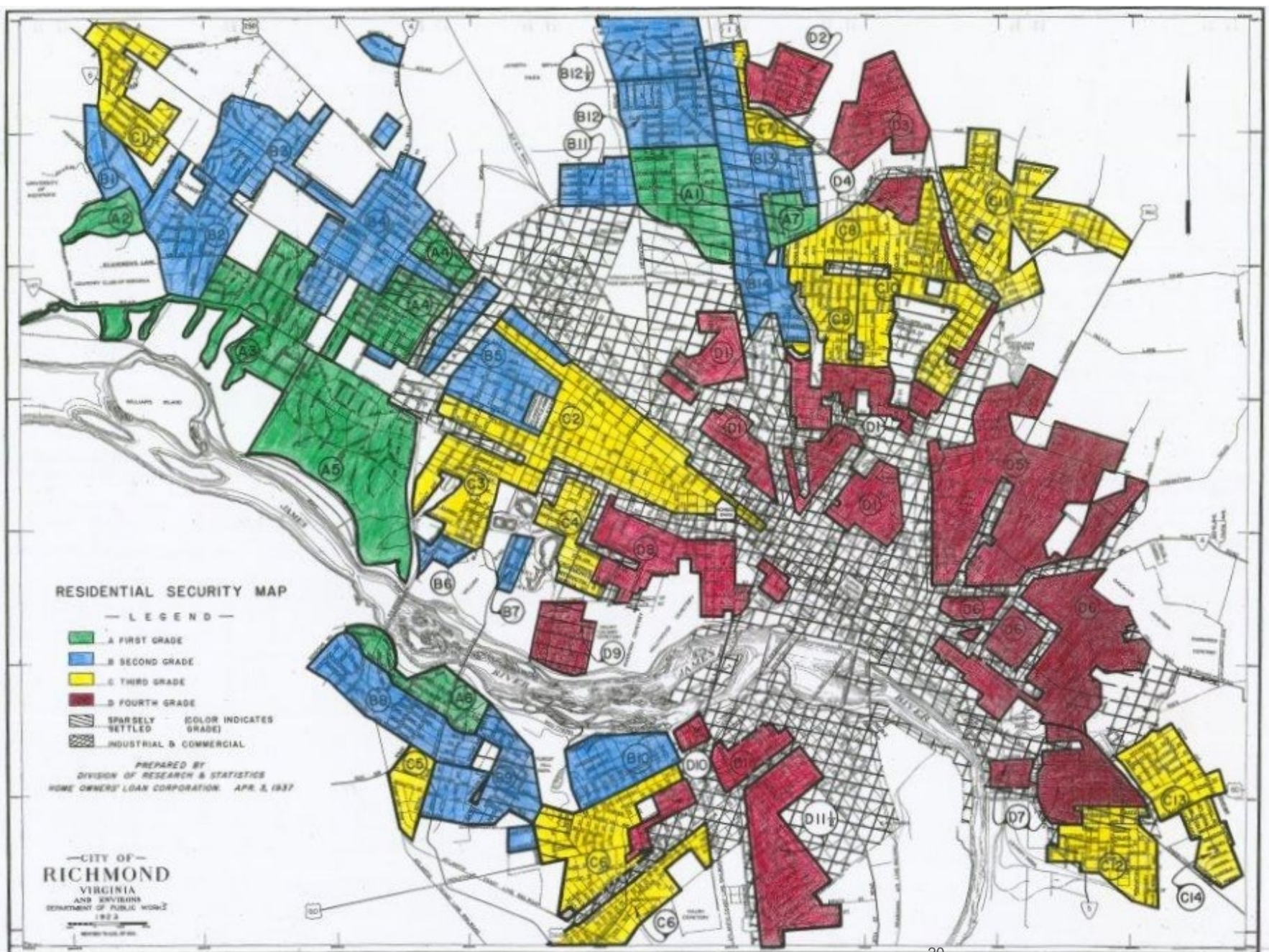
Completely developed neighborhoods. Not as desirable as the hot spots, but still good.

C

Older neighborhoods with poorly maintained homes. In a transitional period and becoming obsolete. Expiring or missing deed restrictions meant “lower grade populations” such as African Americans could infiltrate the neighborhood and disrupt the homogeneity.

D

Fully declined areas—poor property conditions, low homeownership rates, undesirable population. Denied investment by lenders—seen as extremely high risk. Applied to ALL African American areas in Richmond.

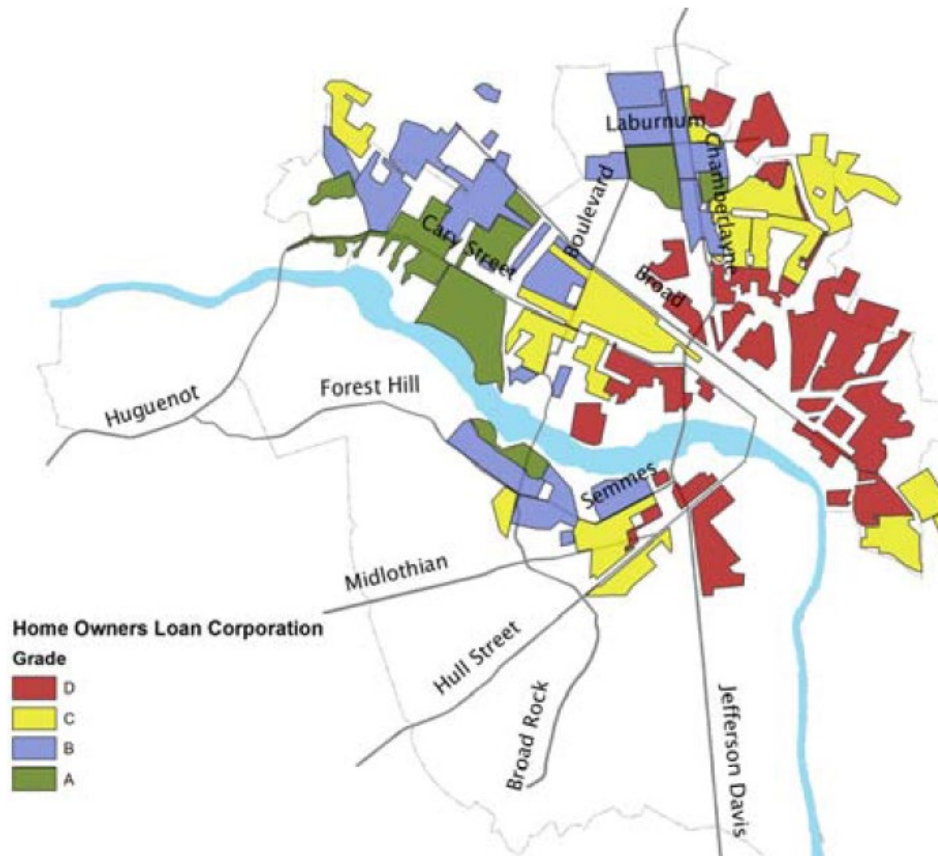


Home Owner's Loan Corporation (HOLC) - 1937

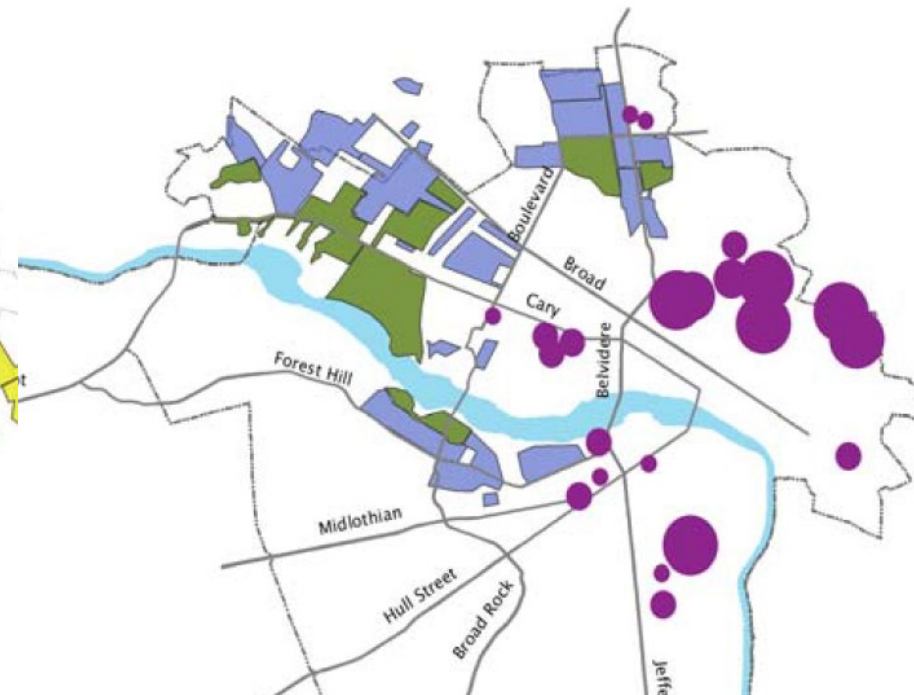
D. Chapman, VCU

Richmond, VA

Map 2: City of Richmond Home Owners Loan Corporation Boundaries, 1937¹¹



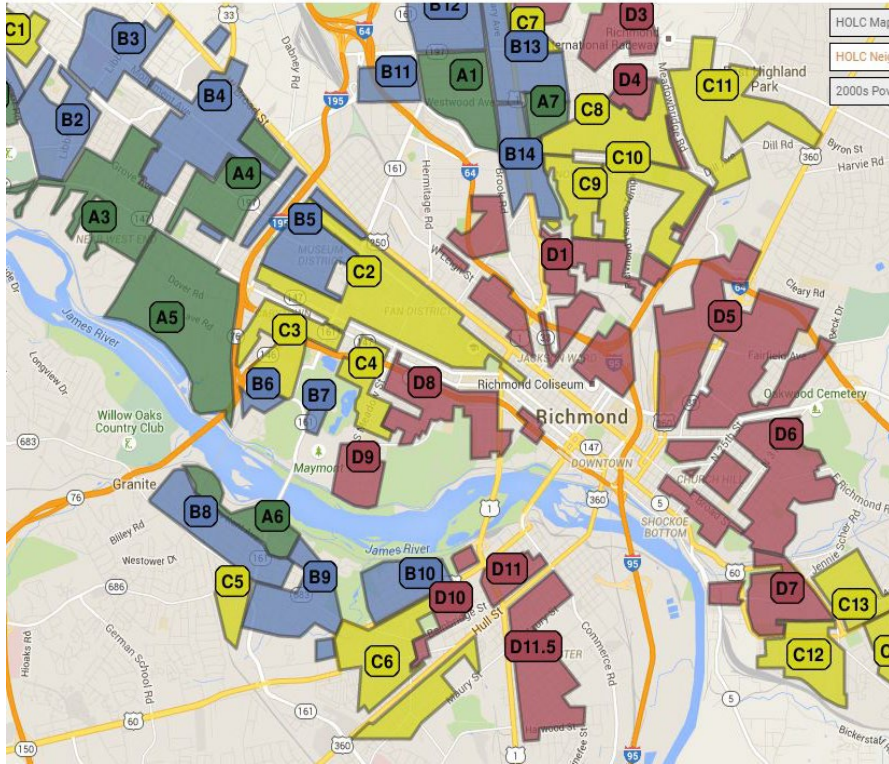
Map 3: Current Concentration of Public Housing, Contrasted with the HOLC Areas (Graded A & B) That Received the Majority of Home Loans¹⁹
2012



Source: <http://www.phonehome.org/Portals/0/Images/PDF/whereyouliivemakesallthedifferenceoppmapreport.pdf>

Richmond, VA

HOLC map, 1937



HOLC = Home Owners Loan Corp

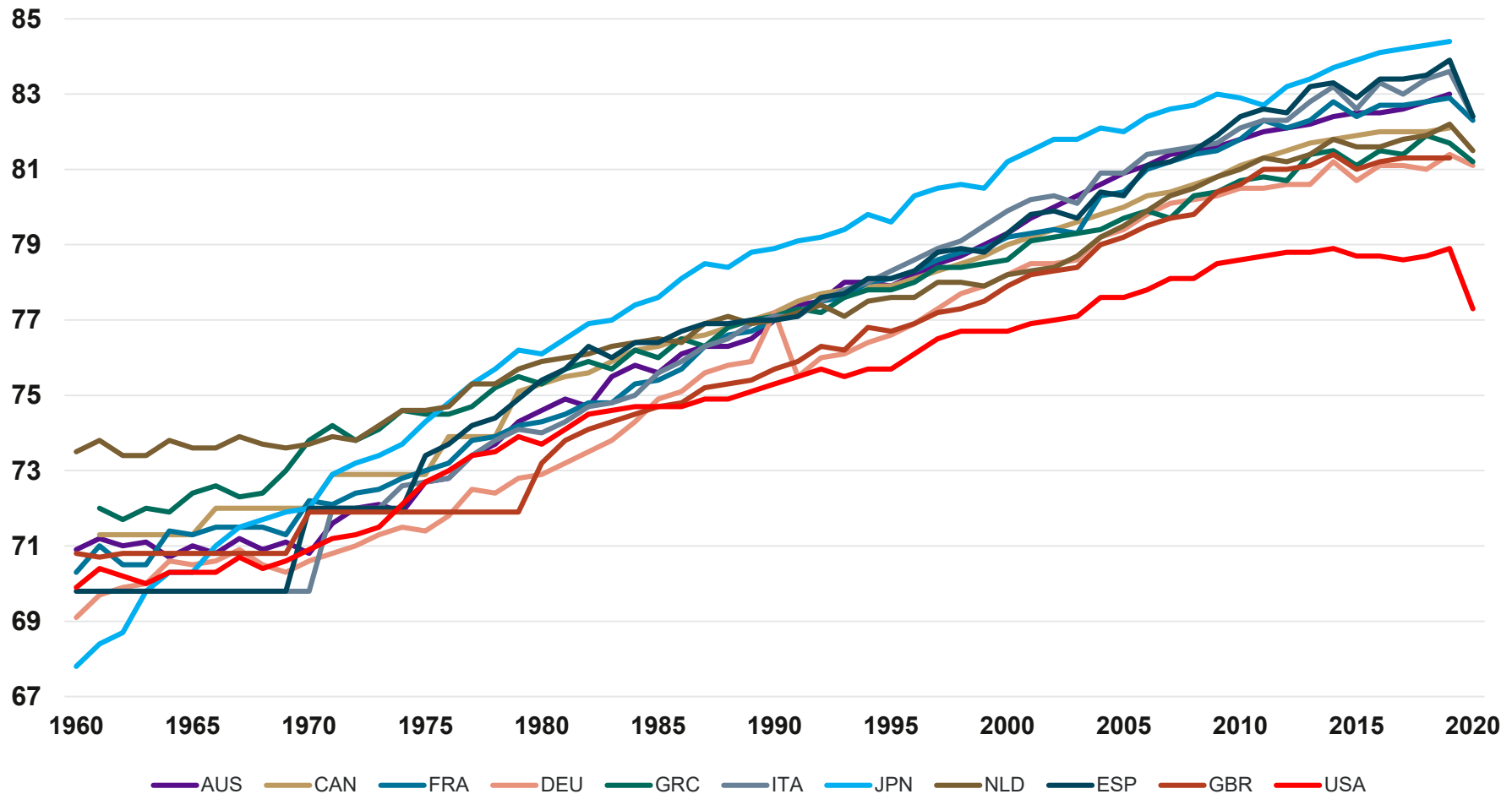


Life expect @ birth, 2002-11

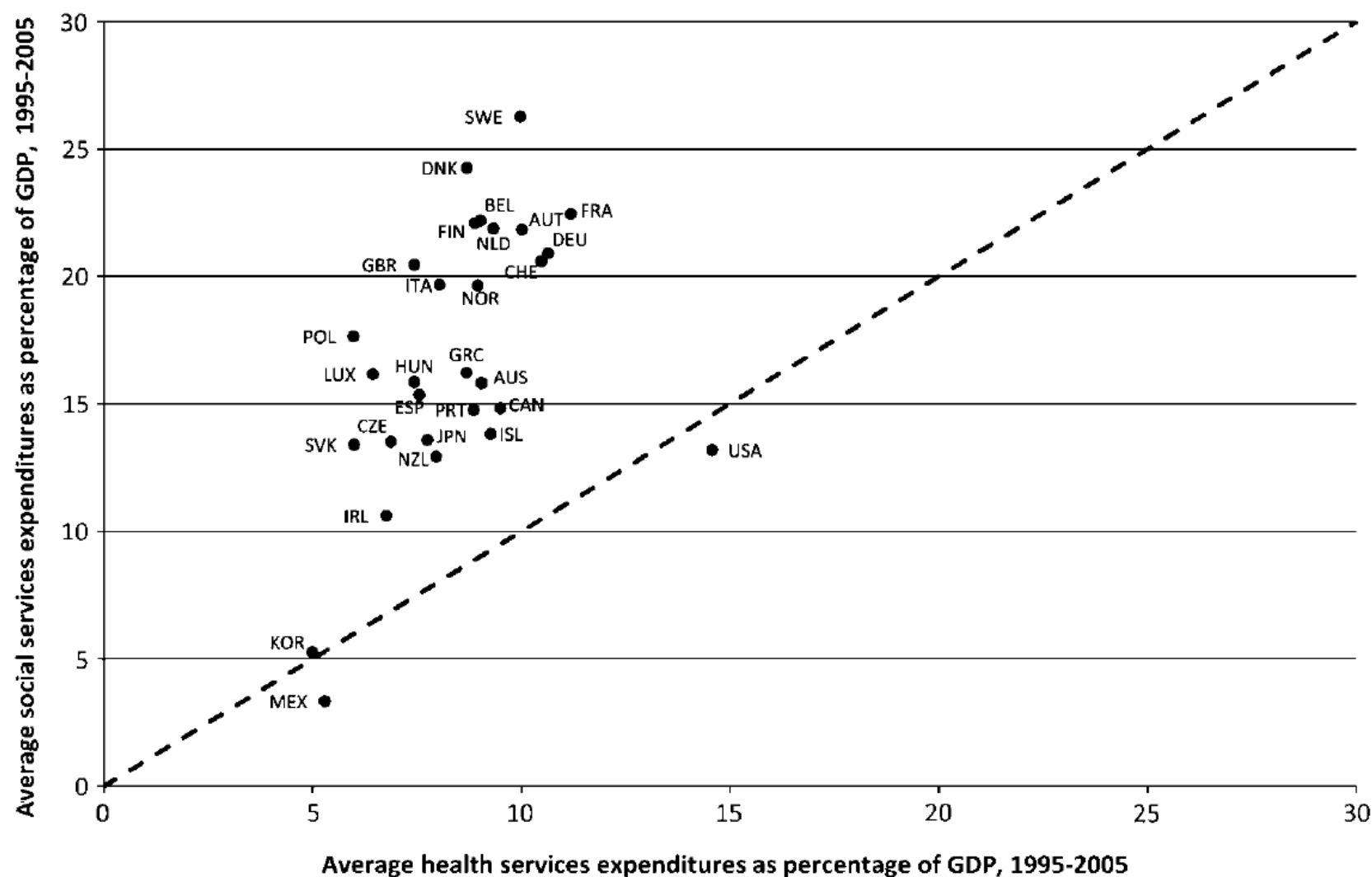


Life Expectancy is Declining in the US

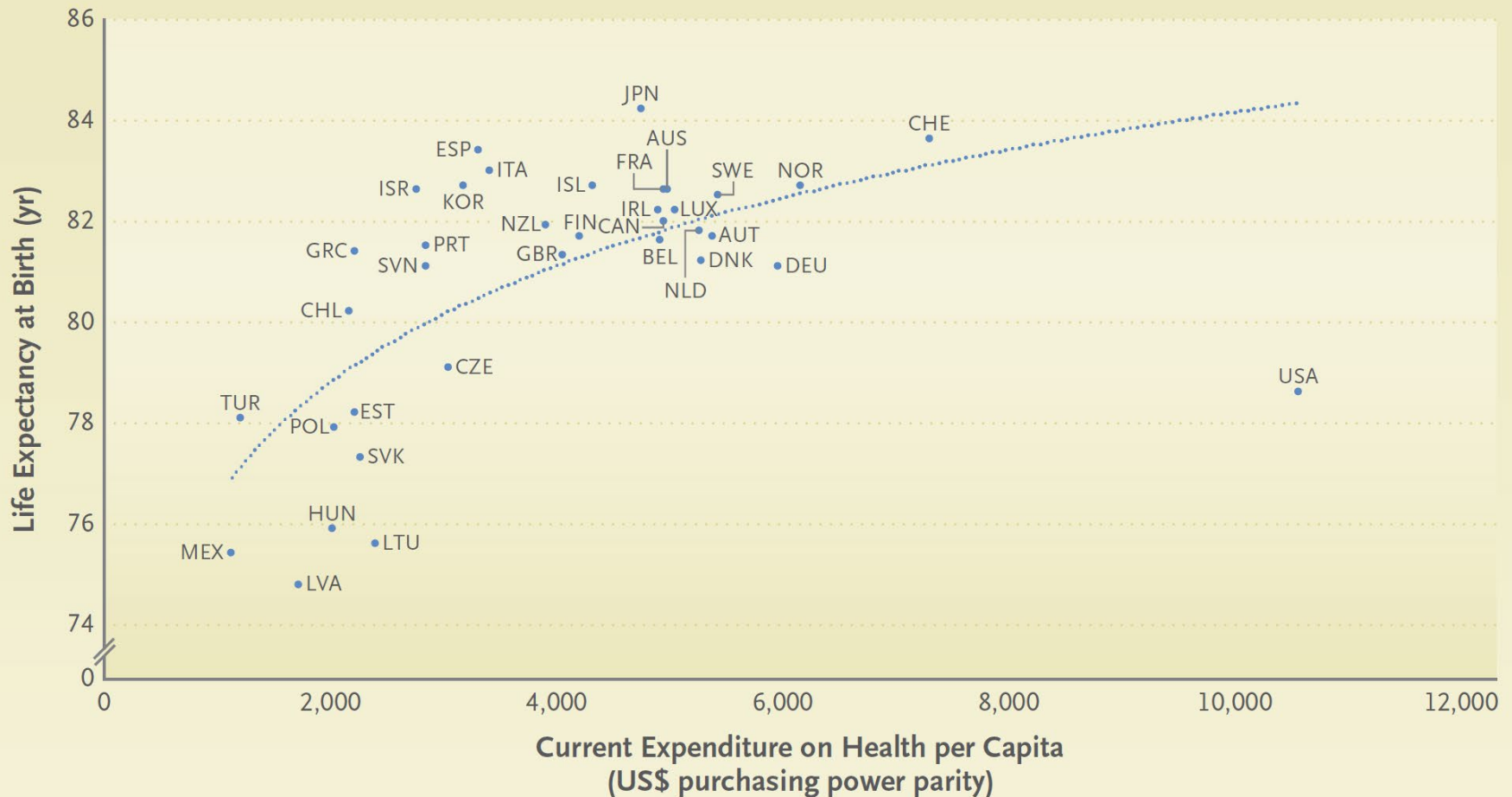
Life expectancy at birth, selected high-income countries, 1960-2020



Average social service expenditures vs. average health expenditures as % of GDP, OECD countries, 1995-2005



Life Expectancy at Birth and Health Spending per Capita, 2019

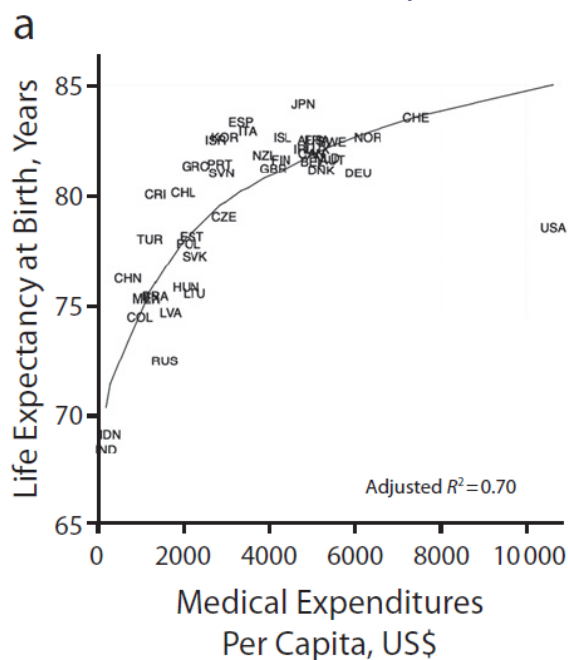


Data from Organization for Economic
Co-operation and Development
Health Statistics 2019.

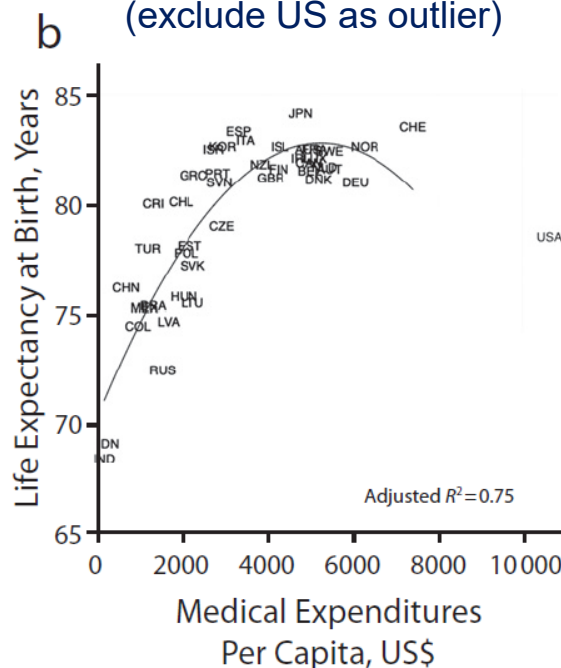
Schneider E, NEJM 2020

Relationship between medical spending and life expectancy

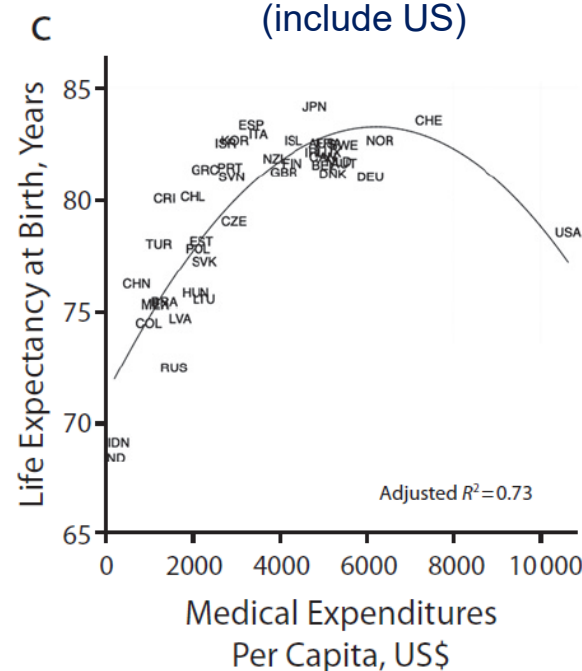
Assume log-linear relationship



No assumption, just curve form that best fits: (exclude US as outlier)

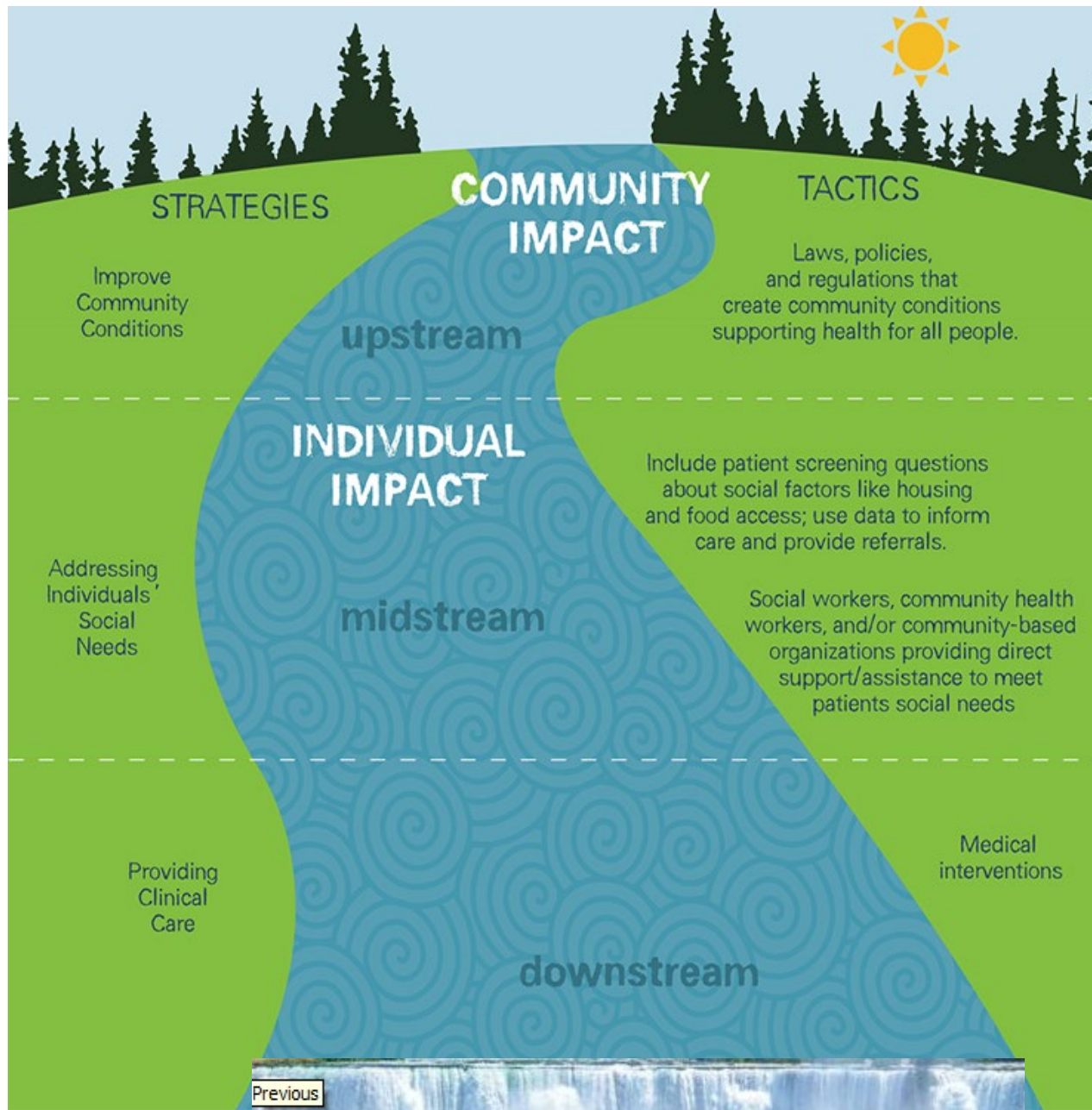


No assumption, just curve form that best fits: (include US)

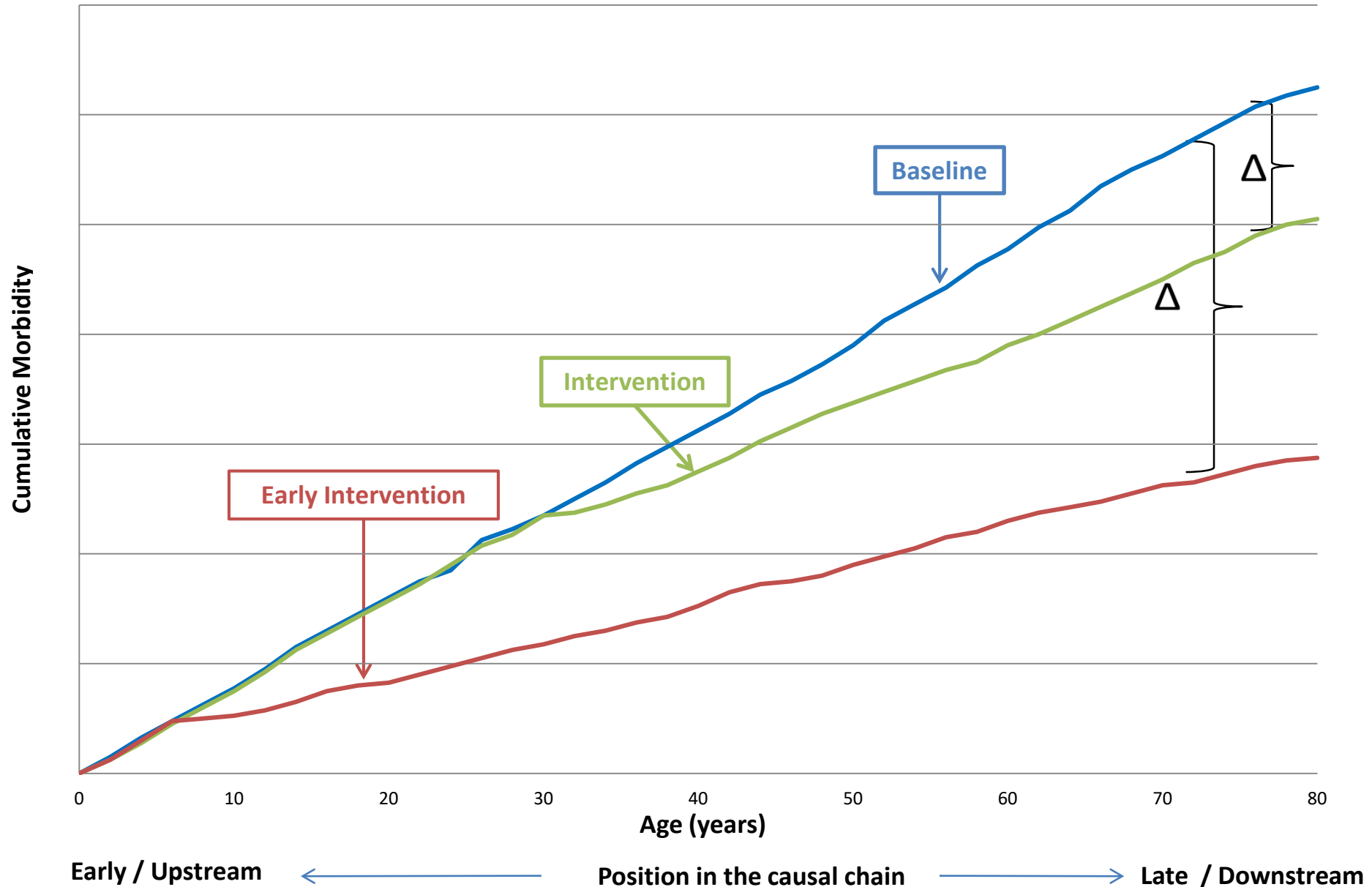


OECD data, 2017

Moving upstream



Impact of Upstream/Early Intervention

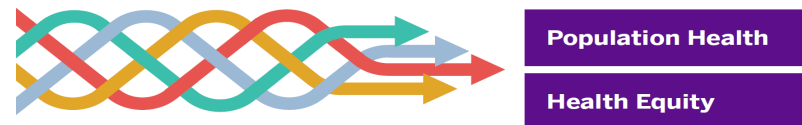


Focusing upstream

- Early childhood
- Housing
- Incarceration

Early childhood: *shared upstream levers*

- Universal school-based interventions to strengthen self-regulation
- Policy initiatives to reduce child poverty
 - e.g., recent ARP policies



Housing: *shared upstream levers*

- Diminishing housing cost burden
 - Affordable housing policies
- Permanent supportive housing
- Other built environment approaches
 - Blighted vacant lot rehabilitation (Branas et al)
 - Reduced fear, gun violence and other crime



Incarceration: *shared upstream levers*

- Legalization
 - Potential for disparate impacts in minoritized communities
- Built environment approaches
- Sentencing reform
- Deincarceration



Facilitating city-level access to comparable data

- **Problem**

- Cities can't manage what they can't measure
- Yet health data not analyzed to city level in US

- **Approach**

- City Health Dashboard (RWJF funding)
- 37 measures of health and determinants
- 750 largest US cities ($\geq 50,000$ pop'n)
- www.cityhealthdashboard.com

(check it out!)



Facilitating city-level access to comparable data

Select a Metric

Health Outcomes

[Breast Cancer Deaths](#)

[COVID Local Risk Index](#)

[Cardiovascular Disease Deaths](#)

[Colorectal Cancer Deaths](#)

[Diabetes](#)

[Frequent Mental Distress](#)

[Frequent Physical Distress](#)

[High Blood Pressure](#)

[Life Expectancy](#)

[Low Birthweight](#)

[Obesity](#)

[Opioid Overdose Deaths](#)

[Premature Deaths \(All Causes\)](#)

Social and Economic Factors

[Absenteeism](#)

[Broadband Connection](#)

[Children in Poverty](#)

[High School Completion](#)

[Housing Cost, Excessive](#)

[Income Inequality](#)

[Neighborhood Racial/Ethnic Segregation](#)

[Racial/Ethnic Diversity](#)

[Third-Grade Reading Proficiency](#)

[Unemployment](#)

- [Current, City-Level](#)
- [Annual, Neighborhood-Level](#)

[Violent Crime](#)

Health Behavior

[Binge Drinking](#)

[Physical Inactivity](#)

[Smoking](#)

[Teen Births](#)

Physical Environment

[Air Pollution - Particulate Matter](#)

[Housing with Potential Lead Risk](#)

[Lead Exposure Risk Index](#)

[Limited Access to Healthy Foods](#)

[Park Access](#)

[Walkability](#)

Clinical Care

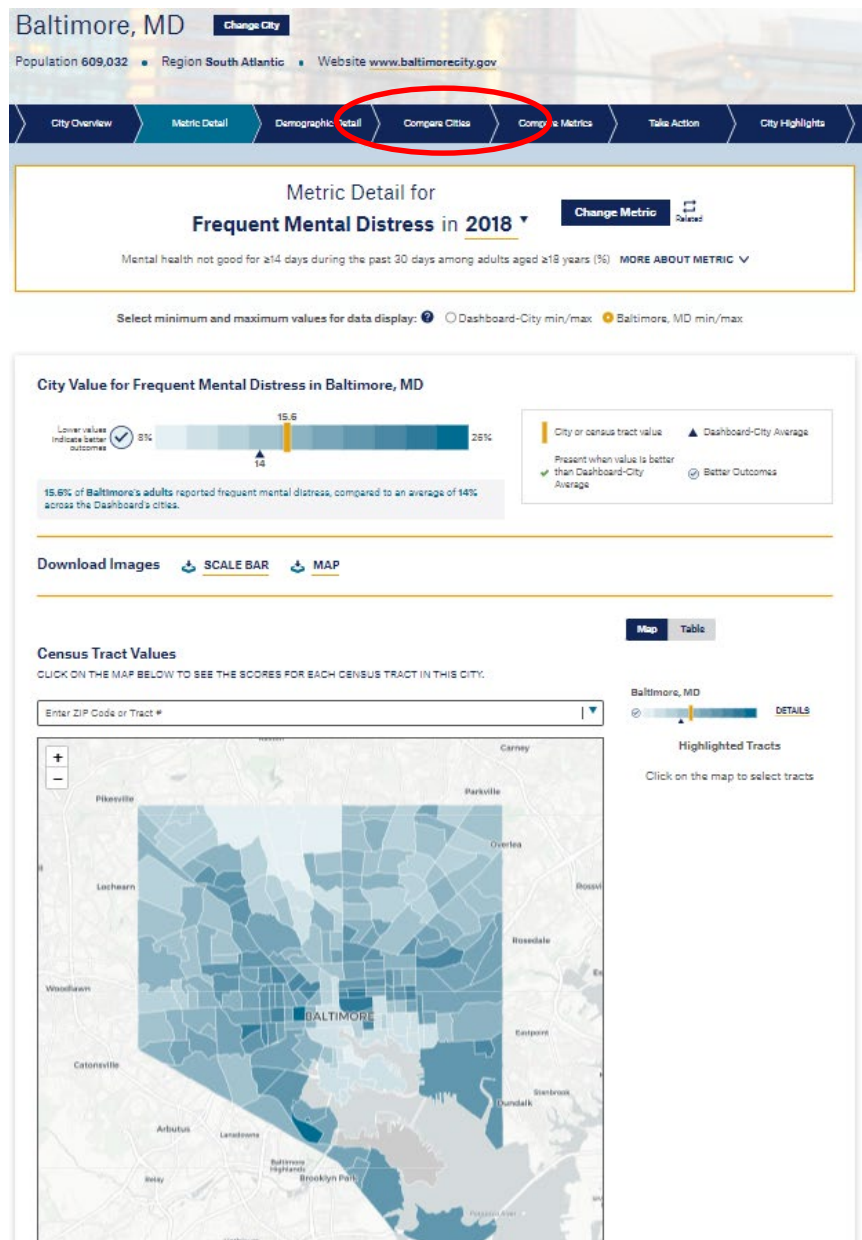
[Dental Care](#)

[Prenatal Care](#)

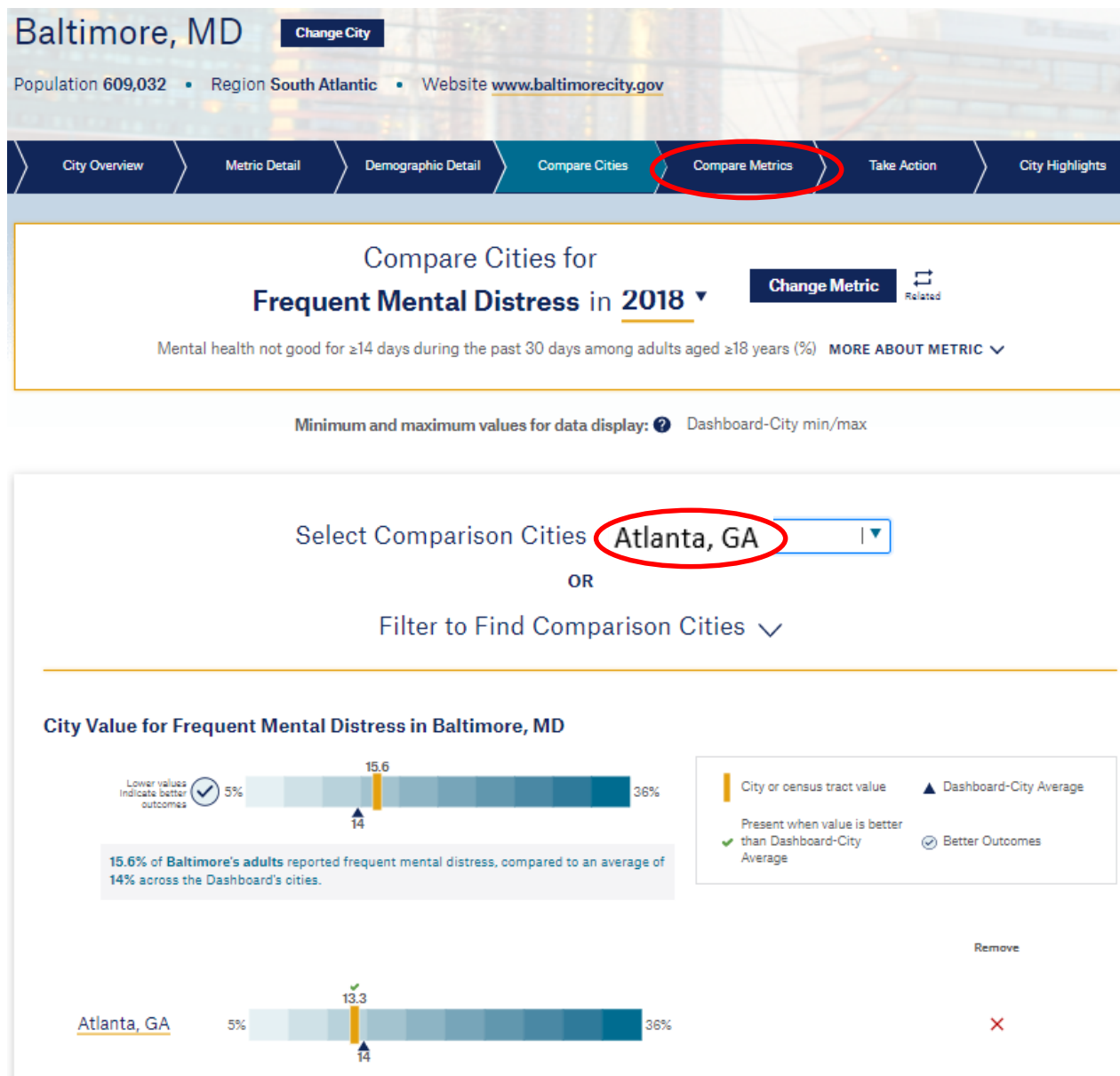
[Preventive Services, 65+](#)

[Uninsured](#)

Facilitating city-level access to comparable data



Facilitating city-level access to comparable data



Facilitating city-level access to comparable data

Scatterplot View

This plot shows the census tract values of frequent mental distress plotted against census tract values of broadband connection in Baltimore, MD. Each point represents a census tract within Baltimore.

Caution is important when examining scatterplots: just because two items are correlated does not mean that one causes the other.



Facilitating city-level access to comparable data

The screenshot displays a web interface for Baltimore, MD, with a navigation bar including links for City Overview, Metric Detail, Demographic Detail, Compare Cities, Compare Metrics, Take Action, and City Highlights. The main content area features a 'Take Action for Frequent Mental Distress in 2018' section, which includes a 'Change Metric' button and a 'Release' icon. Below this, a section titled 'Explore tools for driving change in Baltimore by selecting resources from the sets below.' offers four options: 'Find Policies & Programs', 'Find Partners', 'Explore Strategies', and 'Find Funding', each with a 'View' link. A 'Filter by:' section allows users to filter by Audience (Choose Any That Apply), Policies or programs (Select One), and Evidence rating (Evidence Backed). The results section shows 21-25 of 25 results, including 'Pricing Strategies for Alcohol Products', 'School-Based Health Centers', 'School-Based Violence Prevention', and 'Tenant-Based Rental Assistance Programs'. Each result includes details on Source, Evidence Rating, Target Audience, and Impacts Metrics.

Baltimore, MD [Change City](#)

Population 609,032 • Region South Atlantic • Website www.baltimorecity.gov

City Overview Metric Detail Demographic Detail Compare Cities Compare Metrics Take Action City Highlights

Take Action for
Frequent Mental Distress in 2018 [Change Metric](#) [Release](#)

Mental health not good for ≥14 days during the past 30 days among adults aged ≥18 years (%) [MORE ABOUT METRIC](#)

Explore tools for driving change in Baltimore by selecting resources from the sets below.

What You Can Do

Find Policies & Programs
[View](#)

How You Can Do It

Find Partners
[View](#)

Explore Strategies
[View](#)

Find Funding
[View](#)

Measure Impact
[View](#)

Filter by:

Audience: [Choose Any That Apply](#)

Policies or programs: [Select One](#)

Evidence rating: [Evidence Backed](#) [Clear all](#)

21-25 of 25 results

Pricing Strategies for Alcohol Products [?](#)

Source: [HI-S](#)

Evidence Rating: [Evidence Backed](#)

Target Audience: [Local Government](#)

Impacts Metrics: [High Blood Pressure](#) - [Binge Drinking](#) - [Cardiovascular Disease Deaths](#) - [Breast Cancer Deaths](#) - [Colorectal Cancer Deaths](#) - [Frequent Mental Distress](#) - [Unemployment - Annual, Neighborhood-Level](#) - [Violent Crime](#) - [Teen Births](#) - [Premature Deaths \(All Causes\)](#) - [Life Expectancy](#) - [Unemployment - Current, City-Level](#)

School-Based Health Centers [?](#)

Source: [The Community Guide](#)

Evidence Rating: [Evidence Backed](#)

Target Audience: [University or School](#) - [Community Organization](#)

Impacts Metrics: [High School Completion](#) - [Income Inequality](#) - [Teen Births](#) - [Low Birthweight](#) - [Frequent Mental Distress](#) - [Dental Care](#) - [Prenatal Care](#) - [Neighborhood Racial/Ethnic Segregation](#) - [Racial/Ethnic Diversity](#) - [Premature Deaths \(All Causes\)](#) - [Life Expectancy](#)

School-Based Violence Prevention [?](#)

Source: [HI-S](#)

Evidence Rating: [Evidence Backed](#)

Target Audience: [Community Organization](#) - [University or School](#)

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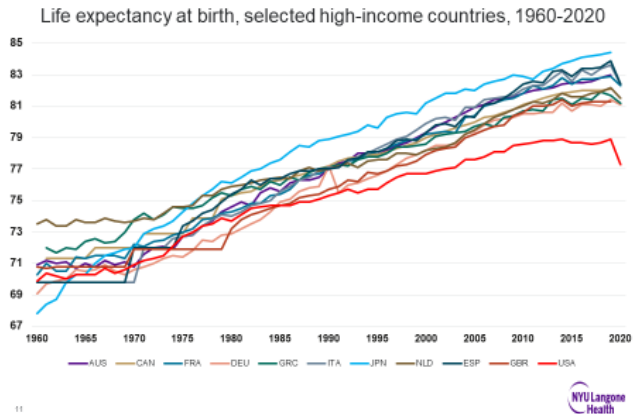
Tenant-Based Rental Assistance Programs [?](#)

Source: [The Community Guide](#)

- Data visualization & rich resources
- Steadily growing national uptake
- Myriad research applications
- Catalyzing improvements in population health and health equity

So then, what's healthcare got to do with it?

Life Expectancy is Declining in the US



Pathways

Fundamental cause	Exposure	Risk (example)	General mechanism	Proximal mechanism	Health outcome
Racist drug policies	- Over-policing, incarceration	- Violent injury - Death			- Violent injury - Death
		- Social disruption - Sustained stress - Etc	- Chronic HPA axis activation	- Up-reg cortisol & inflammatory response - Reward dysreg	- CVD - SUD
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Proportional Contribution to Premature Death

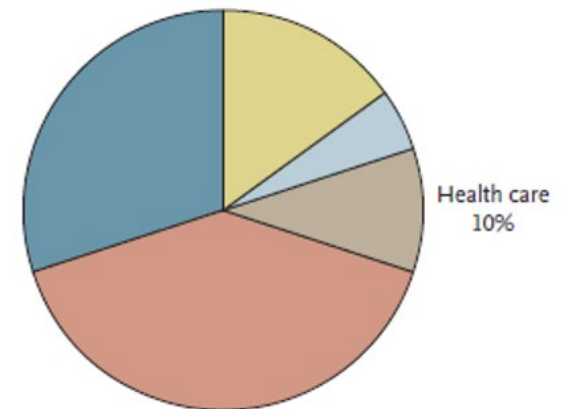


Figure 1. Determinants of Health and Their Contribution to Premature Death.

Adapted from McGinnis et al.¹⁰

Audience reminder: healthcare is after all...

- Huge ecosystem thrumming with health-focused energy
- Deeply expert in clinical prevention, diagnosis, treatment, underlying science
- Should healthcare even be “addressing” social determinants?
 - Education; housing; the built environment?
 - “Seriously? When you’re still struggling to share information effectively between my two doctors, let alone to deliver error-free care?”
- Housing / education / built environment are their whole own sectors, with their own expertise, policy, finance, history, deep complexity
- In short: partnership, partnership, partnership

Upstream action requires partnership

	Health care system	Public health agency	Human, social services or other sector
Upstream	Partner	Lead or partner	Lead or partner
Midstream	Partner	Lead or partner	Lead or partner
Downstream	Lead	Partner	Partner

Upstream action requires partnership

	Health care system	Public health agency	Human, social services or other sector
Upstream	Partner <i>Respite housing</i>	Lead or partner <i>Youth employment</i>	Lead or partner <i>Optimizing benefit access (DHS)</i>
Midstream	Partner <i>Peer navigators</i>	Lead or partner <i>Expand care in CJS; PDMPs</i>	Lead or partner <i>Blighted lot rehab (Planning Dept)</i>
Downstream	Lead <i>MAT @ all clinical sites</i>	Partner <i>SEP, fentanyl testing kits</i>	Partner <i>K-3 programming (DOE)</i>

AMCs: moving (albeit slowly) to integrate population health as a field?

Population Health and the Academic Medical Center: The Time Is Right

Marc N. Gourevitch, MD, MPH



Original Investigation | Public Health

JAMA Network Open

April 12, 2019

The Emergence of Population Health in US Academic Medicine A Qualitative Assessment

Marc N. Gourevitch, MD, MPH¹; Lesley H. Curtis, PhD²; Maureen S. Durkin, PhD, DrPH³; et al

Advancing Population Health at Academic Medical Centers: A Case Study and Framework for an Emerging Field

Marc N. Gourevitch, MD, MPH, and Lorna E. Thorpe, PhD



- **Population Health Leaders in Academic Medicine (PHLAM)**
 - Inaugural meeting at IAPHS, October 2019
 - >30 institutions



Fundamental challenges

- Brain disease is just flat out tough
- Illegal: many effective policy approaches (taxes, incentives) off the table
- Blame (other, self) still deeply embedded
 - Fundamental barrier to disseminating effective strategies
- Pharmacotherapy
 - Effective but still under-utilized
 - N/A for many substances

Accelerate/deepen engagement of SUD field with population health approaches:

- Measurement
 - i.e., with the summary and place-based metric movement
- New care & finance models
 - Value based payment
 - Social impact bonds
- Tackling inequity
 - Research to inform anti-racist policy
 - Advancing parity in treatment access and outcomes
- Increased upstream focus through partnership
 - Early childhood, housing, courts

Bringing it all back home

- The fields of SUD and population health share awareness and respect for upstream influences/levers
- Already plenty to do “in our lane” (beware everythingalism)
- Paradigm/challenge for our field:
 - Seek, & foster, opportunities to partner across disciplines and sectors in tackling deeper (population-level) causes, while keeping eye on the immediate and pressing (individual-level)