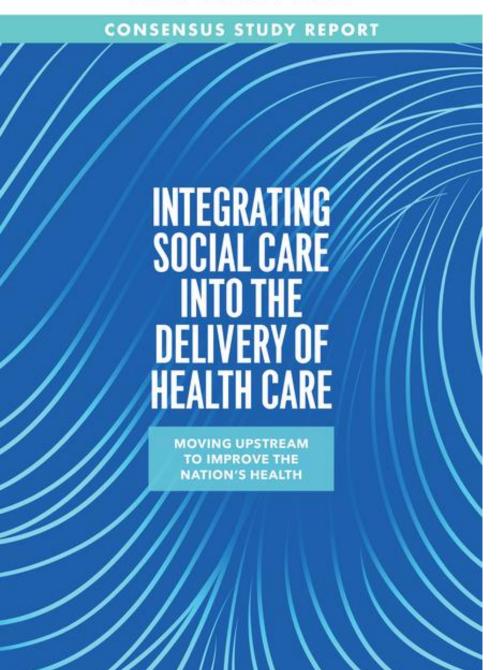
Social Determinants of Health and Their Influence on Cancer Risk & Outcomes

John Z. Ayanian, MD, MPP



Applying Big Data to Address Social Determinants of Health in Oncology National Cancer Policy Forum Workshop, October 28, 2019



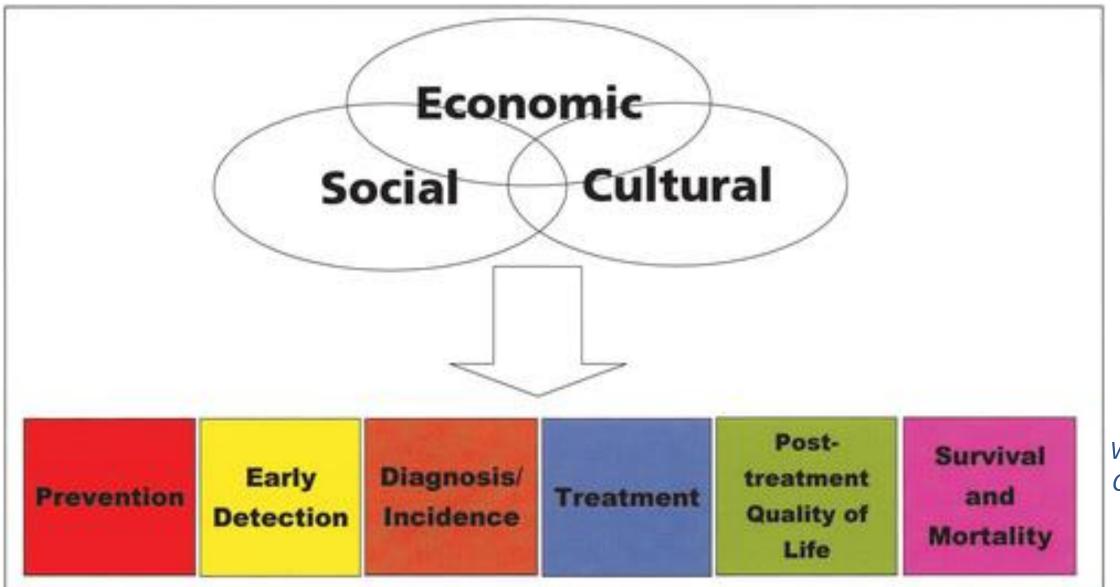
World Health Organization definition of Social Determinants of Health:

Conditions in which people are born, grow, live, work, and age

Shaped by distribution of money, power, or resources at global, national & local levels

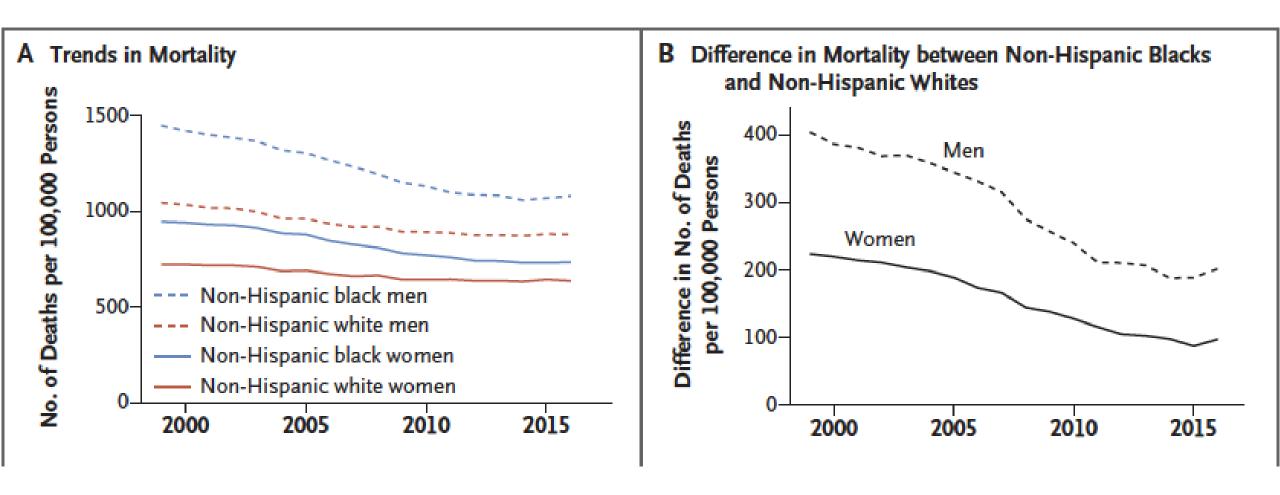
Mostly responsible for health inequities - unfair and avoidable differences in health status within and between countries

Social, Economic & Cultural Factors Affect Disparities Across Cancer Continuum

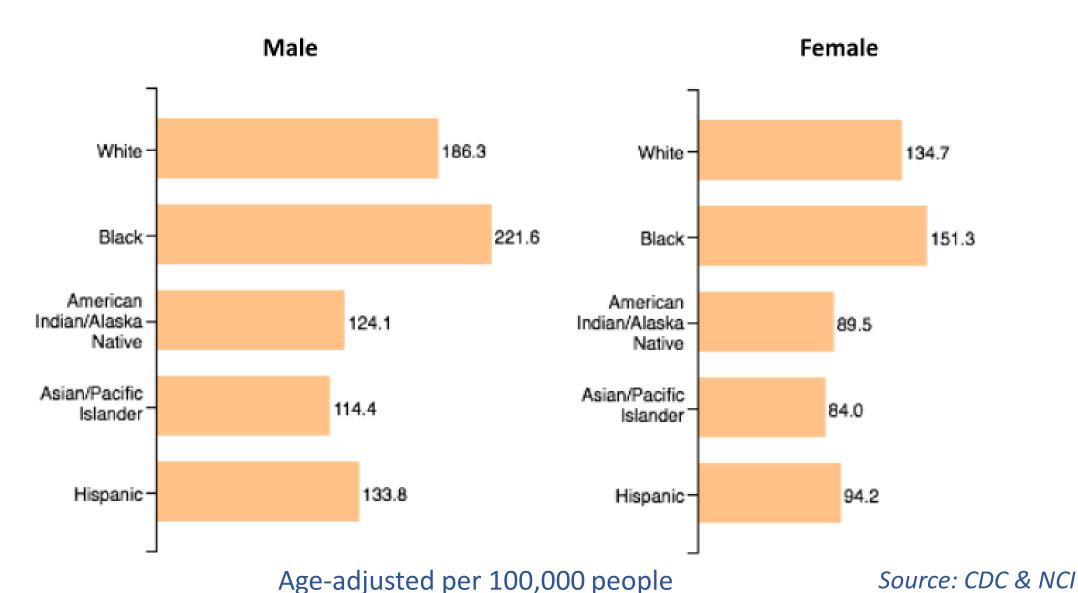


Ward et al. CA: Cancer Journal for Clinicians 2008

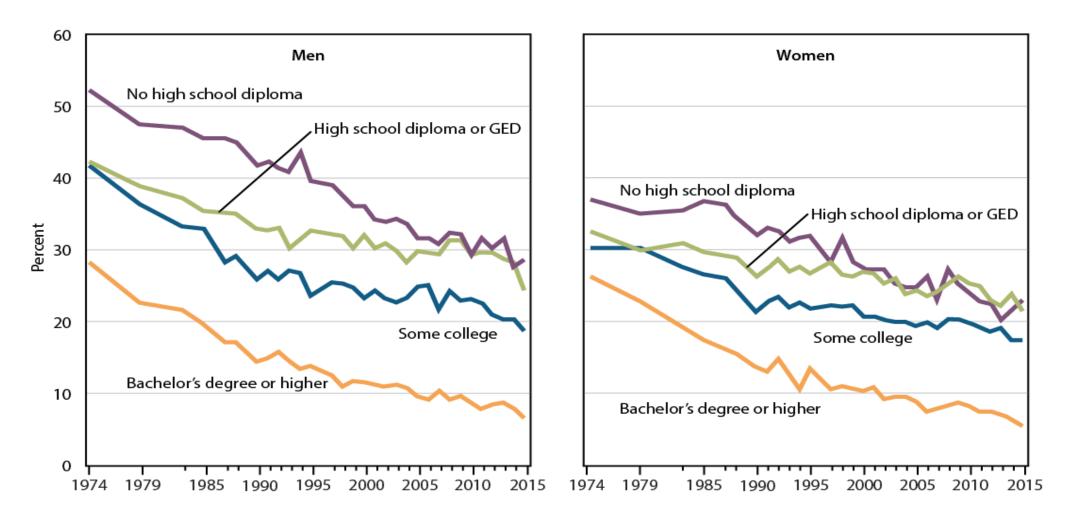
Trends in US Life Expectancy by Race & Sex, 1999-2016



Cancer Mortality Rates by Race/Ethnicity, US 2016



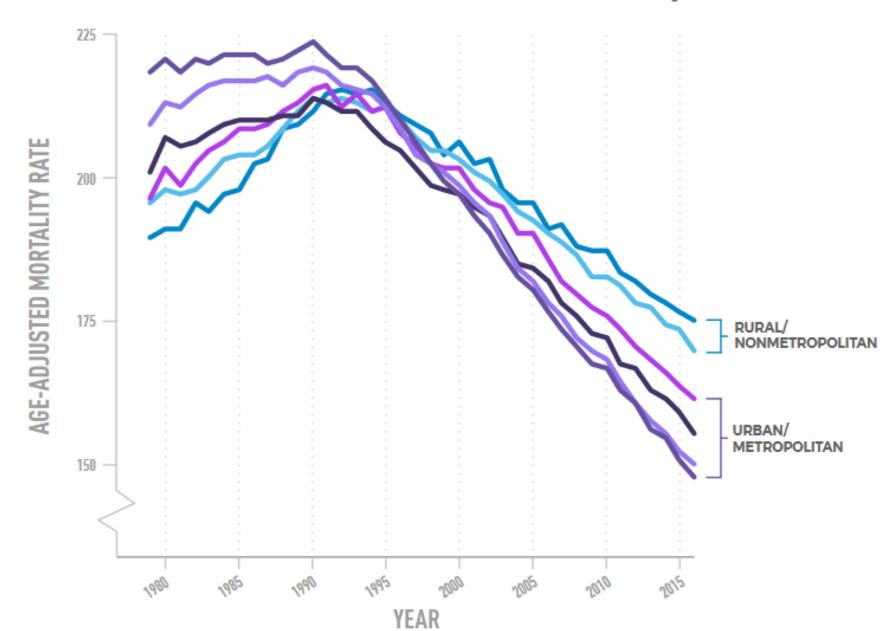
Current cigarette smoking: Adults aged 25+



NOTE: Smoked 100 cigarettes in their lifetime and now smoke every day or some days.

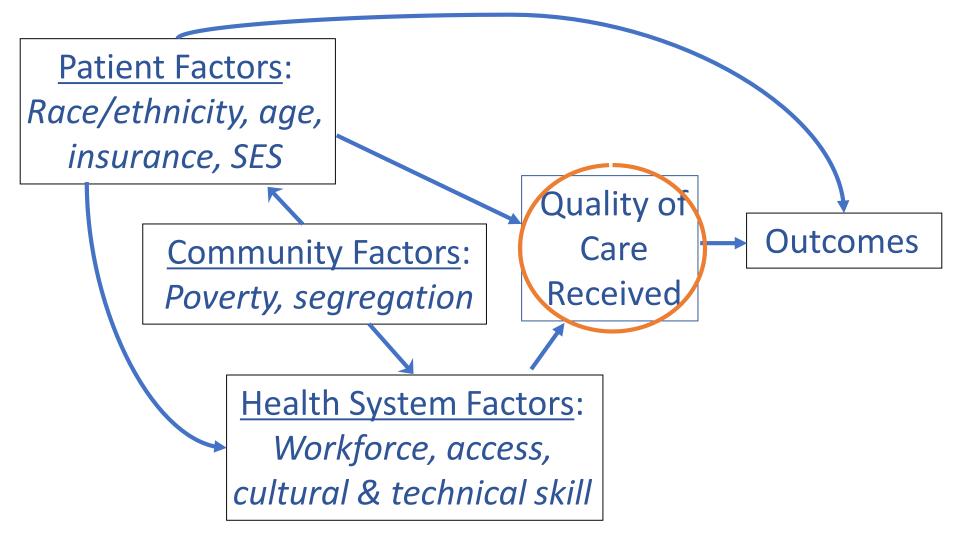
SOURCE: NCHS, Health, United States, 2016, Figure 10 and Table 48. Data from the National Health Interview Survey (NHIS).

Deaths from Cancer: Rural vs. Urban Populations

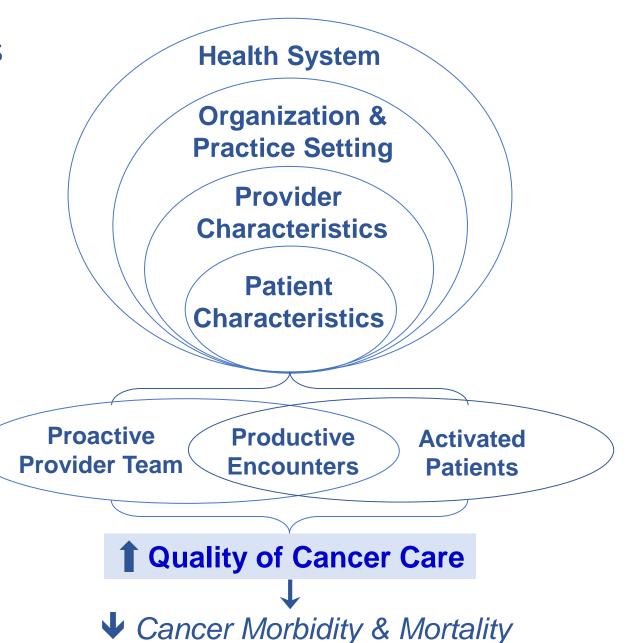




Conceptual Model of Health Care Disparities



Multi-level Factors
Affecting Quality
of Cancer Care



Adapted from Zapka et al. Med Care 2008

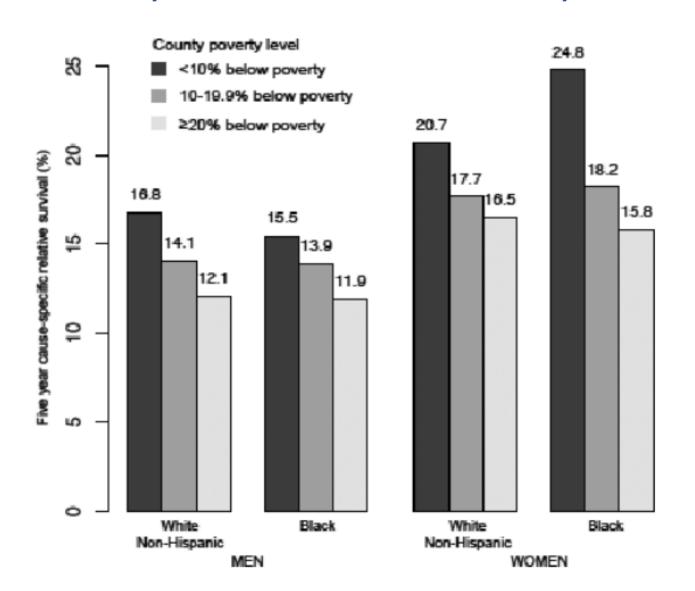
Integrating Multiple Social Statuses in Health Disparities Research: The Case of Lung Cancer

David R. Williams, Emily Z. Kontos, K. Viswanath, Jennifer S. Haas, Christopher S. Lathan, Laura E. MacConaill, Jarvis Chen, and John Z. Ayanian

Intersectional theory applied to the cancer care continuum

"Multiple social statuses (SES, race/ethnicity, gender & others) experienced simultaneously as dynamic, interdependent processes affect cancer risk, diagnosis, treatment & outcomes"

Five-Year Cause-Specific Relative Survival with Lung Cancer by Gender, Race & County-Level Poverty



Williams et al. Health Serv Res 2012

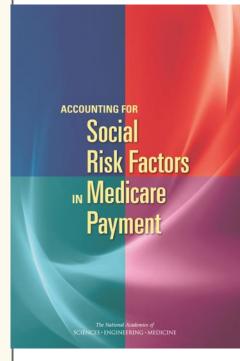
ACCOUNTING FOR Social **Risk Factors Medicare Payment**

Social risk factors associated with health care outcomes independently of quality of care:

- Socioeconomic position
- Race, ethnicity, cultural context
- Gender identity and sexual orientation
- Social relationships
- Residential and community context

Social Risk Indicators	Data Availability			
	Data available for use now	Some data available for use; research needed to improve accuracy	Insufficient data available now; research needed on how to best collect data	Research needed on relationships to quality, costs, and outcomes and how to best collect data
Socioeconomic position				
Income		•		
Education level		•		
Dual eligibility for Medicare and Medicaid	•			
Wealth			•	
Race, ethnic group, and cultural context				
Race or ethnic group		•		
Language spoken		•		
Country of origin	•			
Extent of acculturation				•
Gender and sexual orientation				
Gender identity				•
Sexual orientation				•
Social relationships				
Marital or partnership status		•		
Living with others vs. alone			•	
Amount of social support			•	
Residential and community context				
Extent of neighborhood deprivation		•		
Urban vs. rural residence	•			
Adequacy of housing		•		
Other environmental factors				•

Data for Social Risk Indicators



National Academies 2017

Buntin & Ayanian N Engl J Med 2017

Applying Intersectionality to Big Data & Social Determinants of Cancer Risk & Outcomes

- > Address data limitations for social risk area measures, surveys, EHR data
- > Take life-course and multi-level approaches to analyze social risk factors
- Incorporate bio-social and gene-environment interactions
- Prioritize resilience factors as well as risk factors
- Develop and implement actionable policies to address social determinants of health nationally and in states, communities and health care systems