Thomas Jefferson University
Jefferson College of Population Health

Value-Based Health Care and the Role of Population Health Research

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Population Health Colloquium

Philadelphia, PA

March 2017

Introductions

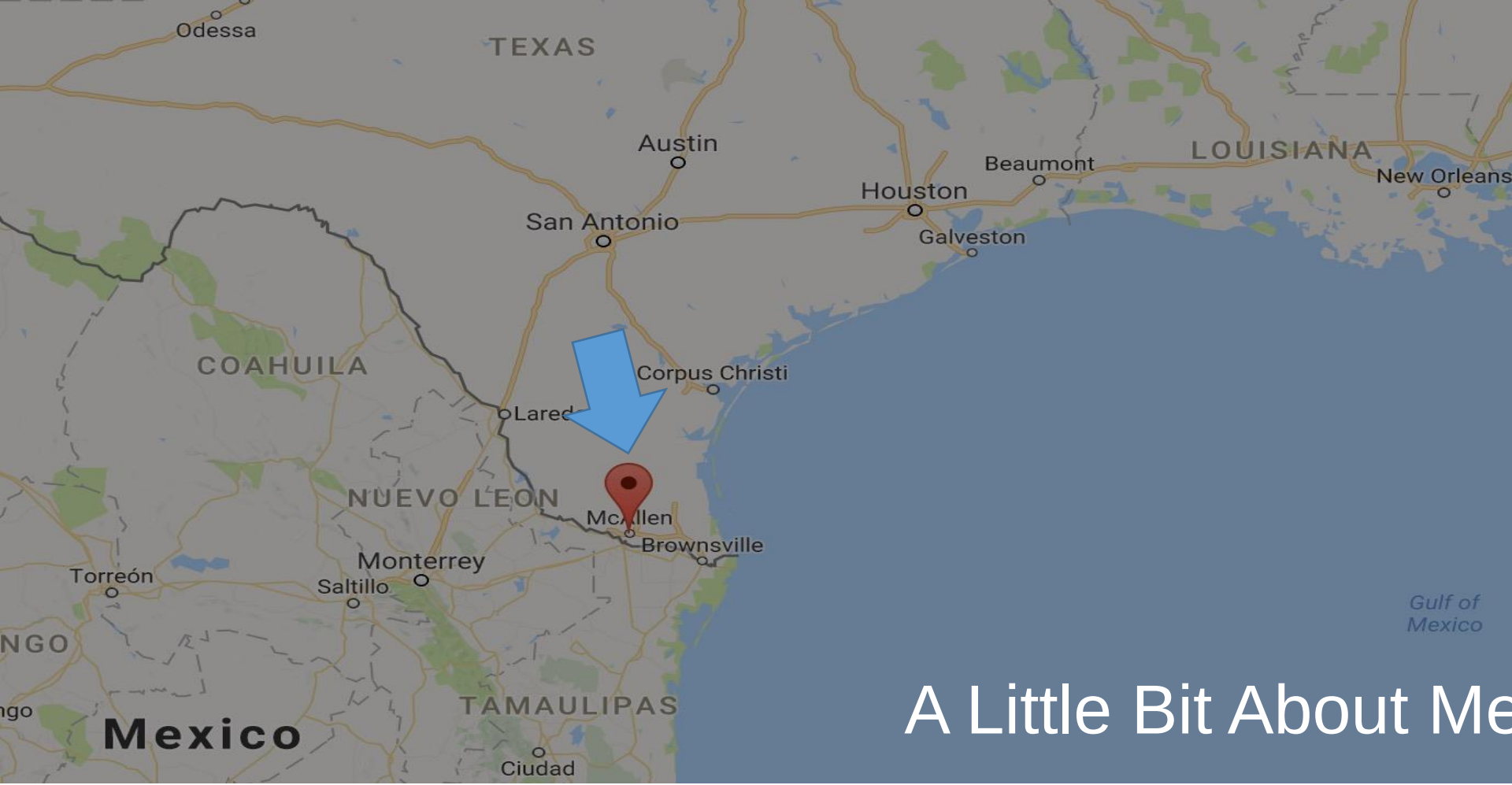
A little bit about me

The MLHS Center for Population Health Research at LIMR

Value-Based Health Care

What we know about the determinants of health

The Role of Population Health Research to Achieve Value-Based Health Care



A Little Bit About Me

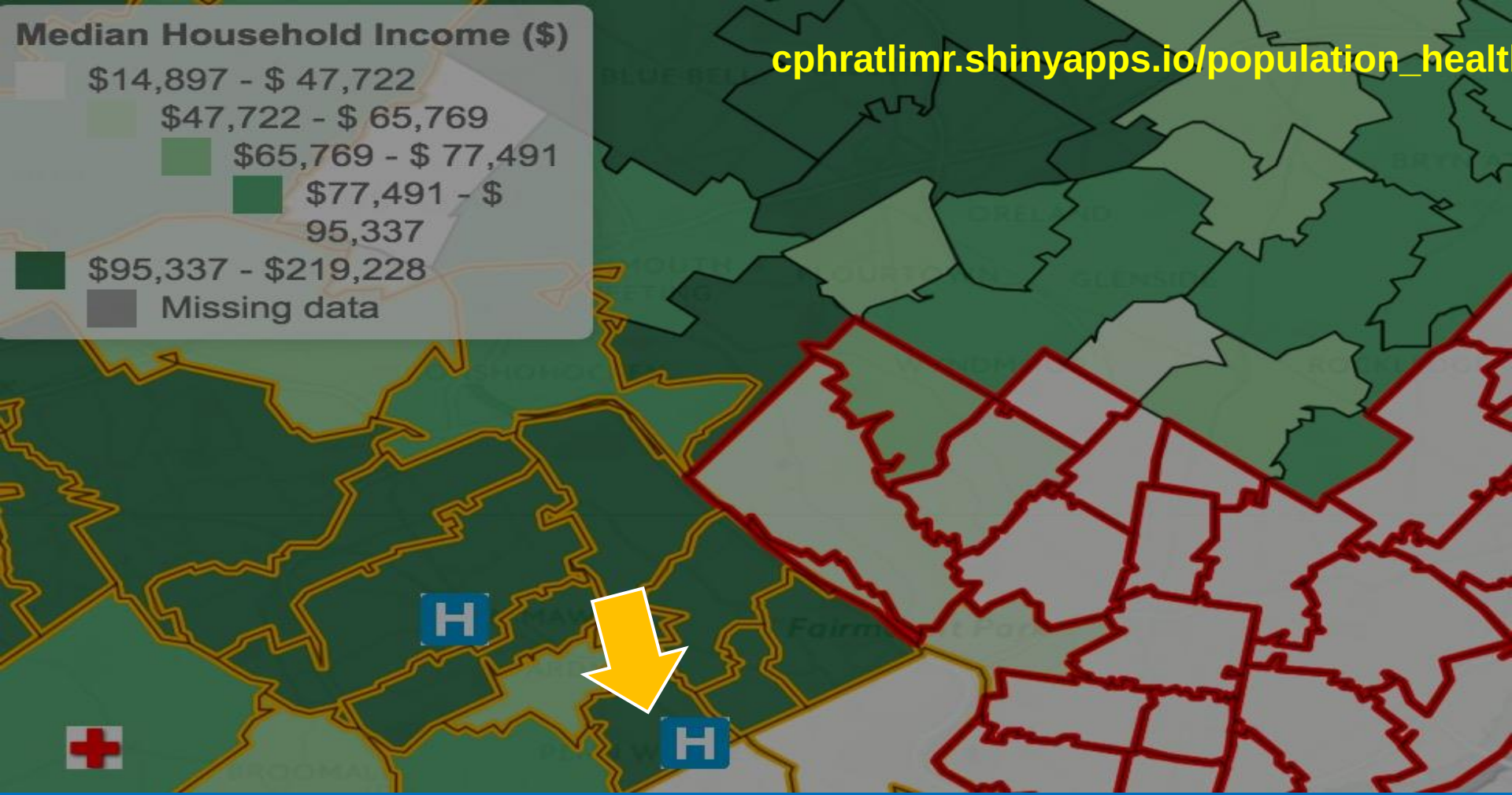
THE COST CONUNDRUM

What a Texas town can teach us about health care.

By Atul Gawande

It is spring in McAllen, Texas. The morning sun is warm. The streets are lined with palm trees and pickup trucks. McAllen is in Hidalgo County, which has the lowest household income in the country, but it's a border town, and a thriving foreign-trade zone has kept the unemployment rate below ten per cent. McAllen calls itself the Square Dance Capital of the World. "Lonesome Dove" was set around here.

Main Line Health System


Median Household Income ($)
$14,897 - $ 47,722
$47,722 - $ 65,769
$65,769 - $ 77,491
$77,491 - $ 95,337
$95,337 - $219,228
Missing data
cphratlimr.shinyapps.io/population_healt
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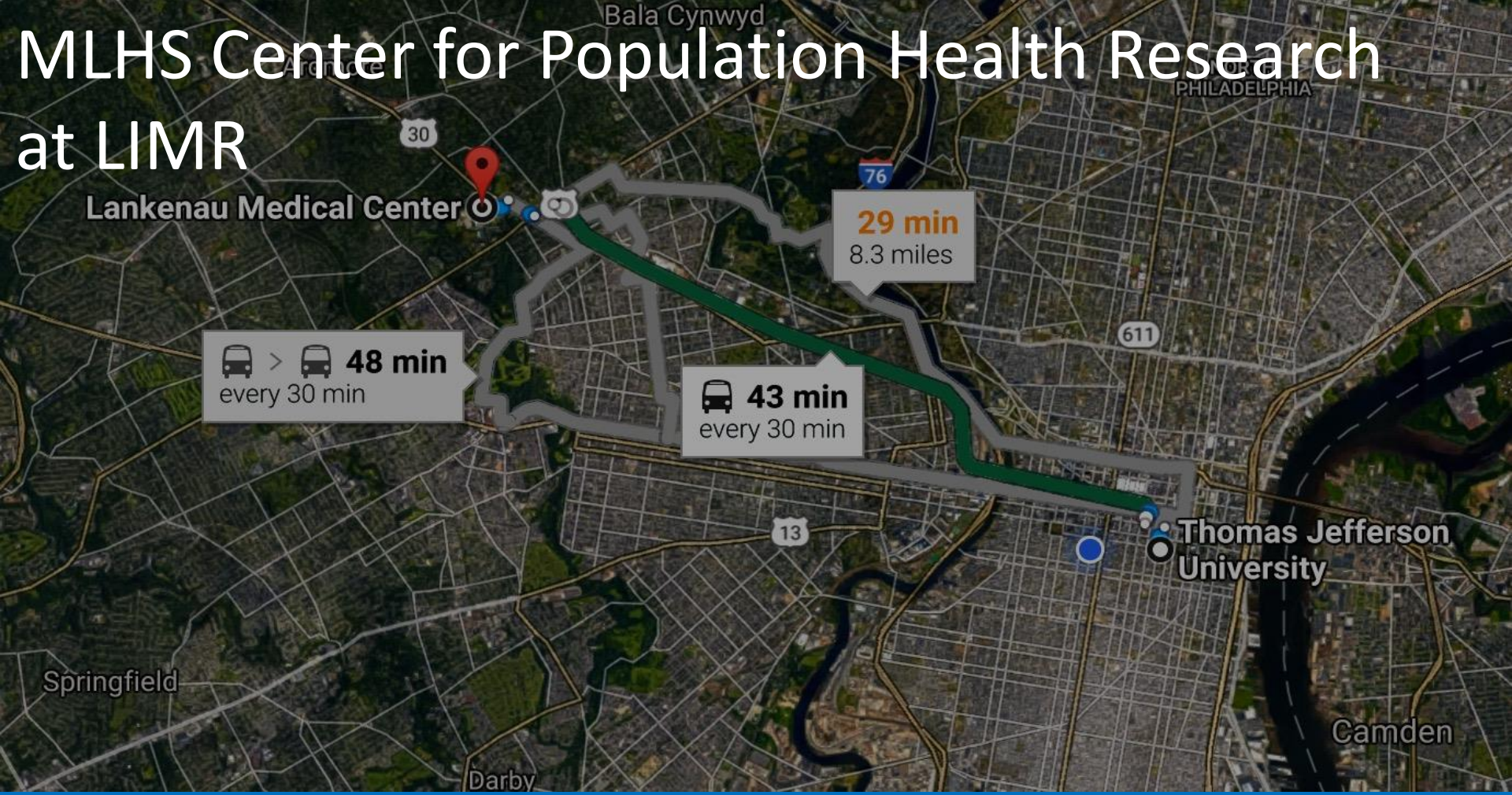
MLHS Center for Population Health Research at LIMR



Our Mission

To advance the understanding of the fundamental domains of population health by being a research and education partner to Main Line Health to inform and assess initiatives to improve the health status and wellbeing in the communities we serve

Value-Based Health Care

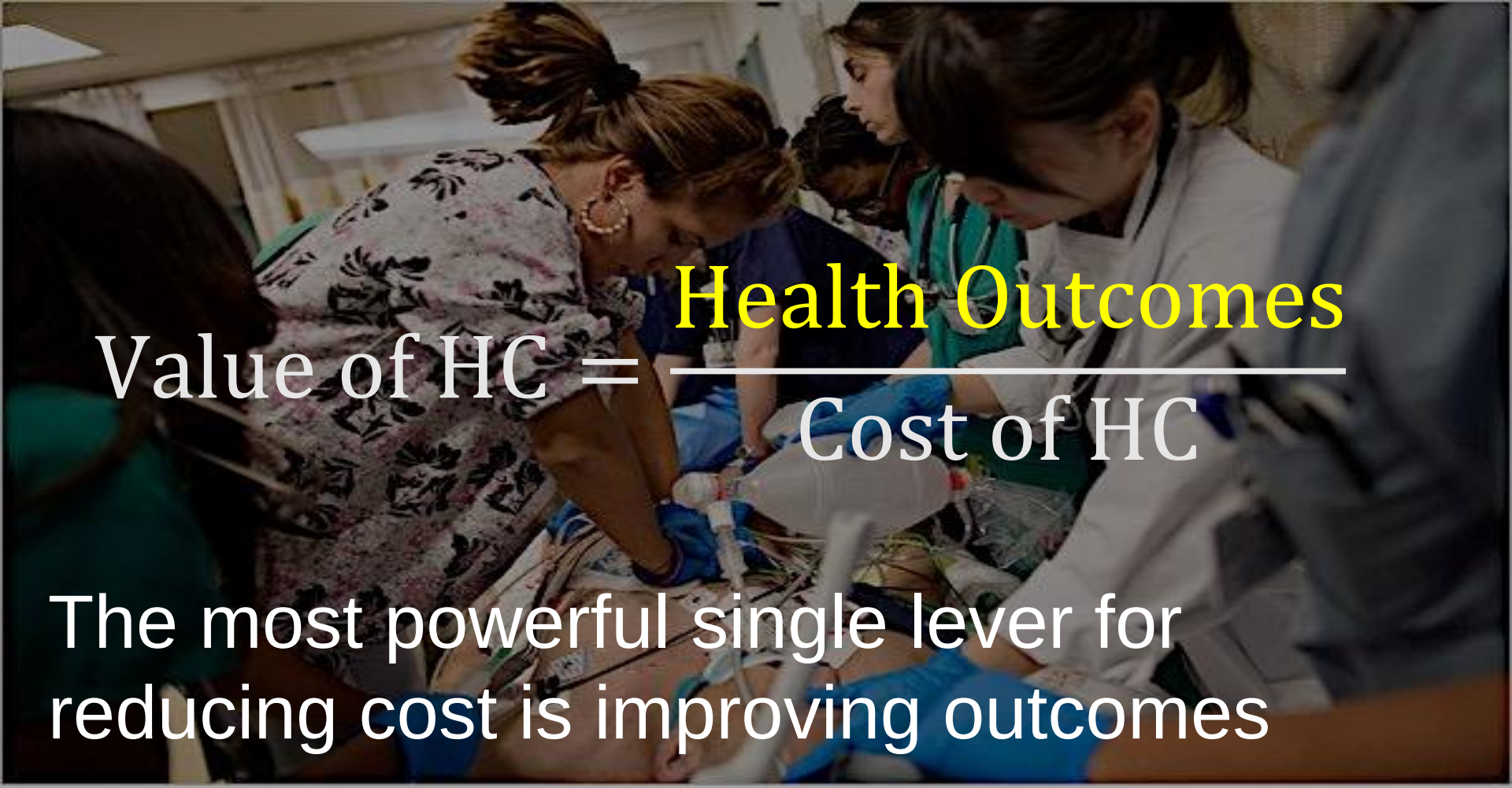
Value-Based Health Care

The core purpose of health care is **value** for patients

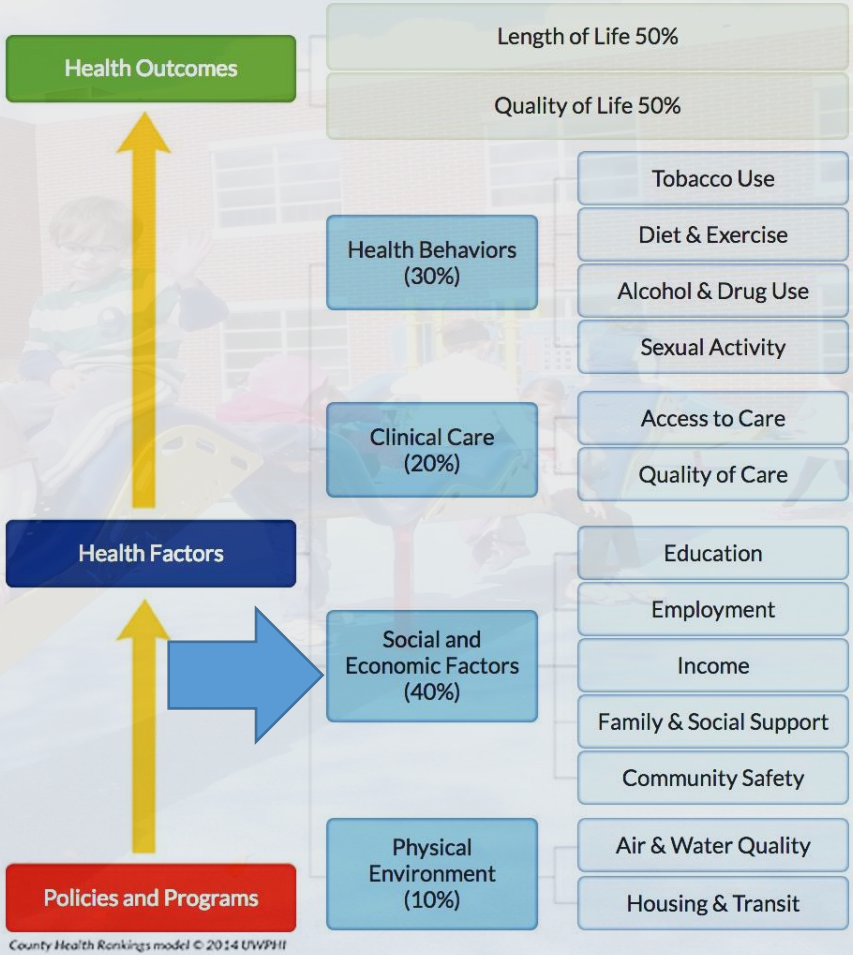
Value-Based Health Care

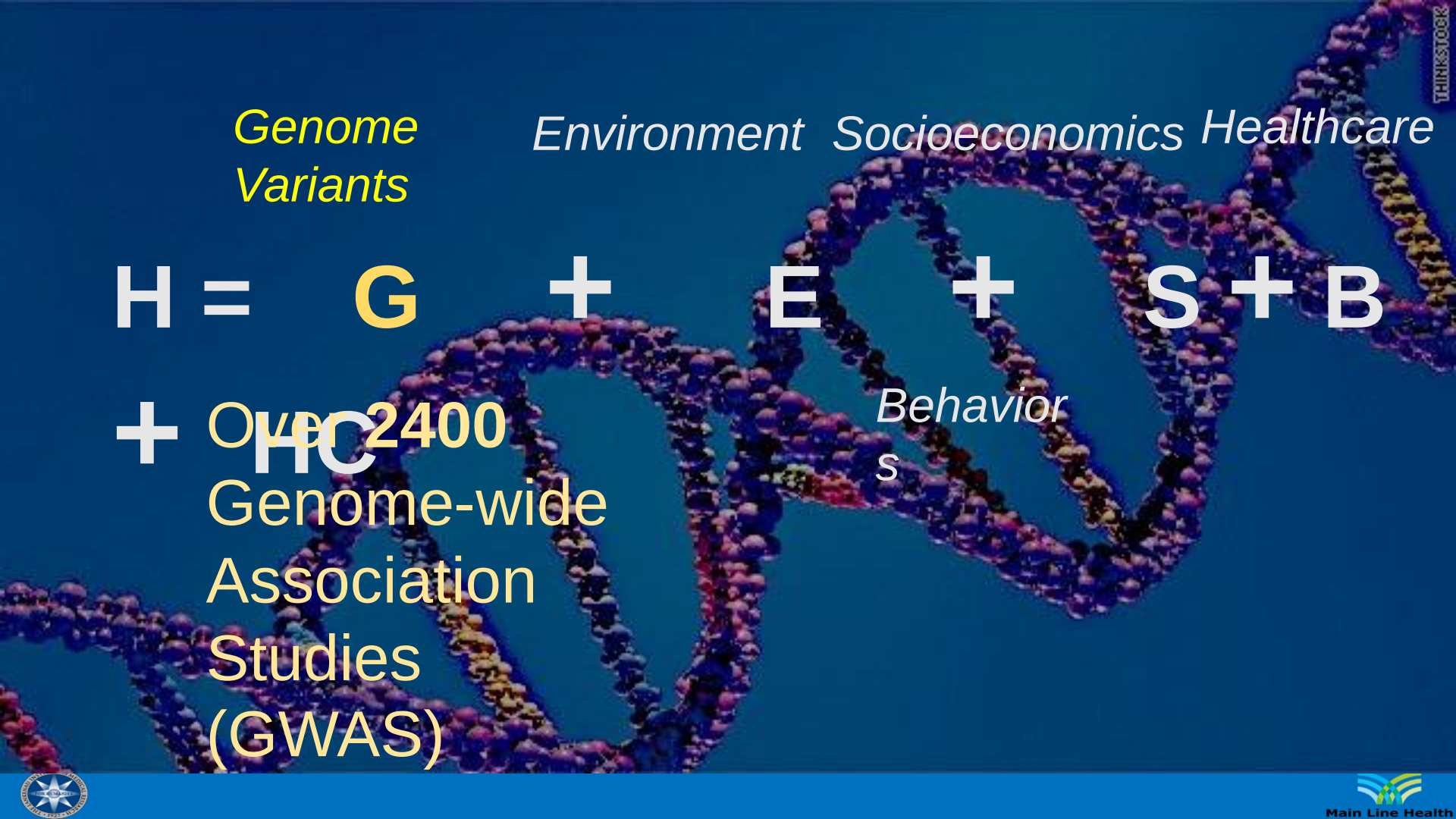
Value in health care remains largely unmeasured and misunderstood.

Value of HC = Health Outcomes / Cost of HC



The most powerful single lever for reducing cost is improving outcomes


Health Outcomes
Length of Life 50%
Quality of Life 50%
Health Behaviors (30%)
Tobacco Use
Diet & Exercise
Alcohol & Drug Use
Sexual Activity
Clinical Care (20%)
Access to Care
Quality of Care
Health Factors
Social and Economic Factors (40%)
Education
Employment
Income
Family & Social Support
Community Safety
Physical Environment (10%)
Air & Water Quality
Housing & Transit
Policies and Programs
County Health Rankings model © 2014 UWPHI



Genome Variants

Environment *Socioeconomics* *Healthcare*

H = G + E + S + B

+ HC

Behavior s

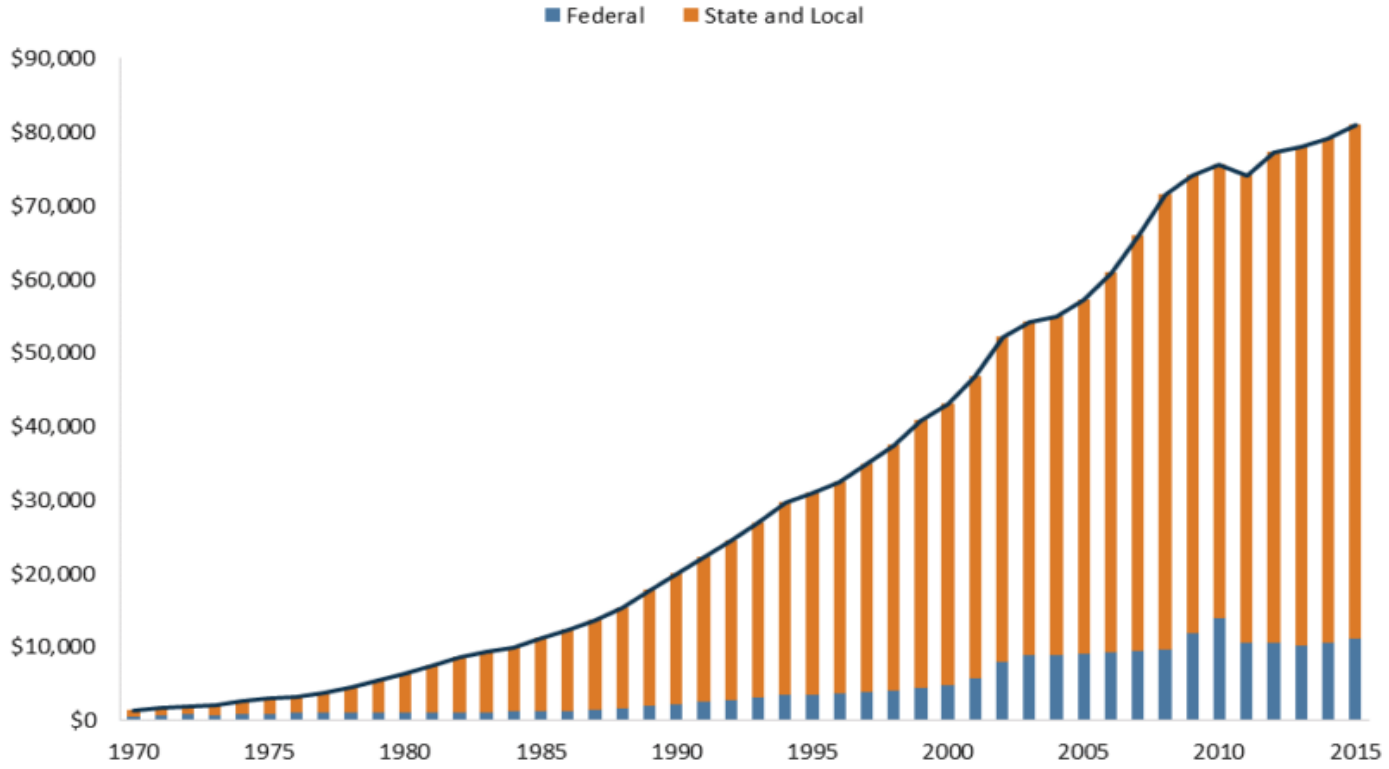
Over 2400 Genome-wide Association Studies (GWAS)

THINKSTOCK

Genome
Variants
Environment
Socioeconomics
Healthcare
H = G + E + S + B
+ HC
Geological
Climate
Pollution
Epidemiological
Built Environment
Behaviors

Immunizations
Fluoridation of Drinking Water
Control of Infectious Diseases

Local and federal expenditures on public health, US $Millions, 1970-2015



Source: Kaiser Family Foundation analysis of National Health Expenditure (NHE) data from Centers for Medicare and Medicaid Services, Office of the Actuary, National Health Statistics Group

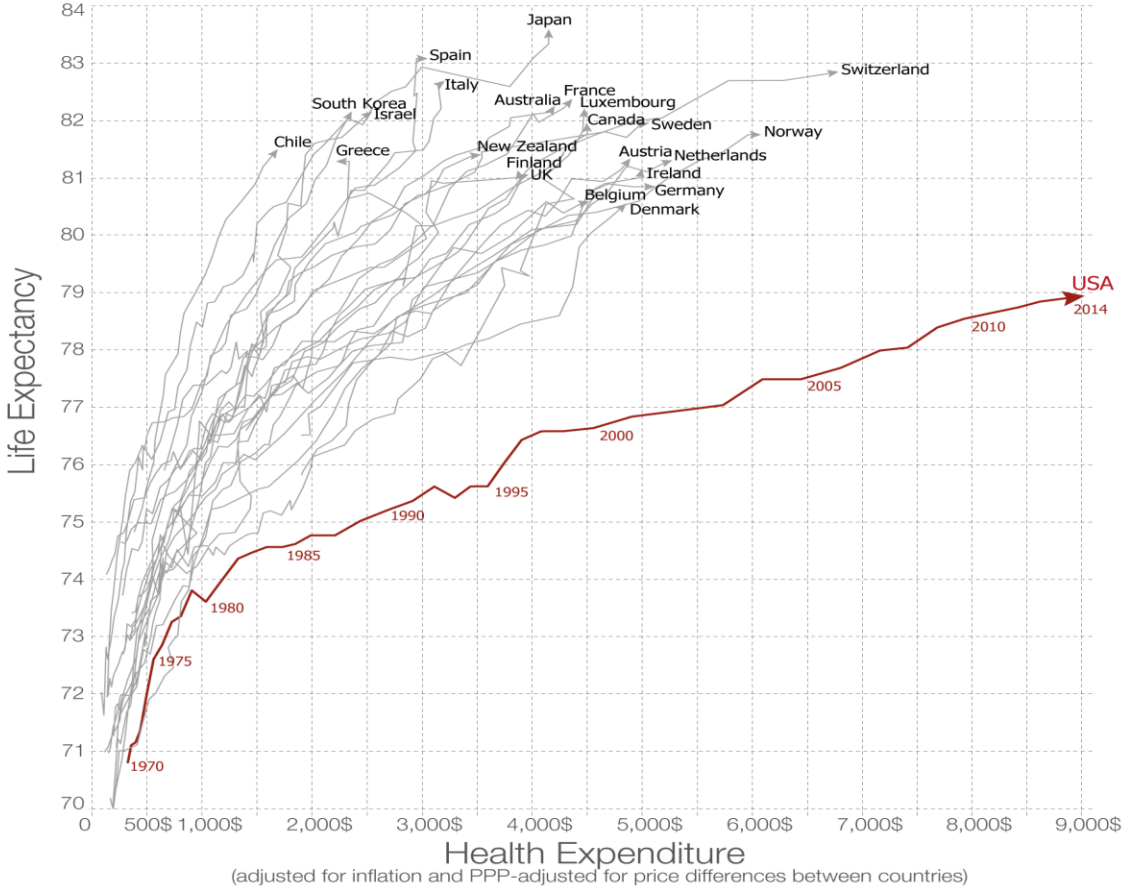
Peterson-Kaiser Health System Tracker

Genome Variants
Environment
Socioeconomics
Healthcare
H = G + E + S + B
Type 2 Diabetes
Heart Disease
Obesity
Life Expectancy
HC
Behaviors

Life expectancy vs. health expenditure over time (1970-2014)

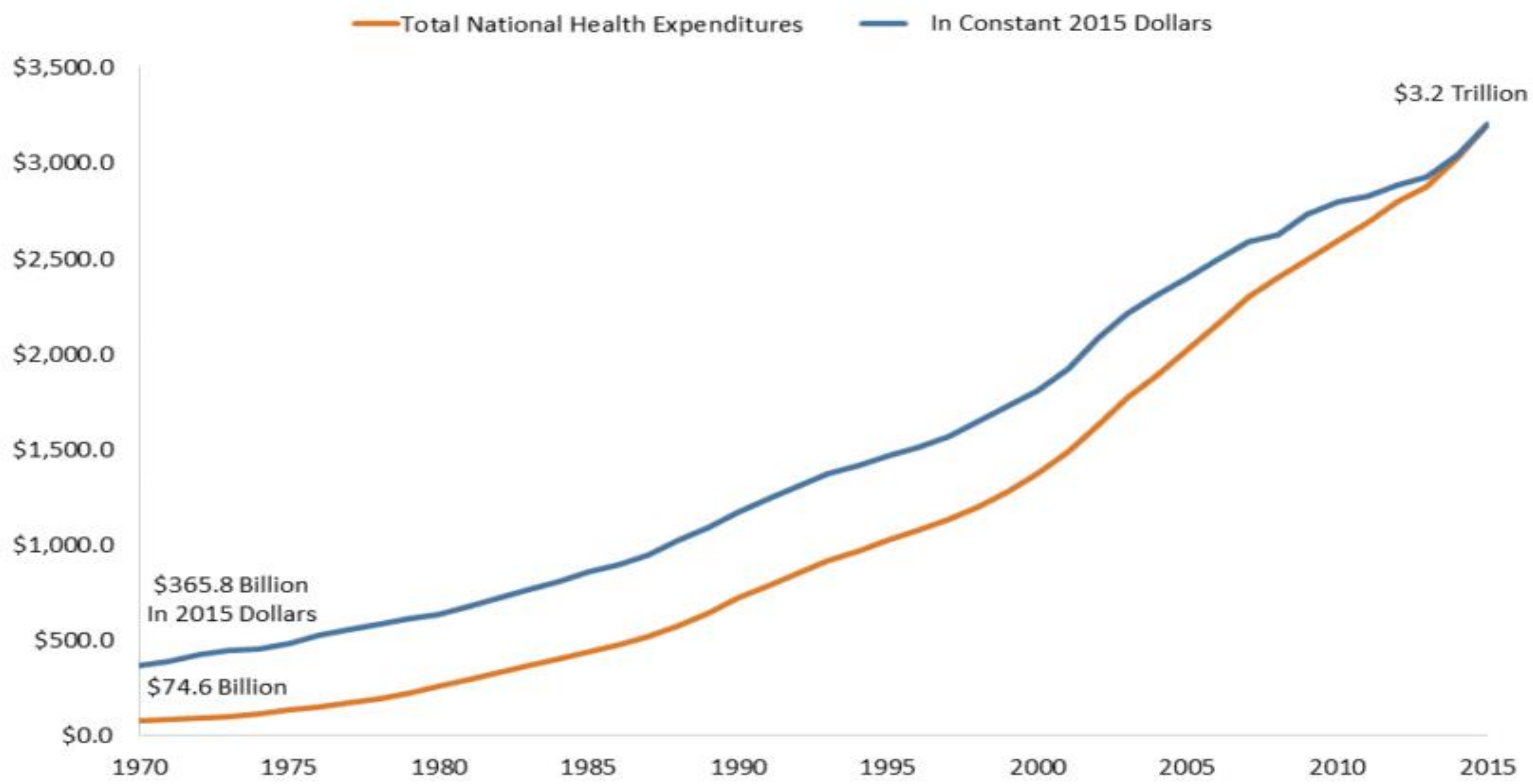
Our World in Data

Health spending measures the consumption of health care goods and services, including personal health care (curative care, rehabilitative care, long-term care, ancillary services and medical goods) and collective services (prevention and public health services as well as health administration), but excluding spending on investments. Shown is total health expenditure (financed by public and private sources).



Data source: Health expenditure from the OECD; Life expectancy from the World Bank Licensed under CC-BY-SA by the author Max Roser.
The data visualization is available at OurWorldinData.org and there you find more research and visualizations on this topic.

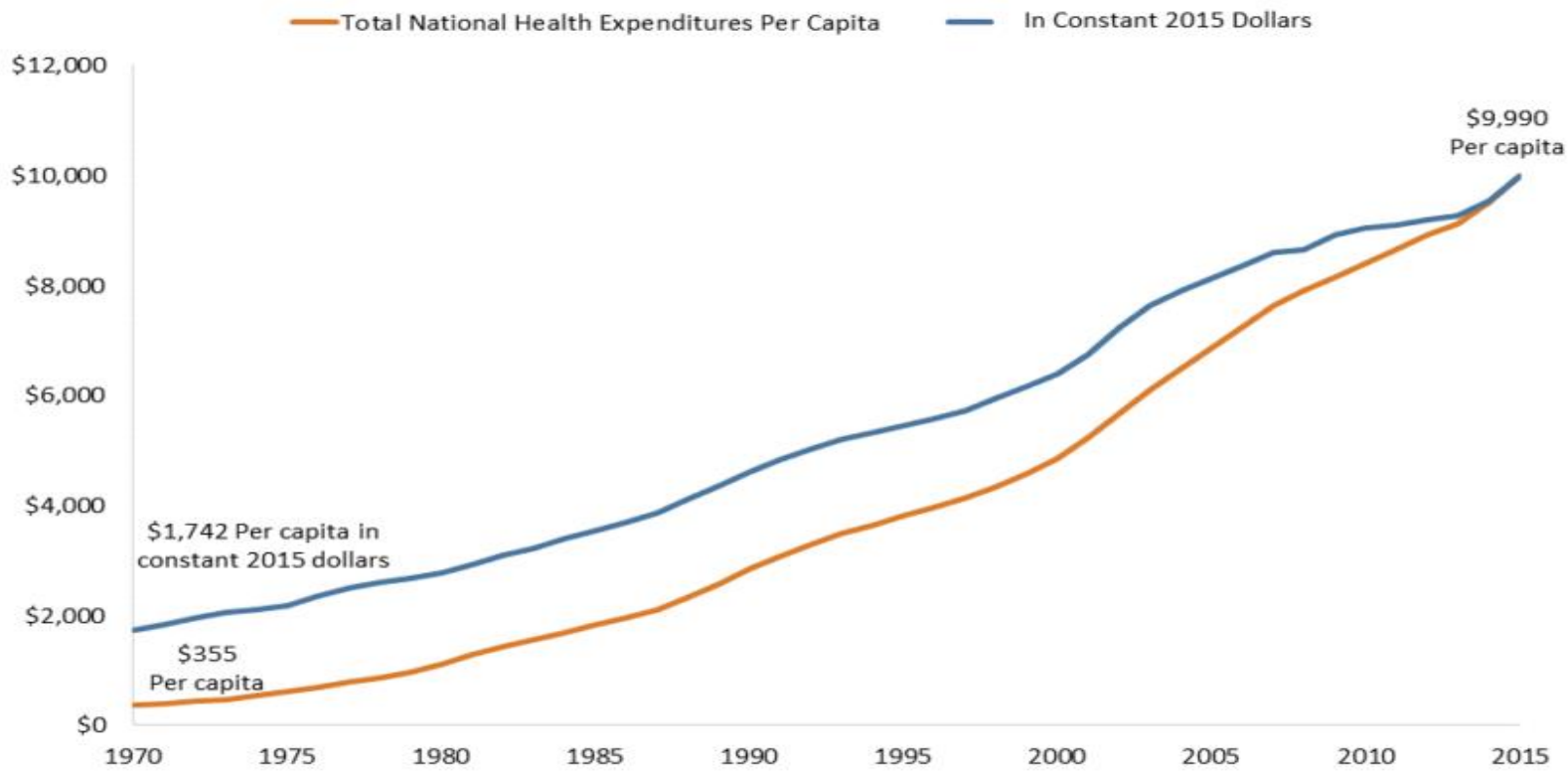
Total national health expenditures, US $ Billions, 1970-2015



Source: Kaiser Family Foundation analysis of National Health Expenditure (NHE) data from Centers for Medicare and Medicaid Services, Office of the Actuary, National Health Statistics Group

Peterson-Kaiser Health System Tracker

Total national health expenditures, US $ per capita, 1970-2015

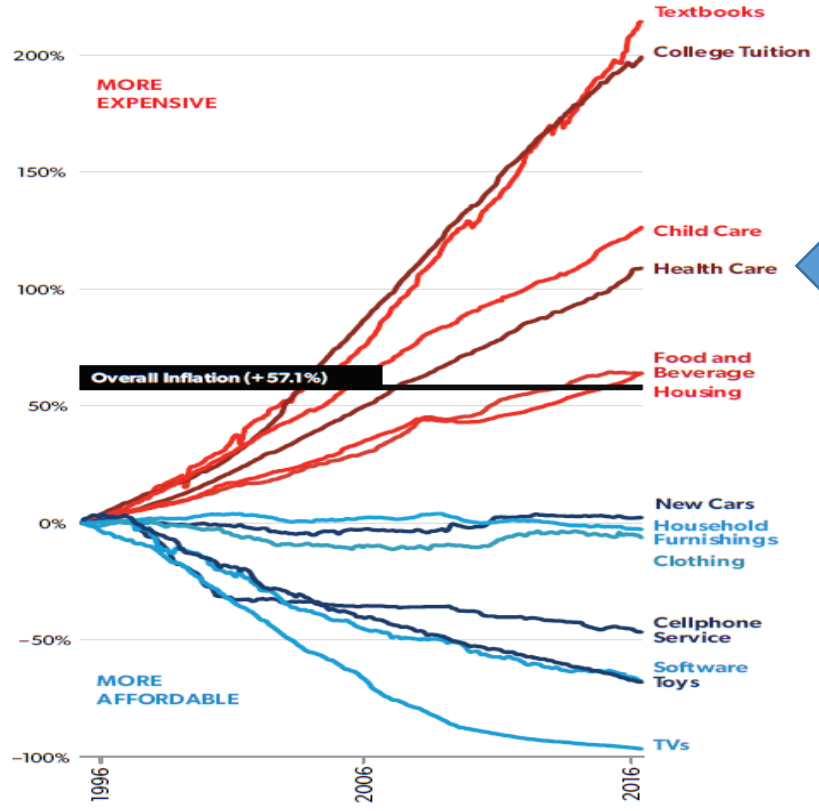


Source: Kaiser Family Foundation analysis of National Health Expenditure (NHE) data from Centers for Medicare and Medicaid Services, Office of the Actuary, National Health Statistics Group

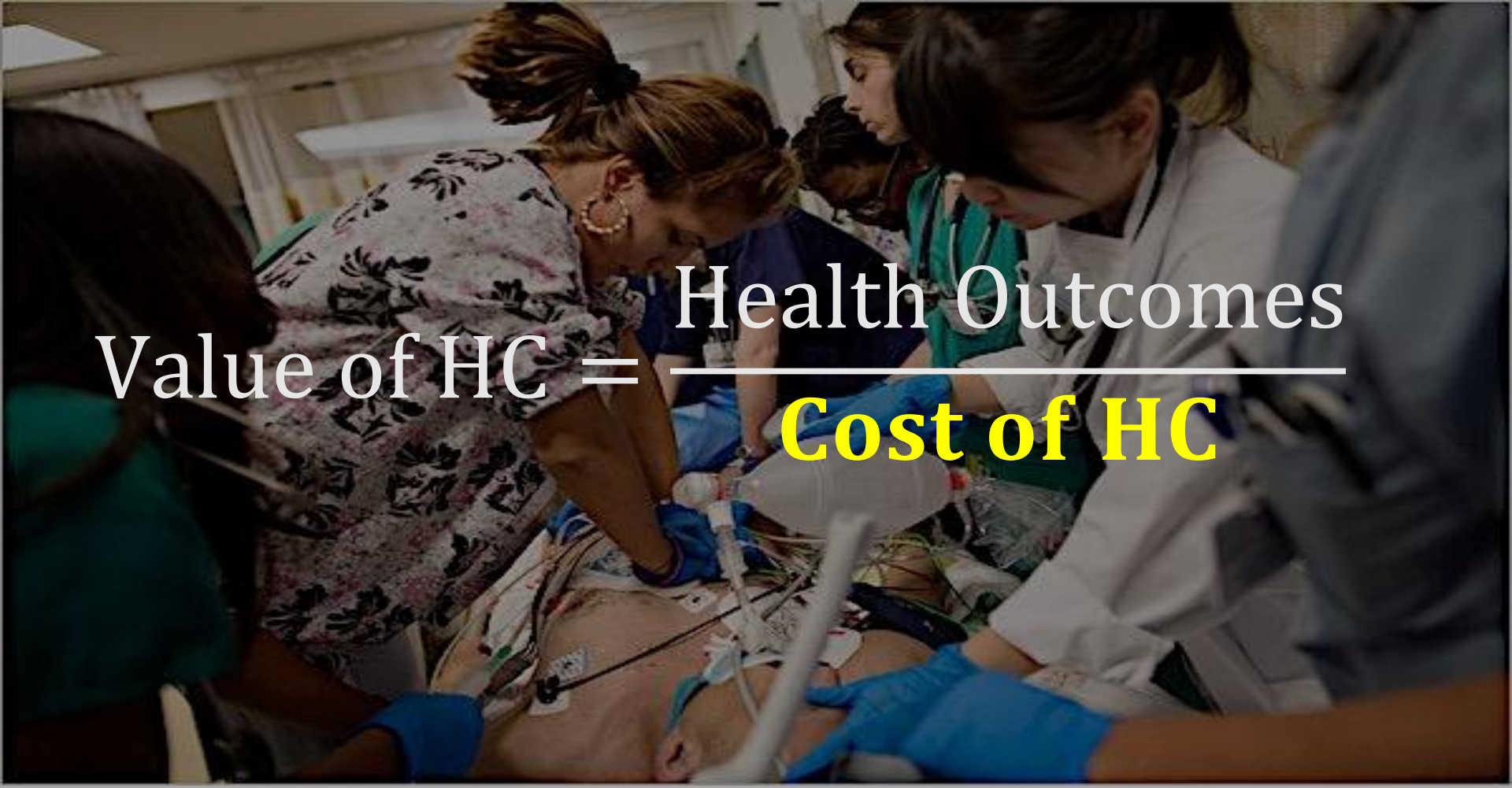
Peterson-Kaiser Health System Tracker

Price Changes (Jan. 1996–Dec. 2016)

Selected Consumer Goods and Services



Source: Bureau of Labor Statistics.


Value of HC = Health Outcomes / Cost of HC

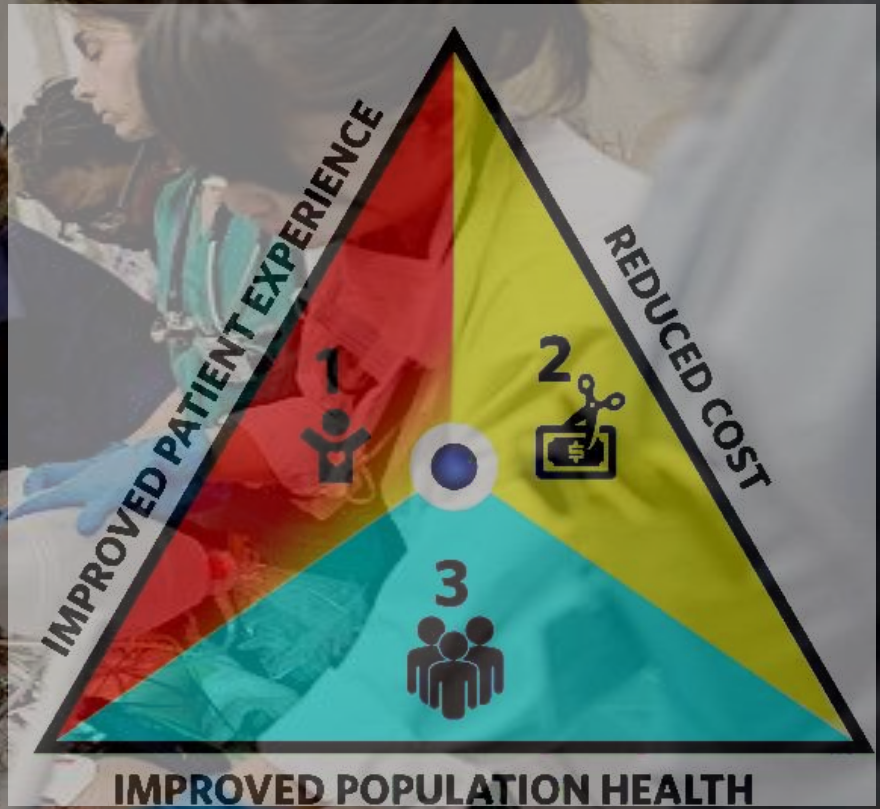
$$\text{Cost of HC} = \sum_{Episode} P_i * S_i$$

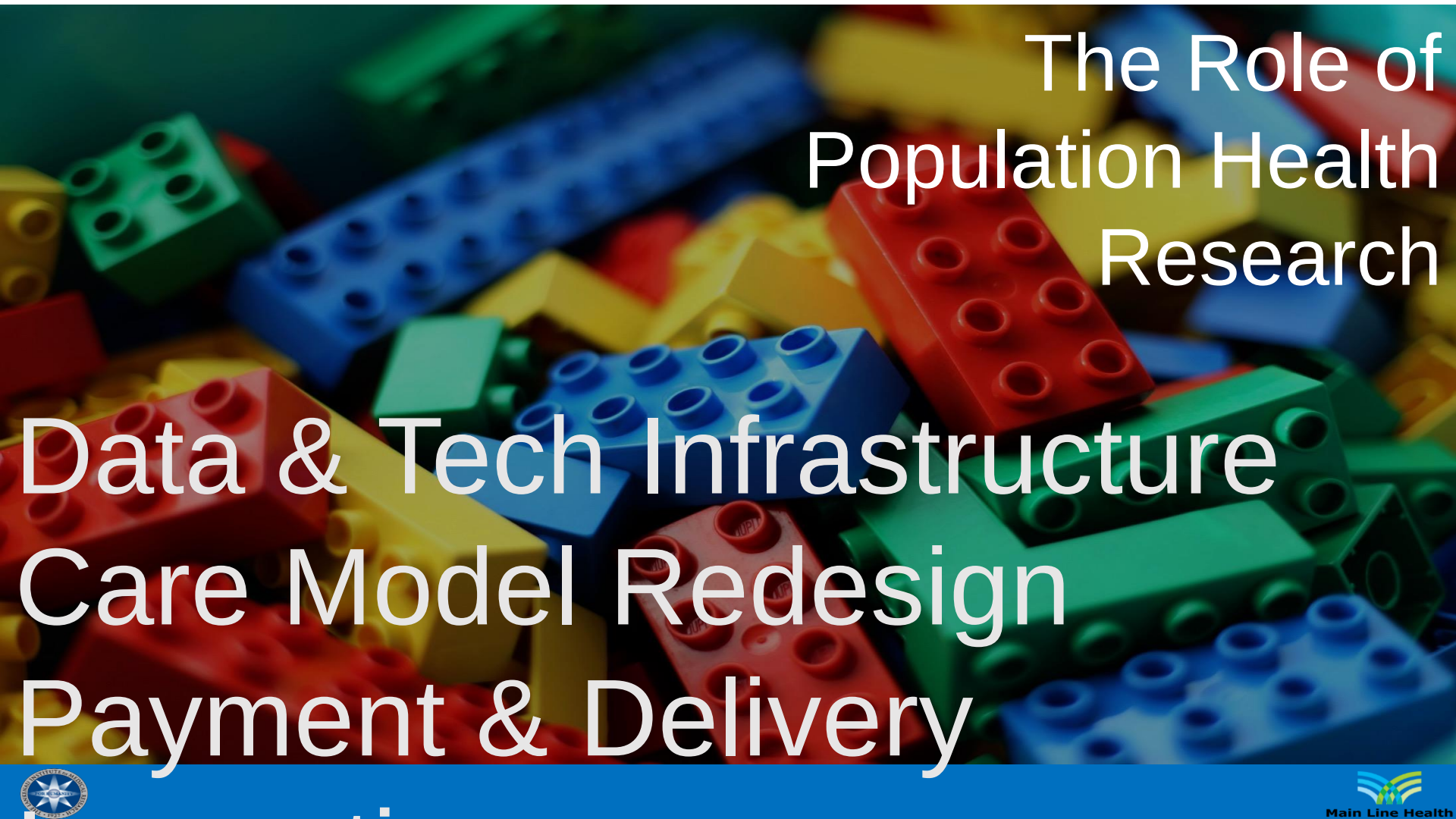
Since we cannot change prices

easily we focus on

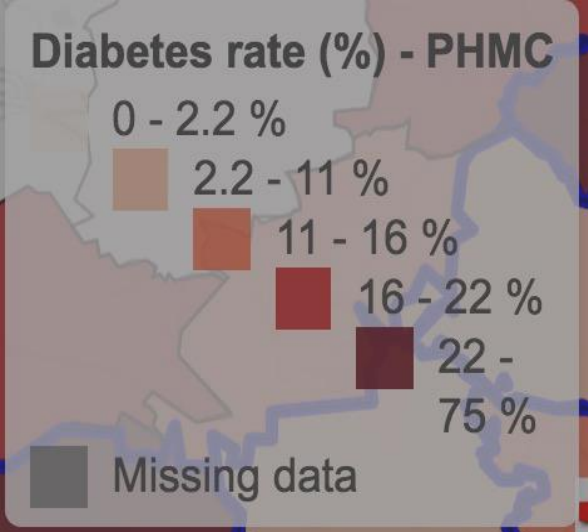
distribution of services (S_i)

to achieve the outcomes of the “triple aim”.




The Role of
Population Health
Research
Data & Tech Infrastructure
Care Model Redesign
Payment & Delivery

The Role of Population Health Research



$$H = G + (E + S + B) + HC$$

Genome Variants

Environment

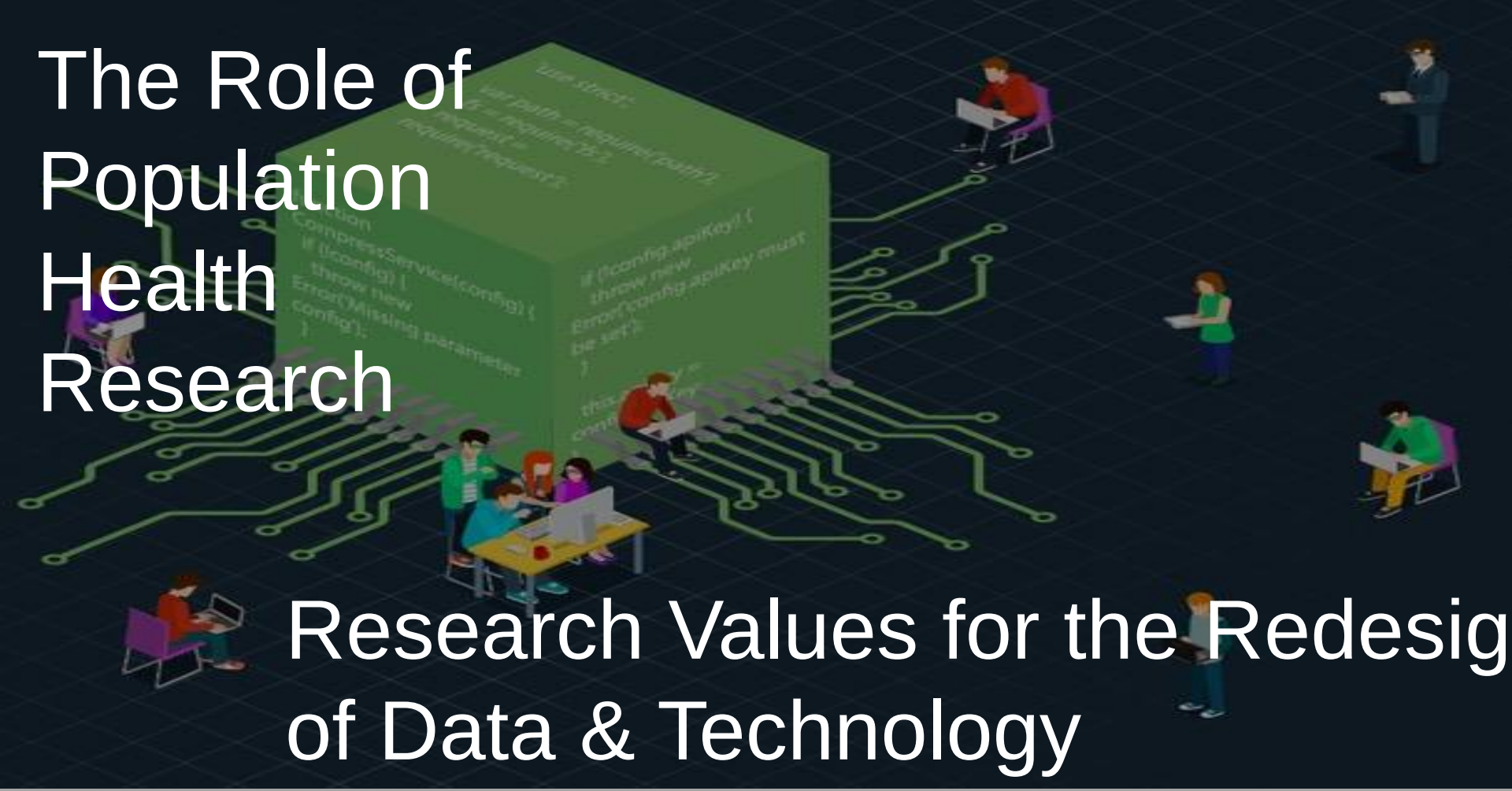
Socioeconomics

Healthcare

Behaviors

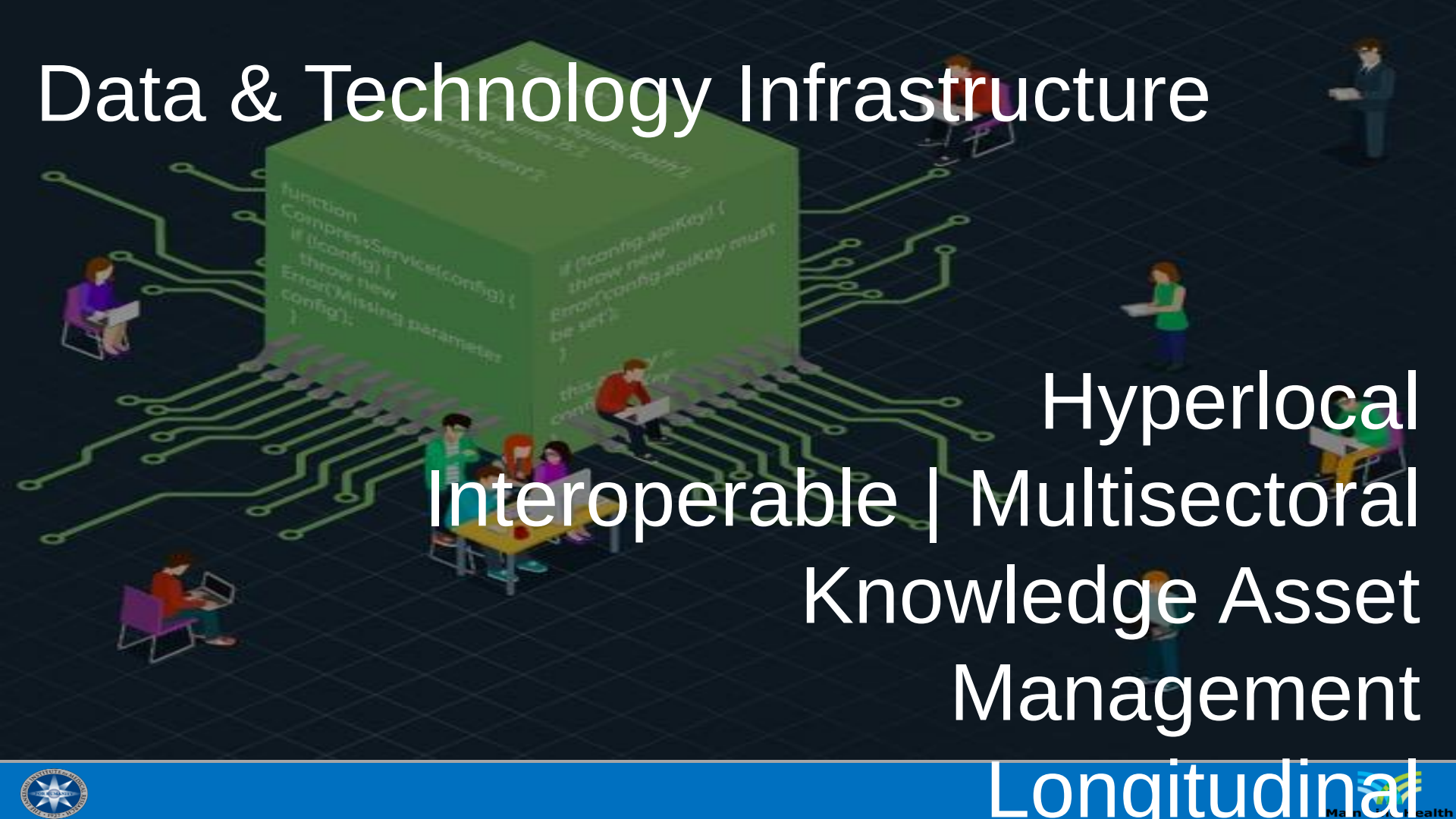
Main Line Health

The Role of Population Health Research



Research Values for the Redesig of Data & Technology Infrastructure

Data & Technology Infrastructure



Hyperlocal

Interoperable | Multisectoral

Knowledge Asset Management

Longitudinal

Main Line Health
Well ahead.

Loading data and maps
Jefferson
HEALTH IS ALL WE DO

View only zip codes whose income is in the selected range

Select one of these tabs

Select one factor

for Population Health Research at MLHS | About | Socio-demographics | Risk Factors | Health | More

About CPHR at MLHS
FAQs
Browse Data
Help

Additional tabs for more details

u want to visualize ?

Diabetes rate (%) - PHMC

Median household income in each county ($) :

14,897 — 215,128

14,000 34,600 55,200 75,800 96,400 117,000 137,600 158,200 178,800 199,400 220,000

Definition

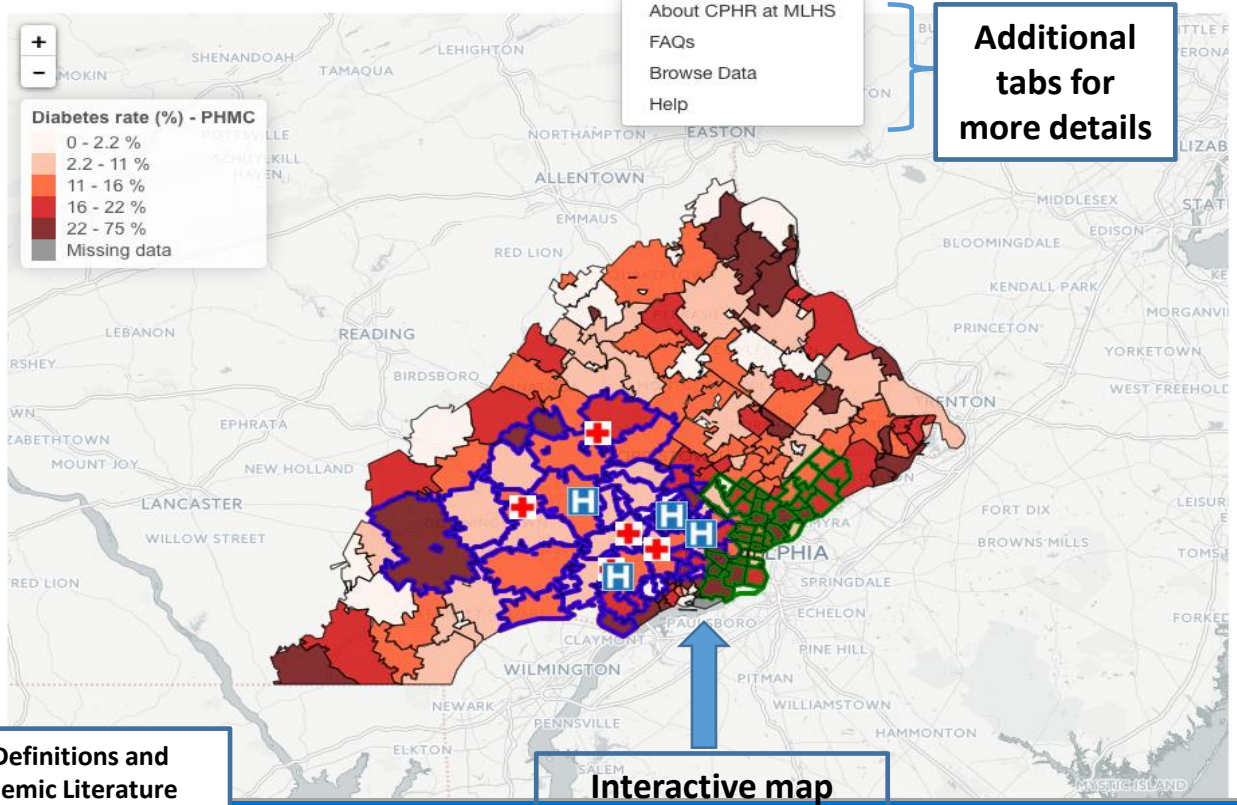
Source : *Public Health Management Corporation (2014-2016)*
Percentage of respondents who answered "YES" to the following question : "Have you EVER been told by a doctor or other health professional that you have or had diabetes?"

Any relationship with cardiovascular diseases?

About half of all Americans (47%) have at least one of the three key risk factors for heart disease: high blood pressure, high cholesterol, and smoking. Here is an interesting article.

A large body of epidemiological and pathological data documents that diabetes is an independent risk factor for Cardiovascular Disease in both men and women.

Read more about it here.



Additional information Definitions and Evidence Base from Academic Literature

Interactive map

cphratlimr.shinyapps.io/population_health/

Main Line Health

Aggregated Data sources

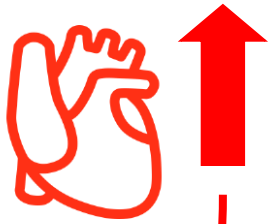
U.S. Census 2014	Public Health Management Corporation 2014-2016	Centers for Disease Control and Prevention 2013	County Health Rankings 2015
-Demographics - Age, sex, density -Economics - Household income - Poverty level - Unemployment -Education - High school and college graduates -Health insurance - Uninsured people	-Health - Diabetes rate - Obesity -Hypertension - Mental health - Behaviors - Smoking - Fast food meals - Built environment - Access to parks	-Health -Diabetes rate - Obesity - Behaviors - Leisure time, Physical inactivity	-Health rankings - Health outcomes - Health factors - Length of life - Clinical Care - Socio-Economic factors -Physical Environment
- N= 4,040,000 respondents - On a zip code level	- N= 13,300 respondents - On an individual level	-On a county level	- Health scores - On a county level

Main Line Health

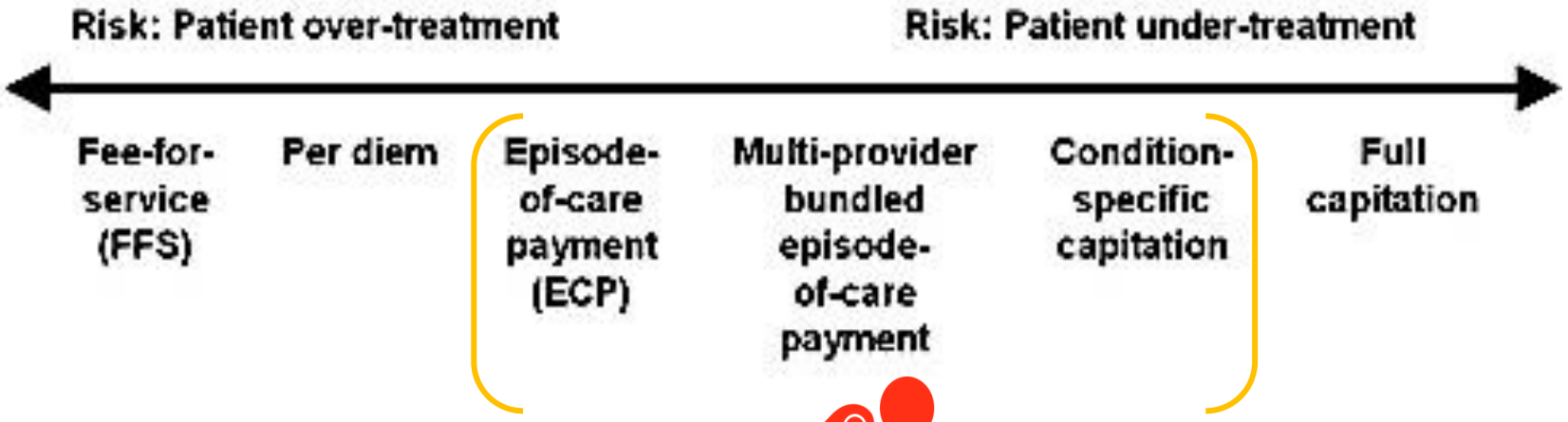
The Role of Population Health Research

T-2years

Care Model Redesign



Alternative Payments & Patients' Perspective



Payment & Delivery Innovation

Fitbit

Connect

Misfit

Disconnect

Withings

Connect

FatSecret

Disconnect

Jawbone

Connect

Strava

Connect

GoogleFit

Connect

Runkeeper

Connect

What's Next for Population Health Research and Value-Based Health Care?

A closer look at the Delema G. Deaver Wellness Garden at Lankenau Medical Center

Google Trends | Explore

population health
Search term

Worldwide | Past 5 years | All categories | Web Search

Related topics

Rising

1	Analytics - Topic	+2,200%
2	Accountable care organization - Topic	+550%
3	Mean - Topic	+250%
4	Patient Protection and Affordable Care Act - ...	+250%
5	World Health Day - Celebration	+180%

Related queries

Rising

1	triple aim	Breakout
2	evolent health	Breakout
3	population health congress 2015	Breakout
4	aco	+1,100%
5	population health analytics	+750%

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