

Social Determinants of Health: Contributions to health equity and promising clinical interventions

Sarah Wiehe, MD, MPH

Nursing Leadership Forum

August 29, 2019

Overview

- Define (briefly) social determinants of health
- Review (briefly) the evidence of how the social determinants of health relate to health outcomes
- Recognize the disparities in social determinants of health as they relate to place and race/ethnicity as a primary driver of health inequity
- Discuss how social determinants of health is being addressed in a clinical setting and what is happening locally in this arena

“Social determinants of health is an abstract term, but for millions of Americans, it is a very tangible, frightening challenge: How can someone manage diabetes if they are constantly worrying about how they’re going to afford their meals each week? How can a mother with an asthmatic son really improve his health if it’s their living environment that’s driving his condition? This can feel like a frustrating, almost fruitless position for a healthcare provider, who understands what is driving the health conditions they’re trying to treat, who wants to help, but can’t simply write a prescription for healthy meals, a new home, or clean air.”

Alex M. Azar II, Secretary, Health and Human Services

November 14, 2018

Hatch Foundation for Civility and Solutions, Washington D.C.

Nurses poised to address social determinants of health *and* recognized as leaders in this emerging area

RELATED TOPICS:

NURSES | SOCIAL DETERMINANTS OF HEALTH | NURSING | HEALTH DISPARITIES | HEALTH PHILANTHROPY
| HEALTH PROFESSIONALS | CARE COORDINATION | ACCESS TO CARE

Perfectly Positioned: Galvanizing Nurses To Address The Social Determinants Of Health

Susan B. Hassmiller

APRIL 30, 2019

10.1377/hblog20190429.781982



[TOOLS](#) [SHARE](#)

With [research](#) showing that social and economic factors—such as access to high-quality jobs, education, and housing—have a greater impact on health outcomes than does the medical care a person receives, philanthropy is increasingly funding initiatives that address these [social](#)

DEFINITION: The social determinants of health are...

...the complex, integrated, and overlapping social structures and economic systems that are responsible for most health inequities. These social structures and economic systems include the social environment, physical environment, health services, and structural and societal factors. Social determinants of health are shaped by the distribution of money, power, and resources throughout local communities, nations, and the world.

So what are the social determinants of health?

- Life-enhancing resources, such as food supply, housing, economic and social relationships, transportation, education and health care, whose distribution across populations effectively determines length and quality of life.

EXAMPLES include...



Economic Stability

- Employment
- Food insecurity
- Housing instability
- Poverty

Education

- Early childhood education and development
- Enrollment in higher education
- High school graduation
- Language and literacy

Social and Community Context

- Civic participation
- Discrimination
- Incarceration
- Social cohesion

Health and Health Care

- Access to health care
- Access to primary care
- Health literacy

Neighborhood and Built Environment

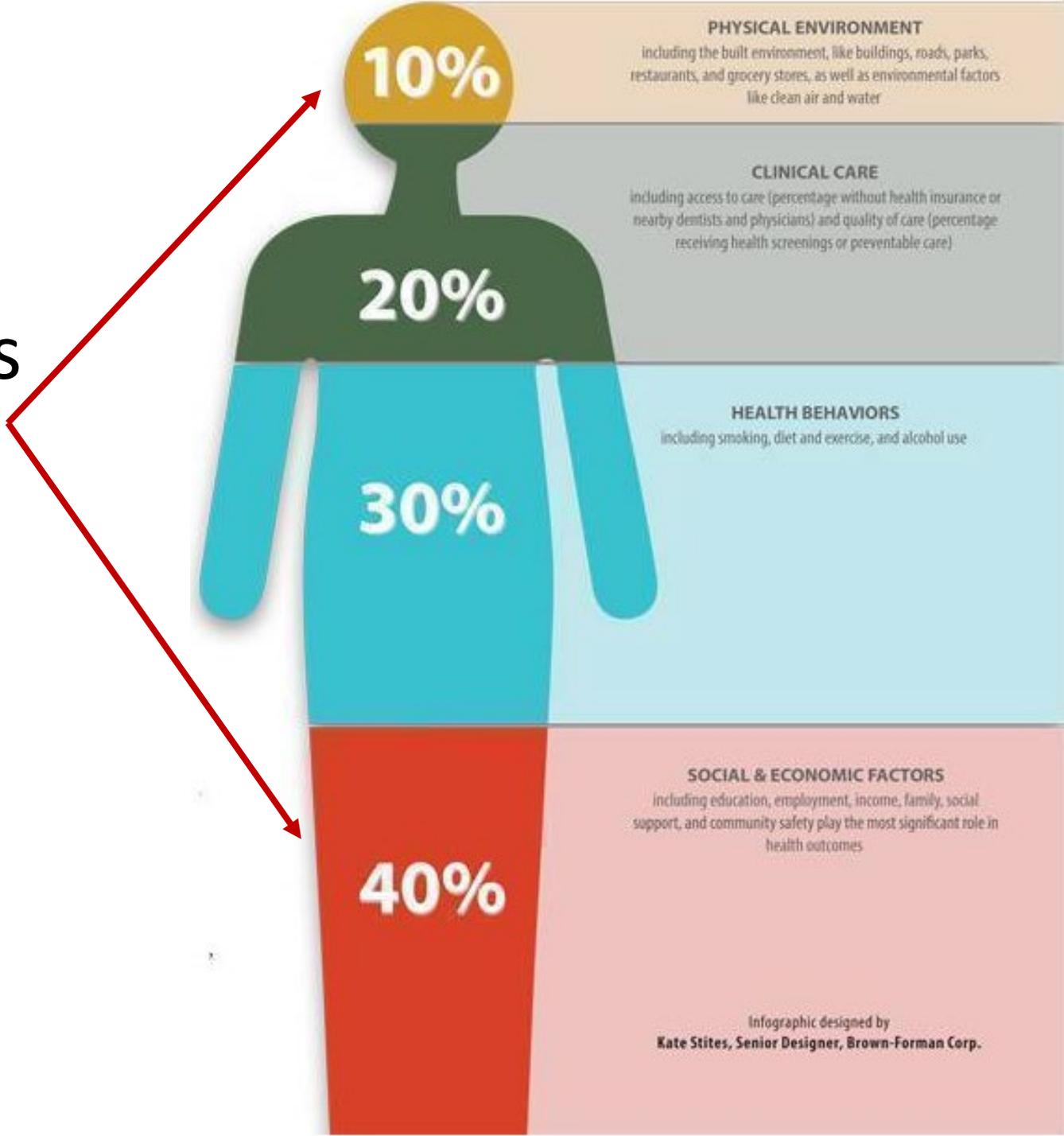
- Access to healthy foods
- Crime and violence
- Environmental conditions
- Quality of housing

Healthy People 2020 Overarching Goals

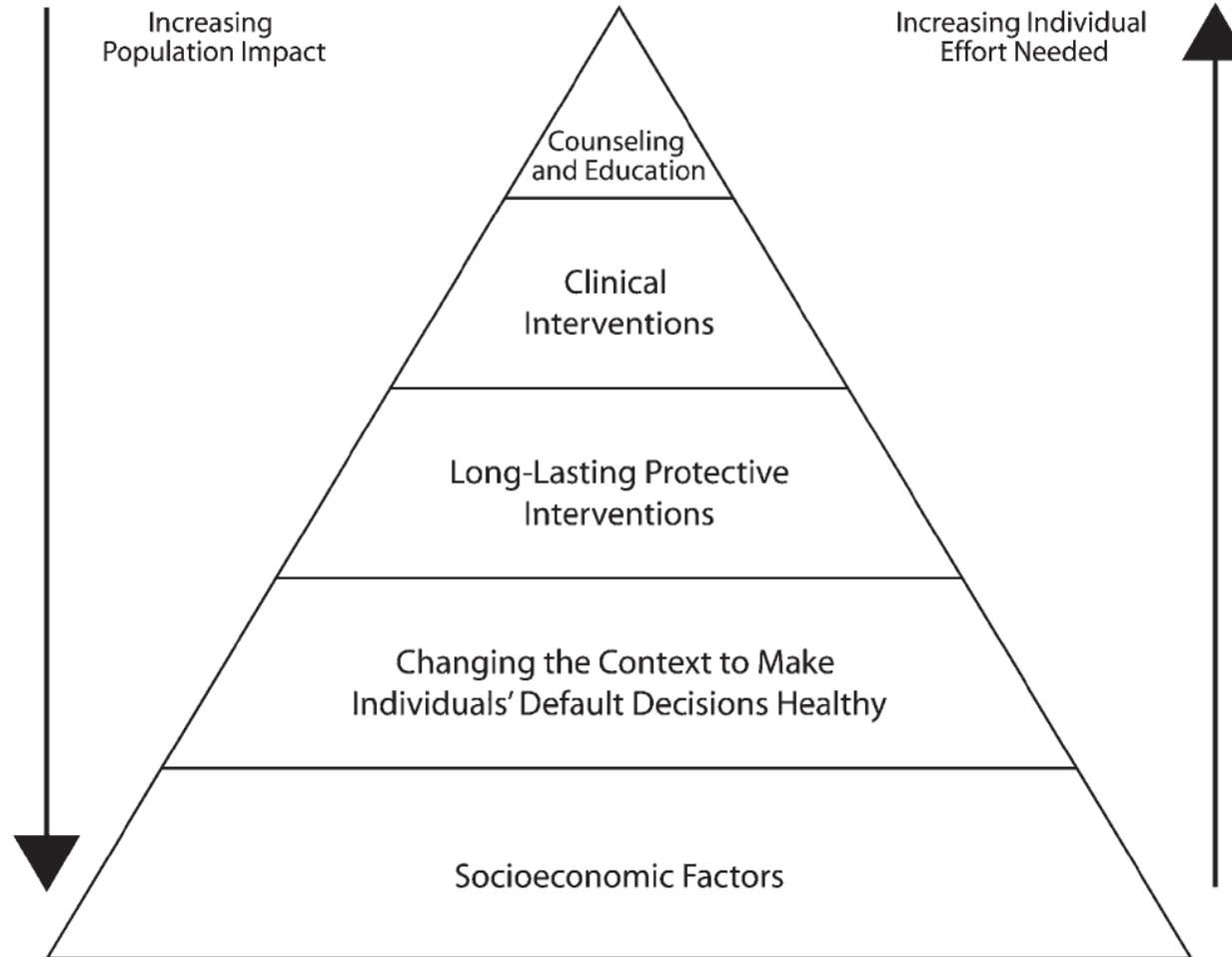
- Attain high-quality, longer lives free of preventable disease, disability, injury, and premature death
- **Achieve health equity, eliminate disparities, and improve the health of all groups**
- **Create social and physical environments that promote good health for all**
- Promote quality of life, healthy development, and healthy behaviors across all life stages

WHY do they matter?

50% of health outcomes result from the social determinants of health

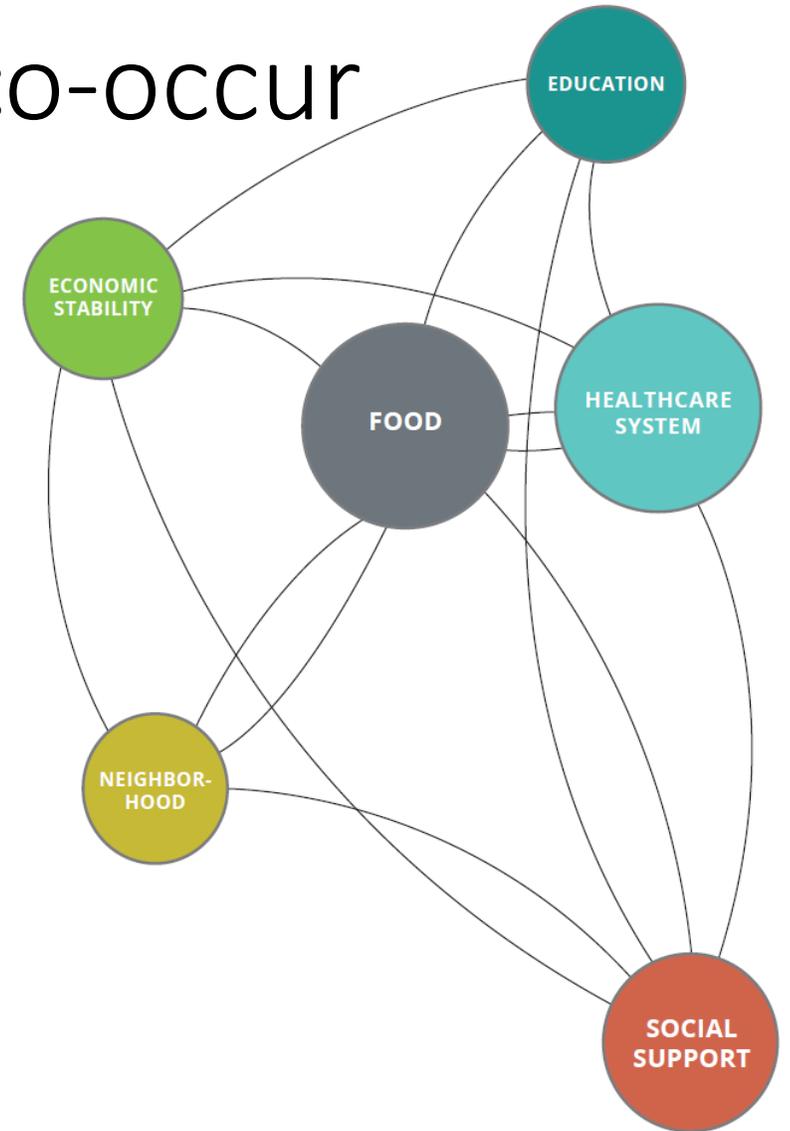


The health impact pyramid

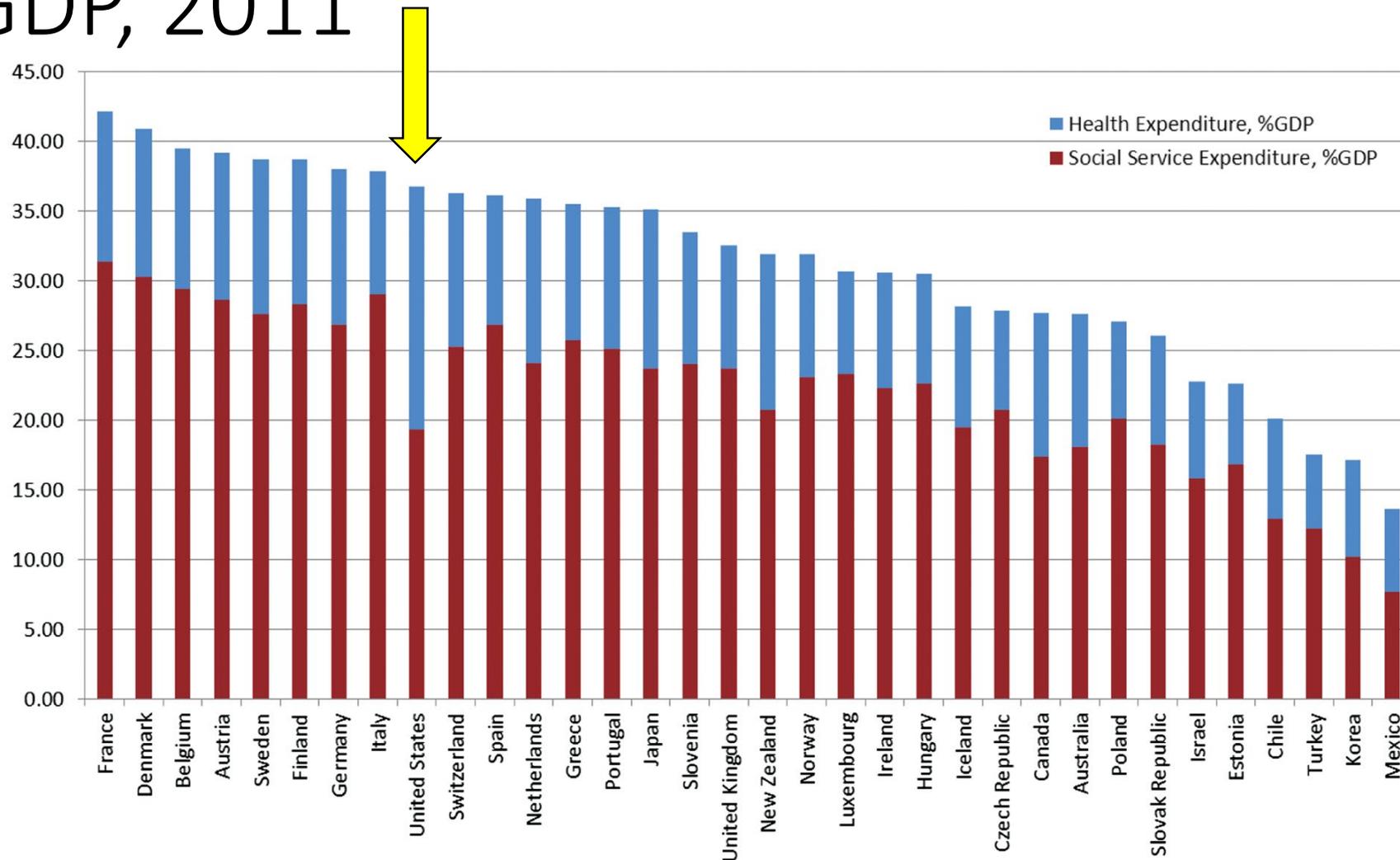


Social determinants of health co-occur

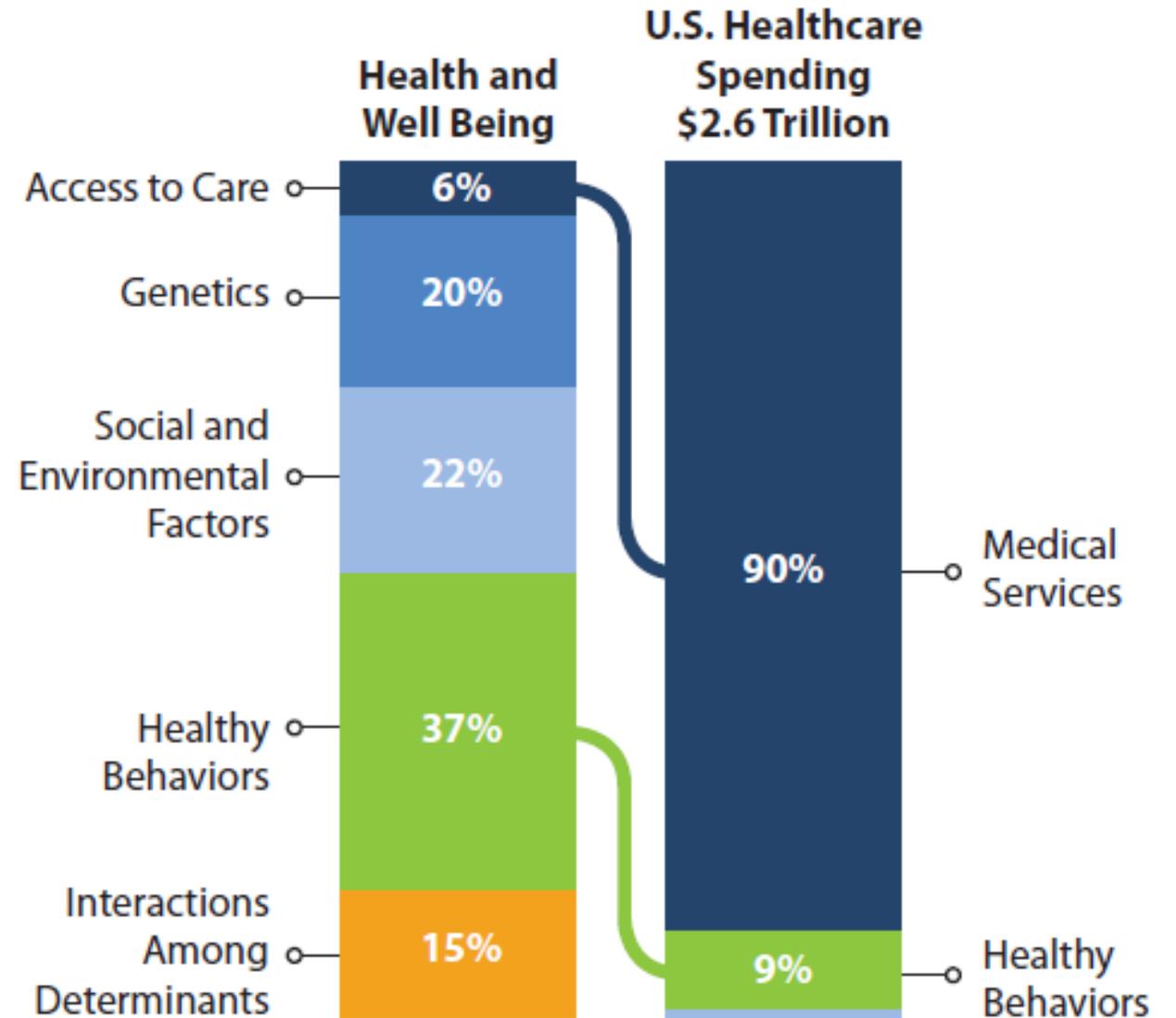
- Connectivity of SDOH mentions in a diabetes forum (among patient groups)
- Nearly every determinant had connectivity with the other 5



Health and social care spending as a percent of GDP, 2011



Mismatch between drivers of health and spending



Federal activity relating to SDOH

1

Making Patients into Empowered Consumers

ONC – MyHealth-e Data
ACF – Workforce training
CCIIO – Plan Flexibilities
CMS – Medicaid Flexibility
HRSA – Federally Qualified Health Centers

3

Making Providers into Accountable Navigators

SIPPRA Implementation (115th Congress Public Law 123)
Deputy Secretary – Addressing Barriers to Coordinated Care RFI
CMS (Medicare) – 2018 Part C Rule
Community Health Needs Assessment (CHNA)
CMMI – AHCs
ASPE – Social Risk Models RFI

2

Paying for Outcomes

CDO – September 2018 Integration Report
CMS – Medicaid Flexibility
OASH – NAM Convening
Deputy Secretary – Barriers
SIPPRA
CMMI – Accountable Health Communities
CMMI – Integrated Care for Kids (InCK) Model
CMS MA Part D Rule
CMS Call Letter

4

Preventing Disease Before it Occurs or Progresses

CMS (Medicare) – April 2018 Call Letter and Clarifications
CMMI – Integrated Care for Kids (InCK) Model
CMMI – Accountable Health Communities
OASH – NAM Convening
OASH – Developing Healthy People 2030
CDO – Hackathon in Austin, Texas ??
OSG – RFI and 2019 Report
CMS – Medicaid Flexibility
CDC – HI-5
NIH – Precision Medicine Initiative

Related constructs: Differentiating social determinants and social needs



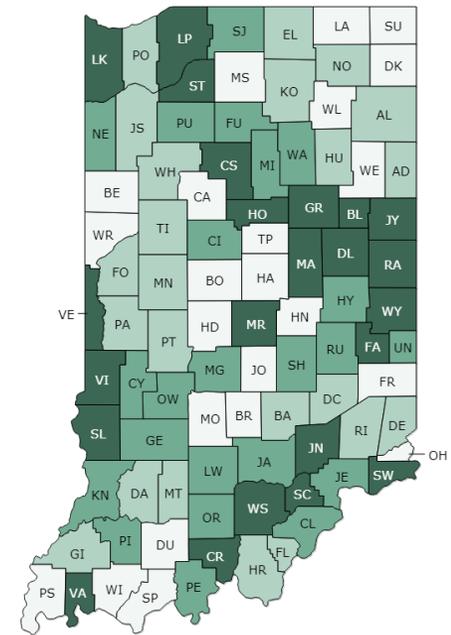
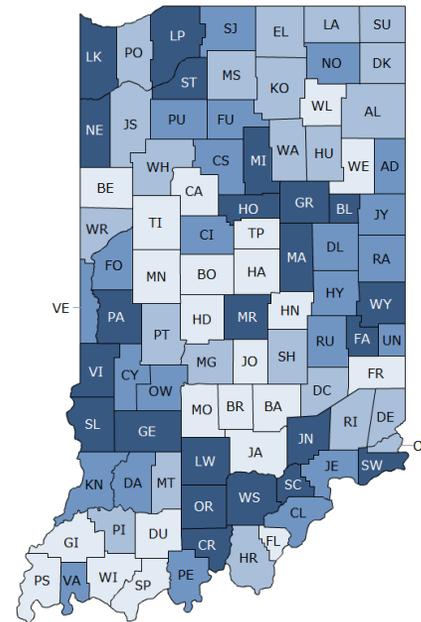
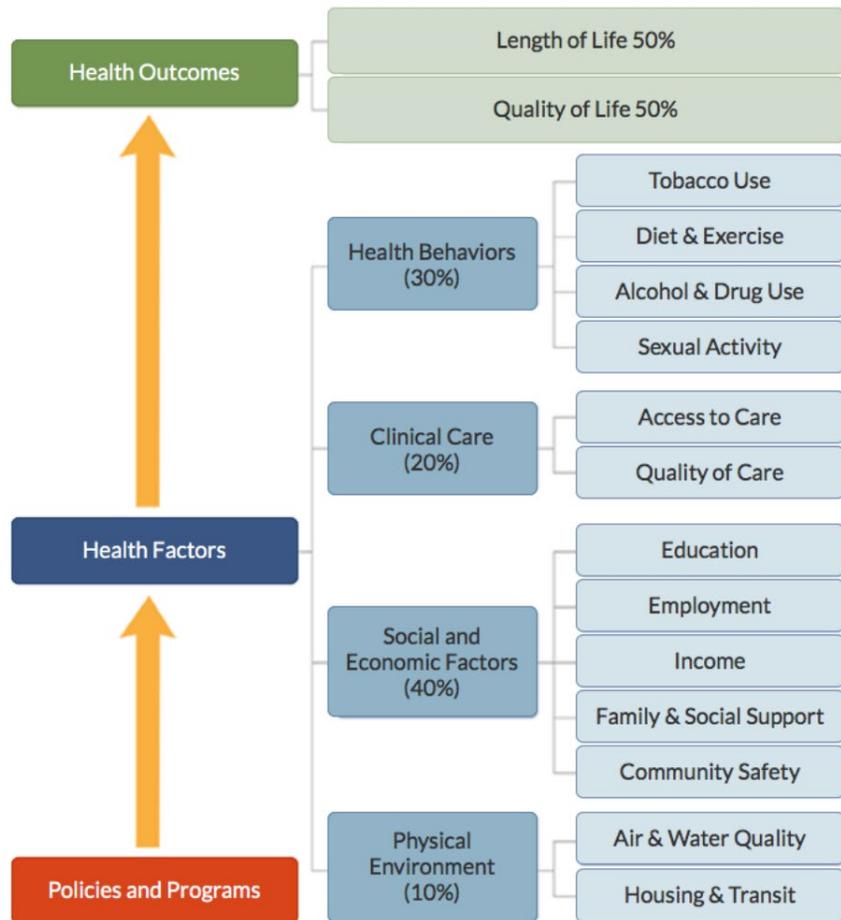
Castrucci B, Auerbach J. Meeting individual social needs falls short of addressing social determinants of health. [Healthaffairs.org/doi/10.1377/nblog20190115.234942/full](https://www.healthaffairs.org/doi/10.1377/nblog20190115.234942/full).

Why do social determinants of health matter?

- Housing insecurity linked to lead poisoning, respiratory conditions
- Food insecurity linked to hypertension, hyperlipidemia, overall poor physical and mental health
- Unemployment linked to overall poor health, heart disease, stroke
- Contributes to health equity!

County health rankings – a look at Indiana

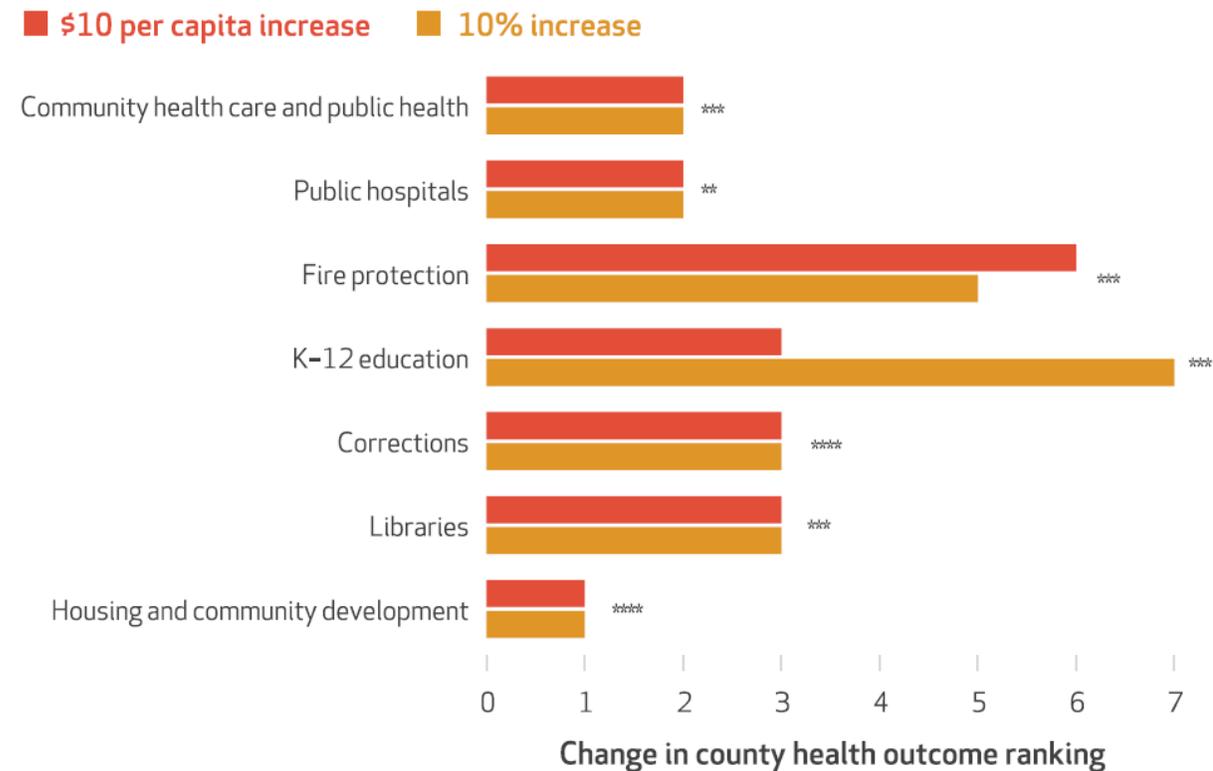
Indiana county health determinants (blue) and health outcomes (green)



Rank 1-23 Rank 24-46 Rank 47-69 Rank 70-92

Rank 1-23 Rank 24-46 Rank 47-69 Rank 70-92

Lagged effects on county health outcomes rankings for 2012-2015 of increases in social services from 2008 to 2012



*Regression effects adjusted for county's health factors, population, state, and mean levels of expenditures; ** $p < 0.05$, *** $p < 0.01$, **** $p < 0.001$*

Effects of health systems addressing social needs indicate success

- Montefiore: 300% ROI from social determinants investments
- Advocate Health Care (Chicago): enhanced **nutrition care program** including coupons for retail oral nutritional supplements → reduced healthcare costs by \$3800/patient → \$4.8 million in total savings and reduced readmission rates among target population
- UIC and Center for Housing and Health: referred homeless to the community agency and outreach worker to find **stable housing** → healthcare costs among participants fell 61% and ED utilization fell 35% and increased utilization of primary care
- MedStar Health and Denver Health Medical Center: **transportation** provided using ridesharing companies (e.g., Lyft, Uber)

What Montefiore's 300% ROI from social determinants investments means for the future of other hospitals. 7/5/2018.

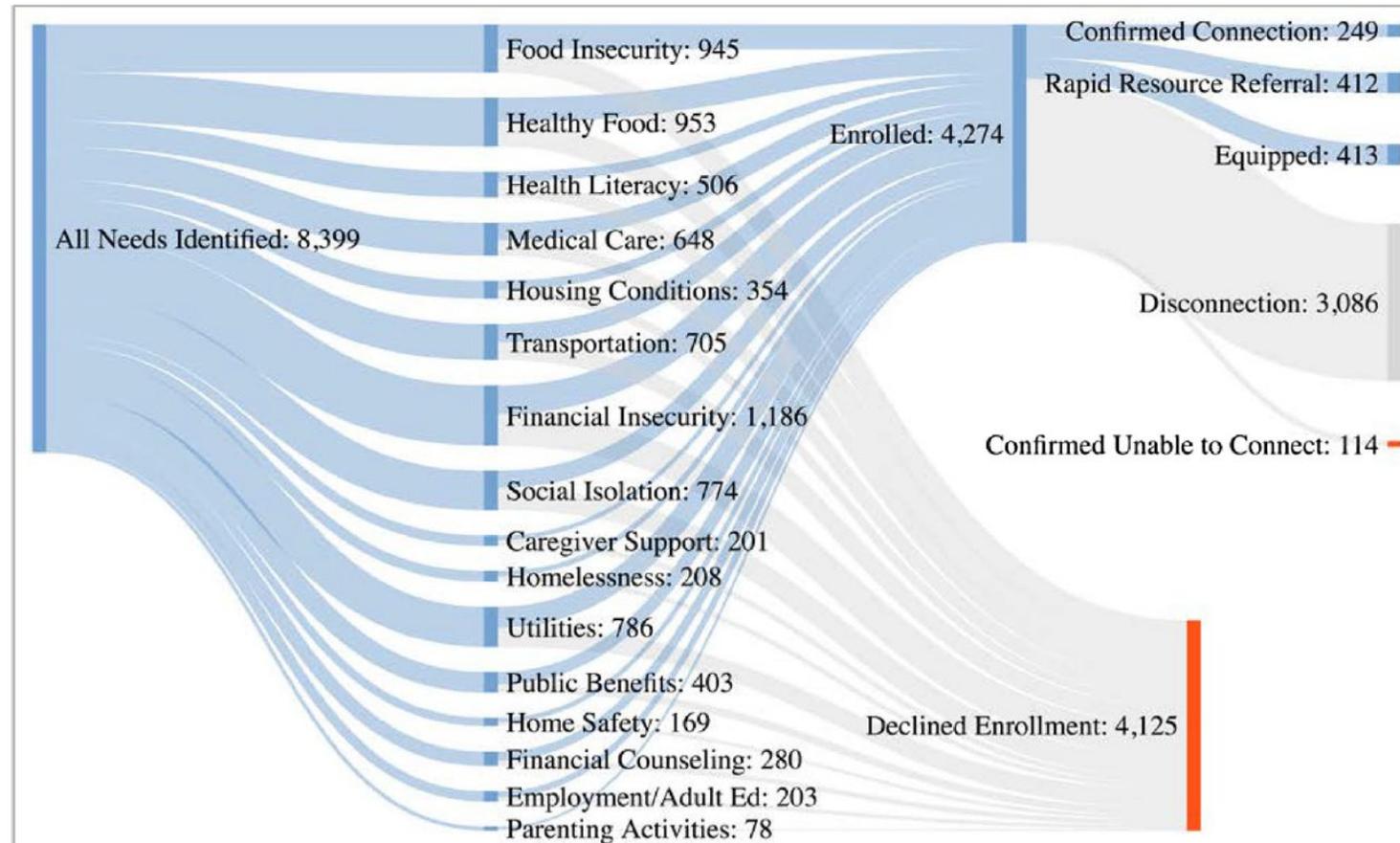
<https://www.healthcarefinancenews.com/news/what-montefiores-300-roi-social-determinants-investments-means-future-other-hospitals>

How Addressing Social Determinants of Health Cuts Healthcare Costs. 6/24/2018. <https://revcycleintelligence.com/news/how-addressing-social-determinants-of-health-cuts-healthcare-costs>

Still a nascent field in terms of peer-reviewed research

- Recent review of the literature between 2000-2017 for US-based studies addressing at least 1 social or economic determinant of health and integrated within the medical care delivery system
- Identified 67 studies of 37 programs
- Wide variety in approaches and outcomes measured = most focused on the process (69%) or the determinant of health (48%) rather than health outcome (30%) or healthcare utilization cost (27%)
- Findings related to health outcomes and/or healthcare utilization costs were mixed

Impact of social needs navigation on utilization



Proportional change in total utilization

Utilization by visit category	All patients (<i>n</i> = 34,225)		Low-income area ¹ (<i>n</i> = 4937)		Low-education area ¹ (<i>n</i> = 3955)		Medicaid insurance (<i>n</i> = 4059)	
	Difference-in-differences estimate (95% CI)	<i>p</i> value	Difference-in-differences estimate (95% CI)	<i>p</i> value	Difference-in-differences estimate (95% CI)	<i>p</i> value	Difference-in-differences estimate (95% CI)	<i>p</i> value
Total utilization visit count	-2.2% (-4.5, 0.1)	0.058	-7.0% (-11.9, -1.9)	0.008	-11.5% (-17.6, -5.0)	< 0.001	-12.1% (-18.1, -5.6)	< 0.001
Within health system network total visit count	-0.6% (-3.5, 2.4)	0.675	-6.2% (-10.4, -1.8)	0.008	0.9% (-5.2, 7.3)	0.800	1.7% (-2.8, 6.5)	0.500
In-network emergency department visits	-2.1% (-6.5, 2.4)	0.356	-0.6% (-6.7, 5.8)	0.900	-6.1% (-14.4, 2.9)	0.150	-3.6% (-9.4, 2.5)	0.200
In-network inpatient visits	-1.2% (-6.2, 3.9)	0.631	-16.1% (-22.9, -8.6)	< 0.001	3.4% (-6.1, 13.9)	0.500	8.7% (-0.9, 19.2)	0.100
In-network outpatient visits	-2.1% (-5.7, 6.0)	0.356	-3.6% (-12.8, 6.7)	0.500	11.2% (-0.9, 24.9)	0.060	8.7% (-3.0, 21.9)	0.160
Outside of network total visits	-2.0% (-6.8, 3.0)	0.500	-4.5% (-15.9, 8.5)	0.500	-25.5% (-37.4, -11.3)	< 0.001	-25.6% (-39.8, -7.9)	< 0.001
Out of network emergency department visits	1.8% (-1.8, 5.6)	0.763	0.9% (-9.4, 12.4)	0.900	-0.2% (-15.4, 17.9)	0.900	7.0% (-5.9, 21.7)	0.300
Out of network inpatient visits	8.2% (-2.5, 20.1)	0.500	-5.5% (-19.6, 11.1)	0.500	-15.5% (-31.3, 3.9)	0.100	-3.3% (-25.5, 25.6)	0.800
Out of network outpatient visits	-3.0% (-10.6, 5.3)	0.596	-6.2% (-24.0, 15.6)	0.500	-36.0% (-51.9, -14.8)	< 0.001	-38.0% (-53.2, -17.7)	< 0.001

Results from another social service referral program on change in total expenditures by patient subgroup

<i>Subgroups</i>	<i>n</i>	<i>12 months pre referral Mean^a</i>	<i>12 months post referral Mean^a</i>	<i>Change (post-pre) Mean diff.</i>	<i>Percent change (change/pre referral)</i>	<i>SE</i>	<i>P value</i>
Medicare Advantage							
All needs were met	740	\$16,978	\$18,652	\$1674	9.8%	\$950	0.08
No needs were met	905	\$16,757	\$17,842	\$1085	6.5%	\$1125	0.33
Between group difference		\$221	\$810	\$589	3.3%	\$1473	0.67
Medicaid Managed Care							
All needs were met	781	\$29,784	\$23,130	-\$6653	-22.3%	\$1093	<0.0001
No needs were met	292	\$19,140	\$15,128	-\$4012	-20.9%	\$1435	0.005
Between group difference		\$10,644	\$8002	-\$2641	-1.4%	\$1804	0.14
Identified as High Risk							
All needs were met	875	\$31,050	\$26,080	-\$4969	-16%	\$876	<0.0001
No needs were met	518	\$24,702	\$22,867	-\$1835	-7.4%	\$1572	0.24
Between group difference		\$6347	\$3213	-\$3134	-8.6%	\$1893	0.10
Not Identified as High Risk							
All needs were met	646	\$13,400	\$14,005	\$605	-4.5%	\$964	0.53
No needs were met	679	\$11,720	\$12,842	\$1122	-9.5%	\$1095	0.31
Between group difference		\$1680	\$1163	-\$516	-5.0%	\$1459	0.72

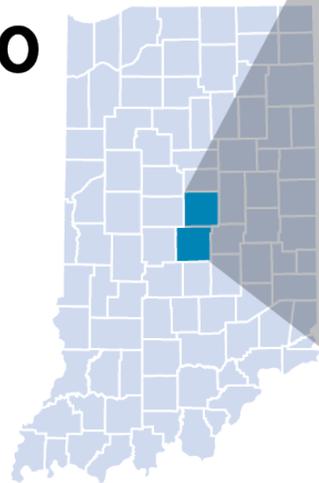
^aMean and standard error (SE) were obtained from the generalized estimating equation model. Model adjusts for age, sex, race/ethnicity, state of residence, metropolitan status, and comorbidity.

How does this relate to health outcomes here?

OBJECTIVE:

To characterize the health outcomes and upstream health determinants of Indianapolis' 99 community-defined neighborhoods and to inform communities to approach and with whom we could partner to improve health equity in Marion County and beyond.

38/50



HAMILTON

1/92

46280



Life Expectancy:
83 years

MARION

92/92

14

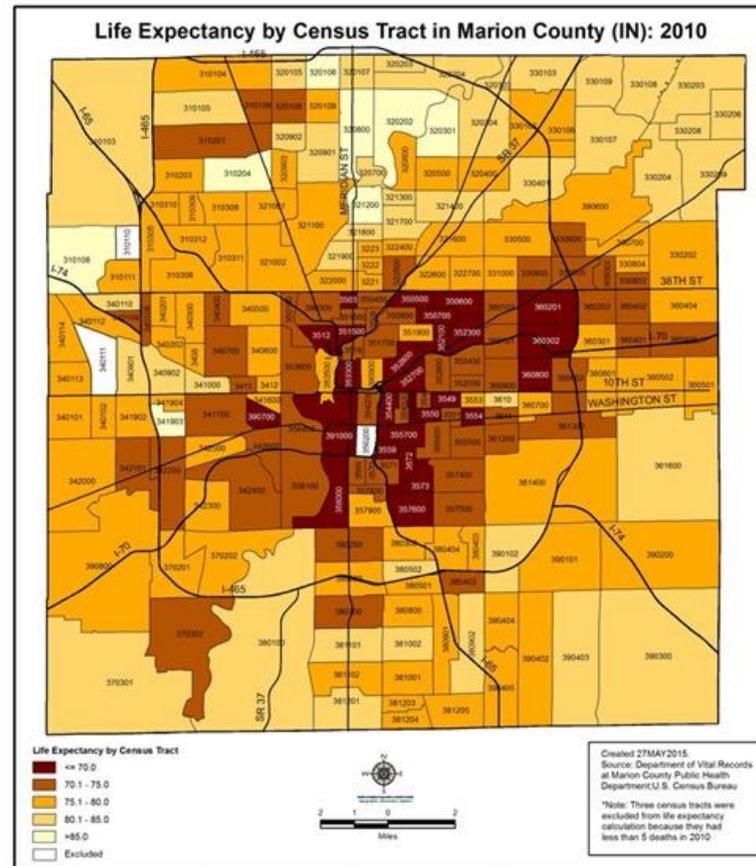
miles apart
+
year drop in
life expectancy



46225

Life Expectancy:
69 years

Not uniform even within Marion County...



By David Broyles, Marion County Public Health Dept., Epidemiology DR3418

Team

Karen Comer	The Polis Center
Joe Gibson	Marion County Public Health Department
Troy Hege	The Westvale Group
Brenda Hudson	Indiana CTSI
Lauren Magee	Doctoral student
Kristin Norris	IUPUI Office of Community Engagement
Amanda Raftery	Regenstrief Institute
Tess Weathers	IUPUI Fairbanks School of Public Health
Sarah Wiehe	Indiana CTSI

Vulnerability Indices

- Identified indices that reflect social determinants of health components based on the Kaiser Family Foundation rubric:

Economic Stability	Neighborhood and Physical Environment	Education	Food	Community and Social Context	Health Care System
Employment	Housing	Literacy	Hunger	Social integration	Health coverage
Income	Transportation	Language	Access to healthy options	Support systems	Provider availability
Expenses	Safety	Early childhood education		Community engagement	Provider linguistic and cultural competency
Debt	Parks	Vocational training		Discrimination	Quality of care
Medical bills	Playgrounds	Higher education			
Support	Walkability				

Health Outcomes
 Mortality, Morbidity, Life Expectancy, Health Care Expenditures, Health Status, Functional Limitations

Vulnerability Indices

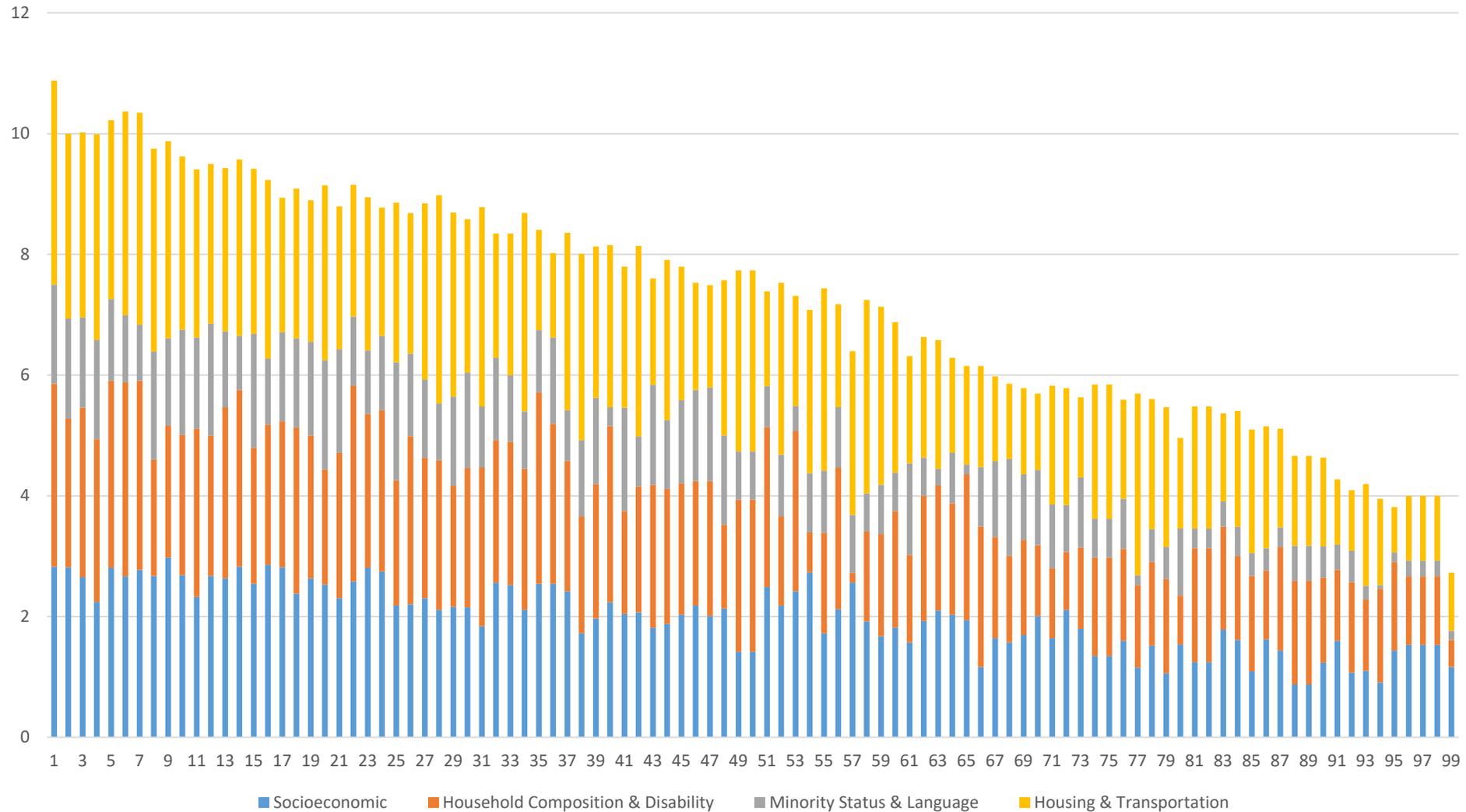
- Primary indices selected were:

Kaiser Family Foundation domain	Social Vulnerability Index	GINI Coefficient	Dissimilarity Index	Healthcare Access	Crime Index
ECONOMIC STABILITY	employment, poverty/income	income inequality			
NEIGHBORHOOD & PHYSICAL ENVIRONMENT	housing, transportation				
EDUCATION	higher education				
FOOD					
COMMUNITY & SOCIAL CONTEXT	language, household composition, disability		discrimination		property & violent crime
HEALTH CARE SYSTEM				uninsured	

+ *Index of Neighborhood Change*: Change of neighborhood over time

Other more comprehensive indices to be included as time/resources allow: Child Opportunity Index, Index of Social Health, Health Equity Index, Segregation Index

Social vulnerability index



Data source: American Community Survey, 2015-2016

Health Measures

- Life Expectancy (Vital Records)
- Infant Mortality (Vital Records)
- Adult health behaviors and outcomes:
 - Smoking (INPC & MCPHD Survey)
 - Obesity (INPC & MCPHD Survey)
 - Asthma (INPC)
 - Drug overdoses (EMS)
 - Sexually transmitted infections (MCPHD)
 - Type II diabetes (INPC)
 - Cancer incidence (Cancer registry)
 - Cancer mortality (Vital Records)
 - Hypertension (INPC)
 - Arthritis (INPC)
 - Diabetes (INPC)
 - Kidney disease/dialysis (INPC)
 - Cardiovascular mortality (Vital records)
 - Dementia/Alzheimer's Disease (INPC)
 - Mental health – self-reported (MCPHD Survey)
- Mental health diagnoses (INPC)
- Substance misuse diagnoses (INPC)
- Suicide attempts (INPC)
- Suicides (Vital records)
- Nonfatal shooting victims/homicides (INPC, vital records)
- Pediatric health behaviors and outcomes:
 - Obesity (INPC)
 - Injury (INPC)
 - Asthma (INPC)
 - Lead exposure (MCPHD & INPC)
 - Sexually transmitted infections (MCPHD)
 - Mental health diagnoses (INPC)
 - Substance misuse diagnoses (INPC)
 - Drug overdoses (EMS)
 - Suicide attempts (INPC)
 - Suicides (Vital records)
 - Nonfatal shooting victims/homicides (INPC, vital records)

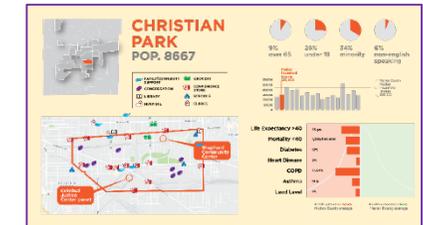
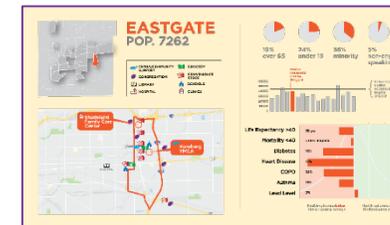
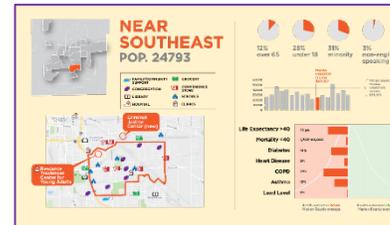
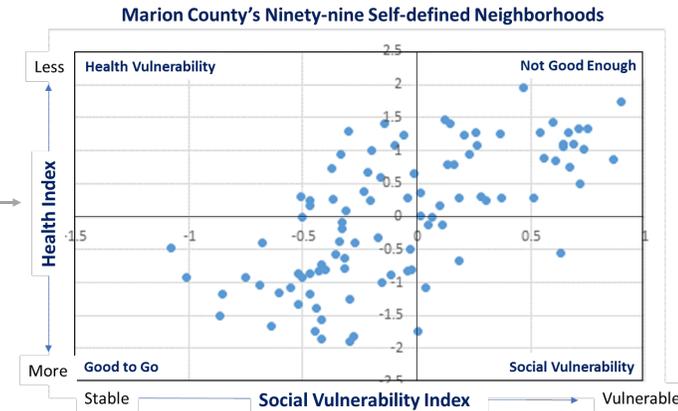
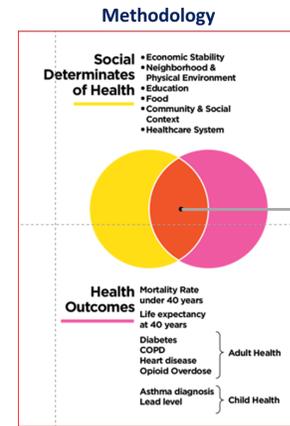
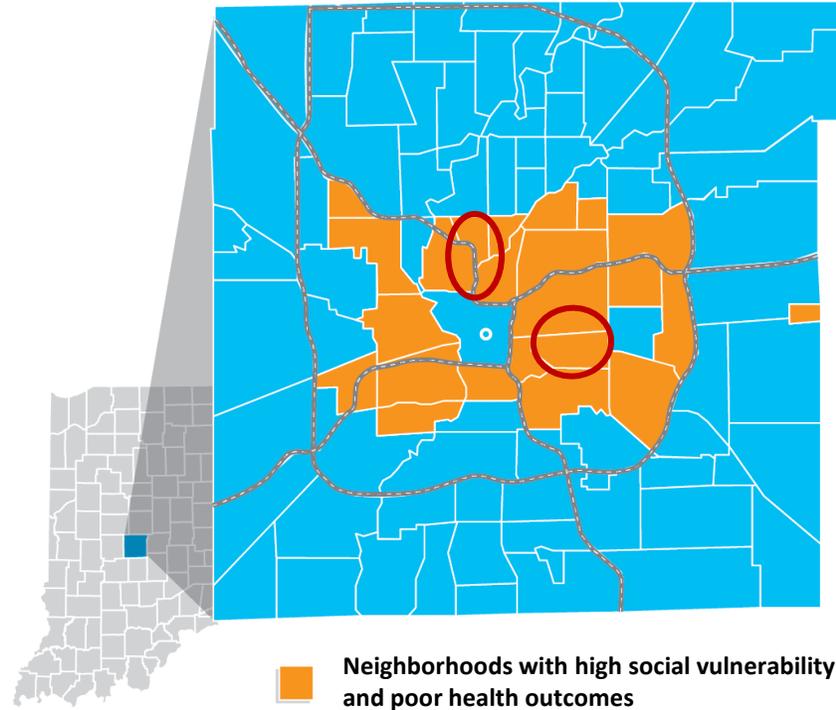
Health Measures

- ***Mortality Rate under 40 years of age (Vital Records)***
- ***Life expectancy at 40 years of age (Vital Records)***
- ***Adult health information used in health calculation:***
 - Diabetes diagnosis (INPC/IUH EDW)
 - Cancer diagnosis (INPC/IUH EDW)
 - Chronic Obstructive Pulmonary Disease diagnosis (INPC/IUH EDW)
 - Cardiovascular disease diagnosis (INPC/IUH EDW)
- ***Pediatric health information used in health calculation:***
 - Asthma diagnosis (INPC/IUH EDW)
 - Lead level >5 mcg/dL (MCPHD & INPC/IUH EDW)

Criteria for neighborhood selection

1. Calculate composite health z score based on a weighted calculation of the following 4 items:
 - a. Life expectancy over 40 years z score (weighted x 2)
 - b. Mortality rate under 40 years z score (weighted x 2)
 - c. Aggregate z scores of 2 child health conditions: asthma prevalence, lead exposure >5 mcg/dL
 - d. Aggregate z scores of 4 adult health conditions: diabetes, cancer (all types), cardiovascular disease & COPD
2. Identify the 25 neighborhoods with the highest composite health z score
3. Of these 25 neighborhoods, remove neighborhood with a social vulnerability score < 0 (least vulnerable 50%)

Findings from environmental scan and next steps



What are strategies to address SDH?

IOM recommends SDOH in the electronic health record

DOMAIN/MEASURE	MEASURE	FREQUENCY
Alcohol use	3 questions	Screen and follow up
Race and ethnicity	2 questions	At entry
Residential address	1 question (geocoded)	Verify every visit
Tobacco use & exposure	2 questions	Screen and follow up
Census tract-median income	1 question (geocoded)	Update on address change
Depression	2 questions	Screen and follow up
Education	2 questions	At entry
Financial resource strain	1 question	Screen and follow up
Intimate partner violence	4 questions	Screen and follow up
Physical activity	2 questions	Screen and follow up
Social connections & social isolation	4 questions	Screen and follow up
Stress	1 question	Screen and follow up

Social need	Technique to address it
Housing	<ul style="list-style-type: none"> • Assess home safety • Connect individuals to housekeeping services • Connect individuals to pest extermination services • Connect individuals to appliance repair services • Assist individuals with legal needs related to housing, such as housing code violations and utility shutoffs
Food	<ul style="list-style-type: none"> • Connect individuals to food supports, such as the Supplemental Nutrition Assistance Program, a food bank, the Women, Infants and Children Program, and Meals on Wheels • Connect individuals to a home care agency that can prepare meals • Provide prescriptions for healthy foods
Public benefits	<ul style="list-style-type: none"> • Help individuals apply for Medicaid and overturn wrongful denials • Help individuals apply for Social Security Disability Insurance and Supplemental Security Income, and overturn wrongful denials • Provide counseling on available public benefits
Employment	<ul style="list-style-type: none"> • Offer workshops to improve professional qualifications

Practical Tools to Address Social Determinants of Health

Task	Tools		
Starting a cross-sector Collaboration	Building a Culture of Health (RWJF)	Community Pathways Hub: Quick Start Guide (AHRQ)	County Health Rankings and Roadmaps Action Center (CHR&R)
Creating a Business Case to connect SDOH with healthcare costs	ROI of Addressing SDOH Calculator (Unite US)	ROI for Social Services Calculator (Commonwealth Fund)	ASTHO ROI Calculator (ASTHO)
Using Facilitated Networks to Catalogue Community Resources and Track Referrals	Social Intervention Research and Evaluation Network (SIREN)	Program to Analyze, Record, and Track Networks to Enhance Relationships (PARTNER)	Partnership Assessment Tool for Health (PATH)
Crafting and disseminating an message to appeal to potential stakeholders	Community Toolbox (Toolkits)	Practical Playbook (deBeaumont) -or- Navigating the Dissemination of New Findings (AboutHealth)	Prepare Workshop (Health Leads Social Needs 101) -- or -- A New Way to Talk about SDOH (RWJF)
Selecting and adapting SDOH strategy	SDOH A Quick Reference Guide for Planners (ASTHO)	Communities Joined in Action (CJIA)	Health Begins -- or -- Dissemination and Implementation Models (D&I.org)
Identifying Evidence-based Strategies and Interventions	PolicyLink	What Works for Health (WW4H and CHR&R)	AVIA or Advisory Board
Financing Models for SDOH	Community Benefit Insight (CACHE) - or - Bridging for Health (GHPC)	Financing Models to Promote Health and Social Service Integration (Center for Healthcare Strategies)	Emerging Financial Vehicles and Payment Mechanism (CDC Health Policy Series) - or - Investing in Social Services for Health
Visualizing Connection between SDOH and Outcomes	Broadstreet Health or Community Commons	PolicyMap - or - Opportunity Index - or - Community Need Index	RWJF Data Across Sectors for Health (AllinData - or - DASH)
Leveraging Existing Resources to Expand Community Capacity	211	100 Million Lives - or - Moving Healthcare Upstream - or - Plan4Health - or - Build Healthy Places	Anchor Mission Playbook (Anchor Mission Network) - or - Asset-based Community Development (ABCD)

Some local examples...

In 2017:

- **The US' Infant Mortality was 5.8 per 1,000 births**
- **Indiana's Infant Mortality was 7.3 per 1,000 births**



- **African-American infants are 2.6 times more likely to die than White infants in Indiana**
- **Of the 602 Indiana infant deaths, 170 in the Central Region**

2011 - 2015 Infant Mortality Rates by Zip Code

Zip Code	County	Births	Deaths	Infant Mortality Rate (IMR)	White IMR	Black IMR
46312	Lake					
46953	Grant					
46806	Allen					
46324	Lake					
46226	Marion					
46229	Marion					
46218	Marion					
47302	Delaware					
46205	Marion					
46805[^]	Allen					
46203	Marion					
46201	Marion					
47374[^]	Wayne					

988 zip codes in Indiana
13 have the highest
infant mortality rate
6 are in Marion County

In these 6 zip codes in
Marion County
41 babies
(on average)
die each year;
Almost one baby
per week

*Numerator less than 20, the rate is unstable.
**Rate has been suppressed due to fewer than five outcomes.
[^] = Zip code did not have an IMR above 10.0 for the combined years 2010 - 2014

Source: Indiana State Department of Health, Maternal & Child Health Epidemiology Division [January 24, 2017]
Indiana Original Source: Indiana State Department of Health, PHPC, ERC, Data Analysis Team

2011 - 2015

Infant Mortality Rates by Zip Code

Zip Code	County	Births	Deaths	Infant Mortality Rate (IMR)	White IMR	Black IMR
46312	Lake				12.8*	25.2
46953	Grant				14.9*	**
46806	Allen				9.0*	21.9
46324	Lake				17.0*	16.5*
46226	Marion				7.0*	16.9
46229	Marion				7.3*	16.1*
46218	Marion				**	15.9
47302	Delaware				12.9	**
46205	Marion				9.2*	13.7*
46805^	Allen				9.8*	26.5*
46203	Marion				9.1	10.6*
46201	Marion				5.3*	19.8*
47374^	Wayne				8.0*	36.9*

Black babies
2-4 times
more likely
to die than
White babies

WeCare: Impact on risk factors for infant mortality and birth outcomes in Central Indiana (PI: Litzelman)

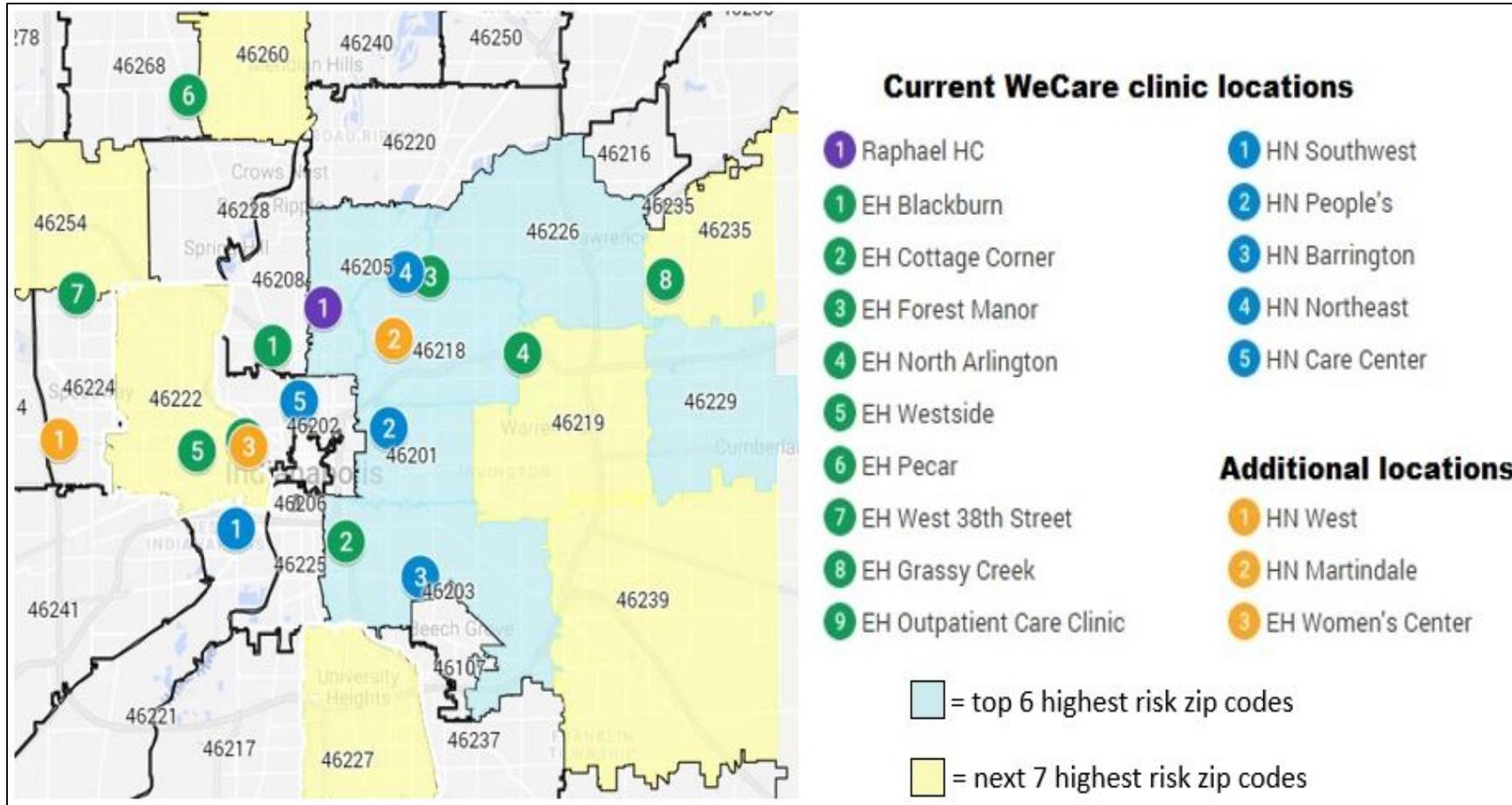
WeCare



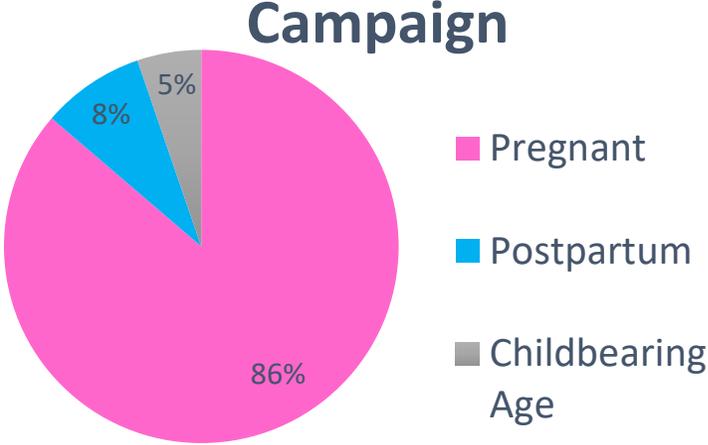
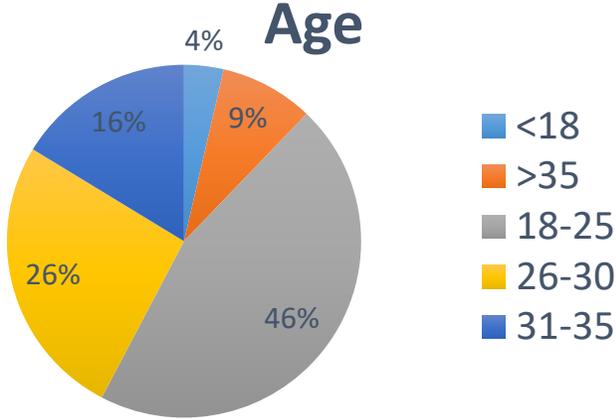
Decreasing the Highest Risk Factors for Infant Mortality in Indiana

- **Health Coaching:** Community Health Workers hired from the local community
- **Tailored mHealth educational messaging** for the 5 targeted indicators
 - Social Determinants of Health: The Basics (food, housing, heat)
 - Bi-directional secure messaging system; dashboard for data capture
- ***WeCare Plus***
 - Adds fathers and first responders
 - Expands We Care to include other FQHCs in Marion Co.

Current sites



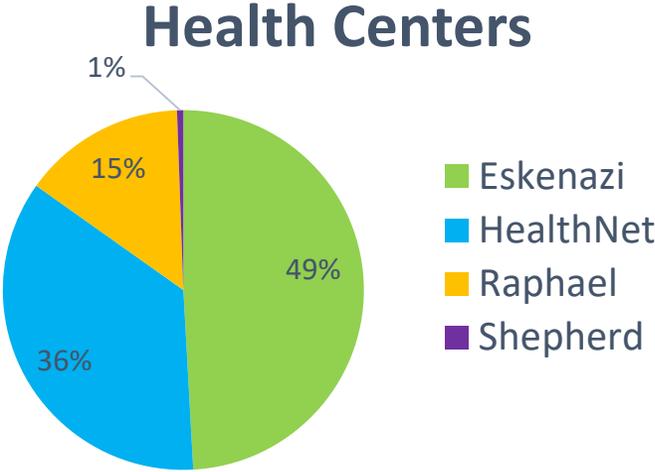
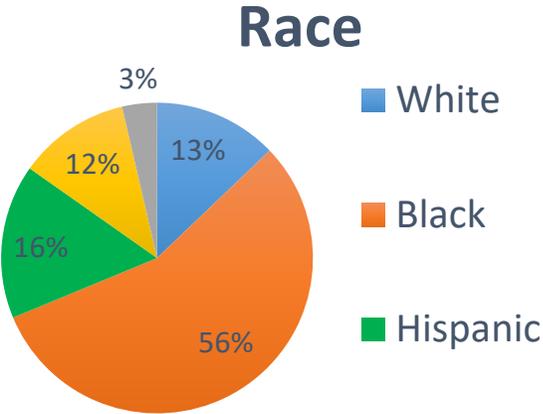
Study Participants: Demographics



Total number of participants:

1775

Data as of 12/31/2018



Health behaviors (baseline vs. current)



Nutrition
(122/134) fewer
skipped meals in
last week
(9%)



WIC
(600/762)
Eligible enrolled
in WIC
(79%)



Safe Sleep
(1528/1734) more
sleeping on back
(21%)
(1403/1760) more
sleeping alone **(20%)**

Health behaviors (baseline vs. current)



Smoking

(299/309)

reduction/cessation

(4%)



Substance Abuse

(221/235)

reduction/cessation

(6%)



Mental Health

+PHQ-9/GAD-7

(206/274)

improvement

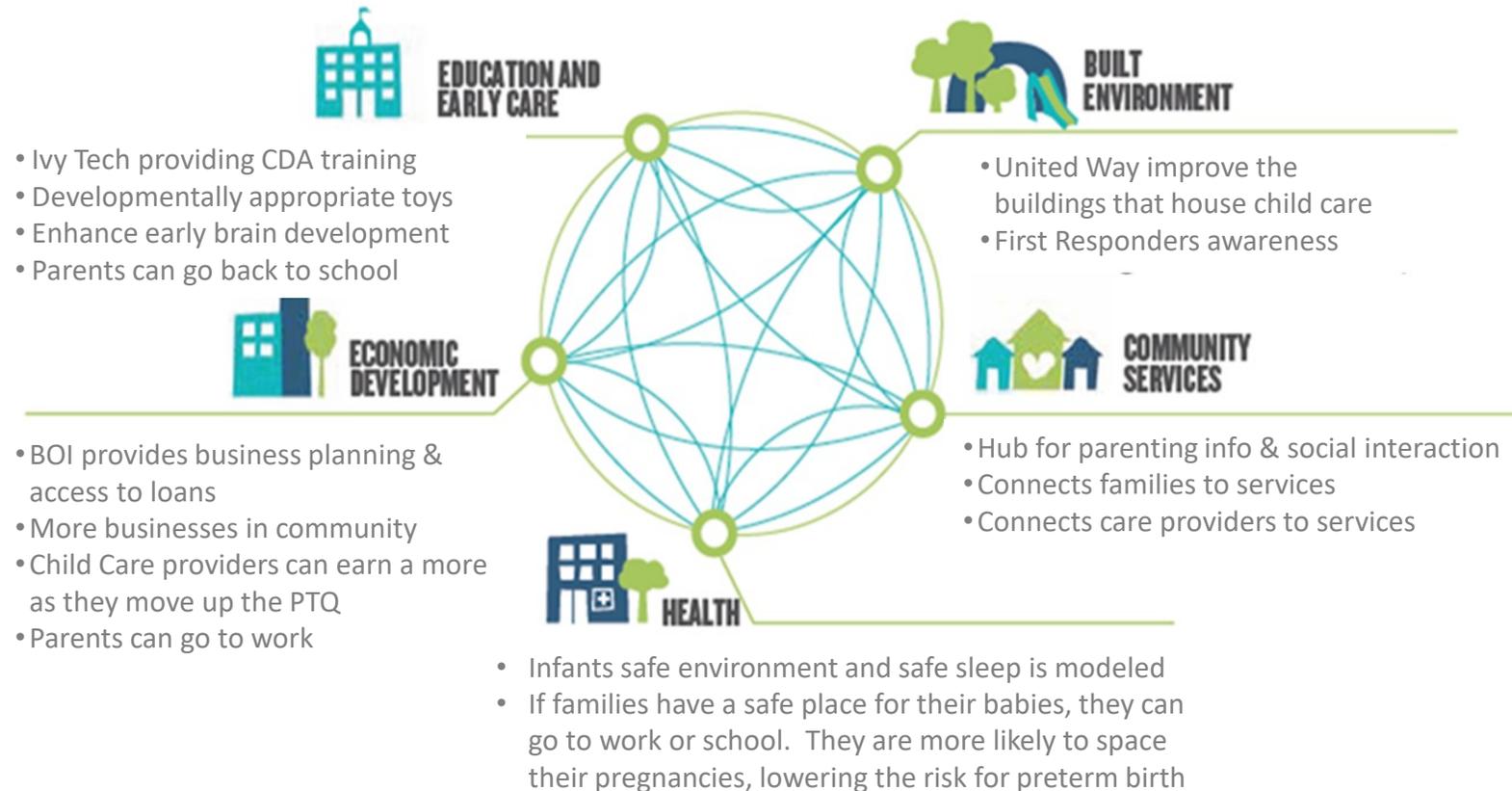
(25%)

Impact on infant mortality rates in Marion County

	All IMR	White IMR	Black IMR	LBW** (<2500 G)
State*	7.5	6.4	14.4	8.2%
Central Region*	7.4	5.5	14.3	8.1%
Marion County*	8.7	5.6	14.4	9.2%
 WeCare	5.8	2.7	8.1	12.8%

*Source: 2016 ISDH Infant Mortality Rate and LBW Data **Low Birth Weight

Improving Infant Mortality Through SDOH Kohl's Caring for Our Kids (PI: Swigonski)



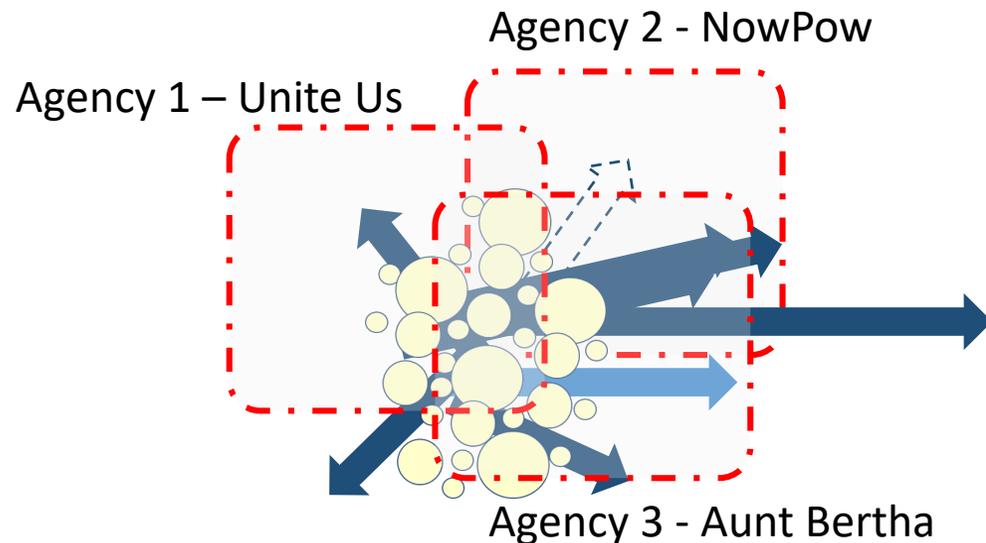
Association between receipt of wraparound services and various patient factors with use of health care in the following year

	Hospitalizations	ED visits	Nonemergent ED visits
Receipt of any wraparound service in prior year	-0.07***	-0.05***	-0.04*
Severity score	0.66****	0.52****	0.49****
Mean annual utilization			
Outpatient visits	0.01****	0.01****	0.01****
Specialist visits	0.03****	0.01**	0.01
Emergency department visits	0.01***	— ^a	— ^a
Hospitalizations	— ^a	0.03****	0.01

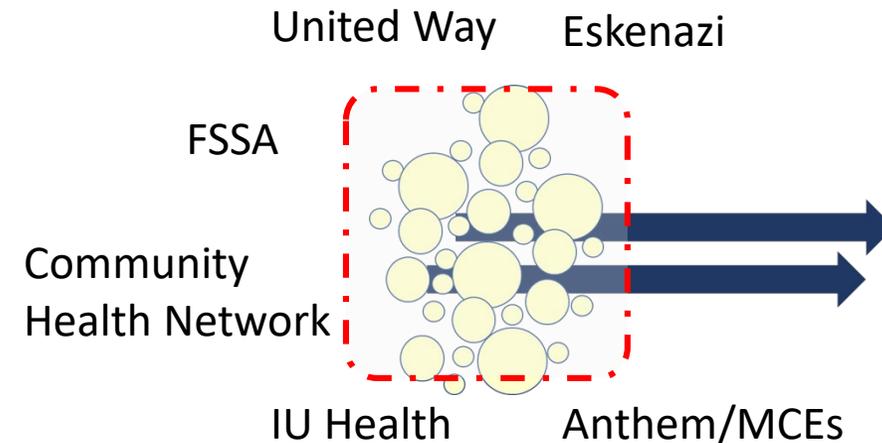
* $p < 0.10$ ** $p < 0.05$ *** $p < 0.01$ **** $p < 0.001$

Monon Collaborative work

A singular, neutrally-managed utility model based on aligned and shared investment and service delivery would be far better than the alternative



- Multiple platforms
- Institutional view of the SDOH space
- Limited view for CBOs and individuals
- Higher cost per sponsor
- Multiple platforms (burden) per CBO



- One platform
- More holistic view of the SDOH space
- Better insights for CBOs and individuals
- Lower Cost per Sponsor
- One platform per CBO

Assessment of a community resource referral intervention

TABLE 2—Estimated Intervention Effects (Intervention Group Minus Control Group) on Mean Short Form-12 Mental Component Score and Physical Component Score at 1 Week, 1 Month, and 3 Months: Chicago, IL, December 2015–December 2016

	Model 1, b (95% CI)	Model 2, b (95% CI)
Mental component score		
1 wk	0.25 (−1.65, 2.15)	0.18 (−1.73, 2.08)
1 mo	−0.07 (−2.01, 1.87)	−0.17 (−2.10, 1.76)
3 mo	−0.98 (−2.99, 1.02)	−1.03 (−3.02, 0.96)
Overall	−0.27 (−1.82, 1.29)	−0.34 (−1.89, 1.21)
Physical component score		
1 wk	−0.58 (−2.07, 0.91)	−0.34 (−1.83, 1.16)
1 mo	0.25 (−1.32, 1.82)	0.46 (−1.10, 2.02)
3 mo	0.40 (−1.18, 1.99)	0.59 (−0.98, 2.16)
Overall	0.02 (−1.17, 1.22)	0.24 (−0.95, 1.43)

Note. CI = confidence interval. Based on mixed effects linear regression models including data from all completed follow-up time points. Model 1 was adjusted for baseline score only. Model 2 was adjusted for baseline mental or physical component score, location where the intervention was received (primary care clinic or emergency department), age (decades), gender, education, race, and ethnicity.

TABLE 3—Estimated Intervention Effect on Confidence in Finding Resources: Chicago, IL, December 2015 to December 2016

Outcome	Model 1, ^a OR (95% CI)	Model 2, ^b AOR (95% CI)	Model 3, ^c AOR (95% CI)
Comparing the intervention group to the control group			
Confidence in finding resources			
1 wk	1.38 (0.79, 2.42)	1.37 (0.78, 2.40)	
1 mo	1.63 (0.93, 2.88)	1.63 (0.92, 2.89)	
3 mo	2.07 (1.18, 3.64)	2.07 (1.18, 3.63)	
Overall	1.67 (1.09, 2.57)	1.67 (1.08, 2.56)	
Endogenous treatment model estimating effect of the number of HealthRx received			
Confidence in finding resources: 3 mo		1.09 (0.95, 1.25)	1.31 (1.03, 1.66)

Note. AOR = adjusted odds ratio; CI = confidence interval; OR = odds ratio. Effects estimated by using mixed-effects ordinal regression. Model 1 includes adjustment for baseline confidence in finding resources only; models 2 and 3 include adjustment for baseline confidence in finding resources and location where intervention was received (primary care clinic or emergency department), age (decades), gender, education, race, and ethnicity.

^aAdjusted for baseline score only.

^bAdjusted for covariates.

^cAdjusted for covariates, accounting for endogeneity.

Example referral

Free Athletic Equipment

Offered by: Youth Sports Help

Resource Description

This group gives free sports gear to kids who want to play sports. You can get baseball gloves, tennis rackets, or other sports equipment. This program can help if your child or a child in your care wants to join youth sports and cannot afford the equipment.

Target Population: Low income families, families with children

- Eligibility:**
1. Your child must qualify for the Free Lunch Program at school
 2. Each of your children is only allowed to take a piece of equipment once a year

Referral Needed? No

How to Access this Service: Go to 165 Center Street in Jamaica Plain on Saturday between 10:00 am and 5:00 pm

Once there, tell an employee what sport you need equipment for -- like baseball or hockey. They will help make sure your child gets the right size.

Materials to Bring: Materials to bring: You need to bring something that shows a youth sports league is about to have sign-ups, like a flyer or brochure. Anything that shows the date of the sign-ups will help.



(617) 872-3060 ; (773) 555-5555

[Website](#)

165 Center Street
Jamaica Plain, MA 02130

Directions: [Car](#) / [Transit](#)

Hours of Operation: Saturday 10:00 am - 5:00 pm

Languages Spoken: English

Contact Instructions: Call within hours of operation

Transportation: Take the Orange Line to Green Street

Other Notes: Your child has to sign-up for the sport that you said they would. The group does check if your child actually joined the sport.

Internal Notes: You might want to recommend families for year-round sports programs through the Park District or after-school programs.

Bottom line

- Social determinants of health are...
 - life-enhancing resources, such as food supply, housing, economic and social relationships, transportation, education and health care, whose distribution across populations effectively determines length and quality of life
 - unequally distributed by income, race/ethnicity, and geography and contribute to health equity
 - highly correlated with nearly every health indicator
- Interventions addressing social determinants are showing promising results in terms of increased connections to social services, decreased healthcare costs, and improved health outcomes
- Lots going on here in Indiana so join in the effort (and let me know if you need pointers on how to do so!)

Questions?

Contact info:

Sarah Wiehe, MD, MPH

317.278.0552

swiehe@iu.edu