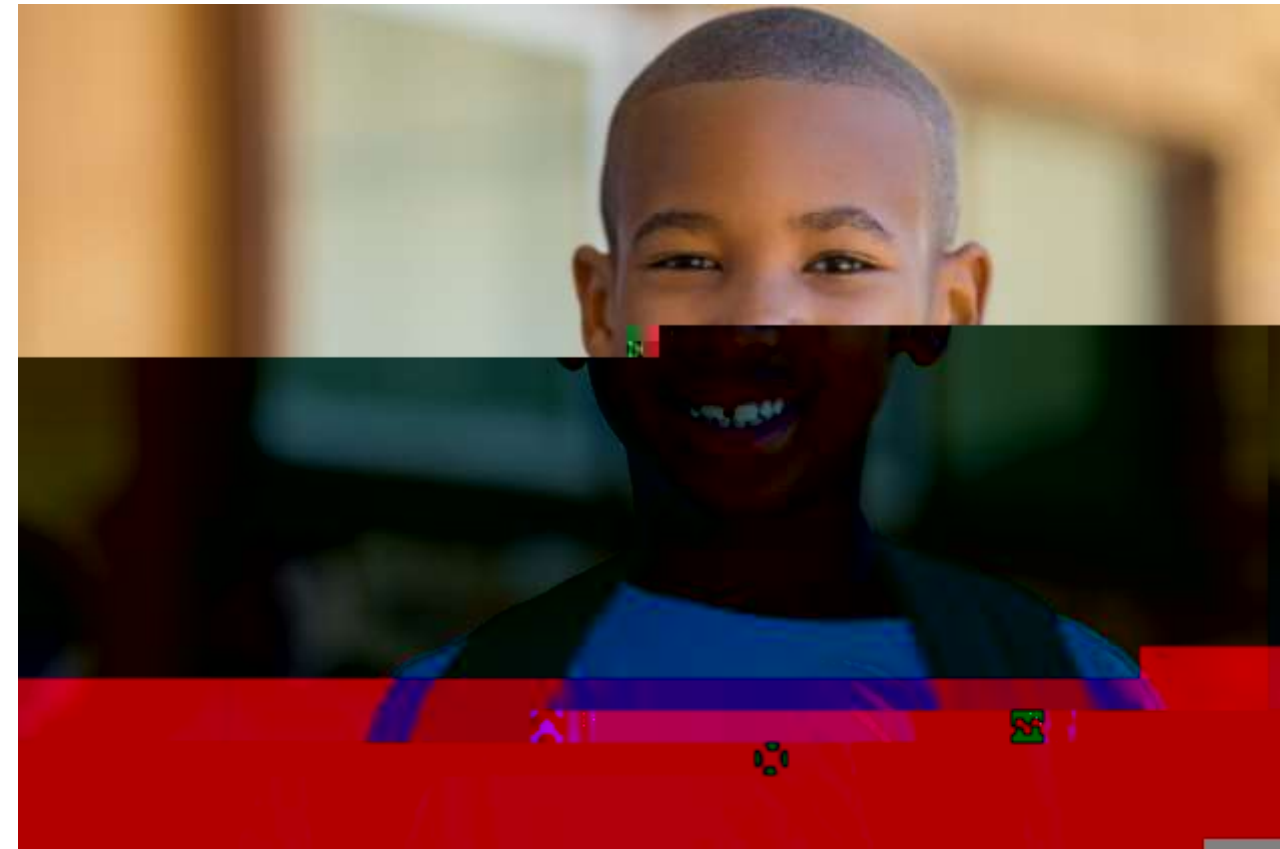


# Adapting Business Models to Address Social Determinants of Health



# Jamal's Story

The worst health care system in the world?



3

We are directing 18% of America's GDP (over \$3 trillion) to buy the opposite of what we want.

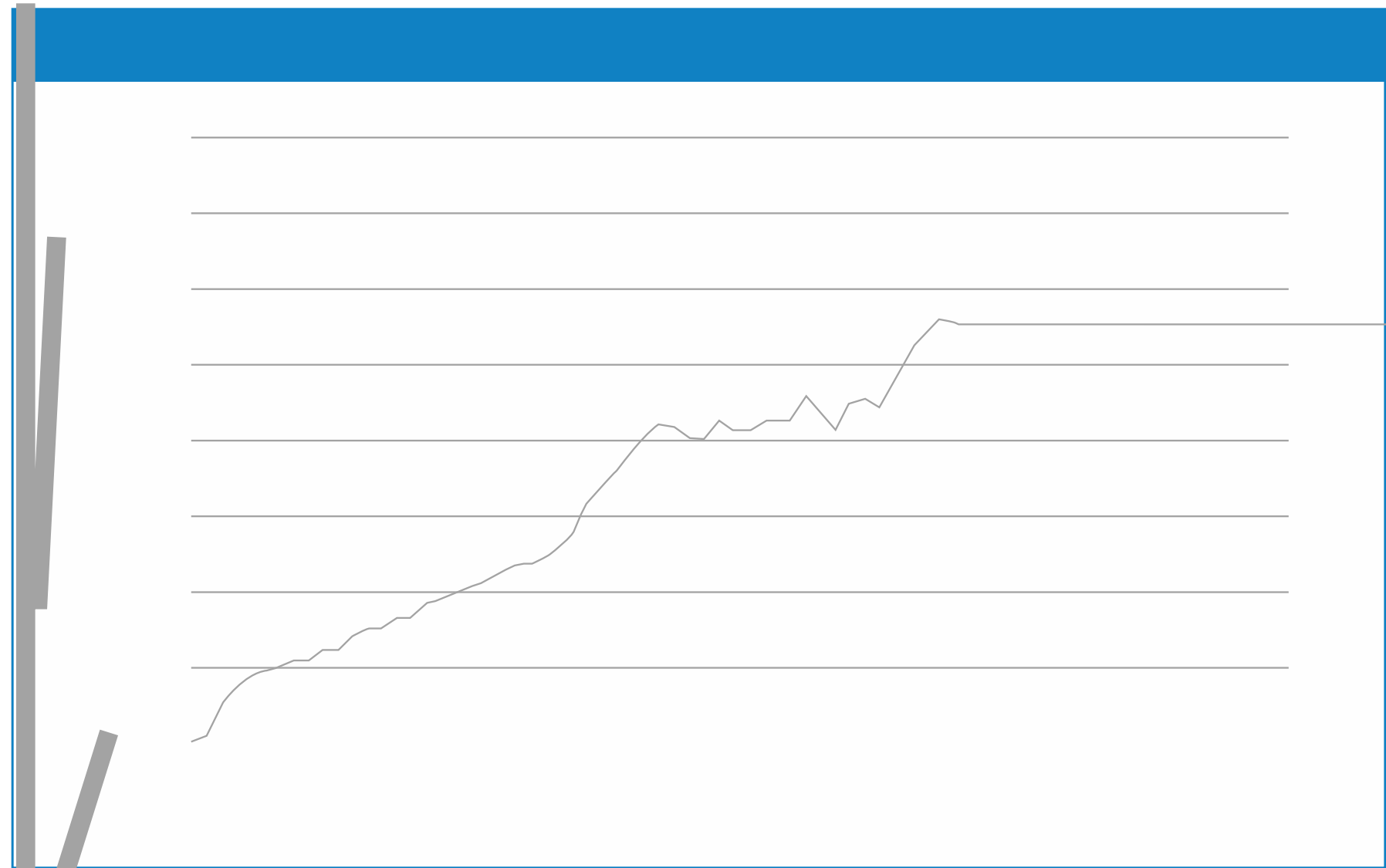
We are getting exactly what we  
are paying for.

Investing in the health of children  
is the most powerful lever to align the  
financial incentives  
to create a healthier society, a  
stronger economy, and a better  
future for our country.

# Amount Trending in the Wrong Direction

Unchecked healthcare costs will grow faster than GDP by .8% over the next decade.

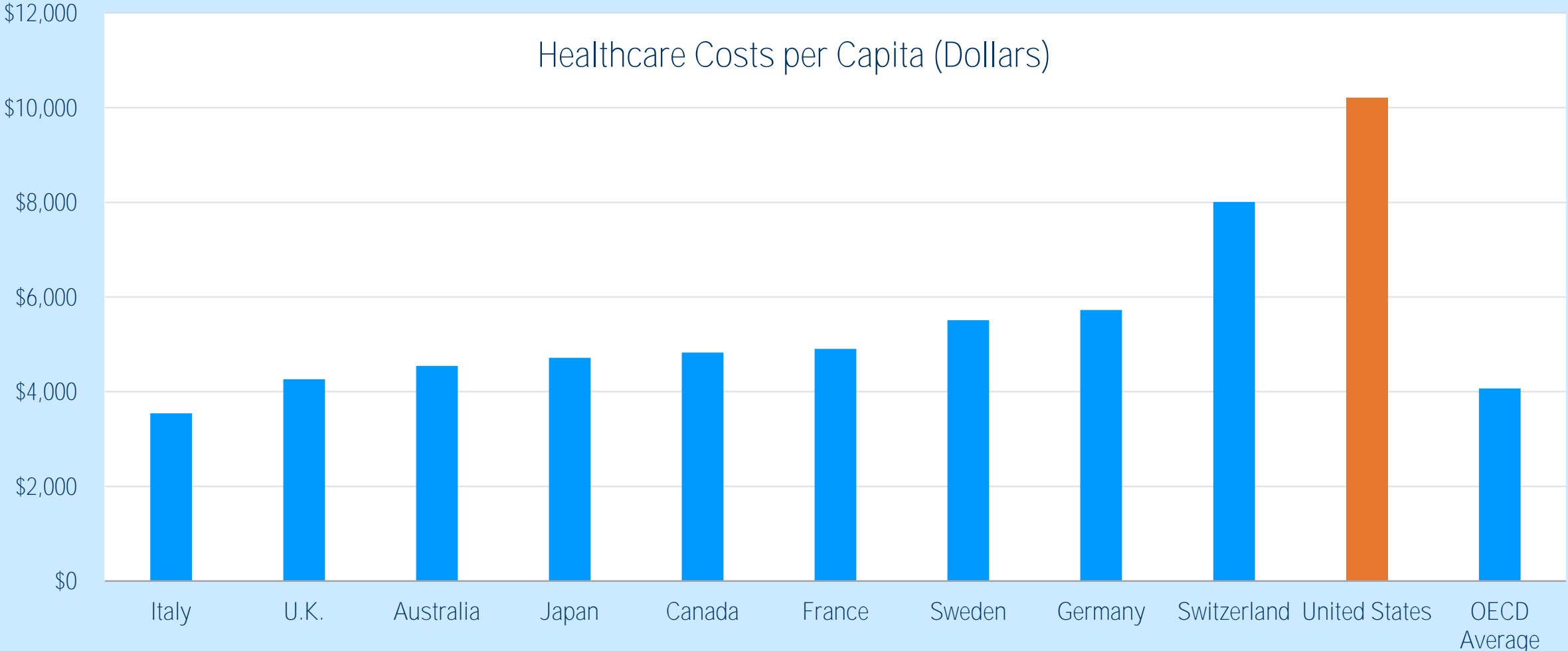
Projected annual growth of 5.5%, reaching \$6 trillion and nearly 20% of GDP





# Proportion Trending in the Wrong Direction

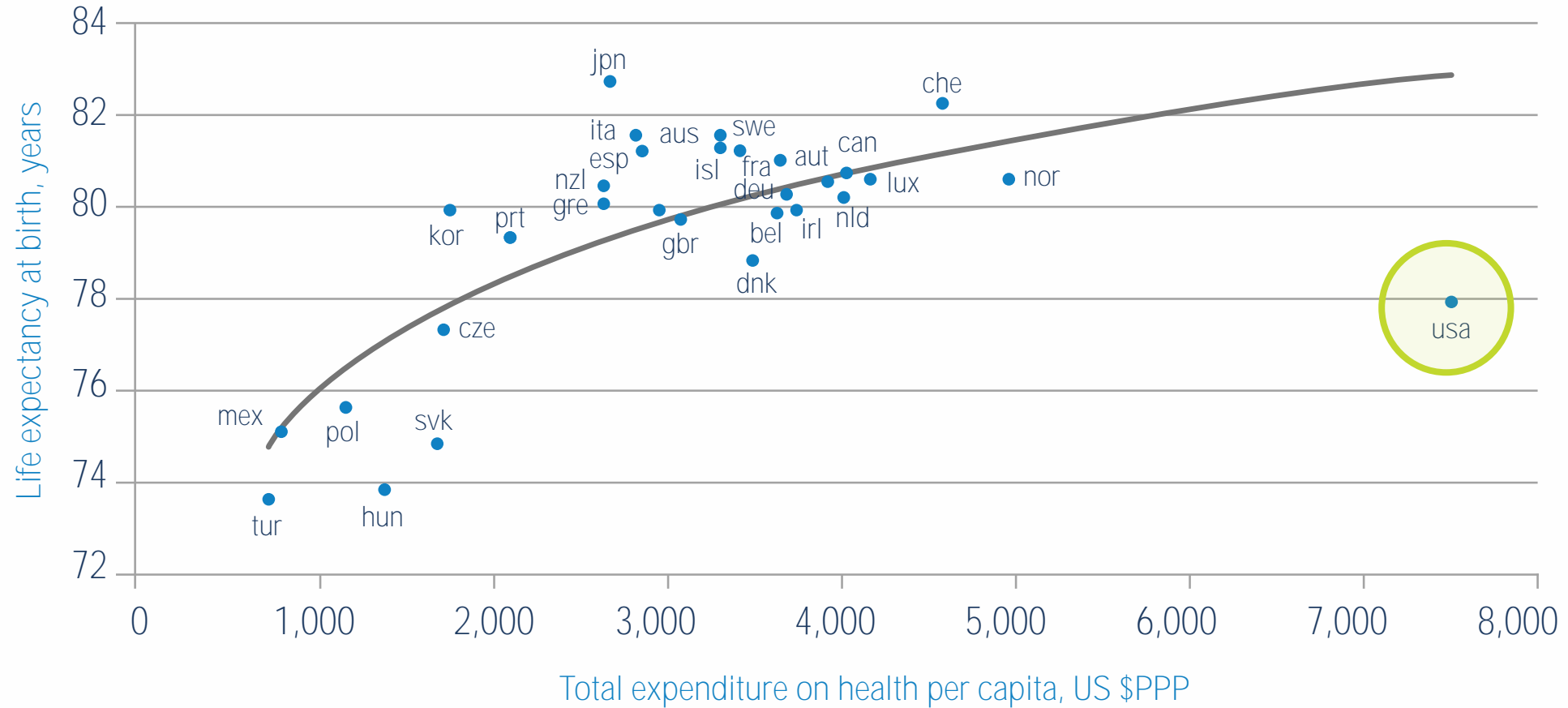
# United States per Capita Healthcare Spending is more than twice the average of other developed countries



Source: Organization for Economic Cooperation and Development, OECD Health Statistics 2018, June 2018. Completed by PGPF. Note: Data are 2017 or latest available. Chart uses purchasing power parities to convert data into U.S. dollars. © 2018 Peter G. Peterson Foundation

# Our Nation's Health — Where is the Value?

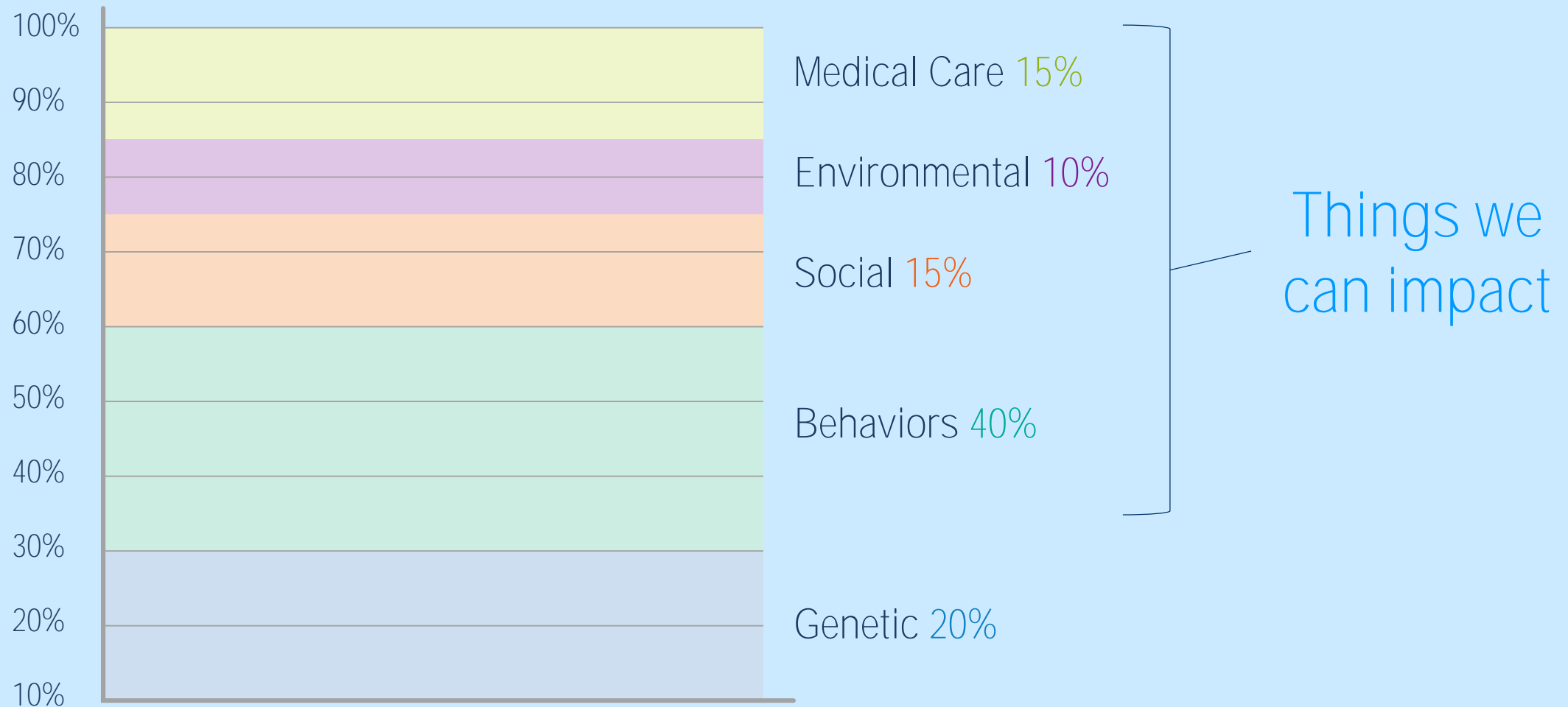
Life Expectancy and Health Care Spending, 2008



Degree of Influence in Shaping the Health of Populations

# What Determines the Health of an Individual?

Degree of Influence in Shaping the Health of Populations



# We Want: Health

# We Are Paying for: Medical Care

Determinants of  
Health

Spending on  
Medical Care

15%

Medical Care

85%

Health Behaviors  
& Other Factors

97%

Medical Care

3%

Health Behaviors  
& Other Factors

# Core Concepts of Social Determinants of Health

## World Health Organization

The social determinants of health are the conditions in which people are born, grow, live, work and age

These circumstances are shaped by the distribution of money, power and resources at global, national and local levels

The social determinants of health are mostly responsible for health inequities

# What are the primary social determinants of health?

Education and literacy

Nutrition and Food Security

Childhood experiences

Healthy behaviors

Income and social status

Employment and work conditions

Social supports and coping skills

Physical environments

Biology and genetic endowment

Culture

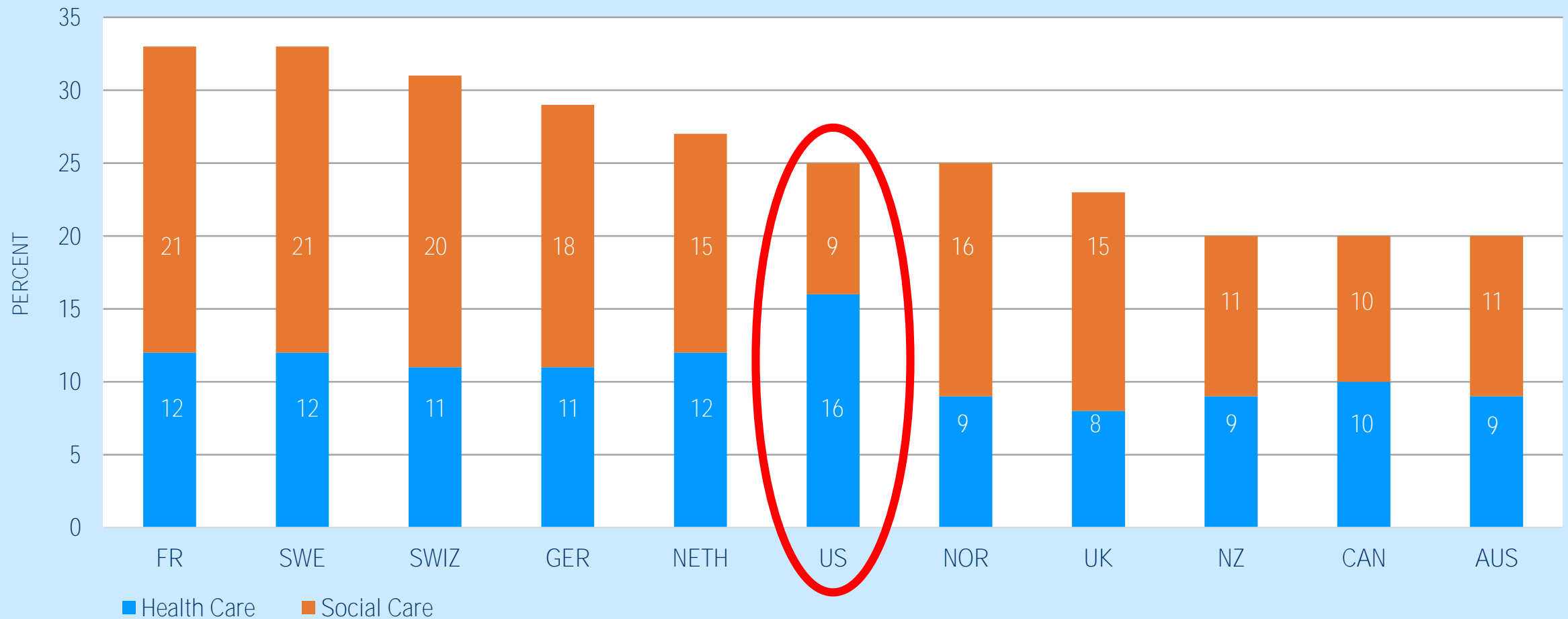




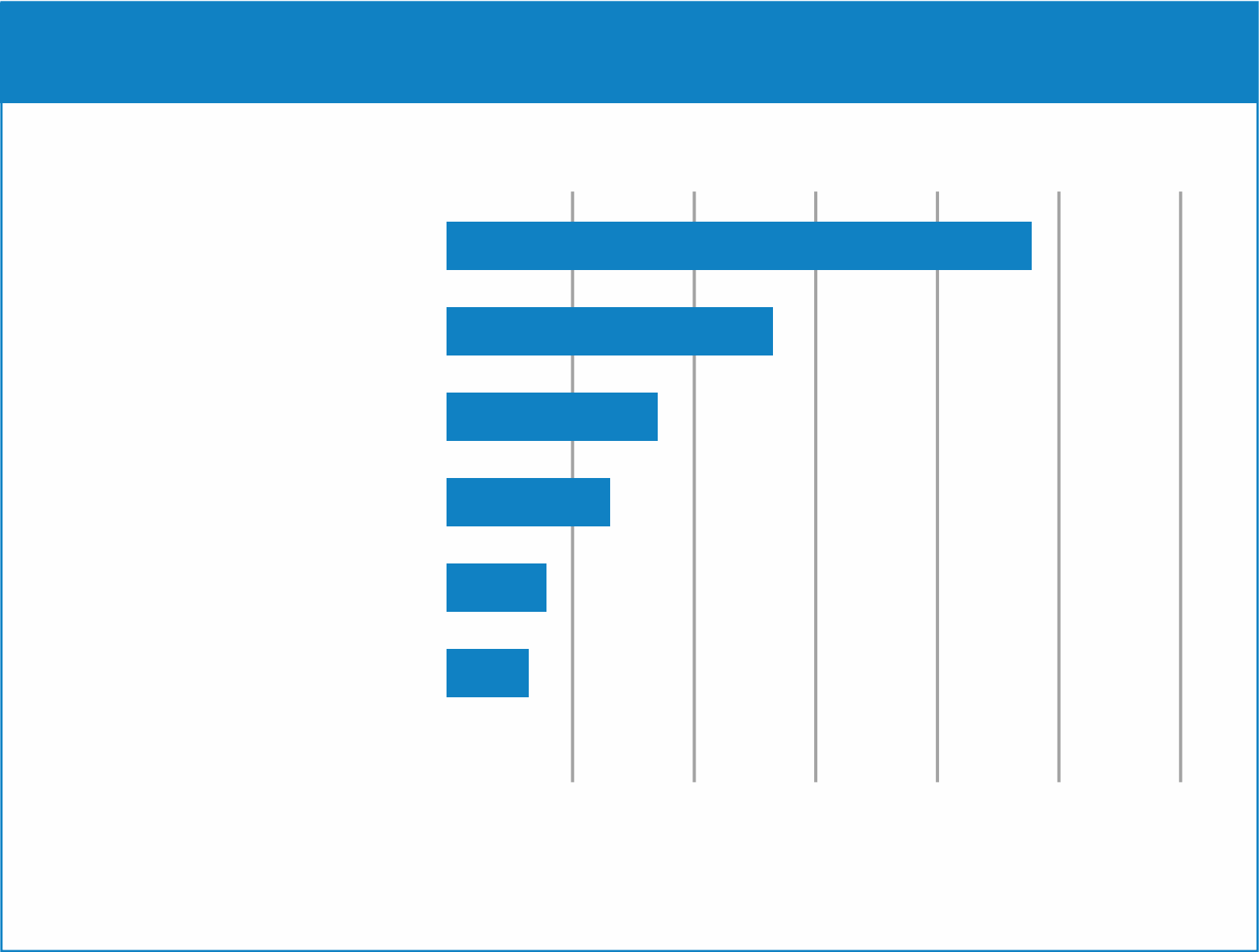


# How Do We Spend Our "Health" Dollars?

Health and Social Care Spending as a Percentage of GDP

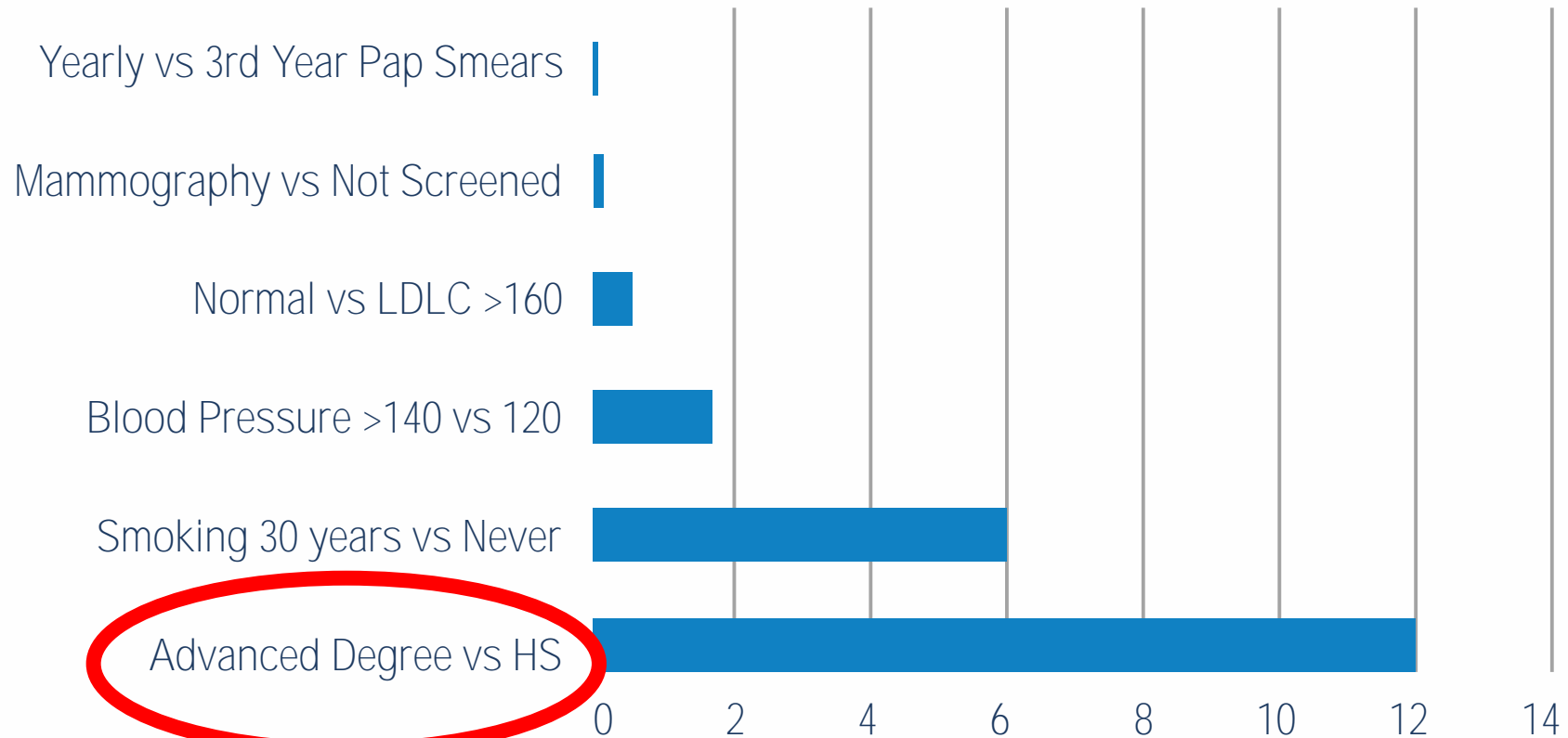


# Lack of Education Links Directly to High Risk of Death



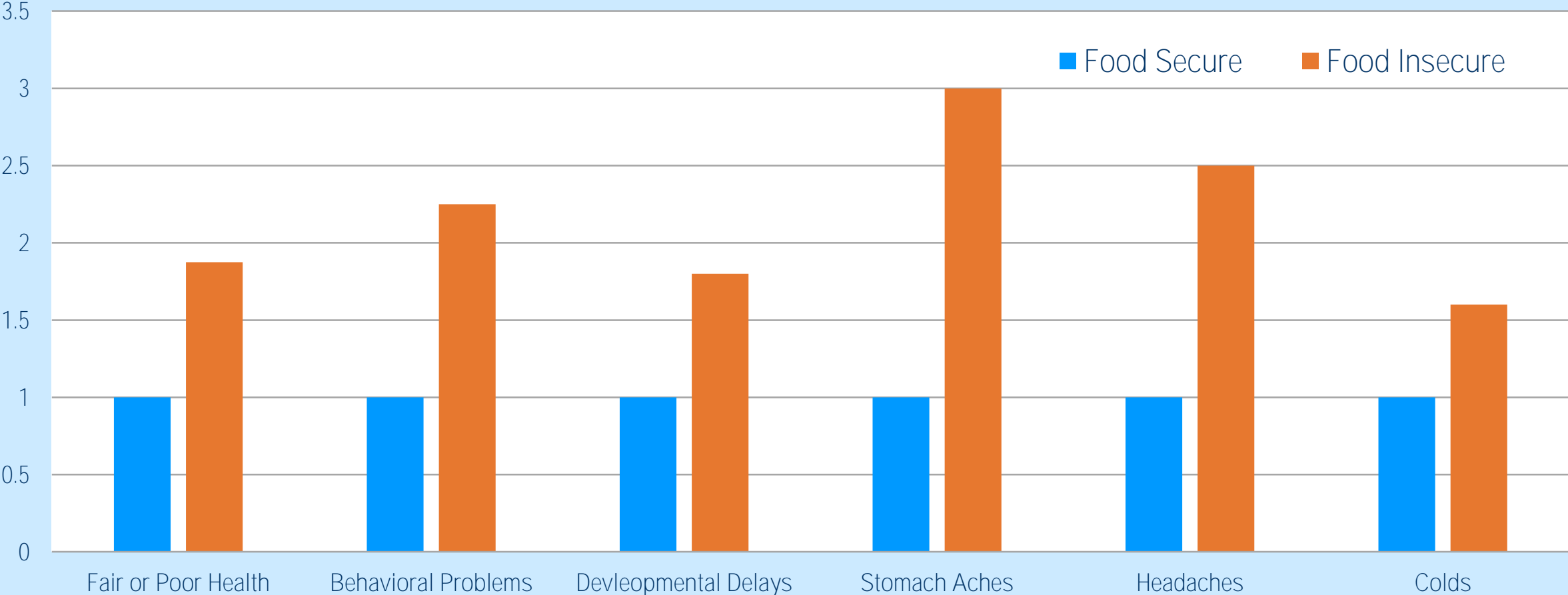
# The Most Powerful Behavior to Promote Health: School

## Quality Adjusted Life Years by Risk



# Impact of Food Insecurity on Health Outcomes

Food Insecure Young Children Face Increased Chances of Various Health Risks



Source: Coleman-Jensen et al., "Food Insecurity in Households with Children," Economic Research Service, USDA (2013).

# Adverse Childhood Experiences

- Emotional or physical neglect
- Physical, emotional or sexual abuse
- Growing up with family members with mental illness, alcoholism or drug problems
- Family violence
- Incarcerated family member
- One or no parents

Source:

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# The Adverse Childhood Experience ACE Study

Center for Disease Control and Kaiser Permanente  
Collaboration

Ten-year study involving 17,000 people

Looked at effects of adverse childhood experiences (trauma)  
over the lifespan

Largest study ever done on the subject

# Findings

67% of respondents had at least one ACE

1 in 4 exposed to 2 categories of ACEs

1 in 16 was exposed to 4 categories.

22% were sexually abused as children.

66% of the women experienced abuse, violence or family strife in childhood.

# Impact of Trauma Over the Lifespan

Neurological, biological, psychological and social. They include:

Changes in brain neurobiology;

Social, emotional & cognitive impairment;

Adoption of health risk behaviors as coping mechanisms (eating disorders, smoking, substance abuse, self-harm, sexual promiscuity, violence); and

Severe and persistent behavioral health, health and social problems, early death. (Felitti et al, 1998)



# ACE Study Findings

Compared with people with no ACEs, those with four or more ACEs were:

Twice as likely to smoke

Seven times as likely to be alcoholics

Six times as likely to have had sex before age 15

Twice as likely to have cancer or heart disease

Twelve times more likely to have attempted suicide

Men with six or more ACEs were 46 times more likely to have injected drugs than men with no history of adverse childhood experiences

**Source:** \_\_\_\_\_

Is the impact of these childhood experiences really that large into adulthood? Don't they just get over it?

An untreated high ACE score in a child predicts a

**20 years decrease**

in life expectancy





# Investing in the Social Determinants in Children Increases ROI By on Order of Magnitude

Longitudinal studies (i.e. James Heckman) show direct health benefits

Longitudinal studies confirm economic benefits to age 35, which translate to lifelong health benefits

These benefits stand up to rigorous (onerous) statistical correction

# Abecedarian Preschool and Early School Age Project: Heckman et al North Carolina

Social experiment based upon intellectual stimulation in early childhood

Preschool (Birth – 5) and School age (6-8)

Two meals and a snack daily

Periodic medical checkups

Health behaviors and lifestyle

# Results on Health Outcomes

## All Changes Statistically Significant at Age 35

Lower systolic and diastolic blood pressure

Less likely to be stage one hypertensive or pre hypertensive

None exhibited metabolic syndrome versus 25% of a control group

Higher levels of HDL "good cholesterol"

Lower incidence of abdominal obesity

# Results on Health Behaviors

All Changes Statistically Significant at Age 35

More likely to engage in regular physical exercise

Less likely to smoke at early age

More likely to eat nutritious food at age 21

Less likely to be overweight in childhood

Less likely to start drinking alcohol before age 17



# Results on Economic Outcomes

13% return on investment per annum

Increased high school graduation rate

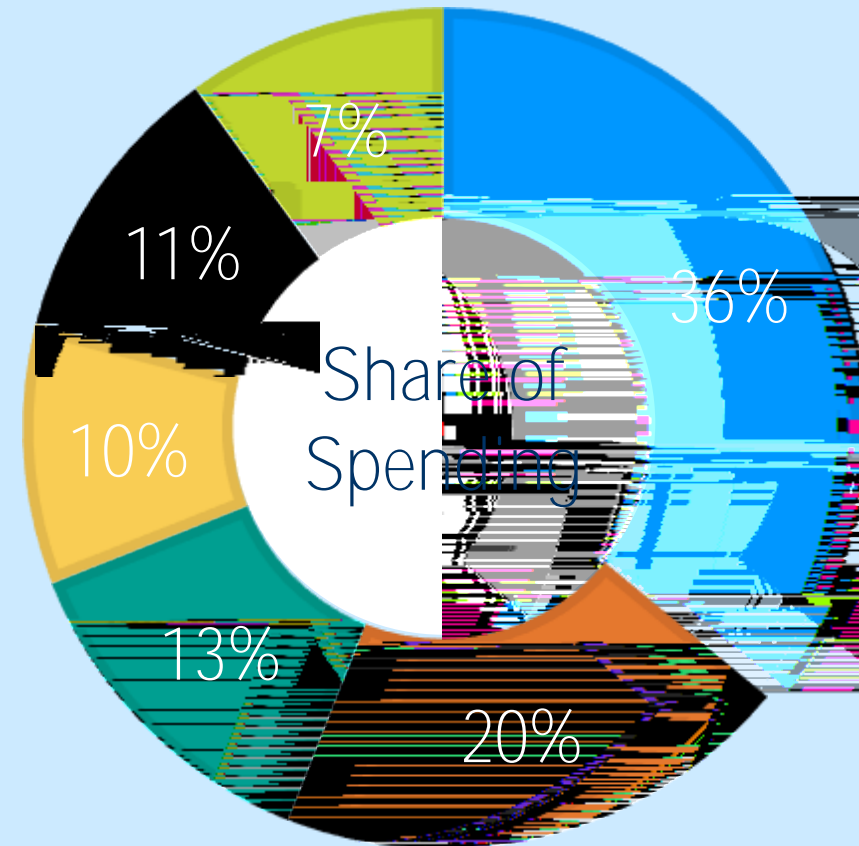
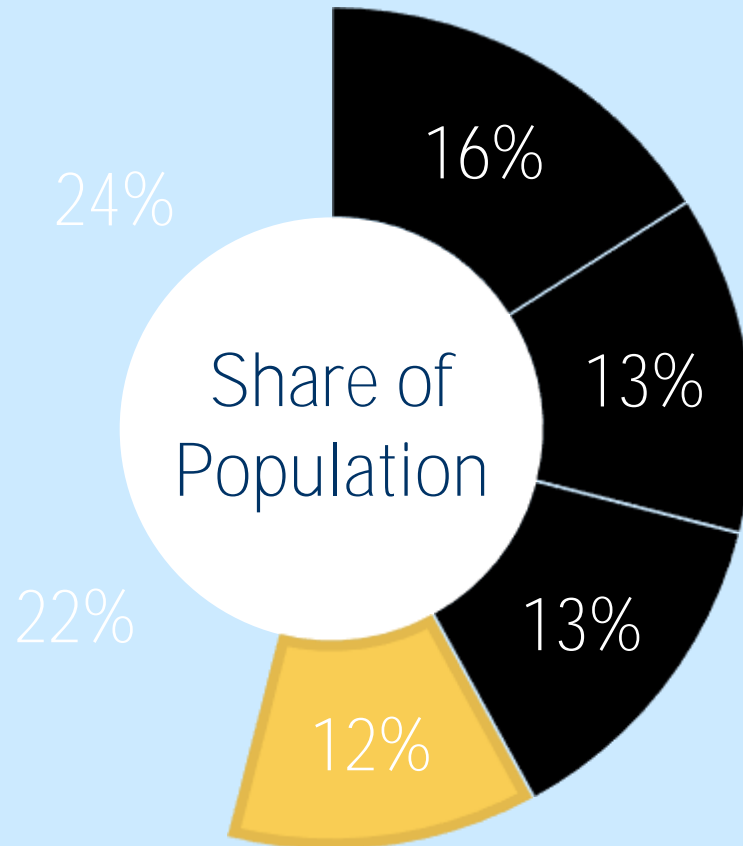
Less likely to be convicted of a crime and be incarcerated

Higher median annual income compared to controls

Two generation effect

# Share of Medical Care Spending by Age Group

■ 65 and over ■ 55 to 64 ■ 45 to 54 ■ 35 to 44 ■ 19 to 34 ■ Under 18





# Nemours at a Glance

The only multi-state, multi-region, multi-hospital pediatric care system in the U.S.

Commitment to all aspects of children's health including medical care

Enduring legacy of Alfred I. duPont



# Nemours at a Glance

1.8 million visits

470,000 unique patients

3,800 trainees (residents and fellows)

847 employed physicians

218 researchers

42 specialties and subspecialties

8,000 employees

80 pediatric care locations

Delaware

New Jersey

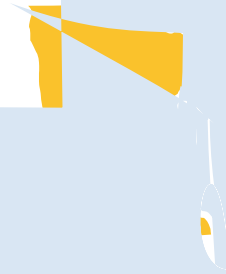
Maryland

Pennsylvania

Florida

# Nemours Prevention and Population Health

Spreading and Scaling Impact in the Early Years



# Three Anecdotal Examples of Leveraging SDOH to Improve Children's Health

Broad based community wide approach to childhood asthma

Development of a social determinants of health screening tool to be used for all children at the primary care doctors office

Implementation of healthy lifestyle training in preschool

# Nemours CMMI Asthma Award

Value Based Care in a Fee-for-Service World

## Award Parameters:

3-year award beginning July 1, 2012

\$3.7 million

Cooperative Agreement

## Self Monitoring and Evaluation:

Nemours in collaboration with Thomas Jefferson U and  
U of Delaware

NORC at the University of Chicago: External Evaluation



# Changes in Our Practice Model--Asthma

Pediatric Primary Care Practices: NCQA accredited PCMHs

Behavioral Health Integration

Patient level influencers (Community Health Workers)

Community level influencers (Community Health Liaisons)

Optimize Use of Technology

# Behavioral Health Integration

Psychologists and social workers hired and integrated into the practice team

## Role

Behavioral health management

Adherence promotion

Team building/integration

Population-based interventions – education/groups

Consultations

# Deployment of a Navigator Workforce

## Patient Level

Hired, trained and deployed Community Health Workers  
– unlicensed

Link between clinic and home

Home environmental assessments

Case management of non-medical issues/concerns

Reinforcement of asthma education

# Deployment of Integrators Workforce Community Level

Community liaisons

Community engagement and mobilization

Link between clinic and community—increase in connections to community resources

# Optimize Use of Technology

Establish Asthma Registry

QI measures and tracking

Individualized Asthma Action Plan

Standardized evidence-based approach—Control stops in EMR

Student Health Collaborative

Asthma Education:

- Electronic newsletter

- Texting Program

- Provider Training Modules in Nemours University

# Patient Based Results

## Internal Data

40% - 60% reduction in ER visits from baseline

Reduced population based asthma admission rates from 0.7/100,000 to 0.1/100,000

Inpatient CHW intervention lowered readmissions by half from 2.8% to 1.4%

Risk-stratification tool worked

Reduced Overall cost of care <\$500 per patient per quarter

Considerable reduction in cost of care,

BUT without a payment model aligned to support outcomes, overall costs to health system were high and unsustainable

# Community Based Results

Change to DE Medicaid drug formulary allowing metered dose inhalers

Smoke-Free Wilmington Ordinance—Impacts smoking in public spaces

Reduced school bus idling

100% of Head Start childcare centers are asthma-friendly

School Health Collaborative—school nurses have access to EMR

Healthy Homes and Integrated Pest Management

# Scope of Impact of Community Based Results

## In a very small state

Changes to drug formulary –metered dose inhaler. 11,805 children impacted.

Smoke-Free Wilmington Ordinance –19,224 children impacted

Reducing school bus idling in Wilmington - 14,029 children impacted.

100% of Telamon Head Start childcare centers in Delaware are asthma-friendly, impacting 852 children annually.

School Health Collaborative: 1302 patients enrolled in 2015-2016 school year

Healthy Homes and Integrated Pest Management >20,000 children est.



# Lessons Learned from a "Pay for Health" Project in a "Pay for Sickness" World

These interventions work. When we invest in health we get health

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# Nemours Social Determinant of Health Screener

Recognition that the health of the children we serve lives predominantly outside of medical care

Recognition that we can provide more efficient and targeted care if we are cognizant of the social circumstances in which our patients live

PILOT – for use in visits to primary care provider

Will evolve with experience

# Piloting Our SDOH Screener

## Real Data but Not Validated

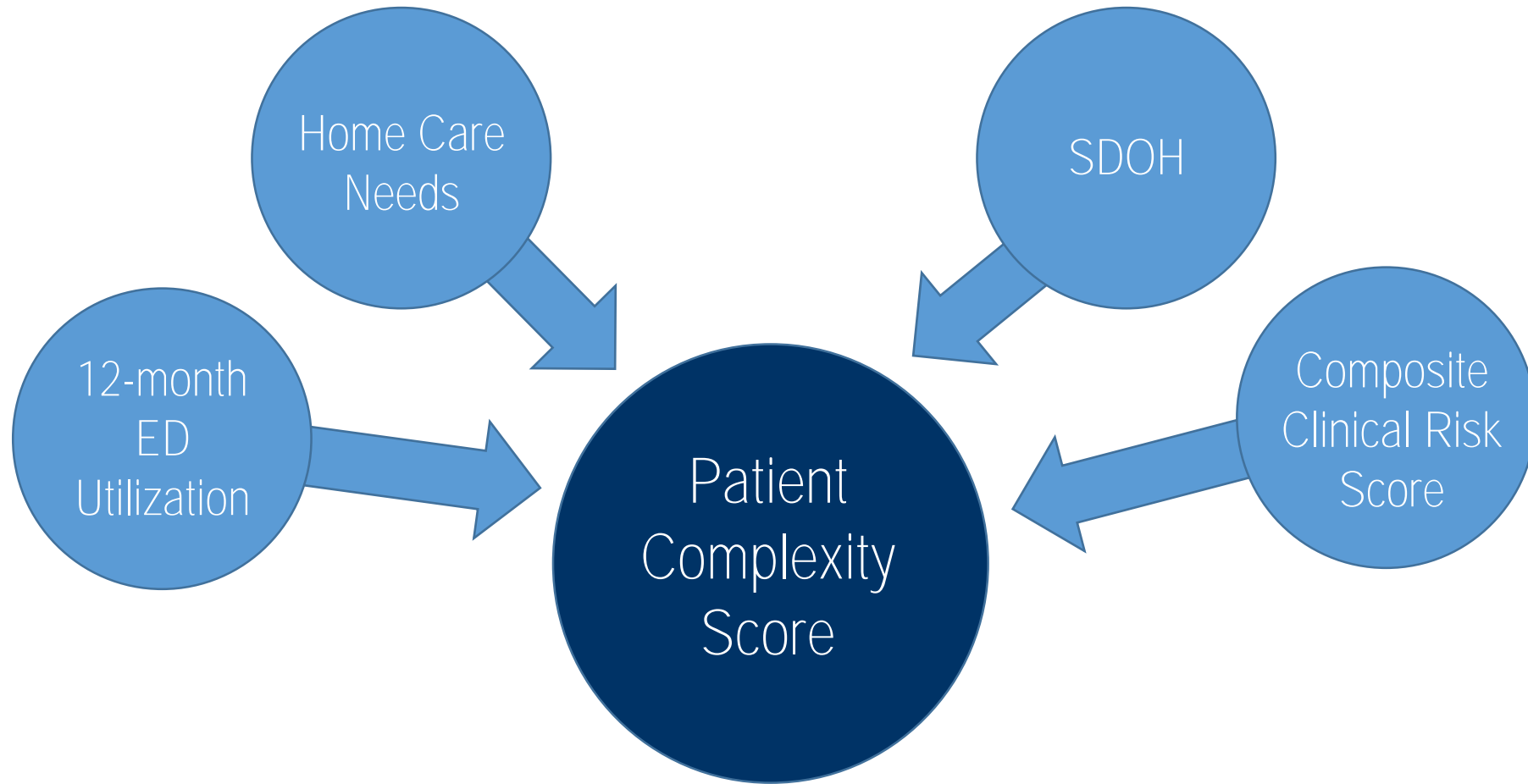
In the past 12 months, were there times the food you bought

was not safe to eat?

- Yes
- No

Response	Overall	Hospital ICU and ED Setting	Suburban Care Setting, Mixed Income	Specialty Clinic	Rural Primary Care Clinic	Urban Primary Care Clinic, High Spanish speaking
No	341	73	47	54	53	51
Yes	88	21	10	10	20	26
% with need	20.5%	22%	17.5%	15.6%	27.3%	33.7%

# Future Plans: Calculating Overall Patient Complexity\*



\*Model based on Children's Hospital of Colorado Patient Complexity Scoring, August 2018



# Levels of Adoption / Intervention for SDOH

Level 0.  
No coordinated  
SDOH activity.

Level 1.  
Standard data  
capture  
organization  
wide. Locally  
maintained  
resource  
directories.

Level 2.  
Community  
resource director  
integration.

Level 3.  
Coordination  
and joint projects  
with outside  
agencies/  
organizations  
based on key  
identified needs.

Level 4.  
Strategic  
investment and  
planning around  
community needs.  
Transformed care  
model.

# Why Nemours Invests in Early Care and Education

Nearly 15 million children under 6 are in child care

60% of children ages birth to 5 spend at least part of every day in non-parental care

Families see their ECE providers every day - children spend more time in ECE settings than they do in health care

ECE programs can promote healthy behaviors

Practice and policy changes are sustainable and have reach

A point of primary prevention

# National Early Care and Education Collaboratives

## The Facts

6 years of implementation

11 locations in 10 states

126 learning collaboratives

More than 2,500 ECE program  
participated

More than 201,500 children served  
by those programs

## The Results

Pre- and post-tests indicated  
statistically significant improvements  
in the number of healthy eating and  
physical activity best practices met

Environment

Provisions

Teacher Practices

Improvements maintained at least 12  
months post intervention



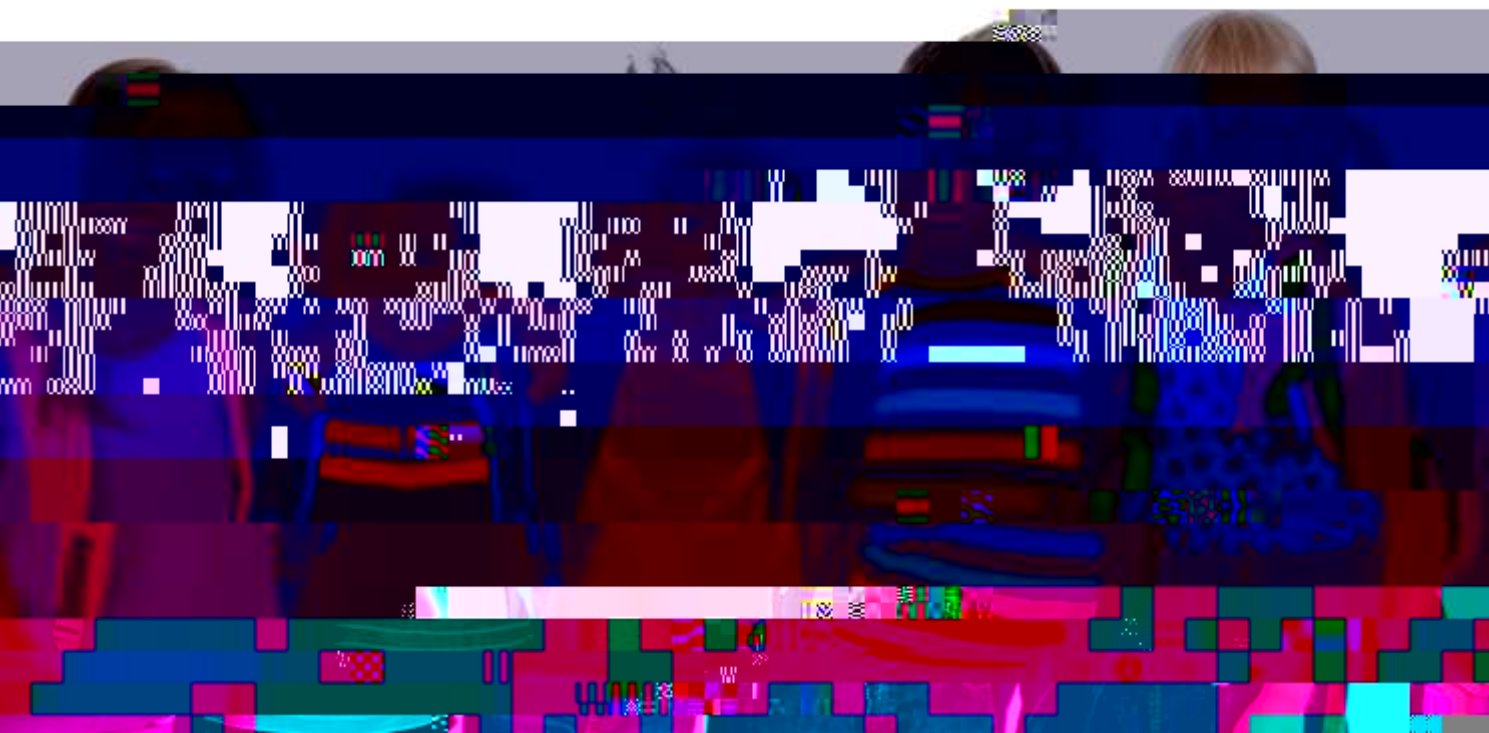
# What if ...

we successfully prevent disease, reduce hospitalizations, and treat disease with less costly treatments?

children's health systems do more than deliver superb medical care and also take responsibility for the vital factors outside of the hospital that impact a child's well-being?

we become stewards of children's health in this country?

we are a major force in creating a new definition of children's health and in creating the healthiest generation of children in American history?





“It is the duty of everyone  
to do what is within his power  
to alleviate human suffering.”