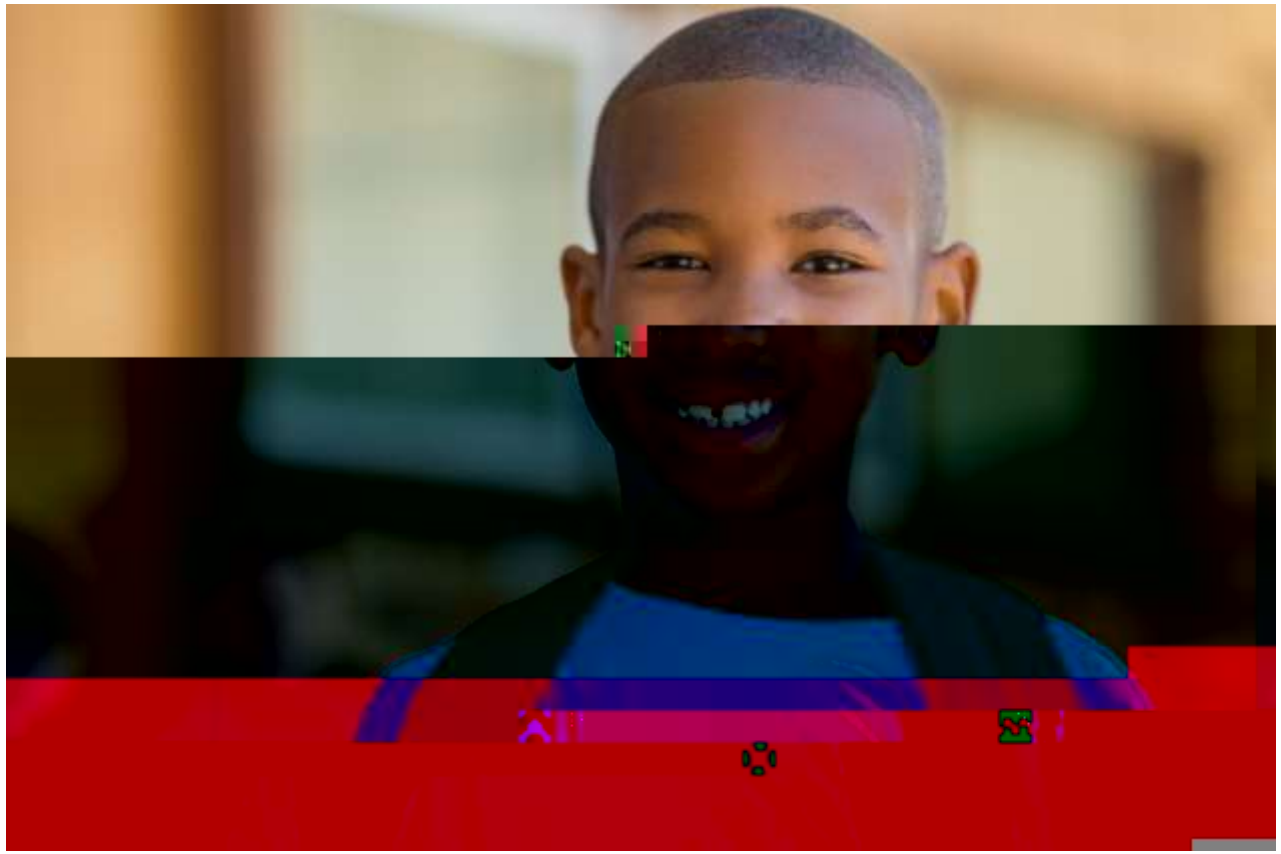
Adapting Business Models to Address Social Determinants of Health

Jamal’s Story

The worst health care system in the world?



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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.

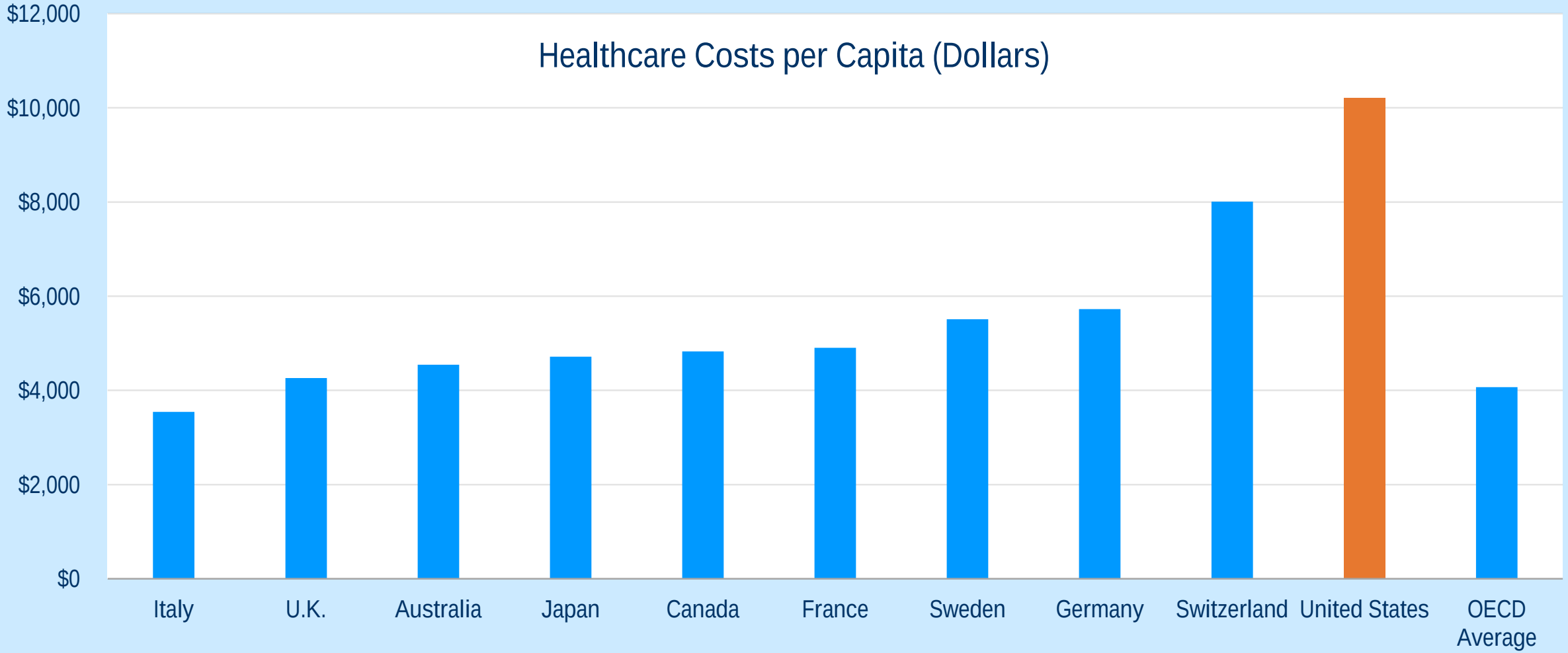
Amount Trending in the Wrong Direction

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

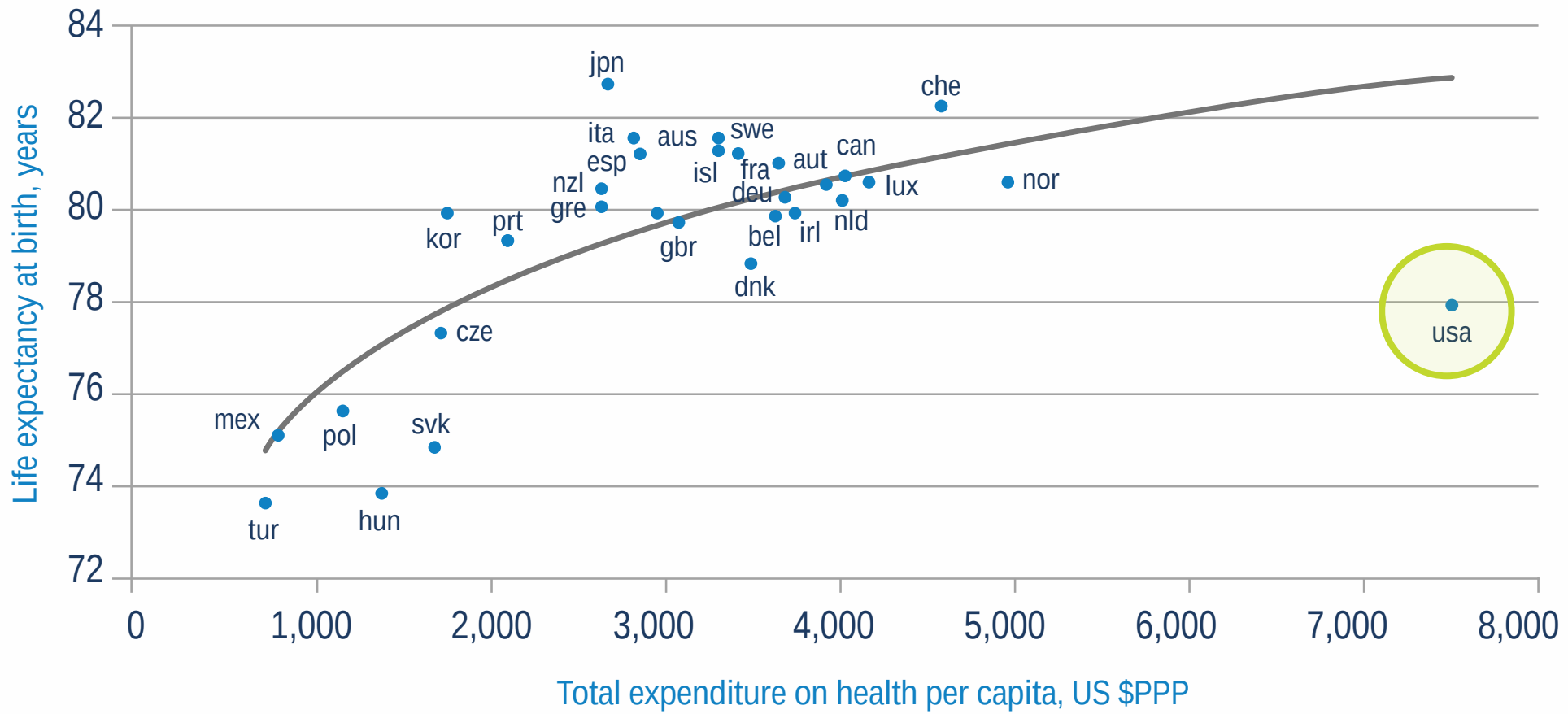
United States per Capita Healthcare Spending is more than twice the average of other developed countries



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.

Our Nation's Health — Where is the Value?

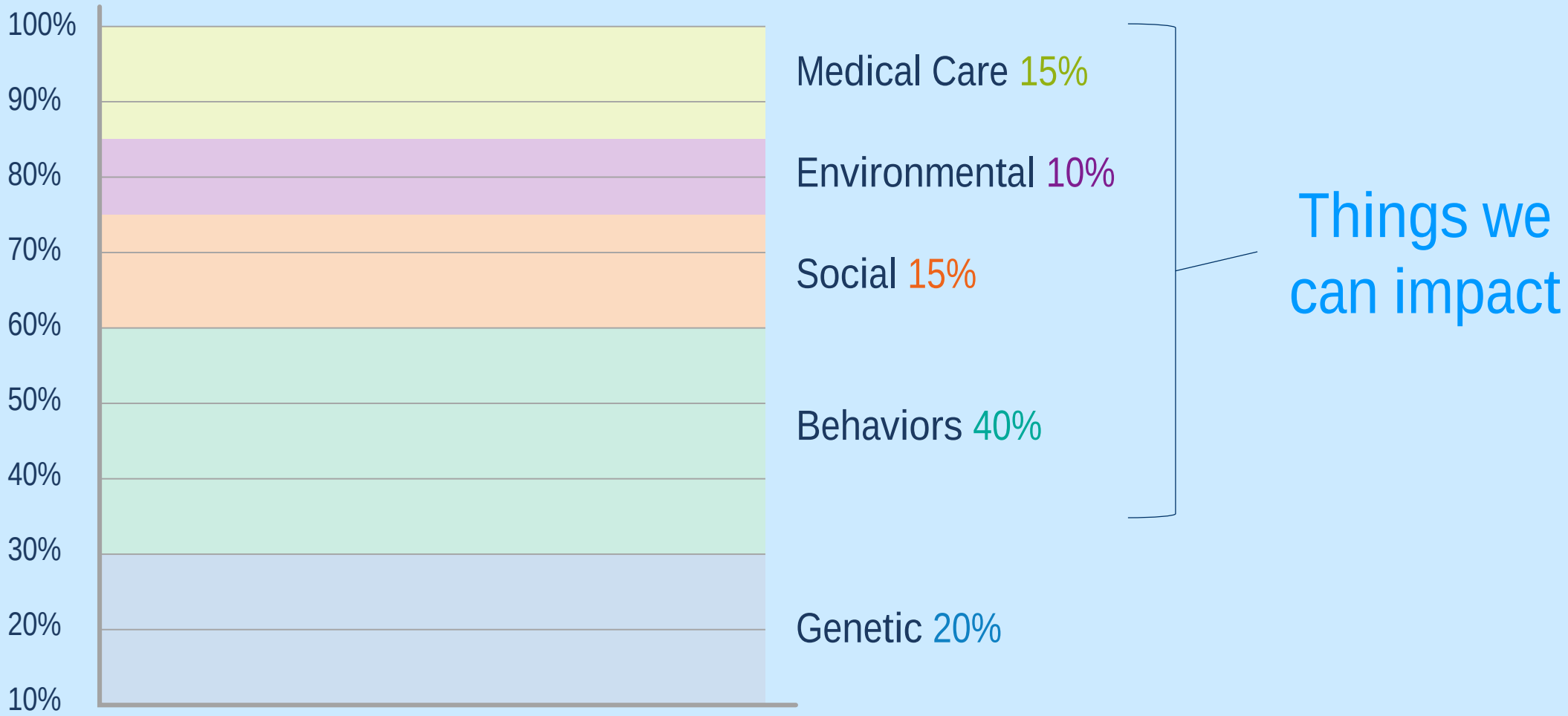
Life Expectancy and Health Care Spending, 2008



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

Determinants of Health

15%
Medical Care

85%
Health Behaviors & Other Factors

We Are Paying for: Medical Care

Spending on Medical Care

97%
Medical Care

3%
Health Behaviors & Other Factors

Source: Kaplan , 2015.

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

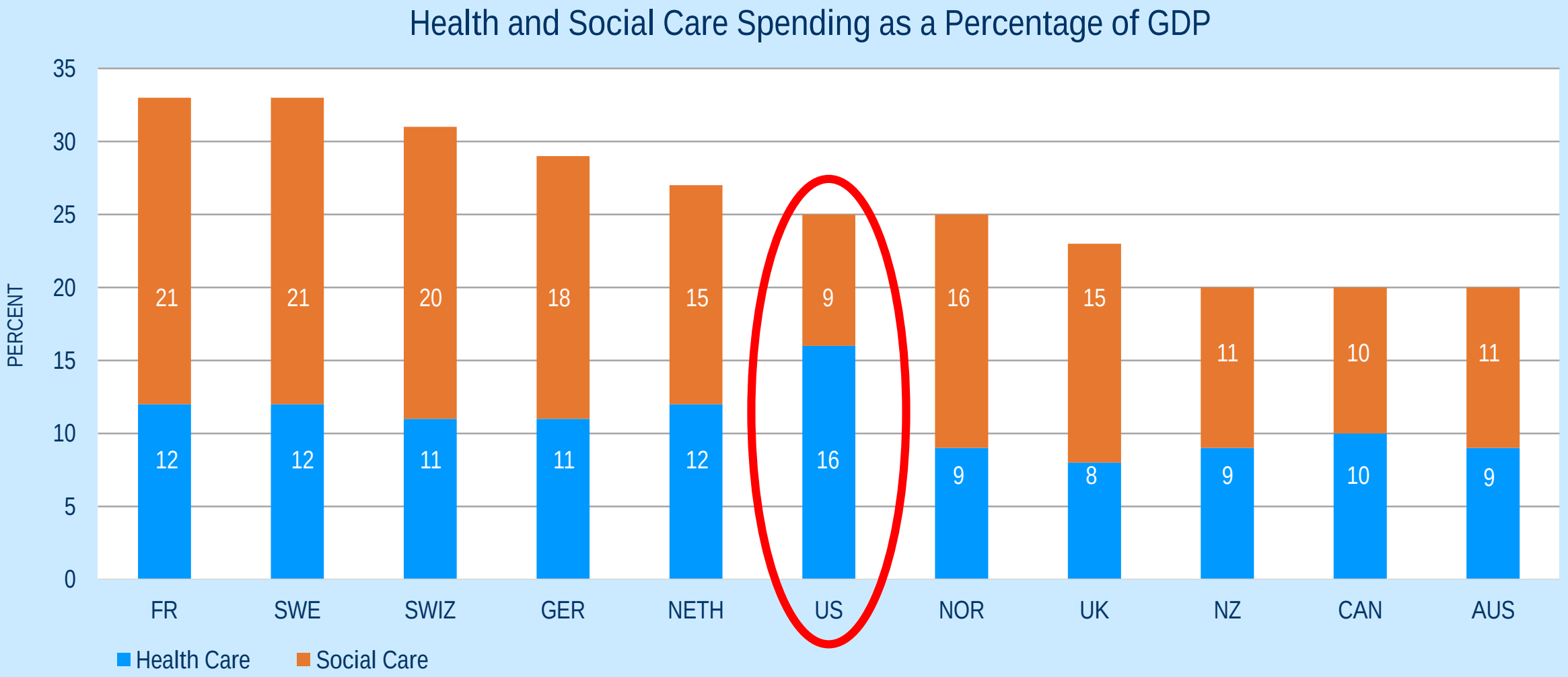
These circumstances are shaped by the distribution of money, power and resources at global, national and local levels

The social determinants of health are mostly responsible for health inequities

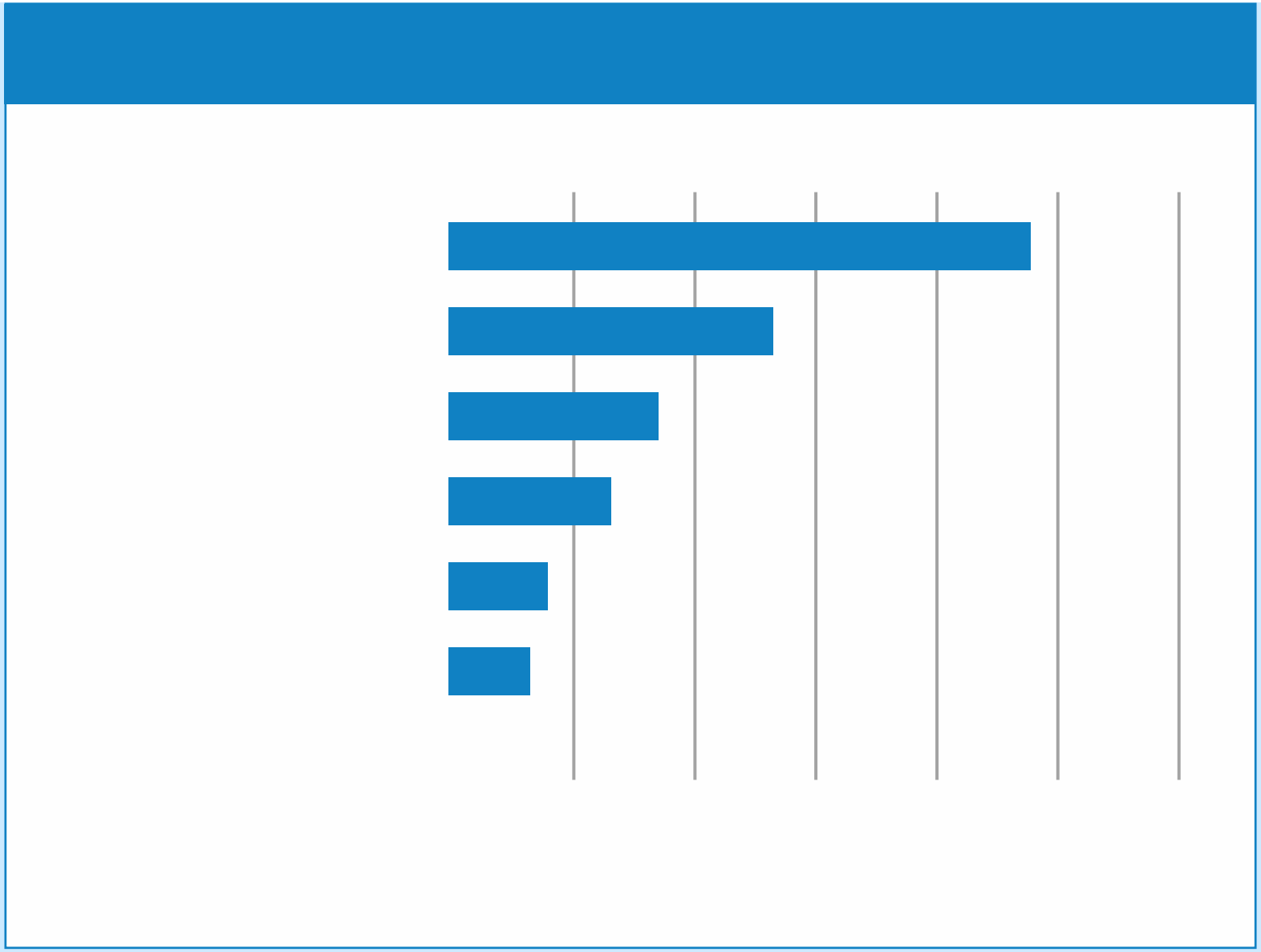
What are the primary social determinants of heath?

- 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

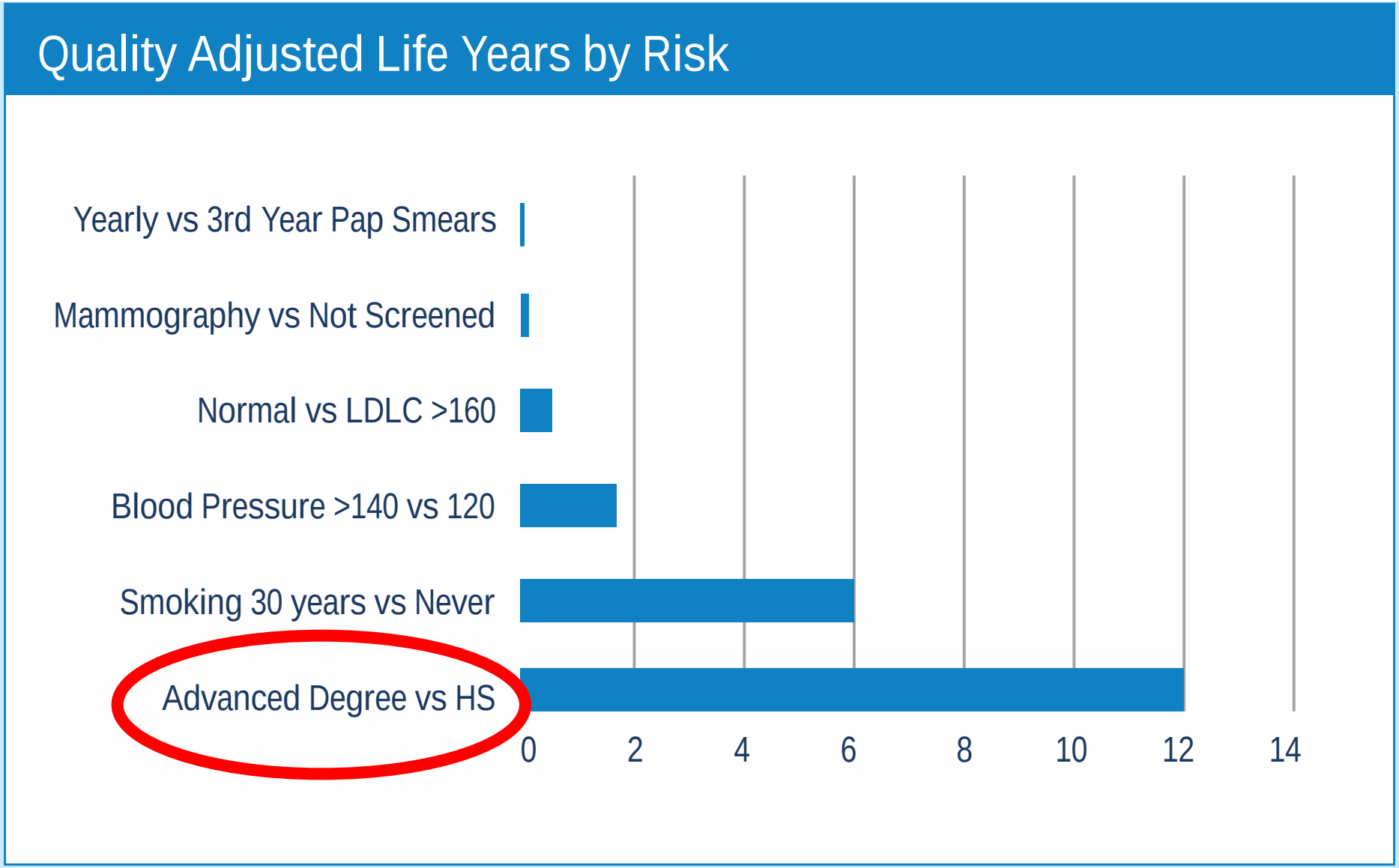
How Do We Spend Our “Health” Dollars?



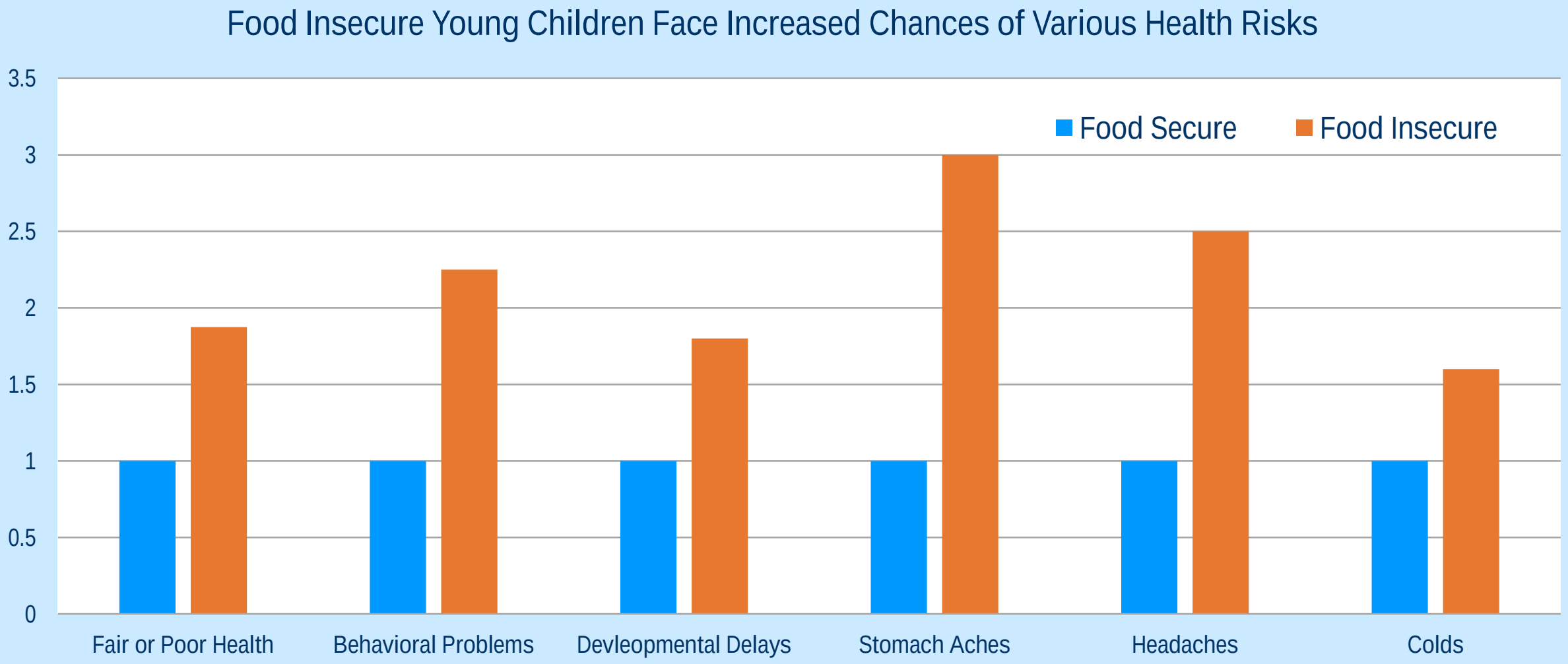
Lack of Education Links Directly to High Risk of Death



The Most Powerful Behavior to Promote Health: School



Impact of Food Insecurity on Health Outcomes



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:

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

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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

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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

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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

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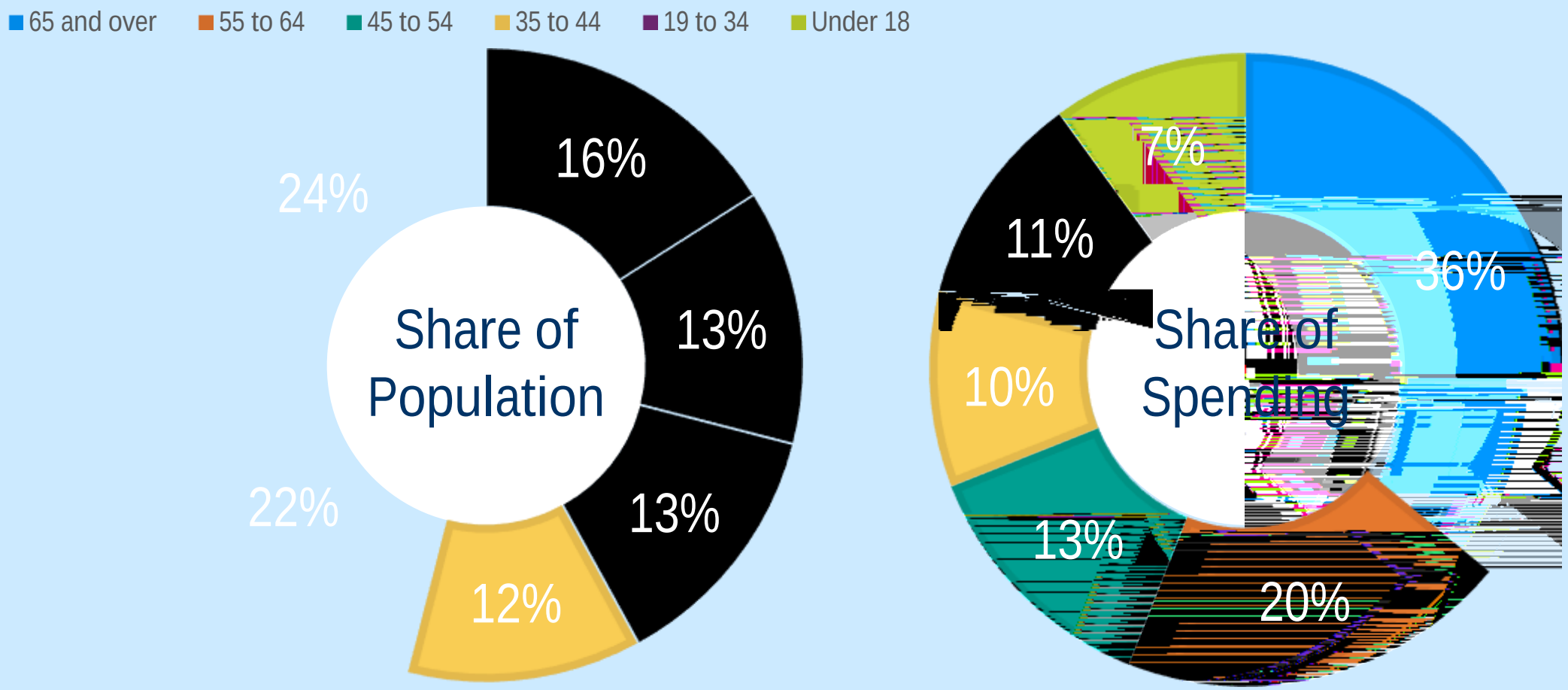
Share of Medical Care Spending by Age Group



Nemours at a Glance

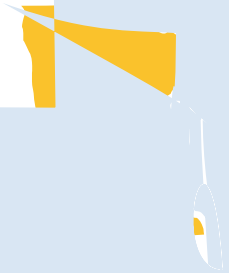
The only multi-state, multi-region, multi-

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

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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

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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

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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

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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 serves 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

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Piloting Our SDOH Screener

Real Data but Not Validated

In the past 12 months, were there times the food you bought
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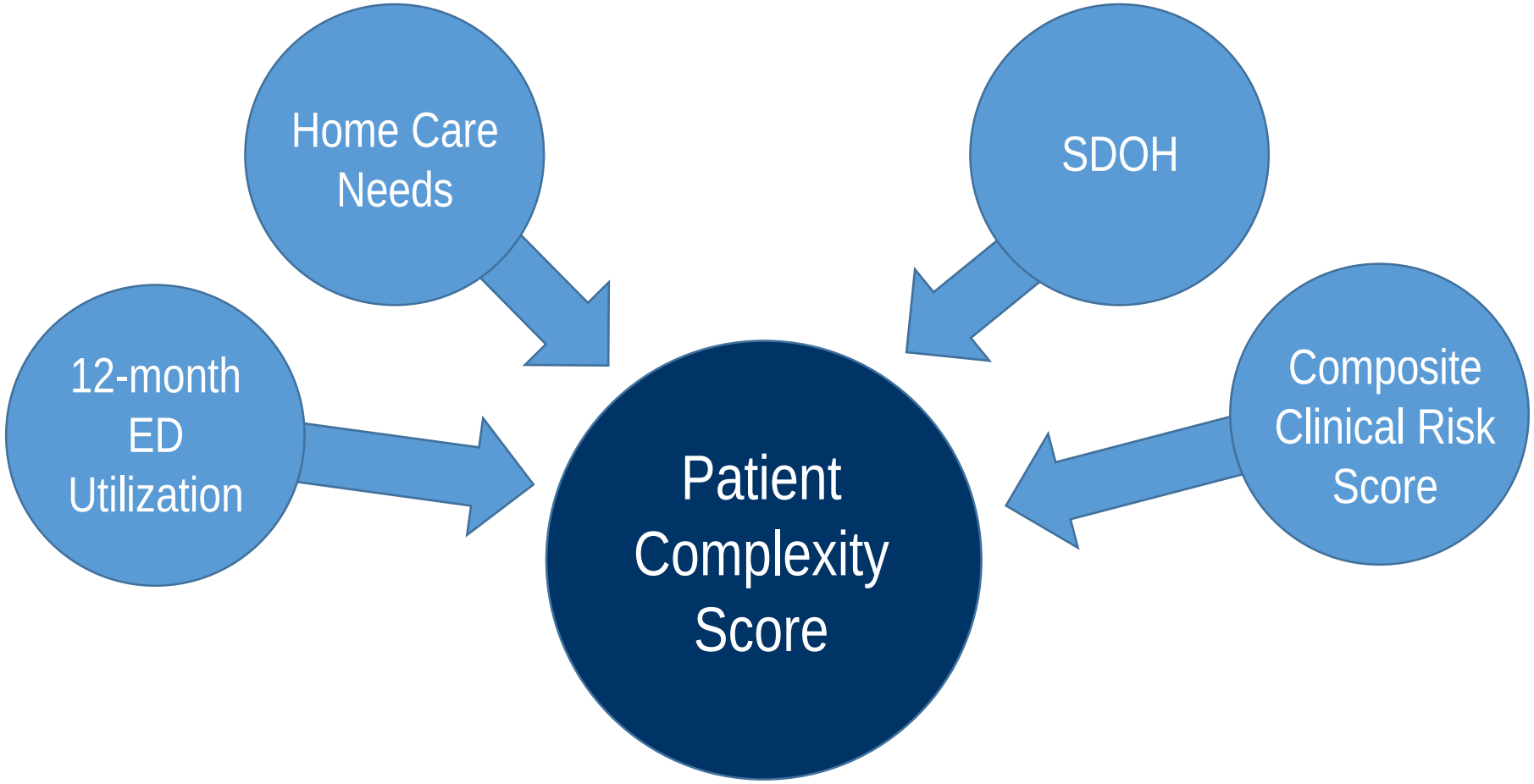
- Yes
- No

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

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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

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Findings in pre-publication. Update citation when published.

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?

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