



# **Levering Children's Health Complexity Data In Order to Guide, Drive and Inform System and Community Level Improvements**

**March 28<sup>th</sup>, 2019**  
***Early Learning Council Meeting***

# Agenda for Presentation

Context setting and alignment with transformation goals

Review Specific System-level Data Being Used to Operationalize Key Indicators and State-Level Findings for Children 0-5

Part 1: **Pediatric Medical Complexity Algorithm**

Part 2: Indicators of **Social Complexity**

Part 3: **Medical** + **Social** Complexity = **Health Complexity**

Sharing the Data with Coordinated Care Organizations (CCO's ) & Communities

Example of Uses in Communities: Spotlight from Central Oregon

# Why focus on Children's Health Complexity?

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- Lifelong health and well-being start in early childhood
- Child health and development are particularly impacted by the social determinants of health and equity
  - Adverse Childhood Experiences (ACEs)
- Thoughtful and innovative approaches are needed to address children's health complexity and health disparities
  - Multi-generational focus

# CCO 2.0 Focus Areas

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*CCO 2.0 policies build on Oregon's strong foundation of health care innovation and tackle our biggest health problems.*



Improve the behavioral health system and address barriers to the integration of care



Increase value and pay for performance



Focus on the social determinants of health and health equity



Maintain sustainable cost growth and ensure financial transparency

# Alignment with *Raise Up Oregon* Strategies

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- **Objective 4: Early Childhood Physical and Social Emotional Health Promotion and Resilience— [Strategies 4.1 & 4.2 & 4.4](#)**
- **Objective 5: Young Children with Social Emotional, Developmental, and Health Care Needs Identified Early and Supported to Reach Full Potential— [Strategy 5.2](#)**
- **Objective 7: Parents and caregivers have equitable access to support for their physical and social emotional health - [Strategy 7.2](#)**
- **Objective 9: Families and young children who are experiencing adversity have access to coordinated and comprehensive services- [Strategies 9.1-9.4](#)**
- **Objective 14: Data infrastructure is developed to enhance service delivery, systems building, and outcome reporting. [Strategy 14.1 & 14.4](#)**

# Measuring Children's Health Complexity



- **Medical Complexity**

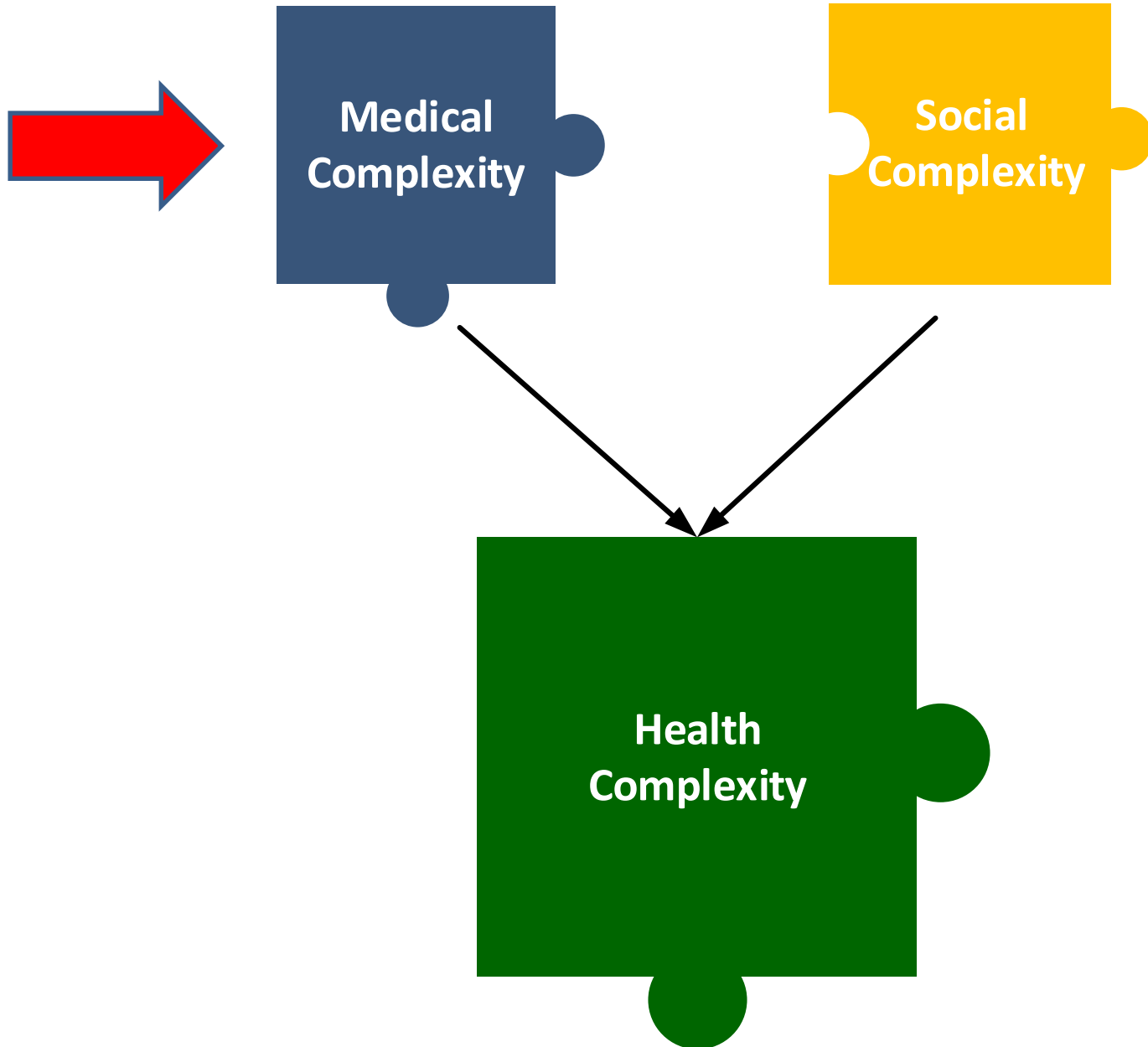
- Defined using the Pediatric Medical Complexity Algorithm (PMCA)
  - Takes into account: 1) Utilization of services, 2) Diagnoses, 3) Number of Body Systems Impacted
  - Assigns child into one of three categories: a) Complex with chronic conditions; b) Non-Complex, with chronic conditions; or c) Healthy.

- **Social Complexity:**

- Defined by The Center of Excellence on Quality of Care Measures for Children with Complex Needs (COE4CCN) as:
  - “A set of co-occurring individual, family or community characteristics that can have a direct impact on health outcomes or an indirect impact by affecting a child’s access to care and/or a family’s ability to engage in recommended medical and mental health treatments”*
- Our work incorporates factors identified by COE4CCN as predictive of a **high-cost health care event** (e.g. emergency room use).

## ➤ **Health Complexity**

- Combines medical and social complexity to create global understanding of children's health and needs



# Pediatric Medical Complexity Algorithm Findings for Publicly Insured Children 0-5

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Statewide Publicly Insured 0-5: N = 145,970

**1. Complex Chronic Disease: 4.7%**

N = 6,861

16.6%

**2. Non-Complex Chronic Disease: 11.9%**

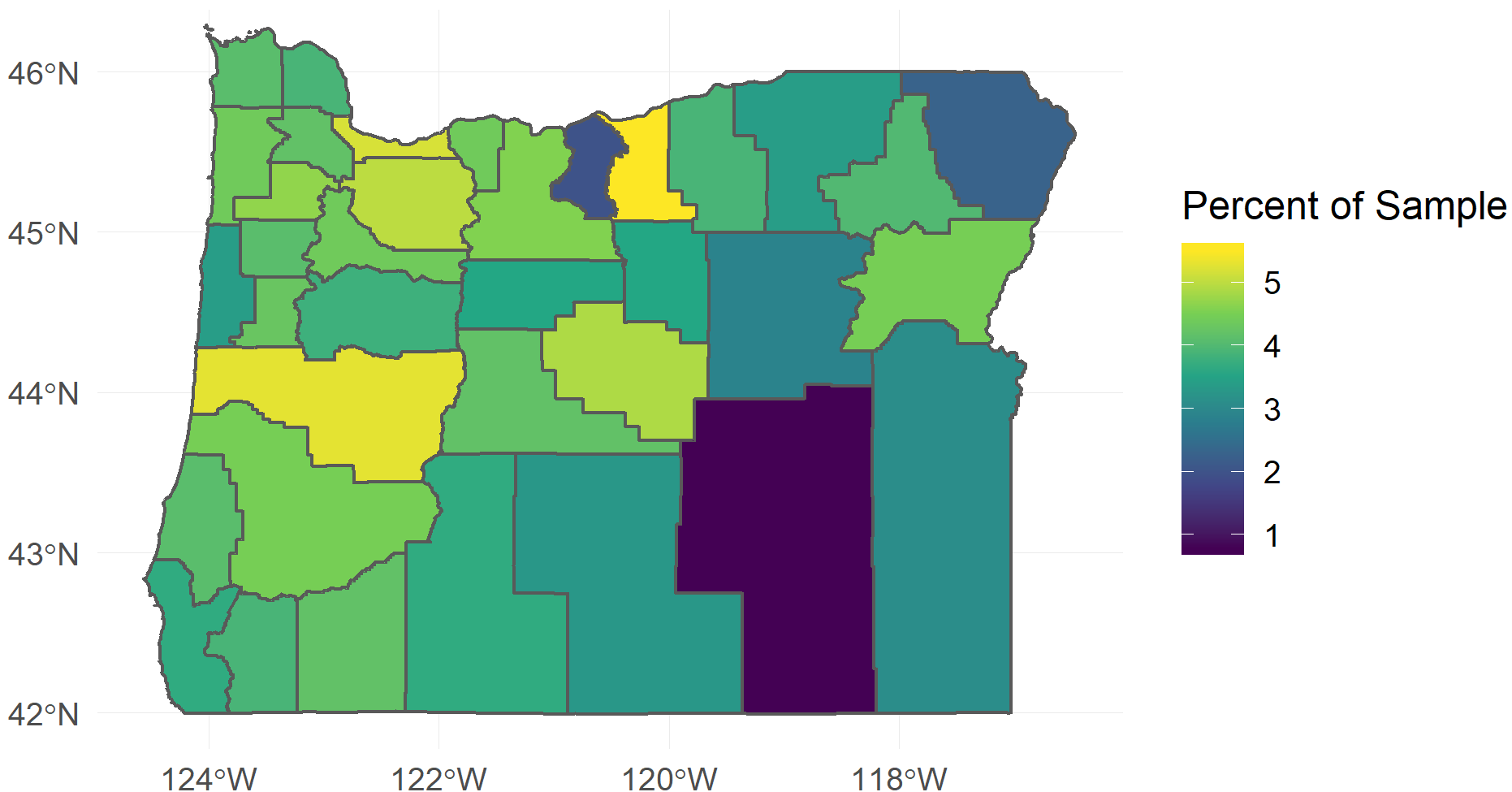
N = 17,370

**3. Healthy: 83.4%**

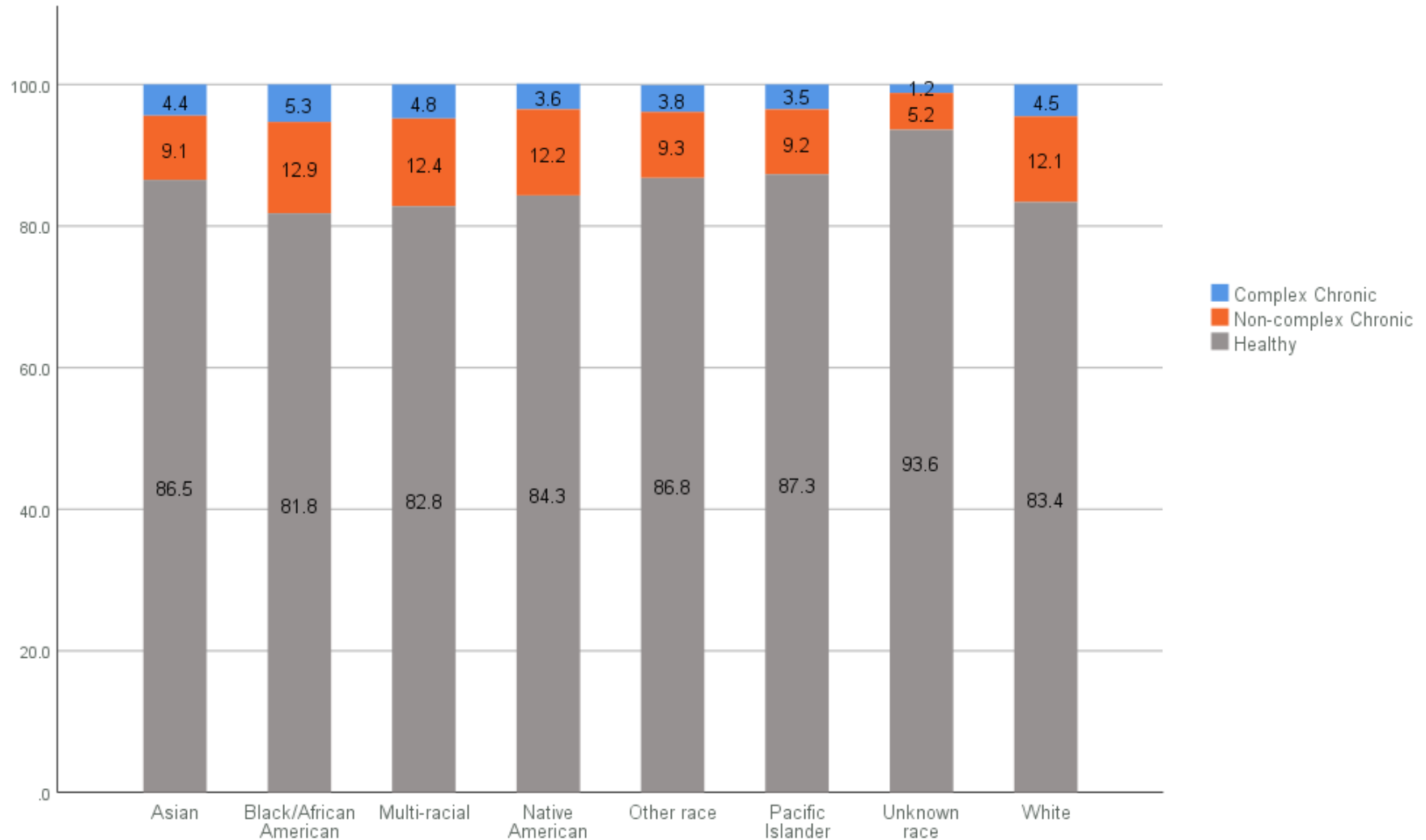
*There is a **statistically significant** difference in the distribution of the three PMCA Categories **across counties** in Oregon.*



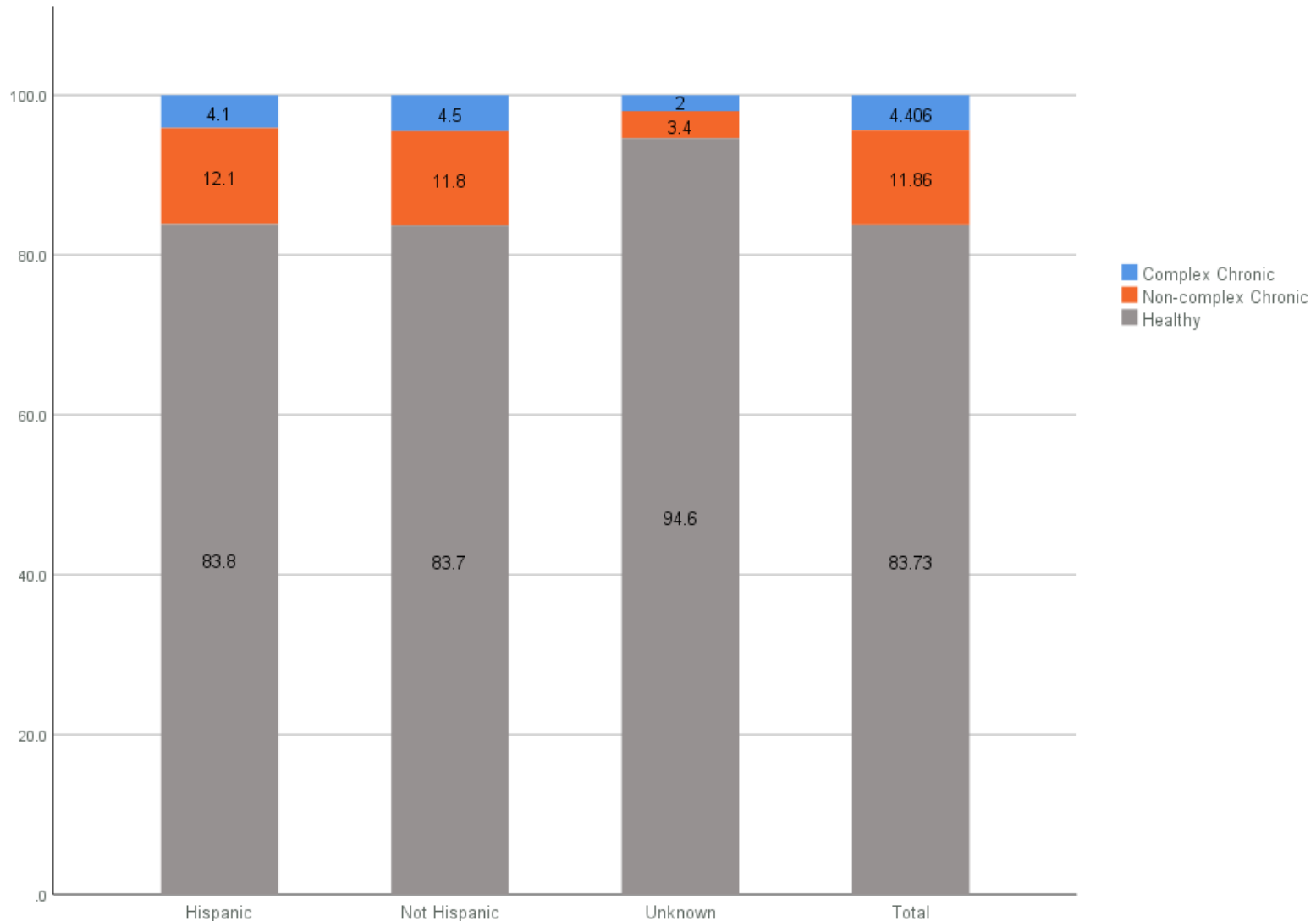
# Complex, Chronic for Publicly Insured Children 0-5

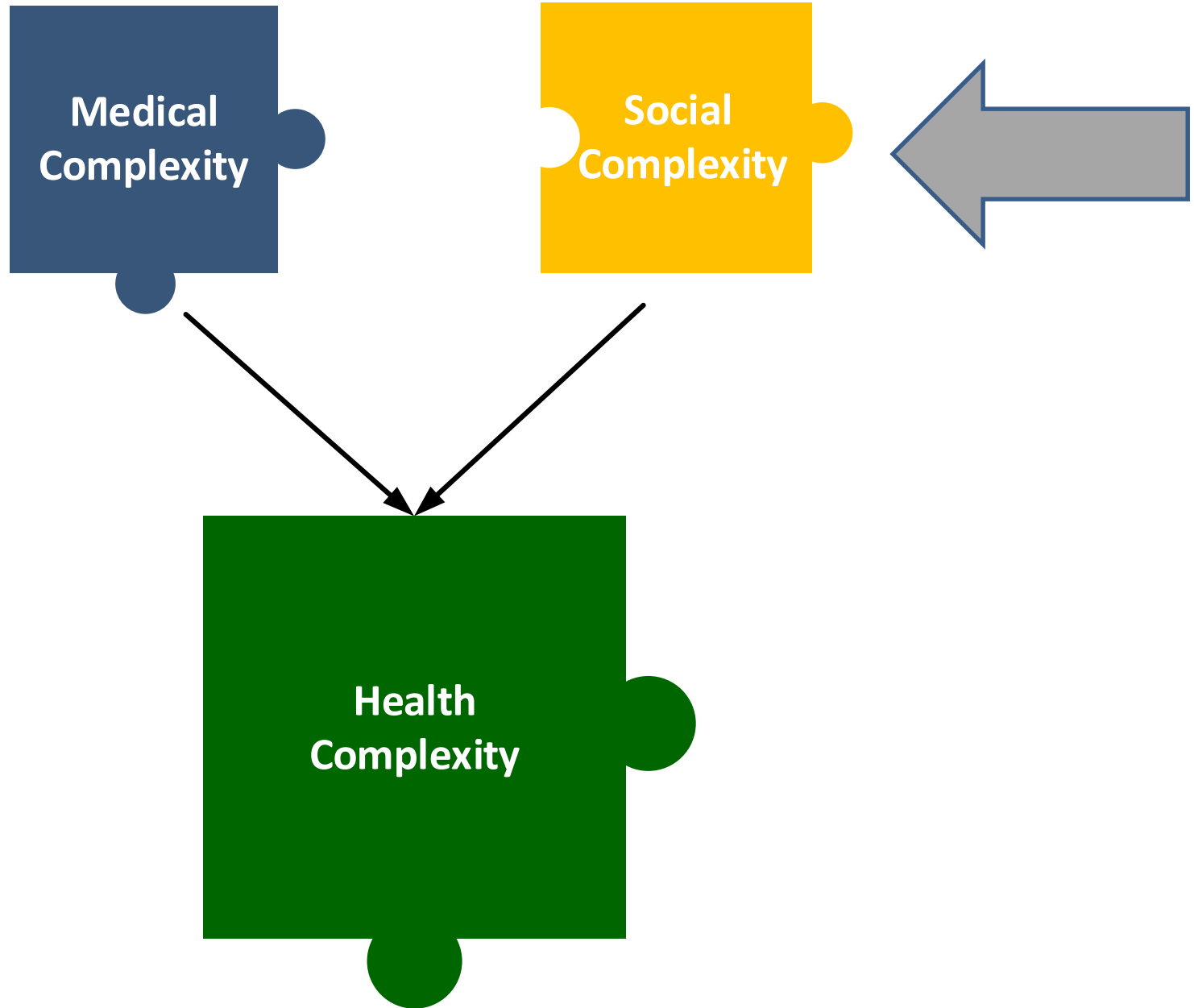


# Pediatric Medical Complexity Algorithm Findings: By Race, For Publicly Insured Children 0-5



# Pediatric Medical Complexity Algorithm Findings: By Ethnicity for Public Insured Children 0-5





## 18 Social Complexity Factors Identified by the Center of Excellence on Quality of Care Measures for Children with Complex Needs (COE4CCN) as Associated in Literature with Worse Health Outcomes and Costs

- 12 SC risk factors from literature review related to **worse outcomes**
  1. Parent domestic violence
  2. Parent mental illness
  3. Parent physical disability
  4. Child abuse/neglect
  5. Poverty
  6. Low English proficiency
  7. Foreign born parent
  8. Low parent educational attainment
  9. Adolescent exposure to intimate partner violence
  10. Parent substance abuse
  11. Discontinuous insurance coverage
  12. Foster care
- COE4CCN studies showed worse outcomes or consensus on impact:
  13. Parent death
  14. Parent criminal justice involvement
  15. Homelessness
  16. Child mental illness
  17. Child substance abuse treatment need
  18. Child criminal justice involvement

# Identifying Feasible Social Complexity Variables : Leveraged Integrated Client Data Warehouse (ICS)

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- Data sources from OHA- Health Analytics and **Integrated Client Data Warehouse (ICS)**
- Collaboration between OHA & DHS to provide staffing
- Data sharing agreements
- Linkage of the child and parent to allow for child-level and population-level analysis
- Input obtained from public and private stakeholders in November 2017 and April 2018 about data methodologies

# Identifying Feasible Social Complexity Variables : Leveraged Integrated Client Data Warehouse (ICS)

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- Data sources from OHA- Health Analytics and **Integrated Client Data Warehouse (ICS)**
- ICS includes data across the Department of Human Services (DHS), OHA client-based services, and data from other external agencies

## **DHS program data** includes:

- Aging and People with Disabilities, Child Welfare, Developmental Disability Services, Self-Sufficiency and Vocational Rehabilitation

## **OHA program data** includes:

- Alcohol and Drug (AD), Contraceptive Care (C-Care), Family Health Insurance Program (FHIAP), Healthy Kids Connect (HKC), Medical Assistance Programs (MAP), Mental Health (MH), Women Infants and Children (WIC)

## **Additional agency data** includes:

- Department of Corrections, Oregon Housing and Community Services

INDICATOR (Source, Descriptive Information)	CHILD FACTOR	FAMILY FACTOR	TOTAL
<b>POVERTY - CHILD *</b> - For Child - Access of Temporary Assistance for Needy Family [TANF], Below 37% Federal Poverty Level ( <i>ICS Data available 2000-2017</i> )	X		X
<b>POVERTY - PARENT *</b> - Parent Access of TANF( <i>ICS Data available 2000-2017</i> )		X	X
<b>FOSTER CARE*</b> -Child receiving foster care services ( <i>ICS, Child interacted with Foster Care System. Data available 2000-2017</i> )	X		X
<b>PARENT DEATH*</b> – Death of parent/primary caregiver in OR ( <i>ICS-Death Certificate in Oregon, Data available 1989-2017</i> )		X	X
<b>PARENTAL INCARCERATION*</b> – Parent incarcerated or supervised by the Dept. of Corrections in Oregon ( <i>ICS-Department of Corrections for state felony charges, not including county/municipal charges. Data available 2000-2017</i> )		X	X
<b>MENTAL HEALTH: CHILD*</b> – Received mental health services through DHS/OHA ( <i>ICS- NMH Caseloads. Data available 2000-2017</i> )	X		X
<b>MENTAL HEALTH PARENT*</b> – Received mental health services through DHS/OHA ( <i>ICS- NMH Caseloads. Data available 2000-2017</i> )		X	X
<b>SUBSTANCE ABUSE-CHILD*</b> – Substance abuse treatment through DHS/OHA ( <i>ICS- AD Caseloads. Data available 2000-2014</i> )	X		X
<b>SUBSTANCE ABUSE-PARENT*</b> : Parent – Substance abuse treatment through DHS/OHA ( <i>ICS- AD Caseloads. Data available 2000-2014</i> )		X	X
<b>CHILD ABUSE AND NEGLECT</b> - ICD-9, ICD-10 dx codes related used by provider ( <i>OHA Medicaid Claims Data, 6/2014-06/2017</i> )	X		X
<b>LIMITED ENGLISH PROFICIENCY:</b> Language other than English listed in the primary language field ( <i>OHA Medicaid Enrollment, Most current data for child</i> )		X	X
<b>PARENT DISABILITY:</b> OHA eligibility due to parent disability ( <i>OHA Medicaid Enrollment, Most current data for child</i> )		X	X
<b>TOTAL NUMBER OF INDIVIDUAL FLAGS</b>	<b>5</b>	<b>7</b>	<b>12</b>

\* Look back period includes pre-natal period through the lifetime of the child, unless an exception is noted due to availability of data.



## Social Complexity Findings

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### Import Notes About Data Being Shown:

- Child Indicators: Available for all children
- For “Family” indicators: Linkage of publicly insured children to a parent in ICS:
  - Unable to link to a parent: 20.44%
  - 1 parent: 11.62%
  - 2 Parents: 67.94%

# State-Level: Findings on Prevalence of Each Social Complexity Indicators for Publicly Insured Children 0-5

INDICATOR	CHILD FACTOR	FAMILY FACTOR
Poverty – TANF (for Child and by Parent)	<b>34.2%</b> (49,921)	<b>30.5%</b> (44,520)
Foster Care – Child receiving foster care services DHS ORKids (since 2012)	<b>7.4%</b> (10,801)	
Parent Death – Death of parent/primary caregiver in OR		<b>0.5%</b> (730)
Parental Incarceration – Parent incarcerated or supervised by the Dept. of Corrections in Oregon		<b>17.5%</b> (25,545)
Mental Health: Child – Received mental health services through DHS/OHA	<b>14.2%</b> (20,728)	
Mental Health: Parent – Received mental health services through DHS/OHA		<b>44.1%</b> (64,372)
Substance Abuse: Child – Substance abuse treatment through DHS/OHA	<b>0.4%</b> (583)	
Substance Abuse: Parent – Substance abuse treatment through DHS/OHA		<b>29%</b> (42,331)
Child Abuse/Neglect: ICD-9, ICD-10 dx codes related to service	<b>4.9%</b> (7,153)	
Limited English Proficiency: Language other than English listed as primary language		<b>17.7%</b> (25,837)
Parent Disability: OHA Eligibility Due to Parent Disability		<b>2.4%</b> (3,503)

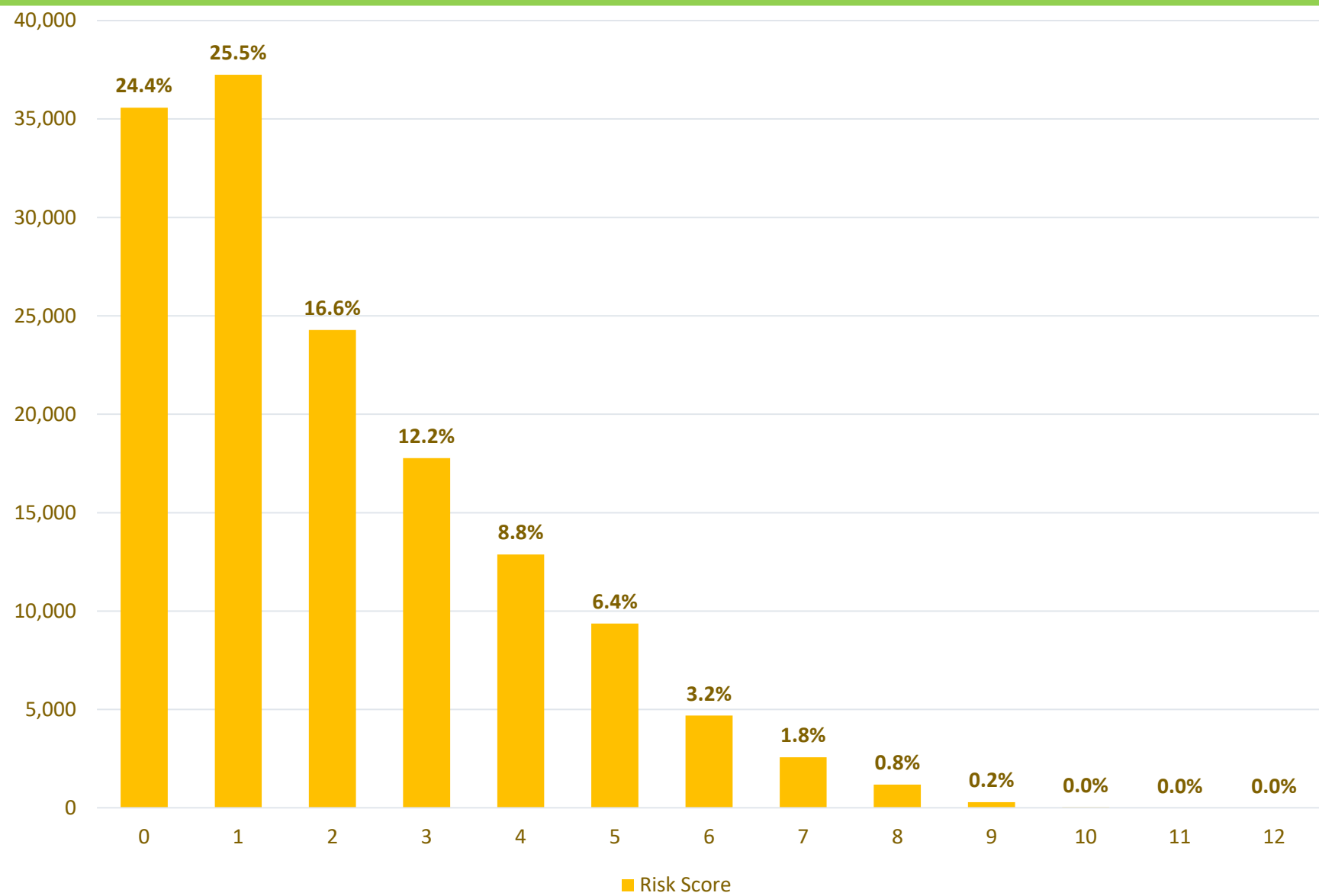
Oregon  
**Health**  
Authority

**DHS**  
Oregon Department  
of Human Services



Data Source: ICS Data Warehouse & Medicaid data sourced from Medicaid Management Information System (MMIS)

# Distribution of Social Complexity Factors for Children 0-5



Data Source: ICS Data Warehouse & Medicaid data sourced from Medicaid Management Information System (MMIS)

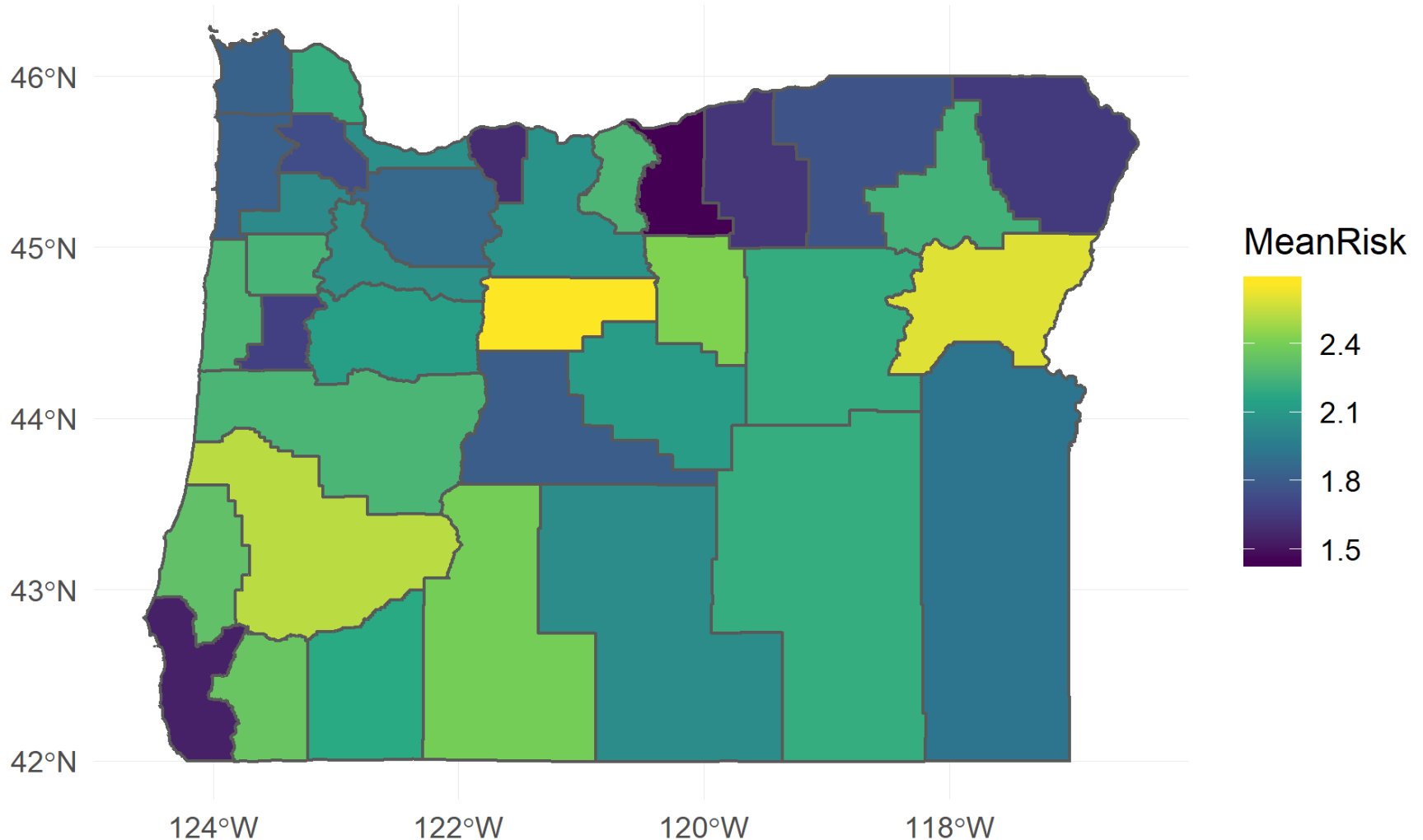
# Magnitude of Social Complexity for Children 0-5

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Burden of social factors for publicly insured **children ages 0-5** (n=145,970):

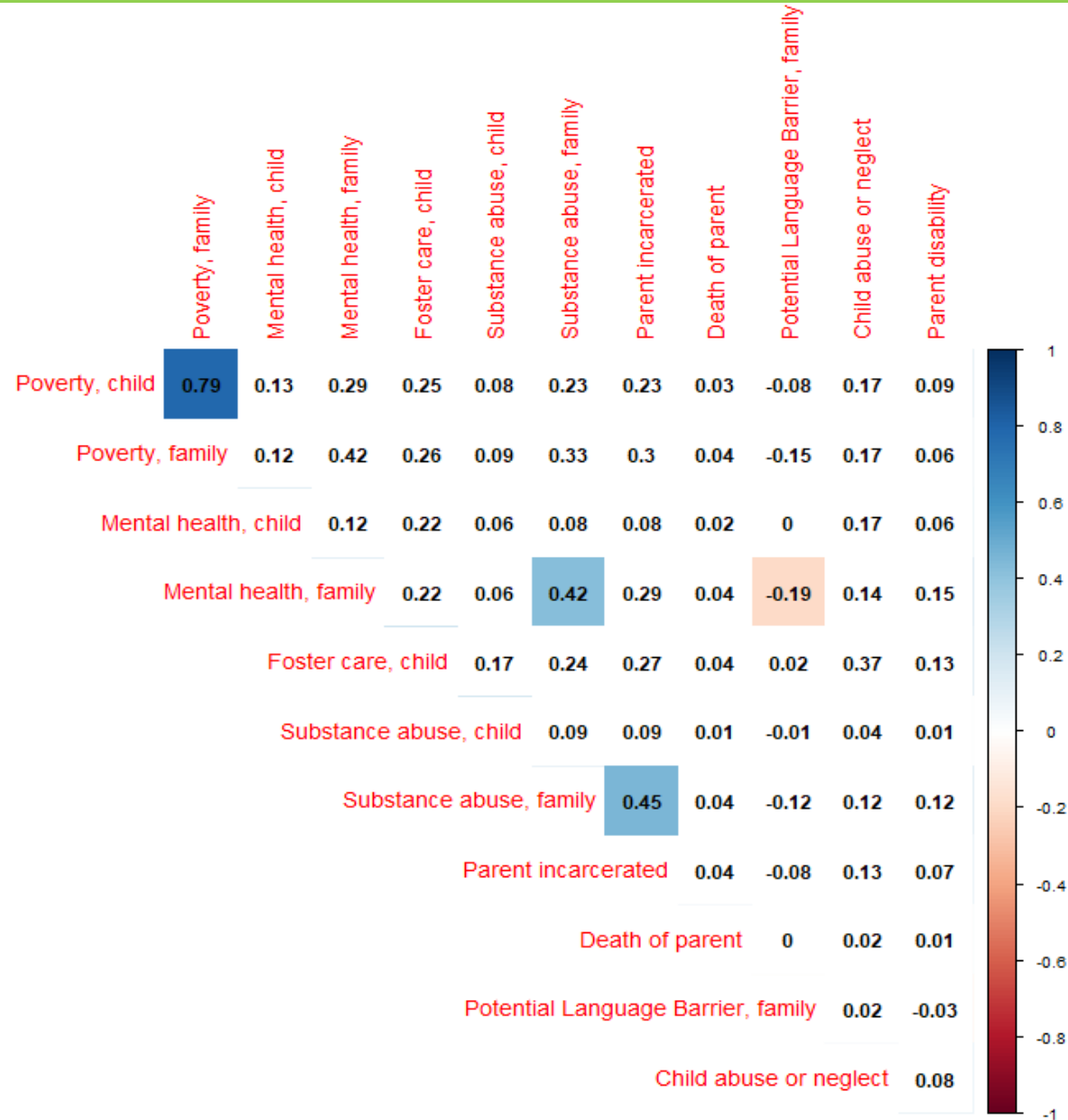
- 3 or more : 33.4% = **48,753 children**
- 4 or more: 21.3% = **31,091 children**
- 5 or more: 12.4% = **18,100 children**

# Social Complexity by County: For Publicly Insured Children 0-5

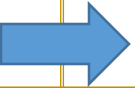


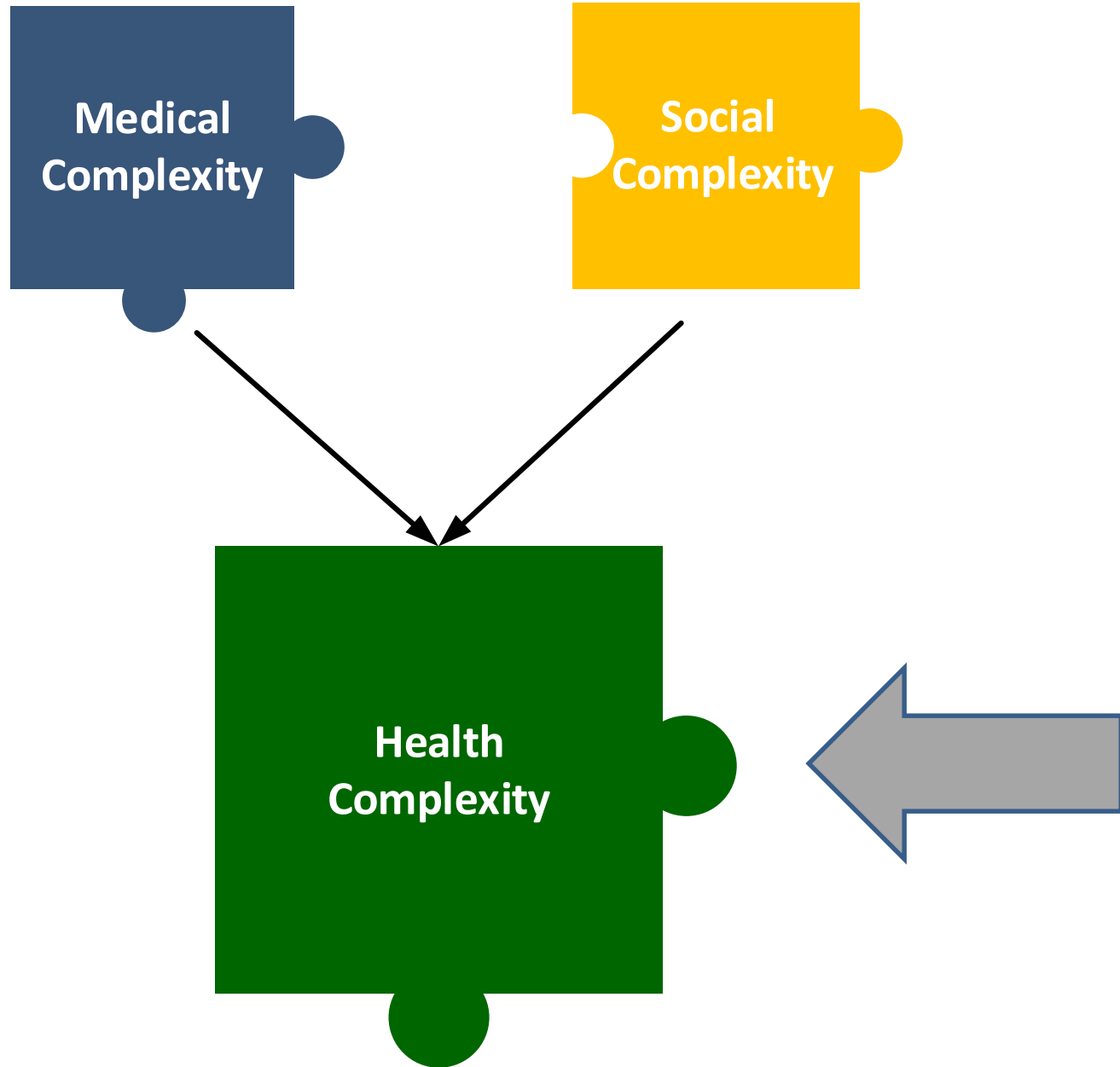
*For the social risk score distribution (range: 0 - 11), there is a statistically significant difference in the social complexity indicator count between counties. (Kruskal-Wallis 2 = 4132.3,  $p < .001$ ).*

# Correlation of Social Complexity Factors for Children 0-5



# Social Complexity By Race for Publicly Insured Children 0-5

SOCIAL FACTORS	ASIAN	BLACK	MULTIRACIAL	NATIVE AMER	OTHER	PACIFIC ISL	UNKNOWN	WHITE
0 	<b>40.1%</b> (1612)	<b>15.9%</b> (946)	<b>22.9%</b> (533)	<b>15.8%</b> (673)	<b>30.7%</b> (1849)	<b>36.1%</b> (489)	<b>53.4%</b> (897)	<b>23.7%</b> (28582)
1	<b>33.6%</b> (1350)	<b>16.9%</b> (1004)	<b>25.1%</b> (586)	<b>27.4%</b> (1165)	<b>41.4%</b> (2496)	<b>30.7%</b> (416)	<b>35.2%</b> (591)	<b>24.7%</b> (29680)
2	<b>14.3%</b> (574)	<b>19.1%</b> (1136)	<b>17.6%</b> (411)	<b>19%</b> (808)	<b>16.4%</b> (990)	<b>17.6%</b> (239)	<b>8.1%</b> (136)	<b>16.6%</b> (20009)
3 or More	<b>12.1%</b> (486)	<b>48.2%</b> (2868)	<b>34.4%</b> (802)	<b>37.7%</b> (1602)	<b>11.4%</b> (688)	<b>15.6%</b> (212)	<b>3.3%</b> (56)	<b>35%</b> (42009)





# Health Complexity Categorical Variable: Purpose and Goal

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- Given that **medical** complexity and **social complexity** will be independently examined and shared, create a categorical variable that combines the unique and different information from each analysis.
  - Categories anchored to level of medical complexity AND level of social complexity
    - ❖ Understand the population with both levels of complexity
- Build off the learnings from the COE4CCN
  - 1 or more social complexity indicators associated with higher costs
  - The more factors present, the higher costs – Gradient effect
- Create a manageable level of categories for population-level aggregate reports that are aligned with the goal of the health complexity variable
- Ensure categories have sufficient denominators to allow for state and county-level reporting, maintain data sharing agreements when shared at a child-level

# State-Level **Health Complexity** Categorical for Publicly Insured Children 0-5

MEDICAL COMPLEXITY (3 Categories)	SOCIAL COMPLEXITY (Total Factors Possible in Preliminary Data Shown Here N=12)		
	3 or More Indicators	1-2 Indicators	None in System-Level Data
HIGH Medical Complexity (Chronic, Complex PMCA=1)	2.0% (2,919)	1.7% (2,481)	0.7% (1,022)
MODERATE Medical Complexity (Non-Complex, Chronic PMCA=2)	5.1% (7,444)	4.9% (7,153)	1.9% (2,773)
NO MEDICAL COMPLEXITY (PMCA=3)	26.4% (38,536)	35.6% (51,965)	Neither Medically or Socially Complex 21.7% (31,675)

Data Source: ICS Data Warehouse & Medicaid data sourced from Medicaid Management Information System (MMIS)

# Data in Action: Reports and Data Sharing

Population of children publicly insured in 2016-2017:

1. **Population-Level Reports:** Aggregate Data (n=390,582)
  - Data shown for the population at state and **county-level**
  - Includes prevalence of specific indicators and by race & ethnicity
  - Three age groups: 0-5, 6-11, and 12-17 years old
2. **CCO Population-Level Report:** Aggregate Data
  - Data shown for the population at a CCO-Level and Across CCOs
  - Includes prevalence of specific indicators at a CCO-level
3. **To CCOs for Their Attributed Populations:** Child-Level Data File
  - Currently attributed population (smaller population)
  - Child-level indicator of:
    - ❖ **Medical** Complexity Categorical Variable (3 categories),
    - ❖ **Three Social** Complexity Count Variable: Child (0-5), Family (0-7) and Total (0-12)
    - ❖ **Health** Complexity Categorical Variable (9 Categories that Map to Slides Shown)

# Data in Action: Supporting CCOs and Communities to Address Children's health complexity

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- 1. Use the Population-Level Findings to Engage Community Partners to:**
  - Understand Child and Family Needs,
  - Identify Community-Level Assets, and
  - Address Capacity of Services to Serve Children with Health Complexity
  
- 2. Use the Population and Child-Level Findings to Identify:**
  - Opportunities to Enhance Care Coordination and Care Management
  - Community-based and centralized supports for children with health complexity
  
- 3. Leverage the Data to Support a Health Complexity Informed Approach with Front-Line Health Care Providers:**
  - Trauma informed and culturally responsive care
  - Explore role of health complexity in Value-based Payment models



## Central Oregon: Pathways from Developmental Screening to Services: Ensuring Young Children Identified At-risk Receive Best Match Follow-Up

- Aim: To improve the **receipt of services for young children** who are **identified at-risk** for developmental and behavioral delays.
- Funding – Central Oregon Health Council, Early Learning Hub
- Early Learning Hub of Central Oregon contracted with the Oregon Pediatric Improvement Partnership (OPIP) to support the 1<sup>st</sup> Year of Work
- In partnership with the Early Learning Hub, the Phase 1 work focused on:
  - Cross-sector stakeholder engagement (Qualitative Data)
    - ✓ Interviews, Group-Level Meetings Like Today
  - Asset and Referral Mapping Based on Information Gathered in the Interviews: Current Pathways, Opportunities
  - Cross-sector Baseline Data Collection (Quantitative Data)
  - Identify Priority Areas for Improvement Pilots (Group-Level Meeting to Confirm Consensus)
  - Years 2-3 would then support implementation, evaluation, refinement and potentially addressing capacity or services needed not current available)

1. Engaged, facilitated and confirmed **commitment** of key partners in the community around the **shared goal of ensuring children** identified at-risk for developmental delay receive follow-up services
  2. **Quantitative data** was obtained from Pacific Source of Central Oregon, two primary care pilot sites (Mosaic Medical and COPA), and Early Intervention (EI), Shared the **Health Complexity Data**.
  3. Created **community-specific asset map** of services available for children identified at-risk for developmental delay overall and by county. **Identified gaps in resources** that could limit follow-up to developmental screening, because they were not available or had a limited capacity.
  4. Two **group-level meetings were held with stakeholders** to describe the goals of the efforts, share the data and information gathered, and to facilitate obtaining **group-level consensus** about the priority areas and partners that should be of focus for the improvement efforts.
- ❖ **Phase II proposal the outcome of the input and direction, informed by the data provided, identified by these partners January 7<sup>th</sup>, 2018**



## Qualitative and Quantitative Data about the Need for an Improvement Project and Priority Areas

- Data revealed **significant opportunities for improvement** in follow-up to developmental screening, closed loop communication, identifying better and best match services, and supporting families to access those services.
- The data also revealed **disparities and inequities** in services and follow-up **by region** (county) and **by race-ethnicity**.
- Examples:
  - Children who reside in Jefferson and Crook counties were significantly **less likely** to receive a developmental screen.
  - Children whose race was identified as Black or American Indian/Alaska Native were significantly **less likely** to receive a developmental screen.
  - Within COPA and Mosaic, **only 15-19% of young children** identified at-risk on developmental screening **received best match follow-up services**.
  - Of the **15-19%** of children who got follow up and were referred to EI, **only 37% were able to be evaluated and found eligible**.
- **One in three (34.8%) publicly insured children aged 0-5** had **three or more** social complexity factors that impact their health and development and ability to be ready for kindergarten
  - The most common social complexity factors:
    - 50.7% of their **parent(s)** accessed **mental health** services,
    - 33.6% of their **parent(s)** accessed **substance abuse services**,
    - 30.1% accessed **TANF**, and
    - 20.1% had one or both parents who were **incarcerated** for a state-level crime.



DATA



INSIGHTS

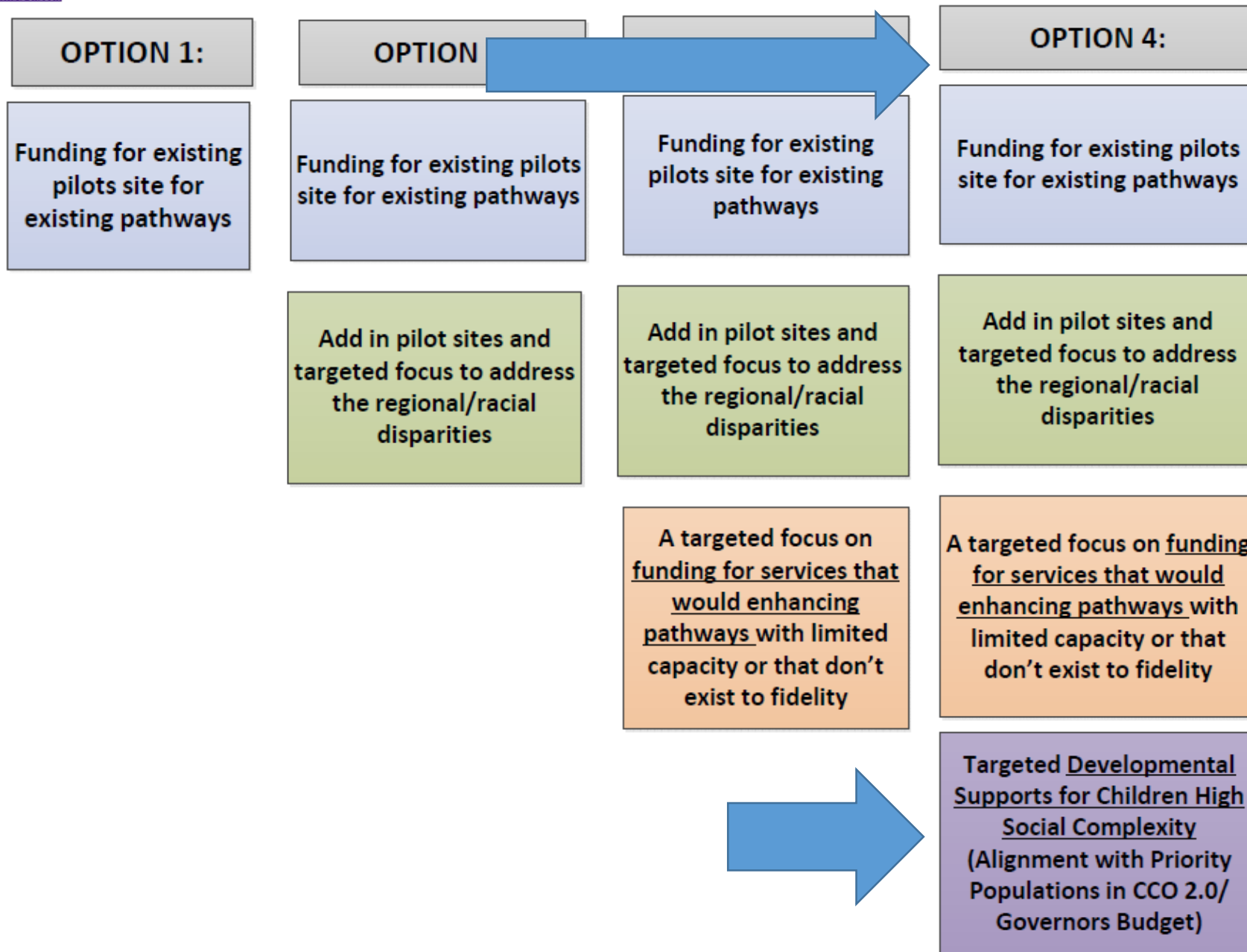


ACTIONS

# Community Votes and Community Priority Led to the Activities Included in Phase 2 Proposal



# Options Considered



# Priority Areas Confirmed at January 2019 Meeting of Stakeholders

- **Improve Follow-Up in Primary Care Practice Pilot Sites** conducting developmental screening
  - Two committed site (COPA, MOSAIC) who have been expecting implementation support
  - Recruit two additional sites
- **Improve Follow-Up in Early Intervention:**
  - Component of the PCP pilots is best match referrals to EI, enhanced care coordination for referrals
  - Enhance coordination and communication with the entity that referred the child **and PCP use of that information**
  - Follow-up steps for EI ineligible, Potential secondary referral pathways
- **Improve Follow-Up to Priority Areas Identified by the community**
  1. Addressing children with social-emotional delays (integrated behavioral health, specialty mental health)
  2. Pathways to medical and therapy services
- **Proactive Developmental Promotion & Preventive Behavioral Health for High-Risk Children**
  - Children with socially complex families (Health complexity data)

**\*\* Across these efforts ensure equity lens and that intentionally addresses areas of disparities**

# Opportunities Looking Forward

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- What does this data tell us about how we can better meet the needs of children and their families in Oregon?
- How can we build on this work to best support the goals of *Raise Up Oregon: A Statewide Early Learning System Plan*?