



Maximizing System-Level Data to Address Health and Social Complexity in Children: Spotlight on Oregon

April 2, 2019



Meet Today's Speakers



Colleen Reuland, MS

Director, Oregon Pediatric Improvement Partnership at
Doernbecher Children's Hospital, Oregon Health & Sciences University



Dana Hargunani, MD, MPH

Chief Medical Officer at the Oregon Health Authority



Jon Collins, PhD

Interim Deputy Director for Behavioral Health Services at
the Oregon Health Authority

Ask Questions!

Enter questions in the GoToWebinar question box.

If there are time limitations and we are unable to answer all of the questions, the speakers will respond via email after the webinar and responses will be posted online.

Today's Agenda

- Context Setting: Key Components of Our Efforts and Why OPIP and OHA Were Invested in This Collaborative Work
- Review Specific System-level Data Used to Operationalize Health Complexity, State-Level Findings
- From Data to Action: Current and Proposed Uses
- Question and Answer

Oregon Pediatric Improvement Partnership

The Oregon Pediatric Improvement Partnership (OPIP) supports a meaningful, **long-term collaboration of stakeholders** invested in child health care quality, with the common purpose of improving the health of the children and youth of Oregon.

OPIP is primarily contract and grant funded. We are based out of Oregon Health & Science University, Pediatrics Department.

Learn more: oregon-pip.org

Problem...or Opportunity in Oregon!

Despite wonderful gains in patient centered primary care homes, coordinated care organizations, and other efforts there is a **need to better support children with health complexity**.

- To impact children's future health & preventable chronic conditions, **need to address predictive social determinants of health and build resilience**
- In order to address children with health complexity a **population and community-based approach and cross-sector engagement** is required.

Efforts that Led Up to OPIP's Proposal

Supporting **practices and health systems** focused on:

- Identifying children and youth with special health care needs
- Care Coordination, methods for tiering patients
- Complex Care Management Pilot within Kaiser Permanente Northwest (KPNW)

Through these efforts, **identified barriers** in:

- Staffing and resources to serve these children within the practice
- Community-level resources
- Lack of metrics focused on this population (what is measured is what is focused on)
- Lack of payment models aligned with a focus on this population

Stakeholder Engagement on the Need and Opportunity for System-Level Methods to Identify Children with Health Complexity:

- OPIP Partners Meetings (Public and Private Stakeholders): Fall 2015, Spring 2016
- Meeting of Leaders within OHA, State Departments that Address Social Complexity, CCOs and Health Care Providers: August 2016

OHA's Perspective:

We've Got Work To Do

- Children and families still face significant obstacles to health and well-being
- Health disparities persist for many in Oregon
- Early life experiences, such as Adverse Childhood Events, can impact lifelong health
- Need to prioritize the value in intervening early and building resiliency

Coordinated Care Organizations Provide Services to 85% of the People on the Oregon Health Plan



OHP provides:

- Physical, oral, and behavioral health care
- For about **one million** Oregonians
- Of which 43% are children

OHP includes:

- Medicaid
- Children's Health Insurance Program (CHIP)
- Cover All Kids
- Reproductive Health Equity Act (RHEA)
- Other related services

CCO 2.0 Focus Areas

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

Power of Data

Strength of robust claims data across types of services, service lines, and CCOs enrolled

Centralized staffing to analyze data

- Value in centralized learning curve
- Value in facilitation of across agency agreements about how data can be shared

Value in more robust data to understand state level population needs, regional needs

- Understand better child health needs based on data available
- Informing shared conversations across departments

Identify federal, state, local and private partners that are leads or influence the area/determinate

- Identify related performance measures or quantified objectives

Consider how this information can possibly be used to enhance Medicaid Value Based Payments for addressing Social Determinants of Health

Grant from the Lucile Packard Foundation for Children's Health to OPIP

Title

System-Level Approaches to Identify Children with **Health Complexity** and Develop Models for Complex Care Management

Goal

Inform health systems on novel and generalizable approaches to identify **children with health complexity**, use of this inform to design better support systems for children and their families

Key Partners

- Oregon Health Authority (OHA)
- Coordinated Care Organizations (CCOs)
- Kaiser Permanente Northwest – Publicly & Privately insured*

** March 14th Webinar spotlighted work with Kaiser Permanente Northwest.*

Learn more: oregon-pip.org/projects/Packard.html

Measuring Children's Health Complexity: Definitions and Tools



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

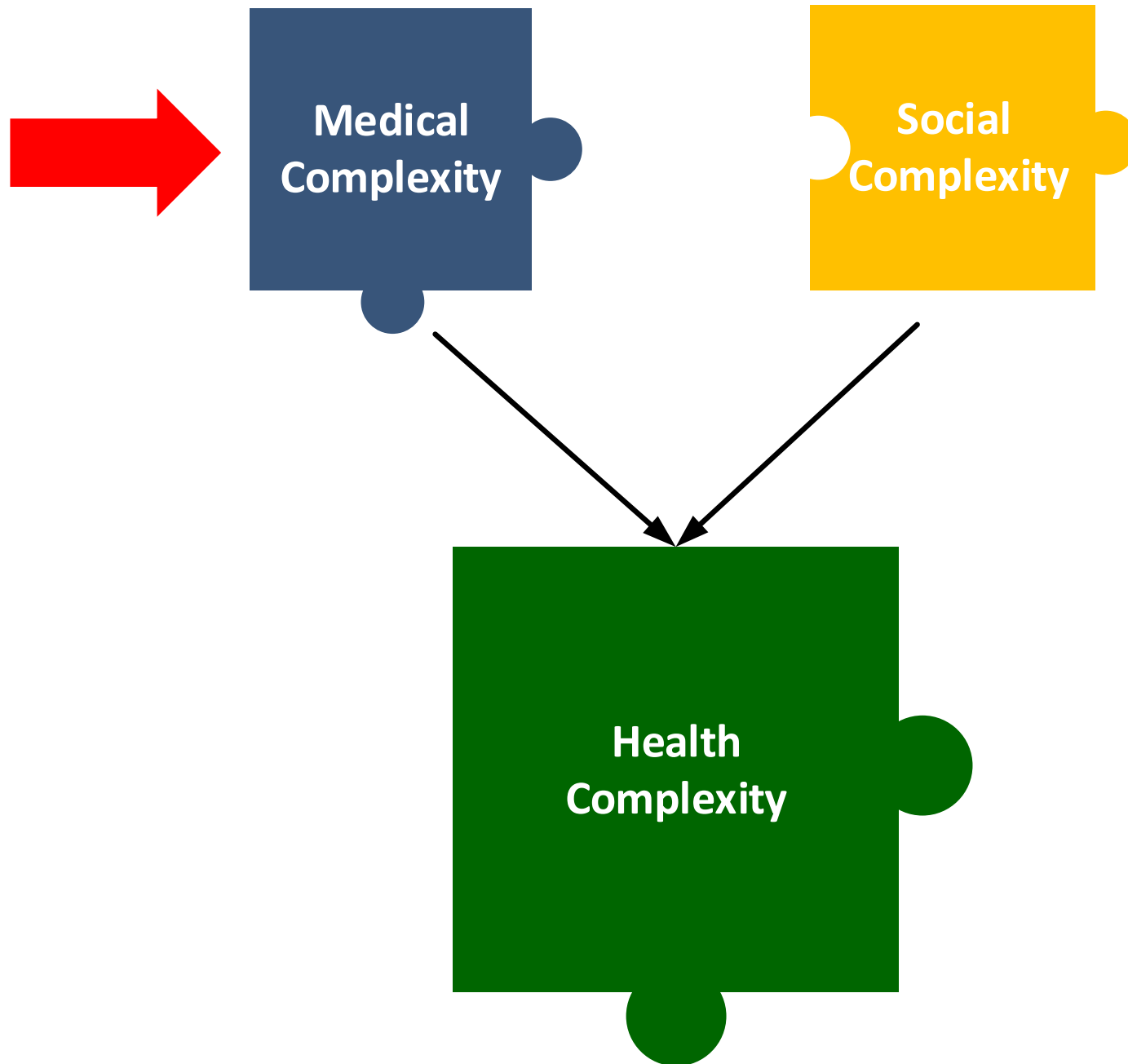
Defined by The Center of Excellence on Quality of Care Measures for Children with Complex Needs (COE4CCN) as:

“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).

Medical Complexity

Defined using the Pediatric Medical Complexity Algorithm (PMCA)



Pediatric Medical Complexity Algorithm

Developed by a team at Seattle Children's, Validated by Center of Excellence on Quality of Care

Measures for Children with Complex Needs (COE4CCN)

- For children 0 to 18 insured
- Developed as a way to identify a population, stratify quality metrics, and to target patients who may benefit from complex care management
- Intentionally meant to address issue with CDPS

Based on claims and diagnosis

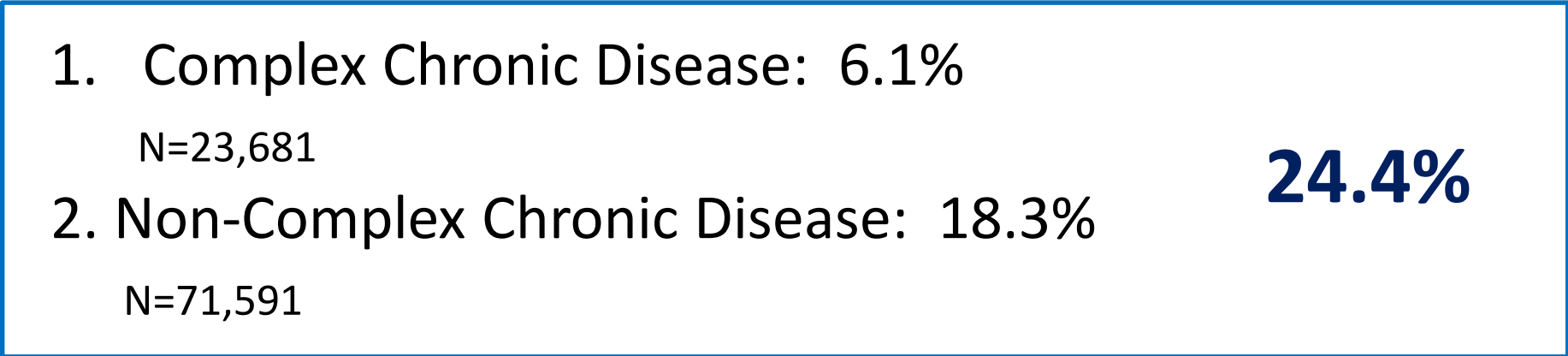
Categorizes complexity into three categories:

1. Complex Chronic Disease,
2. Non-Complex Chronic Disease, and
3. Healthy

The three categories are co-linear with COST (i.e. as complexity increases, so does cost)

PMCA Findings for Publicly Insured Children in Oregon

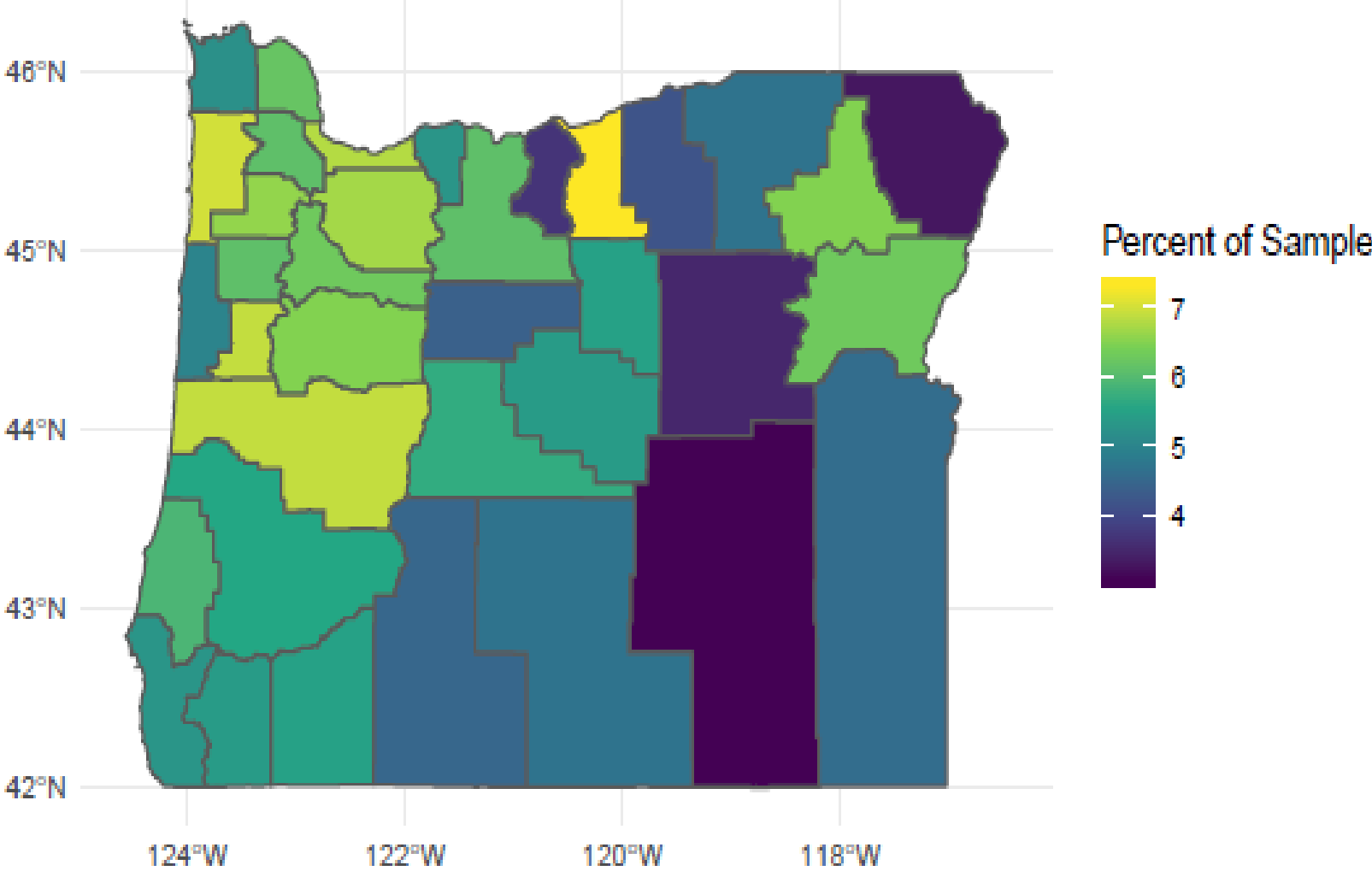
Statewide Publicly Insured: N=390582



3. Healthy: 75.6%

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

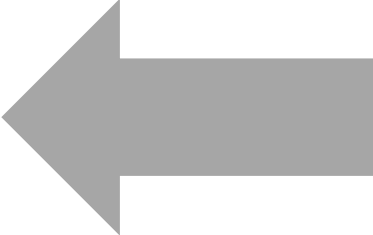
Complex, Chronic



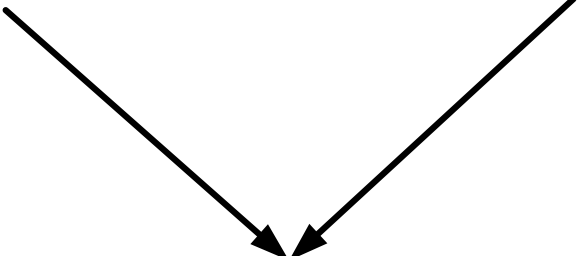
Data Source: ICS Data Warehouse & Medicaid data sourced from Medicaid Management Information System (MMIS)

**Medical
Complexity**

**Social
Complexity**



**Health
Complexity**



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 in Oregon: Leveraged Integrated Client Data Warehouse (ICS)

- 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 in Oregon: Leveraged Integrated Client Data Warehouse (ICS)

- 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

FIGURE 1: SOCIAL COMPLEXITY INDICATORS

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

* 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: Linkages for Child and Child's Parent(s)

Important Notes About Data Being Shown for the Population of Publicly Insured Children:

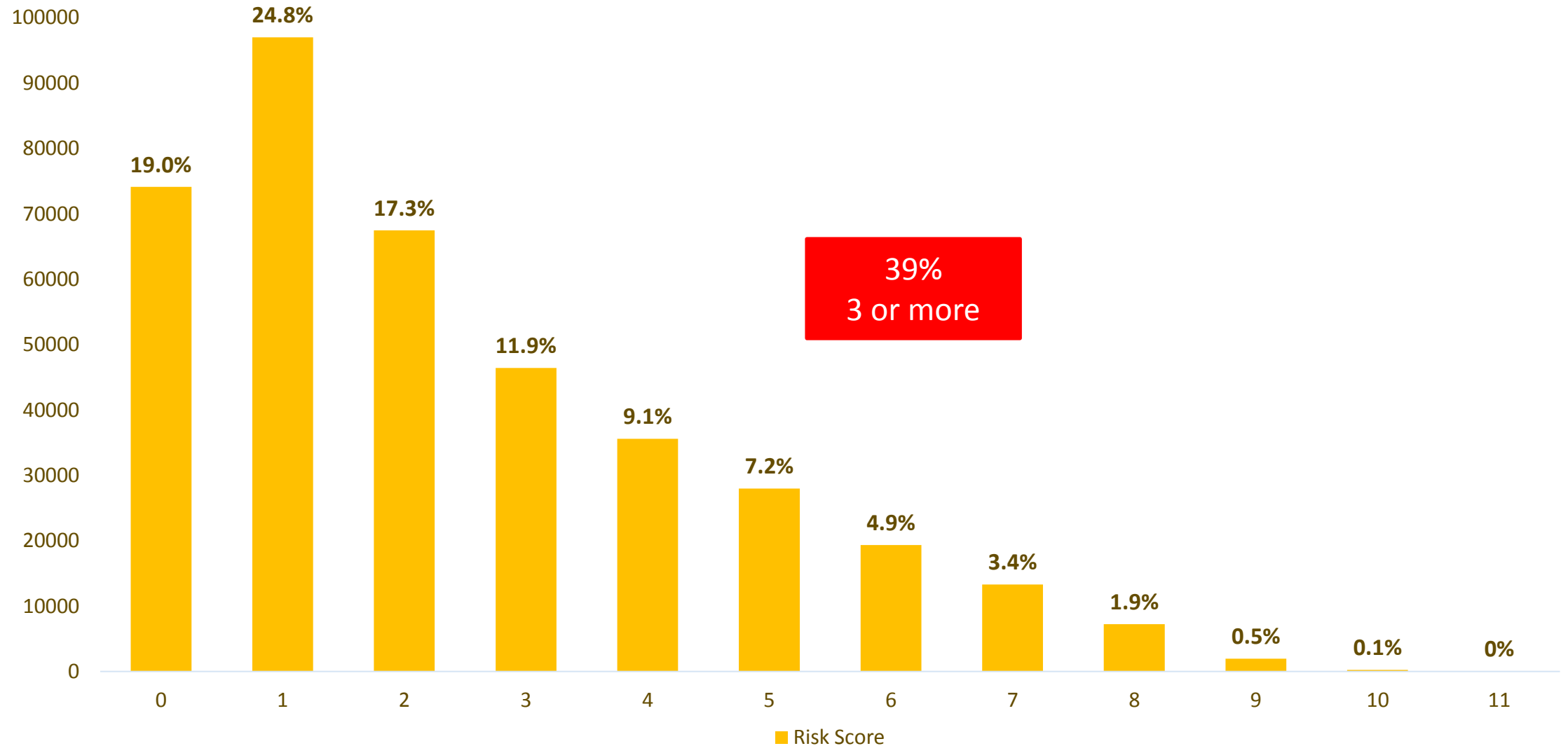
- For “Child” indicators: all children included matched with ICS
- For “Family” indicators: linkage of publicly insured children to a parent in ICS:
 - Unable to link to a parent: 20.44%
 - 1 parent: 11.62%
 - 2 Parents: 67.94%

State Level: Findings on Prevalence of Each **Social Complexity** Variable

INDICATOR	CHILD FACTOR	FAMILY FACTOR
Poverty – TANF (for Child and by Parent)	40.6% (158,650)	31.2% (121,952)
Foster Care – Child receiving foster care services DHS ORKids (since 2012)	13% (50,672)	
Parent Death – Death of parent/primary caregiver in OR		1.3% (5,172)
Parental Incarceration – Parent incarcerated or supervised by the Dept. of Corrections in Oregon		19.1% (74,707)
Mental Health: Child – Received mental health services through DHS/OHA	33.1% (129,212)	
Mental Health: Parent – Received mental health services through DHS/OHA		40% (156,221)
Substance Abuse: Child – Substance abuse treatment through DHS/OHA	4.5% (17,763)	
Substance Abuse: Parent – Substance abuse treatment through DHS/OHA		29% (113,124)
Child Abuse/Neglect: ICD-9, ICD-10 dx codes related to service	5.3% (20,589)	
Limited English Proficiency: Language other than English listed as primary language		20.5% (80,262)
Parent Disability: OHA Eligibility Due to Parent Disability		3% (11,892)

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

Distribution of Social Complexity Factors



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

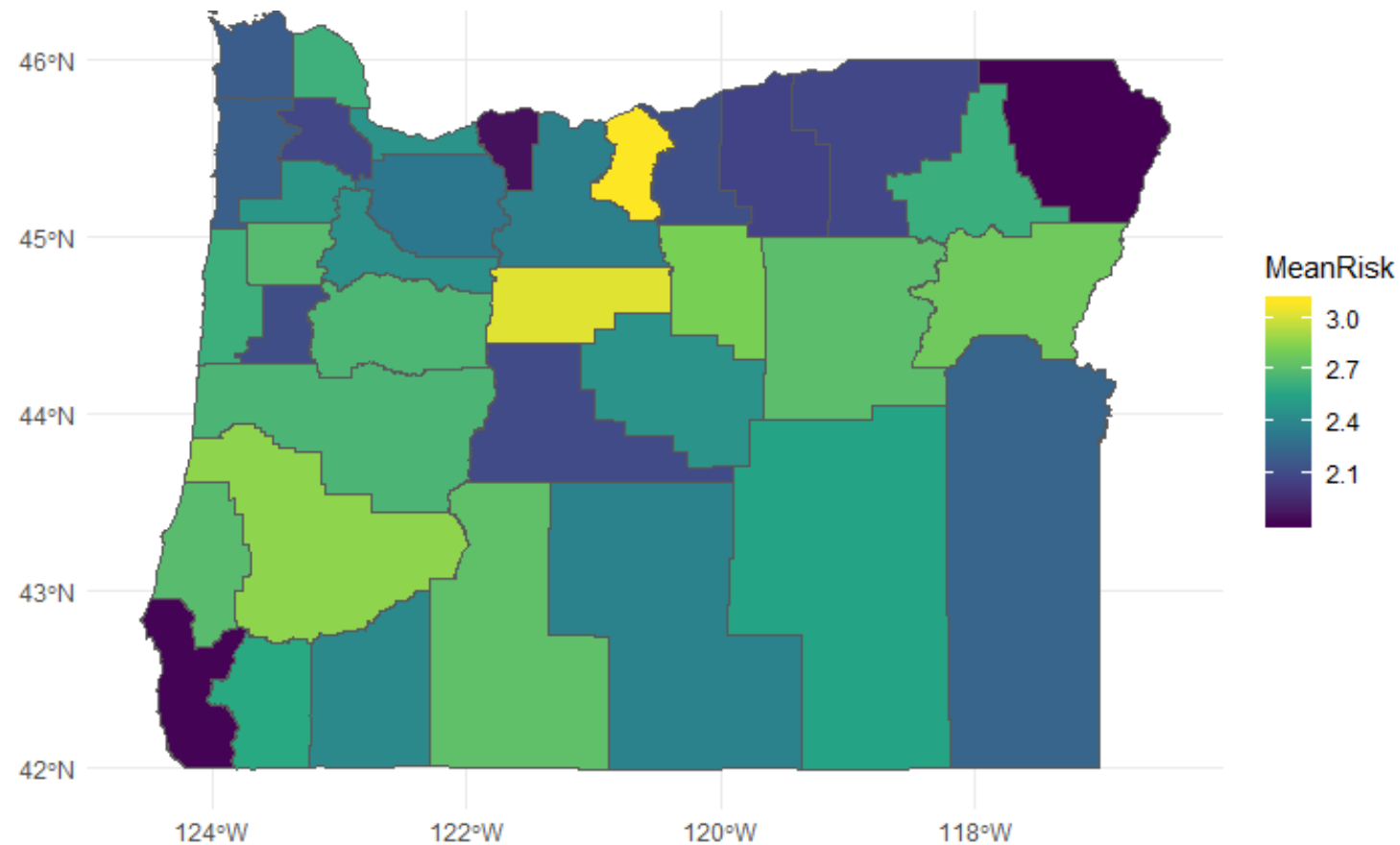
Putting the Data Into Perspective

In Terms of the Number of Individual Children

Looking at the 0-17 Population:

- There are N= 256 kids who have a **10 or 11** social complexity factors
- When we look at the proportion of kids exposed to **3 or more** of the risk factors: **38.91% → 152,004 kids**

Social Complexity by County

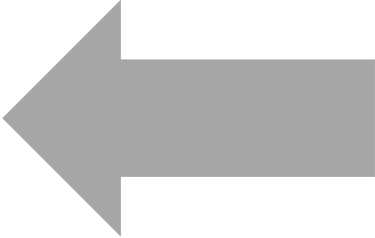


For the social risk score distribution (range: 0 - 11), there is a statistically significant difference in the social complexity indicator count between counties. (Kruskal-Wallis 2 = 4132.3, $p < .001$).

**Medical
Complexity**

**Social
Complexity**

**Health
Complexity**



Health Complexity Categorical Variable: Purpose and Goal

Given that **medical complexity** and **social complexity** will be independently examined and shared, create a health categorical variable that combines both factors

- 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

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:

Source Variables Related to Medical and Social Complexity

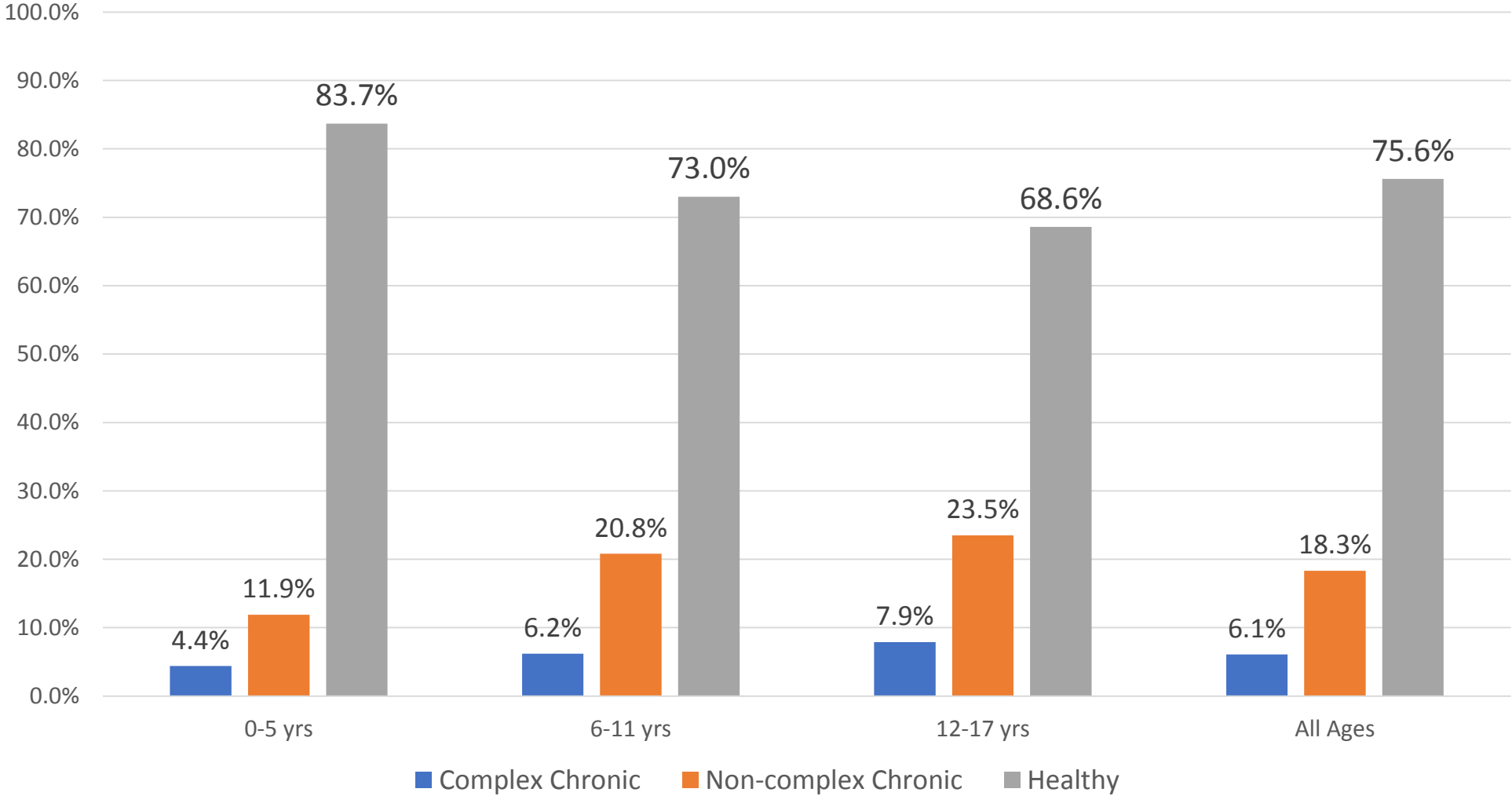
MEDICAL COMPLEXITY (3 Categories)	SOCIAL COMPLEXITY (Total Factors Possible in Preliminary Data Shown Here N=12)		
	3 or More Indicators	1-2 Indicators	None in System-Level Data
HIGH Medical Complexity (Chronic, Complex PMCA=1)	3% (11,637)	2.4% (9,342)	0.7% (2,702)
MODERATE Medical Complexity (Non-Complex, Chronic PMCA=2)	9.5% (36,908)	7.2% (27,952)	1.7% (6,731)
NO MEDICAL COMPLEXITY (PMCA=3)	26.5% (103,459)	32.6% (127,169)	Neither Medically or Socially Complex 16.6% (64,682)

Aggregate Data Reports Display the Data by Groups of Children

Data Displayed by:

- Three Age Groups
 - 0-5, 6-11, and 12-17 years old
- County
- Race (State-Level Report)
- Ethnicity (State-Level Report)

Pediatric Medical Complexity Algorithm Findings: By Age of Child



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

Social Complexity By Age of Child

	Children 0-5 N=145,970		Children 6-11 N=118,965		Children 12-17 N=125,647	
	Child Factor	Parent Factor	Child Factor	Parent Factor	Child Factor	Parent Factor
Poverty –TANF (For Child and For Either/Both Parent)	34.2% (49,990)	30.5% (44,464)	44.9% (53,380)	33.7% (40,138)	44.0% (55,280)	29.7% (37,350)
Foster care – Child receiving foster care services DHS ORKids	7.4% (10,772)		13.8% (16,446)		18.7% (23,454)	
Parent death – Death of parent/primary caregiver in OR		0.5% (675)		1.3% (1,513)		2.4% (2,984)
Parental incarceration – Parent incarcerated or supervised by the Dept. of Corrections in Oregon		17.5% (25,604)		20.7% (24,674)		19.4% (24,429)
Mental Health: Child – Received mental health services through DHS/OHA	14.2% (20,779)		36.8% (43,753)		51.5% (64,680)	
Mental Health: Parent – Received mental health services through DHS/OHA		44.1% (64,419)		40.6% (48,350)		34.6% (43,452)
Substance Abuse: Child – Substance abuse treatment through DHS/OHA	0.4% (547)		1.7% (2,059)		12.1% (15,157)	
Substance Abuse: Parent – Substance abuse treatment through DHS/OHA		29.0% (42,387)		30.5% (36,248)		27.4% (34,489)
Child abuse/neglect: ICD-9, ICD-10 dx codes related to service	4.9% (7,224)		5.6% (6,625)		5.4% (6,740)	
Limited English Proficiency: Language other than English listed in the primary language field		17.7% (25,779)		22.8% (27,162)		21.7% (27,321)
Parent Disability: OHA eligibility due to parent disability		2.4% (3,561)		3.0% (3,553)		3.8% (4,778)

Magnitude of Social Complexity for Children 0-5

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

- 3 or more : 33.4% = **48,804 children**
- 4 or more: 21.3% = **31,041 children**
- 5 or more: 12.4% = **18,155 children**

Population Race & Ethnicity

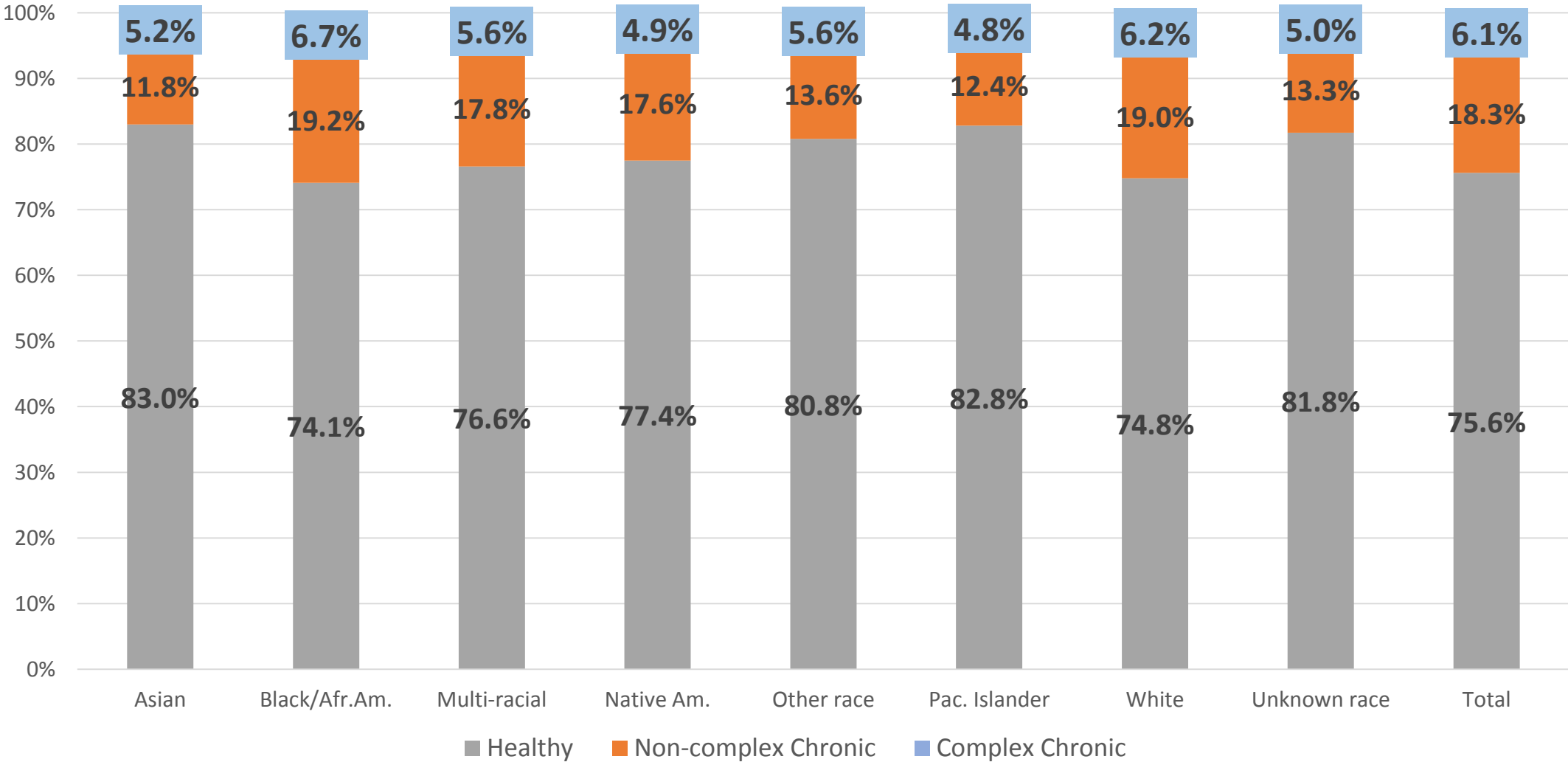
Race

- Asian: 2.9% (11,232)
- Black: 4.2% (16,586)
- Multiracial: 1.7% (67,03)
- Native American: 3.9% (15,158)
- Other: 3% (11,586)
- Pacific Islander: 0.7% (2,882)
- White: 80% (312,636)
- Unknown: 3.5% (137,99)

Ethnicity

- Hispanic: 27.1% (105,922)
- Not-Hispanic: 72.8% (284,218)
- Unknown: 0.1% (442)

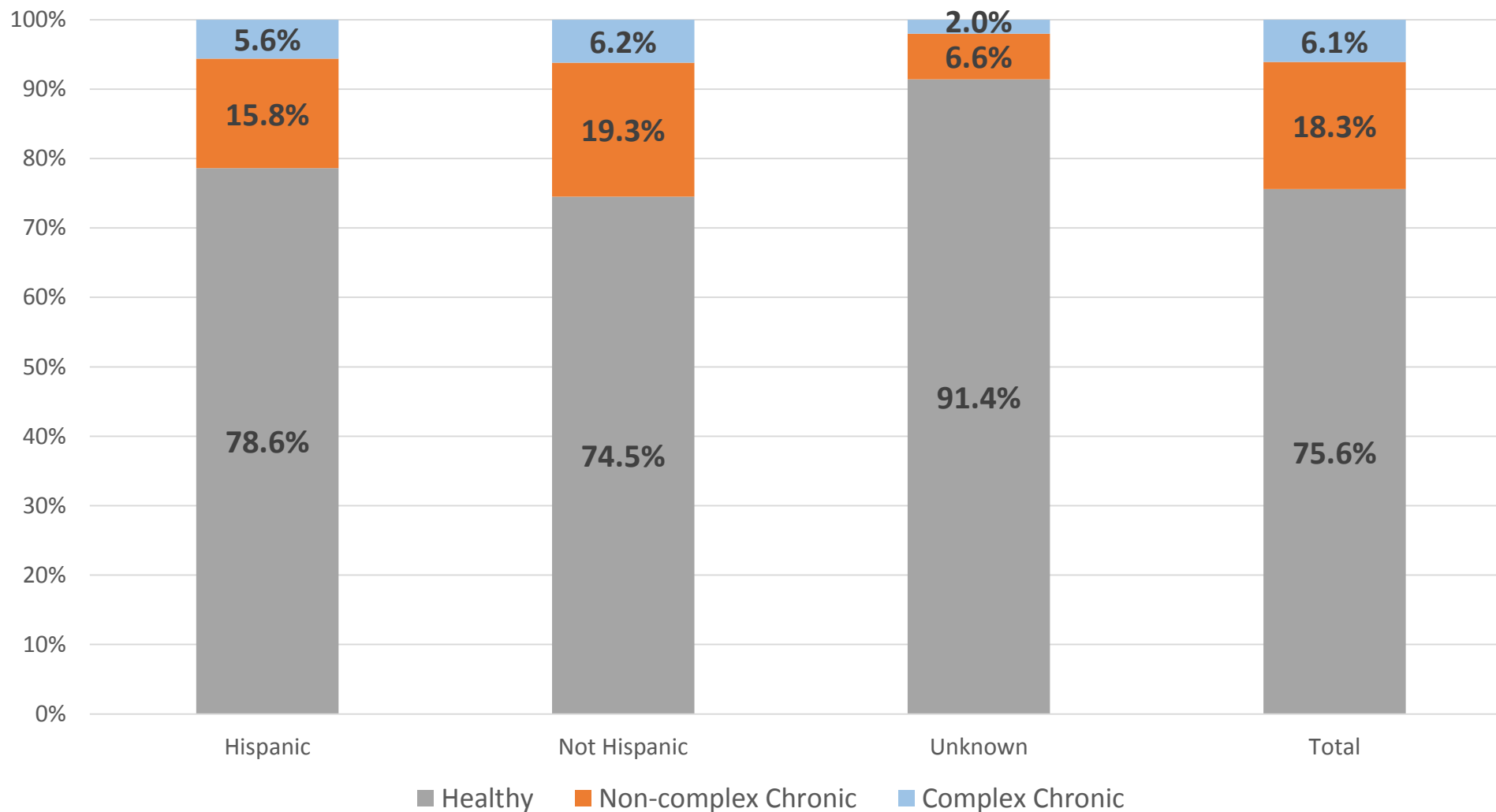
Pediatric Medical Complexity Algorithm Findings: By Race



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



Pediatric Medical Complexity Algorithm Findings: By Ethnicity



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



Social Complexity By Race

SOCIAL FACTORS	ASIAN	BLACK	MULTIRACIAL	NATIVE AMER	OTHER	PACIFIC ISL	WHITE	UNKNOWN
0	34.5% (3880)	11.5% (1914)	19.1% (1280)	12.8% (1937)	25.0% (2891)	33.7% (971)	18.6% (58286)	21.4% (2956)
1	36.1% (4051)	18.7% (3102)	27.4% (1838)	27.8% (4210)	39.4% (4570)	31.1% (897)	23.2% (72438)	42.8% (5900)
2	15.8% (1771)	18.3% (3041)	18.3% (1227)	19.3% (2926)	19.4% (2248)	16.5% (475)	16.9% (52827)	21.3% (2942)
3 or more	13.6% (1530)	51.4% (8529)	35.2% (2358)	40.1% (6085)	16.2% (1877)	18.7% (539)	41.3% (129085)	14.5% (2001)

Health Complexity Rates by Race

HEALTH COMPLEXITY	ASIAN	BLACK	NATIVE AMER	OTHER	UNKNOWN	WHITE
Complex Chronic: 3+ social factors	0.9% (103)	4.0% (666)	2.5% (384)	1.3% (149)	1.1% (158)	3.2% (9974)
Complex Chronic: 1-2 social factors	3.1% (347)	2.2% (363)	2.0% (306)	3.5% (406)	3.2% (439)	2.3% (7243)
Complex Chronic: 0 social factors	1.2% (131)	0.5% (83)	0.4% (58)	0.8% (89)	0.6% (89)	0.7% (2181)
Non-complex: 3+ social factors	2.3% (256)	11.9% (1976)	8.4% (1280)	3.6% (415)	3.1% (424)	10.2% (31890)
Non-complex: 1-2 social factors	6.7% (753)	6.1% (1004)	7.9% (1196)	7.9% (913)	8.6% (1190)	7.1% (22220)
Non-complex: 0 social factors	2.8% (317)	1.3% (209)	1.3% (197)	2.1% (247)	1.6% (217)	1.7% (5334)
Healthy: 3+ social factors	10.4% (1171)	35.5% (5887)	29.2% (4421)	11.3% (1313)	10.3% (1419)	27.9% (87221)
Healthy: 1-2 social factors	42.0% (4722)	28.8% (4776)	37.2% (5634)	47.5% (5499)	52.3% (7213)	30.6% (95802)
Healthy: 0 social factors	30.6% (3432)	9.8% (1622)	11.1% (1682)	22.1% (2555)	19.2% (2650)	16.2% (50771)

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

Data in Action: Reports and Data Sharing

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)
- The variables **are blinded** and indicate the number of risk factors, but do NOT indicate WHICH specific indicators.
- 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: How the Data Informs OHA's Work

Informs opportunities to further CCO 2.0 efforts that will improve child and family health and system transformation

- Increase value and pay for performance
- Improve the behavioral health system and address barriers to integration
- Focus on the social determinants of health and equity
- Maintain a sustainable cost growth

Provides pathway to improve care coordination for children with complex care needs

Drives culturally responsive approaches to care to address health disparities

Clarifies needed next steps to build on data agreements within ICS to better understand and address needs of children and families

Data in Action: Supporting CCOs and Communities to Address Children's Health Complexity

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

Submit your questions in the questions box



Colleen Reuland, MS

Director, Oregon Pediatric Improvement Partnership at
Doernbecher Children's Hospital, Oregon Health & Sciences University



Dana Hargunani, MD, MPH

Chief Medical Officer at the Oregon Health Authority



Jon Collins, PhD

Interim Deputy Director for Behavioral Health Services at
the Oregon Health Authority

For More
Information

System-Level Approaches to Identify Children with Health Complexity and Develop Models for Complex Care Management

Visit: oregon-pip.org/projects/Packard.html

Children's Health Complexity Data

Transformation Center, Oregon Health Authority

Visit: oregon.gov/oha/HPA/dsi-tc/Pages/Child-Health-Complexity-Data.aspx