

# Health Complexity in Children – Crook County

February 2019

## Introduction

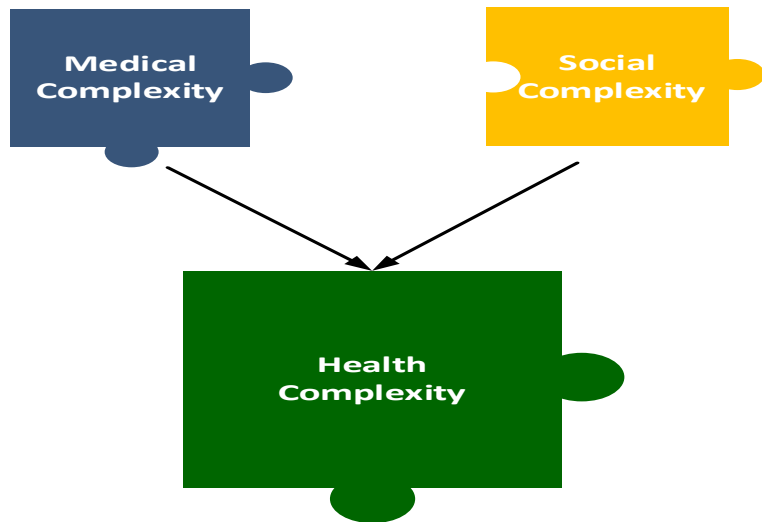
The goal of this project is to identify children with health complexity in the Medicaid population and share this information with CCOs and other partners. Health complexity is based on medical complexity and social complexity.

This report has data specific to this county's population.

This project is a partnership between:

- 1) Oregon Pediatric Improvement Partnership (OPIP)
- 2) Oregon Health Authority (OHA) - Health Analytics Department
- 3) Department of Human Services (DHS) – Oregon Enterprise Data Analytics (OEDA) and Integrated Client Services (ICS)

Additional support for OPIP's role in providing technical consultation and facilitation of public and private stakeholders was provided by the Lucile Packard Foundation for Children's Health.



For questions about this report, please email [Metrics.Questions@dhsaha.state.or.us](mailto:Metrics.Questions@dhsaha.state.or.us)



Data sources for this dataset include:

1. The ICS data warehouse which includes data from:
  - a) DHS programs: Aging and People with Disabilities, Child Welfare, Developmentally Disabled, Self-Sufficiency, and Vocational Rehabilitation
  - b) OHA programs: Alcohol and Drug, Contraceptive Care, Family Health Insurance Assistance Program, Healthy Kids Connect, Medical Assistance Program, Mental Health, Women Infants Children
  - c) External agencies: Department of Corrections, Oregon Housing and Community Services
2. Medicaid data sourced from the Medicaid Management Information System (MMIS).

## Medical Complexity

### Background

To measure medical complexity, we are using the Pediatric Medical Complexity Algorithm (PMCA). The PMCA was developed by a team at Seattle Children's Hospital and validated by the Center of Excellence on Quality of Care Measures for Children with Complex Needs (COE4CCN). The PMCA was run using three years of data and using the most conservative version of the algorithm. The target period was July 2015 to June 2016 with claims data pulled one year before this target year and one year after the target year for a three-year total period.

The PMCA takes into account 1) Utilization of services 2) Diagnoses, and 3) Number of body systems impacted, and assigns children into one of three categories:

1. Children with Complex Chronic Disease
2. Children with Non-Complex Chronic Disease
3. Children without Chronic Disease / Healthy

The three categories are co-linear with cost so as complexity increases so does cost.

PMCA is based on utilization and coding, so it does not capture children who 1) are not accessing services 2) cannot access specialized services, and/or 3) have diagnoses that were not coded, meaning medical complexity information is not in the data that we have access to.

For more information about the PMCA:

<https://www.seattlechildrens.org/research/centers-programs/child-health-behavior-and-development/labs/mangione-smith-lab/measurement-tools/>

## Summary of Data and Key Findings

This dataset includes 2,554 publicly insured children in Crook county.

- 5.4% of children were placed into the PMCA complex chronic disease category
- 18.3% of children were placed into the PMCA non-complex chronic disease category
- 76.3% of children were placed into the PMCA no chronic disease or healthy category

Within counties in Oregon, there was a large range in the percent of children placed into each medical complexity category:

- For complex chronic children, there was a range of 3.1% (lowest) to 7.3% (highest) with a statewide average of 6.2%
- For non-complex chronic children, there was a range of 13.4% (lowest) to 25.3% (highest) with a statewide average of 18.5%
- For healthy children, there was a range of 69.2% (lowest) to 81.7% (highest) with a statewide average of 75.3%

## Social Complexity

### Background

Social complexity is defined by COE4CCN as “a set of co-occurring individual, family or community characteristics that 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.” COE4CCN identified 18 social complexity factors associated with worse health outcomes and increased costs.

OPIP, OHA and DHS went through an extensive process to identify useable data sources for these social complexity factors using Health Analytics and Integrated Client Data Warehouse (ICS) data. After this process we identified 12 factors of social complexity that could be gathered for this population during this first phase of work. There are **5 child-level factors** and **7 parent/family level factors** for a total of 12 factors. For about 20% of children in this dataset, it was not possible to link the child to either parent. Therefore, these children only have data available for the **5 child-level** social complexity factors.

For most social complexity factors, a lookback period of the lifetime of the child + one year (including pre-natal period) was used. Due to data limitations for the factors with an asterisk, a different look back period was used. Please refer to the data dictionary for more details about the exact lookback periods and other specifics for these factors.

Social Complexity Factors	Child-Level Factor	Parent/Family – Level Factor	Total
Poverty – Child received Temporary Assistance for Needy Families (TANF)	x		x
Foster Care – Child interacted with foster care system	x		x
Mental Health – Child received mental health services through DHS/OHA	x		x
* Substance Abuse – Child received substance abuse treatment through DHS/OHA	x		x
* Child Abuse or Neglect – Captured by ICD-9 and ICD-10 diagnosis codes related to service	x		x
Poverty – Parent received Temporary Assistance for Needy Families (TANF)		x	x
Parental Death – Death of parent/primary caregiver in Oregon		x	x
Parental Incarceration – Parent incarcerated or supervised by the Department of Corrections in Oregon		x	x
Mental Health – Parent received mental health services through DHS/OHA		x	x
* Substance Abuse – Parent received substance abuse treatment through DHS/OHA		x	x
* Limited English Proficiency – Language other than English listed in primary language field		x	x
* Parental Disability – OHA disability due to parent disability		x	x
Total Factors	5	7	12

## Summary of Data and Key Findings

There was an average of 2.4 social complexity factors per child across the state. In other words, the average child had 2.4 social complexity factors. This varied by county with a range of 1.8 (low) and 3.1 (high) social complexity factors per child.

The table below shows the number of children and prevalence with that social complexity factor for this county.

### Prevalence by Social Complexity Factor

County	Total
Crook	2,554

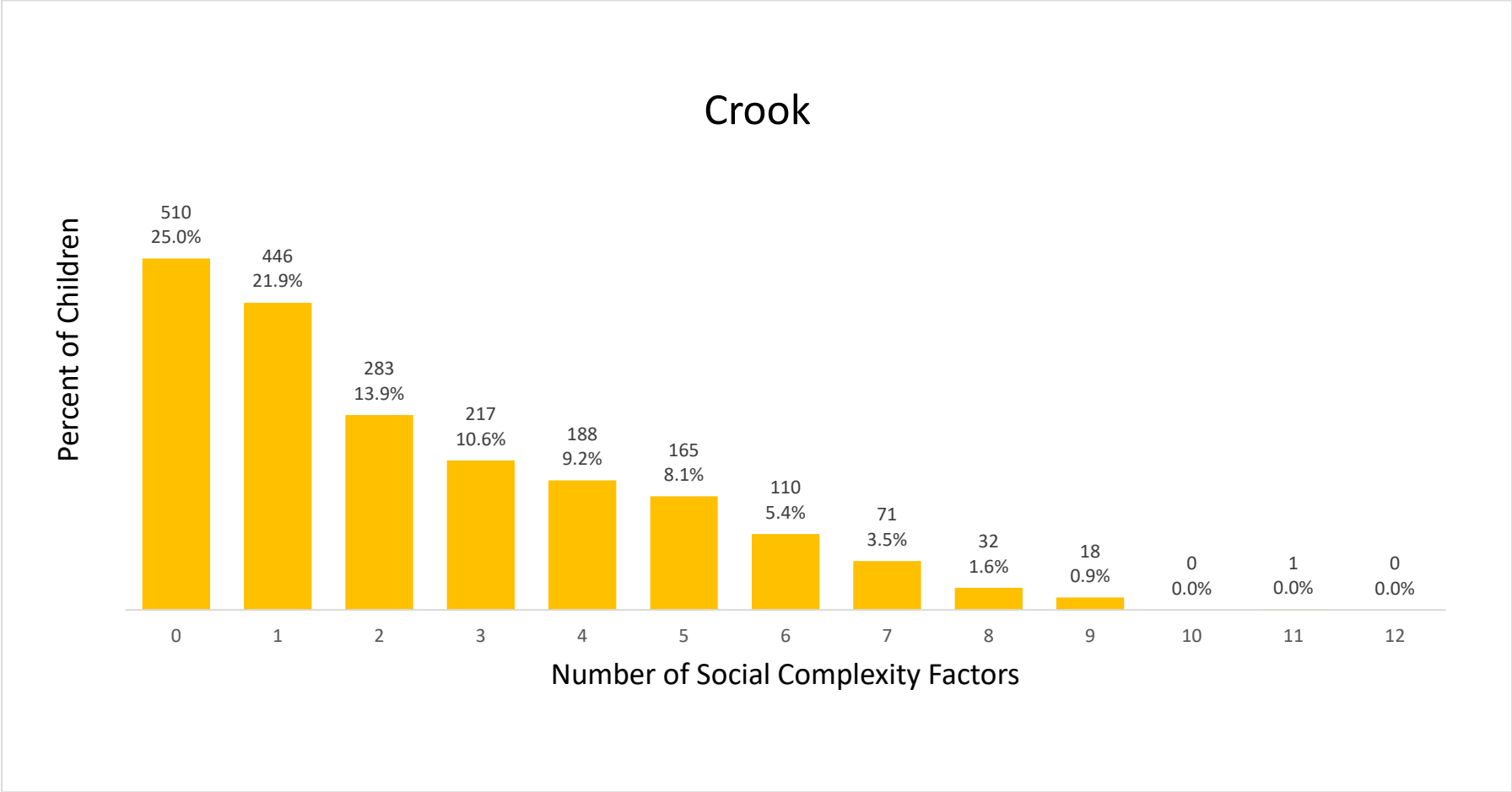
*The county is the child's listed county of residence on 06-01-2016.*

Indicator	n	Prevalence
Child abuse/neglect	167	6.54%
Foster care	294	11.51%
Limited English proficiency	281	11%
Mental Health - Child	826	32.34%
Mental Health - Family	1,254	49.1%
Parent death	37	1.45%
Parent disability	108	4.23%
Parental incarceration	530	20.75%
Poverty - Child	1,006	39.39%
Poverty - Family	841	32.93%
Substance Abuse - Child	117	4.58%
Substance Abuse - Family	852	33.36%

**Note:** Due to reporting rules from DHS Integrated Client Services, populations with low counts ( $\leq 10$  people) are masked and reported as NA.

Prevalence %s are for that County.

Count of Social Complexity Indicators



## Health Complexity

### Background

Medical complexity and social complexity are then combined to create a metric of Health Complexity. The Health Complexity variable describes the degree to which the child has both medical and social complexity. This is important because the level and type of supports that are needed for children with high medical and social complexity is very different from the level and type of supports that would be useful for a child with low medical and low social complexity. The categories created combine the existing three categories for the PMCA with three categories based on the social complexity count variable: Children with 3 or more social risk factors, children with 1-2 risk factors, and children with no social risk factors. These categories were chosen because children with 1 or more social risk factors have been shown to have social complexity and children with more risk factors are shown to be at a greater risk. The goal is to identify the population with both levels of complexity.

### Summary of Data and Key Findings

The nine boxes are the components of the nine-part categorical variable for health complexity

1. Healthy / 0 social factors	4. Non-complex chronic / 0 social factors	7. Complex chronic / 0 social factors
2. Healthy / 1-2 social factors	5. Non-complex chronic / 1-2 social factors	8. Complex chronic / 1-2 social factors
3. Healthy / 3+ social factors	6. Non-complex chronic / 3+ social factors	9. Complex chronic / 3+ social factors

Medical Complexity (3 Categories)	Social Complexity (12 Factors Total)					
	3 or More Factors		1-2 Factors		None in System-Level Data	
Complex Chronic	9	2.1%	8	2.7%	7	0.6%
		53		69		16
Non-Complex Chronic	6	10.1%	5	6.5%	4	1.7%
		258		166		44
Non-Chronic/Healthy	3	28.6%	2	30.1%	1	17.6%
		730		768		450

# APPENDIX 1: COMPLEXITY BY AGE GROUP

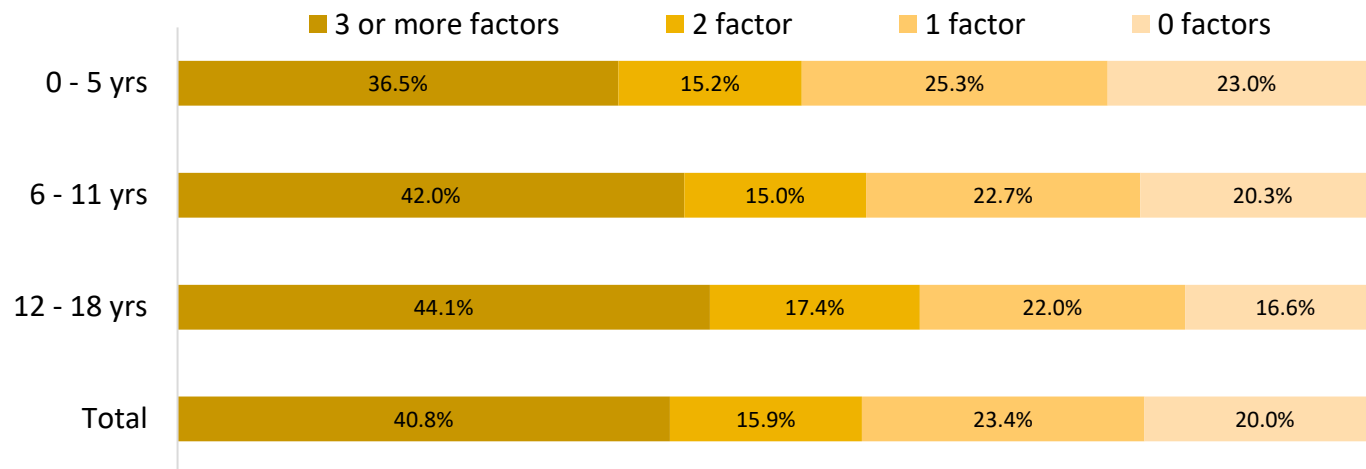
County	Crook							
	<b>0 - 5 yrs</b>		<b>6 - 11 yrs</b>		<b>12 - 18 yrs</b>		<b>Total n</b>	<b>Total %</b>
	<b>n</b>	<b>%</b>	<b>n</b>	<b>%</b>	<b>n</b>	<b>%</b>		
Complex Chronic	44	4.9%	37	4.9%	57	6.4%	138	5.4%
Non-complex Chronic	117	12.9%	147	19.4%	204	22.9%	468	18.3%
Healthy	743	82.2%	574	75.7%	631	70.7%	1948	76.3%
<b>Grand Total</b>	<b>904</b>	<b>100.0%</b>	<b>758</b>	<b>100.0%</b>	<b>892</b>	<b>100.0%</b>	<b>2554</b>	<b>100.0%</b>



## Prevalence by Social Complexity Factor by Age Group

	0-5 years		6-11 years		12-18 years	
<b>Social Complexity Factor</b>	<b>n</b>	<b>Prevalence</b>	<b>n</b>	<b>Prevalence</b>	<b>n</b>	<b>Prevalence</b>
Child abuse/neglect	44	4.87%	48	6.33%	75	8.41%
Foster care	69	7.63%	91	12.01%	134	15.02%
Limited English proficiency	77	8.52%	88	11.61%	116	13.00%
Mental Health - Child	106	11.73%	249	32.85%	471	52.80%
Mental Health - Family	501	55.42%	364	48.02%	389	43.61%
Parent death	NA	NA	13	1.72%	22	2.47%
Parent disability	38	4.20%	26	3.43%	44	4.93%
Parental incarceration	172	19.03%	170	22.43%	188	21.08%
Poverty - Child	300	33.19%	331	43.67%	375	42.04%
Poverty - Family	278	30.75%	272	35.88%	291	32.62%
Substance Abuse - Child	NA	NA	14	1.85%	98	10.99%
Substance Abuse - Family	323	35.73%	250	32.98%	279	31.28%

## Social Complexity Counts by Age (Crook)



## Health Complexity Categories by Age Group

County	Crook								
	0 - 5 yrs		6 - 11 yrs		12 - 18 yrs		Total n	Total %	
	n	%	n	%	n	%			
1	186	20.6%	133	17.5%	131	14.7%	450	17.6%	
2	305	33.7%	218	28.8%	245	27.5%	768	30.1%	
3	252	27.9%	223	29.4%	255	28.6%	730	28.6%	
4	13	1.4%	17	2.2%	14	1.6%	44	1.7%	
5	45	5.0%	48	6.3%	73	8.2%	166	6.5%	
6	59	6.5%	82	10.8%	117	13.1%	258	10.1%	
7	9	1.0%	4	0.5%	3	0.3%	16	0.6%	
8	16	1.8%	20	2.6%	33	3.7%	69	2.7%	
9	19	2.1%	13	1.7%	21	2.4%	53	2.1%	
<b>Total</b>	<b>904</b>	<b>100.0%</b>	<b>758</b>	<b>100.0%</b>	<b>892</b>	<b>100.0%</b>	<b>2554</b>	<b>100.0%</b>	