

# Health Complexity in Children – Benton County

February 2019

## Introduction

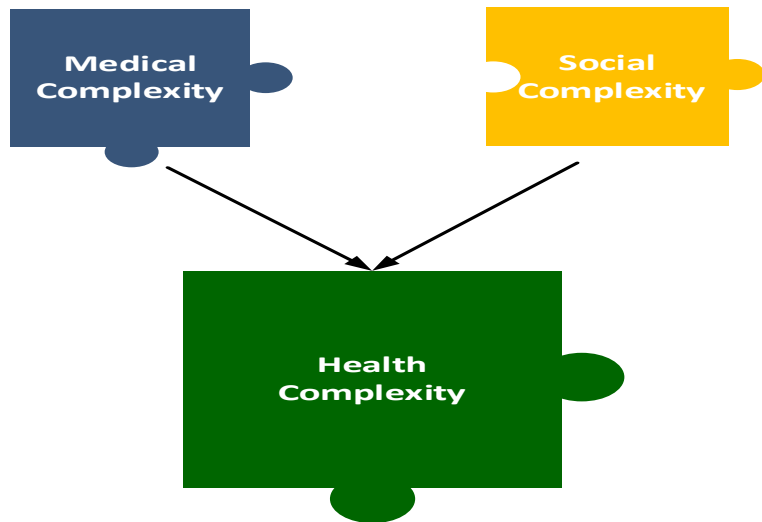
The goal of this project is to identify children with health complexity in the Medicaid population and share this information with CCOs and other partners. Health complexity is based on medical complexity and social complexity.

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 5,113 publicly insured children in Benton county.

- 6.9% of children were placed into the PMCA complex chronic disease category
- 19.1% of children were placed into the PMCA non-complex chronic disease category
- 74.0% 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
Benton	5,113

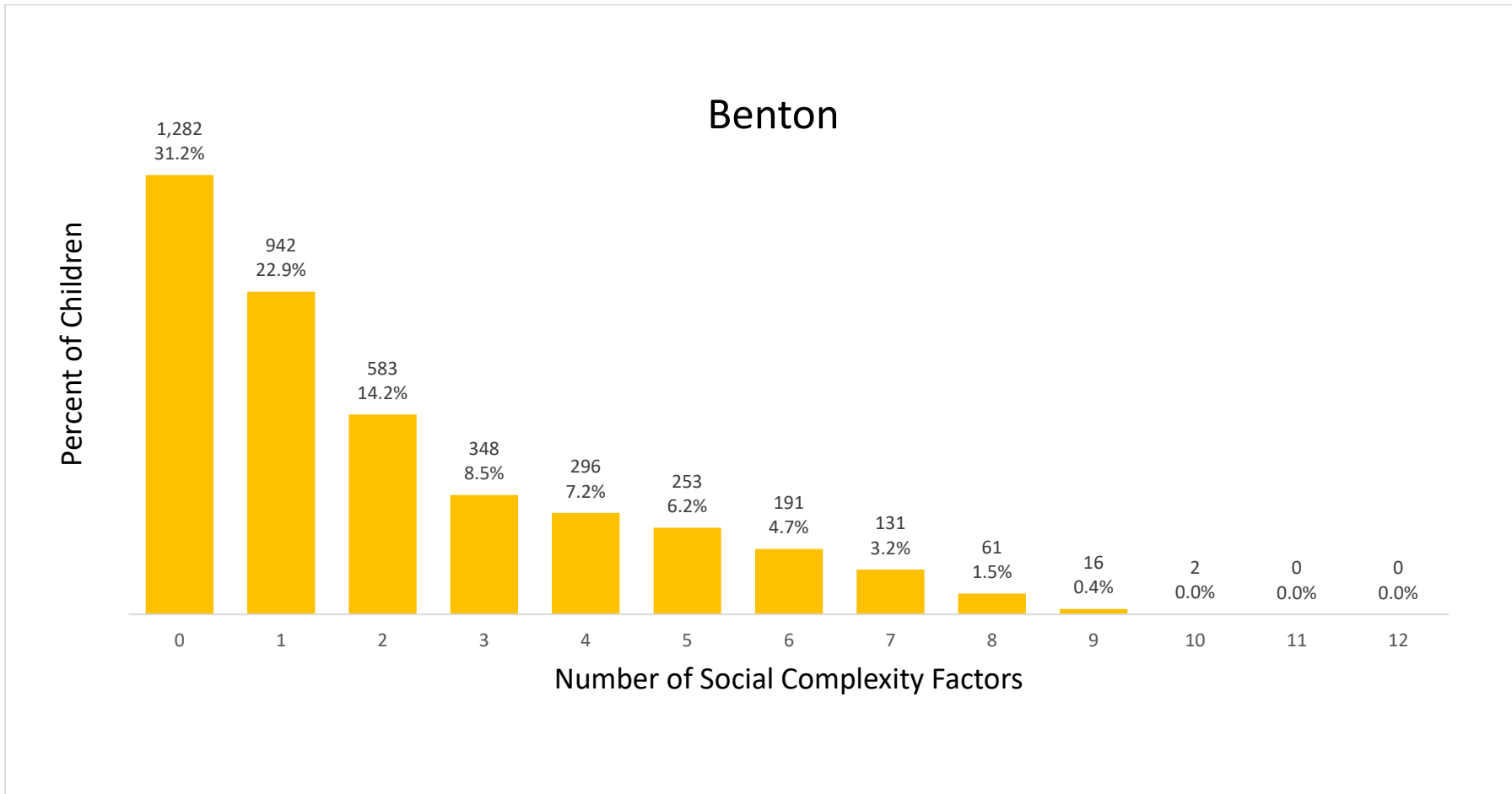
*The county is the child's listed county of residence on 06-01-2016.*

Indicator	n	Prevalence
Child abuse/neglect	238	4.65%
Foster care	575	11.25%
Limited English proficiency	909	17.78%
Mental Health - Child	1,750	34.23%
Mental Health - Family	1,890	36.96%
Parent death	60	1.17%
Parent disability	154	3.01%
Parental incarceration	819	16.02%
Poverty - Child	1,721	33.66%
Poverty - Family	1,280	25.03%
Substance Abuse - Child	213	4.17%
Substance Abuse - Family	1,244	24.33%

**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	3.0%	8	2.7%	7	1.2%
		153		137		62
Non-Complex Chronic	6	8.9%	5	8.2%	4	2.1%
		453		419		105
Non-Chronic/Healthy	3	20.7%	2	31.5%	1	21.8%
		1,057		1,612		1,115

APPENDIX 1: COMPLEXITY BY AGE GROUP

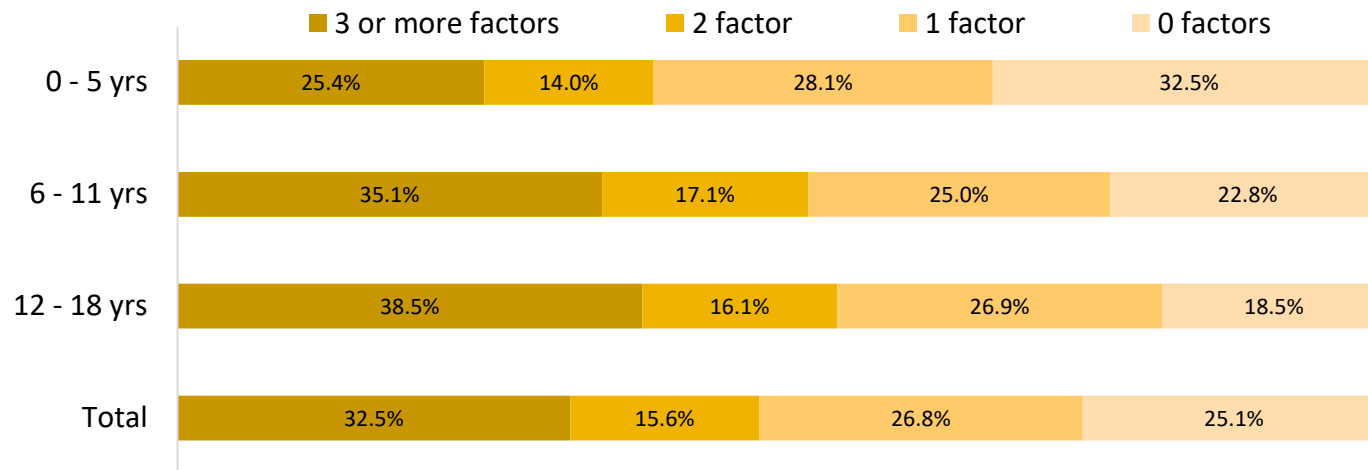
County	Benton							
	<b>0 - 5 yrs</b>		<b>6 - 11 yrs</b>		<b>12 - 18 yrs</b>		<b>Total n</b>	<b>Total %</b>
	<b>n</b>	<b>%</b>	<b>n</b>	<b>%</b>	<b>n</b>	<b>%</b>		
Complex Chronic	83	4.3%	107	6.9%	162	9.9%	352	6.9%
Non-complex Chronic	204	10.6%	324	20.8%	449	27.5%	977	19.1%
Healthy	1639	85.1%	1126	72.3%	1019	62.5%	3784	74.0%
<b>Grand Total</b>	<b>1926</b>	<b>100.0%</b>	<b>1557</b>	<b>100.0%</b>	<b>1630</b>	<b>100.0%</b>	<b>5113</b>	<b>100.0%</b>



**Prevalence by Social Complexity Factor by Age Group**

Social Complexity Factor	0-5 years		6-11 years		12-18 years	
	n	Prevalence	n	Prevalence	n	Prevalence
Child abuse/neglect	87	4.52%	77	4.95%	74	4.54%
Foster care	118	6.13%	195	12.52%	262	16.07%
Limited English proficiency	310	16.10%	306	19.65%	293	17.98%
Mental Health - Child	262	13.60%	604	38.79%	884	54.23%
Mental Health - Family	723	37.54%	590	37.89%	577	35.40%
Parent death	NA	NA	16	1.03%	38	2.33%
Parent disability	48	2.49%	52	3.34%	54	3.31%
Parental incarceration	288	14.95%	276	17.73%	255	15.64%
Poverty - Child	502	26.06%	587	37.70%	632	38.77%
Poverty - Family	429	22.27%	439	28.20%	412	25.28%
Substance Abuse - Child	NA	NA	21	1.35%	189	11.60%
Substance Abuse - Family	450	23.36%	396	25.43%	398	24.42%

## Social Complexity Counts by Age (Benton)



### Health Complexity Categories by Age Group

County	0 - 5 yrs		6 - 11 yrs		12 - 18 yrs		Total n	Total %
	n	%	n	%	n	%		
1	553	28.7%	309	19.8%	253	15.5%	1115	21.8%
2	686	35.6%	481	30.9%	445	27.3%	1612	31.5%
3	400	20.8%	336	21.6%	321	19.7%	1057	20.7%
4	47	2.4%	28	1.8%	30	1.8%	105	2.1%
5	95	4.9%	132	8.5%	192	11.8%	419	8.2%
6	62	3.2%	164	10.5%	227	13.9%	453	8.9%
7	26	1.3%	18	1.2%	18	1.1%	62	1.2%
8	30	1.6%	42	2.7%	65	4.0%	137	2.7%
9	27	1.4%	47	3.0%	79	4.8%	153	3.0%
<b>Total</b>	<b>1926</b>	<b>100.0%</b>	<b>1557</b>	<b>100.0%</b>	<b>1630</b>	<b>100.0%</b>	<b>5113</b>	<b>100.0%</b>