

Informing the Placement Continuum

Classifying Children in Out-of-Home Placement Using Integrated Administrative Data

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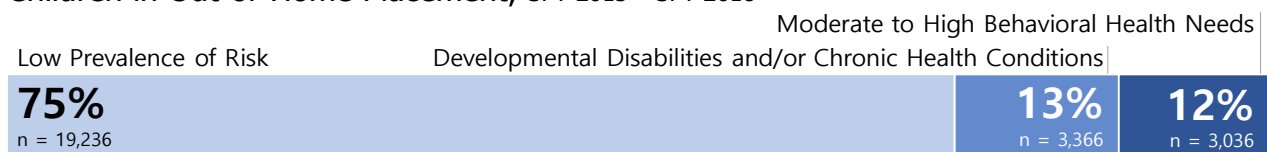
Report to the Department of Children, Youth, and Families

THE DEPARTMENT OF CHILDREN, YOUTH, AND FAMILIES (DCYF) is working to expand its out-of-home placement continuum to better meet the needs of children in care and adjust its foster care payment rate methodology. As part of this effort, DCYF contracted with DSHS Research and Data Analysis (RDA) to conduct a proof of concept study to determine whether administrative data contained in the DSHS Integrated Client Database (ICDB) can group children in out-of-home care according to their characteristics, needs, and experiences. We found that measures built using cross-agency administrative data contained in the ICDB assigned children to ten mutually exclusive groups that exhibited face validity and were associated with placement outcomes and child welfare costs.

Key Findings

- 1. Most children in out-of-home placement have a relatively low prevalence of health and behavioral health needs at the time of placement.** A total of 75 percent of children in out-of-home care were in the three groups with low behavioral health needs and no evidence of disability or chronic health conditions and were therefore at “low-risk” of intense service needs. Two of the low-risk groups were primarily children under 12 and required the least costly care. The third low-risk group was older youth who required more costly care, but did not reach the level of costs of most of the remaining groups.
- 2. Another segment of children in out-of-home placement were those with developmental disabilities and/or chronic health conditions.** About 13 percent of children in out-of-home care fell into three groups of children with developmental disabilities and/or chronic disease. Most of these children were under age 12. Children in these groups required more costly care than most of the low-risk groups. The group of children with both diagnosed developmental disabilities and complex chronic disease required especially costly care.
- 3. The remaining segment of children included older youth with behavioral health needs.** Twelve percent of children in out-of-home care fell into four groups of youth with moderate to high behavioral health needs. These youth needed the most costly care because they were more likely to experience hotel stays, exceptional cost payments, and Behavior Rehabilitation Services (BRS).

FIGURE 1.
Children in Out-of-Home Placement, SFY 2015 – SFY 2018



Project Overview

DCYF has identified two related issues with the current out-of-home placement continuum and foster care payment rate methodology. **First, the placement continuum and associated payment structure is insufficient for the breadth of needs of children in out-of-home placement.** There are four levels in the current foster care rate structure: Basic Foster Care (Level 1) and Foster Care Levels 2 through 4. Each level is associated with an age-specific monthly foster care maintenance payment (see Table 1) with higher payment amounts for the higher levels and older children. Above Level 4, DCYF has identified a “rate cliff” where there are no placement resources or placement options between the \$1,612 monthly payment for Level 4 and the \$8,266 monthly payment for Behavior Rehabilitation Services (BRS) Treatment Foster Care. DCYF has identified that this rate cliff contributes to pressure on both foster parents and BRS providers to accept children who may not be appropriate to place with them, and contributes to negative outcomes such as hotel or office stays, night-to-night placements, and exceptional cost payments (see Technical Notes for details on definitions).

TABLE 1.

Current Foster Care Monthly Payment Rates

Age	Level 1	Level 2	Level 3	Level 4
0 to 5	\$672	\$849	\$1,195	\$1,474
6 to 11	\$796	\$973	\$1,320	\$1,598
12+	\$810	\$988	\$1,334	\$1,612

The second issue is that the rate assessment process, which assigns children to the foster care levels (Levels 1 through 4), relies on foster parent responses to the Rate Assessment Screening Tool (RAST). Within 30 days of placement, foster parents report hours spent caring for various child needs such as physical needs, behavioral needs, educational needs, parent visits, and medical/dental care using the RAST. This approach focuses on foster parents’ assessment of time spent caring for the foster child, which may differ from the actual needs and characteristics of the child over time.

DCYF is developing a placement continuum and associated foster care rates that do not rely on self-reported time spent on care; are based on measures of child functioning; and allow for more than four levels of foster care payment rates, thus smoothing out the rate cliff. As part of this effort, DCYF contracted with RDA to complete a proof of concept study to determine whether administrative data contained in the DSHS Integrated Client Database (ICDB) can group children in out-of-home care according to their characteristics, needs, and experiences.

Explaining Washington’s Out-of-Home Placement Continuum

Children in out-of-home placement are temporarily separated from their families due to abuse, neglect, or other safety issues. Children in out-of-home placement may be cared for in a number of different settings and a child may be cared for in different settings over time. Out-of-home placement settings include:

- **FOSTER CARE**—Children live with foster families who have been licensed to accept placement of children. Foster parents receive a monthly foster care payment based on the child’s age and assigned level (see Table 1). Kinship caregivers who become licensed are also included in this group. Rates for these monthly maintenance payments are a focus of DCYF’s expanded placement continuum and rate setting work.
- **UNLICENSED KINSHIP CARE**—Children live with unlicensed kin who agree to care for the child. Licensed kinship caregivers are included in the Foster Care group. Unlicensed kin do not receive the monthly foster care payments that foster parents receive (unless they become licensed). Unlicensed kin can receive Temporary Assistance for Needy Families for the child from the DSHS Economic Services Administration.
- **GROUP CARE**—Children live in group settings with other youth placed out-of-home. Group home providers are paid according to a separate rate structure from the foster care rate structure.

Latent Class Analysis Approach

RDA identified latent class analysis (LCA) as the preferred approach to meet the study goals set out by DCYF. LCA is a statistical method for identifying group membership among a population of individuals using observed categorical variables. LCA models are estimated iteratively with the number of groups increasing until a statistically efficient number of groups is obtained. This approach is appropriate for the goals of this project, as it selects the composition of groups based on observed characteristics of individuals.

Study Cohort

Using out-of-home placement data from DCYF's child welfare case management system, FamLink, we identified the cohort of children for the LCA. The cohort included 25,638 children in out-of-home placement for at least 30 days between State Fiscal Year (SFY) 2015 and 2018 who were under the age of 18. For each child, we identified an 'index month' relative to which we measured characteristics, experiences, and outcomes. For 68 percent of the cohort (N = 17,538) the index month corresponded to the month of their removal (first removal if there was more than one in the study period). The remaining 32 percent of the cohort (N = 8,100) were removed from home prior to the start of the study period so the index month was set to the start of the study period (July 2014).

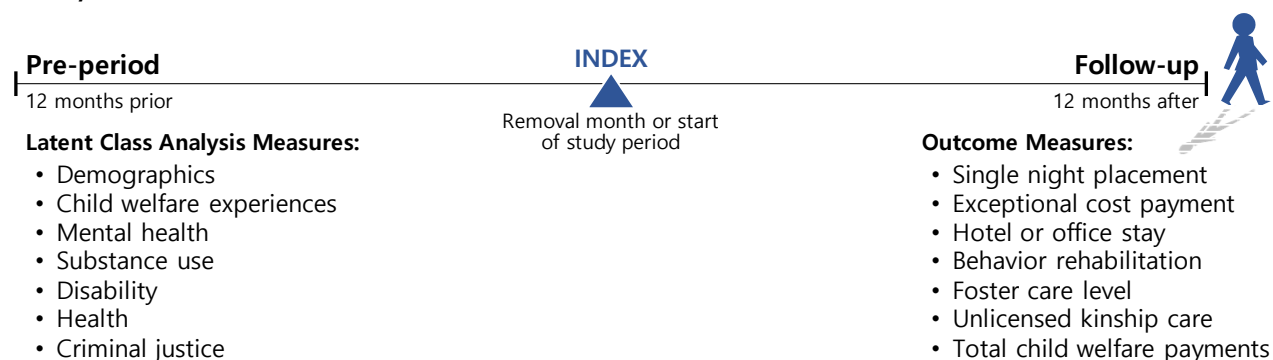
Measures and Descriptive Statistics

We selected measures from ICDB and FamLink that capture children's characteristics and needs at the index month for use in the LCA. Candidate LCA measures fell into broad categories including demographic information, previous child welfare experiences, mental health, substance use, disability, health, and criminal justice (see Figure 2). Details on all candidate measures used in the LCA are available in the Technical Notes.

We also selected measures from ICDB and FamLink that capture experiences and outcomes in the 12 months following the removal. These measures included foster care and kinship care settings, single night placements, hotel or office stays, exceptional cost payments, Behavior Rehabilitation Services (BRS), and total child welfare payments (see Figure 2). These measures were not included in the LCA, but were used to assess whether the LCA groups were associated with outcomes of interest. Details on all outcome measures used to validate the LCA are available in the Technical Notes.

FIGURE 2.

Study Timeline



To select the final measures for use in the LCA, we assessed each factor on multiple criteria. First, we eliminated factors that were not common enough in the population to be analytically useful. Second, we selected factors that were associated with at least a 30 percent difference in total child welfare payments for children who had the factor relative to children who did not. We eliminated factors that were highly correlated with another measure to prevent issues with model estimation. Finally, we

assessed any excluded factors that did not meet the 30 percent difference benchmark but were analytically useful. The final list of LCA measures is displayed in Table 2.¹ Table 2 also includes information on the prevalence of measures within the cohort and average child welfare payments for children in placement with the particular characteristic. Child welfare payments are not limited to foster care maintenance payments and include payments in such categories as Behavior Rehabilitation, transportation, respite, mental health, receiving care, concrete goods, and adoption support, thus representing the broader universe of child welfare payments in the 12 months following removal. We examine child welfare payments because they are associated with historical levels of child needs.

TABLE 2.

Baseline Descriptive Statistics for the Out-of-Home Placement Cohort

Children under 18 in Out-of-Home Placement for at Least 30 Days, SFY 2015 - SFY 2018

	Child welfare payments per day in out-of-home placement, per child			
	Total 12-month child welfare payments, per child			PER DAY
	Percent of cohort		PER YEAR	
	NUMBER	PERCENT		
All children in the cohort	25,638	100%	\$9,782	\$32
Age as of index month				
Under 2 years old	8,191	31.9%	\$8,158	\$25
2 to 4 years old	5,149	20.1%	\$8,600	\$28
5 to 11 years old	8,094	31.6%	\$9,909	\$32
12 to 17 years old	4,204	16.4%	\$16,350	\$51
Child welfare experiences				
Founded physical abuse in lifetime	2,036	7.9%	\$14,798	\$48
Abandoned or relinquished at removal	975	3.8%	\$14,966	\$45
Mental health over 12 months prior to index month				
Psychotic disorder diagnosis	282	1.1%	\$50,565	\$147
Bipolar diagnosis	571	2.2%	\$34,352	\$104
Depression diagnosis	1,582	6.2%	\$22,970	\$71
Anxiety diagnosis	3,022	11.8%	\$18,030	\$56
ADHD diagnosis	1,941	7.6%	\$24,626	\$76
Conduct disorder diagnosis	1,707	6.7%	\$27,414	\$84
Eating disorder diagnosis	104	0.4%	\$28,606	\$87
Antipsychotic prescription	577	2.3%	\$48,504	\$145
Antidepressant prescription	958	3.7%	\$31,907	\$97
Antianxiety prescription	478	1.9%	\$31,185	\$95
ADHD prescription	1,497	5.8%	\$26,478	\$81
Psychotropic polypharmacy	298	1.2%	\$56,400	\$167
Mental health inpatient service	282	1.1%	\$41,720	\$128
Mental health crisis service	776	3.0%	\$30,758	\$94
Possible suicide or self-harm	189	0.7%	\$22,089	\$68
Substance use over 12 months prior to index month				
Substance use disorder	673	2.6%	\$21,125	\$66
Overdose or possible overdose	254	1.0%	\$12,765	\$42
Other poisoning	277	1.1%	\$13,849	\$44

¹ While all age categories are included in Table 2, only the 12 to 17 year old category (relative to under age 12) was included in the LCA modeling.

Child welfare payments per day in out-of-home placement, per child				
Total 12-month child welfare payments, per child				
	Percent of cohort		PER YEAR	PER DAY
	NUMBER	PERCENT		
Disability over 12 months prior to index month				
Special education	3,437	13.4%	\$20,825	\$64
Pervasive developmental disorder	518	2.0%	\$31,173	\$98
Specific developmental or intellectual disability	2,436	9.5%	\$15,304	\$49
Developmental Disabilities Administration (DDA) service	1,138	4.4%	\$16,735	\$55
Health over 12 months prior to index month				
Significant health problems	588	2.3%	\$25,281	\$80
Chronic complex condition	1,735	6.8%	\$18,919	\$59
Chronic non-complex condition	4,369	17.0%	\$15,653	\$50
No chronic conditions	19,534	76.2%	\$7,658	\$26
2+ outpatient emergency department visits	3,691	14.4%	\$12,886	\$42
Injury treatment	6,657	26.0%	\$11,954	\$39
Criminal justice over 12 months prior to index month				
Criminal justice involvement	614	2.4%	\$29,520	\$90

On average, over the 12 months after the index month, DCYF made \$9,782 in total child welfare payments for each child in the cohort. There were a number of subgroups of children that required very costly care. For example, about 1.1 percent of children in the cohort had a psychotic disorder diagnosis and DCYF paid on average \$50,565 over 12 months for their care. Children with psychotropic polypharmacy made up 1.2 percent of the population and their average cost of care over 12 months was \$56,400.

A number of factors were more common and associated with moderate increases in costs of care relative to the average. For example, about 12 percent of the cohort had an anxiety disorder diagnosis, which was associated with an average cost of \$18,030 per 12 months. About 13 percent of the cohort received special education, which was associated with an average cost of \$20,825 per 12 months.

Final Groupings

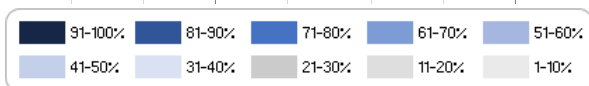
We examined grouping children starting with two groups and increasing to 10 groups. The performance of each grouping was assessed using various model statistics (*see* Technical Notes for more details). We identified two groupings that performed the best: the 7-group model and the 10-group model. We consulted with the DCYF project sponsors and steering committee to select the final grouping included in this report. The consensus was to use the 10-group model.

Table 3 (next page) displays the 10-group model results, including: 1) The counts and percentages of children from the study cohort in each group, and 2) percentages of each group with the listed characteristic. The percentages for each characteristic correspond to the estimated probability that a group member will have that characteristic, given that they belong to that group.² Higher probabilities are represented by darker colors in the table. Each group is represented by one column in Table 3. For example, one percent of Group A received a DDA service prior to removal, as compared to 43 percent of Group E and 42 percent of Group F.

² The LCA coefficients technically correspond to estimated probabilities of having the characteristics given that a child is a member of a group. However, for simplicity in describing the results, the probabilities will be referred to as percentages of the group with that characteristic.

TABLE 3.

Characteristics of the 10 Groups of Children in Out-of-Home Placement

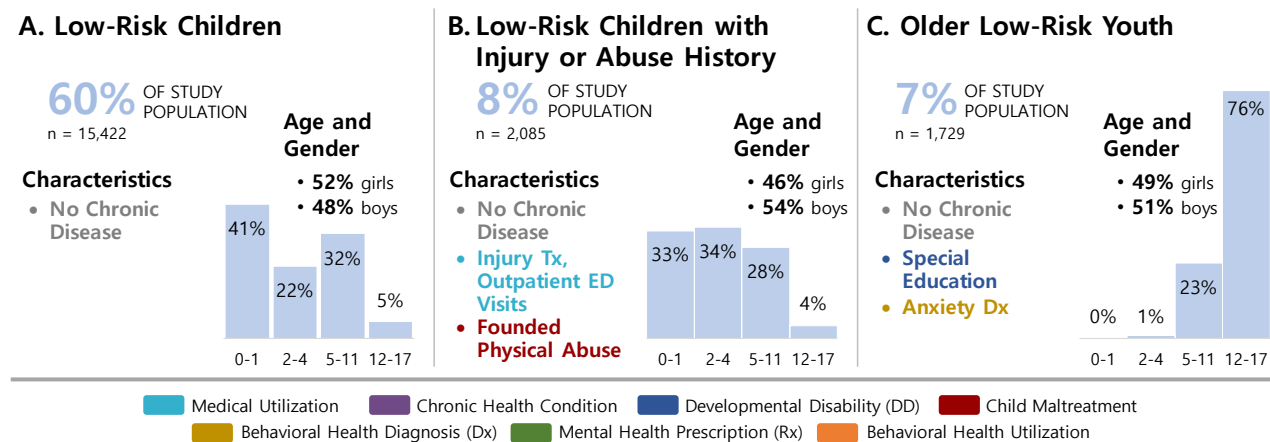
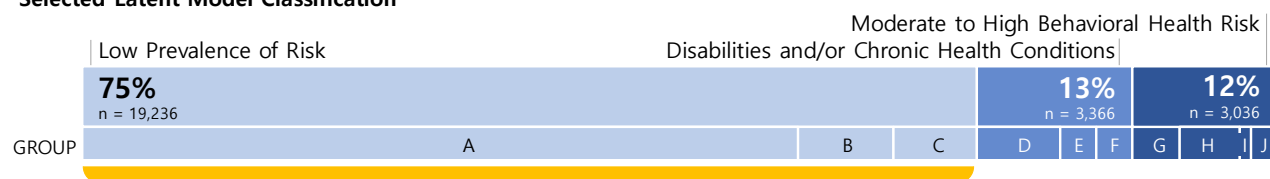
BEHAVIOR 12%	Youth with high MH need and 'externalizing'											
	Youth with high MH need and 'internalizing'											
HEALTH 13%	Youth with ADHD											
	Youth with moderate mental health needs											
LOW-RISK 75%	Children with developmental disabilities with complex chronic disease											
	Children with developmental disabilities without complex chronic disease											
Children with chronic disease without developmental disabilities												
Older low-risk youth												
Low-risk children with injury or physical abuse history												
Low-risk children												
												
GROUP	A	B	C	D	E	F	G	H	I	J	TOTAL	
Number	15,422	2,085	1,729	1,764	861	741	921	1,232	300	583	25,638	
Percent of Total	60%	8%	7%	7%	3%	3%	4%	5%	1%	2%	100%	
Child welfare experiences												
Founded physical abuse in lifetime	3%	18%	17%	8%	5%	10%	16%	18%	17%	20%	8%	
Abandoned or relinquished at removal	3%	1%	8%	4%	3%	3%	7%	4%	14%	9%	4%	
Mental health												
Psychotic disorder diagnosis	0%	0%	0%	0%	0%	0%	3%	0%	36%	22%	1%	
Bipolar disorder diagnosis	0%	0%	0%	5%	0%	0%	7%	5%	39%	39%	2%	
Depression diagnosis	0%	0%	3%	9%	0%	1%	64%	14%	98%	44%	6%	
Anxiety diagnosis	3%	6%	21%	13%	7%	6%	50%	39%	79%	64%	12%	
ADHD diagnosis	0%	1%	2%	2%	1%	3%	5%	97%	37%	75%	8%	
Conduct disorder diagnosis	1%	2%	2%	16%	9%	6%	15%	34%	50%	73%	7%	
Eating disorder diagnosis	0%	0%	0%	0%	0%	3%	1%	1%	8%	2%	0%	
Antipsychotic prescription	0%	0%	0%	0%	0%	1%	4%	4%	33%	62%	2%	
Antidepressant prescription	0%	0%	2%	0%	0%	0%	24%	11%	67%	57%	4%	
Antianxiety prescription	0%	1%	1%	1%	1%	6%	6%	3%	31%	20%	2%	
ADHD prescription	0%	0%	2%	0%	0%	0%	3%	78%	21%	68%	6%	
Psychotropic polypharmacy	0%	0%	0%	0%	0%	0%	0%	1%	12%	42%	1%	
Mental health inpatient service	0%	0%	0%	0%	0%	0%	2%	0%	55%	14%	1%	
Mental health crisis service	0%	1%	3%	1%	0%	0%	19%	4%	71%	31%	3%	
Possible suicide or self-harm	0%	1%	0%	0%	0%	1%	3%	0%	35%	1%	1%	
Substance use												
Substance use disorder	0%	1%	4%	0%	2%	2%	26%	2%	55%	12%	3%	
Overdose or possible overdose	0%	5%	0%	1%	1%	6%	2%	0%	8%	0%	1%	
Other poisoning	0%	6%	0%	0%	0%	3%	3%	1%	24%	0%	1%	
Disability												
Special education	4%	5%	31%	12%	19%	19%	29%	51%	35%	77%	13%	
Pervasive developmental disorder	0%	0%	1%	1%	10%	17%	0%	7%	4%	23%	2%	
Specific DD or intellectual disability	3%	10%	0%	9%	76%	64%	2%	16%	7%	30%	10%	
DD Administration service	1%	3%	0%	0%	43%	42%	0%	3%	0%	13%	4%	
Health												
Significant health problems	0%	3%	0%	4%	0%	35%	1%	1%	13%	14%	2%	
Complex chronic disease	0%	0%	0%	31%	0%	95%	10%	14%	35%	28%	7%	
Noncomplex chronic disease	2%	9%	0%	69%	61%	5%	68%	79%	65%	69%	17%	
No chronic disease	98%	91%	100%	0%	39%	0%	22%	7%	1%	3%	76%	
Two or more outpatient ED visits	6%	51%	4%	19%	19%	36%	25%	9%	77%	27%	14%	
Injury treatment	9%	97%	24%	27%	31%	49%	44%	33%	85%	45%	26%	
Criminal justice												
Criminal justice involvement	0%	0%	7%	0%	0%	0%	20%	2%	34%	20%	2%	

DD = Developmental Disabilities; ED = Emergency Department

GROUPS A-C Low-risk Children and Youth (75 percent)

The first three groups were composed of children who appear to be low-risk as they have little to no recorded behavioral health needs, developmental disabilities, or health problems.

Selected Latent Model Classification



GROUP A. Low-risk Children

Group A made up about 60 percent of the cohort and included children who were distinguished by having low risk factors across all measured areas in the LCA. Very few had any identified behavioral health issues, developmental disabilities, or health problems. Gender balance was observed for this group, with 52 percent girls and 48 percent boys. Additionally, 41 percent were under age 2, 22 percent were age 2 to 4, and 32 percent were age 5 to 11.

GROUP B. Low-risk Children with Injury or Physical Abuse History

Group B made up about eight percent of the cohort and included children who were distinguished by having low risk factors, but higher proportions of founded physical abuse in their lifetime and evidence of physical injury. Eighteen percent of Group B members had founded physical abuse in their lifetime and 97 percent had received injury treatment in the prior year. Over half (51 percent) visited the emergency department for outpatient services more than once in the prior year. Fifty-four percent were boys, 46 percent were girls and approximately one third fell into each of the younger age categories (0 to 1, 2 to 4, and 5 to 11).

GROUP C. Older Low-risk Youth

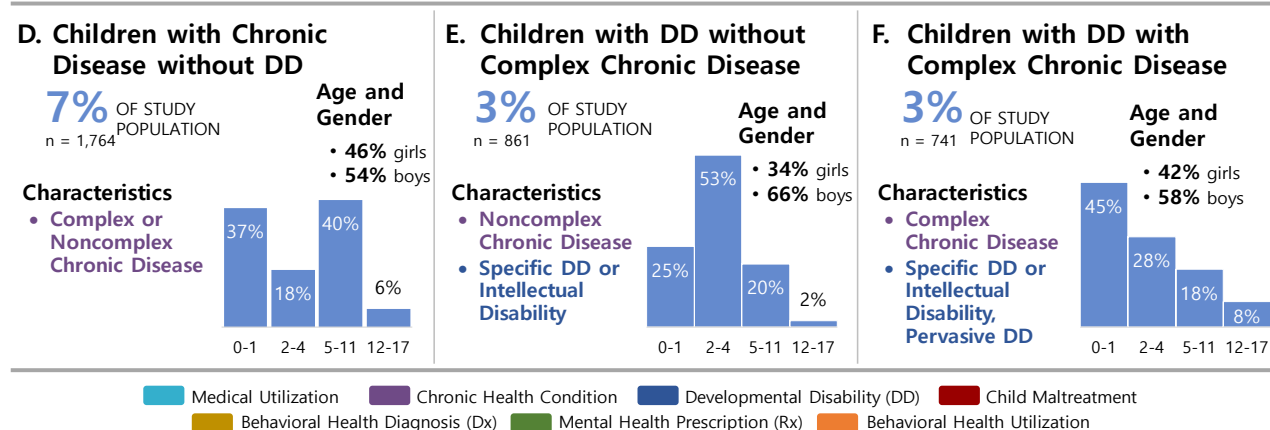
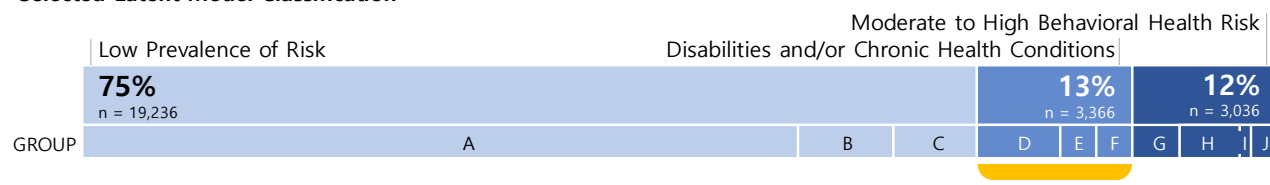
Group C made up about seven percent of the out-of-home placement cohort and included older youth who were distinguished by their low number of identified risks. About three-quarters (76 percent) of Group C members were age 12 or older. While very few Group C members were prescribed psychotropic medications or had diagnosed disabilities, 21 percent of members had an anxiety diagnosis and 31 percent were receiving special education. This indicates that while Group C can be considered low-risk, these youth may still have some behavioral health and educational needs. Gender balance was observed in Group C: 49 percent were girls and 51 percent were boys.

GROUPS D-F

Children with Developmental Disabilities and/or Chronic Disease (13 percent)

Groups D through F were primarily made up of children under 12 who had developmental disabilities, complex (or noncomplex) chronic disease,³ or both developmental disabilities and chronic disease.

Selected Latent Model Classification



GROUP D. Children with Chronic Disease without Developmental Disabilities

Group D made up about seven percent of the out-of-home placement cohort and included children who were distinguished by having chronic disease, but without the presence of developmental disabilities. Group D had low rates of mental health needs and low rates developmental disability-related diagnoses and services. However, 69 percent were classified as having chronic disease and 31 percent had complex chronic disease. Additionally, 54 percent were boys, 46 were girls, while 40 percent were 5 to 11 years old, and 37 percent were under age 2.

GROUP E. Children with Developmental Disabilities without Complex Chronic Disease

Group E made up about three percent of the out-of-home placement cohort and included children who were distinguished by their diagnosed developmental disabilities and absence of complex chronic disease. Seventy-six percent of Group E members had a specific developmental disorder or intellectual disability, 10 percent had a diagnosis of pervasive developmental disorder, and 43 percent received services from DDA. Almost no Group E members were classified as having complex chronic disease; instead, 61 percent were classified as having noncomplex chronic disease and 39 percent were classified as having no chronic disease. Additionally, 66 percent were boys and 34 percent were girls, while 53 percent were age 2 to 4.

GROUP F. Children with Developmental Disabilities with Complex Chronic Disease

Group F made up about three percent of the out-of-home placement cohort and included children distinguished by their diagnosed developmental disabilities and complex chronic disease. Sixty-four percent of Group F members had a diagnosis of a specific developmental disorder or intellectual disability, 17 percent had a diagnosis of a pervasive developmental disorder, and 42 percent received

³ See Technical Notes for details and examples of complex chronic disease and noncomplex chronic disease.

services from the Developmental Disabilities Administration (DDA). Nearly all (95 percent) had complex chronic disease, in contrast to Group F. Additionally, 58 percent were boys, while 42 percent were girls, and 45 percent were under age 2.

GROUPS G-J

Youth with Behavioral Health Needs (12 percent)

The final four groups made up about 12 percent of the total cohort of children in out-of-home placement. The members of these four groups had similarities, including being older than average. While 16 percent of children in the overall out-of-home placement cohort were 12 years old or older, the proportion of 12 to 17 year olds in Groups G to J ranged from 28 percent to 95 percent. Additionally, the last four groups were characterized by pronounced behavioral health needs.

Selected Latent Model Classification

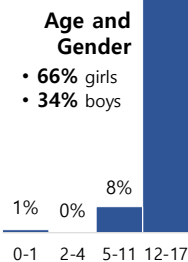
GROUP	Low Prevalence of Risk			Moderate to High Behavioral Health Risk Disabilities and/or Chronic Health Conditions							
	A	B	C	D	E	F	G	H	I	J	
	75% n = 19,236			13% n = 3,366				12% n = 3,036			

G. Youth with Moderate Mental Health Needs

4% OF STUDY POPULATION
n = 921

Characteristics

- Depression Dx, Anxiety Dx

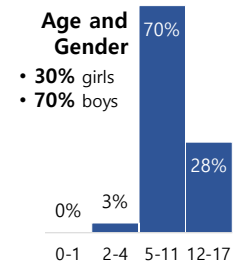


H. Youth with ADHD

5% OF STUDY POPULATION
n = 1,232

Characteristics

- ADHD Dx
- ADHD Rx
- Special Education

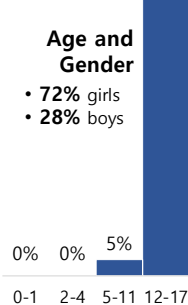


I. Youth with High Mental Health Need and 'Internalizing'

1% OF STUDY POPULATION
n = 300

Characteristics

- Anxiety Dx, Depression Dx, Suicide or Self-harm, Substance Use
- Antidepressant Rx
- Mental Health Crisis, Mental Health Inpatient
- Injury Treatment, Outpatient Emergency Department Visits

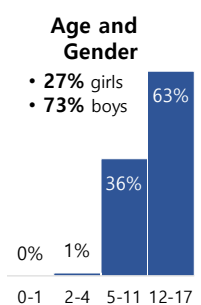


J. Youth with High Mental Health Need and 'Externalizing'

2% OF STUDY POPULATION
n = 583

Characteristics

- ADHD Dx, Conduct Disorder Dx, Anxiety Dx
- ADHD Rx, Anti-psychotic Rx, Antidepressant Rx, Polypharmacy
- Special Education, Pervasive DD



GROUP G. Youth with Moderate Mental Health Needs

Group G made up about four percent of the cohort and included youth distinguished by moderate mental health needs, when compared to the other groups in this section. Sixty-four percent of group members had a depression diagnosis, 50 percent had an anxiety diagnosis, and about one-quarter had been prescribed anti-depressants. Group G had some usage of crisis mental health services, with 19 percent having used such services in the prior year. About one-quarter (26 percent) had evidence of substance use disorder.

Most Group G youth were identified as having noncomplex chronic disease (68 percent). While Group G had moderate mental health needs, they did not have the high rates of psychotropic prescriptions and/or use of acute mental health services that characterize the remaining groups discussed below. Additionally, 34 percent were boys and 66 percent of Group G were girls.

GROUP H. Youth with ADHD

Group H made up about five percent of the total cohort of children in out-of-home placement and included youth who were distinguished by high rates of ADHD diagnoses and prescriptions primarily without other co-occurring mental health diagnoses, though about one-third of this group had a conduct disorder diagnosis and about one-third had an anxiety diagnosis. In contrast to the other groups in this section, Group H was comprised of primarily youth under age 12, mostly ages 5 to 11 (70 percent).

In Group H, 97 percent of members had an ADHD diagnosis and 78 percent had been prescribed ADHD medication. About half received special education and 79 percent had noncomplex chronic disease. Additionally, 70 percent of Group H was boys while 30 percent were girls.

GROUP I. Youth with High Mental Health Need and ‘Internalizing’

Group I made up about 1 percent of the total cohort of children in out-of-home placement and included youth who were distinguished by high rates of depression and anxiety diagnoses as well as evidence of mental health crisis. Nearly all the members of Group I had a depression diagnosis (98 percent) and 79 percent had an anxiety diagnosis, while two-thirds had been prescribed antidepressants. Thirty-nine percent were diagnosed with bipolar disorder. Seventy-one percent of Group I used a crisis mental health service in the prior year, 55 percent had an inpatient mental health hospitalization, and 35 percent had diagnoses indicative of possible suicide or self-harm. Over half (55 percent) had diagnoses indicating substance use disorder, 85 percent had received injury treatment, and 77 percent had visited the emergency department for outpatient treatment more than once in the past year. Group I had the highest prevalence of criminal justice involvement of all groups at 34 percent. Group I members were nearly all identified as having either noncomplex chronic disease or complex chronic disease, perhaps due to the severity of their mental health diagnoses or the co-occurrence of mental health with other chronic disease. Seventy-two percent of members of Group I were girls, while 28 percent were boys.

The types of diagnoses exhibited for this group and the presence of a high proportion of girls indicated this group could be characterized as exhibiting ‘internalizing’ behavior. Internalizing behaviors are actions that direct issues with a person’s emotional or psychological state inward (e.g. self-harming). Common diagnoses for children with internalizing behaviors include depression and anxiety, as well as the presence of self-harming behavior. Depression and anxiety were the most common mental health diagnoses in Group I, and members have the highest rate of possible suicide or self-harm diagnoses of all groups in the study. Therefore, the internalizing identifier is included in the description of Group I.

GROUP J. Youth with High Mental Health Need and ‘Externalizing’

Group J made up about two percent of the total cohort and included youth who were distinguished by high mental health need and psychotropic medication use. Three-quarters of Group J members had an ADHD diagnosis, 73 percent had a conduct disorder diagnosis, 64 percent had an anxiety disorder diagnosis, 44 percent had a depression diagnosis, and 39 percent had a bipolar disorder diagnosis. Over two-thirds (68 percent) had been prescribed ADHD medication, 62 percent had been prescribed an anti-psychotic medication, 57 percent had been prescribed an antidepressant, and 42 percent had evidence of psychotropic polypharmacy—receiving prescriptions for four or more psychotropic medications at the same time for at least 60 days in the last year.

Group J members were the most likely of all groups to be participating in special education at school (77 percent) and they were most likely of all of the groups to have a pervasive developmental disorder (23 percent). Nearly all of the members were classified as having either noncomplex chronic disease or complex chronic disease, which may be due to the severity of their mental health diagnoses or the co-occurrence of mental health with other chronic disease. In contrast to Group I, 73 percent of members of Group J were boys, while 27 percent were girls.

The types of diagnoses exhibited for this group and the presence of a high proportion of boys indicated this group could be characterized as exhibiting 'externalizing' behavior. Externalizing behavior includes antisocial acts that direct issues with a person's emotional or psychological state externally and may sometimes be targeted at other individuals (e.g. aggression). Common diagnoses associated with externalizing behavior include conduct disorder and ADHD, which were the most prevalent mental health diagnoses among children in Group J. Therefore, the externalizing identifier is included in the description of Group J.

Group Membership and Placement Outcomes

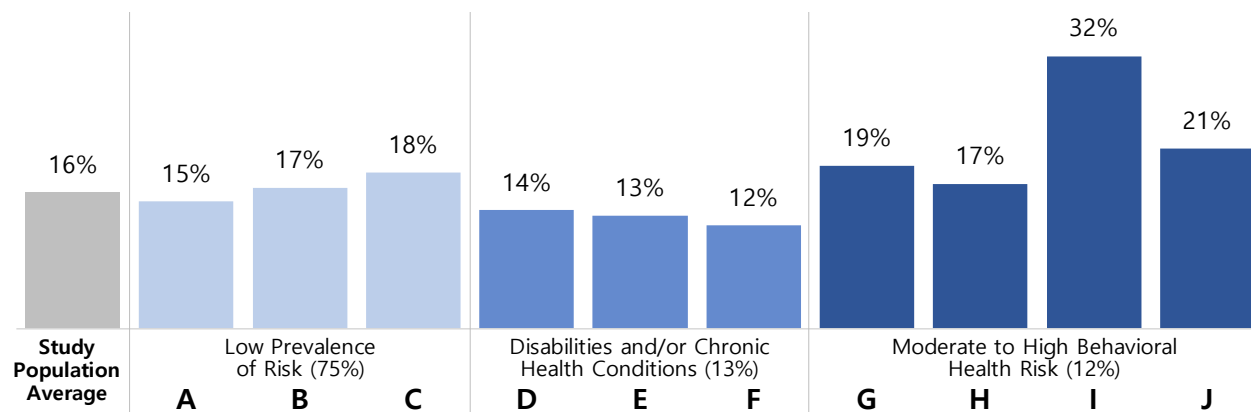
Once the LCA was complete and children were assigned to groups, we assessed whether children experienced differences in outcomes of interest across the groups. While the 10 groups appeared to be classifying children with different risk profiles, if the groupings were not related to differences in experiences or outcomes, they may be identifying distinctions that are not relevant to the placement continuum redesign. However, we found that group membership was associated with a number of important outcomes. All outcomes presented below were measured in the 12 months following removal, or the 12 months following the start of the study period for those removed prior to the study period.

Single Night Placements

The percent of each group that experienced a single night placement is displayed in Figure 3. Sixteen percent of the overall out-of-home placement cohort experienced a placement lasting a single night. Groups G through J all experienced higher rates of single night placements than the cohort as a whole, with Group I (Youth with High Mental Health Need and 'Internalizing') having the highest prevalence at 32 percent followed by Group J (Youth with High Mental Health Need and 'Externalizing') at 21 percent. Single night placements were less common than average among Groups D through F (Children with Developmental Disabilities and/or Chronic Disease). Both Group C (Older Low-risk Youth) and Group B (Low-risk Children with Injury or Physical Abuse History) had rates of single night stays only slightly higher than the cohort average.

FIGURE 3.

Percent of Each Group with a Single Night Placement

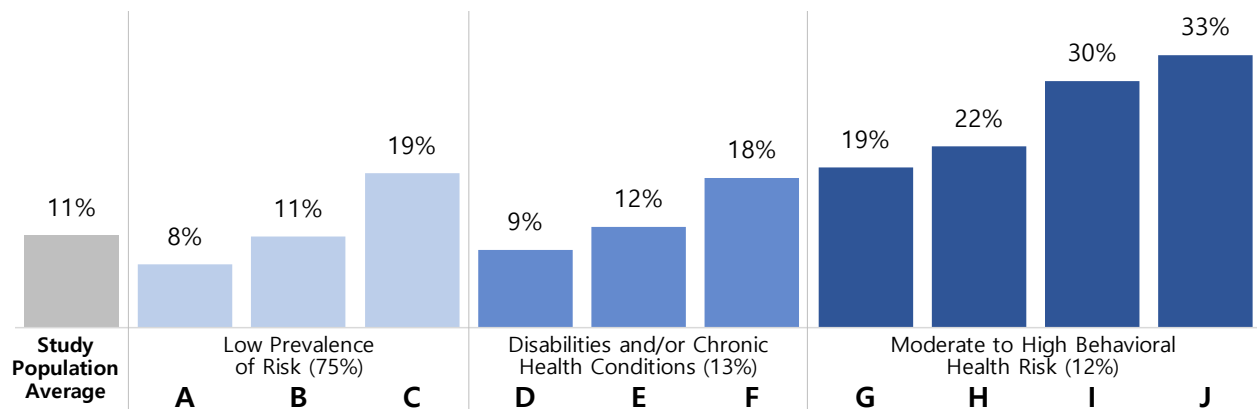


Exceptional Cost Payments

The percent of each group who experienced an exceptional cost payment is displayed in Figure 4. On average, 11 percent of children in the cohort received an exceptional cost payment.⁴ The highest prevalence was for Group J (Youth with High Mental Health Need and 'Externalizing') and Group I (Youth with High Mental Health Need and 'Internalizing'): 33 percent of Group J and 30 percent of Group I had an exceptional cost payment. Group H (Youth with ADHD), Group G (Youth with Moderate Mental Health Needs), Group F (Children with Developmental Disabilities with Complex Chronic Disease) and Group C (Older Low-risk Youth) had above average rates of exceptional cost payments between 18 and 22 percent.

FIGURE 4.

Percent of Each Group with an Exceptional Cost Payment

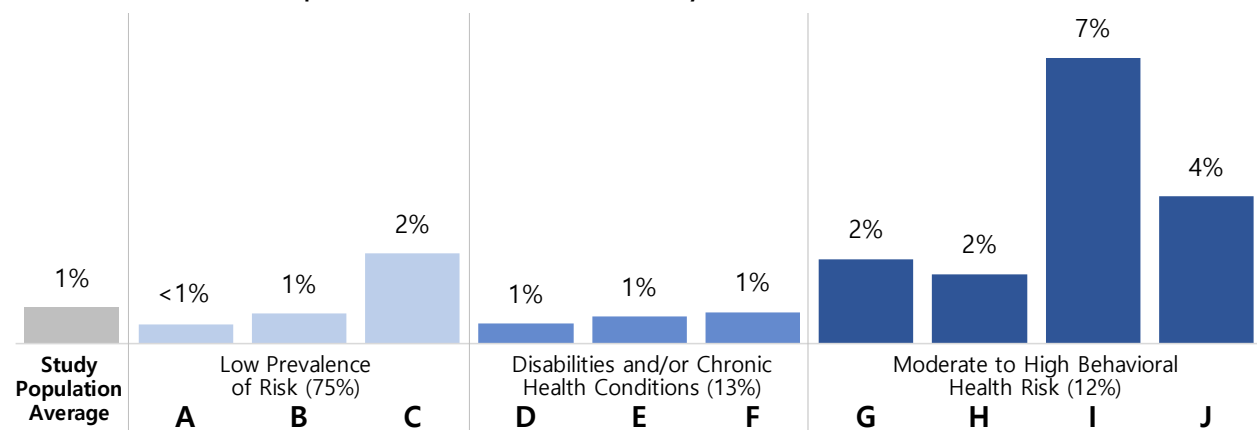


Hotel or Office Stay

The percent of each group who experienced a hotel or office stay is displayed in Figure 5. On average, one percent of the out-of-home placement cohort stayed in a hotel or DCYF office for at least one night. Group I (Youth with High Mental Health Need and 'Internalizing') was seven times more likely to experience a stay in a hotel or office (seven percent) than the out-of-home placement cohort as a whole. Group J (Youth with High Mental Health Need and 'Externalizing') also experienced a heightened prevalence compared to the cohort as a whole, at 4 percent.

FIGURE 5.

Percent of Each Group with a Hotel or Office Stay



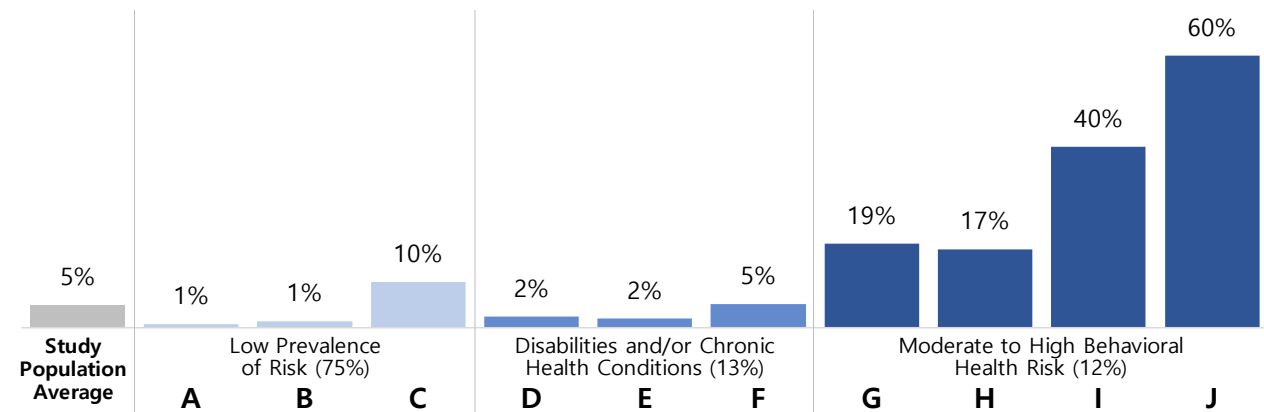
⁴ Exceptional cost payments are often for placements that are negotiated on a child specific basis, outside of the foster care rate structure. However, other payments such as one-time payments for costs not elsewhere classified (e.g. camp registration fee) can show up as exceptional costs payments.

Behavior Rehabilitation Services

The percent of each group who received Behavior Rehabilitation Services (BRS) is displayed in Figure 6. On average, five percent of the out-of-home placement cohort received BRS in the year. Groups G through J were much more likely to receive BRS than the cohort as a whole. Six out of ten youth in Group J (Youth with High Mental Health Need and 'Externalizing') experienced BRS while four out of ten youth in Group I (Youth with High Mental Health Need and 'Internalizing') experienced BRS. Group H (Youth with ADHD) and Group G (Youth with Moderate Mental Health Needs) also experienced higher rates of BRS: 17 percent and 19 percent, respectively. Group C (Older Low-risk Youth) also experienced elevated rates of BRS: 10 percent relative to 5 percent for the out-of-home placement cohort as a whole.

FIGURE 6.

Percent of Each Group with Behavior Rehabilitation Services

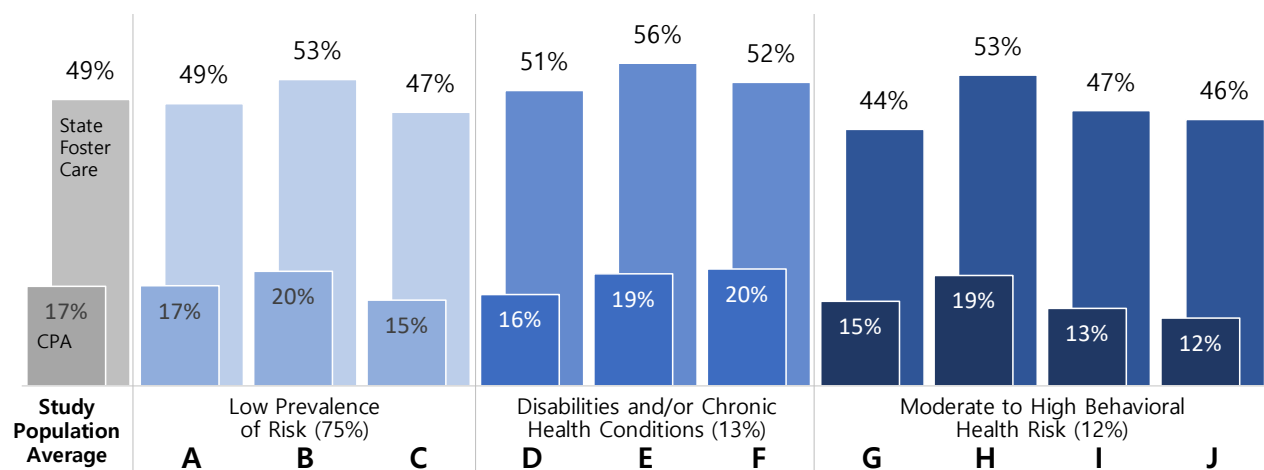


Family Foster Care

Children in out-of-home placement can be placed in family foster care with either state-licensed homes or in homes overseen by Child Placing Agencies (CPA) that contract with DCYF. The percent of each group who were placed with state-licensed or CPA foster homes are displayed in Figure 6. About half of children in the out-of-home placement cohort spent time in a state-licensed foster home (49 percent) and 17 percent spent time in a CPA foster home. There was some variation in the percentages of children in state-licensed and CPA foster care across the 10 groups, but overall the proportion in each setting was relatively consistent across the 10 groups.

FIGURE 6.

Percent of Each Group with State or Child Placing Agencies (CPA) Foster Care

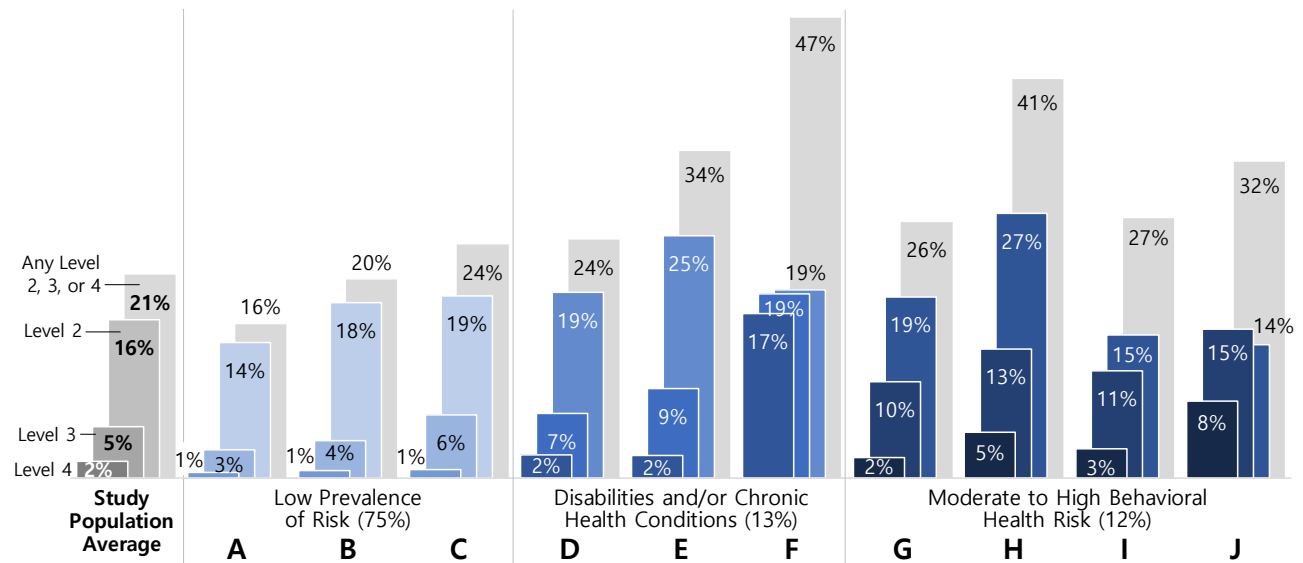


Foster Care Levels 2 through 4

Current foster care rate setting allows for increased payments for children with greater caretaking needs through the use of the Rate Assessment Screening Tool to assign children to Level 1, 2, 3, or 4. Figure 7 displays the percent of children in each group whose family foster home ever received a Level 2, Level 3, or Level 4 payment. Sixteen percent of the out-of-home placement cohort as a whole ever received a Level 2 payment, five percent received a Level 3 payment, and two percent received a Level 4 payment. Group H (Youth with ADHD) and Group E (Children with Developmental Disabilities without Complex Chronic Disease) were the most likely to have a Level 2 payment, at 27 percent and 25 percent respectively.

FIGURE 7.

Percent of Each Group Receiving Level 2, 3, or 4 Foster Care Payment



Group F (Children with Developmental Disabilities with Complex Chronic Disease) was also notable, as members were most likely to receive increased payment overall: 19 percent received Level 2, 19 percent received Level 3, 17 percent received Level 4, and nearly half (47 percent) received any payment above Level 1. While Group J (Youth with High Mental Health Need and 'Externalizing'), Group I (Youth with High Mental Health Need and 'Internalizing'), and Group G (Youth with Moderate Mental Health Needs) have risk characteristics that would be expected to lead to higher foster care levels, they are not greatly overrepresented in experiencing Level 3 and Level 4.

Given the patterns in exceptional cost payments and BRS outlined earlier, many of these youth may have bypassed the rate assessment system entirely because they were served with exceptional cost payments or in BRS instead. The pattern of rate assessment in Figure 6 suggests the rate assessment process was more often used to reimburse families for young children with higher caretaking needs, for example, children with ADHD, developmental disabilities or complex chronic health conditions, and less often used for youth with behavioral health needs.

Unlicensed Kinship Placements

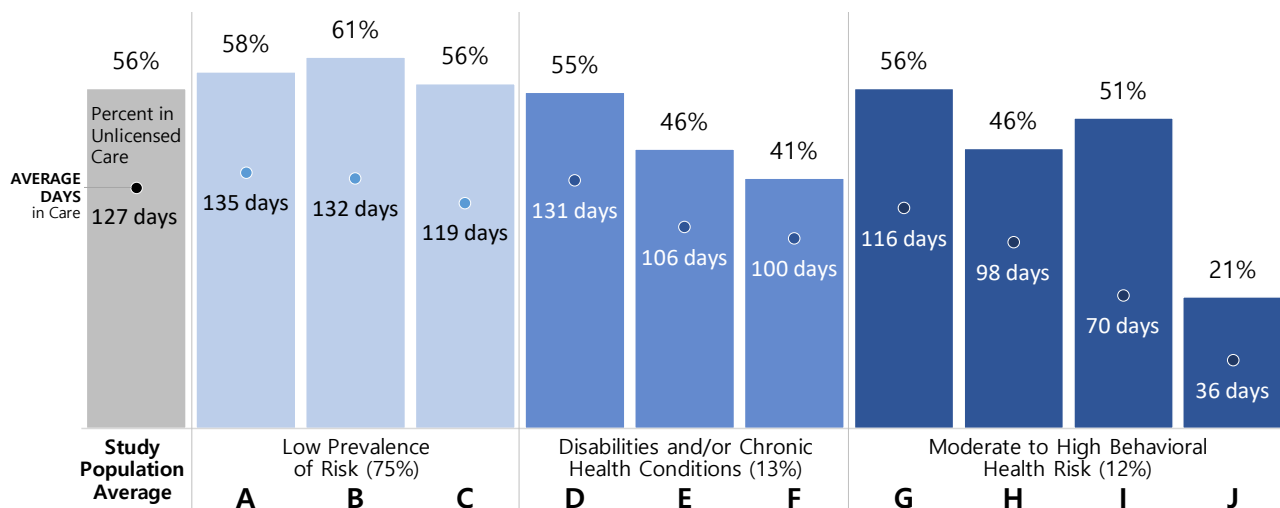
Children in out-of-home placement are often placed with kinship caregivers who do not hold a foster care license in order to maintain connections with their families and communities. Figure 8 displays the percentage of each group that spent time in an unlicensed kinship placement and the number of days spent in unlicensed care over the year. The overall percentage of children in the out-of-home placement cohort who spent time living with unlicensed kin was 56 percent and the average number of days was 127.

Youth in Group J (Youth with High Mental Health Need and 'Externalizing') were least likely to spend time in the care of unlicensed kin, with a rate of only 21 percent for an average of 36 days. Group F (Children with Developmental Disabilities with Complex Chronic Disease) were also less likely than average to be cared for by kin (41 percent and 100 days).

Group H (Youth with ADHD) and Group E (Children with Developmental Disabilities without Complex Chronic Disease) were also below average at 46 percent with 98 days and 46 percent with 106 days, respectively. While Group I (Youth with High Mental Health Need and 'Internalizing') was near the average in likelihood of spending time in unlicensed care (51 percent), these youth spent a lower than average amount of days (70 days) in unlicensed care. This may indicate disruptions in placements with kin and the need for greater supports.

FIGURE 8.

Percent of Each Group who Spent Any Days in Unlicensed Kinship Placement and Average Number of Days with Kin



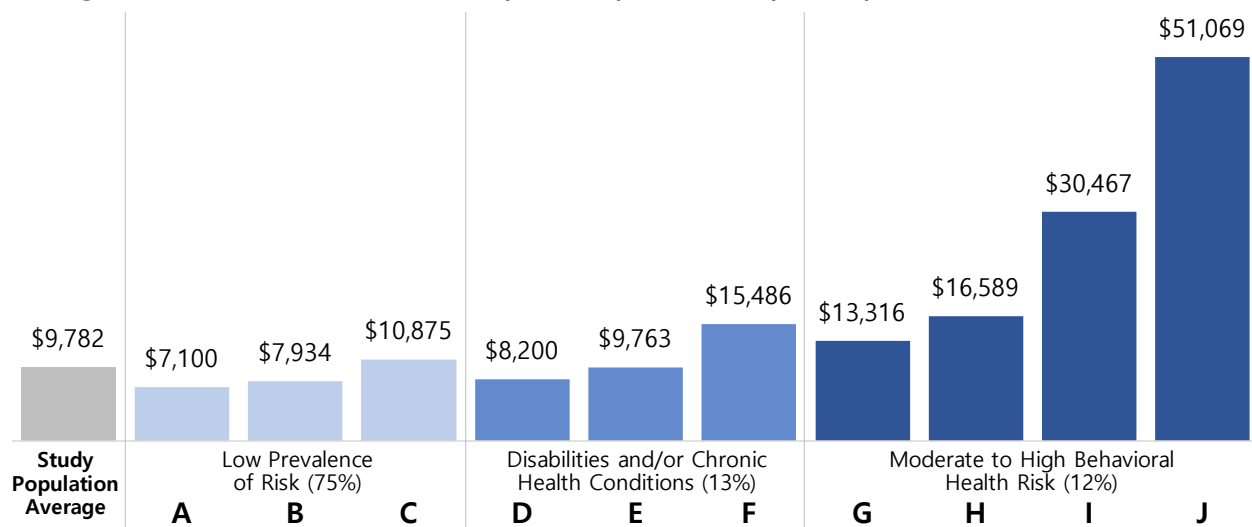
The lowest risk children (Group A and Group B) were more likely than average to be cared for by unlicensed kin. Group C (Older Low-risk Youth) and Group G (Youth with Moderate Mental Health Needs) were average in likelihood of placement with kin (56 percent), though they spent fewer days in unlicensed care than the cohort as a whole. Finally, Group D (Children with Chronic Disease without Developmental Disabilities) were near the average for likelihood of placement with kin (55 percent) but were slightly over the average in number of days with kin (131 days).

Total Child Welfare Payments

Figure 9 displays the average total payments per child by DCYF for child welfare services by group for the 12 months following removal. The average for the total cohort of children in out-of-home placement was \$9,782. Group J (Youth with High Mental Health Need and 'Externalizing') required the most costly care by a wide margin: on average \$51,069 in payments was made for each member of Group J during the 12 months. This was primarily driven by the fact that 60 percent of Group J members received BRS. Group I (Youth with High Mental Health Need and 'Internalizing') had the next most costly care at \$30,467, followed by Group H (Youth with ADHD) at \$16,589 and Group F (Children with Developmental Disabilities with Complex Chronic Disease) at \$15,489. Group G (Youth with Moderate Mental Health Needs) had care costs that were also above the average compared to children in out-of-home placement as a whole.

FIGURE 9.

Average 12-month Child Welfare Payments per Child by Group



Discussion

We used integrated administrative data to identify subgroups within the foster care population to inform DCYF’s effort to expand their placement continuum and revise their payment methodology. We identified 10 groups of foster children, including four groups with significant behavioral health needs, three groups of children with developmental disabilities and/or chronic disease, and three groups of relatively low risk children and youth. The majority of children fell into the three low-risk groups (75 percent in Groups A, B, or C).

This analysis adds evidence for the existence of a placement or rate cliff, as there are a number of groups of youth who appear to have needs that are too high for Foster Care Level 4 but not high enough to justify BRS. Data suggest these children are currently being served through exceptional cost payments, an inefficient solution where placements are negotiated individually on a child-by-child basis. DCYF will need to identify the service and placement needs for these groups of children, and design regular, reliable placement options that fall between Foster Care Level 4 and BRS.

While this analysis identified 10 groups of children, it does not simply map directly to a new payment structure with 10 levels. Instead, it offers a picture of the needs of children in out-of-home placement, and opens the discussion for the types of training, services, and supports foster care or kinship care providers require to care for children with different needs more effectively.

Study Limitations

This study had a number of limitations. First, in order to allow time for data to mature, children in this cohort were in out-of-home placement between SFY 2015 to SFY 2018. It is likely that the percentages within each group in this report may differ somewhat for a more recent cohort of foster children. However, many of the same characteristics and needs will likely be present in current foster children. Future studies will need to apply the groups identified in this study to more recent children in out-of-home placement.

The LCA also included factors which may be subject to racial bias. For example, biased policing can lead to racial/ethnic disparities in criminal justice involvement for youth, and stigma around mental health in some communities may lead to disparities in diagnosed behavioral health disorders across different racial/ethnic groups. These disparities are important to keep in mind when interpreting the prevalence of these factors across groups.

For LCA in particular, children with the same risk profile would not be assigned differently based on their race. For example, white and Black foster children with the same pattern of risk factors would both be assigned to the same group. However, children of different backgrounds may be more or less likely to have each of the individual factors identified due to racial biases. As DCYF revises their approach to assigning children to rate levels, to guard against exacerbating any existing disparities, biases in administrative data will need to be considered

Finally, administrative data can only be observed if children are interacting with state systems, so the measures used in the LCA rely on children accessing services. For example, while nearly all children in the cohort were on Medicaid, allowing RDA to create measures based on Medicaid claims and diagnosis information, if children were not accessing medical care, then conditions may have gone undiagnosed and therefore unmeasured. This is especially a concern for children who are experiencing abuse and neglect. Therefore, some children who were identified as low risk may in fact have risk factors that were unobserved in state data systems.

Conclusions

This study indicates that service data from integrated administrative data systems can be used to classify foster youth and that distinct profiles of youth service needs emerge when data is viewed in this way. This analysis indicates that DCYF will need a foster care placement continuum and rate structure that can serve youth with high and moderate behavioral health needs, children with developmental disabilities and other chronic health conditions, as well as low and moderate risk children. The continuum will also need to be trauma-informed for children across all groups. The continuum expansion could include foster home options with specialized training for placement of youth with specific patterns of needs, as well as wraparound supports for kinship caregivers to serve relative children with those specific needs. As DCYF redesigns their system, it will be important to consider what supports families (both foster and kin) will need to reduce placement disruption, exceptional cost plans, and placement exceptions and ensure families and children are supported based on their individual needs.

Next Steps

DCYF and RDA will collaborate on further research to continue to inform DCYF's placement continuum redesign. Next steps in this planned work include:

1. Conducting a cost study to identify current levels of placement-related costs (the subset of child welfare payments paid to foster homes and other placement providers and those spent to support placement) across groups to inform the new foster care placement structure;
2. Refining characteristics included in the LCA modeling; and
3. Identifying any racial disparities and their impacts on equity.

This planned work will lead to further refinement of the classification approach and an exploration of whether a classification tool based on this model, in combination with caseworker judgement, case information, and information from foster and biological parents, could be applied to the DCYF placement continuum decision-making process.

APPENDIX

While race was not used in the LCA because it would be inequitable to assign groups based on race, some groups may be over or under-represented in each of the 10 groupings due to differences in the prevalence of factors across race. The percent of each racial group in the 10 groups is displayed below. More in depth analysis of whether there is racial disproportionality will be a main focus of the next report.

APPENDIX TABLE 1.

Race/Ethnicity of Children in Out-of-Home Placement, SFY 2015 – SFY 2018

	GROUP	Adolescents with High Mental Health Need and 'Externalizing'									
		A	B	C	D	E	F	G	H	I	J
BEHAVIOR 12%	Adolescents with High Mental Health Need and 'Internalizing'										
	Children and Youth with ADHD										
	Youth and Adolescents with Moderate Mental Health Needs										
	Children with Developmental Disabilities with Complex Chronic Disease										
HEALTH 13%	Children with Developmental Disabilities without Complex Chronic Disease										
	Children with Chronic Disease without Developmental Disabilities										
	Older Low-risk Youth										
LOW-RISK 75%	Low-risk Children with Injury or Physical Abuse History										
	Low-risk Children										
	NUMBER										
OVERALL	25,638	60%	8%	7%	7%	3%	3%	4%	5%	1%	2%
American Indian or Alaska Native, single race	1,163	66%	6%	5%	8%	3%	3%	4%	3%	1%	1%
American Indian or Alaska Native, multiple race	4,826	57%	8%	7%	7%	4%	3%	5%	6%	2%	3%
Asian or Pacific Islander, single race	308	64%	8%	11%	7%	2%	2%	4%	1%	0%	0%
Black, single race	1,064	57%	7%	10%	8%	3%	3%	4%	5%	1%	3%
Black, multiple race	2,675	59%	9%	7%	7%	4%	3%	3%	5%	1%	3%
Hispanic	3,798	62%	8%	8%	6%	3%	2%	4%	4%	1%	1%
Other multiple race	961	63%	10%	6%	6%	2%	3%	3%	4%	1%	1%
White, single race	10,836	61%	8%	6%	7%	4%	3%	3%	5%	1%	3%

NOTE: 7 children did not have race information. Race/ethnicity categorizations were based on guidance from DCYF found in this document: <https://www.dcyf.wa.gov/sites/default/files/pdf/reports/OIAAEquityData2021.pdf>.

TECHNICAL NOTES

STUDY DESIGN AND OVERVIEW

We conducted a latent class analysis (LCA) to classify children in out-of-home placement according to their characteristics and needs. The cohort for the study included children in out-of-home placement between SFY 2015 and SFY 2018 who were:

1. Under age 18 at time of removal and did not turn 18 before the end of the 12 month follow up period
2. In out-of-home placement for at least 30 days

Using FamLink, we identified 25,638 children who met this definition between SFY 2015 and SFY 2018. We identified an index month for each child, from which the classification and outcome measures were measured. For 68 percent of the cohort (N = 17,538) the index month corresponded to the month of their removal (removal cohort). The remaining 32 percent of the cohort (N = 8,100) had been removed from home prior to the start of the study period (prior to July 2014) so the index month was set to the start of the study period (July 2014). For children with multiple removals during the study period, the first removal date was used to determine the index month. While many measures for the LCA were based on Medicaid claims information, Medicaid eligibility information was not used to define the cohort because over 99 percent of children in the out-of-home placement cohort had at least one month of Medicaid eligibility in the year prior to removal making the additional restriction unnecessary.

Classification Model Selection

The LCA model was run for a 2-class model up to a 10-class model, for both the full out-of-home placement cohort (N = 25,638) and the removal cohort (N = 17,538) which is a subset of the full out-of-home placement cohort. While the report focuses on the full out-of-home placement cohort, the model was also assessed for the removal cohort, which more closely represents the population of new arrivals into foster care. Model fit was assessed in a number of ways, as there is no agreed upon goodness-of-fit approach for LCA.

Likelihood criteria: Akaike Information Criterion (AIC) and Bayesian Information Criterion (BIC) are likelihood criteria that penalize models with a higher number of parameters and are often used to compare models with different numbers of latent classes. Models with lower AIC and BIC scores are preferred in terms of the trade-off between fit and parsimony. In terms of AIC and BIC, models continued to perform well as classes were added; the 10-class model had the lowest AIC and BIC values for both the out-of-home placement and removal cohorts.

Entropy is a measure of classification quality that ranges from 0 to 1. The LCA assigns each observation a probability of being in each class in that particular classification model. The closer those probabilities are to assigning the observation 100% to one category and 0% to the other categories, the closer the entropy will be to 1. The more even the probabilities are across classes (e.g. a 3-class model where an observation has a 33% chance of being in each group) the closer the entropy will be to 0. Entropy above .80 is generally considered to be good classification. All class solutions had entropy values above .80.

N-class	Out-of-home Placement Cohort					Removal Cohort				
	AIC	BIC	Entropy	MAE	R-Square	AIC	BIC	Entropy	MAE	R-Square
2	278,246	278,760	0.92	\$30.54	0.070	161,327	161,817	0.94	\$30.48	0.042
3	268,530	269,304	0.91	\$30.30	0.074	156,251	156,989	0.91	\$30.20	0.054
4	263,656	264,691	0.91	\$29.28	0.113	153,721	154,708	0.88	\$30.15	0.055
5	259,718	261,014	0.91	\$29.18	0.118	151,366	152,602	0.89	\$29.81	0.078
6	256,856	258,413	0.88	\$29.18	0.118	149,312	150,796	0.89	\$29.81	0.079
7	255,408	257,226	0.88	\$28.73	0.132	148,460	150,194	0.86	\$29.62	0.094
8	254,255	256,334	0.85	\$28.83	0.125	147,896	149,878	0.87	\$29.43	0.099
9	253,519	255,859	0.83	\$28.83	0.126	147,473	149,703	0.85	\$29.45	0.099
10	252,874	255,474	0.84	\$28.83	0.126	147,152	149,631	0.86	\$29.44	0.100

Deviance measures: To assess the relationship between classes and observed costs, the Mean Absolute Error (MAE) and the R-square statistic were calculated for each classification model. While cost information was not used in the fitting of the LCA, it was hypothesized that the classifications would be highly correlated to current payments by DCYF. Both MAE and R-square compare each observation's observed cost to the predicted cost, where predicted cost was defined as the average cost of all members of the class to which that observation was assigned.

Lower MAE means less deviation from the class mean, and higher R-square values mean a higher proportion of deviation from the grand mean is explained by deviations from the class mean. The out-of-home placement cohort had MAE and R-square values that preferred a 7-class model while the removal cohort had MAE and R-square values that preferred a 10-class model.

Given that there is no single accepted statistic for selection of LCA number of classes, we brought the 7-class and 10-class models to the DCYF project sponsors and steering committee for discussion and final model selection. The consensus was that the 10-class model offered more specificity, so it is discussed in this report.

DATA SOURCES AND MEASURES

The data for these analyses came from the DSHS Integrated Client Database (ICDB) which integrates administrative data from multiple Washington State government agencies. To select the final measures used in the LCA, we assessed each factor on multiple criteria. First, we eliminated factors that were not common enough in the population to be analytically useful (measures with fewer than 50 children). Second, we selected factors that were associated with at least a 30 percent difference total child welfare payments for children who had the factor relative to children who did not. We eliminated factors that were highly correlated with another measure to prevent issues with model estimation.

Classification variables were the characteristics of children in out-of-home placement that were used in the latent class analysis. With the exception of age, which was measured as of the index month; physical abuse, which was measured during the lifetime; and abandonment or relinquishment which was measured as of the removal, all other classification variables were measured over the 12 months prior to index month (month of removal or start of the study period for children removed prior to the study).

- **Age 12 to 17:** Age was calculated as of the child's index month and only a flag for the age group 12 to 17 was included in the LCA model.
- **Founded physical abuse in lifetime:** FamLink records of abuse allegations where the child was the named victim were used to create a flag for whether the child ever had a founded physical abuse allegation in their lifetime prior to the index month.
- **Abandoned or relinquished at removal:** FamLink records of reason for removal were used to identify children who were abandoned or relinquished at removal.
- **Mental health disorder diagnoses:** Medicaid claims records contained in the ICDB were used to create flags for each of the following mental health diagnostic categories based on ICD-9 and ICD-10 diagnosis codes for the 12 months prior the index month:
 - a. Psychotic disorder diagnosis
 - b. Bipolar diagnosis
 - c. Depression diagnosis
 - d. Anxiety diagnosis
 - e. ADHD diagnosis
 - f. Conduct disorder diagnosis
 - g. Eating disorder diagnosis
- **Psychotropic prescriptions:** Prescription data contained in the ICDB was used to identify children with filled prescriptions in the following categories in the 12 months prior the index month:
 - a. Antipsychotic prescription
 - b. Antidepressant prescription
 - c. Antianxiety prescription
 - d. ADHD prescription
- **Psychotropic polypharmacy:** Prescription data contained in the ICDB was used to identify children who were holding four or more psychotropic prescriptions for at least 60 days in the 12 months prior to the index month.
- **Mental health inpatient service:** Encounter and fee-for-service claims data in the ICDB were used to identify mental health inpatient services.
- **Mental health crisis service:** Encounter and fee-for-service claims data in the ICDB were used to identify mental health crisis services.
- **Possible suicide or self-harm:** ProviderOne claims in the ICDB with ICD-9 or ICD-10 diagnosis codes related to suicide or self-harm or possible suicide or self-harm were used to create this flag.

- **Substance use disorder:** Substance use disorder (SUD) was identified through ICDB data on SUD diagnosis, prescriptions, and treatment, as well as SUD-related arrests. SUD for children under age 2 was excluded, as the measure was likely capturing prenatal substance exposure and not SUD.
- **Overdose or possible overdose:** ProviderOne claims in the ICDB with ICD-9 or ICD-10 diagnosis codes related to overdose or possible overdose were used to create this flag.
- **Other poisoning:** ProviderOne claims in the ICDB with ICD-9 or ICD-10 diagnosis codes related to other poisonings were used to create this flag.
- **Special education:** Records in ICDB from FamLink indicating the child was in special education in school were used to create this flag.
- **Pervasive developmental disorder:** Encounters and fee-for-service claims with ICD-9 or ICD-10 diagnostic codes indicating pervasive developmental disorders were used to create this flag. Pervasive developmental disorders affect all aspects of development, and examples include autism, Down syndrome, and chromosomal disorders.
- **Specific developmental disorder or intellectual disability:** Encounters and fee-for-service claims with ICD-9 or ICD-10 diagnostic codes indicating specific developmental disorders or intellectual disability were used to create this flag. Specific developmental disorders are specific to a single area of development such as expressive language disorder, specific reading disorder, and dyslexia. Intellectual disabilities are specific limitations on intellectual functioning and adaptive behavior.
- **Developmental Disabilities Administration service:** ICDB client data on Developmental Disabilities Administration (DDA) services was used to identify youth who either received services through DDA or who received a determination of positive eligibility for DDA services, even if no paid service was received.
- **Significant health problems:** ICDB client data on diagnoses and prescriptions were used to identify individuals with costly medical conditions, using the Chronic Illness and Payment Systems (CDPS) algorithm for child populations.
- **Pediatric medical complexity algorithm:** ICDB client data on diagnoses from medical claims were used to calculate the Pediatric Medical Complexity Algorithm (PMCA). PMCA classifies children into three distinct groups:
 - a. **Complex chronic disease:** To be classified as having complex chronic disease, children must meet one of the following criteria:
 - i. Child has significant chronic conditions in two or more body systems. Chronic conditions are a physical, mental, or developmental condition expected to last at least a year, will require increased use of health care resources relative to a healthy child and ongoing treatment to control the condition, and will be debilitating, either continuously or episodically. Example: A child with type 1 diabetes AND depression.
 - ii. Child has a progressive condition associated with deteriorating health and decreased life expectancy. Example: A child with cystic fibrosis.
 - iii. Child has a malignancy that is progressive or metastatic and affects life function. Example: a child with leukemia.
 - b. **Noncomplex chronic disease:** To be classified as having a noncomplex chronic disease, children must have a chronic condition(s) in only a single body system that is not progressive, and have no malignancies. Example: A child with type 1 diabetes and no other chronic condition.
 - c. **No chronic disease:** To be classified as having no chronic disease a child must have no chronic conditions, progressive conditions, or malignancies. While the child may not have diagnosis for chronic conditions, the child may have diagnoses for acute conditions and fall into this category (e.g. ear infection).
- **Two or more outpatient emergency department visits:** ICDB client data on emergency department visits was used to create this flag.
- **Injury treatment:** ICDB client data on claims with ICD-9 or ICD-10 codes related to injury treatment was used to create this flag.
- **Criminal justice involvement:** ICDB data on arrests or convictions were used to create this flag.

Outcome variables were measured over the 12 months following the index month (either the month of removal or start of the study period for children replacement prior to the start of the study).

- **Single night placement:** Single night placements were defined as placement episodes that were shorter than two nights, excluding runaway episodes. Adjacent placement episodes with a zero-day interval in between and which were with the same provider were collapsed together and were not counted as single night placements.
- **Exceptional cost payment:** Exceptional cost payments are child-specific payments to foster families for child placement and were identified using the following set of payment codes from FamLink. Note sometimes the exceptional cost payment codes listed below could be used for other purposes such as one-time payments for costs not elsewhere classified (e.g. camp registration fee). However, the majority of use of these payments codes was for child-specific exceptional cost placements.

FamLink Service Type	FamLink Service Type Name
379	Basic Special Supervision \$0 -\$1500
593000	Basic Special Supervision \$1500 & above
845004	CPA Special Supervision \$0 - \$1500
845005	CPA Special Supervision \$1500 & above
468	Restricted FC (Placement \$) Pd to Bus
469	Restricted FC (Placement \$) Reimbursement
473	Restricted FC Support Pd to Bus
474	Restricted FC Support Reimbursement
119003	Restricted FC Support(IV-E)Pd to Bus
119004	Restricted FC Support(IV-E)Reimbursement
471	Restricted Receiving Care Pd to Busns
472	Restricted Receiving Care Reimbursement
1377001	Short Term/High Cost - Pd to Bus
1377002	Short Term/High Cost - Reimbursement
380	Spec Suprvs Med/Behvrial/Phys\$1500-\$3000

- **Hotel or office stay:** Rarely, when a suitable placement cannot be found on short notice, children can be placed in a hotel or office on a night to night basis. DCYF shared a tracking document of these placement exceptions and we create a flag if a child experienced a hotel or office stay within 12 months of their index month.
- **Behavior Rehabilitation Services:** Behavior Rehabilitation Services (BRS) provides comprehensive services for children with mental, developmental, emotional, and/or behavioral difficulties that exceed the care capacity of regular foster families. BRS was identified using payment codes from FamLink.
- **Foster Care (state):** State licensed foster care was identified using payment codes in FamLink.

FamLink Service Type	FamLink Service Type Name
38	Basic Foster Care 0-5 In-State
39	Basic Foster Care 12+ In-State
40	Basic Foster Care 6-11 In-State

- **Foster Care (Child Placing Agencies):** DCYF contracts with Child Placing Agencies (CPA) to recruit and oversee some foster homes. CPA licensed foster care was identified using payment codes in FamLink.

FamLink Service Type	FamLink Service Type Name
302	CPA Basic Foster Care 0-5 Instate
303	CPA Basic Foster Care 12+ Instate
304	CPA Basic Foster Care 6-11 Instate

- **Foster Care Level II:** Foster parents who care for children who require higher levels of care receive increased monthly maintenance payments. Children whose foster parents received Level II foster care payments were identified using payment codes in FamLink.

FamLink Service Type	FamLink Service Type Name
224	Foster Care Level II
298	CPA - Foster Care Level II
393	Tribe Not a CPA - Foster Care Level II
503003	EFC - Foster Care Level II
522002	EFC - CPA Foster Care Level II
878000	NO!EFC-PCA - Basic FC Level II
879000	NO!EFC-PCA - CPA Level II
880012	T-PCA - Foster Care Level II
880019	T-PCA - CPA Foster Care Level II

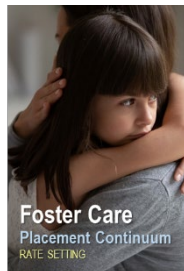
- **Foster Care Level III:** Foster parents who care for children who require higher levels of care receive increased monthly maintenance payments. Children whose foster parents received Level III foster care payments were identified using payment codes in FamLink.

FamLink Service Type	FamLink Service Type Name
225	Foster Care Level III
299	CPA - Foster Care Level III
394	Tribe Not a CPA - Foster Care Level III
503004	EFC - Foster Care Level III
525000	EFC - CPA Foster Care Level III
878001	NO!EFC-PCA - Basic FC Level III
879001	NO!EFC-PCA - CPA Level III
880013	T-PCA - Foster Care Level III
880020	T-PCA - CPA Foster Care Level III

- **Foster Care Level IV:** Foster parents who care for children who require higher levels of care receive increased monthly maintenance payments. Children whose foster parents received Level IV foster care payments were identified using payment codes in FamLink.

FamLink Service Type	FamLink Service Type Name
226	Foster Care Level IV
300	CPA - Foster Care Level IV
395	Tribe Not a CPA - Foster Care Level IV
266009	Foster Care Level IV
266011	CPA - Foster Care Level IV
503005	EFC - Foster Care Level IV
522005	EFC - CPA Foster Care Level IV
878002	NO!EFC-PCA - Basic FC Level IV
879002	NO!EFC-PCA-CPA Level IV
880014	T-PCA - Foster Care Level IV
880021	T-PCA - CPA Foster Care Level IV

- **Unlicensed care:** Children can be placed with unlicensed kin caregivers or other suitable adults while in out-of-home care. Stays in unlicensed care were identified using placement setting codes from the placement episode table in FamLink.
- **Average days in unlicensed care:** Children can be placed with unlicensed kin caregivers or other suitable adults while in out-of-home care. The number of days in unlicensed care was identified using start and end dates for placement events where the placement setting indicated unlicensed care.
- **Total payments:** Total payment refers to all payments linked to an individual child from the FamLink payment table in the 12 months following removal or the start of the study period. Payments are not limited to foster care maintenance payments and include payments in such categories as behavior rehabilitation, transportation, respite, mental health, receiving care, concrete goods, adoption support, etc.
- **Payment per day of care:** Total payments were averaged over the days the child spent in out-of-home care in the 12 months after removal (or start of study period).
- **Candidate measures not in the LCA:** The following measures were candidates for the LCA but did not meet criteria for inclusion outlined above:
 - Founded neglect in lifetime
 - Founded sexual abuse in lifetime
 - Previous out-of-home placement
 - Any mental health treatment need
 - Anti-mania prescription
 - Inpatient hospitalization
 - Received SUD services



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