Using [linked] Data to Shape Outcomes…

Implications for practice and policy in early childhood settings

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Children's Data Network
USC Suzanne Dworak-Peck
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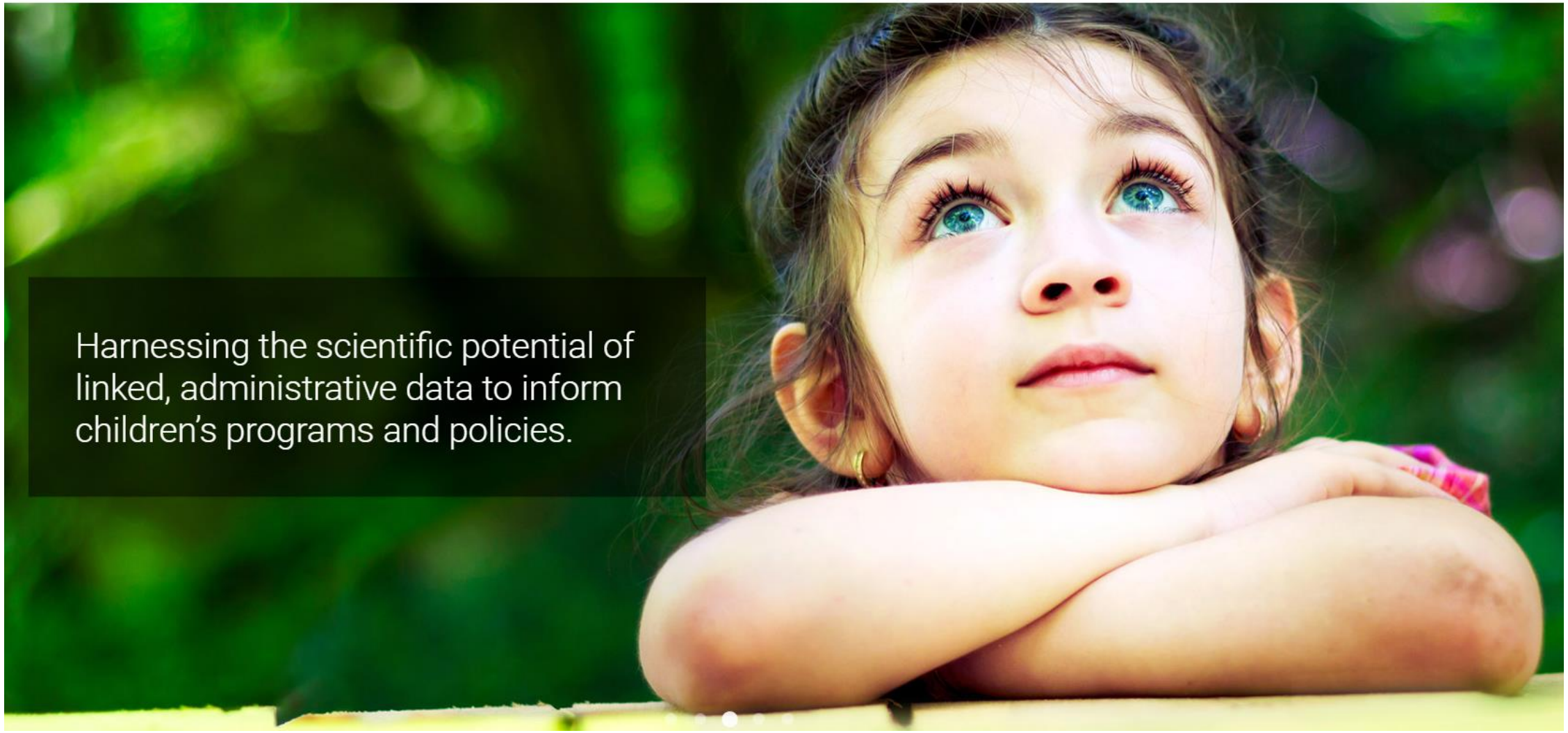
ABOUT US RESEARCH KNOWLEDGE SNAPSHOTS PEOPLE PARTNERS NEWS



first 5 la
Giving kids the best start

CONRAD N. Hilton FOUNDATION

HEISING-SIMONS FOUNDATION

THE ANNIE E. CASEY FOUNDATION

overview

1. CDN 101 *(and why record linkage rocks)*
2. Birth records *(and how they can be used…)*
3. Family support projects *(research)*
4. Real time applications *(PRM)*

section

1

CDN 101

(and why you should love record linkage!)

animation

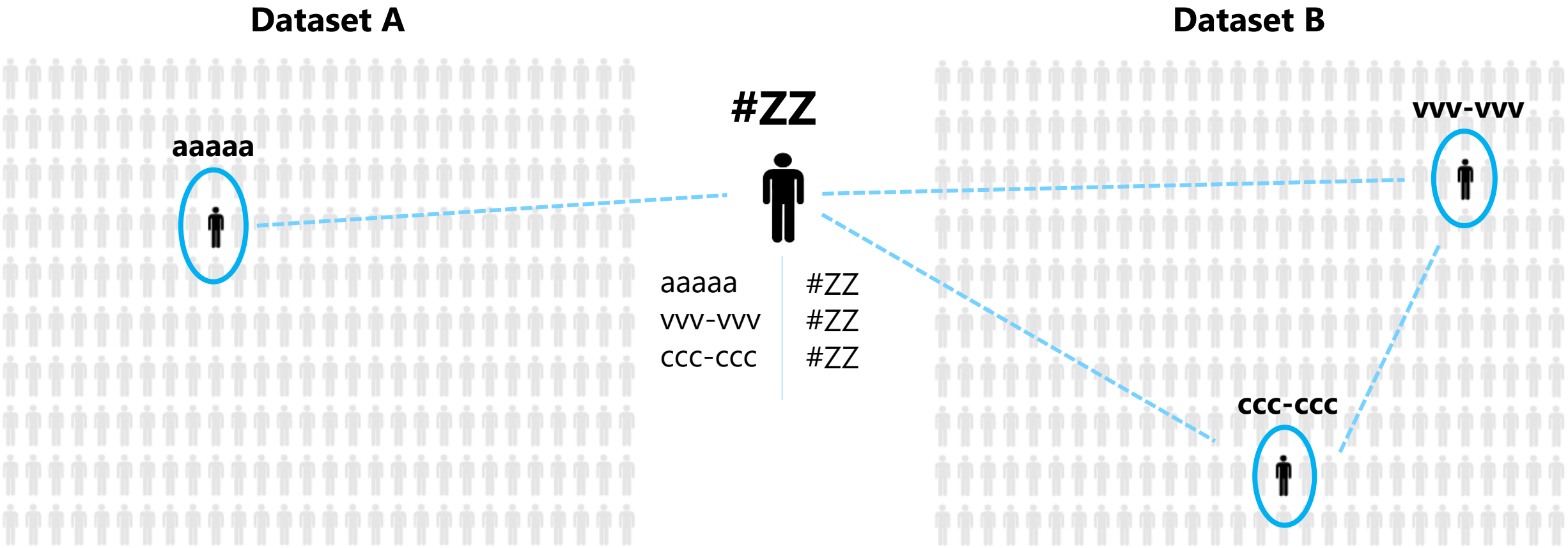
Overview

What is linked administrative data? And why is it important?

http://www.datanetwork.org/about-us/

linkage

Probabilistic de-duplication and cross-program linkage of records using an algorithm trained / customized for California data (*machine learning*)



U.S. Child Study Canceled After $1.3 Billion

Don't Miss Out — Follow us on:

by
Alexander Wayne

8:47 AM PST
December 15, 2014

(Corrects name of pediatrics group in sixth paragraph.)

(Bloomberg) -- The U.S. government canceled one of its most ambitious health research projects, an effort to follow 100,000 children from before birth through adolescence, after spending about $1.3 billion since 2007 without it ever really getting off the ground.

section

2

Birth Records

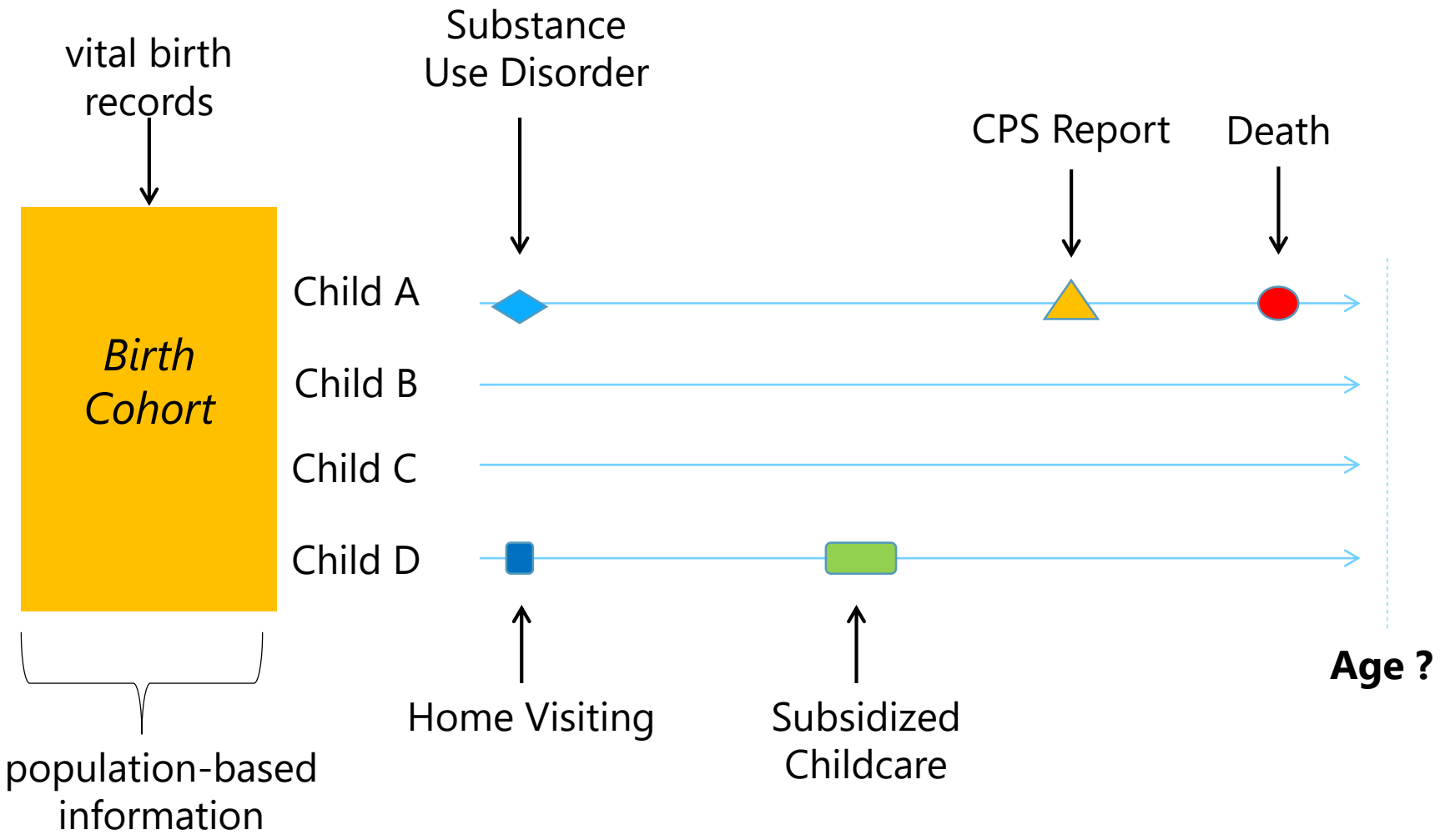
(so much more than what parents bring home from the hospital…)

"Each person in the world creates a Book of Life. This Book starts with birth and ends with death. Its pages are made up of the records of the principal events in life. Record linkage is the name given to the process of assembling the pages of this Book…"

Halbert L. Dunn, 1946

birth records?

1. Universally collected *(good for research & real-time applications)*
2. Nationally standardized and well-documented fields
3. Information for three individuals *(child, mother, father)*
4. Provides a population-base *(spine)* for developing prospective studies
5. Health, demographic, financial, and service information


vital birth records
Substance Use Disorder
CPS Report
Death
Birth Cohort
Child A
Child B
Child C
Child D
Home Visiting
Subsidized Childcare
Age ?
population-based information

1

Calculating Cumulative Rates of Child Welfare Involvement

AJPH

A PUBLICATION OF THE AMERICAN PUBLIC HEALTH ASSOCIATION

Home Articles Authors Subscrip

Home » American Journal of Public Health (AJPH) » **February 2017**

Lifetime Prevalence of Investigating Child Maltreatment Among US Children

Hyunil Kim MSW, **Christopher Wildeman** PhD, **Melissa Jonson-Reid** PhD, MSW, and **Brett Drake** PhD, MSW

[+] Author affiliations, information, and correspondence details

Accepted: October 24, 2016 Published Online: January 11, 2017

Abstract **Full Text** **References** **Supplements** **PDF** **PDF Plus**

Objectives. To estimate the lifetime prevalence of official investigations for child maltreatment among children in the United States.

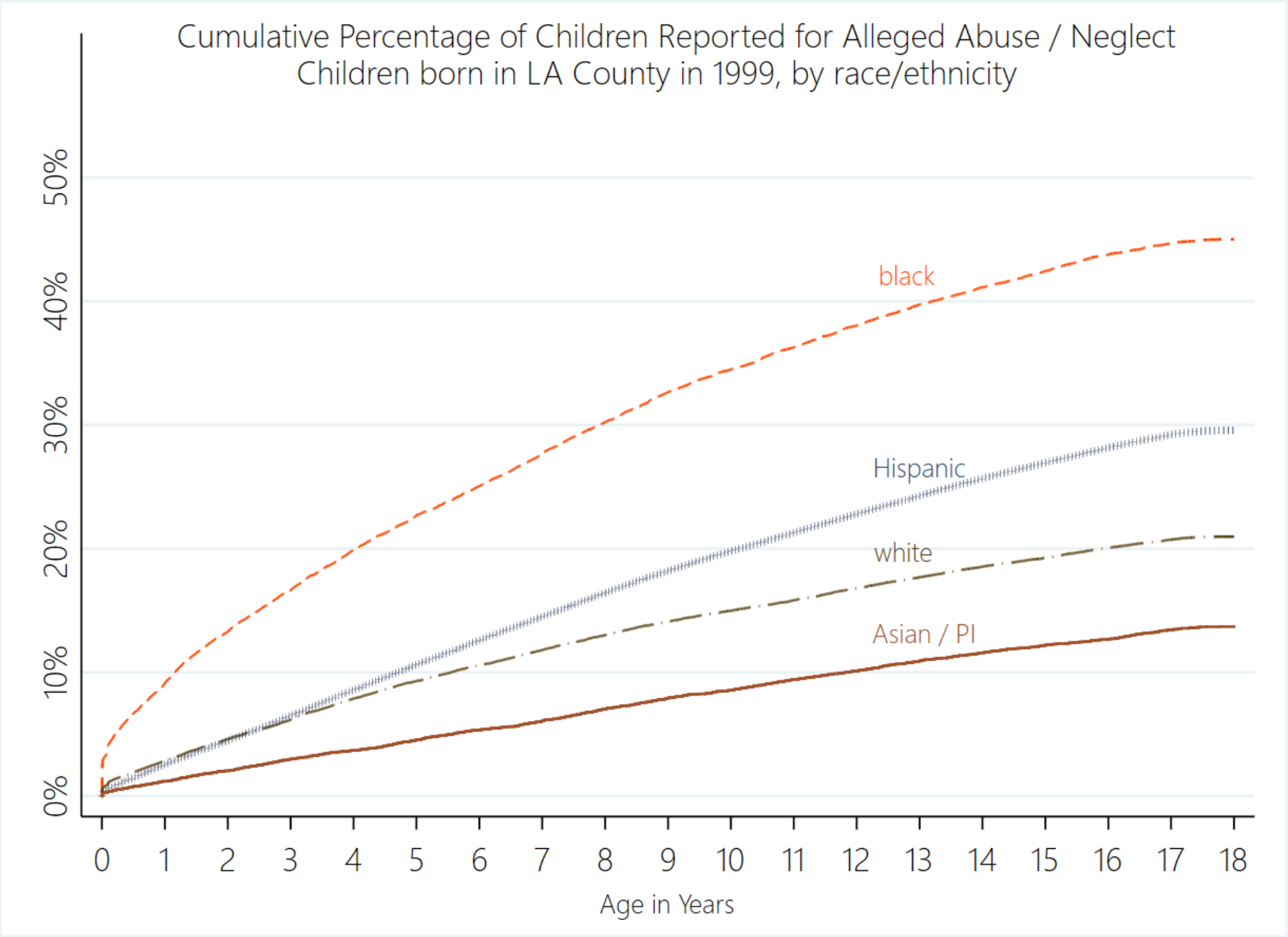
Methods. We used the National Child Abuse and Neglect Data System Child Files (2003–2014) and Census data to develop synthetic cohort life tables to estimate the cumulative prevalence of reported childhood maltreatment. We extend previous work, which explored only confirmed rates of maltreatment, and we add new estimations of maltreatment by subtype, age, and ethnicity.

Los Angeles Times

Science Now

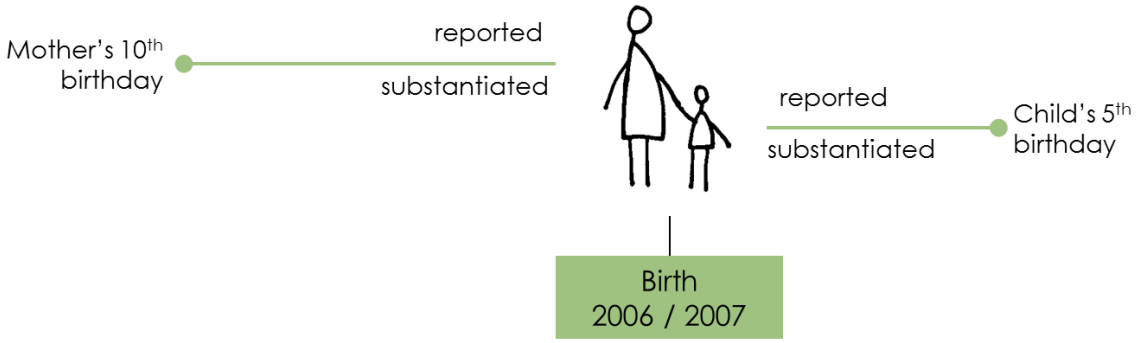
Discoveries from the world of science and medici

1 in 8 U.S. children will become victim of serious abuse or neglect


Cumulative Percentage of Children Reported for Alleged Abuse / Neglect
Children born in LA County in 1999, by race/ethnicity
50%
40%
30%
20%
10%
0%
black
Hispanic
white
Asian / PI
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
Age in Years

2

Documenting intergenerational maltreatment dynamics



ELSEVIER
JOURNAL OF ADOLESCENT HEALTH
www.jahonline.org

Adolescent health brief

A Population-Based Examination of Maltreatment History Among Adolescent Mothers in California

Emily Putn
Jaclyn Clev
[a] School of Social
[b] Center for Socia

Article history
Keywords: Te

American Journal of Epidemiology
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DOI: 10.1093/aje/kwu321

Original Contribution

A Population-Level and Longitudinal Study of Adolescent Mothers and Intergenerational Maltreatment

Emily Putnam-H
Penelope K. Tric
* Correspondence to
1150 South Olive Stre

Initially submitted C

For teena
history of ma
arous teen r
we used CP

Infant Birth Weight and Maltreatment of Adolescent Mothers

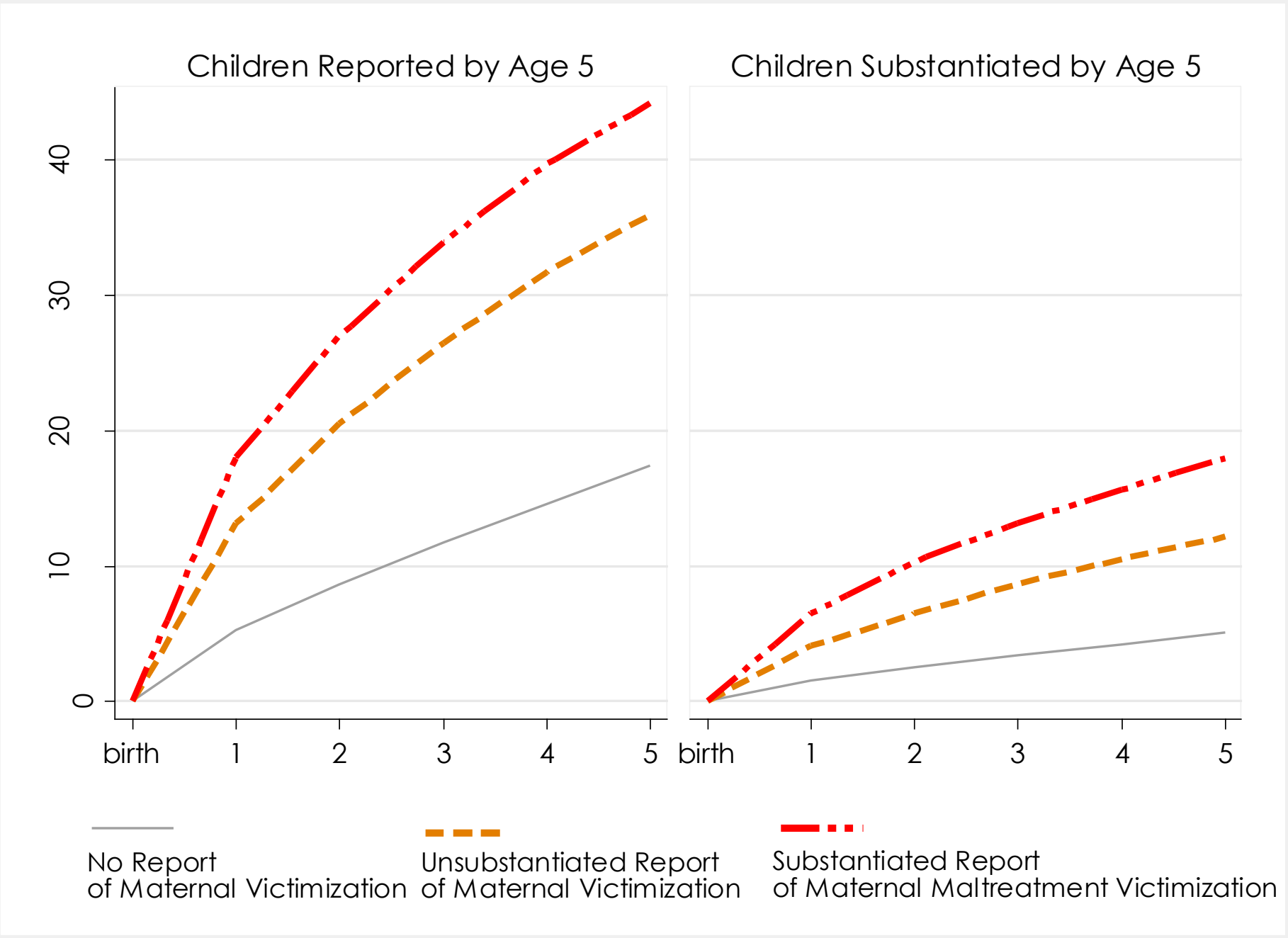
Julie A. Cederbaum, PhD, Emily Putnam-Hornstein, PhD, Bryn King, MSW, Kaycee Gilbert, BA, Barbara Needell, PhD

Background: Emerging literature suggests that maternal exposure to stress and adversity throughout the life course may have health consequences for offspring.

Purpose: To examine the maltreatment history of adolescent mothers as an independent predictor of infant birth weight.

Methods: Birth records for all infants born between 2007 and 2009 to mothers aged 12–19 years were extracted from California's vital statistics files. Maternal information from the birth record was linked to child protection data (1999–2009) to identify young mothers with substantiated maltreatment. Generalized linear models run in 2012 were used to estimate the relationship between maternal maltreatment and infant birth weight, after adjusting for maternal sociodemographic risk factors and health behaviors.

Results: Among the 153,762 singleton infants born to adolescent mothers, 7.1% (n=10,886) weighed <2500 g at birth. Of all adolescent mothers, 13.6% had been substantiated as victims of maltreatment after age 10 years and before giving birth. After adjusting for known factors predictive of negative birth outcomes, maltreatment history was associated with a slight yet significantly


Children Reported by Age 5
Children Substantiated by Age 5
0
10
20
30
40
birth
1
2
3
4
5
No Report of Maternal Victimization
Unsubstantiated Report of Maternal Victimization
Substantiated Report of Maternal Maltreatment Victimization

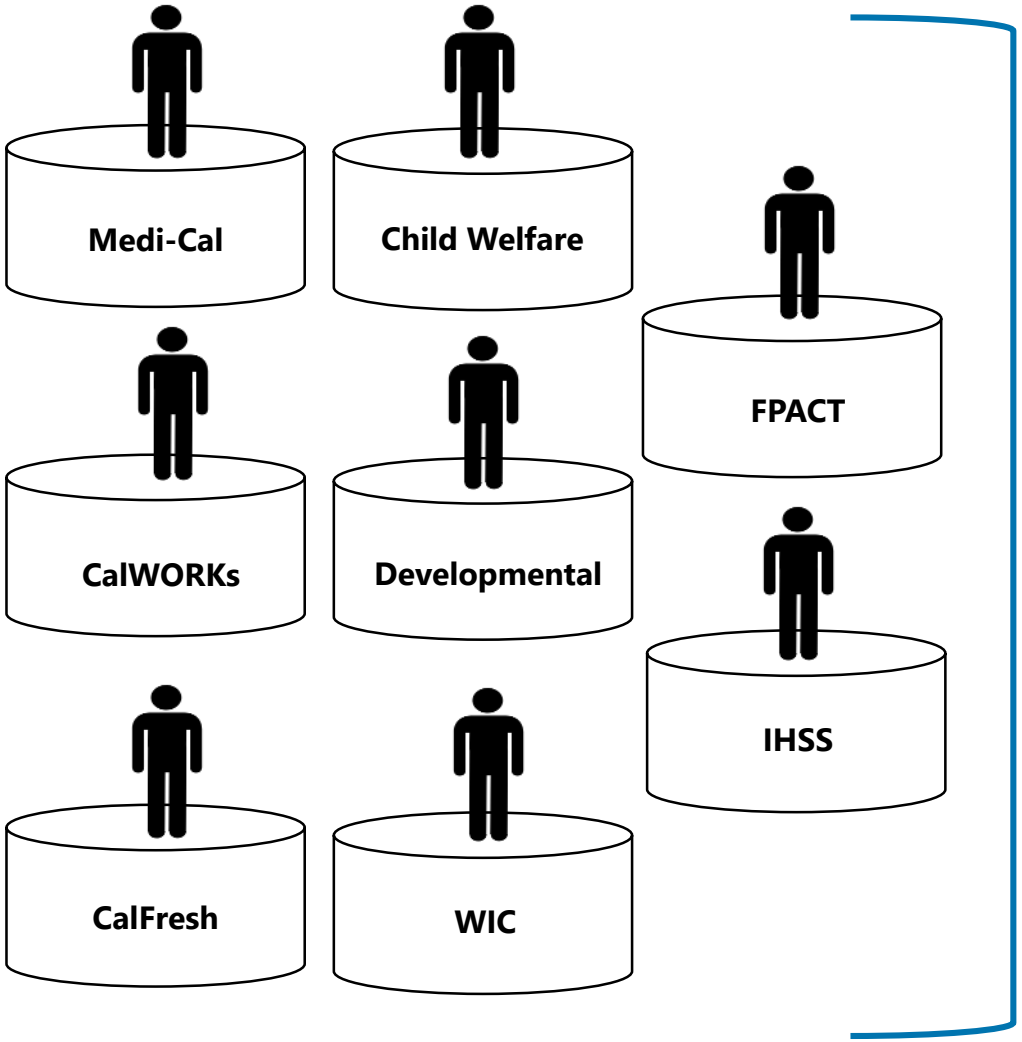
section

3

Family Support Projects

(in various stages of development...)

structure

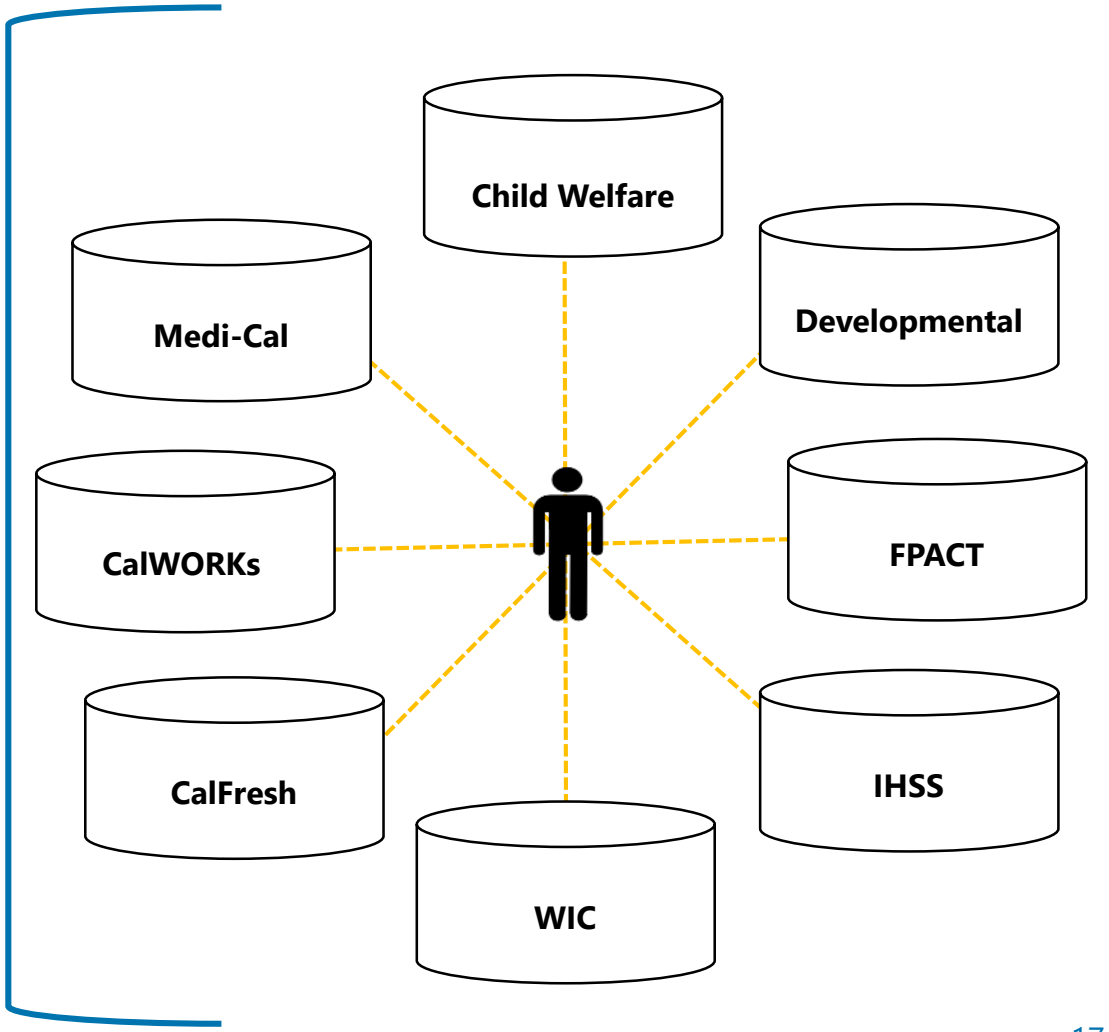


(today)

Research & Development

Transactional

(in development)



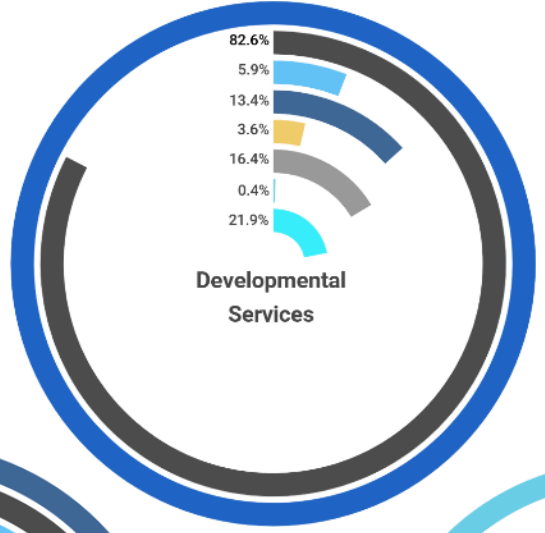
CHHS Clients [2016]

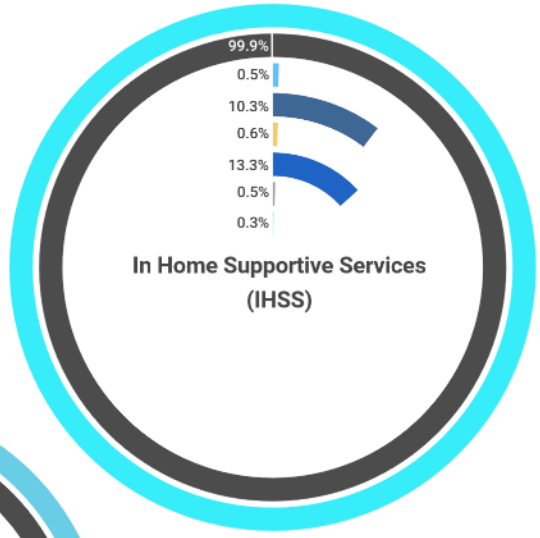
18,176,928 Medi-Cal	**365,114** Developmental
1,840,427 CalWORKs	**2,000,480** WIC
5,808,535 CalFresh	**1,928,708** FPACT
331,986 Child Welfare	**603,626** IHSS

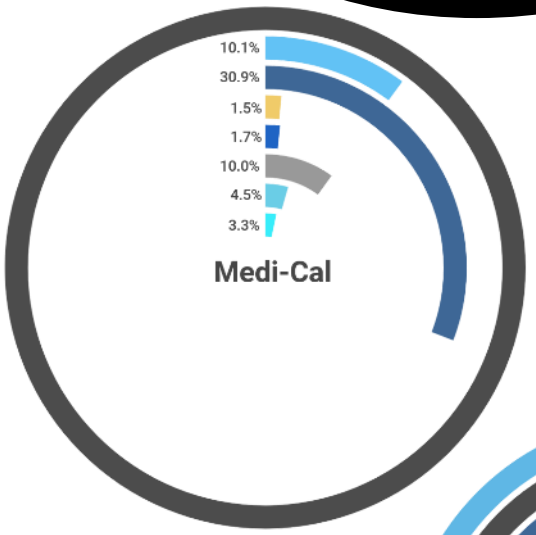
Linkage Matrix

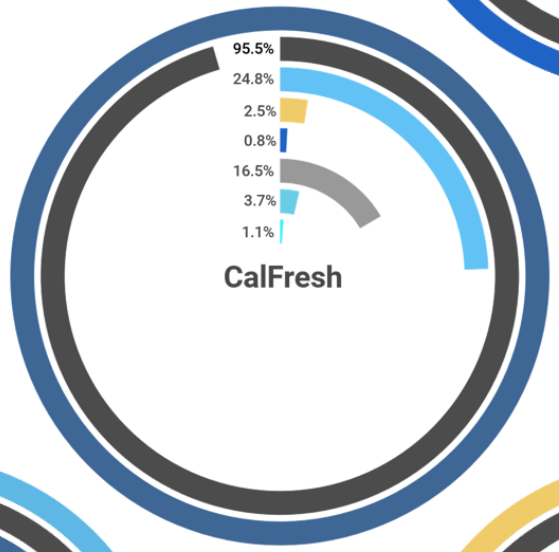
		Medi-Cal	CalWORKs	CalFresh	Child Welfare	Developmental	WIC	FPACT	IHSS
Medi-Cal			10.1%	30.9%	1.5%	1.7%	10.0%	4.5%	3.3%
CalWORKs		99.9%		91.2%	5.2%	1.2%	24.8%	3.3%	0.2%
CalFresh		95.5%	28.5%		2.5%	0.8%	16.5%	3.6%	1.1%
Child Welfare	*child*	93.0%	48.4%	48.6%		8.2%	30.1%	1.5%	0.5%
	parent	64.2%	14.3%	39.6%		1.2%	7.3%	7.4%	1.5%
Developmental		82.6%	5.9%	13.4%	3.6%		16.4%	0.4%	21.9%
WIC		89.2%	23.1%	49.1%	2.9%	3.1%		6.2%	0.2%
FPACT		45.5%	3.4%	12.2%	1.0%	0.1%	7.1%		0.1%
IHSS		99.9%	0.5%	10.3%	0.6%	13.3%	0.5%	0.3%	

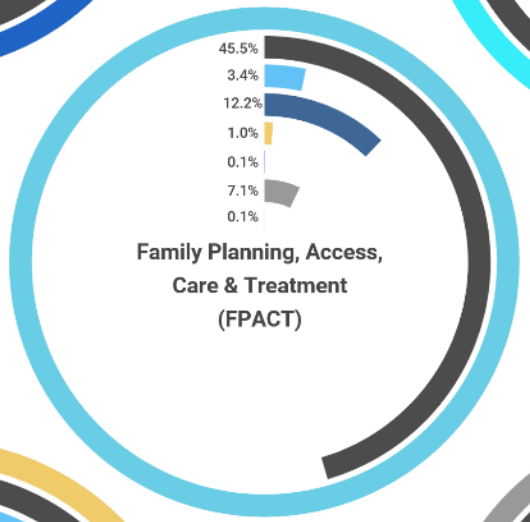
Cross-Program Data

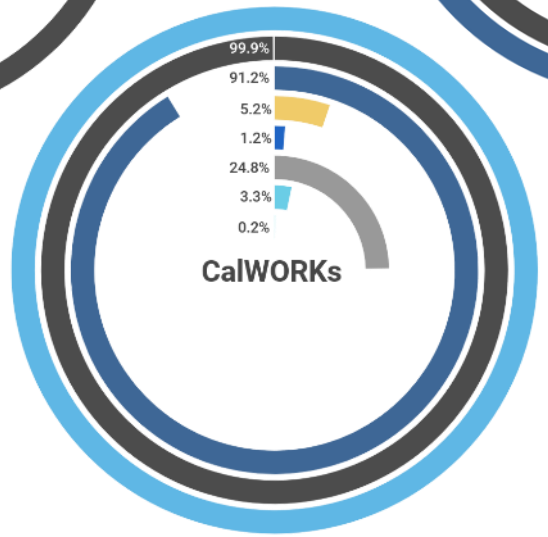


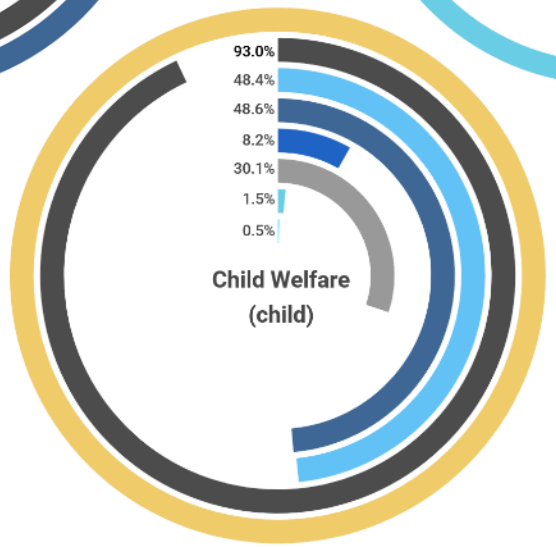


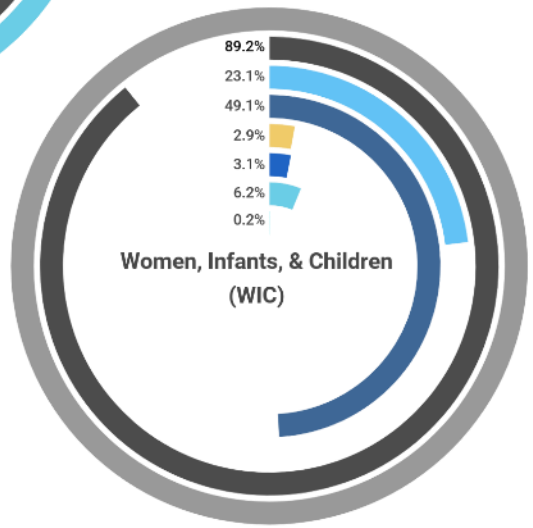










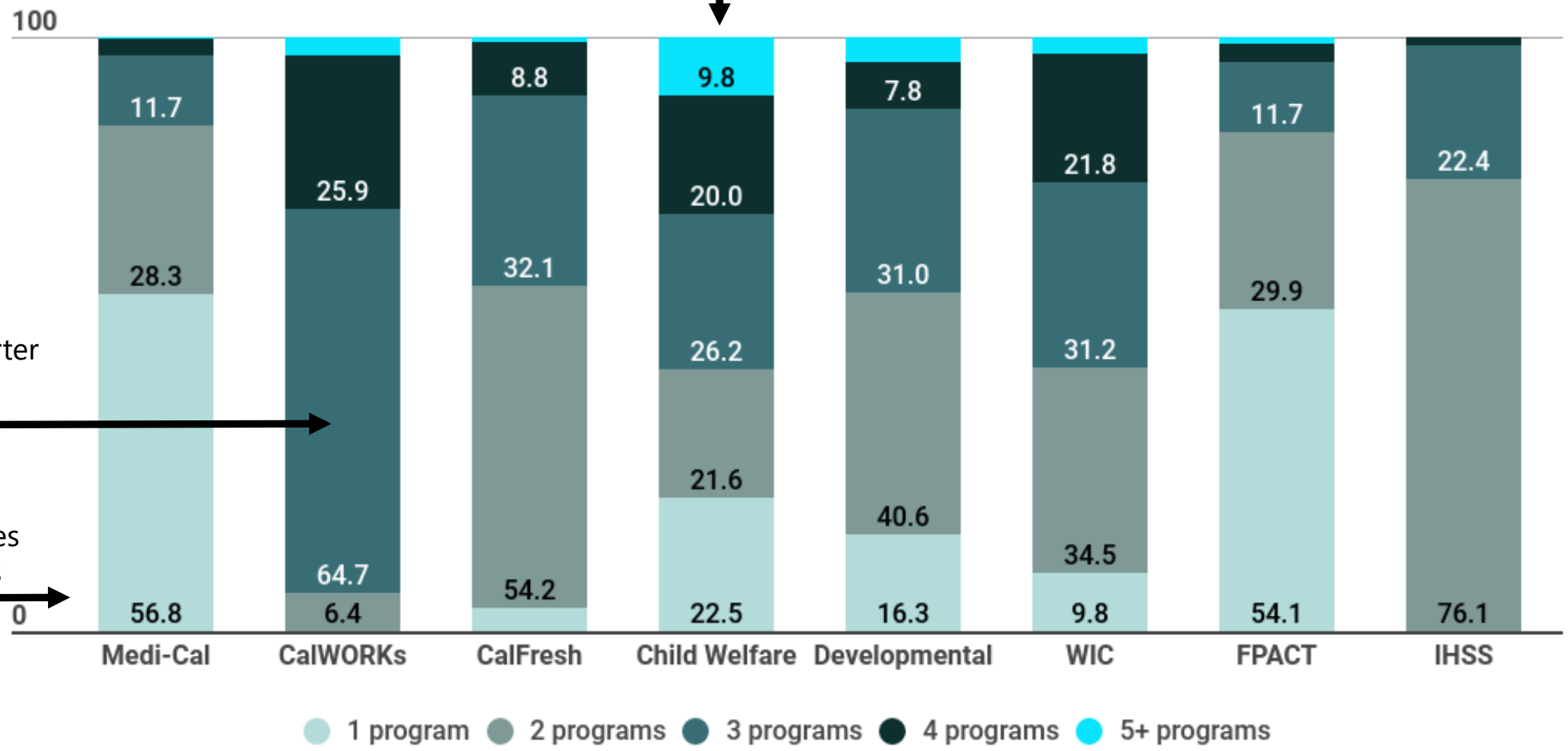


Multi-Program Involvement (by program)

1 in 10 individuals involved with the child welfare system touched at least 5 CHHS programs in 2016

Two-thirds of CalWORKs clients received benefits from 3 CHHS programs in 2016; another quarter were involved with 4 programs

More than half of Medi-Cal enrollees did not receive services from any other CHHS programs

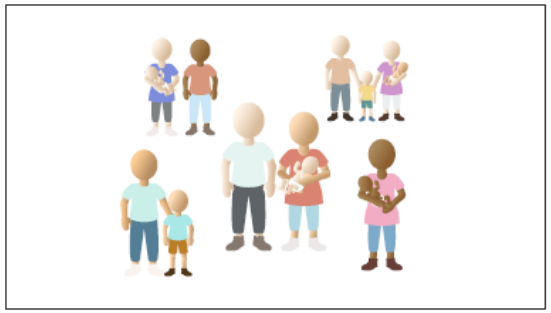


California Strong Start Index (CASSi)

Information universally registered at birth can be used to document assets available to each California newborn at birth. Although assets and conditions at birth are not destiny, thoughtful supports and services may be required to ensure that children with fewer assets find themselves on equal footing with their peers in California. Monitoring the distribution of assets among newborns in different communities can help ensure our investments are intentional and equitable.

- Family
- Health
- Service
- Financial

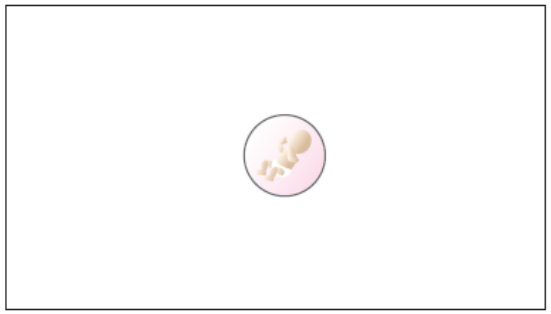
0-12



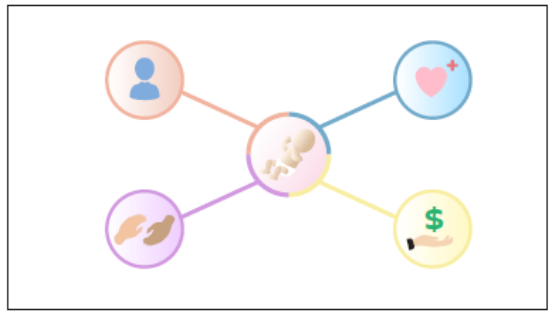
1 When a baby is born,

2 vital information is generated about the

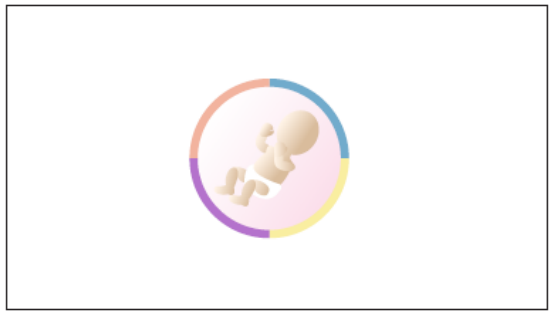
3 resources available to that child and family.



4 Assets, in form of



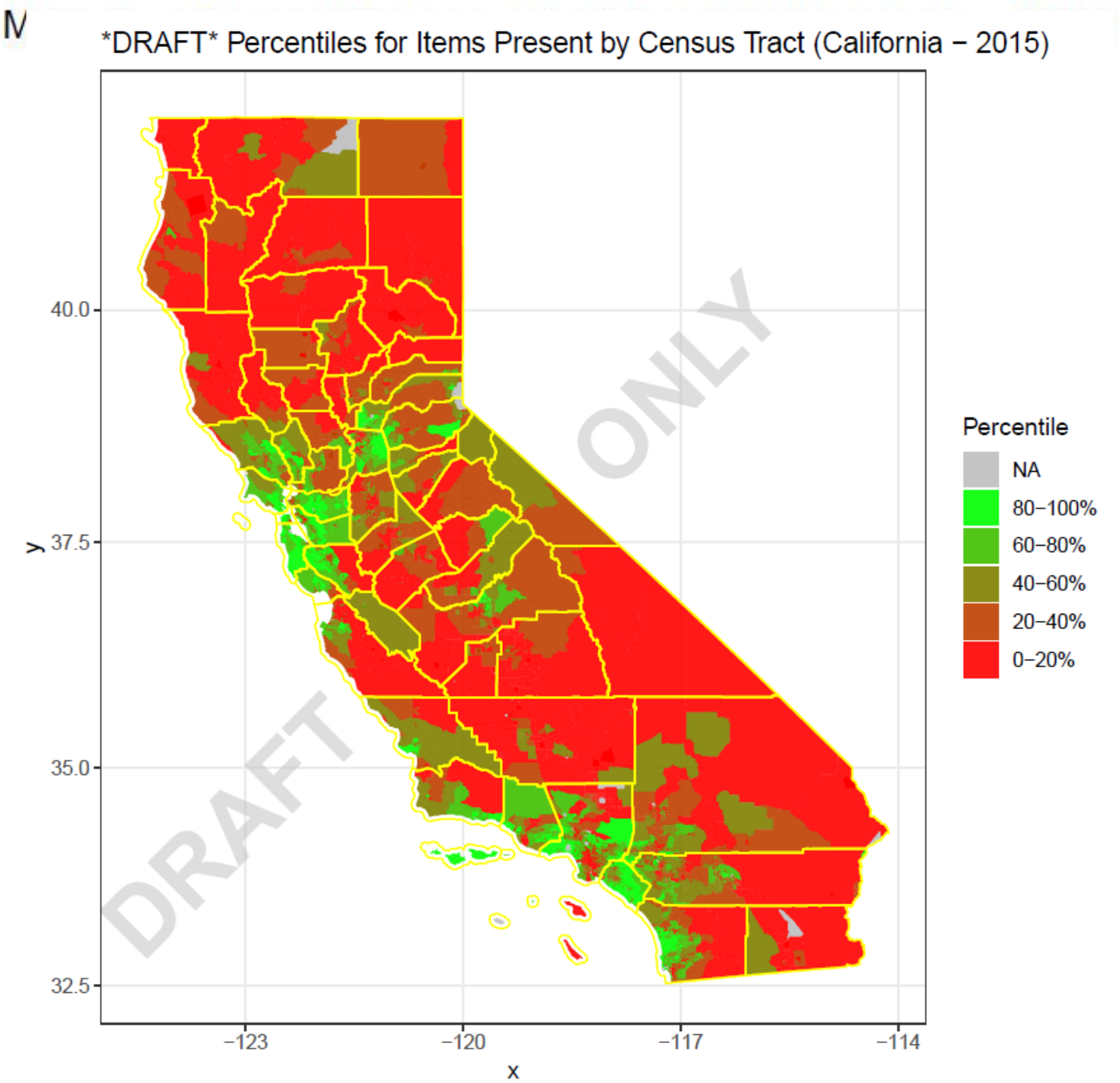
5 family, service, financial, and health assets are tied to good outcomes resilience throughout the lifecourse



6 A half a million babies are

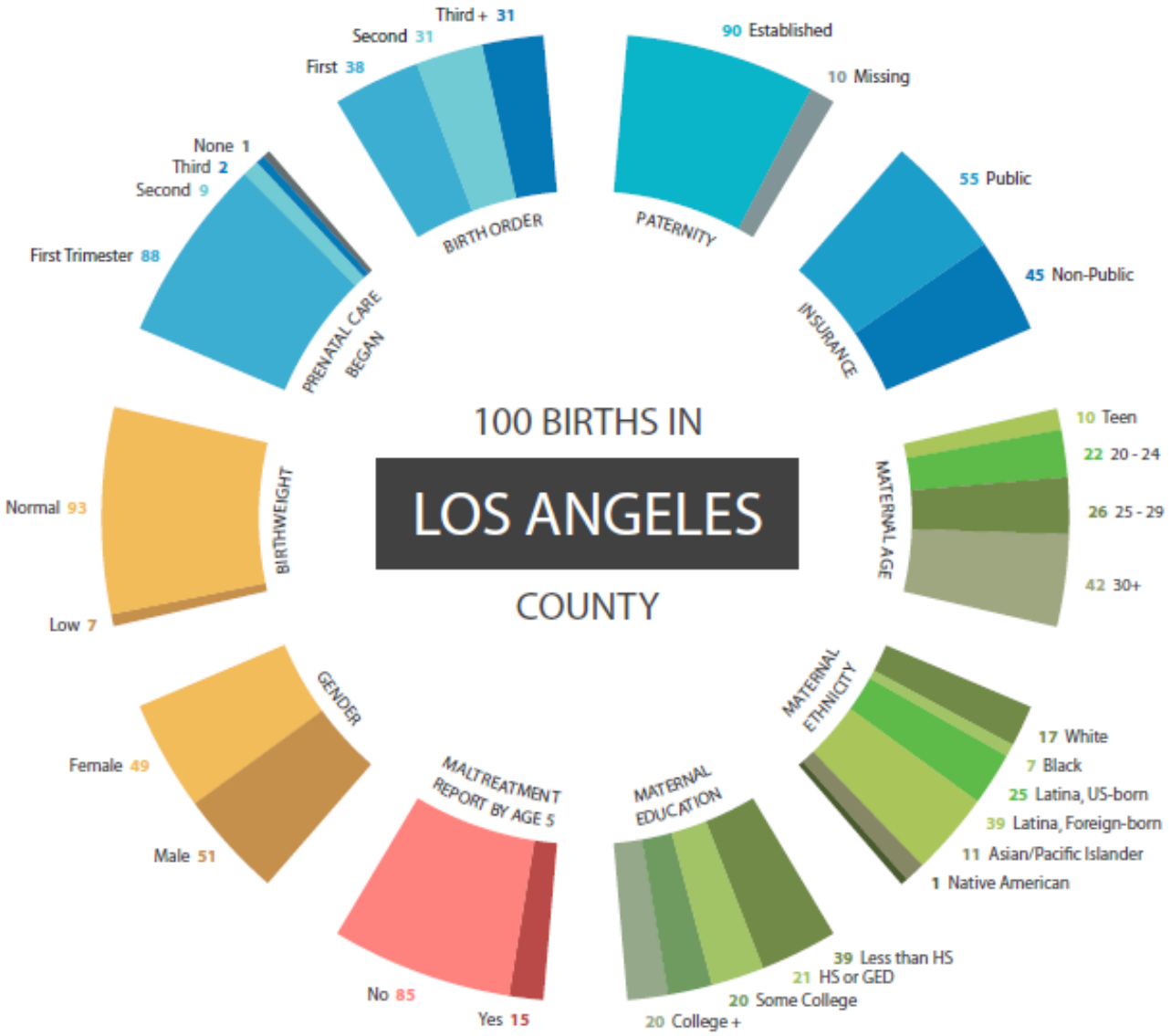
draft maps

- The CASSi score is generated by summing the total number of assets (1-12) as coded from each child's (de-identified) birth record.
- Child-specific scores are then aggregated by residential census tract and a mean for census tract asset score is calculated.
- Means for all census tracts in California are placed along a continuum, and then grouped into quintiles (e.g., 20% groupings), each representing where that census tract's mean CASSi score falls relative to all other census tracts in California.

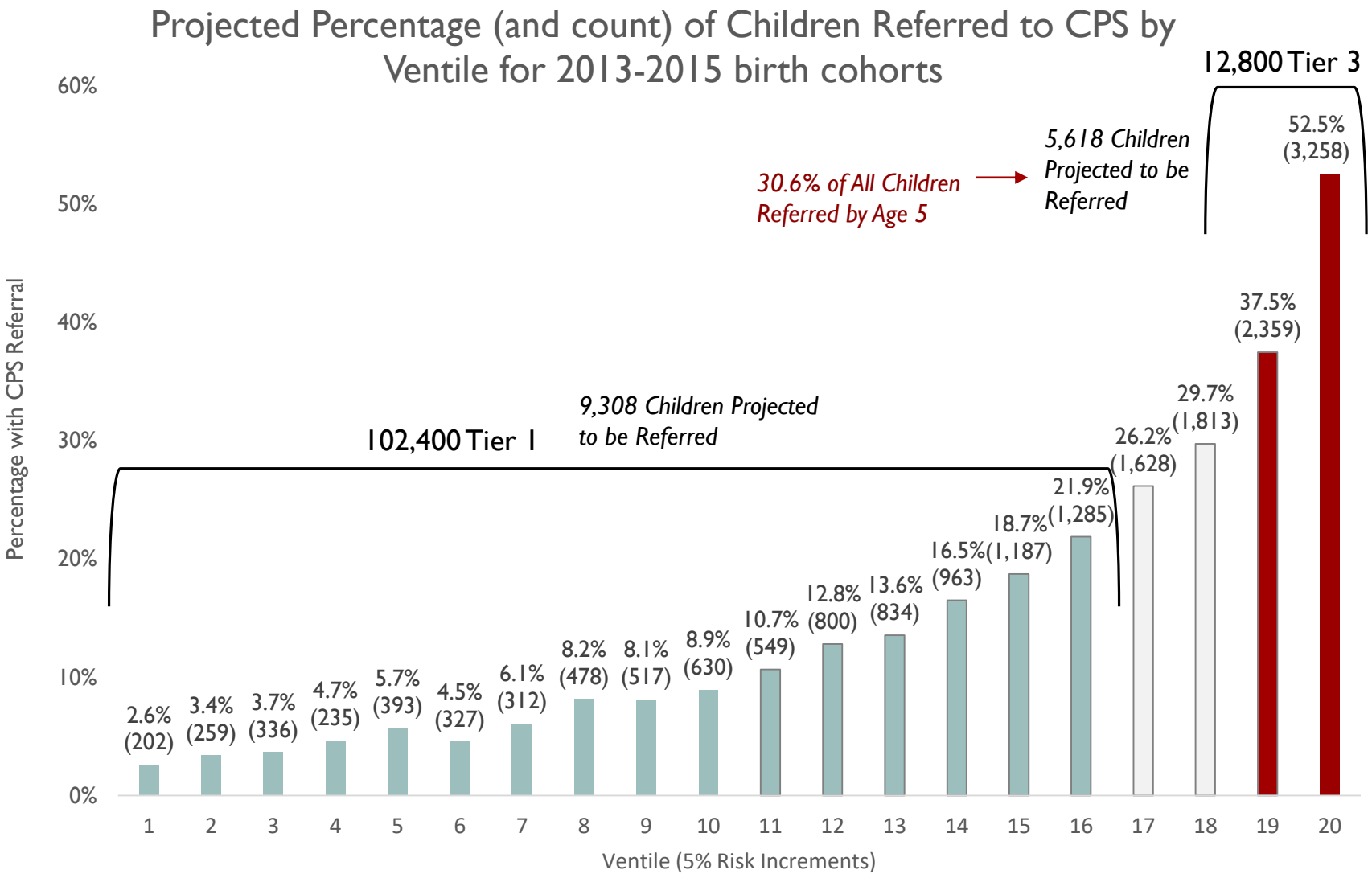


service slots

Risk stratification for service delivery / maltreatment prevention



	All Birth Records for Los Angeles County		All Birth Records for XXX XXX Hospital (N=5,129)	
At-Risk Birth Score	n	col%	n	col%
1	15,429	12%	127	2.5
2	14,420	11%	206	4.0
3	13,563	10%	302	5.8
4	12,153	9%	337	6.5
5	12,639	10%	406	7.8
6	11,805	9%	546	10.5
7	12,063	9%	530	10.2
8	12,867	10%	703	13.6
9	12,675	10%	779	15.0
10	12,613	10%	1,253	24.2


Projected Percentage (and count) of Children Referred to CPS by Ventile for 2013-2015 birth cohorts
Percentage with CPS Referral
60%
50%
40%
30%
20%
10%
0%
12,800 Tier 3
5,618 Children Projected to be Referred
30.6% of All Children Referred by Age 5
9,308 Children Projected to be Referred
102,400 Tier 1
2.6% (202)
3.4% (259)
3.7% (336)
4.7% (235)
5.7% (393)
4.5% (327)
6.1% (312)
8.2% (478)
8.1% (517)
8.9% (630)
10.7% (549)
12.8% (800)
13.6% (834)
16.5% (963)
18.7% (1,187)
21.9% (1,285)
26.2% (1,628)
29.7% (1,813)
37.5% (2,359)
52.5% (3,258)
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20
Ventile (5% Risk Increments)

section

4

Real Time Applications

(not just research…)

Assessing Children's Risk Using Administrative Records: A Proof of Concept Predictive Risk Modeling (PRM) Project

[www.datanetwork.org]

Summary

The increased availability and quality of administrative data during the last several decades have led to growing interest in tools and statistical models that can be deployed in real time to predict future events. Predictive risk modeling (PRM) is one such class of tools. PRM is used to automatically generate a risk score for each individual in a given data system, providing a efficient means of screening populations without requiring any additional data entry.

The goal of the project is to establish whether the statistical modeling of historical child protection records can be used to improve the initial screening and triaging of child abuse and neglect referrals. Although this project will not result in a tool without future technological investments, it will lead to the development of data that can inform (in an open and transparent fashion) the opportunities

FUNDERS

California Department of Social Services (CDSS)

Office of Child Abuse Prevention (OCAP)

Laura and John Arnold Foundation (LJAF)

[system] Outcomes

Victim Demographics

Victim Current

Victim History

Referral

Siblings

Maternal

Paternal

Other

Maltreatment Referral

Follow-up Referral

* Follow-up Referrals (3+ total) *

* Follow-up Substantiation *

Follow-up Inconclusive / Substantiation

Case Opening

* Foster Care Placement *

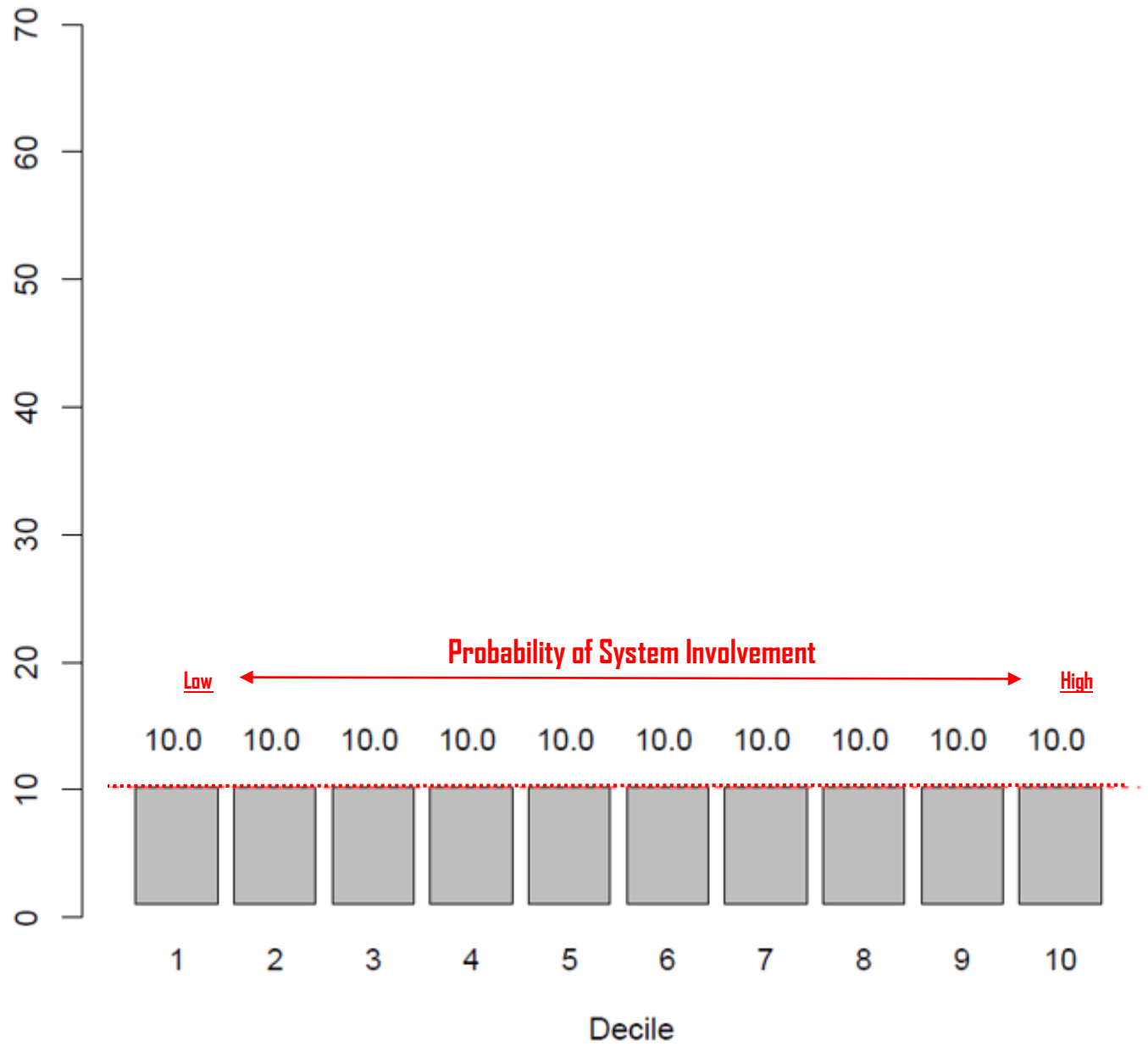
0 6 12 18 24 ← *long-arc risk…*

months

CWS / CMS

"risk deciles"

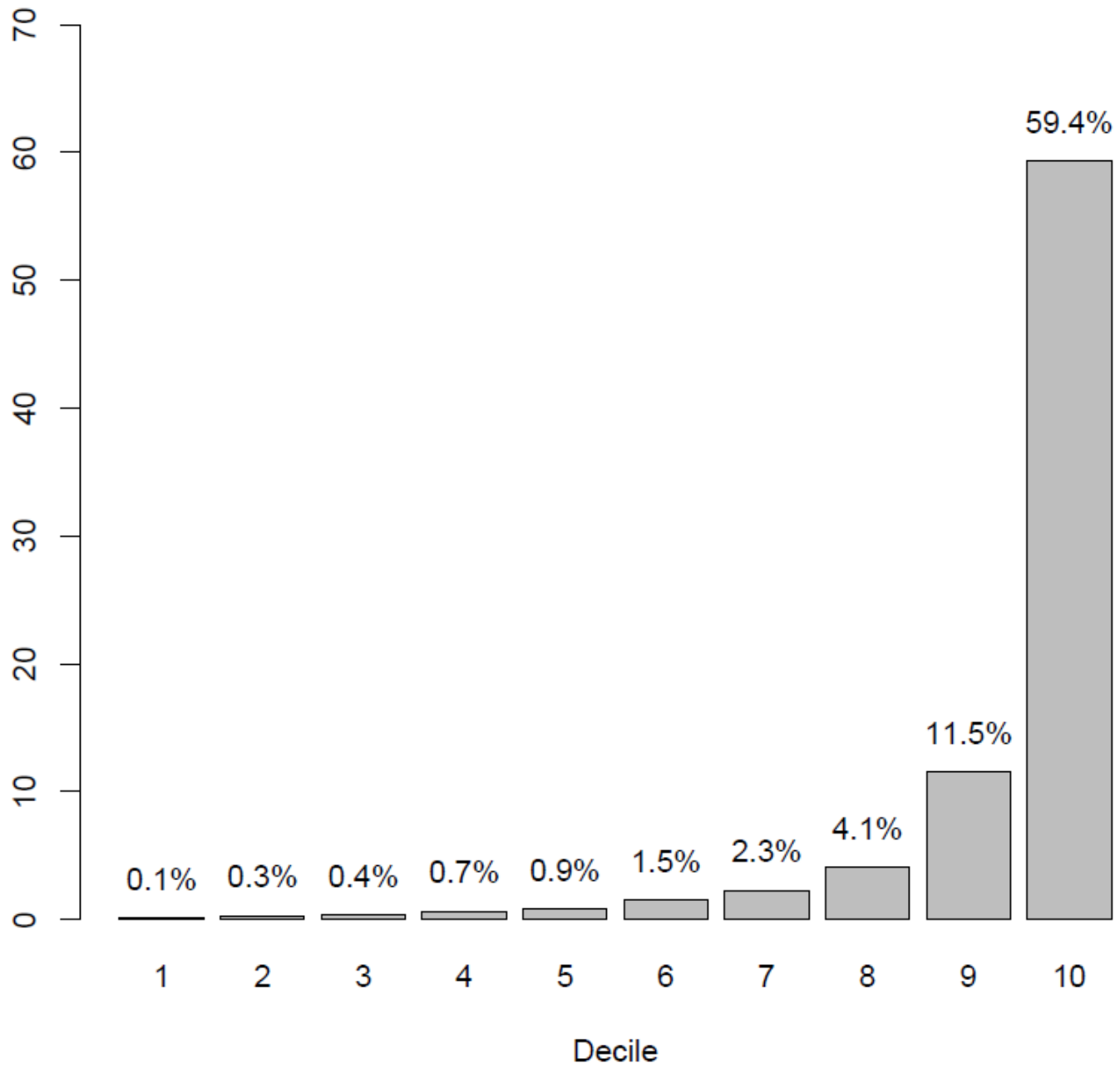
We use the algorithm to assign each child/referral into 10 evenly sized groups (or deciles) based on the predicted probability of system involvement.



risk of foster care placement

We then examined how well the algorithm risk-stratified children (in unique family and referral events) by looking at how many children were placed in foster care within 24 months

(test set, statewide average: 8.0%)



Questions?

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