

# *Children's Data Network: Helping Los Angeles County Chart a Course Toward Universal and Targeted Home Visiting*

June 30<sup>th</sup>, 2018

Children's Data Network

# Connecting the Dots: Snapshots of Child Well-Being in Los Angeles County

*Connecting the Dots, an informational resource coordinated by the Children's Data Network (CDN) and funded by First 5 LA, is a cross-sector partnership committed to making data and research more accessible to those engaged in the development of public policy and the delivery of programs for children and families.*

Goal: Identify and inform promising new pathways for strengthening Los Angeles County's children and families through narrated and contextualized data snapshots.



## Last Year

Drawing on data from 2002-2012 birth records to examine regional differences in births and healthy birth indicators across L.A. County, we created four snapshots:

1. Births In Los Angeles County
2. Timely Prenatal Care
3. Perinatal Non-Smoking
4. Full-term / Normal-weight Births

They can be found here:

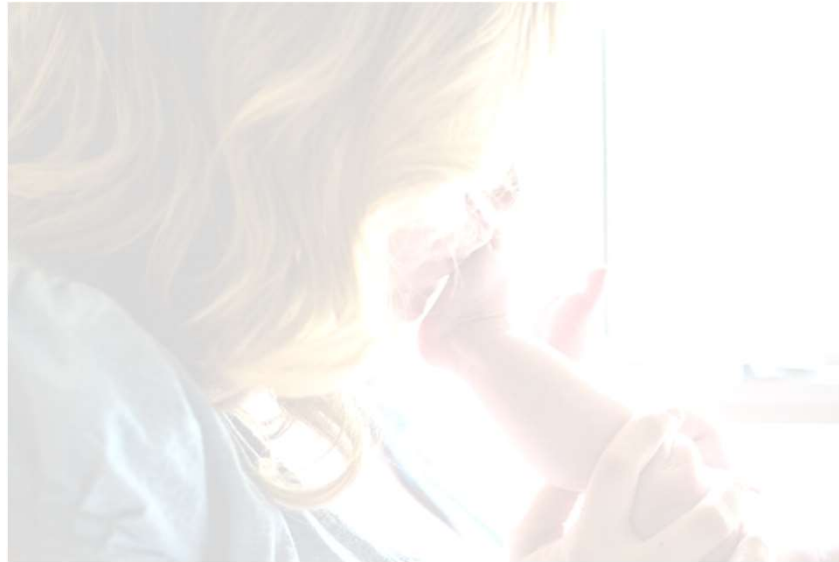
<http://www.datanetwork.org/snapshots/>



This Year

Goal:

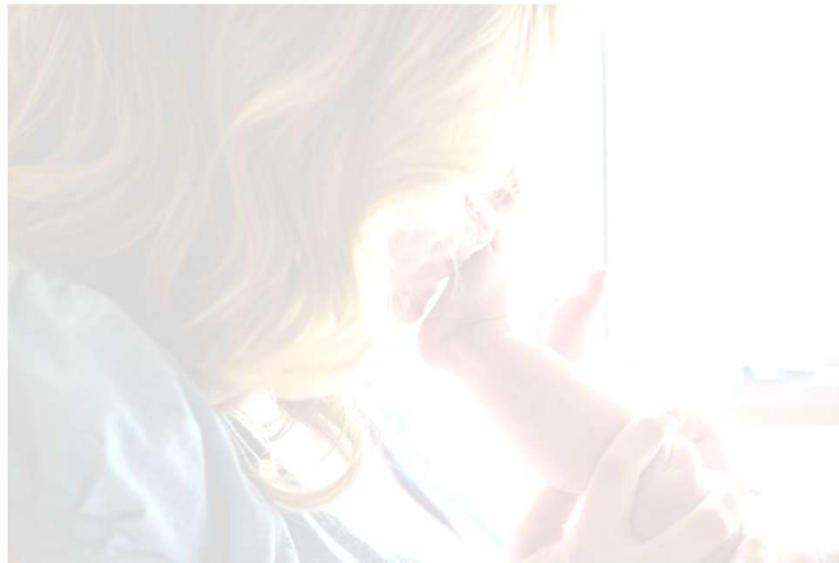
- Inform Los Angeles County Board of Supervisors motion: *Strengthening Home Visiting in Los Angeles County: A Plan to Improve Child, Family, and Community Well-Being*
- Explore how best to expand home visiting services so that there is a universal system (i.e., offered to every mother giving birth countywide) within which families at highest risk of adverse outcomes are prioritized for more intensive services.



# Critical Components

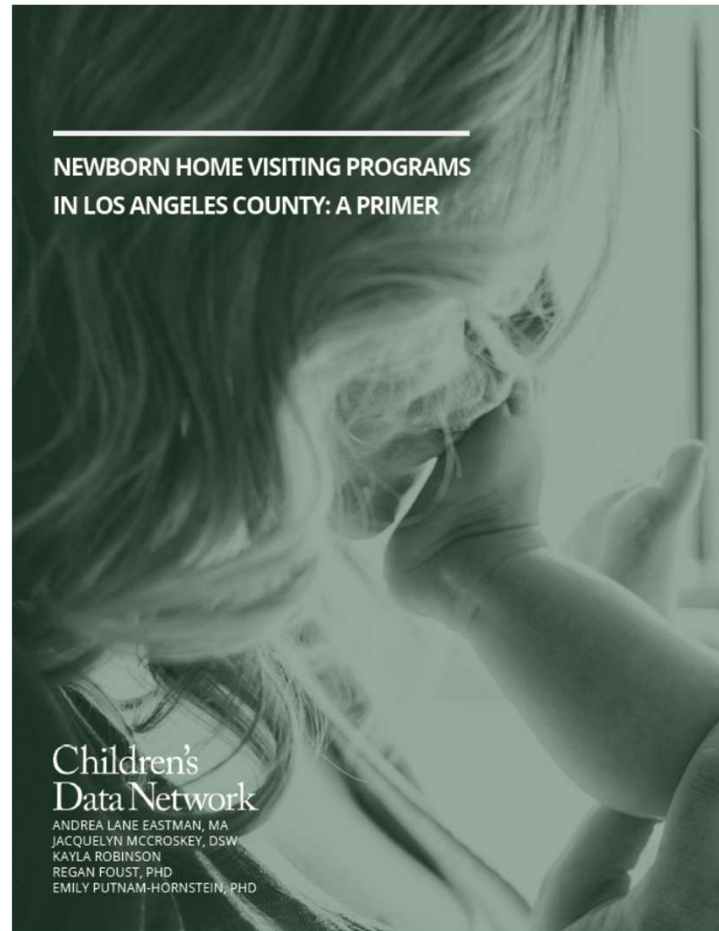
In order to achieve that goal, we need to know about:

1. The Programs:
  - Goals, intensity, funding streams
  - Where are they currently operating
2. The Births (i.e., risk and slot estimation)



# *Critical Component I: The Programs*

# *Home Visiting Primer*



## NEWBORN HOME VISITING PROGRAMS IN LOS ANGELES COUNTY: A PRIMER

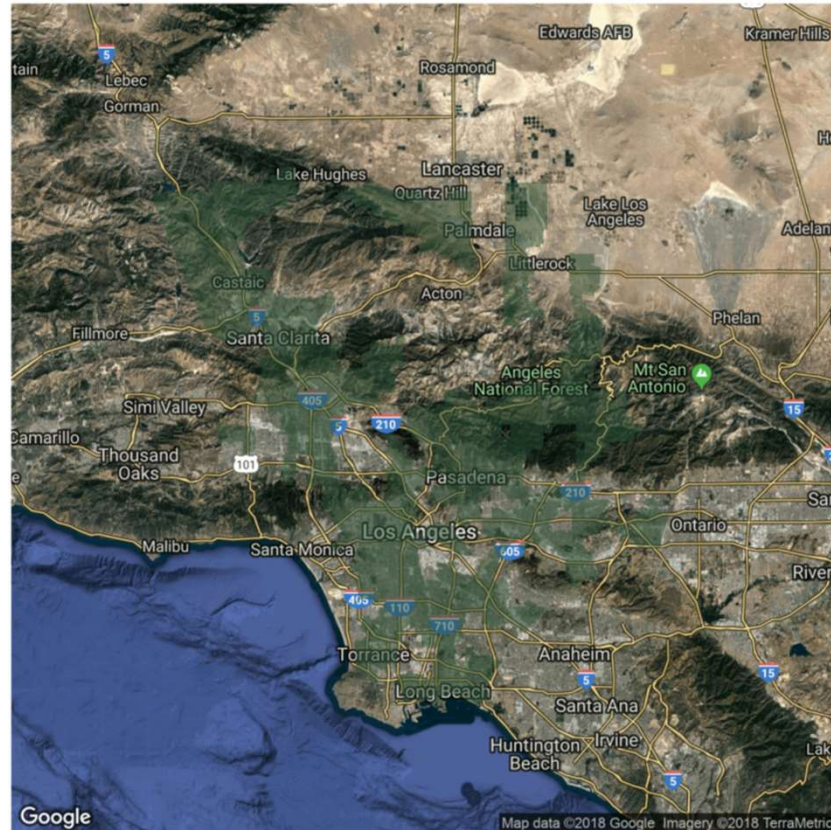
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ANDREA LANE EASTMAN, MA  
JACQUELYN MCCROSKEY, DSW  
KAYLA ROBINSON  
REGAN FOUST, PHD  
EMILY PUTNAM-HORNSTEIN, PHD

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# Home Visiting Catchment Area Maps

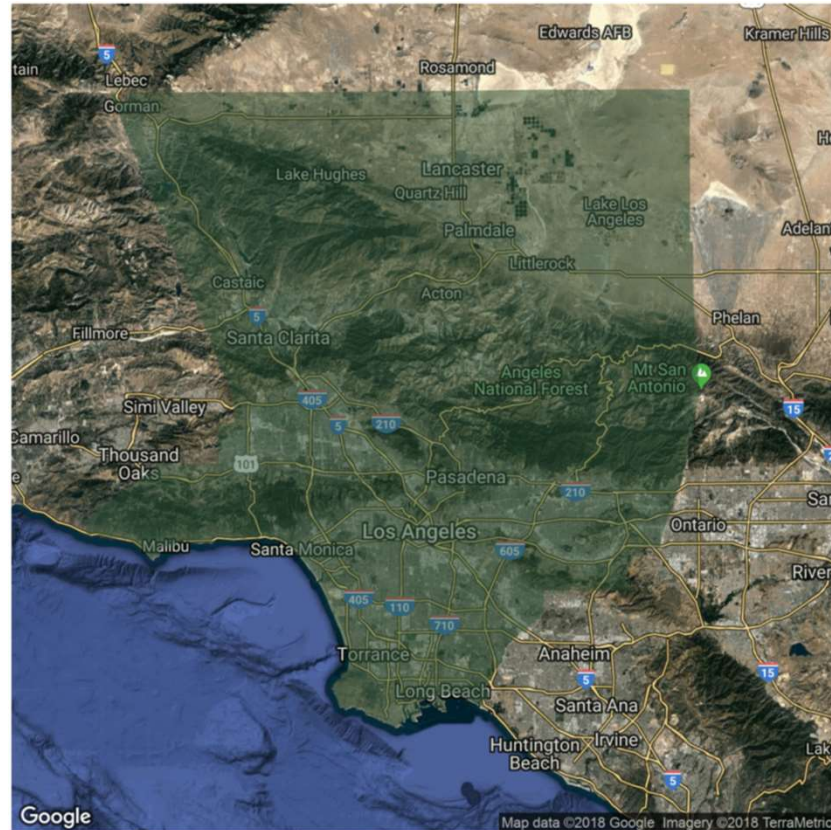
## Early Head Start Zip Code Coverage





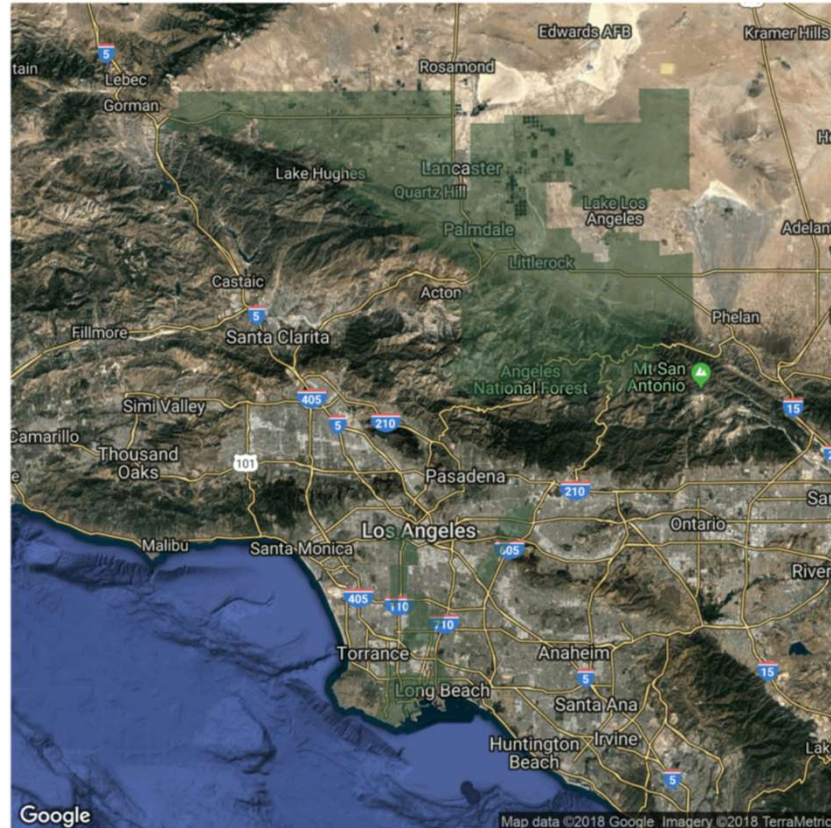
# *Home Visiting Catchment Area Maps*

## Nurse Family Partnership Zip Code Coverage



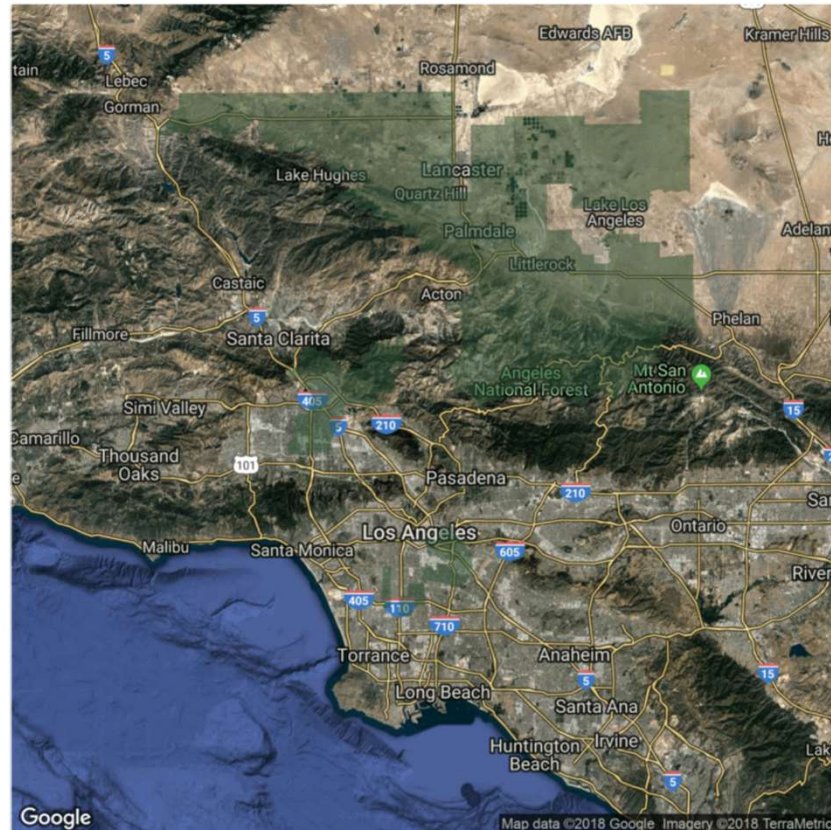
# *Home Visiting Catchment Area Maps*

## Healthy Families America Zip Code Coverage



# Home Visiting Catchment Area Maps

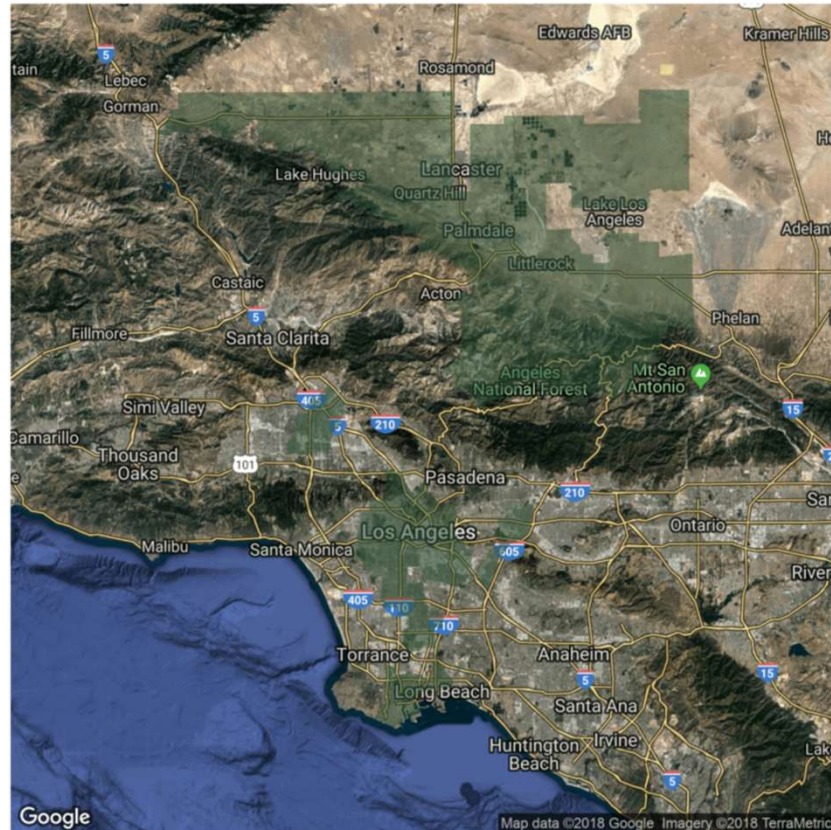
## Parents as Teachers Zip Code Coverage





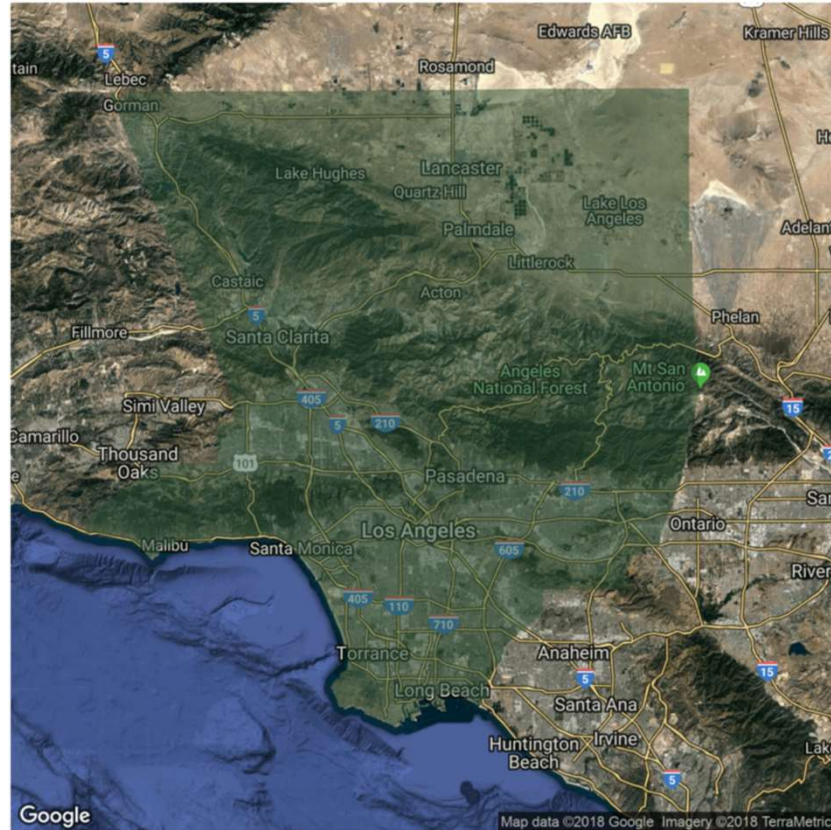
# *Home Visiting Catchment Area Maps*

## Welcome Baby Zip Code Coverage



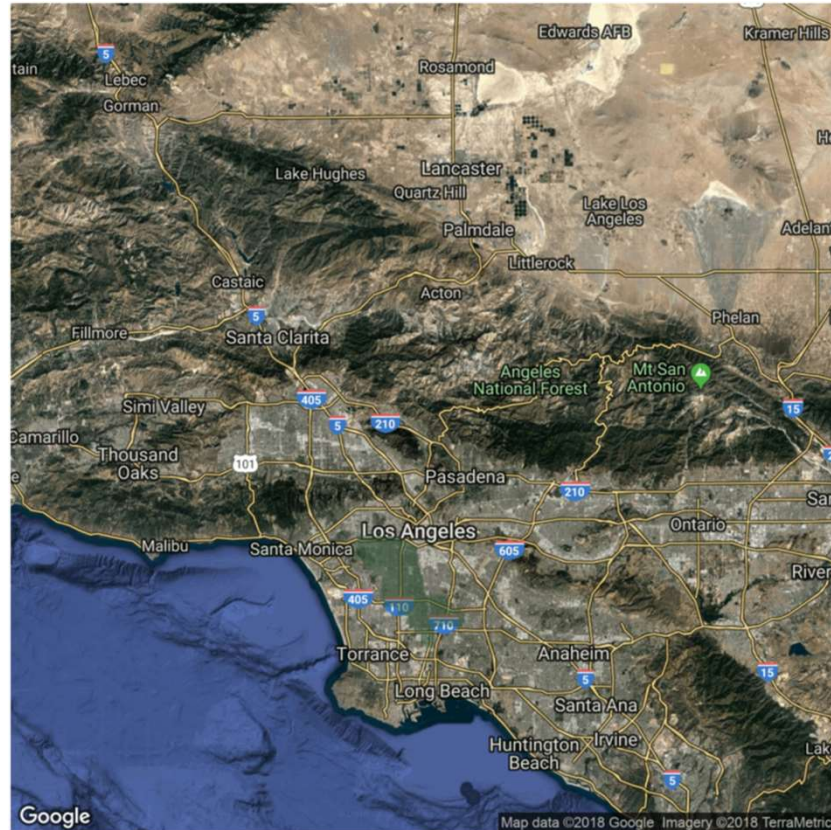
# *Home Visiting Catchment Area Maps*

## Partnerships for Families Zip Code Coverage



# Home Visiting Catchment Area Maps

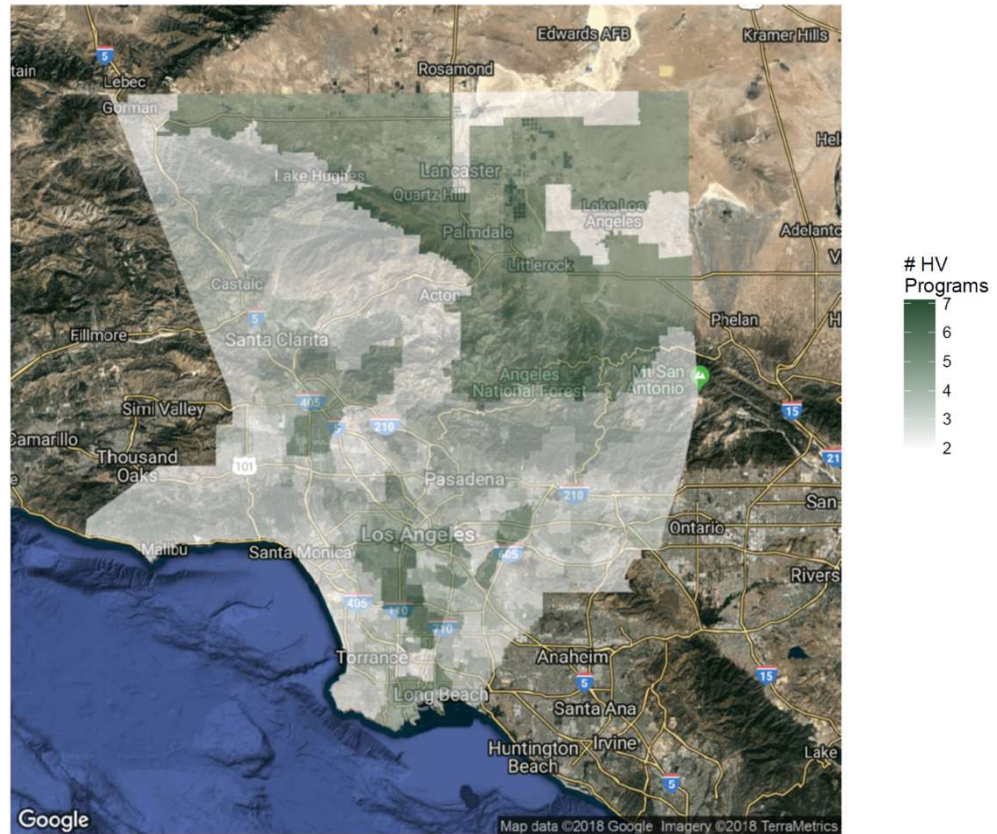
## Healthy Start Zip Code Coverage





# Home Visiting Catchment Area Maps

## Home Visiting Program Density, by Zip Code



## *Critical Component 2:* *The Births*



## *Risk and Slot Estimation*

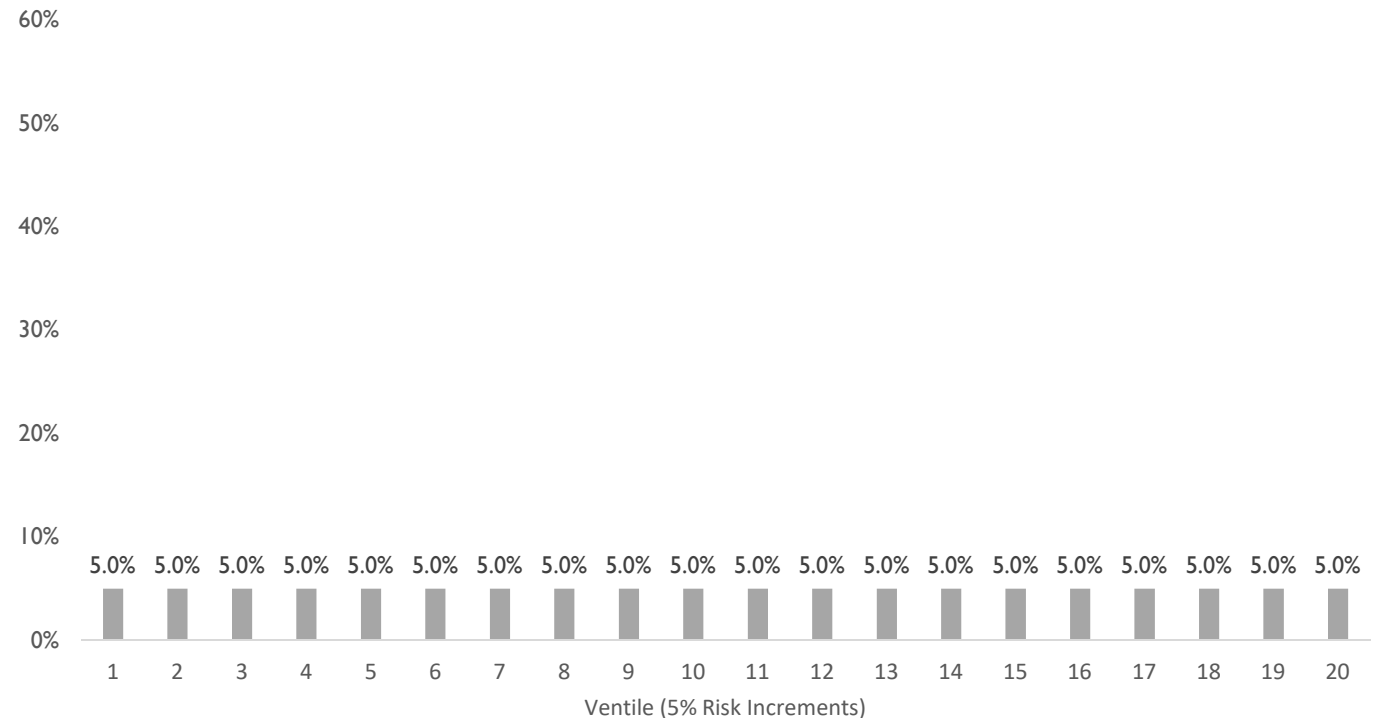
- One way to identify families at highest risk of adverse outcomes is to employ a model that uses information available on the birth record to understand likelihood of referral to Child Protective Services (CPS) by age 5.
  - *This is not a true measure of child abuse or neglect!* However, a report to CPS is a signal that someone in the community was concerned about the child, and the report itself is highly correlated with other childhood adversities.
- Approach:
  - Risk score 2006 CA births
  - Distribute births into 'bins'
  - Apply model to 2013-2015 LA births
  - Estimate numbers and slots required overall, and within each of the three proposed tiers:
    - TIER 3: Home visit and high intensity HV services
    - TIER 2: Home visit and warm hand-off
    - TIER 1: Home visit

## Step 1. *Risk Score 2006 Births*

- We built a model off of 2006 birth cohort data that predicts CPS referral by age 5
  - Factors include: Gender; timing of birth; birthweight; presence of birth abnormalities; maternal age; maternal race/ethnicity; maternal nativity; maternal education level; insurance type; number of children ever born to mother; previous sibling death; previous abortions; timing of prenatal care; paternity establishment; and paternal age.
  - Model performance appears to be very stable across birth cohort years...key is that we can observe the outcome we are trying to predict to test how well we are doing.

## Step 2. *Distribute 2006 Births into 'Bins'*

Ventile Distribution of CA Births



Each 'bin' has an equal number of births, but increasing proportions of children who were referred for maltreatment

## Step 2. Distribute 2006 Births into 'Bins'

### Observed CPS Referral by Age 5 by Ventile

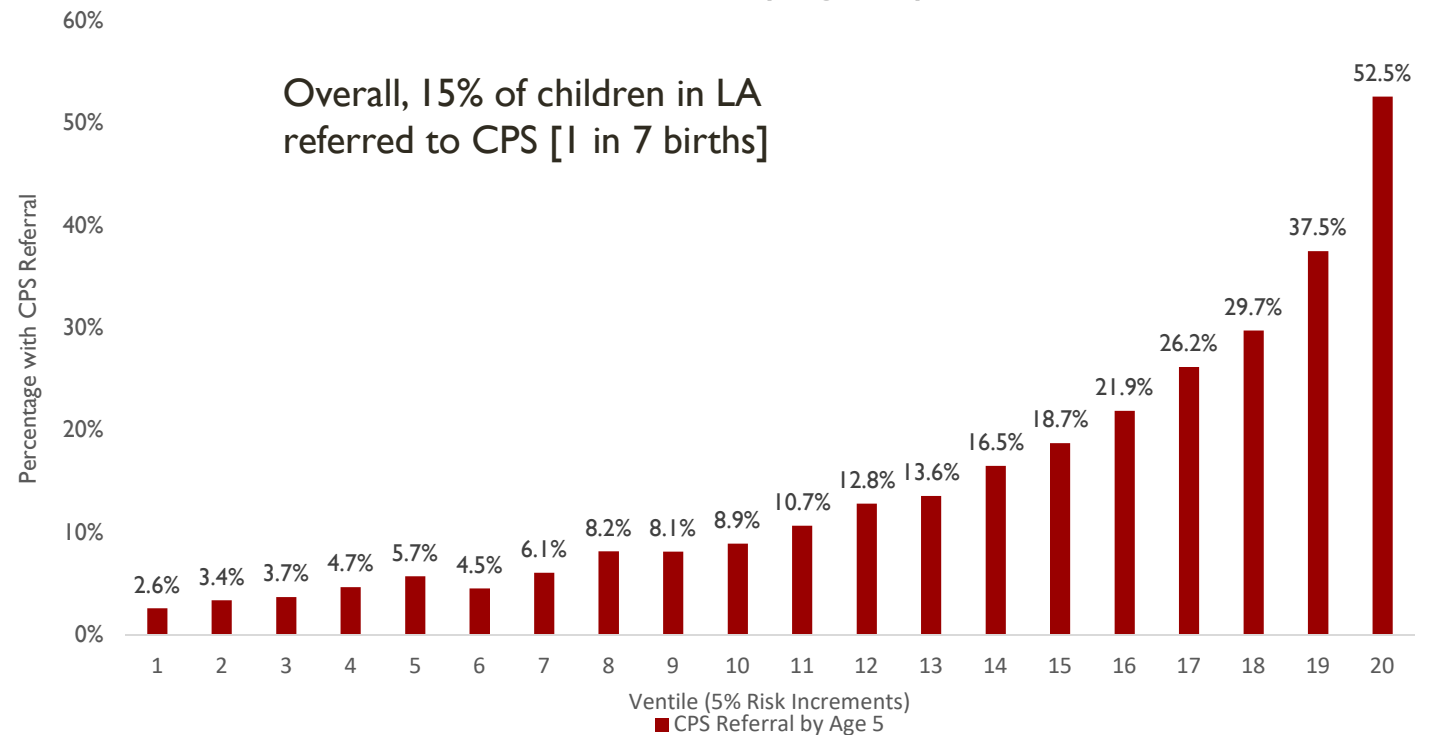


Table 1. Observed proportion of CA births in 2006 that had a CPS referral by age 5, by ventile (i.e., 5% increment of risk scores).

	Risk Ventile (5% Increments of Risk)																			
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
No CPS	97.4%	96.6%	96.3%	95.3%	94.3%	95.5%	93.9%	91.8%	91.9%	91.1%	89.3%	87.2%	86.4%	83.5%	81.3%	78.1%	73.8%	70.3%	62.5%	47.5%
CPS Referral by Age 5	2.6%	3.4%	3.7%	4.7%	5.7%	4.5%	6.1%	8.2%	8.1%	8.9%	10.7%	12.8%	13.6%	16.5%	18.7%	21.9%	26.2%	29.7%	37.5%	52.5%

# Step 3. Apply model to 2013-2015 LA births

Number of births in 2013-2015 in CA and LA County, by ventile (i.e., 5% increment of risk scores).

		Risk Ventile (5% Increments of Risk)																			
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
California																					
2013	23594	23667	30154	17337	25408	26568	20733	23987	25153	26801	22435	24949	24549	24977	25052	24796	25210	25465	25837	25731	
2014	25806	26155	32482	18085	26564	27071	21155	25248	25167	26918	22953	25420	24119	24936	24854	24720	24817	24759	24510	24609	
2015	24935	24482	32000	17931	26490	27015	21191	24812	24304	26287	22347	25317	23831	24190	24311	24549	24257	23653	24062	23458	
Average	24,778	24,768	31,545	17,784	26,154	26,885	21,026	24,682	24,875	26,669	22,578	25,229	24,166	24,701	24,739	24,688	24,761	24,626	24,803	24,599	
LA County																					
2013	7402	7270	8975	4863	6625	7254	5041	5649	6486	7208	5099	6382	6322	5980	6637	5997	6471	6427	6638	6685	
2014	8382	8564	9551	5252	7069	7336	5273	5885	6447	7139	5165	6270	6126	5779	6334	5782	6240	6054	6168	6031	
2015	7442	7094	8833	5015	6964	7044	5110	6014	6163	6842	5201	6101	6003	5749	6035	5849	5954	5809	6079	5887	
Average	7,742	7,643	9,120	5,043	6,886	7,211	5,141	5,849	6,365	7,063	5,155	6,251	6,150	5,836	6,335	5,876	6,222	6,097	6,295	6,201	

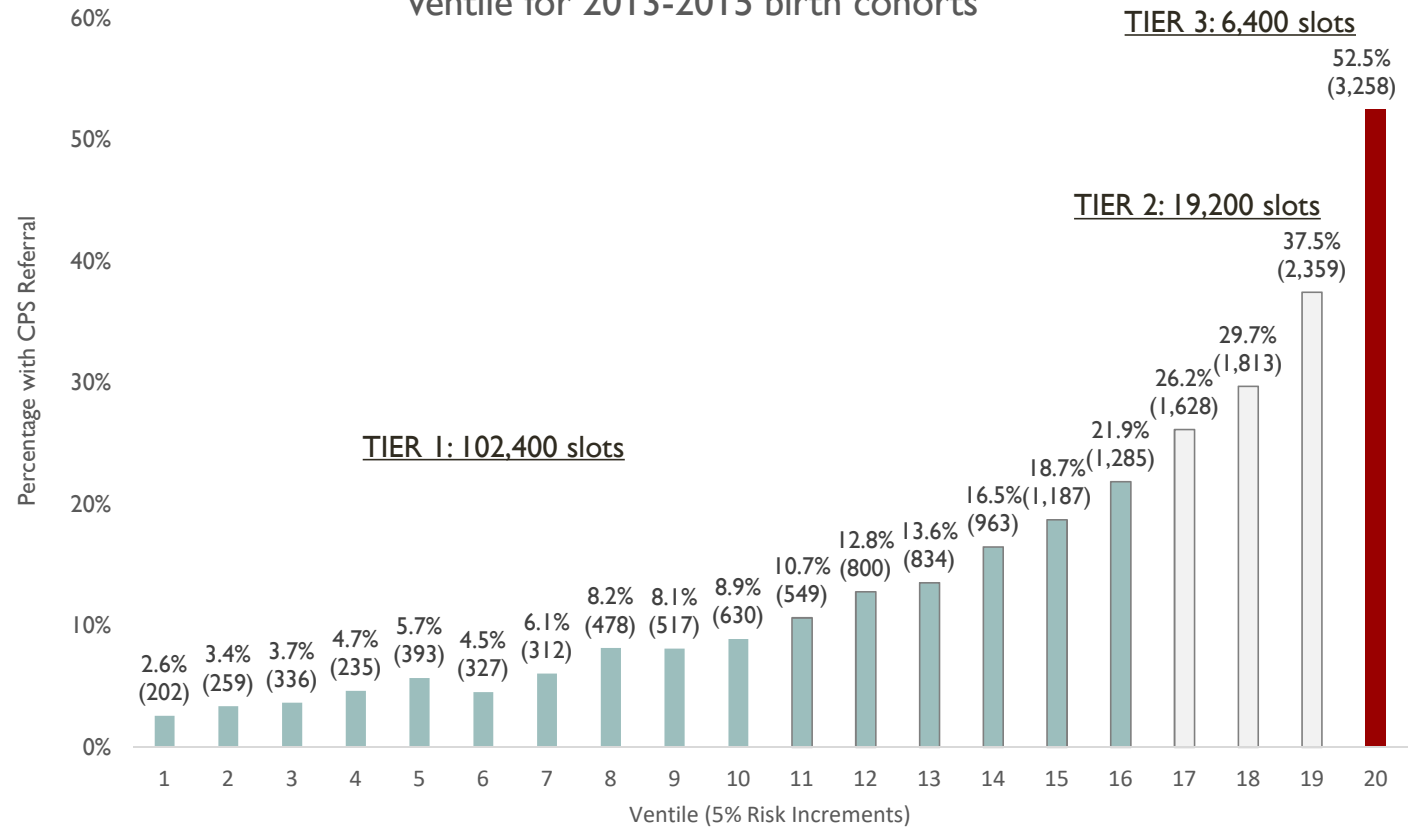
- Average number of births per year:
  - CA: ~494,000
  - LA: ~128,000 *[Total slots needed for a universal program]*
- Number of births per ventile:
  - CA: ~24,700
  - LA: ~ 6,400 *[Slots per tier]*

## Step 4. *Explore Potential Cut-Points*

- Using risk stratification, examined possible cut-points for TIER 1, 2, and 3 services
- Notes:
  - No “perfect” answer - must consider cost / benefit of targeting 5% vs. 10% vs. 15% (etc.) of “highest risk children” – and capacity to provide a defined level of service
  - The number of TIER 3 slots needed is driven by estimate of children in each ventile
    - If we decide to offer TIER 3 services to the top 5% of children, we would need approximately 6,400 intensive HV slots (if we thought 100% uptake)
- Possible Scenario:
  - TIER 3: Offer home visit and high intensity HV services to top 5% of births
  - TIER 2: Offer home visit and warm hand-off to next 15% of births
  - TIER 1: Offer home visit to remaining 80% of births

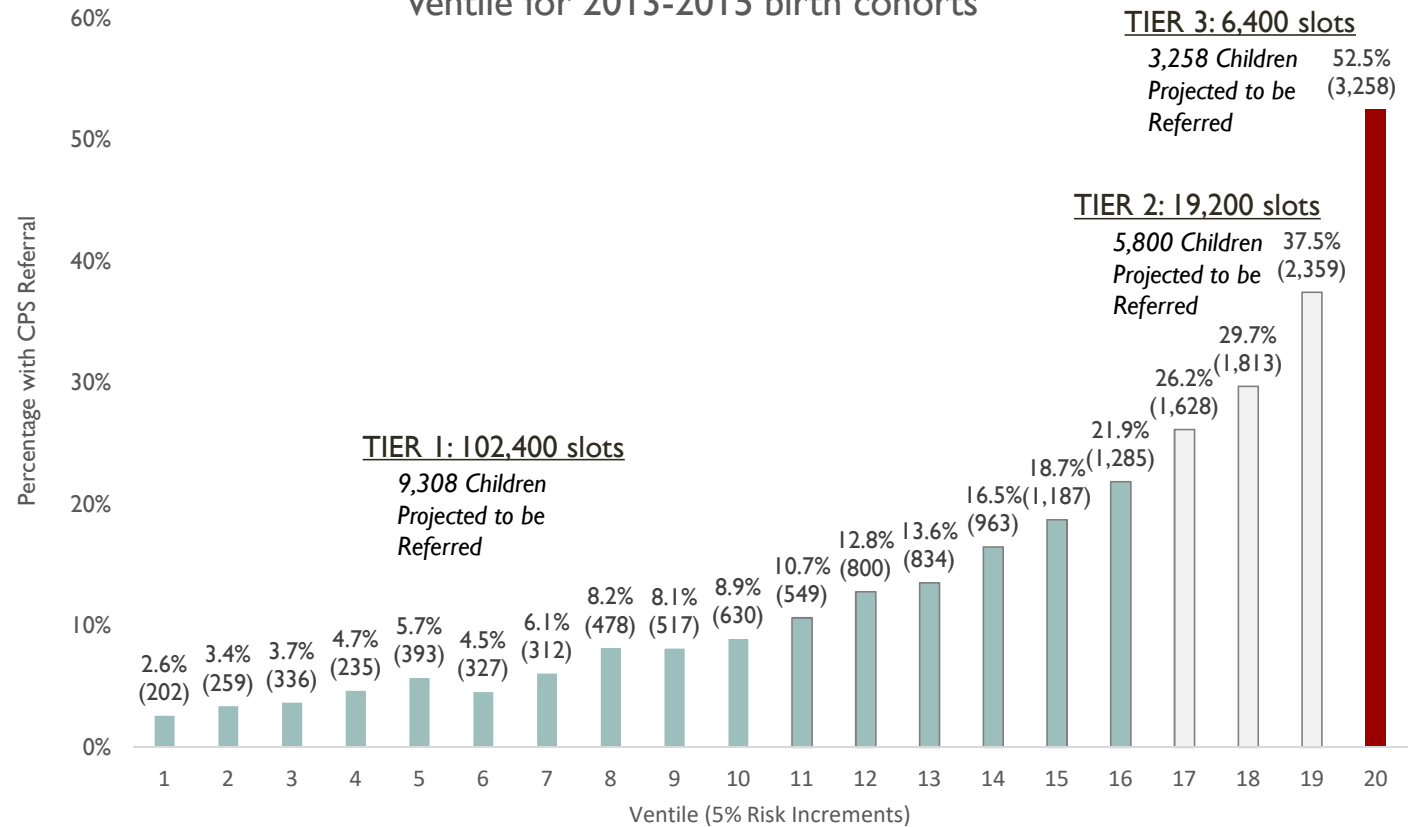
# Possible Scenario

Projected Percentage (and count) of Children Referred to CPS by  
Ventile for 2013-2015 birth cohorts



# Possible Scenario

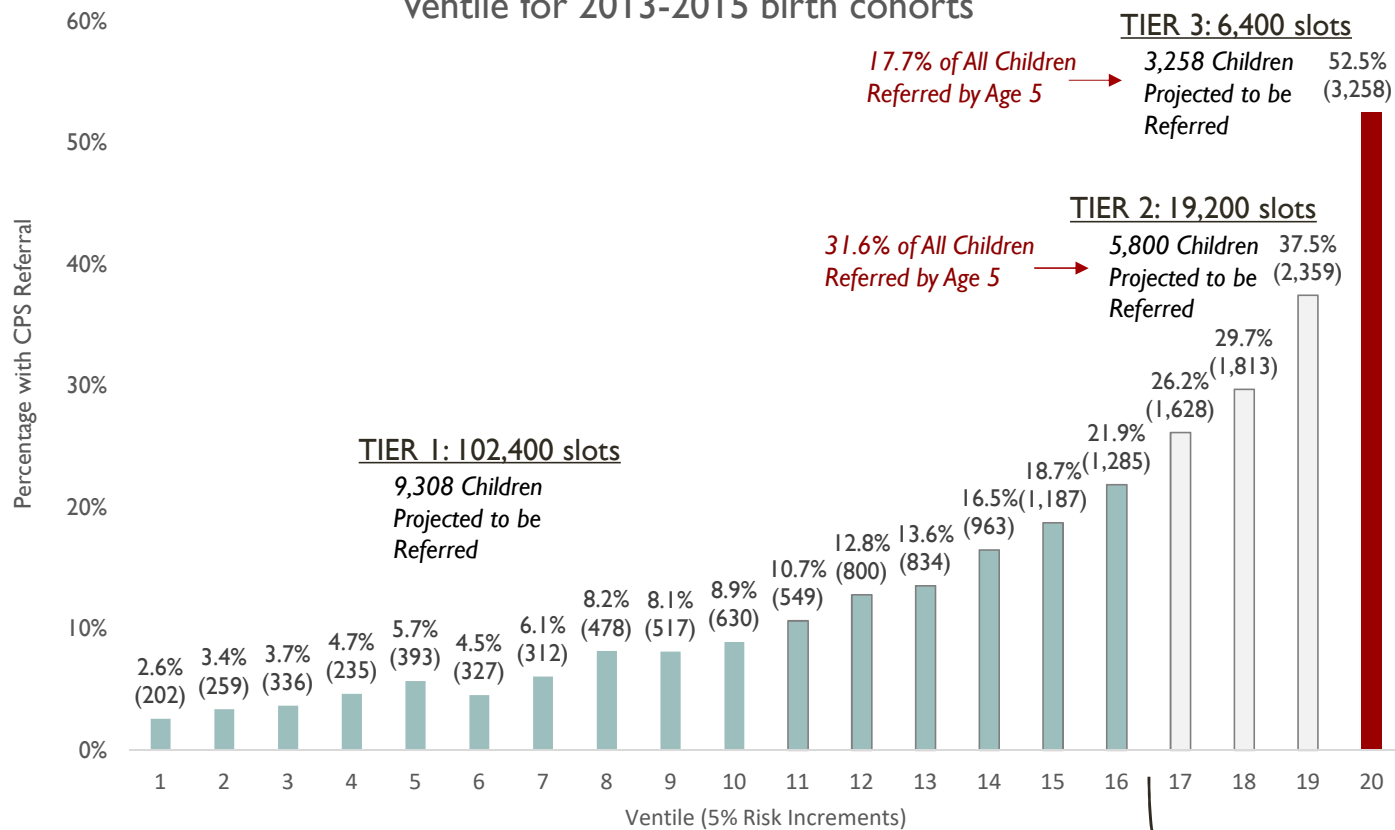
Projected Percentage (and count) of Children Referred to CPS by Ventile for 2013-2015 birth cohorts





# Possible Scenario

Projected Percentage (and count) of Children Referred to CPS by  
Ventile for 2013-2015 birth cohorts

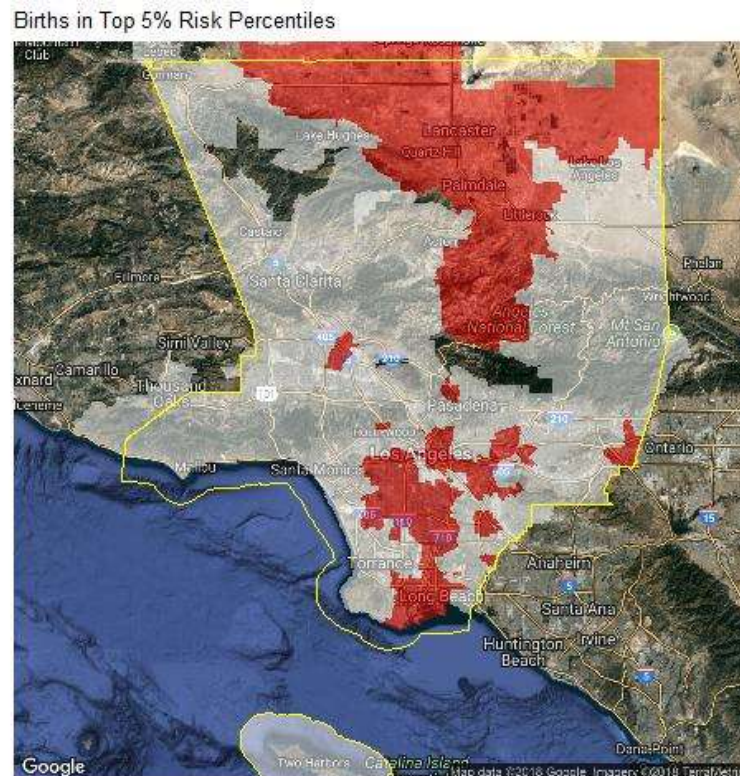


Targeting the **top 20%** for more intensive services would reach **50%** of all children projected to have CPS referral by age 5

# The Births: Tier Summary

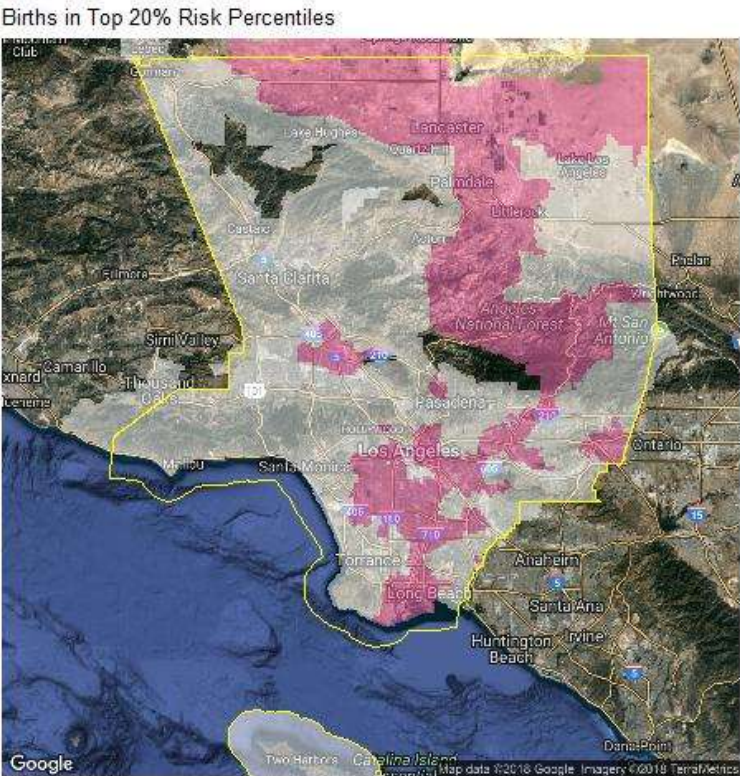
- Potential TIER structure:
  - TIER 3: Offer home visit and high intensity HV services to top 5% of births = **~6,400 slots needed**
  - TIER 2: Offer home visit and warm hand-off to next 15% of births = **~19,200 slots needed**
  - TIER 1: Offer home visit to remaining 80% of births = **~102,400 slots needed**
- The scenario presented is a reasonable balance of sensitivity and specificity
  - 53% of the children in the top 5% of risk (TIER 3) were predicted to be referred to child protection before age 5. Therefore, setting TIER 3 at the top 5% would designate the most vulnerable children as recipients of the highest level of intensity services.  
*[Please see Appendix for demographic profiles of births by proposed Tier]*
  - Setting TIERS 2 and 3 as capturing the top 20% of risk would reach 50% of all children projected to have a CPS referral by age 5.
  - This strategy also would provide a level of specificity that would be good for targeting purposes.
- Considerations?
  - Expected engagement levels
  - Cost of HV Programs and differences by Tier
  - ***Differences in Risk, by Geography***

# The Births: *Risk Maps*



This map shows zip codes where the proportion of births in the top 5% of likelihood of referral to CPS (TIER 3) was greater than 5%

# The Births: *Risk Maps*



This map shows zip codes where the proportion of births in the top 20% of likelihood of referral to CPS (TIERs 2 & 3) was greater than 20%

*Next Steps:*  
*Put the Pieces Together*

## Next Steps

- Finalize Tiers and cost
- Overlay Risk and Program maps to align existing local programs with community risk profiles

*Per Los Angeles Board of Supervisors motion directives*

Thank you!

Regan Foust  
[rfoust@usc.edu](mailto:rfoust@usc.edu)

Jacquelyn McCroskey  
[mccroske@usc.edu](mailto:mccroske@usc.edu)

<http://www.datanetwork.org>

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# Appendix

Demographics of Births in California and Los Angeles 2013-2015, by proposed Tiers

		Tier 1 (ventiles 1-16)		Tier 2 (ventiles 17-19)		Tier 3 (ventile 20)	
		CA	LA	CA	LA	CA	LA
<i>Sex</i>							
	Female	48.7%	48.5%	48.9%	48.8%	48.6%	48.4%
	Male	51.3%	51.5%	51.1%	51.2%	51.4%	51.6%
<i>Birth Abnormality</i>							
	None	89.1%	91.2%	85.7%	88.0%	79.3%	82.1%
	One or More	10.9%	8.8%	14.3%	12.0%	20.7%	17.9%
<i>Number of Live Births</i>							
	1	42.5%	43.2%	27.8%	29.4%	11.9%	12.8%
	2	34.1%	34.1%	27.1%	27.9%	17.8%	19.6%
	3	15.9%	15.5%	20.7%	19.7%	19.6%	19.9%
	4+	7.5%	7.2%	24.5%	23.0%	50.7%	47.8%
<i>Birth Weight</i>							
	Normal	94.0%	93.7%	91.7%	91.1%	86.2%	85.3%
	Low (<2500 grams)	6.0%	6.3%	8.3%	8.9%	13.8%	14.7%
<i>Maternal Nativity</i>							
	Foreign-Born	44.7%	51.9%	12.9%	14.1%	3.7%	4.2%
	US Born	55.3%	48.1%	87.1%	85.9%	96.3%	95.8%
<i>Birth Payment Method</i>							
	Non-Public	64.7%	61.4%	8.2%	7.4%	3.3%	2.7%
	Public (Medi-Cal)	35.3%	38.6%	91.8%	92.6%	96.7%	97.3%
<i>Prenatal Care Initiation</i>							
	1st Trimester	86.2%	86.3%	71.2%	73.1%	49.3%	52.1%
	2nd Trimester	10.3%	8.9%	20.5%	18.6%	27.4%	26.9%
	3rd Trimester	2.3%	2.5%	5.1%	4.7%	10.1%	9.3%
	No Care	0.1%	0.1%	0.7%	0.5%	8.2%	6.0%
	Missing	1.2%	2.2%	2.4%	3.1%	5.0%	5.8%



# Appendix

Demographics of Births in California and Los Angeles 2013-2015, by proposed Tiers

		Tier 1 (ventiles 1-16)		Tier 2 (ventiles 17-19)		Tier 3 (ventile 20)	
		CA	LA	CA	LA	CA	LA
<i>Maternal Race / Ethnicity</i>							
	Asian	11.5%	15.1%	2.1%	0.9%	1.5%	0.7%
	Black	3.9%	5.3%	10.2%	13.4%	17.5%	24.2%
	Hispanic	43.7%	51.4%	64.8%	77.1%	58.9%	66.2%
	Native American	0.3%	0.1%	0.9%	0.3%	1.5%	0.6%
	Pac Islander	3.8%	3.3%	1.3%	0.9%	1.1%	0.8%
	White	31.3%	22.0%	19.1%	6.6%	17.7%	6.5%
	Other	3.1%	1.6%	0.1%	0.1%	0.1%	0.1%
	Missing	2.4%	1.2%	1.4%	0.8%	1.6%	0.9%
<i>Maternal Age</i>							
	<=19	2.1%	2.0%	19.8%	20.7%	17.7%	19.4%
	20-24	14.7%	13.7%	35.7%	36.4%	32.1%	33.3%
	25-29	27.0%	25.5%	23.3%	22.3%	25.5%	24.2%
	30+	56.2%	58.9%	21.2%	20.6%	24.7%	23.1%
	Missing	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
<i>Maternal Education</i>							
	0-11 Years	12.6%	14.8%	28.6%	32.9%	40.0%	43.2%
	High School Graduate	20.8%	20.6%	39.6%	38.9%	36.1%	34.8%
	Some College	26.5%	25.6%	25.4%	23.3%	18.6%	18.0%
	BA or Higher	35.7%	35.8%	2.9%	2.3%	1.1%	1.0%
	Missing	4.4%	3.2%	3.5%	2.6%	4.1%	3.0%

# Appendix

Demographics of Births in California and Los Angeles 2013-2015, by proposed Tiers

		Tier 1 (ventiles 1-16)		Tier 2 (ventiles 17-19)		Tier 3 (ventile 20)	
		CA	LA	CA	LA	CA	LA
<i>Paternity Establishment</i>							
No Father Listed on Birth Record		2.6%	3.2%	19.0%	22.2%	56.6%	61.0%
Father Listed on Birth Record		97.4%	96.8%	81.0%	77.8%	43.4%	39.0%
<i>Paternal Age</i>							
<=19		0.9%	0.9%	9.1%	9.7%	5.2%	5.4%
20-24		9.3%	8.6%	25.5%	25.0%	13.6%	12.7%
25-29		21.0%	19.4%	21.6%	20.0%	12.5%	11.1%
30+		66.4%	68.3%	26.9%	25.6%	18.8%	16.6%
Missing		2.3%	2.8%	16.8%	19.7%	49.8%	54.2%

# Appendix

Distribution of Births by Select Zipcode in LA County

Zip Code	Area	PoLA Label	Tier 1 (ventiles 1-16)		Tier 2 (ventiles 17-19)		Tier 3 (ventile 20)	
			#	%	#	%	#	%
90001	Florence-Graham	Precarious	2044	62.2%	910	27.7%	331	10.1%
90003	South LA	Precarious	2462	58.9%	1175	28.1%	542	13.0%
90044	Southeast LA	Precarious	2804	59.5%	1298	27.6%	609	12.9%
90201	Cudahy	Struggling	3177	70.5%	1062	23.6%	265	5.9%
90275	Rancho Palos Verdes	Glittering	664	97.6%	.	.	.	.
93550	Palmdale	Struggling	2171	57.0%	1073	28.2%	566	14.9%