

Home visiting at scale: the evaluation of Cuna Mas

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Motivation

Home visiting programs have been shown to **have high impacts** on child development in **low and high-income countries**

Reach Up in Jamaica, Colombia, Bangladesh, India

Nurse Family Partnership in the USA

However, these results come from **small-scale** pilots or efficacy trials

Cuna Mas is Peru's flagship ECD Program

Childcare in urban areas

Home visits in rural areas

It reached **93k children** in 2015

Evaluation of an **at-scale parenting program** implemented by a **government agency**

Cuna Mas Home Visiting Program

Began operating in 2013

- To promote **better parenting** practices and improve **development** of children **0-36 months** of age
- Targeted to **rural districts** with **high poverty** and **high malnutrition** rates
- Within targeted districts, all children ages 0-24 months of age are eligible



Atma Quezlla
(no seas holgazán)



Program operation

Home visitors are **community members**

- 10 families per home visitor

- 4 days of pre-service training + in-service training

- Get paid for this job

Home visitors are **trained and mentored by their supervisors**

- 10 home visitors per supervisor

- 9 days of pre-service training + in-service training

Supervisors are trained and mentored by **regional specialists**

- 20 regional offices throughout the country

Regional specialists are trained and mentored by a **central team in Lima**

Staff profile

Home visitors

- 85% women

- 87% are parents

- On average 31 years old

Low **education** levels:

- 15% have at most complete primary

- 72% have at most complete high school

- 13% have some tertiary (e.g. nurses, educators)

Past **experience**

- 27% worked with children 0-3

- 27% worked with families

Supervisors

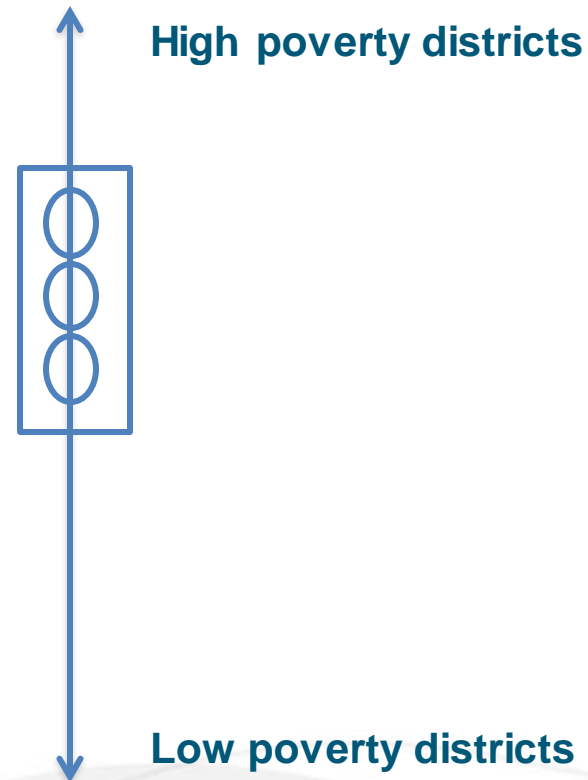
- Required to have some tertiary education

The impact evaluation

Cuna Mas was **rolled-out gradually**

Out of all districts that met eligibility criteria, we selected **180 districts**, grouped in trios of similar levels of poverty

These 180 districts are located in 12 departments (67 provinces)



The impact evaluation

180 districts, grouped in trios of similar levels of poverty

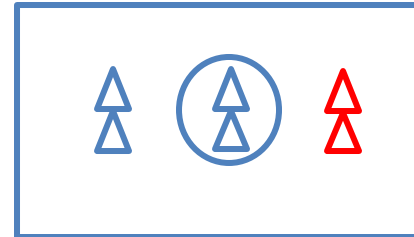
Within each group, random assignment into T and C

120 T and 60 C

Within each district, selection of 2 villages

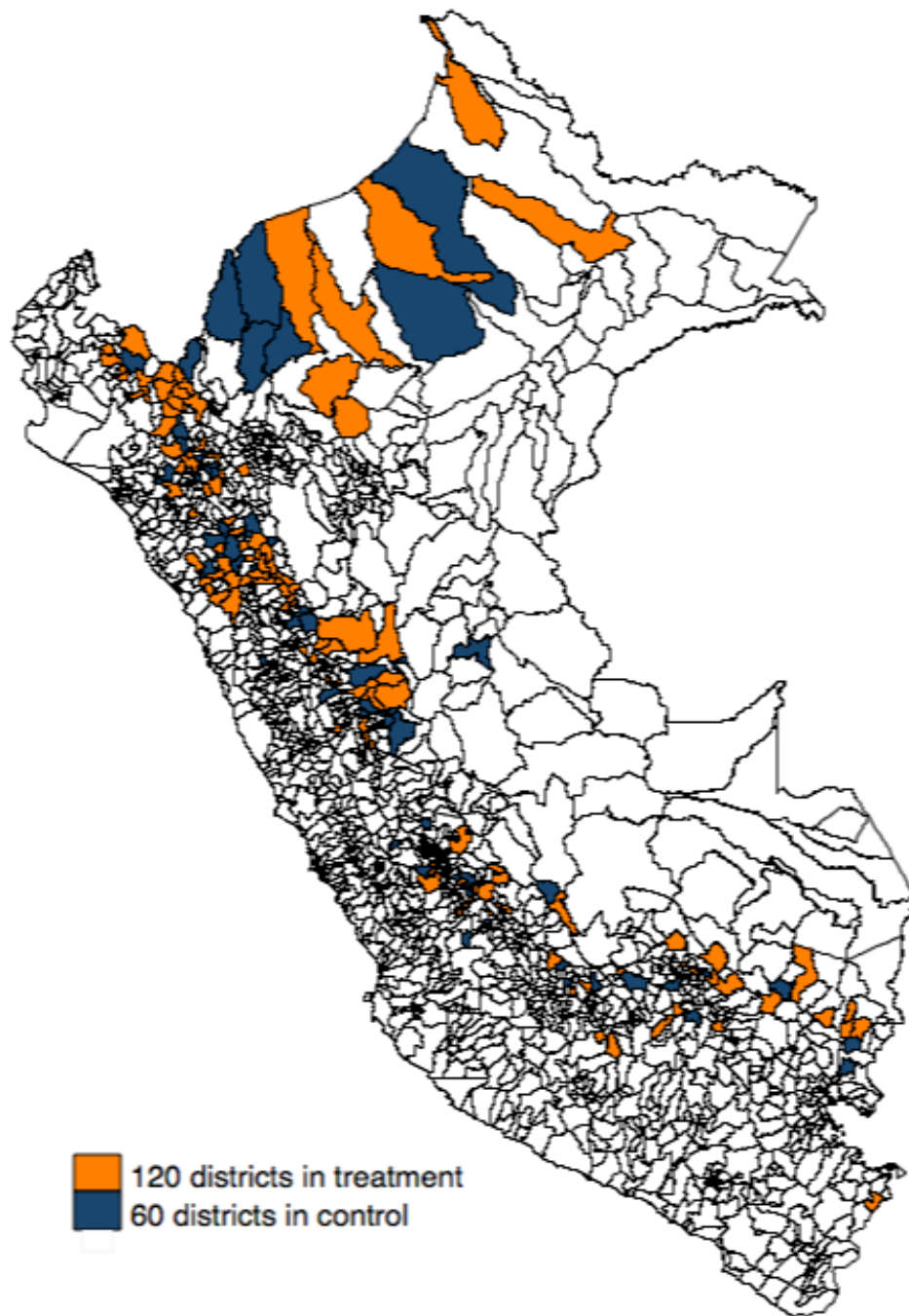
Maximum number of kids 0-24 months old

At baseline, 16 kids per village





The sample



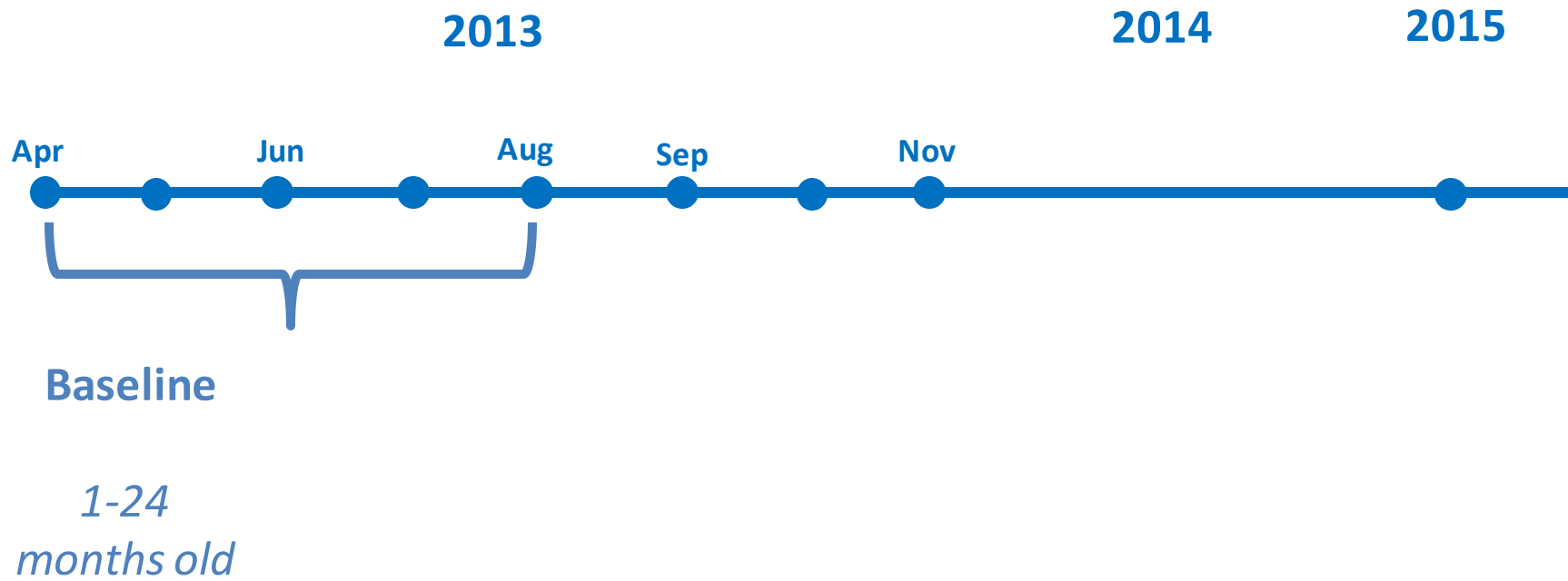
Descriptives

Full Sample (N=5339)		
	Mean	SD
<i>Child Characteristics</i>		
Age (months)	12.79	6.66
Proportion of female	0.49	0.50
Proportion of stunted	0.38	0.48
Proportion of underweight	0.08	0.27
<i>Caregiver and household characteristics</i>		
Maternal education (years)	6.57	4.08
Proportion of indigenous	0.11	0.31
Proportion of hh with a TV	0.50	0.50
Proportion of hh with a fridge	0.08	0.27
Proportion of hh with a gas stove	0.41	0.49
Proportion of hh with a cell phone	0.60	0.49
Proportion of homes with a dirt floor	0.26	0.44
Proportion of homes with electricity	0.76	0.43
Proportion of homes with running water	0.59	0.49
Proportion of homes with sanitary facilities	0.25	0.43

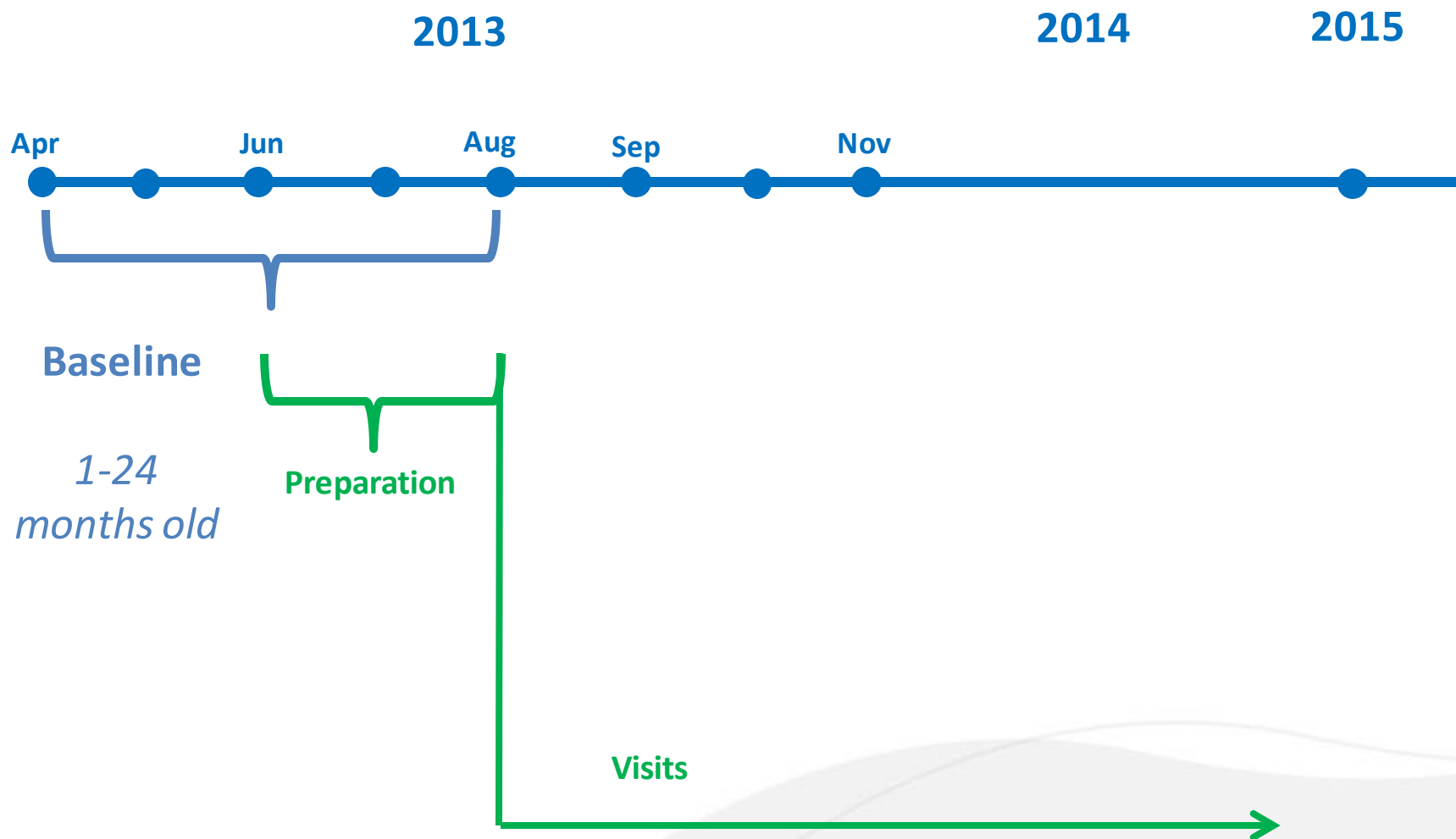
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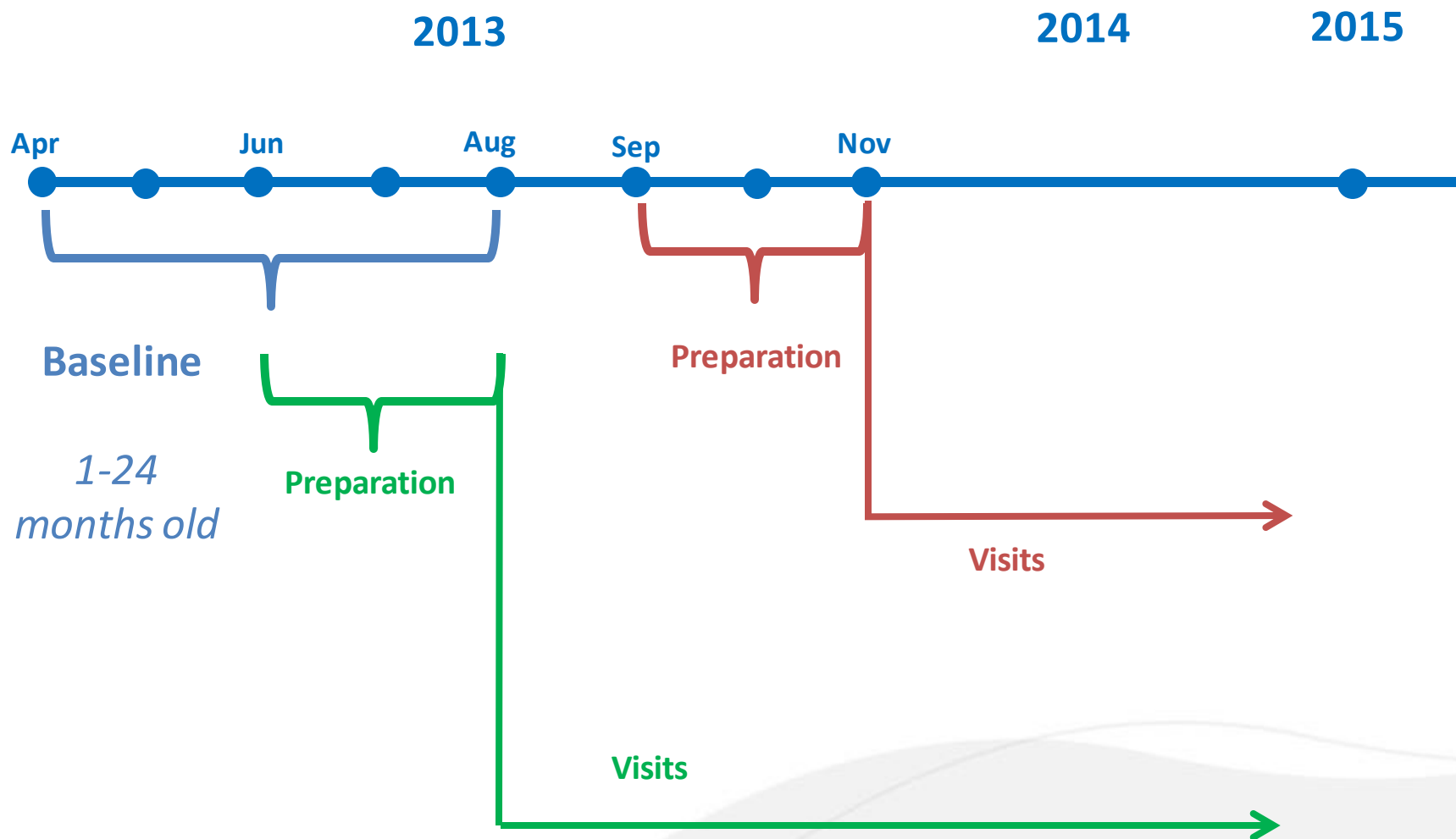
Timeline



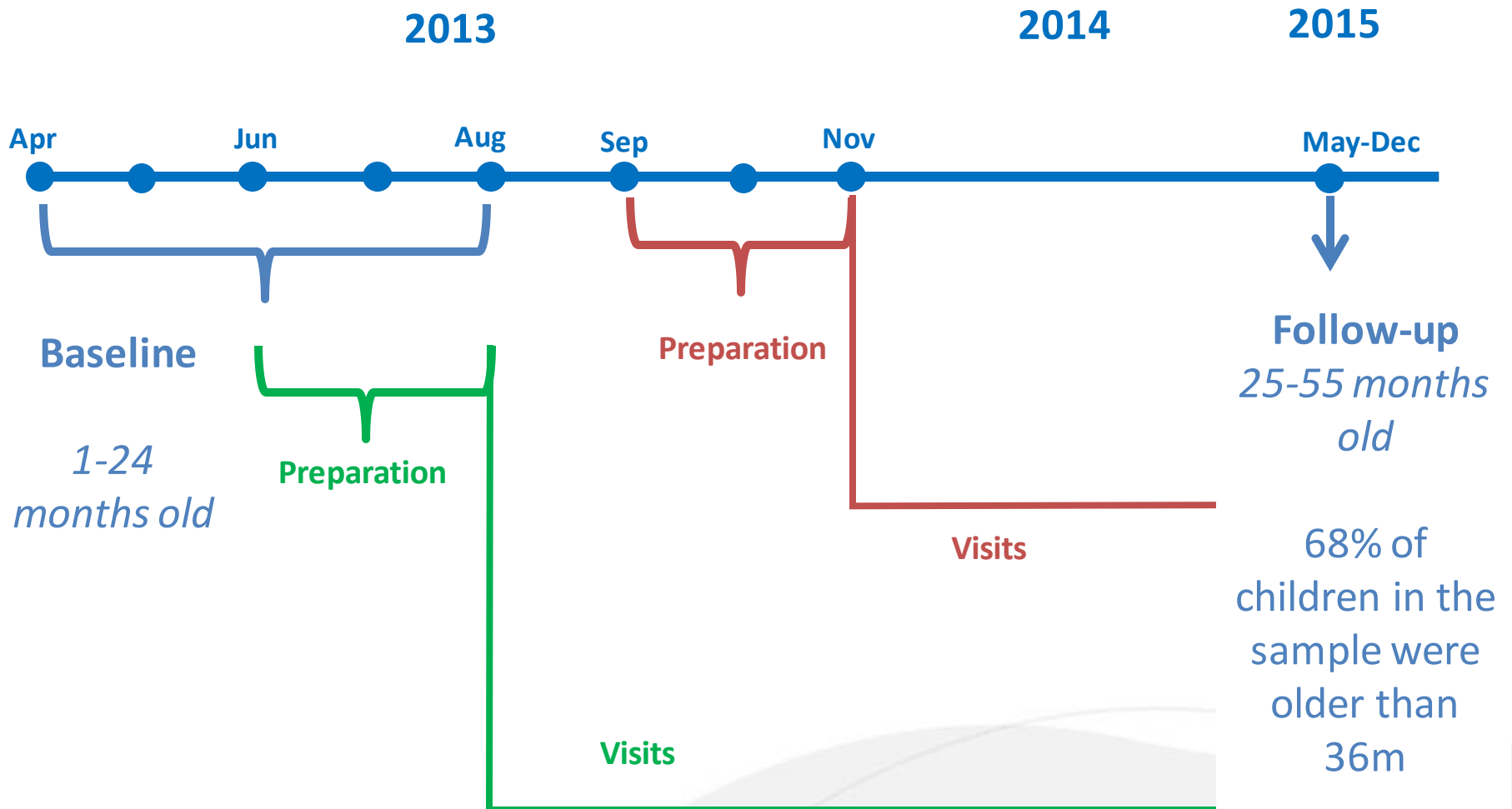
Timeline



Timeline



Timeline



Main outcomes

Ages and Stages Questionnaire (ASQ-3)

Screenener, available in Spanish, adapted to Peruvian context by local psychologists

5 domains: problem solving, communication, fine motor, personal-social, and gross motor

Maternal report and direct administration

Administered by survey enumerators in the home

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Maternal report and direct administration

Administered by survey enumerators in the home

Bayley Scales of Infant and Toddler Development (Bayley-III)

Diagnostic test, translated to Spanish and adapted to Peruvian context by local psychologists

4 domains: cognitive, receptive language, expressive language, and fine motor

Direct administration

Administered by psychologists in a community center

The data

Baseline and follow-up data

Household survey

Family care indicators

Anthropometrics

Ages and Stages Questionnaire 3

Follow-up collected between Jun-Dec 2015

8% of attrition, uncorrelated with T

N=5,339 children with complete data

Bayley

Collected at follow-up only, between Aug-Dec 2015

5% attrition, uncorrelated with T

N=1038 children with complete data

Attrited children are younger and have more educated mothers.

Amongst attrited, T and C are balanced

Estimation

$$Y_i = \alpha T_i + \beta X_i + \gamma G_i + \delta E_i + \varepsilon_i$$

Where:

Y_i = child development (ASQ z-score, Bayley)

T_i = assignment into treatment

X_i = age, gender, baseline test scores, maternal education, wealth, ethnicity

G_i = group dummy (trio)

E_i = tester dummy

SE are clustered at the level of the district.

Main results – ITT (N=5339)

Domain	Impact	SE	P-value
Problem Solving	0.064*	0.032	0.047
Communication	0.079*	0.032	0.015
Fine Motor	0.061+	0.036	0.093
Personal-social	0.066+	0.037	0.077
Gross Motor	-0.008	0.031	0.804
Total (all domains)	0.064*	0.028	0.026
Total (PS+Com+FM)	0.063*	0.024	0.010

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36% of children assigned to T did not receive Cuna Mas. Why?

40 **villages deemed ineligible** for Cuna Mas after baseline survey

- Social conflict OR

- Cuna Mas daycare operating

=> **39%**

Children **outgrew eligibility age** due to delays in implementation

=> **14%**

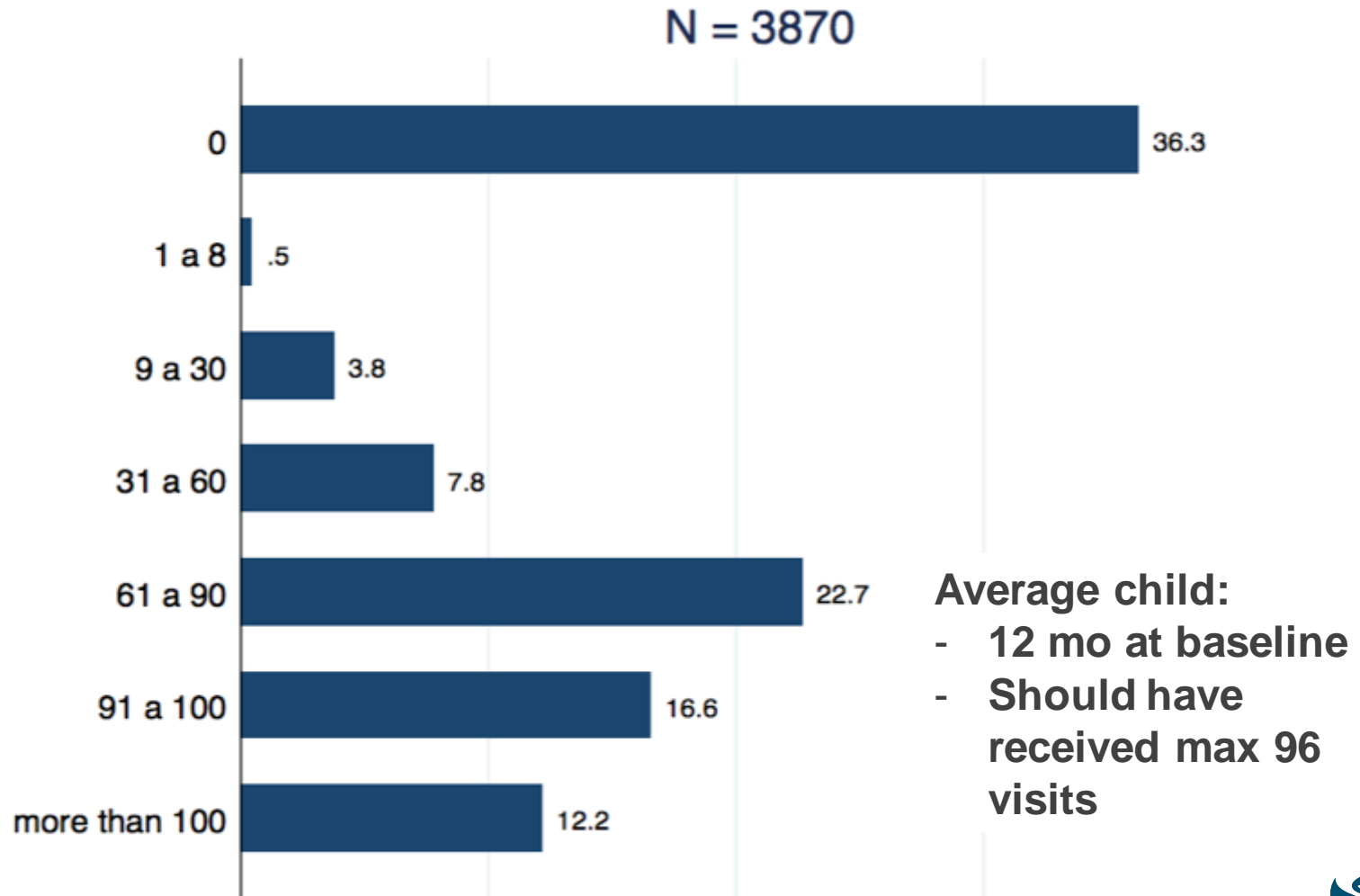
Other reasons

- Families chose not to participate

- Program did not reach all eligible children

=> **47%**

After 27m of implementation, take-up amongst T was 64%, with large variation in number of visits received



Main results - TOT (N=5,339)

Domain	Impact	SE	P-value
Problem Solving	0.098*	0.048	0.042
Communication	0.122*	0.049	0.013
Fine Motor	0.094+	0.055	0.089
Personal-social	0.102+	0.057	0.074
Gross Motor	-0.012	0.047	0.801
Total (all domains)	0.098*	0.043	0.024
Total (PS+Com+FM)	0.097**	0.037	0.009

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Summary of main findings

ITT

Significant impact of Cuna Mas on **problem solving, communication, fine motor and personal-social** scales

Magnitude of impact ~ **0.06-0.08 SD**

Imperfect take-up: 64%

TOT

Magnitude of impact ~ **0.09-0.12 SD**

The Bayley sub-sample

Includes all groups of districts in the sample where...

No village in the group was **deemed** ineligible
<30% of households in the survey were
indigenous

Includes **only children under 42 months of age**, to whom Bayle can be administered

By construction the sub-sample has:

- Younger children
- Less indigenous
- Higher compliance
- More children still in the program at follow-up

ASQ results ITT– All & Sub-sample

Domain	Full Sample			Sub-sample		
	Impact	SE	P-value	Impact	SE	P-value
Problem Solving	0.064*	0.032	0.047	0.177**	0.062	0.006
Communication	0.079*	0.032	0.015	0.078	0.059	0.185
Fine Motor	0.061+	0.036	0.093	-0.035	0.064	0.586
Total (PS+Com+FM)	0.063*	0.02	0.010	0.075+	0.043	0.087
Observations	5339			980		

Bayley results – ITT (N=1038)

Domain	Impact	SE	P-value
Cognitive development	0.247**	0.075	0.002
Receptive Language	0.162*	0.062	0.011
Expressive Language	-0.111	0.072	0.129
Fine Motor	0.034	0.068	0.622
Total (all domains)	0.139+	0.074	0.066

Bayley results – ITT (N=1038)

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Receptive Language	0.162*	0.062	0.011
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Fine Motor	0.034	0.068	0.622
Total (all domains)	0.139+	0.074	0.066

Bayley results – TOT (N=1038)

Treatment on the treated, IV

Domain	Impact	SE	P-value
Cognitive development	0.295**	0.088	0.001
Receptive Language	0.193**	0.071	0.007
Expressive Language	-0.132	0.083	0.115
Fine Motor	0.040	0.079	0.610
Total (all domains)	0.165+	0.086	0.054

Bayley results – TOT (N=1038)

Treatment on the treated, IV

Domain	Impact	SE	P-value
Cognitive development	0.295**	0.088	0.001
Receptive Language	0.193**	0.071	0.007
Expressive Language	-0.132	0.083	0.115
Fine Motor	0.040	0.079	0.610
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Heterogeneity


Within Bayley sub-sample:

Cognitive development:

Larger impacts for girls, from poorer households, for children of low-education parents, for children of mothers with more symptoms of depression in baseline

Receptive language:

Larger impacts for kids from poorer households, for those with less educated parents, and for those who were exclusively breastfed 6mo.



Putting things into perspective

Study	Country	N (N Treated)	Effective treatment	Impact
Grantham-McGregor et al. (1991)	Jamaica	129 (62)	100%	0.91 SD Developmental coefficient (Griffiths)
Hamadani et al. (2006)	Bangladesh	193 (92)	~100%	0.28-0.33 SD Index of mental development (Bayley-II)
Attanasio et al. (2014)	Colombia	1267 (720)	81% of planned visits (average)	0.26 SD Cognitive 0.22 SD Receptive Language (Bayley-III)

At a scale 70+ times larger than Colombia, with room to improve implementation and quality, Cuna Mas has robust, significant impacts on child development (cognitive and language).

Concluding thoughts

Despite all the difficulties of implementing a home visiting program at scale, through a government agency, in areas that are hard to reach and culturally diverse, these results document robust impacts on cognitive and receptive language development.

Program costs: ~US\$300 per child per year in 2015

Impacts are not small:

- They close 18% of the socio-economic gradient for this sample in problem-solving (35% in communication, ASQ)

- They close 62% of the socio-economic gradient for this sample in cognitive development (42% in receptive language, Bayley)



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