Enrollment & Demographic Information

- As of July 31st there were 2,830 children enrolled in the MANI IV Program across 3 municipalities. Of these children, 2,661 have been enrolled since the beginning of the project, receiving 4 bags of Chispuditos every 3 months, or 16 bags total over 12 months (July 2016 – June 2017).
- The average age of participants increased from 34 months (SD 15.4 mo.) to 46 months (SD 15.2 mo.) throughout the study period.
- The study group ranged from 50.9% to 51.2% male throughout the study period.

Enrollment data overtime of all program participants

Municipality	Communities	July 2016	Oct. 2016	Jan. 2017	April 2017	July 2017
Colomoncagua	51	1,530	1,508	1,499	1,499	1,499
San Marcos	30	786	777	792	777	777
Camasca	14	521	531	566	554	554
Total	95	2,837	2,816	2,857	2,830	2,830

Enrollment data overtime of program participants receiving nutritional product since July of 2016

Municipality	Communities	July 2016	Oct. 2016	Jan. 2017	April 2017	July 2017
Colomoncagua	51	1,530	1,472	1,462	1,462	1,462
San Marcos	30	786	762	716	704	704
Camasca	14	521	509	500	495	495
Total	95	2,837	2,743	2,678	2,661	2,661

Demographic data of children receiving nutritional product since July, 2017

	July 2016	Oct. 2016	Jan. 2017	April 2017	July 2017
N	2,837	2,743	2,678	2,661	2,661
Average Age (SD)	34.0 (15.4)	36.9 (15.6)	39.9 (15.4)	43.0 (15.2)	46.0 (15.2)
Sex	M: 1,444 (50.9%)	M: 1,395 (50.9%)	M: 1,371 (51.2%)	M: 1,361 (51.1%)	M: 1,361 (51.1%)

Analysis of Anthropometric Measures

- Every three months program participants were weighed and measured by Shoulder to Shoulder health promoters at regularly scheduled community health meetings (i.e. AIN-C meetings). The following analysis includes only those children who received Chispuditos during the entirety of the program and whose data is complete (n=2,435 or 91.5% of program participants)

Nutrition indicators from baseline to 12 months for program participants (n=2,435)

	Total				
	Baseline	3 mo.	6 mo.	9 mo.	12 mo.
Mean Age, m (SD)	34.1 (15.1)	37.0 (15.2)	40.7 (15.1)	43.1 (15.1)	46.1 (15.1)
Mean Height, cm (SD)	87.4 (10.7)	88.9 (10.7)	90.9 (9.9)	92.7 (9.7)	94.6 (18.9)
Mean Weight, kg (SD)	12.2 (3.1)	12.7 (2.7)	13.4 (3.7)	13.9 (4.5)	14.2 (2.7)
Mean WHZ (SD)	-0.25 (1.1)	0.03 (0.9)	0.20 (1.0)	0.18 (1.0)	0.22 (1.1)
% Wasted (WHZ<-2)	4.2%	2.1%	1.6%	2.0%	1.8%
Mean WAZ (SD)	-0.93 (1.1)	-0.89 (1.0)	-0.80 (1.0)	-0.83 (1.0)	-0.84 (1.0)
% Underweight (WAZ<-2)	14.0%	12.3%	10.4%	10.7%	10.6%
Mean HAZ (SD)	-1.44 (1.3)	-1.59 (1.2)	-1.61 (1.2)	-1.60 (1.1)	-1.65 (1.1)
% Stunted (HAZ<-2)	32.8%	36.9%	36.4%	34.8%	37.0%

- Nutrition indicators show improvements in weight for age, the average z-score increasing from -0.93 (SD 1.1) to -0.84 (SD 1.0) and the percent underweight decreasing from 14% to 10.6% over 12 months.
- Decreases are also seen for wasting (weight for height/length) from 4.2% to 1.8%, with the average z-score increasing from -0.25 (SD 1.1) to 0.22 (1.1).
- The average height/length for age does not show a clear trend among program participants, increasing and decreasing throughout the program. Overall approximately one third of program participants were stunted (32.8 – 37.0%)

Morbidity Measures

- The medical charts of 958 (36%) randomly selected program participants were reviewed for diagnosed respiratory and intestinal infections. The below chart shows the number of infections noted during each month, beginning with three months prior to implementation (April 2016).

Diagnosis of respiratory and intestinal infections among program participants by month (n=958)

	April 2016	May 2016	June 2016	July 2016	Aug 2016	Sept 2016	Oct 2016	Nov 2016	Dec 2016	Jan 2017	Feb 2017	Mar 2017	April 2017
Diagnosed with Respiratory Infection	36 (3.8%)	20 (2.1%)	55 (5.7%)	45 (4.7%)	53 (5.5%)	34 (3.5%)	22 (2.3%)	33 (3.4%)	11 (1.1%)	25 (2.6%)	13 (1.4%)	30 (3.1%)	27 (2.8%)
Diagnosed with Intestinal Infection	22 (2.3%)	17 (1.8%)	27 (2.8%)	25 (2.6%)	12 (1.3%)	10 (1.0%)	12 (1.3%)	7 (0.7%)	8 (0.8%)	6 (0.6%)	14 (1.5%)	12 (1.5%)	7 (0.7%)

Hemoglobin Measures

- Every 6 months from July of 2016 to July 2017 hemoglobin samples were taken for a group of randomly selected children under the age of 5 in Camasca. All children sampled are participants of the MANI IV program, consuming 16 bags of Chispuditos throughout the study period.
- At baseline 41.4% of program participants were anemic, compared to 30.0% after 6 months and 27.8% after 12 months (13.6% decrease over 12 months). This change is more prominent among males (18.4% decrease over 12 months).

Average hemoglobin levels and anemia status of children at baseline, 6 months and 12 months (n=210, n2=200, n3=198)

	Male			Female			Total		
	Baseline	6 mo.	12 mo.	Baseline	6 mo.	12 mo.	Baseline	6 mo.	12 mo.
N	96	92	91	114	108	109	210	200	198
Mean Age (SD)	31.2 (15.0)	37.0 (15.1)	43.0 (14.8)	31.0 (14.9)	37.5 (15.0)	43.5 (15.0)	31.2 (15.0)	37.1 (15.1)	43.2 (15.0)
Mean Hb, g/dl (SD)	11.2 (1.1)	11.7 (1.1)	11.7 (1.0)	11.2 (1.0)	11.7 (1.1)	11.8 (1.0)	11.2 (1.1)	11.7 (1.2)	11.8 (1.1)
Anemic*, N (%)	43 (44.8%)	31 (33.7%)	24 (26.4%)	44 (38.6%)	29 (26.9%)	31 (28.4%)	87 (41.4%)	60 (30.0%)	55 (27.8%)

*11 g/dl cutoff for children <60 mo; 11.5 g/dl cutoff for children ≥60 mo

Children Stunted at Baseline

- Among those who were stunted at baseline there is almost a 20% decrease in stunting by 6 months as only 83.7% were stunted after the second quarter.
- The percent of this group underweight was over twice that of the group overall (35.4% versus 14.0%). While the group overall only decreased underweight by 3.4%, this group decreased by 9.9%.
- This group also showed improvements in wasting, from 3.6% to 2.3%.

Select nutrition indicators of children stunted at baseline (n=892)

	Stunted at Baseline		
	Baseline	**6 mo.**	**12 mo.**
Mean Age, m (SD)	37.7 (12.9)	43.8 (12.9)	49.8 (12.9)
Mean Height, cm (SD)	85.4 (6.7)	89.2 (7.4)	93.4 (28.7)
Mean Weight, kg (SD)	12.2 (4.1)	12.7 (2.0)	13.5 (2.1)
Mean WHZ (SD)	-0.13 (1.6)	0.03 (1.0)	0.03 (1.0)
% Wasted (WHZ<-2)	3.6%	2.5%	2.3%
Mean WAZ (SD)	-1.6 (1.3)	-1.94 (2.0)	-1.53 (0.8)
% Underweight (WAZ<-2)	35.4%	26.2%	25.5%
Mean HAZ (SD)	-2.81 (0.7)	-2.62 (0.8)	-2.57 (0.8)
% Stunted (HAZ<-2)	100%	83.7%	81.0%
Hb data available	37	36	36
Anemic (%)	45.9%	41.7%	36.1%

Children Anemic at Baseline

- Of those who were anemic at baseline (n=87), only 50.6% were anemic after 6 months and 40.2% after 12 months.

Select nutrition indicators for children anemic at baseline (n=87)

	Anemic at Baseline		
	Baseline	**6 mo.**	**12 mo.**
Age (m)	24.9 (13.6)	30.9 (13.6)	36.9 (13.6)
Hb data available	87	81	82
Mean Hb, g/dl (SD)	11.2 (1.0)	11.5 (1.1)	11.7 (1.0)
Anemic, N (%)	87 (100%)	41 (50.6%)	33 (40.2%)