

# *¡Viva Con Chispa!* My Summer with Project Spammy

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Hormel Foods Corporation, Cáritas Arquidiocesana, and the Center for Studies of Sensory Impairment, Aging, and Malnutrition (CeSSIAM) Guatemala City, Guatemala



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A final thank you goes out to my family and teachers from Regina High School, who supported me from the first step of this internship process.

#### I. Introduction

Growing up in Iowa City, Iowa, I always heard different words related to agriculture, but I never paid attention to them. I was also blessed to never have been truly hungry. I never thought about how a drought or a flood in Iowa could affect other states or countries. But the World Food Prize Foundation changed my views on all of this.

I first heard of the Borlaug-Ruan Internship when my sister Jane went to Beijing in 2002 as an intern. But I did not fully grasp its significance until I attended the Global Youth Institute in 2010 as a sophomore in high school. I left the GYI inspired and passionate about fighting hunger. I brought the Oxfam hunger banquet back to my school because I wanted my classmates to have that eye-opening experience. I also participated in the Iowa Youth Institute in 2012. I applied for the Borlaug-Ruan Internship in December of 2013, and left for Guatemala in June of 2014. I spent two months in Guatemala, and returned in August.

#### II. Background

#### A. Working with Project Spammy and Hormel Foods

As the first intern in Guatemala, I had the privilege of working with Hormel Foods Corporation, Cáritas Arquidiocesana, and the Center for Studies of Sensory Impairment, Aging, and Malnutrition (CeSSIAM). My research was conducted both when I went on Hormel employee engagement trips, and at La Esperanza, the daycare run by the Sisters

of Christ Crucified (*Las Hermanas de Cristo Crucificado*), whom I lived with for the rest of my stay in Guatemala.

In 2008, Hormel brought a shelf-stable fortified turkey product called Spammy to Guatemala. It can be mixed into any food to provide essential vitamins and nutrients, such as vitamins D and B12, and by doing so, can be incorporated into any traditional diet (Hormel). According to Project Spammy's website, Hormel has reached



8,300 Guatemalan families, and more than 30,000 children (Project Spammy). These numbers continue to grow as Hormel continues to send its employees to Guatemala.



Project Spammy's mission, as stated on their website, is "to improve lives through nutrition, educational programming and leadership development" (Project Spammy). Hormel employees and their families have the opportunity to go to Guatemala to establish family and community centers called Chispa Centers and learn more about Project Spammy. They visit the homes of the families that Project Spammy is aiding. The employees

also see La Villa de Las Niñas, the boarding school where Hormel sponsors scholarships for eight girls.

Before their departure, the employees collaborate among themselves to create their own Dream Stations for the children. There are six different Dream Stations: Arts and Crafts, Physical Education, Computers, Dream Books, Learning English, and the Imagination Station.

Chispa, in Spanish, means "spark" or "passion," and exemplifies what these centers symbolize for the children. The Dream Stations, especially the Dream Books, encourages the children to think about their futures and what their aspirations are. One of the most inspiring



experiences that I had was meeting a girl named Sabrina on the June employee engagement trip. She was in my group, and her dream is to become a lawyer. In her Dream Book, she drew a picture of herself as a lawyer, and wrote that she needs to study in order to achieve her goal. When I saw her again the next month, she proudly told me she still has the same dream.

The Hormel employees spend their time visiting previously established Chispa Centers, and then found one that they can call their own. The employees bring all of the supplies for the Dream Stations. They also bring materials for each child who attends the Chispa Center to have their own backpack. They spend a day setting up for these activities, and also paint and clean the Chispa Center.



The next day, the employees run the stations with groups of about ten children. In one short day, the employees and their groups rotate through all six Dream Stations. Before they leave, they teach Chispa Center staff how to implement each station. After Hormel employees leave, the Chispa Center staff continue to run the stations.



B. Working with Cáritas Arquidiocesana

Hormel partners with Food for the Poor to work in conjunction with Cáritas Arquidiocesana, whose headquarters are located in Guatemala City. Cáritas' mission is to be "...the social arm of the Archdiocese of Guatemala, who serves Christ present in the poor, sick and abandoned, through timely, high quality compassionate care" (Program

Educativo) They run the only dedicated pediatric hospital in all of Guatemala. Cáritas identifies the best places to establish Chispa Centers, and works in conjunction with the staff and volunteers.



One of their many programs is the Mother and Child Education



Program (*Programa Educativo Materno Infantil*), which focuses on mothers and children from birth to age six and eleven months, before the children enter elementary school.

The mothers come to Chispa Centers every month, and attend classes with differing themes, such as nutrition, hygiene, and health. The Cáritas staff then measure the height and weight of the children, to see how they are

developing. The mothers are now eligible to receive food rations, with five pounds of rice, five pounds of beans, and a box of Spammy with twenty-four cans. Each family must keep their empty cans and turn in all twenty-four before they can receive another box. The women in these communities also ensure that their peers are abiding by Cáritas' standards because they fear that if one woman in the community abuses the system, then all of their privileges will be revoked. This system of "self-policing" has been successful.



B.1. The Impact of Project Spammy

The staff from Cáritas took me to see five different Chispa Centers. While there, I would conduct a variety of interviews with the staff, who are typically religious sisters, priests, or volunteer parents. A sample questionnaire can be viewed in the appendix. This questionnaire was translated into Spanish.

As I interviewed the staff, I heard amazing testimonies. One Sister at the sixth Chispa Center in El Tejar told me, "They [the kids eating Spammy] have learned to love each other." Common things that I heard were that the children were healthier, taller, and gained weight. They were missing less school, were more active, and loved to eat Spammy!

The priest, Father Isadore, at the ninth Chispa Center said, "The nutrition of the children is improving; Spammy is fighting against malnutrition...The Dream Stations are excellent....the children are very involved and want to be here [at the Chispa Center]." I had the chance to also participate in these Dream Stations, and I could see that the children also loved them!

# C. Working with the Center for Studies of Sensory Impairment, Aging, and Malnutrition (CeSSIAM)

My internship also included doing research on stunting and malnutrition. Guatemala has the highest prevalence of stunting in the Americas with fifty-four percent of children ages six months to five years displaying stunted growth. The main cause of stunting is malnutrition, both from lack of sufficient calories and from a deficiency of essential



nutrients. Stunting can lead to a score of problems, such as reduced ability to fight infections, reduced mental capability, and reduced physical capability.

In order to better combat malnutrition and stunting, Hormel partnered with CeSSIAM's director, Dr. Noel Solomons, whose team has significantly contributed to research on nutritional deficiencies in Guatemalan children. This research led to improved fortification of Spammy.

One of CeSSIAM's many topics of interest is photographic documentation of stunted growth. In 2013, students Emily Caplan, Fabian Chang and Ben Chomitz, while working through CeSSIAM, determined that a person's side view gives their most accurate measurements when using photographic analysis. Photographic representation has been established as cost-effective and accurate in documenting adult proportions. However, it had not been determined if this procedure is applicable among preschool-aged children. My research expanded on what is already known about stunting in Guatemala, especially because research on whether leg length is the component of stature related to stunting is incomplete. I had hypothesized that the leg to trunk ratio will serve as a useful measure for stunting in both children and adults.

#### III. Methodology of Photographic Analysis

First, I required colored stickers, a digital camera, a tripod with bubble level, a stool, and a color printer. I found that the best stickers to use were film index arrows, which are commonly used to mark notes.

In order to set up, the stool needed to be placed far enough away from the wall so children were not tempted to lean against it or place their hand on it. The tripod was then set up at the height of the child's waist. Both bubble levels on the tripod were used to ensure that the tripod was horizontal.

I would then place these stickers on the child's hip. This point was determined by finding the top of their iliac crest with my hand. The top of the arrow was placed at the ridge of the iliac crest. The color of the sticker needed to contrast with the child's clothing, so that it would stand out in the picture. To make sure these measurements could be done as accurately as possible, belts, jackets, thick sweaters, and *garbachos* (daycare uniform bibs) were removed or pulled up.



To determine the leg to trunk ratio, the child stands, feet together and without shoes, on the stool. The child's feet were aligned to be straight

across, using the lines on the stool as a guide. The child stands up straight, with good posture. His or her head needs to be in the Frankfort plane, which means that the ear canal needed to be in line with the eyes.



The child places their hands on their heart (*saludo uno*, as if they were saluting their national flag), or holds their jacket or *garbacho* up to their chest. Then several peripheral pictures were taken (see figure above). Slight adjustments were made if needed. If children were absent or refused to have their picture taken, or if the picture was unacceptable, then I would return at the next opportunity to take additional photos.

The best picture for each child was then printed out. The crown of the head, the top of the hip, and the sole of the foot was marked. Then I took the measurements, in millimeters, from the crown to the sole. Then the distance from the upper-edge of the reference sticker on their hip to the sole of the foot is recorded as "lowerextremities." The ratios that needed to be recorded were the "lower-extremities" to "total length" ratio and the "upper-body" to "lower-extremities" ratio.

#### IV. Results and Discussion

The potential sources of error and unreliability include diurnal height variation and the posture and movement of the children. Diurnal height variation occurs as gravity affects the fluid in a person's spinal discs; height loss for a child over a day can range from 0.47 to 2.8 cm (Foote).

The children that I used as my subjects were young and tended to be fidgety. This may skew also the proportions in the photos.

In the end, I was able utilize 128 students' photos. I had children refuse to let me take their photo, while some on the class lists no longer attend La Esperanza. The students' ratios can be viewed in the appendix, but the average ratios of each class, and the standard deviations, are in the table below.

	Nursery (Ages 2- 3)	Pre-K (Ages 3- 4)	Kinder (Ages 4- 5)	Parvulos (Ages 5- 6)	Prepatoria (Ages 6-7)
Lower/Total Avg					
	0.54144184	0.541356497	0.546401602	0.582592267	0.568249612
Lower/Total StD (σ)	0.020561142	0.020663236	0.01666108	0.015563867	0.015931904
Upper/Lower Avg	0.846655275	0.849803718	0.831803865	0.717636426	0.761132539
Upper/Lower StD (σ)	0.071392443	0.070824408	0.055779992	0.045909843	0.049613577

When a child is born, the average upper to lower ratio is 1.7. This ratio should decrease to 1.0 by age ten (Nwosu). Further research showed that these ratios differed among Turkish children; at age three, Turkish children have an upper to lower ratio of 1.108 and 0.984 at ten.

Dr. Solomons had previously hypothesized that malnourished Guatemalan children's bodies compensate by stunting the growth of their legs. But these ratios show that their legs are in fact longer than their trunks. This has great implications for future research with Guatemalan children and adolescents, as I have found that these ratios are different for Guatemalan children around these ages.

Because this was the first research of its kind with Guatemalan children, I can only recommend for further work to be done. These procedures need to be repeated to ensure accuracy, reliability, and applicability. As children at La Esperanza continue to eat Spammy, it would be of interest to see if their ratios change in the future, especially after puberty. Future work should also include older children. The oldest children at La Esperanza were six and seven, so the ratios of children above those ages should be researched.

Another suggestion for future work is using digital measurement tools, which would not only save paper and ink, but may allow for more accurate measurements.

#### V. Conclusion

My two months in Guatemala went much too quickly for me. But living there and immersing myself in the culture was the most amazing experience. When I visited the girls that Hormel sponsors at La Villa de Las Niñas, they many of them said, "When I graduate, I am going home to help my family." When I graduate, I want to go "home" to Guatemala to help my new family.

I do hope to return soon, and continue working with the Sisters, Project Spammy, and CeSSIAM. Project Spammy and the people that I met continue to inspire me. The USDA is now working with Hormel on Spammy production, which means even greater opportunities for its future. I am also excited about the implications of my research on stunting and malnutrition for CeSSIAM's future studies.

I am currently a sophomore at Boston University studying Sociology. After I graduate, I hope to pursue a Master's in Public Health, and dedicate my life to fighting hunger. While I may not know quite where this will lead me, I know that Project Spammy and the Borlaug-Ruan Internship has given me a good head start.

#### Works Cited

- Foote JM, Brady LH, Burke AL, Cook JS, Dutcher ME, et al. (2011) Development of an evidence-based clinical practice guideline on linear growth measurement of children. J Pediatr Nurs 26: 312–324. doi: 10.1016/j.pedn.2010.09.002
- "Hormel Foods and USDA Collaborate to Help Improve Physical and Cognitive Development in Malnourished Children."*Hormel Foods Press Releases.* 14 July 2014. Web. 1 Oct. 2014.
- Nwosu B, and Lee M. "Evaluation of Short and Tall Stature in Children." American Family Physician. American Family Physician, 1 Sept. 2008. Web. 1 Oct. 2014.
- "Programa Educativo Materno Infantil." Cáritas Arquidiocesana De Guatemala. Cáritas Arquidiocesana De Guatemala. Web. 1 Oct. 2014.
- "Project Spammy." Food For The Poor. Food For The Poor, Inc. Web. 1 Oct. 2014.
- Turan S, Bereket A, Omar A, Berber M, Ozen A & Bekiroglu N. Upper segment/lower segment ratio and armspan–height difference in healthy Turkish children. Acta Paediatrica 2005 94 407–413. doi:10.1111/j.1651-2227.2005.tb01909.x.

#### Appendix

#### **Project SPAMMY Survey**

#### **Interview Warm Up (about 5 minutes)**

Introduce yourself and explain that you are helping Hormel learn more about how Project SPAMMY the staff at the Chispa Center feels about the program. Explain that when you're talking about Project SPAMMY overall, you want them to think both about the Dream Station activities at the center as well as the distribution and use of the SPAMMY product in homes. Assure them that there are no right or wrong answers. Ask permission to video record the interview.

#### Staff Role (about 5 minutes)

Ask the respondent to describe the role at the Chispa Center. Are they a nun? Or a parent volunteer? How many days a week are they working there?

#### **Overall Program Opinions (5 to 10 minutes)**

Explain that you're first going to ask them a few general questions about Project SPAMMY and then you'll ask them about specific aspects of the program.

- 1. Overall, how would you rate the Project Spammy Program? Excellent, very good, good, fair, or poor
- 2. What, if anything, do you like about Project Spammy?
- 3. What if anything, do you not like about Project Spammy?
- 4. How, if at all, has the classroom environment and mood changed since the beginning of Project Spammy?
- 5. What, if anything, would you like to see changed about how Project Spammy is implemented?
- 6. Overall, how would you rate the Dream Station portion of Project Spammy? Excellent, very good, good, fair, or poor
- 7. [In response to question 6.] Why?

### **Dream Station Opinions**

Explain that you're going to ask them about each Dream Station individually. Physical Activity---group games

Arts and Crafts---making items the kids can take home

Dream Books---creating a personal book with life aspirations

Imagination Station---Playing with Legos, bubbles, PlayDoh, Chalk, etc.

Learning English---Singing and basic words in both English and Spanish

Computers---Learning computer navigation

A. Overall, how much do you think the children enjoy the (insert name) Dream Station?

Not at all, somewhat, or very much

- B. Why do you say that?
- C. When you are doing this Dream Station, do the children...

Get very excited and wish it went longer?

Stay engaged during the activity for the length of it, but do not beg for more?

Seem to get bored or distracted before the end of activity?

D. Overall, how easy or hard is it for the Chispa Center staff to run this Dream Station?

Very easy, somewhat easy, somewhat hard, or very hard? [If somewhat or very hard, inquire why.]

E. What, if anything, would you change about this Dream Station?

[REPEAT A-E FOR EACH DREAM STATION. AFTER ASKING ABOUT ALL SIX STATIONS, FINISH WITH THE FOLLOWING.]

In your opinion, which one of the Dream Stations is the best? Why? Which one station would the children say is the best? Why?

Photographic Evidence Ratios Names have been removed to protect identities.

	Fecha-de+	Age (as tof+	Total-Length	Lower-fin-	Upper-(in-				
Nursery	Nacimiento	18/8/14}	(in+mm)	mm)	mm)=#B	Lower/Total	Upper/Lower	Lower/Total	Upper/Lower
		3 Vears, 4 Months,						-	
	9/28/11	3-Days	222	125	97	0.563063063	0.776	0.563063063	0.77
		3¥ears, ₽•Months,							
	8/17/11	14-Days	230	133	97	0.57826087	0.729323308	0.57826087	0.72932330
		2¥ears,⊕Months,							
	1/31/12	0-Days						0.54	0.85185185
		3¥ears, <del>5</del> ∙Months,							
	5/30/11	1-Days	250	135	115	0.54	0.851851852	0.561264822	0.78169014
		3¥ears, <del>5</del> Months,							
	5/24/11	7-Days	253	142	111	0.561264822	0.781690141	0.526785714	0.89830508
		2 Years, 8 Months,							
	2/27/12	4 Đays	224	118	106	0.526785714	0.898305085	0.536290323	0.86466165
		2#ears,∉1							
	11/6/11	. ,	248	133	115	0.536290323	0.864661654	0.528225806	0.89312977
		2 Vears, <del>6 Months</del> ,							
	4/25/12	6-Days	248	131	117	0.528225806	0.893129771	0.542168675	0.84444444
		3¥ears, 4 Months,							
	6/9/11	22-Days	249	135	114	0.542168675	0.84444444	0.5375	0.86046511
		3¥ears, <del>5</del> Months,							
	5/31/11	0+Days	240	129	111	0.5375	0.860465116	0.545454545	0.833333333
		3 Vears, <del>5 Months</del> ,							
	5/31/11	0+Days	242	132	110	0.545454545	0.8333333333	0.553278689	0.80740740
	0.60	3 Years, 2 Months,	744	135	109	0.553370500	0.007407407	0.55070.0000	0.005.0703.4
	8/9/11	22-Days 3-Years, 8-Months,	244	135	109	0.553278689	0.807407407	0.553719008	0.80597014
	7/1 4/11		242	134	108	0	0.805970149	0.486956522	1 05353143
	7/14/11	17-Days 2-Vears, <del>6 M</del> onths,	242	134	108	0.553719008	0.805970149	0.486956522	1.05357142
	4/1/12	2 rears, to womms, 30 Davs	230	112	118	0.486956522	1.053571429	0.552995392	0.80833333
	4/1/12	3 Vears, 2 Months,	2.30	112	110	0.4005.0022	1.0337/1423	0	0.000.33333
	8/27/11	4 Days						0.520547945	0.92105263
	0 <i>j21</i> ,11	2 Years, 4 Months,						0.320347343	0.52105203
	6/21/12	10-Days						0.563786008	0.77372262
	9191	3¥ears,∉Months,						U.SUSTOWARD	0.773712101
	8/26/11	5-Days						0.526748971	0.82812
	3,23,11	2#ears.40						0.020/40//1	3.02011
	12/24/11	Months, 7 Days	217	120	97	0.552995392	0.8083333333	0.547826087	0.84126984
		2 Vears, 6 Months,							
	4/5/12	26-Days		114	105	0.520547945	0.921052632	0.522522523	0.91379310
		3 Vears, 0 Months,							
	10/31/11	0+Days	243	137	106	0.563786008	0.773722628		

		1¥ears,40					
	12/28/12	Months, 6 Days					
		2#ears, <del>6</del> Months,					
	4/10/12	21-Days	243	128	106	0.526748971	0.828125
		3¥ears,&Months,					
	7/27/11	4-Days	230	126	106	0.547826087	0.841269841
		2#ears,40					
	12/15/11	Months, 46 Days					
		2#ears,41					
	11/13/11	Months, 48 Days	222	116	106	0.522522523	0.913793103
L/T+Avera	L <b>/</b> T-std	U/L+Avg	U/L+std				
0.54144	0.020561142	0.846655275	0.07139244				

Kinder	Fecha de Nacimiento	Age (as of 18/8/14)	Total (in mm)	Lower (in mm)	Upper (in mm)	Lower/Total	Upper/Lower
	4/1/09	5 Years, 6 Months, 30 Days	235	128	107	0.544680851	0.835937
	8/17/09	5 Years, 2 Months, 14 Days					
	5/1/09	5 Years, 5 Months, 30 Days	243	129	114	0.530864198	0.883720
	5/18/10	4 Years, 5 Months, 13 Days					
	7/28/09	5 Years, 3 Months, 3 Days					
	10/16/09	5 Years, 0 Months, 15 Days	228	125	103	0.548245614	0.8
	1/11/10	4 Years, 9 Months, 20 Days					
	4/17/10	4 Years, 6 Months, 14 Days					
	9/1/09	5 Years, 1 Months, 30 Days	256	137	119	0.53515625	0.8686131
	12/12/12	1 Years, 10 Months, 19 Days	242	141	101	0.582644628	0.7163120
	7/1/09	5 Years, 3 Months, 30 Days	233	133	100	0.570815451	0.7518796
	2/2/10	4 Years, 8 Months, 29 Days	241	133	108	0.55186722	0.8120300
	6/28/10	4 Years, 4 Months, 3 Days					
	7/24/09	5 Years, 3 Months, 7 Days	232	125	107	0.538793103	0.8
	4/26/10	4 Years, 6 Months, 5 Days	228	123	105	0.539473684	0.8536585
	6/22/09	5 Years, 4 Months, 9 Days	243	133	110	0.547325103	0.8270676
	6/24/09	5 Years, 4 Months, 7 Days	230	127	103	0.552173913	0.8110236
	2/16/10	4 Years, 8 Months, 15 Days	237	132	105	0.556962025	0.7954545
	6/25/09	5 Years, 4 Months, 6 Days	240	134	106	0.558333333	0.7910447
	12/10/09	4 Years, 10 Months, 21 Days	226	126	100	0.557522124	0.7936507
	7/19/09	5 Years, 3 Months, 12 Days	239	134	105	0.560669456	0.783582
	6/16/09	5 Years, 4 Months, 15 Days	243	140	103	0.576131687	0.7357142
	10/11/09	5 Years, 0 Months, 20 Days	248	136	112	0.548387097	0.8235294
	1/29/10	4 Years, 9 Months, 2 Days	218	116	102	0.532110092	0.8793103
	10/18/09	5 Years, 0 Months, 13 Days	225	110	105	0.533333333	0.0755105
	9/24/09	5 Years, 1 Months, 7 Days	223	131	98		0.7480916
	572-1705	4 Years, 10 Months, 23		151		0_572052402	0.7400510
	12/8/09	Days	230	123	107	0_534782609	0.8699186
	6/14/09		230	123		0.536796537	0.8629032
	4/1/10		231	118		0_533936652	0.8728813
	9/8/09		243	135		0.555555556	0.6726615
	9/6/09	4 Years, 10 Months, 25 Days	243	155	100	0_333333335	
	40 (4 (00						
	12/1/09	Days	235	121		0_514893617	0.942148
	1/19/10		235	121	114		0.942148
	8/9/09		236	129	107	0_546610169	0.8294573
	4/13/09						
	2/22/10	4 Years, 8 Months, 9 Days	225		400	0.000000	0.04505.40
	8/16/09		226	118		0_522123894	0.9152542
	8/5/09		229	129		0.563318777	0.7751937
	4/20/10		233	121		0_519313305	0.9256198
	9/21/09		229	127	102	0.554585153	0.8031496
	3/13/10						
	7/13/09		232	126	106	0_543103448	0.8412698
	_	7 Years, 11 Months, 29					
	11/2/06	Days	214	111		0_518691589	0.9279279
	8/17/09		240	132	108	0.55	0.8181818
/TAverag	-	U/L Avg	U/L std				
0_546402	0.0166611	0.831803865	0.055779992				

	Fecha de		Total Length (in				
Pre-Kinder	Nacimiento	Age (as of 18/8/14)	mm)	Lower (in mm)	Upper (in mm)= T-L	Lower/Total	Upper/Lower
	5/18/10	4 Years, 5 Months, 13 Days	245	132	113	0.53877551	0.85606060
	12/21/09	4 Years, 10 Months, 10 Days					
	7/22/10	4 Years, 3 Months, 9 Days	219	120	99	0.547945205	0.82
	12/20/10	3 Years, 10 Months, 11 Days	221	123	98	0.556561086	0.79674796
	11/25/10	3 Years, 11 Months, 6 Days					
	12/1/10	3 Years, 10 Months, 30 Days					
	6/8/10	4 Years, 4 Months, 23 Days	209	106	103	0.507177033	0.97169811
	6/8/10	4 Years, 4 Months, 23 Days	231	117	114	0.506493506	0.97435897
	11/13/10	3 Years, 11 Months, 18 Days					
	5/19/10	4 Years, 5 Months, 12 Days					
	4/24/11	3 Years, 6 Months, 7 Days	210	116	94	0.552380952	0.8103448
	10/26/10	4 Years, 0 Months, 5 Days					
	3/16/11	3 Years, 7 Months, 15 Days					
	11/29/10	3 Years, 11 Months, 2 Days	225	122	103	0.542222222	0.8442622
	9/27/10	4 Years, 1 Months, 4 Days					
	10/24/10	4 Years, 0 Months, 7 Days	238	126	112	0.529411765	0.88888888
	9/7/10	4 Years, 1 Months, 24 Days	242	134	108	0.553719008	0.80597014
-	12/3/10	3 Years, 10 Months, 28 Days	236	120	116	0.508474576	0.96666666
	9/21/10	4 Years, 1 Months, 10 Days	254	142	112	0.559055118	0.7887323
	2/27/11	3 Years, 8 Months, 4 Days	206	109	97	0.529126214	0.8899082
	12/16/10	3 Years, 10 Months, 15 Days	228	122	106	0.535087719	0.8688524
	2/10/11	3 Years, 8 Months, 21 Days	219	121	98	0.552511416	0.8099173
	5/20/11	3 Years, 5 Months, 11 Days	211	108	103	0.511848341	0.95370370
	5/9/11	3 Years, 5 Months, 22 Days	213	118	95	0.55399061	0.80508474
	8/12/10	4 Years, 2 Months, 19 Days	246	135	111	0.548780488	0.8777777
	9/10/10	4 Years, 1 Months, 21 Days	222	131	91	0.59009009	0.69465648
	1/1/11	3 Years, 9 Months, 30 Days	239	133	106	0.556485356	0.79699248
	6/29/10	4 Years, 4 Months, 2 Days	198	113	85	0.570707071	0.75221238
	12/27/10	3 Years, 10 Months, 4 Days	214	118	96	0.551401869	0.81355932
	8/25/10	4 Years, 2 Months, 6 Days					
	12/25/10	3 Years, 10 Months, 6 Days	234	129	105	0.551282051	0.81395348
	1/5/11	3 Years, 9 Months, 26 Days					
	3/10/11	3 Years, 7 Months, 21 Days	225	117	108	0.52	0.92307692
	1/12/11	3 Years, 9 Months, 19 Days	221	117	104	0.529411765	0.88888888
	4/13/11	3 Years, 6 Months, 18 Days	226	120	106	0.530973451	0.88333333
/f Average	L/T std	U/L Avg	U/Lstd				
0.541356497	0.020663236	0.849803718	0.070824408				

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	Fecha de						
Parvukos	Nacimiento	Age (as of 18/8/14)	Total (in mm)	Lower (in mm)	Upper (in mm)	Lower/Total	Upper/Lower
	11/26/08	5 Years, 11 Months, 5 Days					
	12/27/08	5 Years, 10 Months, 4 Days					
		5 Years, 8 Months, 27 Days	249	145	104	0.582329317	
	1/6/09	5 Years, 9 Months, 25 Days	236	130	106	0.550847458	0.81538461
		6 Years, 4 Months, 5 Days	226	129	97	0.57079646	0.75193798
		6 Years, 1 Months, 6 Days					
		6 Years, 0 Months, 4 Days	223	135	88	0.605381166	
		5 Years, 9 Months, 15 Days	240	147	93	0.6125	0.63265306
	7/9/08	6 Years, 3 Months, 22 Days					
	1/21/19						
	12/14/08	5 Years, 10 Months, 17 Days	242	137	105	0.566115702	0.76642335
	8/14/08	6 Years, 2 Months, 17 Days					
	7/5/08	6 Years, 3 Months, 26 Days					
	5/7/09	5 Years, 5 Months, 24 Days	238	139	99	0.584033613	0.71223021
	7/27/08	6 Years, 3 Months, 4 Days					
	12/10/08	5 Years, 10 Months, 21 Days	241	136	105	0.564315353	0.77205882
	9/10/08	6 Years, 1 Months, 21 Days	239	139	1.00	0.581589958	0.7194244
	9/13/07	7 Years, 1 Months, 18 Days					
		114 Years, 9 Months, 31 Days	246	145	101	0.589430894	0.69655172
	8/5/08	6 Years, 2 Months, 26 Days	239	138	101	0.577405858	0.73188405
	11/11/08	5 Years, 11 Months, 20 Days	239	142	97	0.594142259	0.68309859
	10/29/08	6 Years, 0 Months, 2 Days	246	144	102	0.585365854	0.708533333
	12/2/08	5 Years, 10 Months, 29 Days					
	8/20/08	6 Years, 2 Months, 11 Days	232	135	97	0.581896552	0.71851851
	4/22/09	5 Years, 6 Months, 9 Days					
	4/22/09	5 Years, 6 Months, 9 Days					
	10/18/08	6 Years, 0 Months, 13 Days					
	5/14/08	6 Years, 5 Months, 17 Days	222	126	96	0.567567568	0.76190476
		6 Years, 3 Months, 20 Days					
		6 Years, 1 Months, 8 Days	237	137		0.578059072	
		6 Years, 2 Months, 13 Days	215	129			0.66666666
	10/20/08	6 Years, 0 Months, 11 Days	236	138	98	0.584745763	0.71014492
	1/25/09	5 Years, 9 Months, 6 Days					
		4 Years, 11 Months, 16					
	11/15/09						
		5 Years, 10 Months, 27					
	12/4/08		241	146		0.605809129	
		5 Years, 7 Months, 29 Days	237	141		0.594936709	
	11/22/08	5 Years, 11 Months, 9 Days	237	137	100	0.578059072	0.72992700
		5 Years, 10 Months, 25					
	12/6/08						
		6 Years, 4 Months, 13 Days					
		6 Years, 5 Months, 30 Days					
		6 Years, 3 Months, 4 Days					
		5 Years, 6 Months, 9 Days	235	132	103	0.561702128	0.7803030
/T Average		U/LAvg	U/L std				
0.5825923	0.015563867	0.717636426	0.045909843				

Prepatoria Fecha de

Nacimiento



