



# MODULE 7:

# Using WHO Anthro Plus Computer Program

- Introduction to WHO Anthro Plus
- Basic community monitoring concepts for outreach teams

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Revised 2013

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Child Survival Programs for Sahel region and Haiti are in collaboration with University of Maryland Dental School.

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# What is WHO Anthro Plus?

- WHO Anthro Plus is a computer program created by the World Health Organization (WHO) that compares height/weight/length data for children age 0-19 years to the WHO child growth standards.
- The “nutritional survey” program of WHO Anthro Plus allows for input of large amounts of data that is ideal for analyzing large numbers of children.

# Goals

- To use WHO Anthro Plus to demonstrate if a program is effective in improving the health of communities as indicated by the growth of children
- To obtain publishable data that demonstrates the impact of MAMA Project

# Indicators of Community Health

- Community Health Indicator #1: Growth of Children
- Community Health Indicator #2: Anemia
  - Anemia can be detected by testing hemoglobin with a simple finger prick, measurement is simple and cost effective.
  - Parasites, malaria, and malnutrition all cause anemia; therefore, a decrease in the prevalence of anemia signifies an increase in the health of a community.

# How does MAMA monitor program impact?

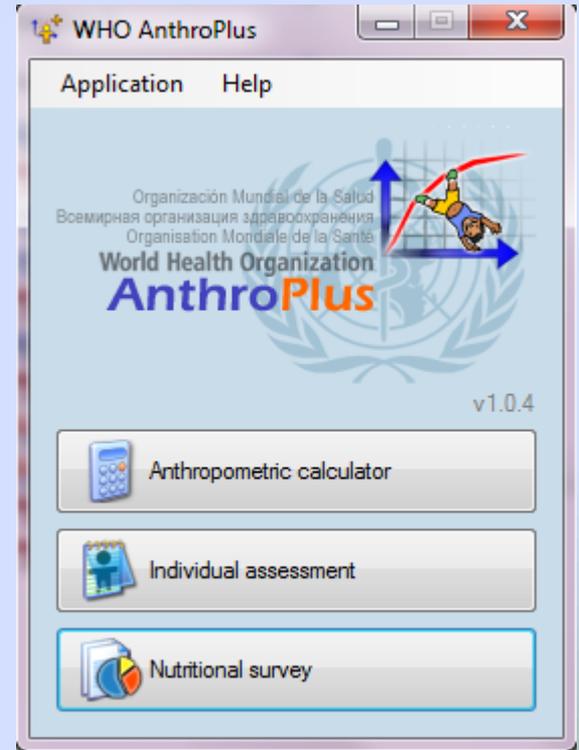
- Every member of the community will be offered the same treatment.
- No new interventions are being tested, rather the results of simultaneous application of multiple proven child survival strategies are being constantly monitored and documented.
- Improvement is measured by comparing community data to the WHO standards and to their own baseline data over time.

# Why is documentation important?

- To inform the community of their situation and trends
- To show donors the impact of MAMA Project
- To generate more support and more funding opportunities for MAMA project
- To inform policy makers of program impact on community health for consideration of implementation on a larger scale

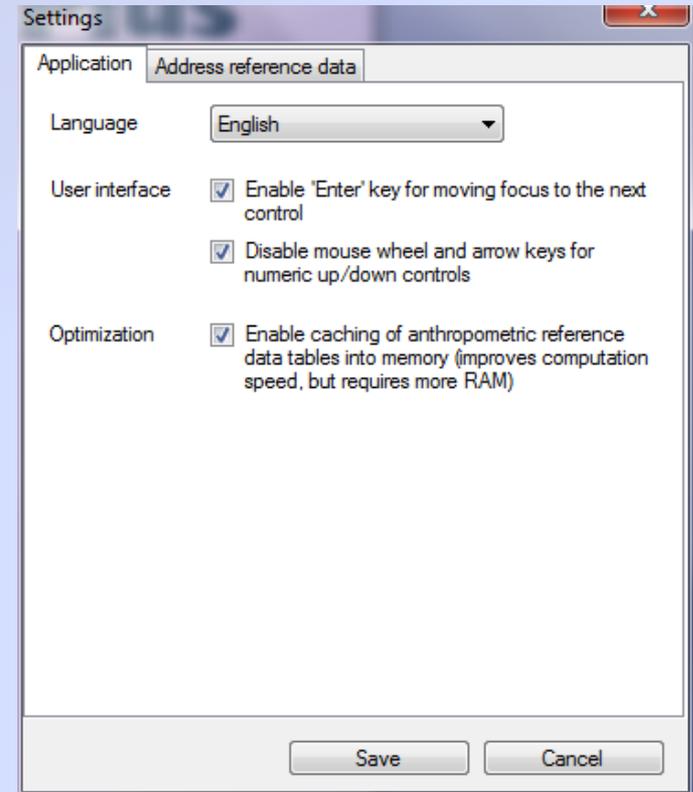
# Downloading WHO Anthro Plus

- WHO Anthro Plus can be downloaded for free from the following website:  
<http://www.who.int/growthref/tools/en/>
- Instruction manuals can also be downloaded.



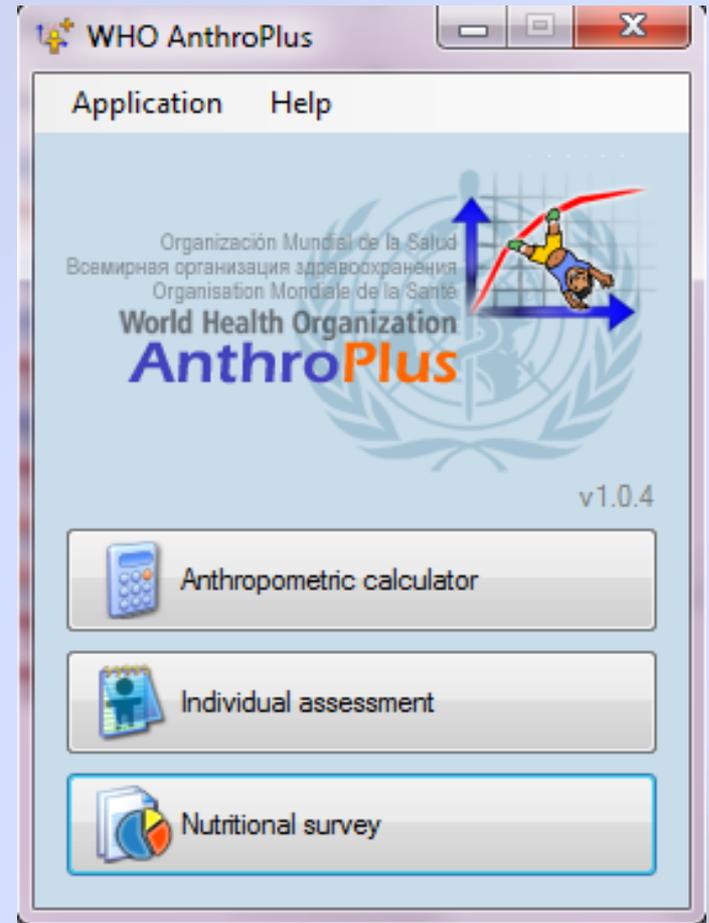
# Downloading WHO Anthro Plus

- In order to change the language to something other than English: Open the program, click on “Application,” then “Setting,” change the language and restart the program
- Language choices: English, French, Spanish, and Russian
- Persons assigned to data input and management must become familiar with this program



# Anthro Plus

To begin, open WHO Anthro Plus and click on the Nutritional Survey Application.

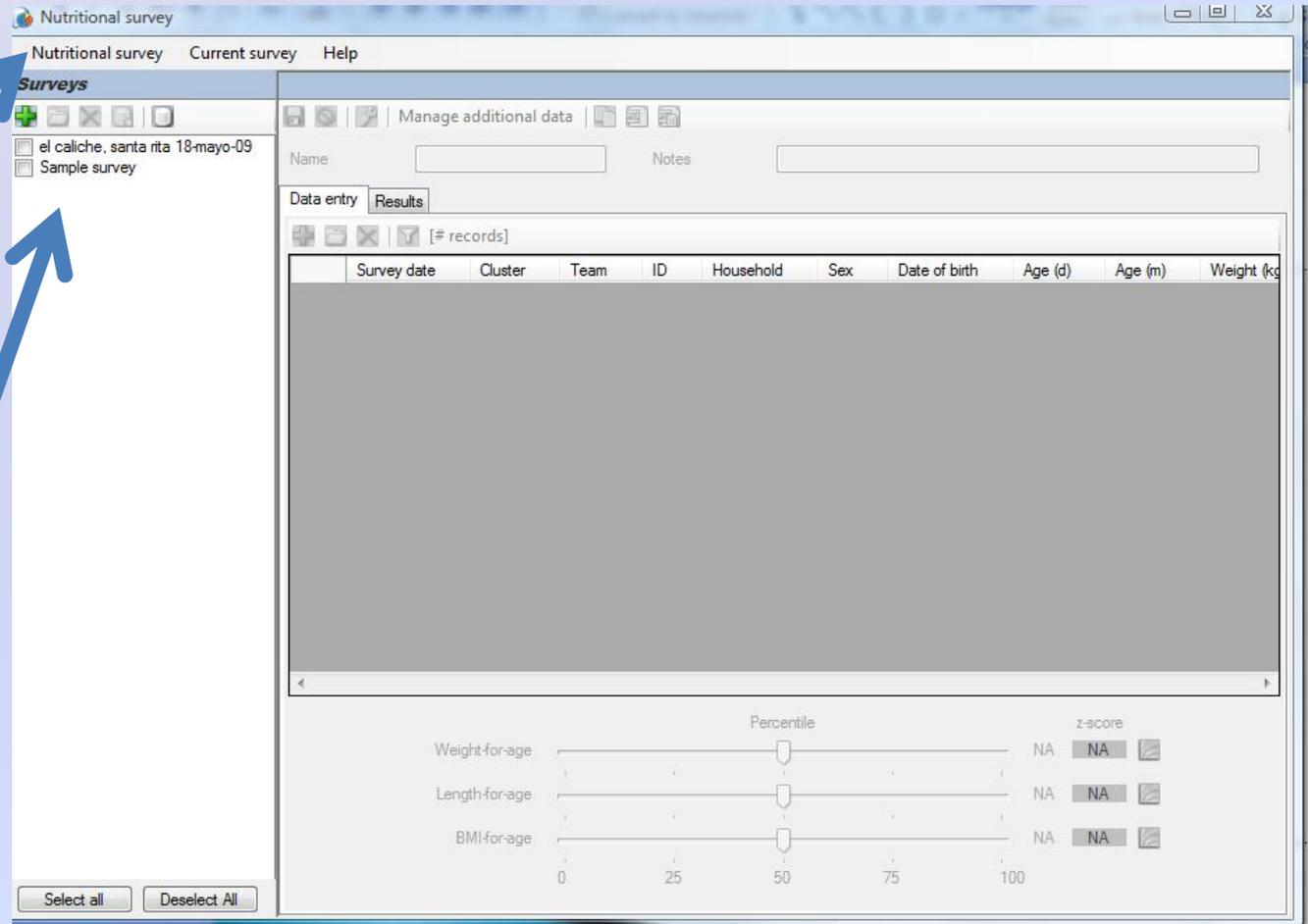


# Nutritional Survey

- Create a new survey by clicking on the “Nutritional Survey” menu.

OR

- Choose an existing survey from the left and click on the open folder



# Adding a Child

**Survey: Cangrejales, Santa Rita, Yoro 27-Febrero-09**

Manage additional data

Name: Cangrejales, Santa Rita, Yorc      Notes:

Data entry    Results

    42 record(s)

	Survey date	Cluster	Team	ID	Household	Sex	Date of birth	Age (d)	Age (m)	Weight
▶	2/27/2009	1	1	5	5	Female	8/6/2006	936	30.75	15.40
	2/27/2009	1	1	6	6	Female	2/15/2007	743	24.41	14.80
	2/27/2009	1	1	7	7	Male	5/30/2008	273	8.97	8.70
	2/27/2009	1	1	8	8	Female	10/23/2004	1588	52.17	18.70
	2/27/2009	1	1	9	9	Female	1/21/2002	2594	85.22	21.10
	2/27/2009	1	1	10	10	Male	1/27/1996	4780	157.04	41.50
	2/27/2009	1	1	11	11	Male	2/3/1999	3677	120.80	36.80
	2/27/2009	1	1	12	12	Male	4/18/1995	5064	166.37	57.60
	2/27/2009	1	1	13	13	Female	12/25/1999	3352	110.13	30.00
	2/27/2009	1	1	14	14	Female	4/29/2005	1400	46.00	14.50
	2/27/2009	1	1	15	15	Male	8/26/2007	551	18.10	11.40

Weight-for-height	Percentile	99.9	z-score	2.98	HC-for-age	Percentile	NA	z-score	NA
Weight-for-age	Percentile	91.8	z-score	1.39	MUAC-for-age	Percentile	97.1	z-score	1.90
Height-for-age	Percentile	7.0	z-score	-1.47	TSF-for-age	Percentile	NA	z-score	NA
BMI-for-age	Percentile	NA	z-score	3.23	SSF-for-age	Percentile	NA	z-score	NA

- Add a new child by clicking on the green “plus” in the upper left corner.

Boqueta, Zacaypa, SB - Munoz, Fransesco

Date of visit: 8/25/2010      Age (m):

Cluster:      Weighting factor: 1.00000000

Team:      First name: Fransesco

ID: 3      Last name: Munoz

Household: 3      Sex:  Female  Male

Date of birth: 6/26/1994      Weight (kg): 51.00      BMI: 20.4

Approximate date      Length/height (cm): 158.20

Unknown date      Measured:  Recumbent  Standing

Age: 16yr 1mo (193mo)      Oedema:  No  Yes

Notes:

Additional data:

Save      Cancel

For each child, complete the information screen:

1. Enter today's date
2. Enter your assigned team number
3. Enter the child's first and last name
4. Choose the sex of the child
5. ID Number and Household Number are automatically assigned – If you want to assign them, you need to change in the program options menu.
6. Enter the birthdate of the child- this will be in mm/dd/yy format

-If the birthdate is unknown, click the approx. date or unknown box

Boqueta, Zacaypa, SB - Munoz, Francisco

Date of visit: 8/25/2010      Age (m):

Cluster:      Weighting factor: 1.000000000

Team:      First name: Francisco

ID: 3      Last name: Munoz

Household: 3      Sex:  Female  Male

Date of birth: 6/26/1994      Weight (kg): 51.00      BMI: 20.4

Approximate date      Length/height (cm): 158.20

Unknown date      Measured:  Recumbent  Standing

Age: 16yr 1mo (193mo)      Oedema:  No  Yes

Notes:

Additional data:

Save      Cancel

7. Enter the weight in kg

9. Enter the height in cm/mm

10. If a child is measured laying down, click the “recumbent” circle (If child is over 5 yrs, you won’t need to click on the circle.)

11. Test the child for oedema and click the appropriate circle.

12. Click Save and the window will close.

# Check Z-scores

- WHO Anthro Plus compares entered data to WHO Child Growth Standards by calculating Z-scores.
- A Z-score is a number that indicates how many standard deviations a data point is from the average (average=WHO standards).
- A negative z-score indicates that a child's data falls below the average; a positive z-score indicates that the data is above the average.
- The smaller a z-score, the closer the data is to the standard.

Nutritional survey

Nutritional survey Current survey Help

**Surveys**

Boqueta, Zacaypa, SB  
Sample survey

Survey: **Boqueta, Zacaypa, SB**

Manage additional data

Name Boqueta, Zacaypa, SB Notes

Data entry Results

58 record(s)

	Survey date	Cluster	Team	ID	Household	Sex	Date of birth	Age (d)	Age (m)	Weight
	8/25/2010			1	1	Female	9/9/2008	715	23.49	10.60
	8/25/2010			2	2	Male	10/30/2009	299	9.82	8.10
▶	8/25/2010			3	3	Male	6/26/1994	5904	193.97	51.00
	8/25/2010			4	4	Male	2/9/1997	4945	162.46	44.90
	8/25/2010			5	5	Male	9/21/1997	4721	155.10	34.50
	8/25/2010			6	6	Male	5/15/1998	4485	147.35	29.80
	8/25/2010			7	7	Female	7/9/1999	4065	133.55	38.20
	8/25/2010			8	8	Male	9/3/2000	3643	119.69	26.90
	8/25/2010			9	9	Female	2/14/1996	5306	174.32	42.50
	8/25/2010			10	10	Male	11/20/1998	4296	141.14	30.70
	8/25/2010			11	11	Male	7/12/2006	1505	49.45	13.70
	8/25/2010			12	12	Female	6/29/2006	1518	49.87	15.50

Percentile

Weight-for-age NA NA

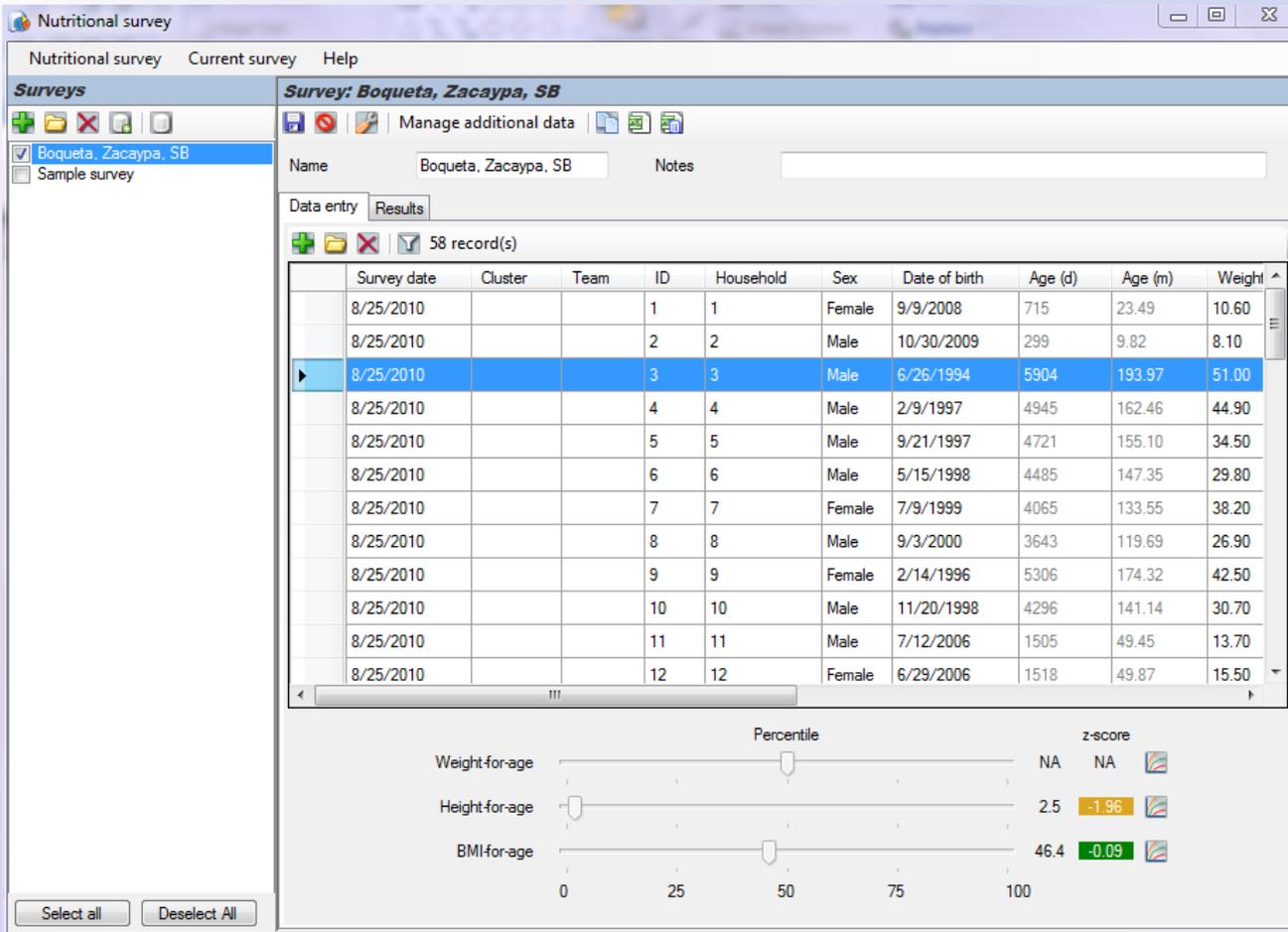
Height-for-age 2.5 -1.96

BMI-for-age 46.4 -0.09

0 25 50 75 100

Select all Deselect All

- When the window closes, you will go back to the main screen of all of the data you've been entering.
- Check the data on the bottom of the page.
- Weight for Age is only calculated for children up to 10 years old.
- Check to see if Z-scores/malnutrition levels are same with other people taking height/weight data.



Coding that Anthro Plus Uses:

- Colored Green or Yellow – Normal Nutrition Levels
- Colored Red – Moderate Malnutrition Levels
- Colored Black – Severe Malnutrition Levels

\*Note: At MAMA, we are only concerned about the negative Z-scores. If the person is severely obese, they will also be marked with a black box, but they don't get the same treatment as a severely malnourished child.

Nutritional survey

Nutritional survey Current survey Help

**Surveys**

Boqueta, Zacaypa, SB

Sample survey

Survey: **Boqueta, Zacaypa, SB**

Manage additional data

Name Boqueta, Zacaypa, SB Notes

Data entry Results

58 record(s)

	Weight (kg)	Oedema	Recumbent	Height (cm)	WAZ	HAZ	BAZ	Flag	Wt. factor
	29.30	No	No	132.30	0.05	-0.33	0.33		1
	9.10	No	Yes	70.00	-0.18	-1.69	1.09		1
	8.80	No	Yes	70.00	-0.49	-1.69	0.68		1
	18.10	No	No	104.50	-0.60	-1.87	0.93		1
▶	18.40	No	No	144.60	-2.83	2.07	-6.16	BAZ	1
	11.00	No	No	83.50	-1.28	-2.20	0.20		1
	13.70	No	No	95.60	-1.90	-2.72	-0.19		1
	32.40	No	No	135.50		-1.32	0.21		1
	9.00	No	No	74.00	-2.53	-4.28	0.61		1
	24.00	No	No	122.00	0.79	0.77	0.48		1
	14.40	No	No	97.00	-0.48	-0.81	0.01		1
	13.40	No	No	91.00	-1.35	-2.61	0.62		1

Percentile

Weight-for-age 0.2 **-2.83**

Height-for-age 98.1 **2.07**

BMI-for-age NA **-6.16**

0 25 50 75 100

Select all Deselect All

Always scroll to the right to check to see if you have a flag on the record, too.

This record has a flag on the BAZ (BMI-for-age). Check record to make sure that your data you input for weight and height is correct. -- Notice the -6 z-score, too.

Boqueta, Zacaypa, SB - Ramos, Xiomara

Date of visit: 8/26/2010    Age (m):

Cluster:    Weighting factor: 1.000000000

Team:    First name: Xiomara

ID: 27    Last name: Ramos

Household: 27    Sex:  Female  Male

Date of birth: 9/24/2001    Weight (kg): 18.40    BMI: 8.8

Approximate date    Length/height (cm): 144.60

Unknown date    Measured:  Recumbent  Standing

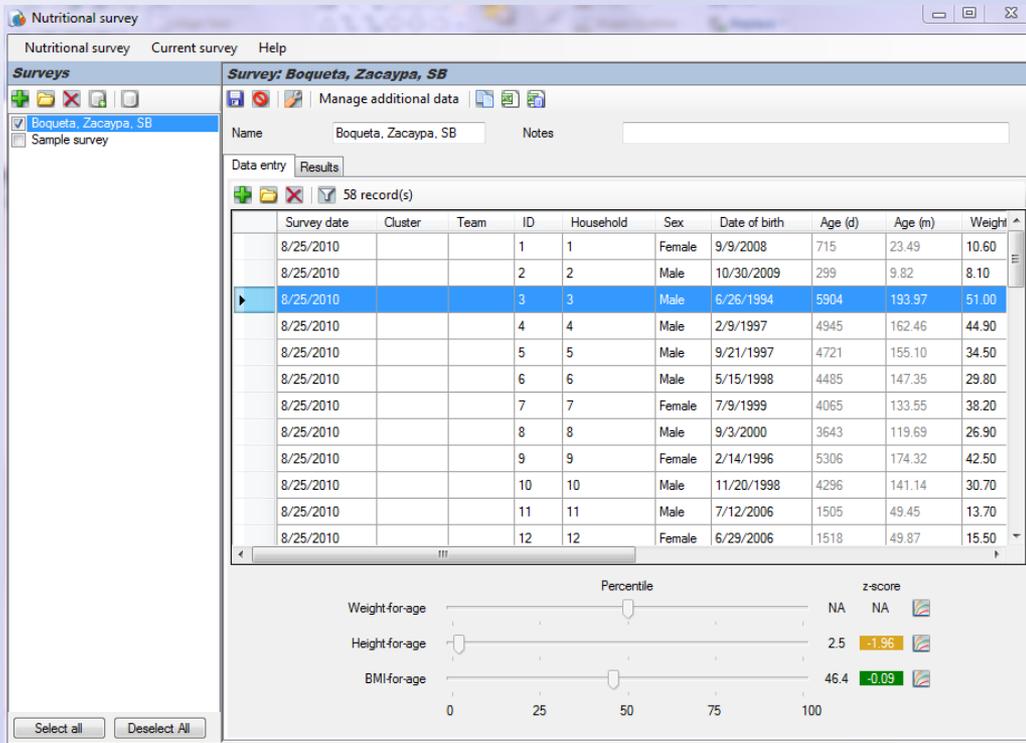
Age: 8yr 11mo (107mo)    Oedema:  No  Yes

Notes:

Additional data:

Save    Cancel

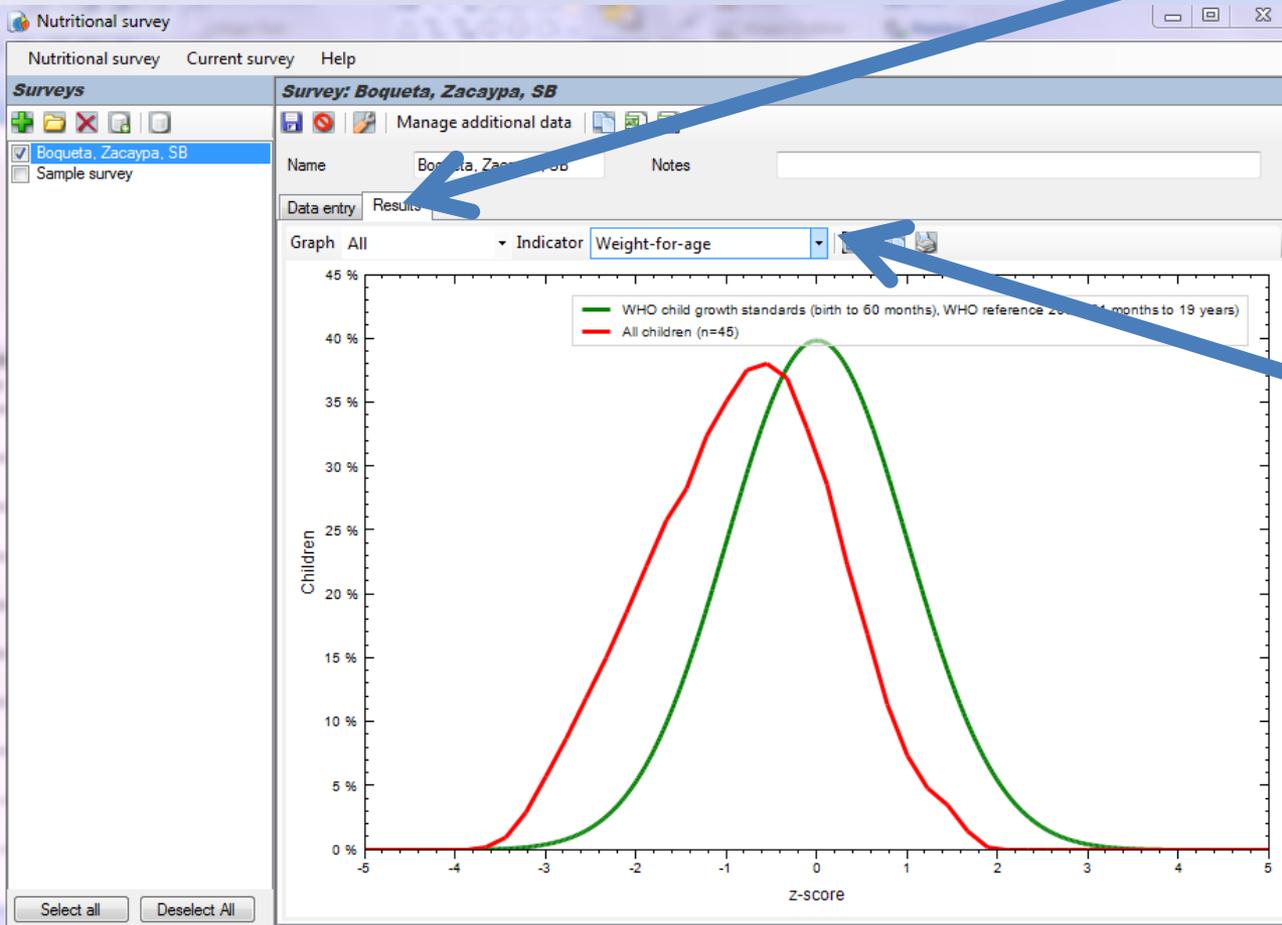
Double click on entry and child's entry will open again. It looks like the weight was probably mis-entered here and is causing the flag. Change the result so that the results are accurate.



Once you have completed entering the information on the entire village, it is time to look at the graphs.

# Graphing the Data

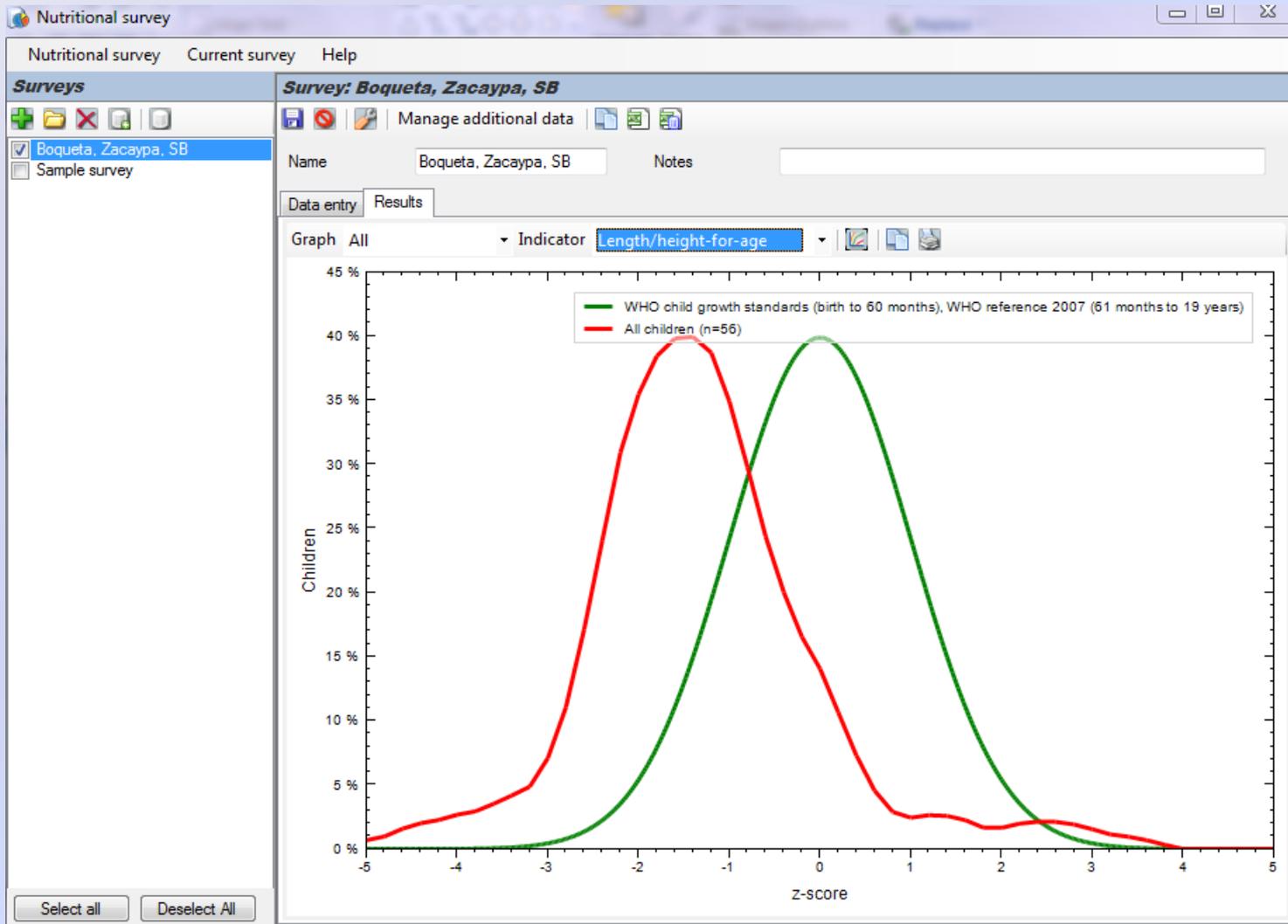
Clicking the results tab will generate a graph of the entered data: the green line represents WHO standards and the red line represents the entered data.



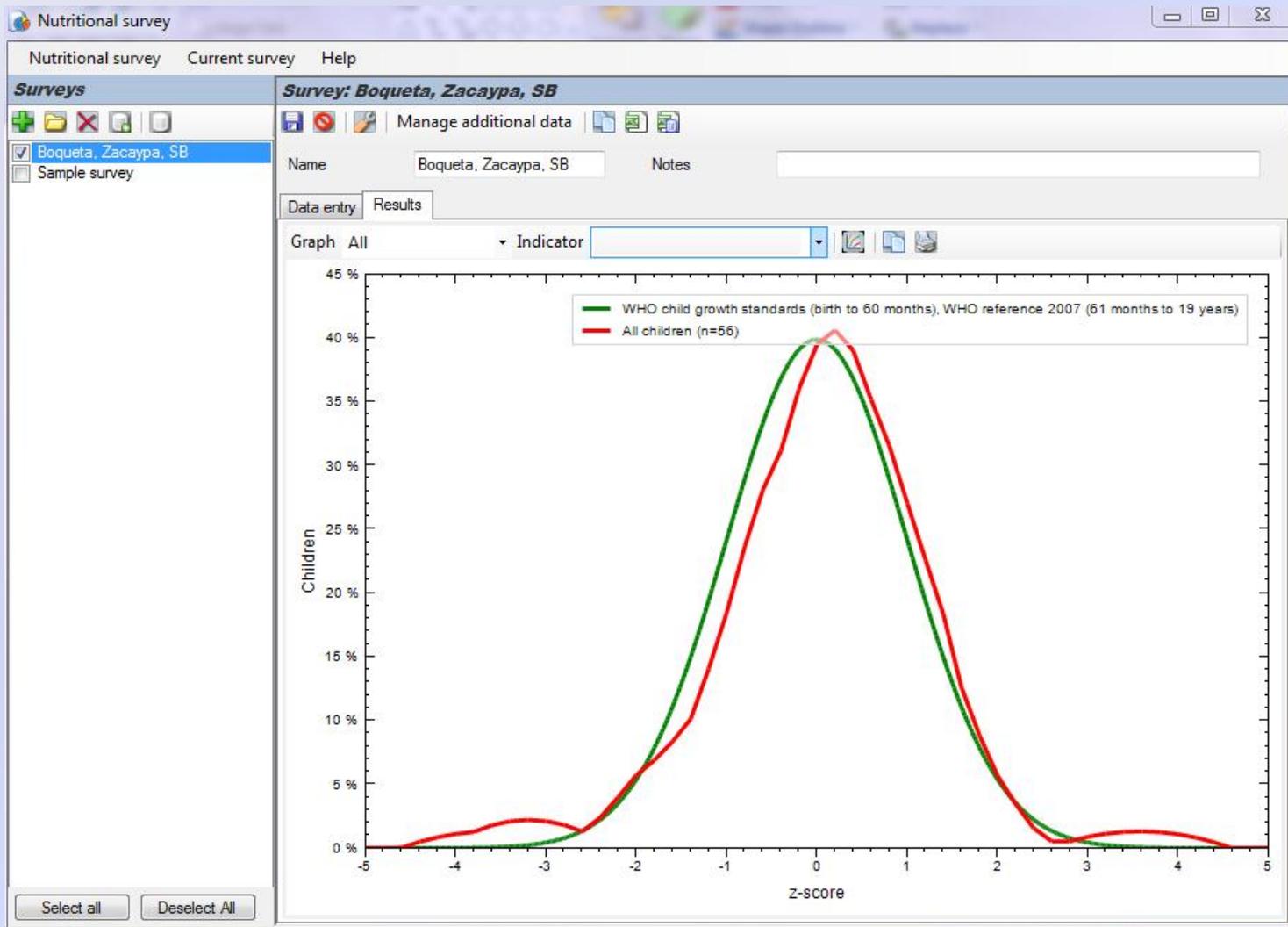
The drop-down box labeled "Indicator" allows you to choose which variable is being compared (ex. Weight-for-age).

These graphs can be printed and given to the community leader as a summary of children's health in the community.

# Length/Height for Age



# BMI for Age



# At the End of the Day

- Save files periodically throughout the day by clicking the floppy disk icon in the top left corner of the program. Save file as name of community, county, and date/year of visit

Nutritional survey

Surveys

Boqueta, Zacaypa, SB

Name: Boqueta, Zacaypa, SB

Data entry | Results

58 record(s)

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8/25/2010			11	11	Male	7/12/2006	1505	49.45	13.70
8/25/2010			12	12	Female	6/29/2006	1518	49.87	15.50

Weight-for-age: Percentile (slider at ~50), z-score: NA

Height-for-age: Percentile (slider at ~10), z-score: 2.5, -1.96

BMI-for-age: Percentile (slider at ~50), z-score: 46.4, -0.09

Select all | Deselect All

# At the End of the Day

- Write the names of all moderately and severely malnourished children on a list to be given to the community leader with the graphs.

# How can data be used?

- Data can be collected from each community on a regular basis.
- The average z-scores for each community will be compared over time (using Microsoft Excel); improvement in z-scores in a community will be used to indicate an improvement in community health.
- At the end of the study period, the data can be analyzed to determine if the improvement in z-scores is statistically significant.

# Using Microsoft Excel

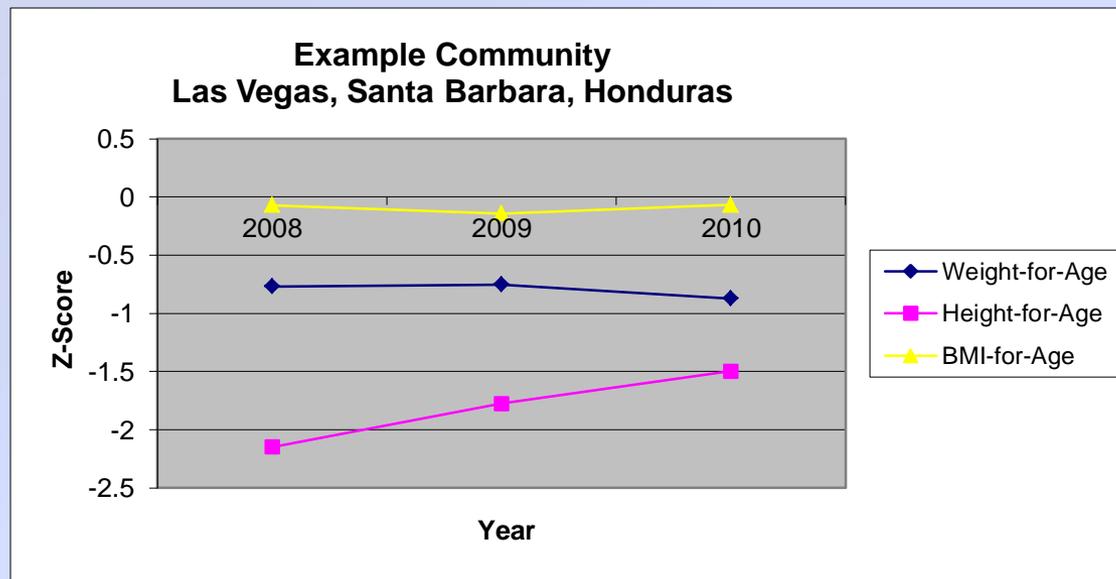
- Export the data from Anthro into an Excel document.
- Find the average Z-scores for Weight for Age, Height for Age, and BMI for Age for that day.

## Example Community

Survey Date	WAZ	HAZ	BAZ
2/21/2008	-0.7672	-2.1491	0.0706
2/26/2009	-0.7506	-1.7743	0.1417
2/15/2010	-0.8718	-1.4972	0.0669

# Using Excel for data analysis

- Afterwards, a graph can be made to see the results for comparison.



**Thank you!**