PN-ABZ-896

COSTS AND COST EFFECTIVENESS OF FOOD AND INCOME SUBSIDIES IN HONDURAS

School Feeding Programs

Maternal and Child Health Care Feeding Programs

Food Consumption Methodology Analysis

Data Analysis Files

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SECTION 1

SCHOOL FEEDING PROGRAMS ANALYSIS

The two diskettes labeled "School Data Analysis Files" contain the *SPSS for Windows* data, program and output files for the School Feeding Programs analysis presented in Rogers, *et al.* (1995) and Phillips, *et al.* (1995). Data entry files (*i.e.*, ES?????.SYS and ES??99.SAV) are not included on these diskettes but can be found in *School Feeding Programs Data File Documentation* (Tatian, 1995).

The School analysis files are organized into the following directories:

Directory	*Contents*
ES01	Initial processing programs for ES01
ES02	Initial processing programs for ES02
ES03	Initial processing programs for ES03
ES04	Initial processing programs for ES04
ES05	Initial processing programs for ES05
ES06	Initial processing programs for ES06
ESCOST	School program cost analysis tables
ESTAB	Descriptive tables for school analysis
T3ESC	Tables and multivariate analysis using Title III data
TITLEIII	Title III Data Files
TMP	Temporary Directory (empty)

A description of each directory's contents can be found in the DIRINFO. file located in that directory.

Standard file extensions are used to identify the different types of files. *SPSS for Windows* program files end with .SPS, data files with .SAV, and output files with .LST. SPSS/PC+ and SPSS Data Entry data files end with the extension .SYS.

The SPSS programs are written from the assumption that the working directory for *SPSS for Windows* is the immediate parent directory of the directories listed above. In other words, if these directories are all subdirectories of C:\HONDURAS, then the working directory must be set to C:\HONDURAS. The working directory can be changed by highlighting (*i.e.*, clicking once on) the *SPSS for Windows* icon in the *Windows' Program Manager*, and pressing Alt-Enter.

SECTION 2

MATERNAL AND CHILD HEALTH CARE FEEDING PROGRAMS ANALYSIS

The five diskettes labeled "MCH Data Analysis Files" contain the *SPSS for Windows* data, program and output files for the MCH Feeding Programs analysis presented in Sanghvi, *et al.* (1995) and Fiedler, *et al.* (1995). Data entry files (*i.e.,* MC?????.SYS, MC???99.SAV, BON??T.DBF, and BON??.SAV) are not included on these diskettes but can be found in *Maternal and Child Health Care Feeding Programs Data File Documentation* (Tatian, 1995).

The MCH analysis files are organized into the following directories:

Directory	*Contents*
MATCH	Programs to check the consistency and reliability of various data sets
MC20	Initial processing programs for MC20
MC21	Initial processing programs for MC21
MC22	Initial processing programs for MC22
MC23	Initial processing programs for MC23
MC31	Initial processing programs for MC31
MC32	Initial processing programs for MC32
MC33	Initial processing programs for MC33
MC34	Initial processing programs for MC34
MC35	Initial processing programs for MC35
MC36	Initial processing programs for MC36
MC37	Initial processing programs for MC37
MC38	Initial processing programs for MC38
MC39	Initial processing programs for MC39
MCHH	Initial processing programs for HH data
MCMVAR	Multivariate Analysis - FINAL MODELS
MCMVAR\CHRIS	Multivariate Analysis - Data files created by Chris Hayes
MCMVAR\PUNAM	Multivariate Analysis - Data files created by Punam Ohri-Vachaspati
MCMVAR\TARA	Multivariate Analysis - Data files created by Tara Smith
MODELS	Multivariate Analysis Programs - Chris Hayes
MODELS\TABLES	Multivariate Analysis Programs - Chris Hayes
PESOS	Anthropometry analysis by Maria-Theresa
POP	Supplementary data on health center service areas
TABLES	Descriptive Tables - Chris Hayes, June 1995

TABLES2	Descriptive Tables - Chris Hayes, August 1995
TABLES2\FINAL	Descriptive Tables - Chris Hayes, Final versions of selected tables
TABLES3	Descriptive Tables - Tara Smith
TABLES3\OUTPUT	Descriptive Tables - Tara Smith
TITLEIII	Title III Data Files
TMP	Temporary Directory (empty)

A description of each directory's contents can be found in the DIRINFO. file located in that directory.

Standard file extensions are used to identify the different types of files. *SPSS for Windows* program files end with .SPS, data files with .SAV, and output files with .LST. SPSS/PC+ and SPSS Data Entry data files end with the extension .SYS.

The SPSS programs are written from the assumption that the working directory for *SPSS for Windows* is the immediate parent directory of the directories listed above. In other words, if these directories are all subdirectories of C:\HONDURAS, then the working directory must be set to C:\HONDURAS. The working directory can be changed by highlighting (*i.e.,* clicking once on) the *SPSS for Windows* icon in the *Windows' Program Manager*, and pressing Alt-Enter.

SECTION 3

FOOD CONSUMPTION METHODOLOGY ANALYSIS

THE URBAN INSTITUTE

MEMORANDUM

TO: Tina Sanghvi

FROM: Peter A. Tatian

SUBJECT: Food Consumption Methodology Analysis

DATE: 22 January 1996

COPIES: Bea Rogers, John Marcotte, Maris Mikelsons

I have completed the methodology analysis of the food consumption data and am presenting the results here. The issue is quantify the effect on food consumption outcomes and models of varying the number of observations of daily food consumption taken at each household. In food consumption studies, it is standard practice to obtain multiple observations of daily consumption levels and then average them together to smooth out any "noise" in the data.

As with any survey, the cost of obtaining additional observations must be weighed against the increase in accuracy and precision from the additional data. Food consumption data are especially affected by these issues because the data are so difficult to obtain. For a typical food consumption survey, obtaining data on foods eaten by a household requires a lengthy interview to obtain "recipes" of all meals prepared and the numbers of people who ate each meal. Ingredients may be measured in non-standard units, such as bowls and cups found around the household, which exacerbates already difficult measurement problems.

In our study, each household was supposed to have been visited on three separate occasions during a two-week period. No two visits to the same household could take place on consecutive days. On each visit, a complete recall as made of all of the meals that the household consumed during the past 24 hours.

The information was used to calculate the total number of calories, protein and Vitamin A consumed by the household in one day. For our analysis in the final report, the separate daily observations for each household were averaged together to obtain an average daily consumption level. It was this average that was used to create the outcome variables for the multivariate analysis in the final report.

The purpose of this analysis is to see how the results of the food consumption models would have changed if all households were interviewed only once or only twice instead of three times. To do this, I looked at some univariate statistics on the food consumption outcome variables to compare values for one, two, and three visit averages. I also ran each of the household food consumption models using outcome variables derived from one, two, and three visit averages.

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Although our intention was to have three consumption visits for each household, as Table 1 shows this was the case for only 85 percent of the households in the sample. The numbers of visits in Table 1 are for "cleaned" observations only. Outlier observations were removed from the consumption data using acceptable ranges developed by Sanghvi and Ohri-Vachaspati and are not included in Table 1 or in the subsequent analysis.

Table 1
Distribution of Number of Visits Made to Households In Food Consumption Survey

Total Number of Visits	Number of Households	Percent
1	42	3%
2	149	12%
3	1,073	85%
Total	1,264	100%

To be sure that the effect of changing sample size did not influence the results, I limited the analysis to only those 1,073 households that had three visits.

The five consumption outcome variables I looked at were calories and protein consumed per adult equivalent (AE) per day, the percentage of daily Vitamin A requirements consumed, and two dummy variables for whether the household consumed 70 and 80 percent of adequate calorie consumption. I calculated these variables using the same definitions as in the multivariate analysis included in the final Honduras Project report (Sanghvi, *et al.*, 1995). The variables were calculated three separate times, once using only data from the first visit to the household, once using data from the first and second visits to the household, and a third time using all three household visits. For each calculation, the daily observations for each household visit were averaged together to obtain a single value for each outcome variable for a household.

The results for these variables using the three different visit averages are given in Table 2.

As one can see from Table 2, adding additional observations (*i.e.*, visits) improves the precision of the estimates of household calorie, protein and Vitamin A consumption. This is most noticeable for daily calorie consumption, where the 95 percent confidence interval narrows by a total of 12 calories per AE between the one visit and two visit averages, and by 18 calories per AE between the one visit and three visit averages. The change is smaller for the confidence intervals for protein and Vitamin A consumption, which narrow by 0.4 grams and 2.4 percentage points, respectively, between one visit and three visit averages. Undoubtedly, averaging together the additional observations for each household eliminates some of the noise in the data, reducing the variance of the estimates.[1]

[1] It is important to note that number of observations used to calculate the means and variances in Table 2 are the same for one, two, and three visit averages. Therefore, the increase in precision is not due to an increase in the number of observations ("n") when determining these statistics.

Table 2
Food Consumption Outcome Variables
By Number of Visits to Household

Food Consumption Outcome Number of Consumption Visits	Mean	Std. Dev.	95% Conf. Interval
Daily Calorie Consumption per AE			
One Visit	2,876	1,054	± 63
Two Visits	** 2,810	951	57
Three Visits	** 2,786	907	54
Daily Protein Consumption (grams) per AE			
One Visit	64	27	1.6
Two Visits	** 63	24	1.4
Three Visits	62	23	1.4
Pct. HH Vitamin A Requirements Consumed			
One Visit	25	57	3.4
Two Visits	24	42	2.5
Three Visits	24	36	2.2
Pct. HH's with Calorie Cons. 70 Pct. Adequate or Higher			
One Visit	79	41	2.5
Two Visits	80	40	2.4
Three Visits	80	40	2.4
Pct. HH's with Calorie Cons. 80 Pct. Adequate or Higher			
One Visit	71	45	2.7
Two Visits	71	45	2.7
Three Visits	70	46	2.7

Notes: n = 1,073 households

** = Significant differences at 0.01 level.
* = Significant differences at 0.05 level.

Significant differences were tested between one and two-visit means and between two and three-visit means. The test result is indicated on the second item in each pair. For calories, protein, and pct. Vitamin A requirements consumed, I used a paired t-test. For calorie consumption 70 pct. and 80 pct. adequate, I used a Chi-square test.

One can also see a decrease in the means for the calorie, protein, and Vitamin A consumption variables as one goes from one visit to three visit household averages, although only in the case of daily calorie consumption are all of these differences significant. Even so, the change is not great. The three visit mean is only 90 calories per AE less than the one visit mean, and only 24 calories less than the two visit mean. The differences between the one, two, and three visit means for the other outcome variables are quite small indeed and, with the exception of one visit vs. two visit means for protein consumption, not statistically significant.

After comparing these univariate statistics for food consumption outcomes, I then turned to examine the effect on our multivariate analysis of changing the number of household visits. I reran the five household level consumption models separately using the outcome variables calculated using one, two, and three visits. The model specifications are the same as those provided for the Final Report (Sanghvi, *et al.*, 1995).

Table 3 summarizes the goodness-of-fit measures for the three separate estimations of the different household food consumption models. With two exceptions, the amount of variance in the dependent variable explained by the model increases as one adds additional visits to the data. Overall, however, the increase in the number of visits has only a modest effect on adjusted R^2. The largest percentage increase is between the one visit and three visit models for Vitamin A consumption. The adjusted R^2 increases by 64 percent from 0.06 to 0.10.

Table 4 examines the effect of including more consumption visits on the estimators of program effects in the household calorie consumption model. Program effects were specified in the models as four yes/no dummy variables. The first three refer to the bonos program and indicate whether the household made one, two, or three or more bonos visits to the health center in the past six months. The fourth variable indicates whether the household received food rations in 1994.

The estimates of the coefficients of the program effect variables become more precise as one adds more consumption visits. The 95 percent confidence intervals narrow for all program variables from one to two-visit estimates and from two to three-visit estimates. Although these changes are not very big, in once case, the food ration variable, adding a third consumption visit resulted in the coefficient estimate becoming significant at the 0.05 level.

The SPSS programs, data files, and regression outputs used for this analysis can be found on the accompanying diskette.

References

Sanghvi, Tina G., Beatrice L. Rogers, Peter Tatian, Jere R. Behrman, Miguel Calderón, Sally Crelia, and Magdalena García. *Impact of Food Assistance and Income Transfer Programs on Health and Nutrition: An Evaluation of Bonos (BMI) and Food Ration (PL 480 Title II) Programs in Honduras.* Report prepared by Latin American and Caribbean Health and Nutrition Sustainability for USAID. September 1995.

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Table 3
Goodness-of-Fit Measures for Separate Estimations Of Household Food Consumption Models

Food Consumption Outcome Number of Consumption Visits	Adjusted R^2	Percent Increase
Daily Calorie Consumption per AE		
One Visit	0.075	--
Two Visits	0.089	18%
Three Visits	0.092	3%
Daily Protein Consumption (grams) per AE		
One Visit	0.086	--
Two Visits	0.084	-2%
Three Visits	0.090	7%
Pct. HH Vitamin A Requirements Consumed		
One Visit	0.061	--
Two Visits	0.084	38%
Three Visits	0.100	19%
Pct. HH's with Calorie Cons. 70 Pct. Adequate or Higher		
One Visit	0.051	--
Two Visits	0.055	8%
Three Visits	0.065	19%
Pct. HH's with Calorie Cons. 80 Pct. Adequate or Higher		
One Visit	0.049	--
Two Visits	0.075	54%
Three Visits	0.063	-16%

Notes: n = 1,073 households

Percent increases in adjusted R^2 are between one and two-visit and between two and three-visit models.

Table 4
Different Estimates of Coefficients for Program Variables
In Model of Daily Calorie Consumption Per AE
By Number of Food Consumption Visits

Independent Variable Number of Food Consumption Visits	Coefficient	Std. Error	95% Conf. Interval
HH made 1 bonos visit to health center			
One Visit	253	189	± 370
Two Visits	353	169	331
Three Visits	266	162	317
HH made 2 bonos visits to health center			
One Visit	-32	144	282
Two Visits	-29	129	253
Three Visits	-25	123	242
HH made 3+ bonos visits to health center			
One Visit	57	152	298
Two Visits	165	136	267
Three Visits	149	130	255
HH received health center food rations in 1994			
One Visit	196	108	211
Two Visits	155	96	189
Three Visits	* 188	92	180

Notes: n = 1,073 households

** = Coefficient significant at 0.01 level.
* = Coefficient significant at 0.05 level.

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