MINISTRY OF AGRICULTURE AND FISHERIES

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Implementing a Simplified Method for Predicting Dietary Adequacy in Mozambique:

A User's Manual

by

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Introduction

This manual will serve as a guide for those wanting to implement the dietary adequacy prediction model. The methods described here allow one to use easy-to-collect data on household food consumption and household composition to make predictions about the dietary adequacy of a diet for a given population. The manual also includes exercises so that the analyst can practice using SPSS programs to generate results on dietary adequacy with sample data. For a detailed explanation of the theory and the development of the model, see MAP/MSU Research Paper No. 36: *A Simplified Method for Assessing Dietary Adequacy in Mozambique.*

The manual is divided into three main sections, which parallel the separate analytical tasks needed to carry out the predictions. The first section describes the calculation of household size in adult equivalents. The second section describes the transformation of the food consumption variables. The third section describes running of the final model and the generation of results.

Calculation of Household Size in Adult Equivalents

A key variable used in the dietary adequacy prediction model is the number of equivalent male adults in each household. The calculation of adult equivalents is an alternative method for calculating household size (i.e. rather than just adding up the number of persons in the household) that takes into account the age and sex distribution of household members. There are many ways to accomplish this. For example, expenditure patterns can be used to calculate adult equivalence. Here we use a biological standard, specifically a desirable level of calorie intake recommended for males and females of different ages. See **Table 1** for a complete listing of energy recommendations used in the calculation of adult equivalents.

Household size in adult equivalent units can be calculated with information from Table 1. We started with the age-sex grouping of individuals with the highest daily energy recommendation — adult males from 18 to 30 years of age. Individuals in this group were the standard, that is, equivalent to 1.0 adults. For each other age-sex grouping we calculated the adult equivalence by dividing their energy recommendation by that of 18-30 year old men. For example, a 16 year-old male would be 0.85 of an adult equivalent (2528/2987), a 3 year-old female would be 0.47 of an adult equivalent (1397/2987), etc. By adding up these adult equivalent values for each household, one gets a value for household size that gives a better indication of the household's total energy needs, than just using a count of the number of individuals.

Table 1. Recommended Levels of Energy Intake (Calories/day) [a]

Age	Males	Females	Age	Males	Females
< 1	785	741	12	2180	1974
1	1307	1107	13	2297	2029
2	1456	1255	14	2397	2087
3	1604	1397	15	2449	2143
4	1729	1546	16	2528	2143
5	1812	1698	17	2618	2150
6	1910	1785	≥18, < 30	2987	2183
7	1992	1771	≥30, < 59	2928	2186
8	2056	1835	≥60	2018	1834
9	2066	1810			
10	2088	1901	Pregnant		+ 285
11	2152	1914	Lactating		+ 500

a These recommendations are based on reference weight data for Mozambique (James and Schofield, 1994) and include energy needed to maintain weight as well as energy necessary for occupational and "socially desirable" activities. For adults, examples of the latter include "attending community meetings or walking to health clinics or places of worship." For children, additional energy is needed for "the normal process of development, for activities such as exploration of the surroundings, learning, and behavioral adjustments to other children and adults" (FAO/WHO/UNU, 1985). Occupational activities are assumed to be characteristic of a rural population in a developing country, i.e. requiring moderate to heavy energy expenditures.

Practice Exercise 1: Try practicing SPSS to calculate household size in adult equivalent units. Sample data on the age and sex of different household members can be found in a file called: *AFMembros_IdadeSexo.Sav* . This file, as well as all other data files for these practices can be found in the archived data sub-directory known as: *C:\Qual_Dieta\Arch\Data* . The SPSS program, or syntax file, needed to calculate adult equivalents can be found in the analysis sub-directory of syntax programs known as: *C:\Qual_Dieta\Anal\Syntax* . The syntax file itself, which encodes all of the compute statements needed to convert information on the age and sex of household members into adult equivalent units, is contained in *Tamanho_AF.SPS* .

Run this syntax file and answer the following questions:

1. What is the average household size expressed in number of persons?
2. What is the average household size in terms of adult male equivalents?

Transformation of Food Consumption Variables

There are over 70 food items that were recorded in the consumption module of the original Nampula/Cabo Delgado survey. In order to work with food consumption data it is important to aggregate these diverse foods into a few usable food groups. Our research on this topic showed that calculating the number of times that foods were eaten from different food groups in the 24-hour recall period yielded the most accurate predictions about the dietary adequacy of the diet. We used an 11-food group system to aggregate individual food items. This aggregation is described in **Table 2**.

The SPSS programing will assign each of the food items in the database to one of these food groups. For detailed information on the numeric codes assigned to each of the foods in the Nampula/Cabo Delgado (NCD) database, see Appendix C.

Table 2. Food items in each of the 11 food groups

Food group	Food items
Grains	dried maize, maize flour, other dried maize products, sorghum, sorghum flour, fresh sorghum, bread, rice, pasta, cookies
Tubers	manioc flour, dried manioc
Beans	dried beans, dried peas
Nuts and Seeds	dried peanuts, coconut, pumpkin seeds, sesame seeds, sunflower seeds, cashew nuts,
Animal Products	dried fish, fresh fish, beef, chicken, rat, bird, pigeon, snail, crustaceans, grasshopper, frog, milk, eggs
Vitamin A-rich Fruits & Vegetables	pumpkin, dark leafy greens, red pepper leaves, manioc leaves, bean leaves, pumpkin leaves, sweet potato leaves, cashew leaves, red peppers, mango
Vitamin C-rich Fruits & Vegetables	papaya, lime, fresh manioc, fresh sweet potato (pale), tomato, fresh beans, fresh peas, fava beans
Other Fruits and Vegetables	mushrooms, onions, bananas, fresh maize, fresh yams, okra, apples, fresh peanuts, enenkelo
Sugars	sugar, sugar cane, honey
Oils	oil
Other Foods	beverages (including maize beer, cashew juice, cashew wine, tea, coffee, soft drinks), salt, candy

Practice Exercise 2: Transforming the food consumption data into food group variables can be practiced in another exercise. The SPSS data file, *Alimentos_EpocaX1.Sav*, found in the sub-directory *C:\Qual_Dieta\Arch\Data* , has sample 24-hour recall food consumption data. Use this input file with the SPSS syntax file, *Grupos_Alimentares.SPS*, which is found in the sub-directory *C:\Qual_Dieta\Anal\Syntax* .

Run the above syntax file and answer the following questions:

1. What is the average number of times per day that households in this sample consume foods from the following groups: Grains? Beans? Animal Products?
2. What is the maximum number of times per day that households consume foods from the following groups: Vitamin A-rich Fruits and Vegetables? Nuts and Seeds? Sugars?

Running the Dietary Adequacy Prediction Model

The third part of making predictions about the dietary adequacy of dietary intakes involves applying the coefficients of the prediction model to the data that have been transformed in the above two sections. As described in MAP/MSU Research Paper No. 36, the coefficients summarize the relationships obtained from regression modeling of nutrient intake variables on food consumption and household size variables. These coefficients are displayed in **Table 3**.

For each household, a predicted intake of each nutrient is calculated by first multiplying the number of times that the household consumed from each of the food groups by the coefficient for each food group in the column of the particular nutrient of interest and them summing up all of those products. **Table 4** gives an example of a calculation of the predicted vitamin A intake of a particular household (expressed here in the form of a nutrient adequacy ratio, i.e. intake divided by recommendation in percentage terms).

After calculation of the predicted intake for each household for each nutrient, a series of dichotomous indicator variables are created to keep track of whether the predicted intake is low or not. We use 75 percent of the recommendations as a cut-point for assessing whether the intake is low. This will enable us to calculate the percent of the sample with low intakes. Another series of programming statements is used to calculate each household's score on the Mozambique Diet Quality Index (MDQI). A trichotomous variable then keeps track of whether households' scores on the MDQI are acceptable, low, or very low.

Practice Exercise 3 provides the analyst with an opportunity to run the syntax file for the prediction model. Other than ModeloPrevNutr.Sav, archived data files referred to in Appendix A are samples to be used in practice exercises. They should be replaced by similarly constructed files when this model is used for real.

Table 3. Coefficients from the Dietary Adequacy Prediction Model

Food Group	Energy	Protein	Vitamin A	Iron	Thiamin	Ribo-flavin	Niacin	Vit B6	Folic Acid	Vitamin C	Calcium
Grains	0.3166	0.2889	0.006	0.2008	0.2923	0.1959	0.2411	-0.01	-0.045	-0.082	0.005
Beans	0.2975	0.6115	0.0895	0.7455	0.505	0.4467	0.3176	-0.092	1.6488	-0.031	0.3001
Tubers	0.3944	-0.0073	-0.014	0.4925	0.1186	0.2309	0.1959	-0.2324	-0.1728	0.2303	0.2712
Nuts/Seeds	0.2401	0.3237	-0.033	0.164	0.4971	0.1977	0.7361	0.0545	0.5544	0.1901	0.251
Animal Products	0.1224	0.2091	0.0843	0.1188	0.0469	0.1317	0.1397	0.0613	0.1854	-0.091	0.2986
F & V -- Vit A	-0.0499	-0.035	0.4458	-0.012	-0.01	0.0009	-0.041	0.2614	0.0263	0.5691	0.0713
F & V -- Vit C	0.0615	0.0706	0.1047	0.0878	0.0807	0.1415	0.0606	-0.035	0.2534	0.8694	0.1308
Other F & V	0.1005	0.1003	0.0500	0.1288	0.1012	0.1111	0.1809	0.1701	0.0962	0.3803	0.0357
Sugars	-0.016	-0.071	-0.082	-0.1025	-0.1134	-0.1178	-0.077	-0.019	-0.074	-0.073	-0.045
Oils	0.0887	-0.1443	0.0177	-0.1417	-0.1069	-0.1085	-0.1456	0.0642	-0.091	0.145	0.1031
Other Foods	0.098	0.1456	0.0964	0.1531	0.1185	0.2057	0.1803	0.0572	.1294-	0.3171	-0.055
HH size (ad equiv)	-0.1469	-0.1447	-0.054	-0.1622	-0.1655	-0.1522	-0.1771	0.009	0.1743	-0.1641	-0.1319
Intercept	-0.7391	-0.457	0.1161	-0.5453	-0.3726	-1458	-0.7711	-0.1456	-0.6944	-0.3962	0.4911

Table 4. An example of how the prediction model works for a specific household for vitamin A intake

Food Group	Number of times per day household consumed items from this group (NTIMEDAY)	Coefficient estimates from vitamin A column of Dietary Adequacy Prediction Model (VITACOEF)	NTIMEDAY X VITACOEF X 100
Grains	2	0.0064	1.28
Beans	0	0.0895	0
Tubers	0	-0.0141	0
Nuts/Seeds	1	-0.0328	-3.28
Animal Products	0	0.0843	0
Vitamin A F & V	1	0.4458	44.58
Vitamin C F & V	0	0.1047	0
Other F & V	0	0.0500	0
Sugars	0	-0.0823	0
Oils	0	0.0177	0
Other Foods	0	0.0964	0
Household size	1.72	-0.0543	-9.34
Intercept	1	0.1161	11.61
Sum of values in column 4			44.85

***Practice Exercise 3**:* This exercise allows the analyst to practice running the last of 3 SPSS syntax files needed to create predictions about dietary adequacy. Each of the previous two exercises has created an output data file. These two files, known as *Tamanho_AF.Sav* and *Gr_AlimX1.Sav* were saved to the analytical data subdirectory *C:\Qual_Dieta\Anal\Data* . The final syntax file, *C:\Qual_Dieta\Anal\Syntax\PrevisaoNutricional.SPS* , merges the data from these two files as well as the coefficients from Table 3, which are found in *C:\Qual_Dieta\Arch\Data\ModeloPrevNutr.Sav*. It then computes the nutrient predictions, as in Table 4, for each household and each nutrient. In subsequent statements the program categorizes these predictions as low or not and does descriptive statistics on the whole sample.

Run *PrevisaoNutricional.SPS* and answer the following questions:

1. What is the percentage of the sample that has a low level of energy intake?
2. Fill in the following table:

Nutrient	Predicted % with a low level of intake
Energy	
Protein	
Vitamin A	
Iron	

3. What is the percentage of the sample with an unacceptable diet?
4. Fill in the following table:

HH with diet quality:		Predicted % of the sample
Accetable	(MDQI $\geq$ 7.5)	
Low	(6.0 $\leq$ MDQI < 7.5)	
Very Low	(MDQI < 6.0)	

Appendix A — Files Used in Running the Dietary Adequacy Prediction Model

Name	Subfolder	Key Variables	Comments
Archived Data Files			
AFMembros_IdadeSexo.Sav	\arch\data	ald-af-mem	Age and sex of each household member
Alimentos_EpocaX1.Sav	\arch\data	ald-af-refeicao	Foods consumed at each meal on previous day. X1 refers to day 1 of epoca X (corresponds to round 4 — postharvest in NCD)
Alimentos_EpocaX2.Sav	\arch\data	ald-af-refeicao	Foods consumed at each meal on previous day. X2 refers to day 2 of epoca X (corresponds to round 4 — postharvest in NCD).
ModeloPrevNutr.Sav	\arch\data	match	Table lookup file of 143 coefficients from the dietary adequacy prediction model. All values cam be matched to all households with match=1 variable.
Analytical Data Files			
TamanhoAF.Sav	\anal\data	ald-af	Household size variables expressed in adult equivalents and in number of persons.
GrAlim_EpocaX1.Sav	\anal\data	ald-af	Number of times foods consumed from each of 11 groups in the previous day. Based on data from Alimentos_EpocaX1.Sav. Also, number of *different* food products consumed in previous day (nfoodsd).
GrAlim_EpocaX2.Sav	\anal\data	ald-af	Number of times foods consumed from each of 11 groups in the previous day. Based on data from Alimentos_EpocaX2.Sav. Also, number of *different* food products consumed in previous day (nfoodsd).
Syntax Files			
Tamanho_AF.SPS	\anal\syntax	—	Transforms age and sex data of household members in AFMembros_IdadeSexo.Sav to household size variables in TamanhoAF.Sav. Produces descriptive statistics.
Grupos_Alimentares.SPS	\anal\syntax	—	Transforms data on specific food items eaten in Alimentos_EpocaX1.Sav into number of times foods eaten from each of 11 groups in GrAlim_EpocaX1.Sav. Produces descriptive statistics.
Previsao_Nutricional.SPS	\anal\syntax	—	Runs dietary adequacy prediction model using data from TamanhoAF.Sav, GrAlim_EpocaX1.Sav and coefficients from ModeloPrevNutr.Sav. Calculates percent low in specific nutrients as well as in overall diet quality using the Mozambique Diet Quality Index. Produces descriptive statistics.

Notes: 1. All subfolders are in the c:\Qual_Dieta main folder
2. Other than ModeloPrevNutr, archived data files are samples to be used in practice exercises. They should be replaced by similarly constructed files when this model is used for real. Analytical data files are not provided in the sample directory, but are to be created as a practice for the analyst.

Syntax 1 — Tamanho_AF.SPS

```
***c:\qual_dieta\syntax\Tamanho_AF.sps -- This file takes data on the age and sex of household members
***and converts it into a variable of household size in adult equivalent units.
***(Source for much of the programming comes from:  namhh\consumo\syntax\NutAdeqPaper\nchhreq2.sps)  .

*** First, get the input data set .

get file = 'c:\qual_dieta\ARCH\data\afmembros_idadesexo.sav' .

compute AFN = 1.
variable labels AFN 'Tamanho do AF -- # Pessoas' .


**** USING FAO REQUIREMENTS CREATED FROM
**** MOZAMBIQUE -- 17 NOV 1994 -- OUTPUT RECEIVED FROM SECCAO DE
**** NUTRICAO, MINISTERIO DE SAUDE.
**** AFEqAd  IS CALCULATED BASED ON DESIRABLE REQUIREMENT LEVELS FOR REFERENCE WTS.
**** AN 18-29 YR OLD MALE'S DES REQ FOR REF WT IS 2987.

if (idade<1 and sexo = 1) AFEqAd=785/2987.
if (idade=1 and sexo = 1)  AFEqAd=1307/2987.
if (idade=2 and sexo = 1)  AFEqAd=1456/2987.
if (idade=3 and sexo = 1)  AFEqAd=1604/2987.
if (idade=4 and sexo = 1)  AFEqAd=1729/2987.
if (idade=5 and sexo = 1)  AFEqAd=1812/2987.
if (idade=6 and sexo = 1)  AFEqAd=1910/2987.
if (idade=7 and sexo = 1)  AFEqAd=1992/2987.
if (idade=8 and sexo = 1)  AFEqAd=2056/2987.
if (idade=9 and sexo = 1)  AFEqAd=2066/2987.
if (idade=10 and sexo = 1)  AFEqAd=2088/2987.
if (idade=11 and sexo = 1)  AFEqAd=2152/2987.
if (idade=12 and sexo = 1)  AFEqAd=2180/2987.
if (idade=13 and sexo = 1)  AFEqAd=2297/2987.
if (idade=14 and sexo = 1)  AFEqAd=2397/2987.
if (idade=15 and sexo = 1)  AFEqAd=2449/2987.
if (idade=16 and sexo = 1)  AFEqAd=2528/2987.
if (idade=17 and sexo = 1)  AFEqAd=2618/2987.
if (idade>=18 and idade <=29 and sexo = 1)  AFEqAd=2987/2987.
if (idade>=30 and idade <=59 and sexo = 1)  AFEqAd=2928/2987.
if (idade>=60                and sexo = 1)  AFEqAd=2018/2987.

if (idade<1 and sexo = 2) AFEqAd=741/2987.
if (idade=1 and sexo = 2)  AFEqAd=1107/2987.
if (idade=2 and sexo = 2)  AFEqAd=1255/2987.
if (idade=3 and sexo = 2)  AFEqAd=1397/2987.
if (idade=4 and sexo = 2)  AFEqAd=1546/2987.
if (idade=5 and sexo = 2)  AFEqAd=1698/2987.
if (idade=6 and sexo = 2)  AFEqAd=1785/2987.
if (idade=7 and sexo = 2)  AFEqAd=1771/2987.
if (idade=8 and sexo = 2)  AFEqAd=1835/2987.
if (idade=9 and sexo = 2)  AFEqAd=1810/2987.
if (idade=10 and sexo = 2)  AFEqAd=1901/2987.
if (idade=11 and sexo = 2)  AFEqAd=1914/2987.
if (idade=12 and sexo = 2)  AFEqAd=1974/2987.
if (idade=13 and sexo = 2)  AFEqAd=2029/2987.
if (idade=14 and sexo = 2)  AFEqAd=2087/2987.

variable labels AFEqAd 'Tamanho do AF -- # Equivalente de Adultos'.

* The following programming adjusts household size in adult equivalents for the fact that a
* certain percentage of women in Mozambican households will be pregnant or lactating.
* Thus these households will have higher energy requirements and  thus a greater "household size"
* when measured in adult equivalents.  Since it is unlikely that data on pregnancy or lactation will be
* collected on an agricultural census, we use demographic data to calculate the probability of
* pregnancy/lactation for each age group and adjust adult equivalent values upwards for each women,
* based on her probability of being preg or lactation.  Used fecundity results from Relatorio Preliminar of
* Inquerito Demograficao de Saude 1997 de Mocambique.  Table 3, Pg 7 presents live births per 1000 women
* broken into 5 year age-intervals.  Assumed that odds of being present was odds of live birth times 0.75
```

```
* which is a strategy used in FAO's energy reqs book (1994).  Lactation rates are assumed to be equal
* to live birth rate, which implicitly assumes women breastfeed on avg for 1 year (probably an underestimate)
* Note that this calculation of pregnancy rates yields very similar MEAN results to previous calculation
* (in syntax file nchhcomp02.sps), which were based on 1985 UN population estimates. Differences will
* occur for specific families and will be closer to actual reqs since same IDS reports that all but 4.6 percent
* of kids aged 10-12 months receive breastmilk (table 11, pg 24)
* The following calculations use FAO/WHO/UNU (1985, Table 50, page 138) data on
* additional reqs during preg and lact:  285 extra kcal/day for full activity pregnancy
* and 500 extra kcal/day for lactation. Each women is therefore assumed to have
* energy requirements as if she was  x % percent pregnant and y % lactating
* Without further information regarding actual pregnancies, imputations to get average
* requirements make it necessary to assume that women are "sort of" pregant.

if (idade=15 and sexo = 2)  AFEqAd=(0.172*0.75*285 + 0.172*500 + 2143)/2987.
if (idade=16 and sexo = 2)  AFEqAd=(0.172*0.75*285 + 0.172*500 + 2143)/2987.
if (idade=17 and sexo = 2)  AFEqAd=(0.172*0.75*285 + 0.172*500 + 2150)/2987.
if (idade>=18 and idade <=19 and sexo = 2)  AFEqAd=((0.172*0.75*285 + 0.172*500 + 2183)/2987).
if (idade>=20 and idade <=24 and sexo = 2)  AFEqAd=((0.271*0.75*285 + 0.271*500 + 2183)/2987).
if (idade>=25 and idade <=29 and sexo = 2)  AFEqAd=((0.235*0.75*285 + 0.235*500 + 2183)/2987).
if (idade>=30 and idade <=34 and sexo = 2)  AFEqAd=((0.199*0.75*285 + 0.199*500 + 2186)/2987).
if (idade>=35 and idade <=39 and sexo = 2)  AFEqAd=((0.126*0.75*285 + 0.126*500 + 2186)/2987).
if (idade>=40 and idade <=44 and sexo = 2)  AFEqAd=((0.095*0.75*285 + 0.095*500 + 2186)/2987).
if (idade>=45 and idade <=49 and sexo = 2)  AFEqAd=((0.025*0.75*285 + 0.025*500 + 2186)/2987).
if (idade>=50 and idade <=59 and sexo = 2)  AFEqAd=(2186/2987).
if (idade>=60                        and sexo = 2)  AFEqAd=1834/2987.



*** FOR THOSE FEW CASES WHERE AGE IS MISSING or SEX IS MISSING,
*** CALCULATE MEAN VALUES AND USE THEM HERE  IN PLACE OF 0.751282.

means  AFEqAD AFN .

if (sysmis(idade) or sysmis(sexo) or sexo > 2) afeqad = 0.751282 .

if (sysmis(idade) or sysmis(sexo) or sexo > 2) afn = 1 .


means  AFEqAD AFN .

****

* AGGREGATE TO THE HOUSEHOLD LEVEL TO GET THE TOTAL NUMBER OF EQAD, N  .

aggregate outfile = *
 /break ald af
 /AFEqAd '# Equivalente de Adultos' = sum(AFEQAD)
 /AFN '# Pessoas' = sum(AFN) .

*****


Means afeqad afn by ald .


save outfile='c:\qual_dieta\ANAL\data\TamanhoAF.sav'
 /keep ald af afeqad afn .
```

Syntax 2 — Grupos_Alimentares.SPS

```
***Grupos_Alimentares.sps -- This syntax file takes data on foods listed as consumed in the previous day and
***and converts it into 11 variables giving the number of times per day foods from each of 11 groups were consumed.

get file = 'c:\qual_dieta\arch\data\Alimentos_EpocaX1.sav'  .

***The following aggregates foods by product, in order to calculate the number of times each food item (product) was
***consumed in the previous day.

AGGREGATE OUTFILE=*
 /BREAK ald af  mes dia  prod
 /NVEZESd=n(prod) .

* THIS ASSIGNS FOOD ITEMS TO ONE OF 11 DIFFERENT FOOD GROUPS .

IF (PROD=1 OR PROD=31   or prod=143 or prod = 129
   or prod = 8 or prod = 33 or prod = 181 or prod = 93 or prod = 4 or prod = 96 or prod = 94) GRAINS=NVEZESd.

IF ( PROD=32 OR PROD=131) TUBERS = NVEZESd .

IF (PROD=2 OR PROD=15) BEANS=NVEZESd.

IF (PROD=6 OR PROD=162  OR PROD = 83 OR prod=98 or prod=18 or prod=14 or prod=24
    OR PROD=10) NUTSEEDS=NVEZESd.

IF (PROD=12 or PROD=13 OR PROD=43 OR prod = 62 or prod = 64 or PROD=75 or prod=81  or prod = 89 or
prod=90
    or prod = 70 or prod= 148) OTHEANIM=NVEZESd.

IF (PROD=16 OR   PROD=85 OR PROD =69
   OR PROD=61 OR PROD=63 OR PROD=66 OR prod=74 or PROD=78
   oR  prod=137 or prod=138 or prod=130 or prod=149 or  prod=147 or prod=140) VITAFRVG =NVEZESd.

IF ( prod=71 or prod=82  or prod=3 or prod = 7 or  prod = 19 or prod = 121 or prod = 132
   or prod  = 702) VITCFRVG = NVEZESd .

if  ( PROD=25  OR prod=67 OR prod=68 OR prod=72 OR PROD=76 or prod = 77  or prod=79
  OR prod=84 or prod = 87 or prod = 701  )  OTHEFRVG = NVEZESd.

if (prod=22 or prod=17 or prod=88 or prod = 65) SUGARS = NVEZESd .

if (prod=23) OILS = NVEZESd .

IF ( PROD=42   OR  prod=21 or prod=86 or  prod=424 or prod=422  or prod=91
     OR PROD=73 OR PROD = 92 OR PROD = 95 OR PROD = 421 OR PROD = 423) OTHERS =NVEZESd.

* Note that code 701 = amendoim fresca, code 702 = ervilha fresca .

* CHECK TO SEE IF ALL PRODUCTS WERE ASSIGNED TO FOOD GROUPS .
* Copy over the above code and create one variable called fdgrp11 (food group 11)
* in place of the 11 different food group variables above.  Then assign values 1-11 to each of the 11 food groups.
* In this way, when you do a frequencies on fdgrp11, you will see if one of the food items
* in your database forgot to get assigned to a group if there are missing values.


IF (PROD=1 OR PROD=31   or prod=143 or prod = 129
   or prod = 8 or prod = 33 or prod = 181 or prod = 93 or prod = 4 or prod = 96 or prod = 94) fdgrp11 = 1.

IF ( PROD=32 OR PROD=131) fdgrp11 = 2.

IF (PROD=2 OR PROD=15) fdgrp11 = 3.

IF (PROD=6 OR PROD=162  OR PROD=83 OR prod=98 or prod=18 or prod=14 or prod=24 OR PROD=10) fdgrp11
=4.

IF (PROD=12 or PROD=13 OR PROD=43 OR prod = 62 or prod = 64 or PROD=75 or prod=81  or prod = 89
    or prod=90 or prod = 70 or prod= 148) fdgrp11 = 5.
```

```
IF (PROD=16 OR   PROD=85 OR PROD =69
 OR PROD=61 OR PROD=63 OR PROD=66 OR prod=74 or PROD=78
  oR  prod=137 or prod=138 or prod=130 or prod=149 or  prod=147 or prod=140) fdgrp11 = 6.

IF ( prod=71 or prod=82  or prod=3 or prod = 7 or  prod = 19 or prod = 121 or prod = 132 or prod  = 702) fdgrp11 = 7 .

if  ( PROD=25  OR prod=67 OR prod=68 OR prod=72 OR PROD=76 or prod = 77  or prod=79
  OR prod=84 or prod = 87 or prod = 701  )  fdgrp11 = 8.

if (prod=22 or prod=17 or prod=88 or prod = 65) fdgrp11 = 9.

if (prod=23) fdgrp11 = 10 .

IF ( PROD=42   OR  prod=21 or prod=86 or  prod=424 or prod=422  or prod=91
     OR PROD=73 OR PROD = 92 OR PROD = 95 OR PROD = 421 OR PROD = 423) fdgrp11 = 11.


**IF YOU GET NO MISSING VALUES WHEN RUNNING THE FREQUENCY STATEMENT BELOW,
**THEN YOU KNOW THAT ALL FOODS IN THE DATABASE HAVE BEEN ASSIGNED TO A GROUP.

FREQUENCIES
  VARIABLES=fdgrp11  .

aggregate outfile = *
 /break ald af  mes dia
 /NFOODSD = n(prod)
 /NVEZCERE = SUM(GRAINS)
 /NVEZTUBE = sum(TUBERS)
 /NVEZFEIJ = sum(BEANS)
 /NVEZNOZE = sum(NUTSEEDS)
 /NVEZANIM = sum(OTHEANIM)
 /NVEZFVVA = SUM(VITAFRVG)
 /NVEZFVVC = sum(VITCFRVG)
 /NVEZFVOU = sum(OTHEFRVG)
 /NVEZACUC = sum(SUGARS)
 /NVEZOLEO = sum(OILS)
 /NVEZOUTR = sum(OTHERS)  .

if (sysmis(NVEZCERE)) NVEZCERE = 0 .
if (sysmis(NVEZTUBE)) NVEZTUBE = 0 .
if (sysmis(NVEZNOZE)) NVEZNOZE = 0 .
if (sysmis(NVEZFEIJ)) NVEZFEIJ = 0 .
if (sysmis(NVEZANIM)) NVEZANIM = 0 .
if (sysmis(NVEZFVVA)) NVEZFVVA = 0 .
if (sysmis(NVEZFVVC)) NVEZFVVC = 0 .
if (sysmis(NVEZFVOU)) NVEZFVOU = 0 .
if (sysmis(NVEZACUC)) NVEZACUC = 0 .
if (sysmis(NVEZOLEO)) NVEZOLEO = 0 .
if (sysmis(NVEZOUTR)) NVEZOUTR = 0 .

variable labels NFOODSD '# alimentos diferentes por dia' .
VARIABLE LABELS  NVEZCERE '# POR DIA CEREAIS ' .
VARIABLE LABELS  NVEZFEIJ '# POR DIA FEIJOES ' .
VARIABLE LABELS  NVEZTUBE '# POR DIA TUBERCULOS ' .
VARIABLE LABELS  NVEZNOZE '# POR DIA NOZES, SEMENTES ' .
VARIABLE LABELS  NVEZANIM '# POR DIA PRODUTOS ANIMAIS  ' .
VARIABLE LABELS  NVEZFVVA '# POR DIA FR & VEG -- VIT A ' .
VARIABLE LABELS  NVEZFVVC '# POR DIA FR & VEG -- VIT C ' .
VARIABLE LABELS  NVEZFVOU '# POR DIA FR & VEG -- OUTR ' .
VARIABLE LABELS  NVEZACUC '# POR DIA ACUCAR ' .
VARIABLE LABELS  NVEZOLEO '# POR DIA OLEOS ' .
VARIABLE LABELS  NVEZOUTR '# POR DIA OUTROS ' .

DESCRIPTIVES
  VARIABLES= nfoodsd
  NVEZCERE NVEZFEIJ NVEZTUBE NVEZNOZE
  NVEZANIM NVEZFVVA NVEZFVVC NVEZFVOU NVEZACUC NVEZOLEO NVEZOUTR
  /STATISTICS=MEAN STDDEV MIN MAX .

save outfile = 'c:\qual_dieta\anal\data\GrAlim_EpocaX1.sav'  .
```

Syntax 3 — Previsao_Nutricional.SPS

```
*Previsao_Nutricional.sps -- This file contains the coefficients from the dietary adequacy prediction model.  It provides
*            the programming to take household size and food group consumption data to make estimates of the
*            dietary adequacy of a population group.


get file ='c:\qual_dieta\anal\data\tamanhoAf.sav' .

match files
 /file = *
 /file='c:\qual_dieta\anal\data\gralim_EpocaX1.sav'
 /by ald af .

compute match = 1 .

* match the table lookup files of coefficients from the dietary adequacy prediction model with the other
* two data files using the variable called "match".  All households get all 143 coefficients.

match files
 /file = *
 /table='c:\qual_dieta\arch\data\modeloprevnutr.sav'
 /by match.


***THIS NEXT PART COMPUTES THE PREDICTED INTAKES FOR EACH NUTRIENT,
*** ANALOGOUS TO TABLE 6 (EXAMPLE OF HOW PREDICTION MODEL WORKS) IN  RP#36.

compute plenar = NVEZCERE*ENERCERE + NVEZFEIJ*ENERFEIJ + NVEZTUBE*ENERtube +
NVEZNOZE*ENERNOZE + NVEZANIM*ENERANIM + NVEZFVVA*ENERFVVA + NVEZFVVC*ENERFVVC
                + NVEZFVOU*ENERFVOU + NVEZACUC*ENERACUC + NVEZOLEO*ENEROLEO +
NVEZOUTR*ENEROUTR + afeqad*ENEREQAD  + 1*ENERINTE .

compute plpnar = NVEZCERE*PROTCERE + NVEZFEIJ*PROTFEIJ + NVEZTUBE*PROTtube +
NVEZNOZE*PROTNOZE + NVEZANIM*PROTANIM + NVEZFVVA*PROTFVVA + NVEZFVVC*PROTFVVC
                + NVEZFVOU*PROTFVOU + NVEZACUC*PROTACUC + NVEZOLEO*PROTOLEO +
NVEZOUTR*PROTOUTR + afeqad*PROTEQAD  + 1*PROTINTE .

compute prenar = NVEZCERE*VITACERE + NVEZFEIJ*VITAFEIJ + NVEZTUBE*VITAtube + NVEZNOZE*VITANOZE
+ NVEZANIM*VITAANIM + NVEZFVVA*VITAFVVA + NVEZFVVC*VITAFVVC
                + NVEZFVOU*VITAFVOU + NVEZACUC*VITAACUC + NVEZOLEO*VITAOLEO +
NVEZOUTR*VITAOUTR + afeqad*VITAEQAD  + 1*VITAINTE .

compute plfnar = NVEZCERE*FERRCERE + NVEZFEIJ*FERRFEIJ + NVEZTUBE*FERRtube +
NVEZNOZE*FERRNOZE + NVEZANIM*FERRANIM + NVEZFVVA*FERRFVVA + NVEZFVVC*FERRFVVC
                + NVEZFVOU*FERRFVOU + NVEZACUC*FERRACUC + NVEZOLEO*FERROLEO +
NVEZOUTR*FERROUTR + afeqad*FERREQAD  + 1*FERRINTE .

compute pltnar = NVEZCERE*TIAMCERE + NVEZFEIJ*TIAMFEIJ + NVEZTUBE*TIAMtube + NVEZNOZE*TIAMNOZE
+ NVEZANIM*TIAMANIM + NVEZFVVA*TIAMFVVA + NVEZFVVC*TIAMFVVC
                + NVEZFVOU*TIAMFVOU + NVEZACUC*TIAMACUC + NVEZOLEO*TIAMOLEO +
NVEZOUTR*TIAMOUTR + afeqad*TIAMEQAD  + 1*TIAMINTE .

compute plrnar = NVEZCERE*RIBOCERE + NVEZFEIJ*RIBOFEIJ + NVEZTUBE*RIBOtube +
NVEZNOZE*RIBONOZE + NVEZANIM*RIBOANIM + NVEZFVVA*RIBOFVVA + NVEZFVVC*RIBOFVVC
                + NVEZFVOU*RIBOFVOU + NVEZACUC*RIBOACUC + NVEZOLEO*RIBOOLEO +
NVEZOUTR*RIBOOUTR + afeqad*RIBOEQAD  + 1*RIBOINTE .

compute plnnar = NVEZCERE*NIACCERE + NVEZFEIJ*NIACFEIJ + NVEZTUBE*NIACtube +
NVEZNOZE*NIACNOZE + NVEZANIM*NIACANIM + NVEZFVVA*NIACFVVA + NVEZFVVC*NIACFVVC
                + NVEZFVOU*NIACFVOU + NVEZACUC*NIACACUC + NVEZOLEO*NIACOLEO +
NVEZOUTR*NIACOUTR + afeqad*NIACEQAD  + 1*NIACINTE .

compute pLB6Nar = NVEZCERE*VTB6CERE + NVEZFEIJ*VTB6FEIJ + NVEZTUBE*VTB6tube +
NVEZNOZE*VTB6NOZE + NVEZANIM*VTB6ANIM + NVEZFVVA*VTB6FVVA + NVEZFVVC*VTB6FVVC
                + NVEZFVOU*VTB6FVOU + NVEZACUC*VTB6ACUC + NVEZOLEO*VTB6OLEO +
NVEZOUTR*VTB6OUTR + afeqad*VTB6EQAD  + 1*VTB6INTE .

compute plfonar = NVEZCERE*FOLACERE + NVEZFEIJ*FOLAFEIJ + NVEZTUBE*FOLAtube +
```

```
NVEZNOZE*FOLANOZE + NVEZANIM*FOLAANIM + NVEZFVVA*FOLAFVVA + NVEZFVVC*FOLAFVVC
                + NVEZFVOU*FOLAFVOU + NVEZACUC*FOLAACUC + NVEZOLEO*FOLAOLEO +
NVEZOUTR*FOLAOUTR + afeqad*FOLAEQAD  + 1*FOLAINTE .

compute plvcnar = NVEZCERE*VITCCERE + NVEZFEIJ*VITCFEIJ + NVEZTUBE*VITCtube +
NVEZNOZE*VITCNOZE + NVEZANIM*VITCANIM + NVEZFVVA*VITCFVVA + NVEZFVVC*VITCFVVC
                + NVEZFVOU*VITCFVOU + NVEZACUC*VITCACUC + NVEZOLEO*VITCOLEO +
NVEZOUTR*VITCOUTR + afeqad*VITCEQAD  + 1*VITCINTE .

compute pcnar = NVEZCERE*CALCCERE + NVEZFEIJ*CALCFEIJ + NVEZTUBE*CALCtube +
NVEZNOZE*CALCNOZE + NVEZANIM*CALCANIM + NVEZFVVA*CALCFVVA + NVEZFVVC*CALCFVVC
                + NVEZFVOU*CALCFVOU + NVEZACUC*CALCACUC + NVEZOLEO*CALCOLEO +
NVEZOUTR*CALCOUTR + afeqad*CALCEQAD  + 1*CALCINTE .


***NOW COMPUTE THOSE  WITH PREDICTED LOW INTAKES.

COMPUTE VITABAIX = 0 .
IF (PREnar < 0.75) VITABAIX = 1 .
VARIABLE LABELS  PRENAR 'Previsao do nivel da Vitamina A' .
VARIABLE LABELS VITABAIX 'Ingestao baixa da Vitamina A' .

COMPUTE CALCBAIX = 0 .
IF (Pcnar < 0.75) CALCBAIX = 1 .
VARIABLE LABELS  PcNAR 'Previsao do nivel do Calcio' .
VARIABLE LABELS CalcBAIX 'Ingestao baixa do Calcio' .

compute eplenar = exp(plenar).
COMPUTE ENERBAIX = 0 .
IF (eplenar < 0.75) ENERBAIX = 1 .
VARIABLE LABELS  EPLENAR 'Previsao do nivel da Energia' .
VARIABLE LABELS ENERBAIX 'Ingestao baixa da Energia' .

compute eplpnar = exp(plpnar).
COMPUTE PROTBAIX = 0 .
IF (eplpnar < 0.75) PROTBAIX = 1 .
VARIABLE LABELS  EPLPNAR 'Previsao do nivel da Proteina' .
VARIABLE LABELS PROTBAIX 'Ingestao baixa da Proteina' .

compute eplvcnar = exp(plvcnar).
COMPUTE VITCBAIX = 0 .
IF (eplvcnar < 0.75) VITCBAIX = 1 .
VARIABLE LABELS  EPLvcNAR 'Previsao do nivel da Vitamina C' .
VARIABLE LABELS VITCBAIX 'Ingestao baixa da Vitamina C' .

compute eplfonar = exp(plfonar).
COMPUTE FOLABAIX = 0 .
IF (eplfonar < 0.75) FOLABAIX = 1 .
VARIABLE LABELS  EPLfoNAR 'Previsao do nivel da Acido Folico' .
VARIABLE LABELS FOLABAIX 'Ingestao baixa da Acido Folico' .

compute epLB6Nar = exp(pLB6Nar).
COMPUTE VTB6BAIX = 0 .
IF (epLB6Nar < 0.75) VTB6BAIX = 1 .
VARIABLE LABELS  EPLb6NAR 'Previsao do nivel da Vit B6' .
VARIABLE LABELS VTB6BAIX 'Ingestao baixa da Vit B6' .

compute epltnar = exp(pltnar).
COMPUTE TIAMBAIX = 0 .
IF (epltnar < 0.75) TIAMBAIX = 1 .
VARIABLE LABELS  EPLtNAR 'Previsao do nivel da Tiamina' .
VARIABLE LABELS TIAMBAIX 'Ingestao baixa da Tiamina' .

compute eplrnar = exp(plrnar).
COMPUTE RIBOBAIX = 0 .
IF (eplrnar < 0.75) RIBOBAIX = 1 .
VARIABLE LABELS  EPlrNAR 'Previsao do nivel da Riboflavina' .
VARIABLE LABELS RIBOBAIX 'Ingestao baixa da Riboflavina' .
```

```
compute eplnnar = exp(plnnar).
COMPUTE NIACBAIX = 0 .
IF (eplnnar < 0.75) NIACBAIX = 1 .
VARIABLE LABELS  EPLnNAR 'Previsao do nivel da Niacina' .
VARIABLE LABELS NIACBAIX 'Ingestao baixa da Niacina' .

compute eplfnar = exp(plfnar).
COMPUTE FERRBAIX = 0 .
IF (eplfnar < 0.75) FERRBAIX = 1 .
VARIABLE LABELS  EPLfNAR 'Previsao do nivel da Ferro' .
VARIABLE LABELS FERRBAIX 'Ingestao baixa da Ferro' .

** THE FOLLOWING CREATES THE MOZAMBIQUE DIET QUALITY INDEX .
**  FIRST TRUNCATE EACH NUTRIENT'S ADEQUACY RATIO AT 1.O.
** THE "NAR" SUFFIX REFERS TO NUTRIENT ADEQUACY RATIO,
**  I.E. INTAKE OVER RECOMMENDATION.  THE "L" REFERS TO THE
**  LOGARITHMIC FORM, SO "LENAR" IS THE LOG OF THE ENERGY NUT
** ADEQ RATIO.  PNAR=PROTEIN NAR, RENAR=VIT A NAR,
** VCNAR = VITAMIN C NAR, FNAR = FERRO NAR, ETC.
** THE "P" REFERS TO A PREDICTED VALUE, AND THE "E" PRECEDING
** THE P REFERS TO THE EXPONENT OF THE
** VARIABLE, WHICH IS NEEDED TO ADJUSTED LOG VALUES
** BACK TO A LINEAR SCALE.  THUS, "EPLENAR" IS THE
** PREDICTED NUTRIENT ADEQUACY RATIO FOR ENERGY AND
** "EPLPNAR" IS THE SAME FOR PROTEIN.  THE "T"
** INDICATES A TRUNCATION.

COMPUTE TPENAR = EPLENAR .
COMPUTE TPPNAR = EPLPNAR .
*COMPUTE TPPNAR = PRE_21 .
COMPUTE TPRENAR = prenar.
COMPUTE TPVCNAR = EPLVCNAR .
COMPUTE TPRNAR = EPLRNAR .
COMPUTE TPNNAR = EPLNNAR .
COMPUTE TPCNAR = pcnar .
COMPUTE TPFNAR = EPLFNAR .
COMPUTE TPTNAR = EPLTNAR .
COMPUTE TPFONAR = EPLFONAR .
COMPUTE TPB6NAR = EPLB6NAR .


IF (EPLENAR  > 1.00 ) TPENAR = 1.00 .
IF (EPLPNAR  > 1.00 ) TPPNAR = 1.00.
*IF (PRE_21 > 1.00) TPPNAR = 1.00 .
IF (PREnar  > 1.00 ) TPRENAR = 1.00 .
IF (EPLVCNAR  > 1.00 ) TPVCNAR = 1.00.
IF (EPLRNAR  > 1.00 ) TPRNAR = 1.00 .
IF (EPLNNAR  > 1.00 ) TPNNAR = 1.00.
IF (Pcnar > 1.00 ) TPCNAR = 1.00 .
IF (EPLFNAR  > 1.00 ) TPFNAR = 1.00.
IF (EPLFONAR  > 1.00 ) TPFONAR = 1.00.
IF (EPLTNAR  > 1.00 ) TPTNAR = 1.00.
IF (EPLB6NAR  > 1.00 ) TPB6NAR = 1.00.

**CALCULATE WEIGHTED IQDM BASED ON MOST IMPORTANT NUTRIENTS.
**IQDM IS THE MOZAMBIQUE DIET QUALITY INDEX -- MDQI IN PORTUGUESE.
**PIQDM IS THE PREDICTED VALUE OF THE INDEX.

COMPUTE XPTENAR = TPENAR*2 .
COMPUTE XPTPNAR = TPPNAR *2.
COMPUTE XPTRENAR = TPRENAR*2.
COMPUTE XPTVCNAR = TPVCNAR*(0.2857142857) .
COMPUTE XPTRNAR = TPRNAR*(0.2857142857) .
COMPUTE XPTNNAR = TPNNAR*(0.2857142857) .
COMPUTE XPTCNAR = TPCNAR*(0.2857142857) .
COMPUTE XPTFNAR = TPFNAR*2 .
compute XPttnar = tPtnar*(0.2857142857) .
compute XPtfonar = tPfonar*(0.2857142857) .
compute XPtb6nar = tPb6nar*(0.2857142857) .
```

```
COMPUTE IQDM = (SUM(XPTENAR, XPTPNAR, XPTRENAR, XPTVCNAR, XPTRNAR, XPTNNAR, XPTCNAR,
XPTFNAR, Xpttnar, Xptfonar,  Xptb6nar              )).

**CREATE THREE CATEGORIES DESCRIBING WHEN DIETARY ADEQUACY IS LOW.

IF (IQDM >= 7.5 ) DIETBAIX = 0 .
IF (IQDM >= 6.0 and IQDM < 7.5 ) DIETBAIX = 1.
IF (IQDM < 6.0 ) DIETBAIX =2.

VARIABLE LABELS  IQDM 'Previsao do Index da Qual da Dieta Moz' .
VARIABLE LABELS DIETBAIX 'Baixa Qualidade da Dieta' .
value labels dietbaix 0 'Aceitavel' 1 'Baixa' 2 'Muito Baixa' .

compute DIETNAOA = 0.
if (IQDM < 7.5) DIETNAOA = 1.

VARIABLE LABELS DIETNAOA 'Qualidade da Dieta--Nao Aceitavel' .
value labels dietnaoa  0 'Aceitavel' 1 'Baixa ou Muito Baixa'  .

variable labels NFOODSD '# alimentos diferentes por dia' .
VARIABLE LABELS  NVEZCERE '# POR DIA CEREAIS ' .

***MAIN RESULTS .

FREQUENCIES
  VARIABLES=  ENERBAIX PROTBAIX              VITABAIX FERRBAIX     DIETNAOA .

FREQUENCIES
  VARIABLES=DIETBAIX DIETNAOA  .

***OUTRR STUFF THAT MAY BE OF INTEREST.

FREQUENCIES
  VARIABLES=   TIAMBAIX RIBOBAIX  NIACBAIX  VTB6BAIX FOLABAIX  VITCBAIX  CALCBAIX .

***THE FOLLOWING GIVES MEAN PREDICTED LEVELS OF INTAKE IN RELATION TO RECOMMENDATIONS.
***NOTE THAT EVEN WITH MEAN LEVELS  ABOVE 1.0, MANY HOUSEHOLDS WILL HAVE LOW INTAKES.

DESCRIPTIVES
  VARIABLES=IQDM eplenar eplpnar PRENAR eplfnar
  /STATISTICS=MEAN .
```

Appendix B — Files Used in Developing the Dietary Adequacy Prediction Model

Table B-1 — Syntax Files (all within c:\namhh\consumo\syntax\RP36_NutAdeqPaper)

Name	Input Dataset	Output Dataset	Comments
nchhreq2.SPS	c:\namhh\arch\data\cmem.sys c:\namhh\arch\data\caf.sys	c:\namhh\consumo\data\nreqspd_west.sav c:\namhh\consumo\data\nreqspaf_west.sav c:\namhh\consumo\data\phhtreqs_west.sav	Calculates nutrient recommendations at the household level based on international standards & age, sex composition of household. These are the denominators to be used in calculating "nutrient adequacy ratios" (i.e. intake/recommendation).
ncdnuts_west.SPS	c:\namhh\arch\data\cuni.sys c:\namhh\arch\data\cing.sys c:\namhh\arch\data\afr.sys c:\namhh\arch\lookup\densi.sys c:\namhh\arch\lookup\w.sys c:\namhh\arch\lookup\nutrients_west.sav c:\namhh\anal\data\afcateg.sys c:\namhh\consumo\data\phhtreqs_west.sav	c:\namhh\consumo\data\unit13_west.sav c:\namhh\consumo\data\unitmea3_west.sav c:\namhh\consumo\data\nutdata2_west.sav c:\namhh\consumo\data\nutsnar2_west.sav	Monster program that takes original archived data from NAMHH and converts into two main files: nutdata2_west.sav which gives the nutrient values of each food consumed at each meal on each day by each household; and nutsnar2_west.sav which gives the mean daily nutrient intakes expressed as nutrient adequacy ratios (intake/recommendation) for each household for each ROUND. This most recent update was done to use the new food composition database created based on data from WEST, 1988 (see appendix C).
tables1--3.sps	C:\namhh\consumo\data\nutsnar2_west.sav	c:\namhh\consumo\data\nutsnar_NutAdeq.sav	Programming for Tables 1-3 of RP 36
regr_11grps_final.sps	C:\namhh\consumo\data\nutdata2_west.sav C:\namhh\consumo\data\nutsnar_NutAdeq.sav	c:\namhh\consumo\syntax\Rp36_nutadeqpaper\coefs\re_coef.sav + c_coef, le_coef, lp_coef, lvc_coef, lt_coef, lr_coef, ln_coef, lb6_coef, lfo_coef, lf_coef, and tmar_b.sav c:\namhh\consumo\syntax\Rp36_nutadeqpaper\coefs\Regr_11grps_variables.sav	Runs the regressions which generate coefficients at the core of the nut adeq pred model. Outputs coefficient datasets - one for each nutrient model run + dataset with all variables used in the regressions
forecast_allseasons.sps	c:\namhh\consumo\syntax\Rp36_nutadeqpaper\coefs\re_coef.sav + c_coef, le_coef, lp_coef, lvc_coef, lt_coef, lr_coef, ln_coef, lb6_coef, lfo_coef, lf_coef, and tmar_b.sav c:\namhh\consumo\syntax\Rp36_nutadeqpaper\coefs\Regr_11grps_variables.sav	c:\namhh\consumo\syntax\Rp36_nutadeqpaper\coefs\renr.sav + cnar, lenar, lpnar, lvcnr, ltnr, lrnar, lnnar, lb6nr, lfonr, lfnar, and tmarb.sav	Takes raw output from regression models, selects coeffecient estimates, renames them, and outputs to coef datasets — one for each nutrient. Merges these files with food group consumption data and does predictions for nutrient intake over all seasons. Creates predicted MDQI variables (final chosen one coded as "tmar_b"). Creates indicator variables to assess whether predicted intakes are low or not. Does descriptive stats.

Name	Input Dataset	Output Dataset	Comments
forecast_hungryseason.sps	c:\namhh\consumo\syntax\Rp36_nutadeqpaper\coefs\Regr_11grps_variables.sav c:\namhh\consumo\syntax\Rp36_nutadeqpaper\coefs\renr.sav + cnar, lenar, lpnar, lvcnr, ltnr, lrnar, lnnar, lb6nr, lfonr, lfnar, and tmarb.sav	—	Merges coefficient estimate files with food group consumption data and does predictions for nutrient intake for hungry season. Creates indicator variables to assess whether predicted intakes are low or not. Creates predicted MDQI variables. Does descriptive stats.
forecast_postharvseason.sps	c:\namhh\consumo\syntax\Rp36_nutadeqpaper\coefs\Regr_11grps_variables.sav c:\namhh\consumo\syntax\Rp36_nutadeqpaper\coefs\renr.sav + cnar, lenar, lpnar, lvcnr, ltnr, lrnar, lnnar, lb6nr, lfonr, lfnar, and tmarb.sav	—	Merges coefficient estimate files with food group consumption data and does predictions for nutrient intake for post harvest season. Creates indicator variables to assess whether predicted intakes are low or not. Creates predicted MDQI variables. Does descriptive stats.
Regr_12Grps_AnnualNutr.sps	C:\namhh\consumo\data\nutsnar_nutadeq.sav C:\namhh\ocnsumo\data\nutdata2_west.sav c:\namhh\consumo\data\socecon_vars.sav c:\namhh\consumo\data\socecon_vars2.sav	C:\namhh\consumo\data\nutsnar_NutAdeq_AnnNutr.sav	Calculates average annual intakes per household and outputs these data. Does appendix D regressions do come up with alternative model. Output covariance matrix datasets from regression models are not needed as predictions are made in this program itself. Does descriptive stats on predicted nutr adequacy variables.
soecon_vars.sps	c:\namhh\anal\income\income2.sav	c:\namhh\consumo\data\socecon_vars.sav	Creates dichotomous ag sales, and other socio-econ variables, including area cultivated and work off-farm for later use in regression models.
Socecon_vars2.sps	C:\namhh\anal\income\prodhinc.sys	c:\namhh\consumo\data\SocEcon_Vars2.sav	Creates maize production and dichotomous ag prodn vars indicating most important crop for each hhold for later use in regression models.
forecast_allseas_portuguese.sps	c:\namhh\consumo\syntax\Rp36_nutadeqpaper\coefs\re_coef.sav + c_coef, le_coef, lp_coef, lvc_coef, lt_coef, lr_coef, ln_coef, lb6_coef, lfo_coef, lf_coef, and tmar_b.sav c:\namhh\consumo\syntax\Rp36_nutadeqpaper\coefs\Regr_11grps_variables.sav	c:\namhh\consumo\syntax\Rp36_nutadeqpaper\coefs\renr.sav + cnar, lenar, lpnar, lvcnr, ltnr, lrnar, lnnar, lb6nr, lfonr, lfnar, and tmarb.sav	Same as forecast_allseasons.sps but creates variable names in portuguese for later use in practical exercise datasets.

Table B-2 — Data Files

Name	Subfolder	Key Variables	Comments
Latest versions of basic NCD consumption data files			
afcateg.sys	c:\namhh\anal\data\	ald-af	matches the cotton production category to each household
afr.sys	c:\namhh\arch\data\	ald-af-ronda	information on interviewer for ag, consumo parts; day of interview, etc.
caf.sys	c:\namhh\arch\data\	ald-af-ronda-dia	numbers of guests at each meal; consumption or not of matabich, almoco, jantar; consumption of chima, carri, outro prato at each meal.
cing.sys	c:\namhh\arch\data\	ald-af-ronda-dia-ing	quantity, unit of each ingredient used in food preparation (or of each food consumed) on previous day; source of food.
cmem.sys	c:\namhh\arch\data\	ald-af-ronda-dia-mem	attendance at each meal by household members
cuni.sys	c:\namhh\arch\data\	ald-af-ronda-unit	weight of each unit (e.g. copo grande) used by household to report quantities consumed in cing; product used to fill the unit was also recorded.
densi.sys	c:\namhh\arch\lookup\	prod	densities by product
mem.sys	c:\namhh\arch\data\	ald-af-mem	characteristics, including age, sex, relation to chefe of household members
nreqspaf_west.sav	c:\namhh\consumo\data\	ald-af	mean nutrient recommendations at household level averaged over all days in which household was surveyed
nreqspd_west.sav	c:\namhh\consumo\data\	ald-af-ronda-mes-dia	daily nutrient recommendations summed at household level based on age, sex composition of household and individual meal attendance on that day
nutdata2_west.sav	c:\namhh\consumo\data\	ald-af-ronda-mes-dia-refeicao-prod	nutrient values of each food consumed at each meal on each day by each household
nutrients_west.sav	c:\namhh\arch\lookup\	prod	nutrient composition of foods based on values from West et al.
nutsnar2_west.sav	c:\namhh\consumo\data\	ald-af-ronda	mean daily nutrient intakes expressed as nutrient adequacy ratios (intake/recommendation) for each household for each ROUND
phhtreqs_west.sav	c:\namhh\consumo\data\	ald-af-ronda-mes-dia	similar to nreqspd_west.sav but includes variables attributing proportion of calories per meal to household members (as opposed to guests).
unit13_west.sav	c:\namhh\consumo\data\	ald-af-ronda-unit	volume of unit (e.g. copo) used to measure food consumed in ing.sys; also has filled weight and density of product used to fill the unit for weighing.

Name	Subfolder	Key Variables	Comments
unitmea3_west.sav	c:\namhh\consumo\data\	unit	trimmed mean volume of units used across entire study. used when information is missing at the household level.
w.sys	c:\namhh\arch\lookup\		
Data files used in analytical work for dietary adequacy paper			
income2.sav	c:\namhh\anal\income\	ald-af	many variables used in creation of household income variable (as well as many vars from afr.sys).
nutsnar_nutadeq.sav	c:\namhh\consumo\data\	ald-af-ronda	same variables as nutsnar2_west.sav plus dichotomous indicators of low intake, various diet quality indices (tmar_b is the final choice for MDQI), and various irrelevant intermediate variables.
nutsnar_NutAdeq_AnnNutr.sav	C:\namhh\consumo\data\	ald-af	same as nutsnar_nutadeq but values averaged over the year
prodhinc.sys	C:\namhh\anal\income\	ald-af-ronda-prod	quantity and value of production of major crops
re_coef.sav + c_coef, le_coef, lp_coef, lvc_coef, lt_coef, lr_coef, ln_coef, lb6_coef, lfo_coef, lf_coef, and tmar_b.sav	c:\namhh\consumo\syntax\Rp36_nutadeqpaper\coefs\		output files from regressions including coefficient estimates and other statistics in the covariance matrix. one file for each nutrient model run.
regr_11grps_variables.sav	c:\namhh\consumo\syntax\Rp36_nutadeqpaper\coefs\	ald-af-ronda	all variables used in the regression models to get coefficents for nut adeq prediction model including food group variables, nut adeq variables, household size.
renr.sav + cnar, lenar, lpnar, lvcnr, ltnr, lrnar, lnnar, lb6nr, lfonr, lfnar, and tmarb.sav	c:\namhh\consumo\syntax\Rp36_nutadeqpaper\coefs\		coefficient estimates on nutrient regression models. Variable names indicate both the dep var (nutrient) and the independent variable (food group, hh size, intercept) to which the coefficient applies. For example, lfnrgrai is the coefficient on the grains group in the equation in which the dependent variable is the logarithm of the ferro (iron) nut adeq ratio (lfnr).
socecon_vars.sav	c:\namhh\consumo\data\	ald-af	dichotomous ag sales vars and other socio-econ variables, including area cultivated and work off-farm
socecon_vars2.sav	c:\namhh\consumo\data\	ald-af	maize production and dichotomous ag prodn vars indicating most important crop per hhold

Appendix C — Nutritional Composition of Foods in the NCD Dataset

List of food codes in the archived ingredient data file

(variable “ing” in c:\namhh\arch\data\cing.sys)

1 Milho
2 Feijao
3 Mandioca fresca
4 Arroz
6 Amendoim
8 Mapira
12 Peixe seco
13 Peixe fresco
14 Girassol
15 Ervilha
16 Abobora/pipino
17 cana doce
18 gergelim
19 Tomate
21 Sal
22 Acucar
23 Oleo
24 Castanha de caju
25 Hort/fruta
31 Farinha de milho
32 Farinha de mandioca
33 Farinha de mapira
42 Bebida
43 Carne
61 Matapa de mandioca
62 Passarinhos
63 Matapa de feijao
64 Ovos
66 Folhas de abobora
67 Cocumelo
68 Legume Inhame
69 Folhas de piri piri
70 Caracol
71 Papaia
72 Cebola
74 Mangas
75 Galinha
76 Bananas
77 Macaroca
78 Matapa de batata doce
79 Vertura quiabo
81 Gafanhotos
82 Limao
83 Coco
84 Enenkelo
85 Couve
86 Cafe
87 Macieira
88 Mel
89 Leite
90 Pombos
91 Oteka
92 Rebucados
93 Pao
94 Bolachas
95 Refresco
98 Sementes de abob/pepino
121 feijao fresco
129 Farelo de milho
130 Piri/piri
131 mandioca seca
132 Fava
133 Farinha de arroz
135 Pasteis
137 matapa de feijao com feigao
138 matapa enheue
139 trincas de mandioca
140 folhas de cajueiro
141 sapo
142 cha
143 trincas de milho
144 trincas de mapira
146 inlekero
147 matapa de mandioca com feijao
148 custaceos
149 matapa de aboboreira com feijao fresco
150 mandioca com feijao
151 ratos
162 amendoim seco con casca
181 mapira fresca
422 bebida
424 bebida

List of food codes in the transformed food consumption data file
(variable “prod” in c:\namhh\consumo\data\nutdata2_west.sav, the database in which food items are merged with nutrient content.)

1 Milho
2 Feijao
3 Mandioca fresca
4 Arroz
6 Amendoim
8 Mapira
12 Peixe seco
13 Peixe fresco
14 Girassol
15 Ervilha
16 Abobora/pipino
17 cana doce
18 gergelim
19 Tomate
22 Acucar
23 Oleo
24 Castanha de caju
25 Hort/fruta
31 Farinha de milho
32 Farinha de mandioca
33 Farinha de mapira
42 Bebida
43 Carne
61 Matapa de mandioca
63 Matapa de feijao
64 Ovos
66 Folhas de abobora
67 Cocumelo
70 Caracol
71 Papaia
72 Cebola
74 Mangas
75 Galinha
76 Bananas
78 Matapa de batata doce
81 Gafanhotos
82 Limao
83 Coco
85 Couve
88 Mel
89 Leite
93 Pao
98 Sementes de abob/pepino
121 feijao fresco
131 mandioca seca
148 custaceos
162 amendoim seco con casca
181 mapira fresca
701 amendoim fresco
702 ervilha fresca

List of codes in the food composition data base
(variable “prod” in c:\namhh\arch\lookup\nutrients_west.sav, which is the nutrient lookup file)

1 Milho
2 Feijao
3 Mandioca fresca
4 Arroz
6 Amendoim
7 Batata doce
8 Mapira
12 Peixe seco
13 Peixe fresco
14 Girassol
15 Ervilha
16 Abobora/pipino
17 cana doce
18 gergelim
19 Tomate
22 Acucar
23 Oleo
24 Castanha de caju
25 Hort/fruta
31 Farinha de milho
32 Farinha de mandioca
33 Farinha de mapira
42 Bebida
43 Carne
61 Matapa de mandioca
63 Matapa de feijao
64 Ovos
66 Folhas de abobora
67 Cocumelo
69 Folhas de piri piri
70 Caracol
71 Papaia
72 Cebola
74 Mangas
75 Galinha
76 Bananas
77 Macaroca
78 Matapa de batata doce
81 Gafanhotos
82 Limao
83 Coco
85 Couve
88 Mel
89 Leite
93 Pao
94 Bolachas
95 Refresco
96 Massas espaquetes
98 Sementes de abob/pepino
121 feijao fresco
129 Farelo de milho
131 mandioca seca
148 custaceos
162 amendoim seco com casca
181 mapira fresca
701 Amendoim Fresca
702 Ervilha Fresca

The NCD Food Composition Database
(c:\namhh\arch\lookup\nutrients_west.sav)

PROD	WEST_ID#	ENERGIA	PROTEINA	GORDURA	CARBOHID	CALCIO	FERRO	RETINOL	BETA_CAR	OTHE_CAR	TIAMINA	RIBOFLAV	VITAM_B6	NIACIN	FOLICACD	VITAM_C	TO_WASTE	PARTECOM	MISAU_ID
1	2.0	3450	94.00	42.00	720.00	160.00	36.00	0.00	0.00	0.00	3.30	1.00	2.00	22.0	.	0.0	100	100	13
2	38.0	3200	220.00	15.00	570.00	1200.00	82.00	0.00	0.00	0.00	3.70	1.60	2.00	24.0	1800.0	10.0	100	100	29
3	27.0	1400	12.00	2.00	350.00	680.00	19.00	0.00	150.00	300.00	0.40	0.50	0.00	6.0	240.0	310.0	74	85	19
4	13.0	3350	70.00	5.00	800.00	90.00	17.00	0.00	0.00	0.00	1.00	0.30	3.00	28.0	290.0	0.0	100	100	1
6	55.0	5700	230.00	450.00	200.00	490.00	38.00	0.00	80.00	140.00	7.90	1.40	5.00	155.0	1100.0	10.0	70	70	21
7	31.5	1100	16.00	2.00	280.00	330.00	20.00	0.00	9175.00	0.00	0.90	0.40	2.70	7.0	520.0	370.0	79	85	17
8	14.0	3450	110.00	32.00	720.00	260.00	110.00	0.00	200.00	0.00	3.40	1.50	2.50	33.0	.	0.0	95	100	8
12	123.0	3200	440.00	160.00	.	30000.00	85.00	.	.	.	1.00	2.00	.	60.0	.	0.0	.	100	43
13	121.0	1150	220.00	30.00	0.00	320.00	17.00	0.00	0.00	0.00	0.50	0.80	1.60	28.0	.	0.0	100	100	42
14	58.0	5900	200.00	460.00	260.00	1000.00	76.00	0.00	0.00	0.00	13.60	1.60	.	33.0	.	0.0	96	50	34
15	47.0	3000	220.00	11.00	560.00	900.00	180.00	0.00	1500.00	250.00	8.80	1.70	1.30	30.0	330.0	0.0	100	100	28
16	83.0	230	10.00	1.00	50.00	250.00	14.00	0.00	12000.00	11000.00	0.50	0.20	1.00	5.0	80.0	80.0	77	75	73
17	107.0	540	6.00	1.00	130.00	80.00	14.00	0.00	.	.	0.20	0.10	.	1.0	.	30.0	45	45	.
18	.	5940	200.00	500.00	160.00	15000.00	100.00	20.00	.	.	10.00	2.50	.	50.0	.	.	.	100	30
19	87.0	220	10.00	2.00	40.00	100.00	6.00	0.00	3800.00	1350.00	0.60	0.40	0.60	6.0	280.0	260.0	96	98	92
22	108.0	3750	0.00	0.00	1000.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	100	100	114
23	140.5	9000	0.00	1000.00	0.00	0.00	0.00	0.00	125.00	0.00	0.00	0.00	0.00	0.0	.	0.0	100	100	112
24	52.0	5600	170.00	430.00	280.00	760.00	180.00	0.00	30.00	40.00	6.50	2.50	.	16.0	.	70.0	100	100	22
25	.	343	17.11	.	.	638.47	15.43	1782.30	0.00	0.00	0.68	0.87	.	7.1	.	441.1	.	.	.
31	5.0	3350	80.00	10.00	770.00	60.00	11.00	0.00	0.00	0.00	1.40	0.50	1.20	10.0	.	0.0	100	100	12
32	28.0	3200	16.00	5.00	820.00	660.00	36.00	0.00	0.00	0.00	0.60	0.50	.	9.0	.	40.0	100	100	18
33	15.0	3350	95.00	28.00	730.00	280.00	100.00	0.00	200.00	0.00	2.80	0.90	.	34.0	.	0.0	100	100	7
42	.	380	3.00	.	.	20.00	7.00	.	.	.	0.05	0.15	.	0.0	.	0.0	.	100	.
43	112.0	1700	180.00	110.00	0.00	110.00	23.00	0.00	0.00	0.00	1.70	3.20	4.00	56.0	.	0.0	74	74	46
61	65.0	900	70.00	10.00	140.00	3000.00	76.00	0.00	30000.00	0.00	2.50	6.00	3.00	24.0	500.0	3100.0	80	80	86
63	73.0	250	18.00	2.00	40.00	760.00	18.00	0.00	13500.00	9000.00	0.40	1.60	3.00	7.0	500.0	410.0	80	80	86
64	111.0	1400	120.00	100.00	10.00	450.00	20.00	1500.00	3000.00	0.00	1.00	3.00	1.50	3.0	250.0	0.0	88	88	52
66	84.0	250	40.00	2.00	20.00	4750.00	8.00	0.00	10000.00	0.00	0.80	0.60	3.00	3.0	500.0	800.0	.	80	86
67	76.0	290	15.00	5.00	50.00	200.00	15.00	0.00	0.00	0.00	1.00	4.00	1.00	40.0	230.0	30.0	91	87	.
69	82.0	730	46.00	34.00	60.00	1700.00	100.00	0.00	35000.00	10500.00	0.40	1.60	3.00	0.0	500.0	20.0	80	80	85
70	120.0	950	180.00	6.00	50.00	2600.00	16.00	1000.00	500.00	0.00	0.50	1.00	1.50	25.0	650.0	0.0	60	25	40
71	100.0	300	4.00	1.00	70.00	210.00	6.00	0.00	3000.00	0.00	0.30	0.30	0.20	4.0	10.0	520.0	74	70	105
72	79.0	380	12.00	1.00	90.00	270.00	8.00	0.00	0.00	0.00	0.20	0.40	0.70	2.0	140.0	110.0	94	95	80
74	98.0	600	6.00	2.00	150.00	240.00	12.00	0.00	24000.00	0.00	0.30	0.50	1.30	4.0	70.0	420.0	64	66	101
75	118.0	1400	200.00	65.00	0.00	100.00	11.00	750.00	600.00	0.00	1.00	1.50	2.00	37.0	.	0.0	67	67	51
76	91.0	820	15.00	1.00	200.00	90.00	14.00	0.00	900.00	600.00	0.30	0.30	3.50	6.0	190.0	90.0	63	67	94
77	1.0	1650	50.00	21.00	340.00	180.00	18.00	0.00	3600.00	0.00	1.60	0.80	1.00	13.0	.	80.0	70	40	88
78	85.0	490	46.00	2.00	80.00	1600.00	62.00	0.00	26200.00	8750.00	1.00	2.80	3.00	9.0	500.0	700.0	80	80	85
81	.	1340	200.00	60.00	.	300.00	10.00	.	.	.	.	5.00	.	22.0	.	.	.	.	64
82	94.0	400	6.00	8.00	80.00	190.00	7.00	0.00	80.00	40.00	0.30	0.20	0.40	3.0	245.0	450.0	59	77	98
83	54.0	3900	36.00	390.00	70.00	210.00	25.00	0.00	130.00	240.00	0.30	0.30	0.70	6.0	260.0	20.0	65	65	25
85	74.0	580	45.00	3.00	100.00	3600.00	72.00	0.00	33000.00	0.00	1.50	5.30	3.00	12.0	1050.0	800.0	80	80	85
88	.	3060	4.00	.	760.00	50.00	4.00	.	.	.	.	0.50	.	2.0	.	.	.	100	117
89	.	3170	73.00	80.00	539.00	2700.00	2.00	926.47	0.00	0.00	0.90	3.30	.	2.0	.	38.0	.	100	66
93	19.0	2400	77.00	20.00	510.00	370.00	17.00	0.00	0.00	0.00	1.60	0.60	0.70	10.0	28.0	0.0	100	100	14
94	.	4470	74.00	108.00	800.00	260.00	33.00	.	.	.	2.00	.	.	12.0	.	0.0	.	100	3
95	.	350	.	0.00	88.00	20.00	0.20	.	.	.	.	.	.	.	.	0.0	.	100	119
96	24.0	1500	50.00	5.00	300.00	110.00	11.00	0.00	0.00	0.00	1.80	1.00	0.30	16.0	50.0	0.0	100	100	6
98	57.0	5750	230.00	460.00	190.00	570.00	28.00	0.00	90.00	180.00	1.50	1.20	.	14.0	.	20.0	75	75	33

PROD	WEST_ID#	ENERGIA	PROTEINA	GORDURA	CARBOHID	CALCIO	FERRO	RETINOL	BETA_CAR	OTHE_CAR	TIAMINA	RIBOFLAV	VITAM_B6	NIACIN	FOLICACD	VITAM_C	TO_WASTE	PARTECOM	MISAU_ID
121	37.0	1050	82.00	4.00	180.00	220.00	18.00	0.00	1500.00	250.00	1.50	1.50	0.50	16.0	360.0	250.0	45	45	27
129	7.0	3450	100.00	45.00	700.00	120.00	25.00	0.00	0.00	0.00	3.50	1.30	2.00	20.0	.	30.0	100	.	.
131	.	3550	21.00	.	.	1020.00	7.00	.	.	.	1.20	0.20	.	15.0	.	10.0	.	.	.
148	120.0	950	180.00	6.00	50.00	2600.00	16.00	1000.00	500.00	0.00	0.50	1.00	1.50	25.0	650.0	0.0	60	37	39
162	55.0	5700	230.00	450.00	200.00	490.00	38.00	0.00	80.00	140.00	7.90	1.40	5.00	155.0	1100.0	10.0	70	70	21
181	14.0	3450	110.00	32.00	720.00	260.00	110.00	0.00	200.00	0.00	3.40	1.50	2.50	33.0	.	0.0	95	100	8
701	.	3330	150.00	250.00	120.00	300.00	15.00	0.00	80.00	140.00	5.00	1.00	.	100.0	.	100.0	.	65	20
702	37.0	1050	82.00	4.00	180.00	220.00	18.00	0.00	1500.00	250.00	1.50	1.50	0.50	16.0	360.0	250.0	45	45	27

The NCD Food Composition Database

(c:\namhh\arch\lookup\nutrients_west.sav)

Notes on creation of the NCD Food Composition Database

1. This database is based on values found in: West, C.E., Pepping, F. and C.R. Temalilwa (1988). *The Composition of Foods Commonly Eaten in East Africa*. Wageningen: Wageningen Agricultural University, which is referred to as West throughout this manual. Foods which were found in WEST have a value for the variable "west_id#" in the lookup file, which corresponds to the number of the food in the WEST reference.

2. Foods which have a missing value for "west_id#" were obtained from a different source. Usually this source was MISAU and the nutrient values correspond to the food in the MISAU table with the code in the variable "misau_id" in the lookup file.

3. In most cases the "west_id#" value is not missing, nor is the "misau_id" value. In these cases, the "misau_id" value simply represents the food that was used previously in c:\namhh\arch\lookup\nuts_rev4.sav, i.e. a cross-reference. However, if there is a valid value for "west_id#", the nutrient values in c:\namhh\arch\lookup\nutrients_WEST.sav came from the corresponding food identified in WEST.

4. In cases where both "west_id#" and "misau_id" is missing, the values came from a third FAO reference.

5. Where there is a missing value for a nutrient it is because none of these references had values for that nutrient from that food.

6. The variable "to_waste" refers to the percent of the purchased food that is edible, i.e. total - waste, where waste was obtained from WEST. "Partecom" was the analogous variable from the MISAU reference. These are listed in the databases merely for reference. The only places they were used were directly in the programming (NCDnuts_usingWEST.sps) was to adjust consumed weights for three foods: amendoim con casca (#162), amendoim fresca (#701) and ervilha fresca (#702). But these were lines added to the program itself.

7. In some cases nutrient values were substituted from different foods or different sources. In other cases, values were an average of two or more foods from West. Below is a table which describes these adjustments.

8. Nutrient values for sal (#21), cafe (#86), piri piri (#130), and cha (#142) were not assigned and are thus not included in the NCD food/nutrient consumption databases.

Food code	Food	Nutrient	Comment
7	Batata doce	all	values are averages from two foods: sweet potato, yellow (west_id# 31) and sweet potato, pale (west_id# 32)
18	Gergelim	retinol	adapted from misau value for vitam_a. See notes below.
23	Oleo	all	values are averaged from two foods: salad oil (west_id# 140) and sunflower oil (west_id# 141)
25	Hort/frut	all	values for this generic category of fruits and vegetables are averages of all other fruits and vegetables in nutdata2_west.sav, first weighted by amount consumed by each household and then across all households. See hortfrut_req2.sps for program.
43	Carne	vitam_b6	value used from mutton, west_id# 116
61	Matapa de mandioca	vitam_b6, folicacd	values used from leaves, medium green, west_id# 73
66	Folhas de abobora	vitam_b6, folicacd	values used from leaves, medium green, west_id# 73
69	Folhas de piri piri	tiamina, riboflav, vitam_b6, niacin, folicacd	values used from leaves, medium green, west_id# 73
78	Matapa de batata doce	vitam_b6, folicacd	values used from leaves, medium green, west_id# 73
82	Limao	folicacd	average of orange/tangerine (west_id# 92) and grapefruit/pomelo (west_id# 93)
85	Couve	vitam_b6	values used from leaves, medium green, west_id# 73
89	Leite	retinol	adapted from misau value for vitam_a. See notes below.
129	Farelo de milho	vitam_b6	value used from yellow maize meal, west_id# 6

9. Retinol values (1 retinol equivalent = 1 RE) were calculated from values for international units (IU) listed in MISAU in the following manner:

Gergelim (#18 in NCD database — c:\namhh\arch\lookup\nutrients_WEST.sav):
MISAU lists 20 IU vit A/100g gergelim or 200IU/kg gergelim. Assume all of this is in the from of beta-carotene (β-carot) so:

Gergelim value =200IU * (0.6 µg β-carot/1 IU) *(1 RE/6 µg β-carot)
=20 RE per kg

Leite (#89 in nutrients_WEST.sav):
MISAU lists 350 IU/100 g leite condensado (misau_id = #66) or 3500 IU/1 kg leite.

Use Table 3 of WEST (page 9) to assume a weight ratio in milk of:
retinol/β-carot = 0.7 µg retinol/ 0.3 µg β-carot.

Then, let X = µg of retinol per kg of milk, so that (0.3/0.7)X = µg β-carot per kg of milk.

3500 IU = (X µg of retinol)*(1 IU/0.3 µg retinol) + (0.3/0.7)*(X µg β-carot)*(1IU/0.6 µg β-carot)
X = 864.71 µg of retinol, which is the retinol content of 1 kg of milk
(0.3/0.7)X = 370.59 µg β-carot, which is the beta-carotene conten of 1 kg of milk.

Since 864.71 µg of retinol = 864.71 RE and since
(370.59 µg β-carot)*(1 RE/6 µg β-carot)= 61.76 RE, the total content is 926.47 RE/kg of leite
and this amount was entered in nutrients_west.sav.

Note that alternative assumptions yield approximately similar results. That is
1. If assume that the 70/30 split in Table 3 of West refers to activity, as measured in retinol equivalents, instead of a weight split, than the total content is 888.46 RE/kg of leite.
2. If assume that the 70/30 split refers to activity as measured in IU, then the result is 840 RE/kg of leite.

10. We did not have nutrient data for a number of foods in the original ingredient file (c:\namhh\arch\data\cing.sys). So a number of programming lines were used in NCDnuts_WEST.sps to substitute foods in the NCD food composition database for these foods recorded by interviewers. The complete table of substitutions is listed below.

Note that the use of the word “matapa” in Nampula not only refers to the dish, but also the main ingredient, i.e. the leaf or folha. So food codes 61, 63, and 78 refer to folhas de mandioca, feijao, and batata doce, respectively (i.e. the leaves themselves). It appears that occasionally, respondents did refer to the dish “matapa”, rather than the leaf which is the principal ingredient. In these few cases, we have used the nutritive values for the leaf, which was the principal ingredient.

Foods in Original Input Database (c:\namhh\arch\data\cing.sys)		Foods used as substitutes that exist in the NCD food composition database (c:\namhh\arch\lookup\nutrients_WEST.sav)	
Food Code	Food Item	Food Code	Food Item
62	passarinhos	75	galinha
68	legume inhame	3	mandioca fresca
77	macaroca	1	milho en grao
79	verdura quiabo	63	matapa de feijao
84	enenkelo	25	hortalica/fruta
90	pombos	75	galinha
91	oteka	42	bebida
95	refresco	42	bebida
129	farelo de milho	31	farinha de milho
132	fava	121	feijao fresco
133	farinha de arroz	4	arroz
135	pasteis	2	feijao
137	matapa de feijao	63	matapa de feijao
138	matapa enheue	63	matapa de feijao
139	trincos de mandioca	32	farinha de mandioca
140	folha de cajueiro	63	matapa de feijao
141	sapo	75	galinha
143	trincas de milho	31	farinha de milho
144	trincas de mapira	33	farinah de mapira
146	inlekero	25	hortalica/fruta
147	matapa de mandioca	61	matapa de mandioca
149	matapa de abobora	66	folhas de abobora
150	mandioca con feijao	32	farinha de mandioca
151	ratos	75	galinha

Appendix D — Handouts from a Workshop Presented to the Direcção de Economía:

Um Método Simples para Avaliar a Qualidade da Dieta Moçambicana

Um Método Simples para Avaliar a Qualidade da Dieta Moçambicana

Workshop apresentado a
Direcção de Economía
Ministério de Agricultura e Pescas

Diego Rose
14 Dezembro 1999

Objectivos

- **Explicar o desenvolvimento dum método simples para monitorar a qualidade da dieta nas áreas rurais de Moçambique**
- **Mostrar como funciona o método**
- **Elaborar um exercício prático para que os participantes familiarizem-se em como utilizar o método**

A Estratégia para Avaliar a Qualidade da Dieta Moçambicana

1ª Fase: Desenvolvimento dum Modelo de Previsão

Variáveis simples da base de dados N/CD → Modelo de previsão nutricional → Adequação nutricional na área de N/CD

2ª Fase: Recolha de Dados CAP

Variáveis simples recolhidas ao nível nacional no CAP

3ª Fase: Aplicar Modelo de Previsão aos Dados CAP para obter estimativas nacionais

Variáveis simples recolhidas ao nível nacional no CAP → Modelo de previsão nutricional → Adequação nutricional prevista ao nível nacional

Un exemplo do tipo do resultado que queremos fornecer

Qualidade da dieta	Porcentagem dos agregados familiares
Aceitável	40.4
Qualidade baixa	32.2
Qualidade muito baixa	27.5

Estudo de Nampula/Cabo Delgado

- Título: Culturas de Rendimento, Culturas Alimentares e a Segurança Alimentar do Sector Familiar no Norte de Moçambique
- Objetivo: Identificar os impactos sobre o renda familiar de várias estratégias de cultivo do algodão
- Distritos: Nampula — Monapo, Meconta
  Cabo Delgado — Montepuez
- A amostra: 388 agregados em 16 aldeias
- Anos: 1994-96

Calendário

	1995								96	
Actividade	5	6	7	8	9	10	11	12	1	2
Lavoura					Algodao Milho					
Sementeira							Algodao Milho			
Sacha									Algod Milho	
Colheita	Milh	Alg				Caju				
Comercializacão		Milh		Algo				Caju		
Ronda do Inquérito	**3**				**4**				**5**	

Módulo de Consumo

- Método da recordacão de consumo familiar dum período de 24-horas
  - Quem comeu ontem?
  - Todos alimentos preparados e comidos durante o dia anterior — quantidade, unidade
  - Medidas volumétricas de todas unidades familiares --peso da unidade com alimento de densidade conhecida
- 2 entrevistas por ronda em dias não-consecutivos
- 3 rondas -- Maio e Setembro, 1995, Janeiro, 1996

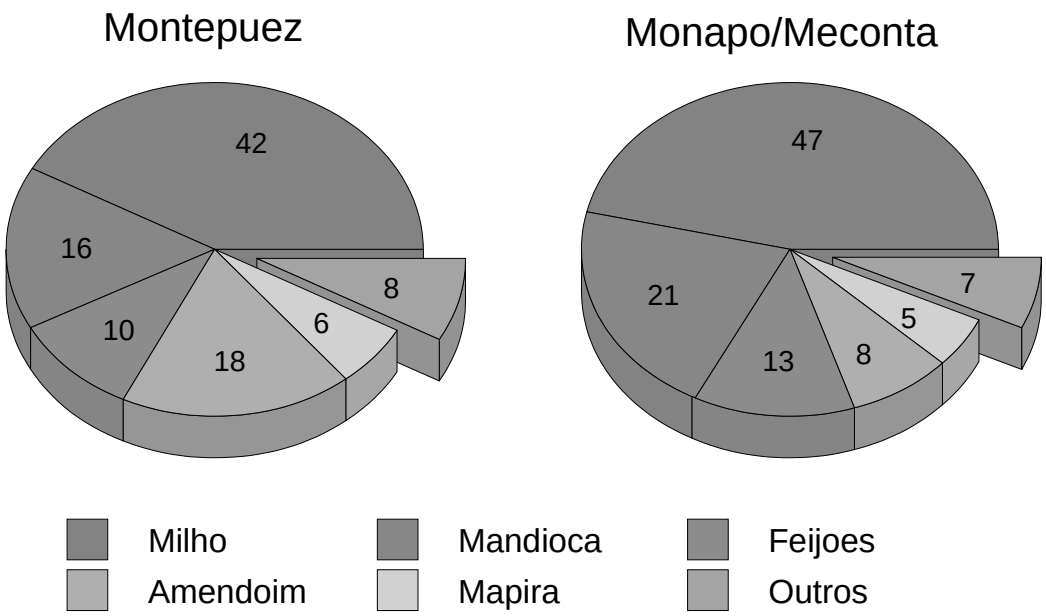
Módulo de Consumo (cont)

Aspectos do processamento de dados

- Alimentos consumidos convertidos a nutrientes usando base de dados West e outros
- Média por família por cada ronda
- Nutrientes consumidos comparados com requerimentos internacionais

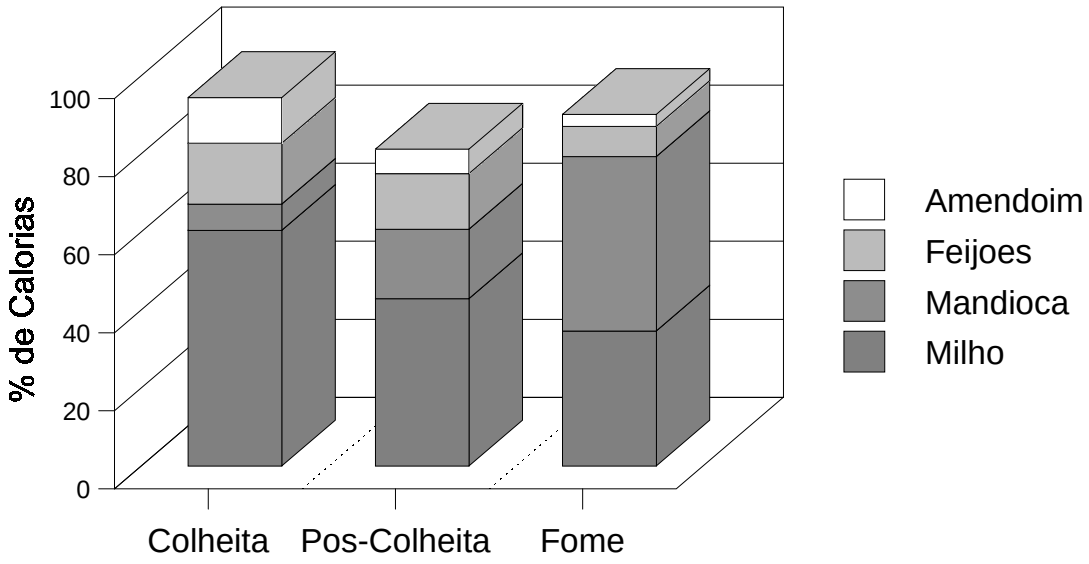
Composição da dieta

Contribuição porcentual dos alimentos básicos



Consumo de alimentos por estação

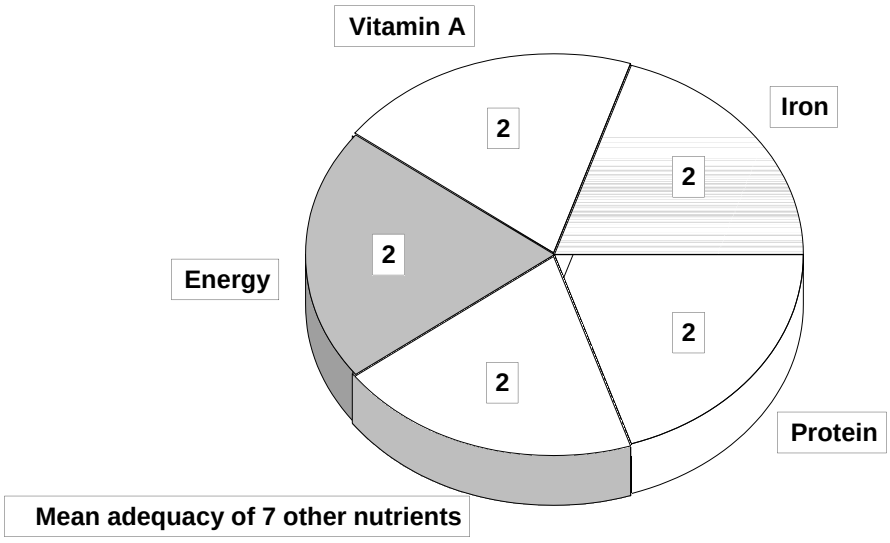
Monapo/Meconta



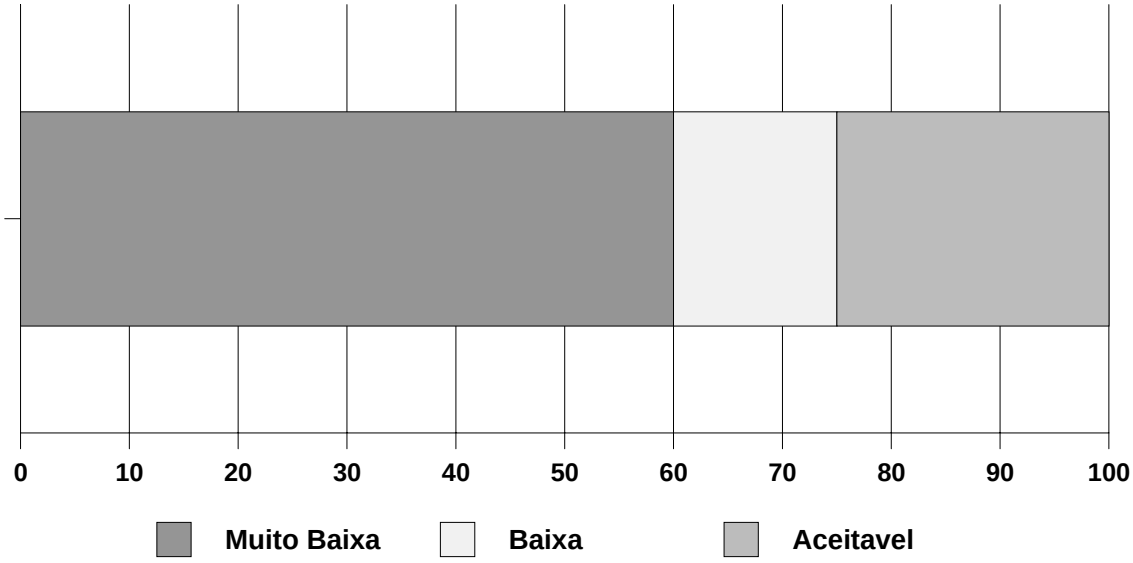
Baixo consumo em Nampula/Cabo Delgado

Nutriente	Porcentagem da amostra con ingestão baixa (< 75% da recomendação)		
	Todas épocas	Pós-Colheita	Fome
Energia	41	25	58
Proteína	24	8	55
Vitamina A	91	98	82
Ferro	38	20	54

Um Index de Qualidade da Dieta para Moçambique

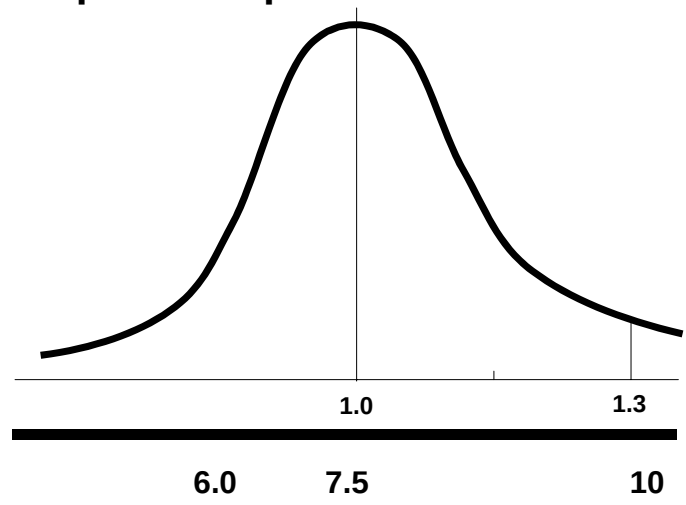


Index de Qualidade da Dieta Moçambicana



Lógica da Escala do Index

Valores aceitáveis são maiores que os requerimentos médios



1.0 ÷ 1.3 = .769

Qualidade da dieta em Nampula/Cabo Delgado

Baseado no Index de Qualidade da Dieta Moçambicana (IQDM)

Qualidade da dieta	Todas épocas	Pós-colheita	Fome
	(% dos agregados)		
Aceitável (IQDM ≥ 7.5)	**40**	**53**	**21**
Qualidade baixa (6.0 ≤ IQDM < 7.5)	**32**	**35**	**28**
Qualidade muito baixa (IQDM < 6.0)	**28**	**12**	**51**

Un exemplo dum módulo de consumo simple

ALIMENTOS CONSUMIDOS DO DIA ANTERIOR		
MATABICHO ATÉ ANTES DO ALMOÇO	ALMOÇO ATÉ ANTES DO JANTAR	JANTAR E DEPOIS

11 Grupos de Alimentos

Grupo	Alimentos Especificos
Cereais	milho, farinha de milho, maçaroca, trincas de milho, farelo de milho, mapira, farinha de mapira, mapira fresca, pão, arroz, massas, bolachas
Feijões	todo tipo de feijão seco
Tubérculos	mandioca seca, farinha de mandioca
Nozes e sementes	amendoim seco, sementes de abóbora, sementes de gergelim, sementes de girassol, castanha de cajú, coco
Produtos animais	peixe seco, peixe fresco, carne, galinha, passarinho, pombo, rato, caracol, crustaceo, gafanhotos, sapo, leite, ovos
Frutas e verduras de vitamina A	abóbora; couve; folhas de piri-piri, mandioca, feijão, abóbora, batata doce, enheue, e de cajú; piri-piri; manga
Frutas e verduras de vitamina C	papaia, limão, tomate, mandioca fresca, feijao fresco, ervilha fresca
Outras frutas e verduras	cogumelo, cebola, banana, inhame, quiabo, enenkelo, macieira, feijão fava, amendoim fresco
Açucar	açucar, cana de açucar, mel
Óleo	óleos de cozinha
Outros alimentos	bebidas, refrescos, sal, café, oteka, sumo de cajú, rebuçados

Coeficientes do Modelo de Previsão Nutricional

Grupo Alimentar	Energia	Proteina	Vit A	Ferro	Tiamin	Ribo flavina	Niacin	Vit B6	Acido Folico	Vit C	Calcio
Cereais	.3166	.2889	.0064	.2008	.2923	.1959	.2411	-.0063	-.0448	-.0822	.0053
Feijões	.2975	.6115	.0895	.7455	.5050	.4467	.3176	-.0924	1.6488	-.0313	.3001
Tubérculos	.3944	-.0073	-.0141	.4925	.1186	.2309	.1959	-.2324	-.1728	.2303	.2712
Nozes/Sementes	.2401	.3237	-.0328	.1640	.4971	.1977	.7361	.0545	.5544	.1901	.2510
Productos Anim	.1224	.2091	.0843	.1188	.0469	.1317	.1397	.0613	.1854	-.0914	.2986
F & V -- Vit A	-.0499	-.0349	.4458	-.0117	-.0102	.0009	-.0406	.2614	.0263	.5691	.0713
F & V -- Vit C	.0615	.0706	.1047	.0878	.0807	.1415	.0606	-.0349	.2534	.8694	.1308
Outros F & V	.1005	.1003	.0500	.1288	.1012	.1111	.1809	.1701	.0962	.3803	.0357
Açucar	-.0163	-.0714	-.0823	-.1025	-.1134	-.1178	-.0774	-.0189	-.0739	-.0734	-.0448
Óleos	.0887	-.1443	.0177	-.1417	-.1069	-.1085	-.1456	.0642	-.0911	.1450	.1031
Outros Alimen	.0980	.1456	.0964	.1531	.1185	.2057	.1803	.0572	.1294-	.3171	-.0550
Tamanho do AF	-.1469	-.1447	-.0543	-.1622	-.1655	-.1522	-.1771	.0092	.1743	-.1641	-.1319
Intercepto	-.7391	-.4570	.1161	-.5453	-.3726	-1.458	-.7711	-.1456	-.6944	-.3962	.4911

Um exemplo do uso do modelo para um agregado familiar e um nutriente

Grupo alimentar	Número de vezes consumido num dia (NUM)	Coeficiente do modelo de previsão para vitamina A (VITACOEF)	NUM X VITACOEF X 100
Cereais	2	0,0064	1,28
Feijões	0	0,0895	0
Tubérculos	0	-0,0141	0
Nozes/Sementes	1	-0,0328	- 3,28
Produtos Animais	0	0,0843	0
F & V -- Vit A	1	0,4458	44,58
F & V -- Vit C	0	0,1047	0
Outros F & V	0	0,0500	0
Açucar	0	-0,0823	0
Óleo	0	0,0177	0
Outros alimentos	0	0,0964	0
Tamanho do AF	1,72	-0,0543	- 9,34
Intercepto	1	0,1161	11,61
Soma columna			44,85

Frequência de famílias com baixo nível de consumo comparado com a previsão

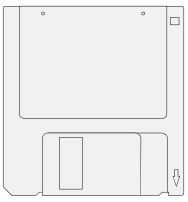
Nutriente	% da amostra com baixo nível de consumo	**Previsão** da % com baixo nível de consumo
Energia	41.1	41.7
Proteína	24.2	27.6
Vitamina A	91.0	93.2
Ferro	37.5	34.0

Frequência de famílias com baixa qualidade da dieta comparado com a previsão

Qualidade da dieta	% da Amostra	Previsão
Aceitável	**40.4**	**42.5**
Baixa ou Muito Baixa	**59.6**	**57.5**
Baixa	**32.2**	**33.7**
Muito Baixa	**27.5**	**23.9**

Baseado no Index de Qualidade da Dieta Moçambicana (IQDM)
Aceitável: IQDM ≥ 7.5
Baixa: 6.0 ≤ IQDM < 7.5
Muito Baixa: IQDM < 6.0

Ficheiros precisos para o exercício



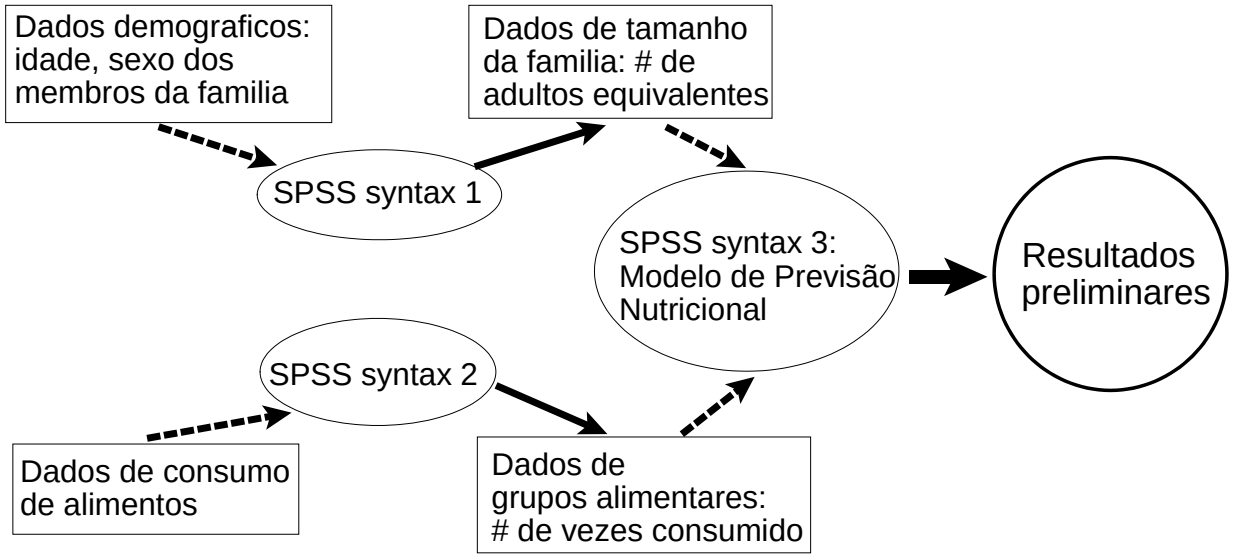
C:\Qual_Dieta\Arch\Data

AFMembros_IdadeSexo.Sav
Alimentos_EpocaX1.Sav
ModeloPrevNutr.Sav

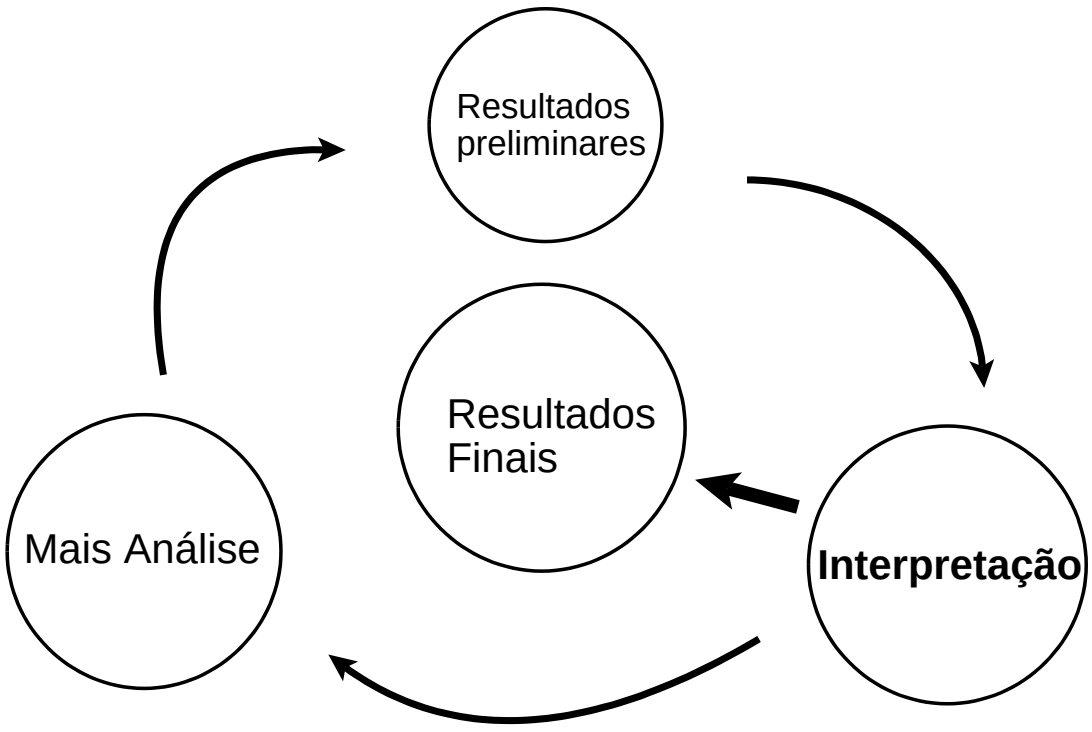
C:\Qual_Dieta\Anal\Syntax

Tamanho_AF.SPS
Grupos_Alimentares.SPS
Previsao_Nutricional.SPS

Fluxo dos dados no cálculo dos resultados preliminares



O Proceso da Análise



Calculo do Numero de Adultos Equivalentes por Agregado Familiar

Dados demograficos: idade, sexo dos membros da familia

AFMembros_IdadeSexo.Sav

Dados do tamanho da familia: # de adultos equivalentes

TamanhoAF.Sav

SPSS syntax 1

TamanhoAF.SPS

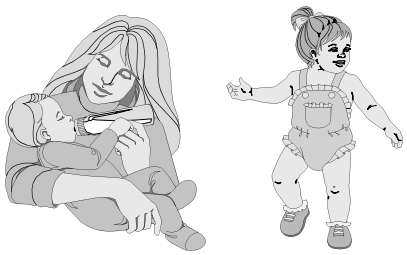
Que São Adultos Equivalentes?

Uma maneIra de contar o tamanho do agregado familiar que toma em conta a idade e o sexo dos membros

AF 1

♂ 29 anos
♀ 28 anos
♂ 58 anos

AF 2



♀ 28 anos
♀ 2 anos
♂ 6 meses

O Calculo de Equivalentes Adultos É Baseado nos Requerimentos Calorificos

AF 1

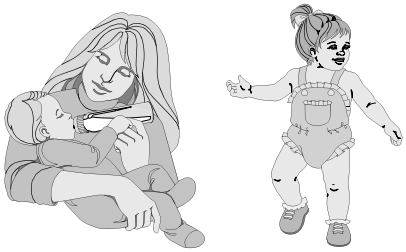
♂ 29 anos
♀ 28 anos
♂ 58 anos

2987 + 2183 + 2928 = 8098 calorias

1.0 + 0.73 + 0.98 = 2.71 equivalentes adultos

O Calculo de Equivalentes Adultos É Baseado nos Requerimentos Calorificos

AF 2



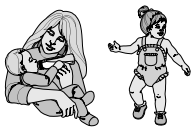
♀ 28 anos
♂ 6 meses
♀ 2 anos

2183 + 785 + 1255 = 4223 calorias

0.73 + 0.26 + 0.42 = 1.41 equivalentes adultos

Resumo dos Dados dos Dois Agregados

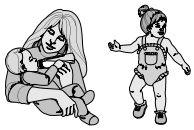
Exemplo do ficheiro de input — ***AFMembros_IdadeSexo.Sav***



AF	MEM	IDADE	SEXO	EQAD
1	1	29	M	1.0
1	2	28	F	0.71
1	3	58	M	0.98
2	1	28	F	0.71
2	2	2	F	0.26
2	3	0.5	M	0.42

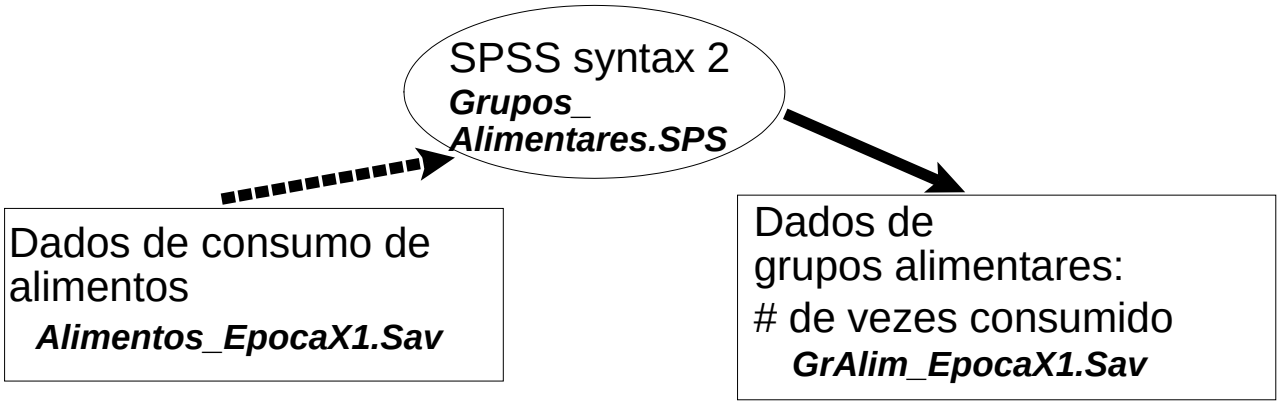
Resumo dos Dados dos Dois Agregados

Exemplo do ficheiro de output — ***TamanhoAF.Sav***



AF	N	EQAD
1	3	2.71
2	3	1.41

Calculo do Numero de Vezes Consumido de Cada Grupo Alimentar



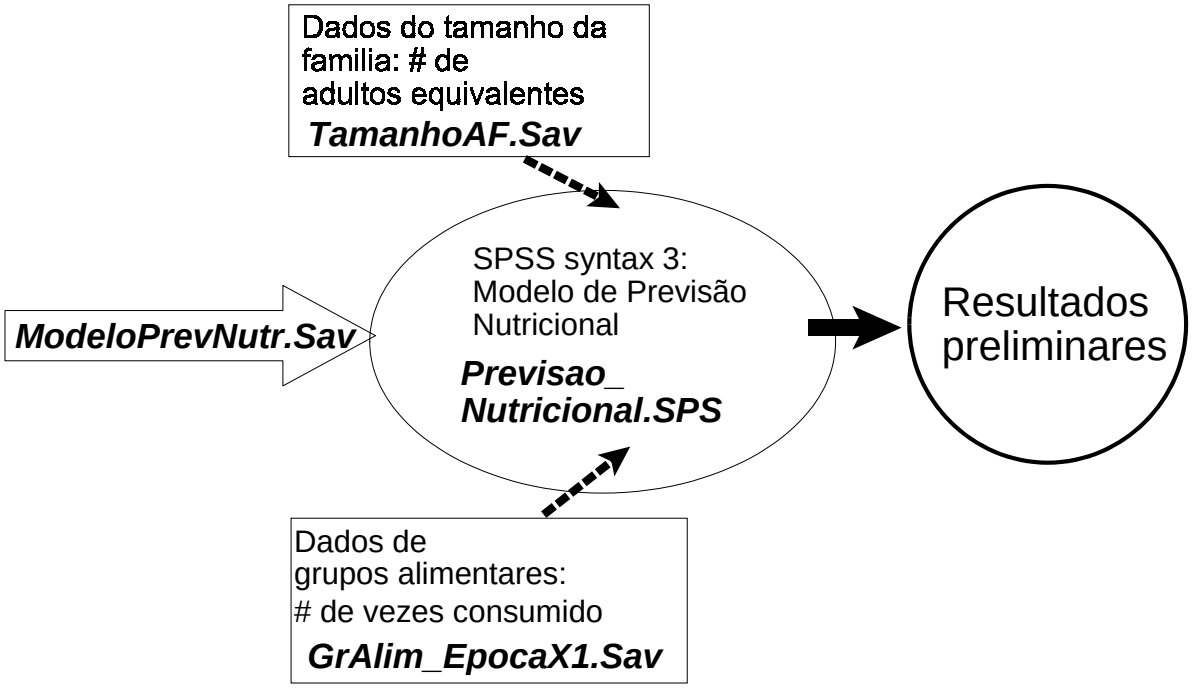
Exemplo do ficheiro de input — *Alimentos_EpocaX1.Sav*

AF	REFEIÇÃO	ALIMENTO	GRUPO ALIMENTAR
1	matabicho	farinha de milho	cereais
1	almoço	feijao	feijoes
1	almoço	tomate	fr & v — vit C
1	almoço	farinha de milho	cereais
1	jantar	farinha de milho	cereais
2	matabicho	bananas	outras fr & v
2	almoço	peixe seco	produtos animais
2	almoço	tomate	fr & v — vit C
2	almoço	amendoim	nozes & sem
2	almoço	farinha de mapira	cereais
2	jantar	farinha de mapira	cereais

Exemplo do ficheiro de output — *GrAlim_EpocaX1.Sav*

AF	NVEZ CERE	NVEZ FEIJ	NVEZ NOZE	NVEZ ANIM	NVEZ FVVC	NVEZ FVOU	.....
1	3	1	0	0	1	0	
2	2	0	1	1	1	1	

Cálculo das previsões da adequação da dieta



Coeficientes do Modelo de Previsão Nutricional

Grupo Alimentar	Energia	Proteina	Vit A	Ferro	Tiamin	Ribo flavina	Niacin	Vit B6	Acido Folico	Vit C
Cereais	.3166	.2889	.0064	.2008	.2923	.1959	.2411	-.0063	-.0448	-.0822
Feijões	.2975	.6115	.0895	.7455	.5050	.4467	.3176	-.0924	1.6488	-.0313
Tubérculos	.3944	-.0073	-.0141	.4925	.1186	.2309	.1959	-.2324	-.1728	.2303
Nozes/Sementes	.2401	.3237	-.0328	.1640	.4971	.1977	.7361	.0545	.5544	.1901
Productos Anim	.1224	.2091	.0843	.1188	.0469	.1317	.1397	.0613	.1854	-.0914
F & V -- Vit A	-.0499	-.0349	.4458	-.0117	-.0102	.0009	-.0406	.2614	.0263	.5691
F & V -- Vit C	.0615	.0706	.1047	.0878	.0807	.1415	.0606	-.0349	.2534	.8694
Outros F & V	.1005	.1003	.0500	.1288	.1012	.1111	.1809	.1701	.0962	.3803
Açucar	-.0163	-.0714	-.0823	-.1025	-.1134	-.1178	-.0774	-.0189	-.0739	-.0734
Óleos	.0887	-.1443	.0177	-.1417	-.1069	-.1085	-.1456	.0642	-.0911	.1450
Outros Alimen	.0980	.1456	.0964	.1531	.1185	.2057	.1803	.0572	.1294-	.3171
Tamanho do AF	-.1469	-.1447	-.0543	-.1622	-.1655	-.1522	-.1771	.0092	.1743	-.1641
Intercepto	-.7391	-.4570	.1161	-.5453	-.3726	-1.458	-.7711	-.1456	-.6944	-.3962

Exemplo do ficheiro de dados antes de calcular as previsões de adequação da dieta

AF	EQAD	NVEZ CERE	NVEZ FEIJ	NVEZ TUBE	NVEZ NOZE	.....	NVEZ OUTR
1	2.71	3	1	0	0		0
2	1.41	2	0	0	1		0

AF	ENER CERE	ENER FEIJ	ENER TUBE	.....	ENER OUTR	ENER EQAD	ENER INTE
1	.3166	.2975	.3944		.0980	-.1469	-.7391
2	.3166	.2975	.3944		.0980	-.1469	-.7391

AF	PROT CERE	PROT FEIJ	.....	PROT INTE	VITA CERE	.....	CALC INTE
1	.2889	.6115		-.4570	.0064		.4911
2	.2889	.6115		-.4570	.0064		.4911

Um exemplo do uso do modelo para um agregado familiar e um nutriente

Grupo alimentar	Número de vezes consumido num dia (NUM)	Coeficiente do modelo de previsão para vitamina A (VITACOEF)	NUM X VITACOEF X 100
Cereais	2	0,0064	1,28
Feijões	0	0,0895	0
Tubérculos	0	-0,0141	0
Nozes/Sementes	1	-0,0328	- 3,28
Produtos Animais	0	0,0843	0
F & V -- Vit A	1	0,4458	44,58
F & V -- Vit C	0	0,1047	0
Outros F & V	0	0,0500	0
Açucar	0	-0,0823	0
Óleo	0	0,0177	0
Outros alimentos	0	0,0964	0
Tamanho do AF	1,72	-0,0543	- 9,34
Intercepto	1	0,1161	11,61
Soma columna			44,85

Calculo da ingestão da vitamina A previsto para um agregado familiar

Escrito em código de SPSS

```
compute pvitaA =    nvezcere*vitAcere + nvezfeij*vitAfeij +
                    nveztube*vitAtube + nveznoze*vitAnoze +
                    nvezanim*vitAanim + nvezfvva*vitAfvva +
                    nvezfvvc*vitAfvvc + nvezfvou*vitAfvou +
                    nvezazuc*vitAazuc + nvezoleo*vitAoleo +
                    nvezoutr*vitAoutr + afeqad*vitAeqad  +
                    1*vitAinte .
```

Exemplo do ficheiro de dados depois de calcular as previsões de adequação da dieta

AF	EQAD	...	PREV ENER	ENER BAIX	PREV PROT	PROT BAIX	..	PREV IQDM	DIET BAIX
1	2.71		1.53	0	2.20	0		7.09	1
2	1.41		.68	1	.92	0		8.11	0
3	4.57		.50	1	.89	0		5.59	2

Dois tipos de resultados produzidos pelo sistema

Nutriente	Previsão da % com baixo nível de consumo
Energia	41.7
Proteína	27.6
Vitamina A	93.2
Ferro	34.0

AF com dieta de qualidade		Previsão(% da amostra)
Aceitável	(IQDM ≥ 7.5)	42.5
Baixa	(6.0 ≤ IQDM < 7.5)	33.7
Muito Baixa	(IQDM < 6.0)	23.9

Appendix E — Answers to Practice Exercises

Exercise 1.1: 4.9

Exercise 1.2: 3.7

Exercise 2.1: 1.8, 0.5, 0.6

Exercise 2.2: 2, 2, 2

Exercise 3.1: 31.3

Exercise 3.2: 31.3, 16.8, 98.4, 51.2

Exercise 3.3: 51.2

Exercise 3.4: 48.8, 32.8, 18.3