

WHO Child Growth Standards SAS igrowup package

The package *igrowup_sas* contains:

1. The source codes of two SAS macros, *%igrowup_standard* (igrowup_standard.sas) and *%igrowup_restricted* (igrowup_restricted.sas);
2. Nine permanent SAS data sets containing the WHO Child Growth Standards: weianthro.sas7bdat, lenanthro. sas7bdat, wflanthro. sas7bdat, wfhanthro.sas7bdat, bmianthro. sas7bdat, hcanthro.sas7bdat, acanthro.sas7bdat, tsanthro.sas7bdat, and ssanthro.sas7bdat;
3. The file Readme.pdf;
4. And output files related to an example survey data (survey.sas7bdat):

survey_z_st.sas7bdat, survey_z_st.csv, survey_prev_st.rtf, survey_prev_st.xls,
survey_z_rc.sas7bdat, survey_z_rc.csv, survey_prev_rc.rtf, and
survey_prev_rc.xls

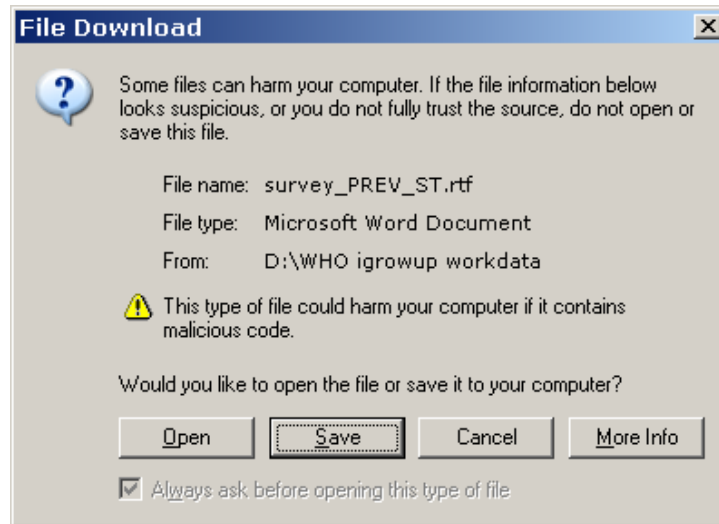
Note: the two macros *%igrowup_standard* and *%igrowup_restricted* concern the following analyses, respectively:

- 1) Standard analysis: takes into account all nine indicators for which all available (non-missing and non-flagged) z-score values are used for each indicator-specific prevalence estimation.
- 2) Restricted analysis: takes into account only the indicators length/height-for-age, weight-for-age, weight-for-length, weight-for-height and body mass index (BMI), and records with at least one flagged z scores (flagged, true missing or with oedema) are excluded to compute the prevalences.

Pre-requisites

1. Users must read the Readme file carefully especially the **macro parameters** section. Users should also follow the example provided in the end of this document before running their own analyses.
2. This macro requires SAS Version 8.2 or higher to run since it creates a rich text format (RTF) file in MS Word. In creating the RTF in Word without opening the

SAS **Results Viewer** window, the following dialogue may be displayed for security reasons.



To proceed, choose either “Open” or “Cancel”. If you choose “Save”, an error message may be displayed even though the correct RTF is still exported. If users have SAS version 7, the macro section for exporting the RTF should be suppressed. And, if users have a SAS version lower than 7, the section for exporting the Excel file should also be suppressed.

3. If a SAS version lower than 8.2 is used, the macro names "igrowup_standard" and "igrowup_restricted" might need to be shortened to less than 8 characters in length.

Precautions:

- Avoid any temporary SAS data sets with names starting with underscore "_"; otherwise they may be replaced by the temporary ones created by the macro.
- Avoid any variable names starting with underscore "_" in the input SAS data set; otherwise they may be replaced by the derived ones created by the macro.
- Avoid any temporary format names starting with underscore "_"; otherwise they may be replaced by the temporary ones created by the macro.
- Avoid any SAS global macro variable names starting with underscore "_", except those defined by the system.

Contact for reporting bugs/comments:

Should you encounter any problem with these two macros, please send an e-mail with a clear description of the identified problem to "anthro2005@who.int", specifying in the

subject line that it concerns the *igrowup_sas* package and also indicate which version of SAS you are using. Thank you.

Setup and run

1. Create a package directory. This directory should be reserved only for the package zip file, the read me file, and the files extracted from the package for the SAS macros and the WHO Child Growth Standards.
2. Download the package zip file and readme file to the package directory.
3. Extract the following files: *igrowup_standard.sas*, *igrowup_restricted.sas*, *weianthro.sas7bdat*, *lenanthro.sas7bdat*, *wflanthro.sas7bdat*, *wfhanthro.sas7bdat*, *bmianthro.sas7bdat*, *hcanthro.sas7bdat*, *acanthro.sas7bdat*, *tsanthro.sas7bdat* and *ssanthro.sas7bdat* to the package directory.
4. Create a working directory, for example "D:\WHO_igrowup_workdata" and extract to it the example survey (*survey.sas7bdat* and its pertaining output files) from the package.
5. To compile the SAS macros, copy the following commend lines in your SAS program, replacing *<path for the package directory>* with the actual path. Users must use the backslash "\" inside path and not at the end of it, for example, "D:\WHO_igrowup_SAS".

```
%include "<path for the package directory>\igrowup_standard.sas";  
%include "<path for the package directory>\igrowup_restricted.sas";
```

References

WHO Multicentre Growth Reference Study Group (2006). WHO Child Growth Standards: Length/height-for-age, weight-for-age, weight-for-length, weight-for-height and body mass index-for-age: Methods and development. Geneva: World Health Organization; pp 312 (web site: <http://www.who.int/childgrowth/publications/en/>)

WHO Multicentre Growth Reference Study Group (2007). WHO Child Growth Standards: Head circumference-for-age, arm circumference-for-age, triceps skinfold-for-age and subscapular skinfold-for-age: Methods and development. Geneva: World Health Organization; (*forthcoming*)

Macro: %igrowup_standard (igrowup_standard.sas)

Description

1. The macro calculates z-scores for the *eight* anthropometric indicators, weight-for-age, length/height-for-age, weight-for-length/height, body mass index (BMI)-for-age, head circumference-for-age, arm circumference-for-age, triceps skinfold-for-age and subscapular skinfold-for-age based on the WHO Child Growth Standards. In this macro, all available (non-missing and non-flagged) z-score values are used for each indicator-specific prevalence estimation (standard analysis).
2. Extreme (i.e. biologically implausible) z-scores for each indicator are flagged according to the following system:

Weight-for-age z-score (ZWEI)	ZWEI<-6 or ZWEI >5
Length/height-for-age z-score (ZLEN)	ZLEN<-6 or ZLEN >6
Weight-for-length/height z-score (ZWFL)	ZWFL<-5 or ZWFL>5
BMI-for-age z-score (ZBMI)	ZBMI <-5 or ZBMI >5
Head circumference-for-age z-score (ZHC)	ZHC<-5 or ZHC >5
Arm circumference-for-age z-score (ZAC)	ZAC<-5 or ZAC >5
Triceps skinfold-for-age z-score (ZTS)	ZTS<-5 or ZTSF >5
Subscapular skinfold-for-age z-score (ZSS)	ZSS <-5 or ZSSF >5

3. The macro produces sex- and age-specific estimates for the prevalence of under/over nutrition and summary statistics (mean and SD) of the z-scores for each indicator, and if required, stratified analysis by a grouping variable such as urban/rural or regions.
4. The macro requires nine permanent SAS data sets containing the WHO Child Growth Standards (see the **setup and run** section for more details). They must be stored in a user defined directory (referred to here as the package directory). The names of these SAS data sets must be:

Standards	SAS names
Weight-for-age	weianthro
Length/height-for-age	lenanthro
Weight-for-length	wflanthro
Weight-for-height	wfhanthro
BMI-for-age	bmianthro
Head circumference-for-age	hcanthro
Arm circumference-for-age	acanthro
Triceps skinfold-for-age	tsanthro
Subscapular skinfold-for-age	ssanthro

5. The macro requires a permanent SAS data set containing age, sex and the anthropometric measurements. It must be stored in a user defined working directory (referred to here as the working directory). The variables for weight and length/height are compulsory to run the macro. If the weight (or length/height) variable is not available in the data set, the user must create a corresponding numeric variable and set its values to missing. The variables for head circumference, arm circumference, triceps and subcapsular skinfolds are optional. If any of those is present in the data set AND is specified via the respective macro parameter, the corresponding individual z-scores and summary statistics will be generated. The requirements to input these variables are detailed in the **macro parameter** section.

Macro parameters

Except for the macro parameter LABEL, all other parameters should be specified without any quotation marks. The values of the parameters are not case sensitive. They are divided into two categories:

1. Compulsory parameters:

The following parameters must be specified; otherwise the macro will not run properly.

- LABEL: to specify the characteristics of the survey, e.g. country, survey year and selection criteria etc; it will appear in the header section of the output Word file. It must be specified in double quotes.
- REF_LIB: to specify the package directory where the nine SAS data sets containing the WHO Child Growth Standards are stored. Users must use the backslash "\" inside the path and not at the end of it, for example, "D:\WHO_igrowup_SAS".
- DATA_LIB: to specify the working directory where the input SAS data set containing anthropometric measurements is stored. Users must use the backslash "\" inside the path and not at the end of it, for example, "D:\WHO_igrowup_workdata".
- DATA_IN: to specify the name of the input SAS data set; it must be a permanent SAS data set stored in the working directory defined by DATA_LIB.
- SEX: to specify the name of a variable containing sex information. If it is a numeric variable, its values must be, 1 for males and 2 for females. And if it is a character variable, it must be, "m" or "M" for males and "f" or "F" for females. Users must code any missing values as "." (for numeric

variable) or “ ” (for character variable), in which case no z-scores will be calculated.

- AGE: to specify the name of a numeric variable containing age information. Age can be in either days or months. An exact age is expected here and should not be rounded if age is in months. Users must code any missing values as ".", in which case the age-related z-scores are not calculated.
- AGE_UNIT: to specify the age unit of the age variable. It must be specified as either DAYS or MONTHS. To convert age in months to days, the macro multiplies by 30.4375 and rounds the result to integer so that the reference tables can be used.
- WEIGHT: to specify the name of a numeric variable containing body weight information, which must be in kilograms. Users must code any missing values as ".", in which case the weight-related z-scores are not calculated.
- LENHEI: to specify the name of a numeric variable containing length (recumbent) or height (standing) information, which must be in centimeters. Users must code any missing values as ".", in which case the length/height-related z-scores are not calculated. For children aged below 24 months (< 731 days) and measured standing, the macro converts the height to recumbent length by adding 0.7 cm; and for children aged 24 months or above who are measured in recumbent position, the macro converts the length to standing height by subtracting 0.7 cm. In other words, all the z-scores for children below 24 months are length-based and height-based otherwise. The exported variable, _CLENHEI, is the converted length/height according to age.

2. Optional parameters:

The following parameters can be left unspecified, and a default analysis will be performed.

- MEASURE: to specify the name of a character variable indicating whether recumbent length or standing height was measured. The values of this variable must be "l" or "L" for recumbent length, and "h" or "H" for standing height. Users must code any missing value as " ". By default, i.e. if this parameter is not specified, the macro creates a temporary variable with missing values. The macro imputes any missing values according to the following algorithm:

a. If age is given, then it is recumbent length if the child's age is below 24 months (< 731 days), and standing height if the child's age is 24 months or above.

b. If age is missing, then it is recumbent length if measurement <87 cm and standing height if measurement ≥ 87 cm.

- **OEDEMA**: to specify the name of the character variable containing oedema information. The values of this variable must be "n" or "N" for non-oedema, and "y" or "Y" for oedema. Users must code any missing values as " ", and the macro assumes they are non-oedema. By default, i.e. if this parameter is not specified, the macro assumes all cases as non-oedema. For oedema cases, weight-related z-scores (`_ZWEI`, `_ZWFL` and `_ZBMI`) are not calculated, but they are treated as being < -3 SD in their prevalence estimations.
- **HEADC**: to specify the name of a numeric variable containing head circumference (HC) information, which must be in centimeters. If specified, the variable for HC must be present in the input data and users must code any missing values as ".", in which case the corresponding z-scores are not calculated.
- **ARMC**: to specify the name of a numeric variable containing arm circumference (AC) information, which must be in centimeters. If specified, the variable for AC must be present in the input data and users must code any missing values as ".", in which case the corresponding z-scores are not calculated.
- **TRISKIN**: to specify the name of a numeric variable containing triceps skinfold (TS) information, which must be in millimeters. If specified, the variable for TS must be present in the input data and users must code any missing values as ".", in which case the corresponding z-scores are not calculated.
- **SUBSKIN**: to specify the name of a numeric variable containing subscapular skinfold (SS) information, which must be in millimeters. If specified, the variable for SS must be present in the input data and users must code any missing values as ".", in which case the corresponding z-scores are not calculated.
- **SW**: to specify the name of a numeric variable containing the sampling weights. By default, i.e. if this parameter is not specified, the un-weighted analysis is performed. If otherwise specified, negative values in the sampling weights are not allowed, and in this case no prevalence tables will be produced. An error message will be given in the log file to indicate that the macro has encountered negative value(s) in the sampling weights.

- Group: to specify, for the stratified analysis, the name of a character variable containing the grouping information. Only one stratifying variable can be specified. Users must code any missing values as " ", and the macro will treat that as a separate group.

Exported files

1. The macro creates, in the working directory, a permanent SAS data set. The name of the data set is *dataname_z_st.sas7bdat*, where *dataname* is the value of the macro parameter `DATA_IN` (see the **macro parameter** section). This data set retains all the records and variables from the input SAS data set and adds the following 19 variables derived by the macro:

Variable names	Variable labels
<code>_AGEDAYS</code>	calculated age in days for deriving z-score
<code>_CLENHEI</code>	converted length/height (cm) for deriving z-score
<code>_CBMI</code>	calculated BMI=weight / squared (<code>_CLENHEI</code>)
<code>_ZWEI:</code>	Weight-for-age z-score
<code>_ZLEN:</code>	Length/height-for-age z-score
<code>_ZWFL</code>	Weight-for-length/height z-score
<code>_ZBMI</code>	BMI-for-age z-score
<code>_ZHC</code>	Head circumference-for-age z-score
<code>_ZAC</code>	Arm circumference-for-age z-score
<code>_ZTS</code>	Triceps skinfold-for-age z-score
<code>_ZSS</code>	Subscapular skinfold-for-age z-score
<code>_FWEI</code>	Flag for <code>_ZWEI</code> <-6 or <code>_ZWEI</code> >5
<code>_FLEN</code>	Flag for <code>_ZLEN</code> <-6 or <code>_ZLEN</code> >6
<code>_FWFL</code>	Flag for <code>_ZWFL</code> <-5 or <code>_ZWFL</code> >5
<code>_FBMI</code>	Flag for <code>_ZBMI</code> <-5 or <code>_ZBMI</code> >5
<code>_FHC</code>	Flag for <code>_ZHC</code> <-5 or <code>_ZHC</code> >5
<code>_FAC</code>	Flag for <code>_ZAC</code> <-5 or <code>_ZAC</code> >5
<code>_FTS</code>	Flag for <code>_ZTS</code> <-5 or <code>_ZTS</code> >5
<code>_FSS</code>	Flag for <code>_ZSS</code> <-5 or <code>_ZSS</code> >5

2. It creates, in the working directory, a data set in CSV format that has the same data structure as the one in SAS format. The name of the data set is *dataname_z_st.csv*, where *dataname* is the value of the macro parameter `DATA_IN`.
3. It creates, in the working directory, an RTF file in MS Word that contains the point estimates and 95% confidence intervals for the indicator prevalences of under/over nutrition and z-score summary statistics. Only children aged below 61 months are included in the analysis. The age groups are: Total (0-60), 0-5, 6-11, 12-23, 24-35, 36-47 and 48-60 completed months. The youngest age group is 3-5

months for the arm circumference, triceps and subscapular skinfolds related indicators. Where age is missing, only weight-for-length/height z-score can be derived and these cases are included in the total (0-60) age group. The name of this file is *dataname_PREV_ST.rtf*, where *dataname* is the value of the macro parameter DATA_IN. If the GROUP parameter is specified, the analysis is further stratified by group.

4. It creates, in the working directory, an Excel file that contains the same age/sex specific estimates as those in MS Word. The name of this file is *dataname_PREV_ST.xls*, where *dataname* is the value of the macro parameter DATA_IN. For the stratified analysis by group, only the age and sex combined estimates are presented.

An example

As an example survey, *survey.sas7bdat*, is included in the package zip file. Users are advised to run this example as an exercise by following the steps below:

1. Follow the steps in the **setup and run** section above;
2. Copy the following SAS codes to run the survey, replacing *<path for the package directory>* and *<path for the working directory>* with their actual paths. Users must use the backslash "\" inside the path and not at the end of it, for example, "D:\WHO_igrowup_SAS" for the package directory and "D:\WHO_igrowup_workdata" for the working directory.

```
*run the standard analysis;  
%igrowup_standard  
(  
  LABEL="An example survey",  
  REF_LIB= <path for the package directory>,  
  DATA_LIB= <path for the working directory>,  
  DATA_IN=survey,  
  SEX=gender,  
  AGE=agemons,  
  AGE_UNIT=months,  
  WEIGHT=weight,  
  LENHEI=height,  
  HEADC=head,  
  ARMC=muac,  
  TRISKIN=tri,  
  SUBSKIN=sub,  
  MEASURE=measure,  
  OEDEMA=oedema,  
  SW=sw,  
  GROUP=region);
```

Macro: %igrowup_restricted (igrowup_restricted.sas)

Description

1. The macro (igrowup_restricted.ado) calculates z-scores for the *four* anthropometric indicators, weight-for-age, length/height-for-age, weight-for-length/height and body mass index (BMI)-for-age, based on the WHO Child Growth Standards. In this macro, records with at least one flagged z-score (flagged, true missing or with oedema) are excluded to compute the prevalences (restricted analysis).
2. Extreme (i.e. biologically implausible) z-scores for each indicator are flagged according to the following system:

a. Weight-for-age z-score (ZWEI)	ZWEI<-6 or ZWEI >5
b.Length/height-for-age z-score (ZLEN)	ZLEN<-6 or ZLEN >6
c. Weight-for-length/height z-score (ZWFL)	ZWFL<-5 or ZWFL>5
d. BMI-for-age z-score (ZBMI)	ZBMI <-5 or ZBMI >5
3. The macro produces sex- and age-specific estimates for the prevalence of under/over nutrition and summary statistics (mean and SD) of the z-scores for each indicator, and if required, stratified analysis by a grouping variable such as urban/rural or regions.
4. The macro requires five permanent SAS data sets containing the WHO Child Growth Standards (see the **setup and run** section for more details). They must be stored in a user defined directory (referred to here as the package directory). The names of these SAS data sets must be:

Standards	SAS names
Weight-for-age	weianthro
Length/height-for-age	lenanthro
Weight-for-length	wflanthro
Weight-for-height	wfhanthro
BMI-for-age	bmianthro
5. The macro requires a permanent SAS data set containing age, sex and the anthropometric measurements. It must be stored in a user defined working directory (referred to here as the working directory). The variables for weight and length/height are compulsory to run the SAS macro. If the weight (or length/height) variable is not available in the data set, the user must create a corresponding numeric variable and set its values to missing. The requirements to input these variables are detailed in the **macro parameter** section.

Macro parameters

Except for the macro parameter LABEL, all other parameters should be specified without any quotation marks. The values of the parameters are not case sensitive. They are divided into two categories:

1. Compulsory parameters:

The following parameters must be specified; otherwise the macro will not run properly.

- LABEL: to specify the characteristics of the survey, e.g. country, survey year and selection criteria etc; it will appear in the header section of the output Word file. It must be specified in double quotes.
- REF_LIB: to specify the package directory where the five SAS data sets containing the WHO Child Growth Standards are stored. Users must use the backslash "\" inside the path and not at the end of it, for example, "D:\WHO_igrowup_SAS".
- DATA_LIB: to specify the working directory where the input SAS data set containing anthropometric measurements is stored. Users must use the backslash "\" inside the path and not at the end of it, for example, "D:\WHO_igrowup_workdata".
- DATA_IN: to specify the name of the input SAS data set; it must be a permanent SAS data set stored in the working directory defined via DATA_LIB.
- SEX: to specify the name of a variable containing sex information. If it is a numeric variable, its values must be, 1 for males and 2 for females. And if it is a character variable, it must be, "m" or "M" for males and "f" or "F" for females. Users must code any missing values as "." (for numeric variable) or "" (for character variable), in which case no z-scores will be calculated.
- AGE: to specify the name of a numeric variable containing age information. Age can be in either days or months. An exact age is expected here and should not be rounded if age is in months. Users must code any missing values as ".", in which case the age-related z-scores are not calculated.
- AGE_UNIT: to specify the age unit of the age variable. It must be specified as either DAYS or MONTHS. To convert age in months to days, the macro multiplies by 30.4375 and rounds the result to integer so that the reference tables can be used.

- **WEIGHT:** to specify the name of a numeric variable containing body weight information, which must be in kilograms. Users must code any missing values as ".", in which case the weight-related z-scores are not calculated.
- **LENHEI:** to specify the name of a numeric variable containing length (recumbent) or height (standing) information, which must be in centimeters. Users must code any missing values as ".", in which case the length/height-related z-scores are not calculated. For children aged below 24 months (< 731 days) and measured standing, the macro converts the height to recumbent length by adding 0.7 cm; and for children aged 24 months or above who are measured in recumbent position, the macro converts the length to standing height by subtracting 0.7 cm. In other words, all the z-scores for children below 24 months are length-based and height-based otherwise. The exported variable, `_CLENHEI`, is the converted length/height according to age.

2. Optional parameters:

The following parameters can be left unspecified, and a default analysis will be performed.

- **MEASURE:** to specify the name of a character variable indicating whether recumbent length or standing height was measured. The values of this variable must be "l" or "L" for recumbent length, and "h" or "H" for standing height. Users must code any missing value as ". ". By default, i.e. if this parameter is not specified, the macro creates a temporary variable with missing values. The macro imputes any missing values according to the following algorithm:
 - a. If age is given, then it is recumbent length if the child's age is below 24 months (< 731 days), and standing height if the child's age is 24 months or above.
 - b. If age is missing, then it is recumbent length if measurement < 87 cm and standing height if measurement \geq 87 cm.
- **OEDEMA:** to specify the name of the character variable containing oedema information. The values of this variable must be "n" or "N" for non-oedema, and "y" or "Y" for oedema. Users must code any missing values as ". ", and the macro assumes they are non-oedema. By default, i.e. if this parameter is not specified, the macro assumes all cases as non-oedema. For oedema cases, weight-related z-scores (`_ZWEI`, `_ZWFL` and `_ZBMI`) are not calculated, but they are treated as being < -3 SD in their prevalence estimations.

- SW: to specify the name of a numeric variable containing the sampling weights. By default, i.e. if this parameter is not specified, the un-weighted analysis is performed. If otherwise specified, negative values in the sampling weights are not allowed, and in this case no prevalence tables will be produced. An error message will be given in the log file to indicate that the macro has encountered negative value(s) in the sampling weights.
- Group: to specify, for the stratified analysis, the name of a character variable containing the grouping information. Only one stratifying variable can be specified. Users must code any missing values as " ", and the macro will treat that as a separate group.

Exported files

1. The macro creates, in the working directory, a permanent SAS data set. The name of the data set is *dataname_z_rc.sas7bdat*, where *dataname* is the value of the macro parameter DATA_IN (see the **macro parameter** section). This data set retains all the records and variables from the input SAS data set and adds the following 11 variables derived by the macro:

Variable names	Variable labels
<code>_AGEDAYS</code>	calculated age in days for deriving z-score
<code>_CLENHEI</code>	converted length/height (cm) for deriving z-score
<code>_CBMI</code>	calculated BMI=weight / squared (<code>_CLENHEI</code>)
<code>_ZWEI:</code>	Weight-for-age z-score
<code>_ZLEN:</code>	Length/height-for-age z-score
<code>_ZWFL</code>	Weight-for-length/height z-score
<code>_ZBMI</code>	BMI-for-age z-score
<code>_FWEI</code>	Flag for <code>_ZWEI<-6</code> or <code>_ZWEI>5</code>
<code>_FLEN</code>	Flag for <code>_ZLEN<-6</code> or <code>_ZLEN>6</code>
<code>_FWFL</code>	Flag for <code>_ZWFL<-5</code> or <code>_ZWFL>5</code>
<code>_FBMI</code>	Flag for <code>_ZBMI<-5</code> or <code>_ZBMI>5</code>

2. It creates, in the working directory, a data set in CSV format that has the same data structure as the one in SAS format. The name of the data set is *dataname_z_rc.csv*, where *dataname* is the value of the macro parameter DATA_IN.
3. It creates, in the working directory, an RTF file in MS Word that contains the point estimates and 95% confidence intervals for the indicator prevalences of under/over nutrition and z-score summary statistics. Only children aged below 61 months are included in the analysis. The age groups are: Total (0-60), 0-5, 6-11, 12-23, 24-35, 36-47 and 48-60 completed months. Where age is missing, only weight-for-length/height z-score can be derived and these cases are included in

the total (0-60) age group. The name of this file is *dataname_PREV_RC.rtf*, where *dataname* is the value of the macro parameter DATA_IN. If the GROUP parameter is specified, the analysis is further stratified by group.

4. It creates, in the working directory, an Excel file that contains the same age/sex specific estimates as those in MS Word. The name of this file is *dataname_PREV_RC.xls*, where *dataname* is the value of the macro parameter DATA_IN. For the stratified analysis by group, only the age and sex combined estimates are presented.

An example

As an example, a test survey, *survey.sas7bdat*, is included in the package zip file. Users are strongly recommended to run this test survey as an exercise by following the steps below:

1. Follow the steps in the **setup and run** section above;
2. Copy the following SAS codes to run the survey, replacing *<path for the package directory>* and *<path for the working directory>* with their actual paths. Users must use the backslash "\" inside the path and not at the end of it, for example, "D:\WHO_igrowup_SAS" for the package directory and "D:\WHO_igrowup_workdata" for the working directory.

*to run the restricted analysis;

```
%igrowup_restricted  
(  
  LABEL="An example survey",  
  REF_LIB= <path for the package directory>,  
  DATA_LIB= <path for the working directory>,  
  DATA_IN=survey,  
  SEX=gender,  
  AGE=agemons,  
  AGE_UNIT=months,  
  WEIGHT=weight,  
  LENHEI=height,  
  MEASURE=measure,  
  OEDEMA=oedema,  
  SW=sw,  
  GROUP=region);
```