# **/\*The SAS program (HEI-2010 Individual Scores per day using ASA24-2016 and ASA24-2018 data)**

**ByPerson. SAS\*/**

# 

/\*This SAS program, and the required macros, can be used to calculate Healthy Eating Index (HEI)- HEI-2010 component and total scores for each individual from a 24-hour recall or food records data for a single day collected using ASA24-2016 and ASA24-2018. Additional code that calculates HEI-2010 component and total scores for multiple 24HRs is available on the ASA24 HEI Resources page. \*/

/\*This program has been tested using SAS, version 9.4 and uses the 'Totals' analysis file from ASA24-2016 and ASA24-2018. These program files can be downloaded from the ASA24 Researcher Website page. The data file should be in CSV format. \*/

/\*Note: Some users have found that the SAS program will drop observations from the analysis if the ID field is not the same length for all observations. To prevent this error, the observations with the longest ID length should be listed first when the data is imported into SAS. \*/

/\*Please see accompanying readme file. \*/

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**/\*INSTRUCTIONS – complete tasks 1-4 in this section, and run these SAS codes before proceeding to the HEI-2010 scoring program that follows\*/**

/\*1. Create a folder on your computer “home folder”, and save the ASA24 data, and the required HEI-2010 macros in it. Specify the path to the folder. \*/

%let home = C:\Users\Documents\ASA24; /\*In this Example, the “home” folder is in C Drive, within Documents, and is called ASA24\*/

/\*2. Filename here specifies the input file. \*/

filename Totals “&home\Totals\Totals.csv”; /\* In this example, the ASA24-2016 or ASA24-2018 Daily Total Nutrient and Pyramid Equivalents data “Totals”, are saved in a folder called “Totals”, within the “home” folder. The data are in csv format. \*/

/\*3. Create a folder within the “home” folder, where the output file, containing HEI-2010 component and total scores for each respondent are to be exported. Specify the name of the folder. \*/

filename RES “&home\RES”; /\*In this Example, the folder is called “RES”, within the “home” folder, and the exported results will be a csv file called “hei2010r”. \*/

/\*4. Read in required HEI-2010 scoring macros. These macros must be saved within the home folder. \*/

%include “&home\hei2010.beanspeas.allocation.macro.sas';

%include “&home\hei2010.score.macro.sas”;

/\*NOTE: Once you have completed all the steps above, all you need to do is run the SAS program below. Unless you used different names for your folders and datasets, no other action is required from you. \*/

TITLE 'ASA24-2016 HEI-2010 scores - by person using all days';

/\*Step 1.

Inputs daily total data and creates five additional required variables. These variables are:

WHOLEFRT, MONOPOLY, ALLMEAT, SEAPLANT, and EMPTYCAL10

\*/

**Proc** **import** datafile=Totals

Out=Totals

Dbms=csv

Replace;

Getnames=yes;

**Run**;

**DATA** Totals;

SET Totals;

WHOLEFRT=F\_CITMLB+F\_OTHER;

MONOPOLY=MFAT+PFAT;

ALLMEAT=PF\_MPS\_TOTAL+PF\_EGGS+PF\_NUTSDS+PF\_SOY;

SEAPLANT=PF\_SEAFD\_HI+PF\_SEAFD\_LOW+PF\_SOY+PF\_NUTSDS;

/\*\*Calculate intake of Calories from SoFAAS\*\*/

ADDSUGC=**16**\*ADD\_SUGARS; /\*calories from added sugars\*/

SOLFATC=**9**\*SOLID\_FATS; /\*calories from solid fat\*/

maxalcgr=**13**\*(kcal/**1000**); /\*max grams of alcohol based on kcal intake\*/

if ALC <= maxalcgr then EXALCCAL=**0**; /\*consumed less than max\*/

else if ALC > maxalcgr then EXALCCAL=**7**\*(ALC-maxalcgr); /\*get cal from extra alc grams\*/

EMPTYCAL10=ADDSUGC+SOLFATC+EXALCCAL; /\*total empty calories in hei2010 definition\*/

**Run**;

/\*Step 2.

Calculates total food group and nutrient intake over all possible days reported per individual.

\*/

**proc** **sort** data=Totals;

by UserName UserID;

**run**;

\*get sum per person of variables of interest;

**proc** **means** data=Totals noprint;

by UserName UserID;

var KCAL allmeat seaplant v\_total v\_drkgr V\_LEGUMES f\_total wholefrt G\_WHOLE D\_TOTAL

monopoly sfat SODI G\_REFINED EMPTYCAL10;

output out=idtot sum=;

**run**;

/\*Step 3.

Runs the macro to properly allocate the intakes of the FPED variable Legumes (V\_LEGUMES)

(NOT PF\_LEGUMES) to either Total Protein Foods and Seafood and Plant Proteins (ALLMEAT

and SEAPLANT) or Total Vegetables and Greens and Beans (V\_TOTAL and V\_DRKGR). The four resulting

variables from this step, named LEGUME\_ADDED\_V\_TOTAL, LEGUME\_ADDED\_BEANGRN,

LEGUME\_ADDED\_ALLMEAT, and LEGUME\_ADDED\_SEAPLANT are all used in the next step.

\*/

%***LEG2010A*** (indat=idtot,

kcal=KCAL,

allmeat=allmeat,

seaplant=seaplant,

v\_total=v\_total,

v\_drkgr=v\_drkgr,

legumes=V\_LEGUMES,

outdat=afterleg);

/\*Step 4.

Runs the HEI2010 scoring macro which calculates intake density amounts and HEI scores.

\*/

%***HEI2010*** (indat=afterleg,

kcal=KCAL,

lv\_total=legume\_added\_V\_TOTAL,

lbeangrn=legume\_added\_BEANGRN,

f\_total=f\_total,

wholefrt=wholefrt,

g\_whl=G\_WHOLE,

d\_total=D\_TOTAL,

lallmeat=legume\_added\_ALLMEAT,

lseaplant=legume\_added\_SEAPLANT,

monopoly=monopoly,

sfat=sfat,

sodi=SODI,

G\_NWHL=G\_REFINED,

EMPTYCAL10=EMPTYCAL10,

outdat=hei2010);

**run**;

/\*Step 5.

Displays and saves the results.

\*/

**Data** hei2010r (keep=UserName UserID HEIX1\_TOTALVEG HEIX2\_GREEN\_AND\_BEAN HEIX3\_TOTALFRUIT

HEIX4\_WHOLEFRUIT HEIX5\_WHOLEGRAIN HEIX6\_TOTALDAIRY HEIX7\_TOTPROT HEIX8\_SEAPLANT\_PROT

HEIX9\_FATTYACID HEIX10\_SODIUM HEIX11\_REFINEDGRAIN HEIX12\_SOFAAS

HEI2010\_TOTAL\_SCORE);

Set hei2010;

**Run**;

**proc** **means** n nmiss min max mean data=hei2010r;

**run**;

**proc** **export** data= hei2010r

file=res

dbms=csv

replace;

**run**;