# /\*The SAS program (HEI-2015 Individual Scores using multiple recalls from NHANES 2011-2012 data (and FPED))

# ByPerson.SAS\*/

**/\*INSTRUCTIONS – complete tasks 1-4 in this section, and run these SAS codes before proceeding to the HEI-2015 scoring program that follows\*/**

/\*1. Create a folder on your computer “home folder”, and save the FPED data, NHANES data, Demographic data, and the required HEI-2015 macro in it. Specify the path to the folder. \*/

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

/\*2. Libnames here specify the input files. \*/

libname NH “&home\NH”;

libname FPED “&home\FPED”; /\*In this example, the FPED data are in a folder called “FPED”, and the NHANES and Demographic data are in a folder called “NH”, all saved within the “home” folder. These are SAS datasets. \*/

/\*3. Create a folder in the "home" folder, where the output file, containing HEI-2015 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 “hei2015r”. \*/

/\*4. Read in required HEI-2015 scoring macro. This macro must be saved within the home folder. \*/

%include “&home\hei2015.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 dataset and folders, no other action is required from you. \*/

title 'HEI-2015 scores for NHANES 2011-2012 day 1, AGE >= 2, RELIABLE DIETS, Include Pregnant and Lactating Women';

/\*Step 1: locate the required datasets and variables \*/

\*part a: get FPED data per day;

**data** FPED1 (keep=SEQN DAYREC F\_CITMLB F\_OTHER PF\_MPS\_TOTAL PF\_EGGS

PF\_NUTSDS PF\_SOY PF\_SEAFD\_HI PF\_SEAFD\_LOW ADD\_SUGARS SOLID\_FATS

V\_TOTAL V\_DRKGR V\_LEGUMES PF\_LEGUMES F\_TOTAL G\_WHOLE D\_TOTAL G\_REFINED);

set FPED.fped\_dr1tot\_1112;

DAYREC=**1**;

F\_CITMLB=DR1T\_F\_CITMLB;

F\_OTHER=DR1T\_F\_OTHER;

PF\_MPS\_TOTAL=DR1T\_PF\_MPS\_TOTAL;

PF\_EGGS=DR1T\_PF\_EGGS;

PF\_NUTSDS=DR1T\_PF\_NUTSDS;

PF\_SOY=DR1T\_PF\_SOY;

PF\_SEAFD\_HI=DR1T\_PF\_SEAFD\_HI;

PF\_SEAFD\_LOW=DR1T\_PF\_SEAFD\_LOW;

ADD\_SUGARS=DR1T\_ADD\_SUGARS;

SOLID\_FATS=DR1T\_SOLID\_FATS;

V\_TOTAL=DR1T\_V\_TOTAL;

V\_DRKGR=DR1T\_V\_DRKGR;

V\_LEGUMES=DR1T\_V\_LEGUMES;

PF\_LEGUMES=DR1T\_PF\_LEGUMES;

F\_TOTAL=DR1T\_F\_TOTAL;

G\_WHOLE=DR1T\_G\_WHOLE;

D\_TOTAL=DR1T\_D\_TOTAL;

G\_REFINED=DR1T\_G\_REFINED;

**run**;

**data** FPED2 (keep=SEQN DAYREC F\_CITMLB F\_OTHER PF\_MPS\_TOTAL PF\_EGGS

PF\_NUTSDS PF\_SOY PF\_SEAFD\_HI PF\_SEAFD\_LOW ADD\_SUGARS SOLID\_FATS

V\_TOTAL V\_DRKGR V\_LEGUMES PF\_LEGUMES F\_TOTAL G\_WHOLE D\_TOTAL G\_REFINED);

set FPED.fped\_dr2tot\_1112;

DAYREC=**2**;

F\_CITMLB=DR2T\_F\_CITMLB;

F\_OTHER=DR2T\_F\_OTHER;

PF\_MPS\_TOTAL=DR2T\_PF\_MPS\_TOTAL;

PF\_EGGS=DR2T\_PF\_EGGS;

PF\_NUTSDS=DR2T\_PF\_NUTSDS;

PF\_SOY=DR2T\_PF\_SOY;

PF\_SEAFD\_HI=DR2T\_PF\_SEAFD\_HI;

PF\_SEAFD\_LOW=DR2T\_PF\_SEAFD\_LOW;

ADD\_SUGARS=DR2T\_ADD\_SUGARS;

SOLID\_FATS=DR2T\_SOLID\_FATS;

V\_TOTAL=DR2T\_V\_TOTAL;

V\_DRKGR=DR2T\_V\_DRKGR;

V\_LEGUMES=DR2T\_V\_LEGUMES;

PF\_LEGUMES=DR2T\_PF\_LEGUMES;

F\_TOTAL=DR2T\_F\_TOTAL;

G\_WHOLE=DR2T\_G\_WHOLE;

D\_TOTAL=DR2T\_D\_TOTAL;

G\_REFINED=DR2T\_G\_REFINED;

**run**;

**data** FPED;

set FPED1 FPED2;

**run**;

\*part b: get individual total food intake if reliable recall status;

**data** NUTRIENT1 (keep= SEQN WTDRD1 KCAL SFAT SODI DR1DRSTZ MFAT

PFAT DAYREC);

set NH.DR1TOT\_G;

if DR1DRSTZ=**1**; /\*reliable dietary recall status\*/

KCAL=DR1TKCAL;

MFAT=DR1TMFAT;

PFAT=DR1TPFAT;

SFAT=DR1TSFAT;

SODI=DR1TSODI;

DAYREC=**1**;

**run**;

**data** NUTRIENT2 (keep= SEQN KCAL SFAT SODI DR2DRSTZ MFAT

PFAT DAYREC);

set NH.DR2TOT\_G;

if DR2DRSTZ=**1**; /\*reliable dietary recall status \*/

KCAL=DR2TKCAL;

MFAT=DR2TMFAT;

PFAT=DR2TPFAT;

SFAT=DR2TSFAT;

SODI=DR2TSODI;

DAYREC=**2**;

**run**;

**data** NUTRIENT;

set NUTRIENT1 NUTRIENT2;

**run**;

\*part c: get demographic data for persons aged two and older;

**data** DEMO (keep=SEQN RIDAGEYR RIAGENDR SDDSRVYR SDMVPSU SDMVSTRA);

set NH.DEMO\_G;

if RIDAGEYR >= **2**;

**run**;

/\*Step 2: Combine the required datasets\*/

**proc** **sort** data=FPED;

by SEQN DAYREC;

**run**;

**proc** **sort** data=NUTRIENT;

by SEQN DAYREC;

**run**;

**data** NUTFDPYR;

merge FPED (in=F) NUTRIENT (in=N);

by SEQN DAYREC;

if F and N;

**run**;

**proc** **sort** data=DEMO;

by SEQN;

**run**;

**data** COHORT;

merge DEMO (in=C) NUTFDPYR (in=P);

by SEQN;

if C and P;

**run**;

/\*Step 3: Creates additional required variables: FWHOLEFRT, MONOPOLY, VTOTALLEG, VDRKGRLEG, PFALLPROTLEG and PFSEAPLANTLEG \*/

**data** COHORT;

set COHORT;

by SEQN;

FWHOLEFRT=F\_CITMLB+F\_OTHER;

MONOPOLY=MFAT+PFAT;

VTOTALLEG=V\_TOTAL+V\_LEGUMES;

VDRKGRLEG=V\_DRKGR+V\_LEGUMES;

PFALLPROTLEG=PF\_MPS\_TOTAL+PF\_EGGS+PF\_NUTSDS+PF\_SOY+PF\_LEGUMES;

PFSEAPLANTLEG=PF\_SEAFD\_HI+PF\_SEAFD\_LOW+PF\_NUTSDS+PF\_SOY+PF\_LEGUMES;

**run**;

\*get sum per person across all days of variables of interest;

**proc** **means** data= COHORT noprint;

by SEQN;

var KCAL VTOTALLEG VDRKGRLEG F\_TOTAL FWHOLEFRT G\_WHOLE D\_TOTAL

PFALLPROTLEG PFSEAPLANTLEG MONOPOLY SFAT SODI G\_REFINED ADD\_SUGARS;

output out=BYID sum=;

**run**;

/\*Step 4: Apply the HEI-2015 scoring macro. \*/

%***HEI2015*** (indat= BYID,

kcal= KCAL,

vtotalleg= VTOTALLEG,

vdrkgrleg= VDRKGRLEG,

f\_total= F\_TOTAL,

fwholefrt= FWHOLEFRT,

g\_whole= G\_WHOLE,

d\_total= D\_TOTAL,

pfallprotleg= PFALLPROTLEG,

pfseaplantleg= PFSEAPLANTLEG,

monopoly= MONOPOLY,

satfat= SFAT,

sodium= SODI,

g\_refined= G\_REFINED,

add\_sugars= ADD\_SUGARS,

outdat= HEI2015);

/\*Step 5: Displays and saves the results. \*/

\*part a: this program saves one HEI-2015 score for each individual, based on multiple 24HRs;

**data** HEI2015R (keep=SEQN KCAL HEI2015C1\_TOTALVEG HEI2015C2\_GREEN\_AND\_BEAN HEI2015C3\_TOTALFRUIT HEI2015C4\_WHOLEFRUIT

HEI2015C5\_WHOLEGRAIN HEI2015C6\_TOTALDAIRY HEI2015C7\_TOTPROT HEI2015C8\_SEAPLANT\_PROT HEI2015C9\_FATTYACID HEI2015C10\_SODIUM

HEI2015C11\_REFINEDGRAIN HEI2015C12\_SFAT HEI2015C13\_ADDSUG HEI2015\_TOTAL\_SCORE);

set HEI2015;

**run**;

\*part b: calculates an unweighted mean across all individuals in group;

**proc** **means** n nmiss min max mean data=HEI2015R;

**run**;

\*part c: saves results as CSV file one line per subject;

**proc** **export** data=HEI2015R

file=RES

dbms=csv

replace;

**run**;