**SAS Codes for NHATS ADL/IADL Variables**

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Language: SAS

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SAS Codes for NHATS ADL/IADL measures variables. Used NHATS data years: 2011-2016. SAS code at year or NHATS wave level. Those wishing to use this for a specific year can do so easily and without much modification.

Published paper: Harrison KL, Ritchie CS, Patel K, Hunt LJ, Covinsky KE, Yaffe K, Smith AK. Care Settings and Clinical Characteristics of Older Adults with Moderately Severe Dementia. J Am Geriatr Soc. 2019; 67(9):1907-1912. PMID: 31389002

The code is indicated below but you may also download it here.

/\* ADL variables

sc1deathelp R1 D HAS HELP EATING

sc1dbathhelp R1 D HAS HELP WHILE BATHING

sc1dtoilhelp R1 D HAS HELP WHILE TOILETING

sc1ddreshelp R1 D HAS HELP WHILE DRESSING

mo1dbedhelp R1 D HELP TO GET OUT OF BED

mo1dinsdhelp R1 D MOVE INSIDE WITH HELP

mo1douthelp R1 D GO OUTSIDE USING HELP

\*/

Libname n 'PATH\NHATSfiles' ;**run**;

option nofmterr;

option fmtsearch =(work n);

/\*format of NHATS variable:

‚ FORMAT NAME: SCEATHLP

‡ƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒˆƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒˆƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒ‰

‚ -9‚ -9‚-9 Missing ‚

‚ -1‚ -1‚-1 Inapplicable ‚

‚ 1‚ 1‚1 No help eating in last month ‚

‚ 2‚ 2‚2 Help eating in last month ‚

‚ 3‚ 3‚3 DKRF help eating in last month ‚

‚ 8‚ 8‚8 Not done in last month

‚ FORMAT NAME: HADLSLF

‡ƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒˆƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒˆƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒ‰

‚ -9‚ -9‚-9 Missing ‚

‚ -1‚ -1‚-1 Inapplicable ,

‚ 1‚ 1‚1 Did not do by self in last month ‚

‚ 2‚ 2‚2 Did by self in last month/no difficulty ‚

‚ 3‚ 3‚3 Did by self in last month/difficulty ‚

‚ 4‚ 4‚4 DKRF did by self in last month/no difficulty ‚

‚ 5‚ 5‚5 DKRF did by self in last month/difficulty ‚

‚ 6‚ 6‚6 Did by self in last month/DKRF difficulty ‚

‚ 7‚ 7‚7 DKRF did by self in last month/DKRF difficulty ‚

‚ 8‚ 8‚8 Not done in last month

FORMAT NAME: ADL or IADL

‡ƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒˆƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒˆƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒ‰

‚ -1‚ -1‚NA/DK/RF ‚

‚ 0‚ 0‚0:No ‚

‚ 1‚ 1‚1:Yes

\*/

**proc** **format** library = n.formats;

value ADL **1**="1:Yes" **0**="0:No" -**1**="NA/DK/RF" ;

value IADL **1**="1:Yes" **0**="0:No" -**1**="NA/DK/RF" ;

**run**;

/\* R16\_previnc = merged dataset file with NHATS sample person file 2011-2016 with 2016 tracker file \*/

/\*ADL, 6 items - Help with eating, transferring, walking inside, dressing, bathing, and toileting \*/

**data** R16\_previnc (drop = i);

set R16\_previnc ;

array r1adl {\*} sc1deathelp sc1dbathhelp sc1dtoilhelp sc1ddreshelp mo1dbedhelp mo1dinsdhelp ;

array r1adl\_item {\*} r1adleat r1adlbath r1adltoil r1adldres r1adlbed r1adlinsd ;

do i=**1** to dim(r1adl\_item);

/\* CODE ONLY YES RESPONSES as 1, NO RESPONSES or not missing as 0 \*/

if r1adl {i} = **2** then r1adl\_item{i}=**1**;

else if r1adl{i} ^= **.** then r1adl\_item{i}=**0**;

r1adl\_sum =sum(of r1adl\_item{\*});

end;

array r2adl {\*} sc2deathelp sc2dbathhelp sc2dtoilhelp sc2ddreshelp mo2dbedhelp mo2dinsdhelp ;

array r2adl\_item {\*} r2adleat r2adlbath r2adltoil r2adldres r2adlbed r2adlinsd ;

do j=**1** to dim(r2adl\_item);

if r2adl {j} = **2** then r2adl\_item{j}=**1**;

else if r2adl{j} ^= **.** then r2adl\_item{j}=**0**;

r2adl\_sum =sum(of r2adl\_item{\*});

end;

array r3adl {\*} sc3deathelp sc3dbathhelp sc3dtoilhelp sc3ddreshelp mo3dbedhelp mo3dinsdhelp ;

array r3adl\_item {\*} r3adleat r3adlbath r3adltoil r3adldres r3adlbed r3adlinsd ;

do k=**1** to dim(r3adl\_item);

if r3adl {k} = **2** then r3adl\_item{k}=**1**;

else if r3adl{k} ^= **.** then r3adl\_item{k}=**0**;

r3adl\_sum =sum(of r3adl\_item{\*});

end;

array r4adl {\*} sc4deathelp sc4dbathhelp sc4dtoilhelp sc4ddreshelp mo4dbedhelp mo4dinsdhelp ;

array r4adl\_item {\*} r4adleat r4adlbath r4adltoil r4adldres r4adlbed r4adlinsd ;

do l=**1** to dim(r4adl\_item);

if r4adl {l} = **2** then r4adl\_item{l}=**1**;

else if r4adl{l} ^= **.** then r4adl\_item{l}=**0**;

r4adl\_sum =sum(of r4adl\_item{\*});

end;

array r5adl {\*} sc5deathelp sc5dbathhelp sc5dtoilhelp sc5ddreshelp mo5dbedhelp mo5dinsdhelp ;

array r5adl\_item {\*} r5adleat r5adlbath r5adltoil r5adldres r5adlbed r5adlinsd ;

do m=**1** to dim(r5adl\_item);

if r5adl {m} = **2** then r5adl\_item{m}=**1**;

else if r5adl{m} ^= **.** then r5adl\_item{m}=**0**;

r5adl\_sum =sum(of r5adl\_item{\*});

end;

array r6adl {\*} sc6deathelp sc6dbathhelp sc6dtoilhelp sc6ddreshelp mo6dbedhelp mo6dinsdhelp mo6douthelp ;

array r6adl\_item {\*} r6adleat r6adlbath r6adltoil r6adldres r6adlbed r6adlinsd ;

do n=**1** to dim(r6adl\_item);

if r6adl {n} = **2** then r6adl\_item{n}=**1**;

else if r6adl{n} ^= **.** then r6adl\_item{n}=**0**;

r6adl\_sum =sum(of r6adl\_item{\*});

end;

**run**;

/\*Additional ADL - Help moving outside - separate category to report \*/

**data** R16\_previnc (drop = n);

set R16\_previnc ;

array outhelp {**1**:**6**} mo1douthelp mo2douthelp mo3douthelp mo4douthelp mo5douthelp mo6douthelp;

array adlout {**1**:**6**} r1adlout r2adlout r3adlout r4adlout r5adlout r6adlout;

do n=**1** to **6**;

if outhelp {n} = **2** then adlout{n}=**1**;

else if outhelp{n} ^= **.** then adlout{n}=**0**;

end;

**run**;

/\*IADL Variables

ha1dlaunsfdf R1 D LAUNDRY SELF AND DIFF LEVEL

ha1dshopsfdf R1 D SLF SHOPPING AND DIFF LEVEL

ha1dmealsfdf R1 D SELF MEALS AND DIFF LEVEL

mc1dmedssfdf R1 D DIFF LEVEL MEDICATIONS SELF

ha1moneyhlp R1 HA51 ANYONE HLP W MONY MATTRS

\*/

/\*IADL, 5 items - Help with laundry, shopping, preparing food, managing money, or taking medications \*/

**data** R16\_previnc (drop = i);

set R16\_previnc ;

/\*IADL, 5 items - laundry, shopping, meal, medication, for money help \*/

array r1iadl {\*} ha1dlaunsfdf ha1dshopsfdf ha1dmealsfdf ha1moneyhlp mc1dmedssfdf ;

array r1iadl\_item {\*} r1iadllaun r1iadlshop r1iadlmeal r1iadlmoney r1iadlmeds ;

do i=**1** to dim(r1iadl\_item);

/\* CODE ONLY YES RESPONSES as 1, NO RESPONSES or not missing as 0 \*/

if r1iadl {i} in ( **1**,**3**) then r1iadl\_item{i}=**1**;

else if r1iadl{i} ^= **.** then r1iadl\_item{i}=**0**;

r1iadl\_sum =sum(of r1iadl\_item{\*});

end;

format r1iadllaun r1iadlshop r1iadlmeal r1iadlmoney r1iadlmeds IADL.;

array r2iadl {\*} ha2dlaunsfdf ha2dshopsfdf ha2dmealsfdf ha2moneyhlp mc2dmedssfdf ;

array r2iadl\_item {\*} r2iadllaun r2iadlshop r2iadlmeal r2iadlmoney r2iadlmeds ;

do i=**1** to dim(r2iadl\_item);

if r2iadl {i} in ( **1**,**3**) then r2iadl\_item{i}=**1**;

else if r2iadl{i} ^= **.** then r2iadl\_item{i}=**0**;

r2iadl\_sum =sum(of r2iadl\_item{\*});

end;

format r2iadllaun r2iadlshop r2iadlmeal r2iadlmoney r2iadlmeds IADL.;

array r3iadl {\*} ha3dlaunsfdf ha3dshopsfdf ha3dmealsfdf ha3moneyhlp mc3dmedssfdf ;

array r3iadl\_item {\*} r3iadllaun r3iadlshop r3iadlmeal r3iadlmoney r3iadlmeds ;

do i=**1** to dim(r3iadl\_item);

if r3iadl {i} in ( **1**,**3**) then r3iadl\_item{i}=**1**;

else if r3iadl{i} ^= **.** then r3iadl\_item{i}=**0**;

r3iadl\_sum =sum(of r3iadl\_item{\*});

end;

format r3iadllaun r3iadlshop r3iadlmeal r3iadlmoney r3iadlmeds IADL.;

array r4iadl {\*} ha4dlaunsfdf ha4dshopsfdf ha4dmealsfdf ha4moneyhlp mc4dmedssfdf ;

array r4iadl\_item {\*} r4iadllaun r4iadlshop r4iadlmeal r4iadlmoney r4iadlmeds ;

do i=**1** to dim(r4iadl\_item);

if r4iadl {i} in ( **1**,**3**) then r4iadl\_item{i}=**1**;

else if r4iadl{i} ^= **.** then r4iadl\_item{i}=**0**;

r4iadl\_sum =sum(of r4iadl\_item{\*});

end;

format r4iadllaun r4iadlshop r4iadlmeal r4iadlmoney r4iadlmeds IADL.;

array r5iadl {\*} ha5dlaunsfdf ha5dshopsfdf ha5dmealsfdf ha5moneyhlp mc5dmedssfdf ;

array r5iadl\_item {\*} r5iadllaun r5iadlshop r5iadlmeal r5iadlmoney r5iadlmeds ;

do i=**1** to dim(r5iadl\_item);

if r5iadl {i} in ( **1**,**3**) then r5iadl\_item{i}=**1**;

else if r5iadl{i} ^= **.** then r5iadl\_item{i}=**0**;

r5iadl\_sum =sum(of r5iadl\_item{\*});

end;

format r5iadllaun r5iadlshop r5iadlmeal r5iadlmoney r5iadlmeds IADL.;

array r6iadl {\*} ha6dlaunsfdf ha6dshopsfdf ha6dmealsfdf ha6moneyhlp mc6dmedssfdf ;

array r6iadl\_item {\*} r6iadllaun r6iadlshop r6iadlmeal r6iadlmoney r6iadlmeds ;

do i=**1** to dim(r6iadl\_item);

if r6iadl {i} in ( **1**,**3**) then r6iadl\_item{i}=**1**;

else if r6iadl{i} ^= **.** then r6iadl\_item{i}=**0**;

r6iadl\_sum =sum(of r6iadl\_item{\*});

end;

format r6iadllaun r6iadlshop r6iadlmeal r6iadlmoney r6iadlmeds IADL.;

**run**;

/\* NHATS has IADL impairment variables that assess the reasons of difficulty. Below is the code if you want to consider IADL difficulty with reason variable \*/

/\* In our paper, we used ha1moneyhlp variable but there is another variable also to use ha1dbanksfdf, with reason variable (ha1dbankreas)–

ha1moneyhlp R1 HA51 ANYONE HLP W MONY MATTRS

ha1dbanksfdf R1 D SELF BANKS AND DIFF LEVEL

\*/

**data** R16\_previnc (drop = i);

set R16\_previnc ;

/\* IADL with reasons for impairment variables, NHATS 2011, Round 1 data

Variables

ha1dbanksfdf R1 D SELF BANKS AND DIFF LEVEL

ha1dlaunreas R1 D LAUNDRY REASN WITH BY OTHERS

ha1dshopreas R1 D SHOP REASN WITH BY OTHERS

ha1dmealreas R1 D MEALS REASN WITH BY OTHERS

ha1dbankreas R1 D BANK BILL REASN WITH BY OTH

mc1dmedsreas R1 D MEDS REASN BY WITH OTHERS

\*/

array r1iadldif {\*} ha1dbanksfdf mc1dmedssfdf ha1dlaunsfdf ha1dshopsfdf ha1dmealsfdf ;

array r1iadlreas {\*} ha1dbankreas mc1dmedsreas ha1dlaunreas ha1dshopreas ha1dmealreas ;

array r1iadl\_dfreas {\*} ha1dbanksfdfreas mc1dmedssfdfreas ha1dlaunsfdfreas ha1dshopsfdfreas ha1dmealsfdfreas ;

do i=**1** to dim(r1iadl\_dfreas);

if r1iadldif {i} in ( **1**,**3**) and r1iadlreas {i} in ( **1**,**3**) then r1iadl\_dfreas{i}=**1**; /\* CODE if 1, 3 had difficulty or did not do by self and reasons -health/functional\*/

else if r1iadldif{i} ^= **.** or r1iadlreas{i} ^= **.** then r1iadl\_dfreas{i}=**0**; /\* all other no-missing values coded as 0 \*/

r1iadl\_sum\_dfrea =sum(of r1iadl\_dfreas{\*});

end;

**run**;