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/*=====
| Covance Study Number      : 000000106343      |
| Program Name              : d_2adqsnd.sas      |
| Purpose                   : Program to ADQSND dataset      |
| Input Data                : ADAM.ADSL, SDTM.QS      |
| Output Data               : ADAM.AQSND          |
| Macros Called             :                    |
| Originally Performed by   :Deepthi Pippalla      |
| Date                     : 06APR2015            |
|                           |                    |
|=====
| Modification History      |
|-----
| Modified by              :                    |
| Modification Date        :                    |
| Modification Description :                    |
+=====*/

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proc datasets lib=work kill memtype=data nolist;
run;

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options validvarname=v7 mlogic mprint symbolgen spool;

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%m_printto(route = YES);

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libname sdtm "/cvn/projects/prj/data/000000106343/datasets/sdtm/sdtmx";

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data qs;
LENGTH PARAMN 8. PARCAT1 PARCAT2 $200. PARAM $100. PARAMCD $8. AVALC $140. avalu $23.;
set sdtm.qs;
where qscat in ('FAGERSTROM TEST FOR NICOTINE DEPENDENCE QUESTIONNAIRE'
'MINNESOTA NICOTINE DEPENDENCE/WITHDRAWAL SCALE' 'SOCIO ECONOMIC STATUS QUESTIONNAIRE'
'BEHAVIORAL RISK FACTOR SURVEILLANCE SYSTEM QUESTIONNAIRE' 'SMOKING QUESTIONNAIRE'
'PROCHASKA STAGE OF CHANGE QUESTIONNAIRE' 'SUPPLEMENTAL QUESTION');
param = qstest;
paramcd = qstestcd;
AVALC = QSSTRESC;
AVALU = QSSTRESU;
/*PARCAT1 = propcase(QSCAT);*/

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if paramcd in ("MNWS01", "MNWS02" "MNWS03" "MNWS04" "MNWS05" "MNWS06" "MNWS07" "MNWS08" "MNWS09") then do;
aval = input(put(qsstresc, sev.), best.);
parcat1 = propcase(qscat);
parcat1n = 2;
parcat2 = "Validated";
parcat2n = 1;
PARAMN = INPUT(SUBSTR(PARAMCD,5), BEST.);
end;

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if paramcd in ("MNWS10", "MNWS11" "MNWS12" "MNWS13" "MNWS14" "MNWS15" ) then do;
aval = input(put(qsstresc, sev.), best.);
parcat1 = propcase(qscat);
parcat1n = 2;
parcat2 = "Unvalidated";
parcat2n = 2;
PARAMN = INPUT(SUBSTR(PARAMCD,5), BEST.);

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end;

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if paramcd = "FTND01" then do;
if qsstresc = "AFTER 60 MINUTES" then aval = 0;
else if qsstresc = "31-60 MINUTES" then aval = 1;
else if qsstresc = "6-30 MINUTES" then aval = 2;
else if qsstresc = "WITHIN 5 MINUTES" then aval = 3;
parcat1 = propcase(qscat);
parcat1n = 1;
PARAMN = 17;
end;

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if paramcd = "FTND02" then do;
if qsstresc = "N" then aval = 0;
else if qsstresc = "Y" then aval = 1;
parcat1 = propcase(qscat);
parcat1n = 1;
PARAMN = 18;
end;

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if paramcd = "FTND03" then do;
if qsstresc = "THE FIRST IN THE MORNING" then aval = 1;
else if qsstresc = "ANY OTHER" then aval = 0;
parcat1 = propcase(qscat);
parcat1n = 1;
PARAMN = 19;
end;
```

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if paramcd = "FTND04" then do;
If QSSTRESC = '10 OR LESS' then AVAL = 0;
Else if QSSTRESC = '11-20' then AVAL = 1;
Else if QSSTRESC = '21-30' then AVAL = 2;
Else if QSSTRESC = '31 OR MORE' then AVAL = 3;
parcat1 = propcase(qscat);
parcat1n = 1;
PARAMN = 20;
end;
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If paramcd = 'FTND05' then do;
If QSSTRESC = 'N' then AVAL = 0;
Else if QSSTRESC = 'Y' then AVAL = 1;
parcat1 = propcase(qscat);
parcat1n = 1;
PARAMN = 21;
End;
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```
If paramcd = 'FTND06' then do;
If QSSTRESC = 'N' then AVAL = 0;
Else if QSSTRESC = 'Y' then AVAL = 1;
parcat1 = propcase(qscat);
parcat1n = 1;
PARAMN = 22;
End;
```

```
If paramcd='QSESUS01' then do;
If QSSTRESC='LESS THAN HIGH SCHOOL' then AVAL=1;
Else if QSSTRESC='HIGH SCHOOL GRADUATE' then AVAL=2;
Else if QSSTRESC='SOME COLLEGE' then AVAL=3;
Else if QSSTRESC='COLLEGE GRADUATE' then AVAL=4;
Else if QSSTRESC='ADVANCED DEGREE' then AVAL=5;
PARCAT1N=3;
PARAMN=101;
parcat1 = propcase(qscat);
end;
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if QSTESTCD='QSESUS02' then do;
If QSSTRESC='WORKING NOW' then AVAL=1;
Else if QSSTRESC='ONLY TEMPORARILY LAID OFF, SICK LEAVE OR MATERNITY LEAVE' then AVAL=2;
Else if QSSTRESC='LOOKING FOR WORK, UNEMPLOYED' then AVAL=3;
Else if QSSTRESC='RETIRED' then AVAL=4;
Else if QSSTRESC='DISABLED, PERMANENTLY OR TEMPORARILY' then AVAL=5;
Else if QSSTRESC='KEEPING HOUSE' then AVAL=6;
Else if QSSTRESC='STUDENT' then AVAL=7;
PARCAT1N=3;
PARAMN=102;
parcat1 = propcase(qscat);
end;
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if QSTESTCD='QSESUS03' then do;
aval = input(qsstresc, best.);
PARCAT1N=3;
PARAMN=103;
parcat1 = propcase(qscat);
end;
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```
if QSTESTCD='QSESUS04' then do;
aval = input(qsstresc, best.);
PARCAT1N=3;
PARAMN=104;
parcat1 = propcase(qscat);
end;
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```
if QSTESTCD='QSESUS05' then do;
aval = input(qsstresc, best.);
PARCAT1N=3;
PARAMN=105;
parcat1 = propcase(qscat);
end;
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```
if QSTESTCD='QSESUS06' then do;
aval = input(qsstresc, best.);
PARCAT1N=3;
PARAMN=106;
parcat1 = propcase(qscat);
end;
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```
if QSTESTCD='QSESUS07' then do;
If QSSTRESC='LESS THAN $10,000' then AVAL=1;
Else if QSSTRESC='$10,000 TO $29,999' then AVAL=2;
Else if QSSTRESC='$30,000 THROUGH $44,999' then AVAL=3;
Else if QSSTRESC='$45,000 THROUGH $59,999' then AVAL=4;
Else if QSSTRESC='$60,000 THROUGH $74,999' then AVAL=5;
Else if QSSTRESC='$75,000 THROUGH $99,999' then AVAL=6;
Else if QSSTRESC='$100,000 THROUGH $149,999' then AVAL=7;
Else if QSSTRESC='$150,000 AND OVER' then AVAL=8;
Else if QSSTRESC='I DO NOT KNOW' then AVAL=9;
Else if QSSTRESC='NO RESPONSE' then AVAL=10;
PARCAT1N=3;
PARAMN=107;
parcat1 = propcase(qscat);
end;
```

```
If paramcd = 'BRFSSQ01' then do;
If QSSTRESC = 'N' then AVAL = 0;
Else if QSSTRESC = 'Y' then AVAL = 1;
Else If QSSTRESC = "DON'T KNOW/NOT SURE" then AVAL=9;
PARAMN = 47;
parcat1 = propcase(qscat);
parcat1n = 4;
End;
```

```
If paramcd = 'BRFSSQ02' then do;
If QSSTRESC = 'EVERY DAY' then AVAL=1;
If QSSTRESC = 'SOME DAYS' then AVAL=2;
If QSSTRESC = 'NOT AT ALL' then AVAL=3;
If QSSTRESC = "DON'T KNOW/NOT SURE" then AVAL=9;
PARAMN = 48;
parcat1 = propcase(qscat);
parcat1n = 4;
End;
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```
If paramcd = 'BRFSSQ03' then do;
If QSSTRESC = 'N' then AVAL = 0;
Else if QSSTRESC = 'Y' then AVAL = 1;
Else If QSSTRESC = "DON'T KNOW/NOT SURE" then AVAL=9;
PARAMN = 49;
parcat1 = propcase(qscat);
parcat1n = 4;
End;
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```
If paramcd = 'BRFSSQ04' then do;
If QSSTRESC = 'WITHIN THE PAST MONTH (LESS THAN 1 MONTH AGO)' then AVAL=1;
If QSSTRESC = 'WITHIN THE PAST 3 MONTHS (1 MONTH BUT LESS THAN 3 MONTHS AGO)' then AVAL=2;
If QSSTRESC = 'WITHIN THE PAST 6 MONTHS (3 MONTHS BUT LESS THAN 6 MONTHS AGO)' then AVAL=3;
If QSSTRESC = 'WITHIN THE PAST YEAR (6 MONTHS BUT LESS THAN 1 YEAR AGO)' then AVAL=4;
If QSSTRESC = 'WITHIN THE PAST 5 YEARS (1 YEAR BUT LESS THAN 5 YEARS AGO)' then AVAL=5;
If QSSTRESC = 'WITHIN THE PAST 10 YEARS (5 YEARS BUT LESS THAN 10 YEARS AGO)' then AVAL=6;
If QSSTRESC = '10 YEARS OR MORE' then AVAL=6;
If QSSTRESC = "DON'T KNOW/NOT SURE" then AVAL=9;
PARAMN = 50;
parcat1 = propcase(qscat);
parcat1n = 4;
End;
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If paramcd = 'BRFSSQ05' then do;
If QSSTRESC = 'EVERY DAY' then AVAL=1;
If QSSTRESC = 'SOME DAYS' then AVAL=2;
If QSSTRESC = 'NOT AT ALL' then AVAL=3;
If QSSTRESC = "DON'T KNOW/NOT SURE" then AVAL=9;
PARAMN = 51;
parcat1 = propcase(qscat);
parcat1n = 4;
End;
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If paramcd = 'SQ01' then do;
If QSSTRESC = 'DAILY SMOKER (AT LEAST ONE CIGARETTE PER DAY, DISREGARDING RELIGIOUS FASTING)' then AVAL=1;
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If QSSTRESC = 'OCCASIONAL SMOKER (LESS THAN ONE CIGARETTE PER DAY)' then AVAL=2;
If QSSTRESC = 'EX-SMOKER OF CIGARETTES' then AVAL=3;
If QSSTRESC = 'NON-SMOKER OF CIGARETTES' then AVAL=4;
PARAMN = 52;
parcat1 = propcase(qscat);
parcat1n = 5;
End;

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If paramcd = 'SQ02' then do;
If QSSTRESC = 'N' then AVAL = 0;
Else if QSSTRESC = 'Y' then AVAL = 1;
PARAMN = 53;
parcat1 = propcase(qscat);
parcat1n = 5;
End;

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If paramcd = 'SQ03' then do;
If QSSTRESC = 'N' then AVAL = 0;
Else if QSSTRESC = 'Y' then AVAL = 1;
PARAMN = 54;
parcat1 = propcase(qscat);
parcat1n = 5;
End;

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If paramcd in ("SQ04" "SQ05" "SQ06" "SQ07") then do;
if anyalpha(QSSTRESC) = 0 then aval = input(qsstresc, best.);
IF PARAMCD = "SQ04" THEN PARAMN= 55;
ELSE IF PARAMCD = "SQ05" THEN PARAMN = 56;
ELSE IF PARAMCD = "SQ06" THEN PARAMN = 57;
ELSE IF PARAMCD = "SQ07" THEN PARAMN = 58;
parcat1 = propcase(qscat);
parcat1n = 5;
end;

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if paramcd in ("SQ08" "SQ09" "SQ10" "SQ11" "SQ12" "SQ13" "SQ14") then do;
If QSSTRESC='NONE' then AVAL=0;
ELSE If QSSTRESC='LESS THAN 1 PER DAY' then AVAL=1;
ELSE IF QSSTRESC NE " " THEN AVAL = INPUT(QSSTRESC, BEST.);
IF PARAMCD = "SQ08" THEN PARAMN = 59;
ELSE IF PARAMCD = "SQ09" THEN PARAMN = 60;
ELSE IF PARAMCD = "SQ10" THEN PARAMN = 61;
ELSE IF PARAMCD = "SQ11" THEN PARAMN = 62;
ELSE IF PARAMCD = "SQ12" THEN PARAMN = 63;
ELSE IF PARAMCD = "SQ13" THEN PARAMN = 64;
ELSE IF PARAMCD = "SQ14" THEN PARAMN = 65;
parcat1 = propcase(qscat);
parcat1n = 5;
end;

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If PARAMCD ='PROCH01' then do;
If QSSTRESC = 'YES, I CURRENTLY SMOKE' then AVAL=1;
If QSSTRESC = 'NO, I QUIT WITHIN THE LAST 6 MONTHS' then AVAL=2;
If QSSTRESC = 'NO, I QUIT MORE THAN 6 MONTHS AGO' then AVAL=3;
If QSSTRESC = 'NO, I HAVE NEVER SMOKED' then AVAL=4;
PARAMN = 66;
parcat1 = propcase(qscat);
parcat1n = 6;
End;

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IF PARAMCD = "PROCH02" THEN DO;
IF QSSTRESC NE " " THEN AVAL = INPUT(QSSTRESC, BEST.);
PARAMN = 67;
parcat1 = propcase(qscat);
parcat1n = 6;
END;

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If PARAMCD ='PROCH03' then do;
If QSSTRESC = 'YES, WITHIN THE NEXT 30 DAYS' then AVAL=1;
If QSSTRESC = 'YES, WITHIN THE NEXT 6 MONTHS' then AVAL=2;
If QSSTRESC = 'NO, NOT THINKING OF QUITTING' then AVAL=3;
PARAMN = 68;
parcat1 = propcase(qscat);
parcat1n = 6;
End;

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IF PARAMCD = "SQSUPP01" then do;
if qsstresc ne " " then aval = input(qsstresc, best.);
PARAMN = 69;

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parcat1 = propcase(qscat);
parcat1n = 7;
end;

If paramcd in ('SQSUPP02' 'SQSUPP03' 'SQSUPP04' 'SQSUPP05' 'SQSUPP06' 'SQSUPP07') then do;
If QSSTRESC in ('NO', 'N')then AVAL = 0;
Else if QSSTRESC in ('YES', 'Y') then AVAL = 1;
IF PARAMCD = "SQSUPP02" THEN PARAMN = 70;
ELSE IF PARAMCD = "SQSUPP03" THEN PARAMN = 71;
ELSE IF PARAMCD = "SQSUPP04" THEN PARAMN = 72;
ELSE IF PARAMCD = 'SQSUPP05' THEN PARAMN = 73;
ELSE IF PARAMCD = "SQSUPP06" THEN PARAMN = 74;
ELSE IF PARAMCD = "SQSUPP07" THEN PARAMN = 75;
parcat1 = propcase(qscat);
parcat1n = 7;
End;

IF PARAMCD = "SQSUPP08" THEN do;
PARAMN = 76;
parcat1 = propcase(qscat);
parcat1n = 7;
end;
run;

/* FOR QSESAHI */

data qsesahi;
LENGTH PARAMTYP $10. AVALCAT1 $50.;
set qs;
if QSTESTCD='QSESUS07' then do;
PARAMCD="QSESAHI";
PARAM="SES (Annual household income)";
PARAMN=198;
if QSSTRESC in ('LESS THAN $10,000' '$10,000 TO $29,999') then AVALCAT1 = 'Low';
else if QSSTRESC in ('$30,000 THROUGH $44,999' '$45,000 THROUGH $59,999') then AVALCAT1 = 'Moderate';
else if QSSTRESC in ('$60,000 THROUGH $74,999' '$75,000 THROUGH $99,999' '$100,000 THROUGH $149,999' '$150,000 AND OVER') then AVALCAT1='High';
PARCAT1N=3;
PARAMTYP = "DERIVED";
output;
end;
RUN;

/* FOR QSESEA */

DATA QSESEA;
LENGTH PARAMTYP $10. AVALCAT1 $50.;
SET QS;

if QSTESTCD='QSESUS01' then do;
PARAMCD="QSESEA";
PARAM="SES (Educational attainment)";
PARAMN=197;
if QSSTRESC = 'LESS THAN HIGH SCHOOL' then AVALCAT1='Low';
else if QSSTRESC = 'HIGH SCHOOL GRADUATE' then AVALCAT1='Moderate';
else if QSSTRESC in ('SOME COLLEGE' 'COLLEGE GRADUATE' 'ADVANCED DEGREE') then AVALCAT1='High';
PARCAT1N=3;
PARAMTYP = "DERIVED";
output;
end;
run;

/* FOR QSESCPLUS */

proc sort data=qsesahi out=sahi(keep=STUDYID usubjid visitnum visit paramcd QSDTC avalcat1 param parcat1n parcat1);
by usubjid visitnum visit parcat1n parcat1;
run;

proc sort data=qsesea out=sea(keep=STUDYID usubjid visitnum visit paramcd QSDTC avalcat1 param parcat1n parcat1);
by usubjid visitnum visit parcat1n parcat1;
run;

data qsescpus;
LENGTH PARAM $100. PARCAT1 $200. PARAMCD $8. AVALCAT1 $50. PARAMTYP $10.;
merge sahi(in=a rename=(avalcat1 = qsesahi paramcd = sahi_paramcd param = sahi_param))
sea(in=b rename=(avalcat1 = qsesea paramcd = sea_paramcd param = sea_param));
by STUDYID usubjid visitnum visit parcat1n parcat1 QSDTC;
IF A AND B;

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PARAM = "SES (Composite)";
PARAMN = 199;
PARAMCD = "QSESCPU";
PARAMTYP = "DERIVED";
IF QSESAHI = "Low" and QSESEA = "Low" then do;
  AVALCAT1 = "Low";
  AVAL = 1;
  AVALC = "1";
end;
else If qsesahi in ("High" "Moderate") and qsesea in ("High" "Moderate") then do;
  AVALCAT1 = "High";
  AVAL = 3;
  AVALC = "3";
end;
else if qsesahi ne " " and qsesea ne " " then do;
  AVALCAT1 = "Moderate";
  AVAL = 2;
  AVALC = "2";
end;
run;

/* FOR MNWSRWDS */

PROC SORT DATA=QS(WHERE=(1<=PARAMN<=9 AND AVAL NE .)) OUT=MNWSRWDS;
BY USUBJID VISITNUM PARAMN;
RUN;

DATA CNT16;
SET MNWSRWDS;
BY USUBJID VISITNUM PARAMN;
IF FIRST.VISITNUM THEN CNT16 = 0;
CNT16 + 1;
IF LAST.VISITNUM;
IF PARAMN > 4;
RUN;

DATA MNWSRWDS1_1;
MERGE MNWSRWDS(IN=A) CNT16(IN=B KEEP=USUBJID VISITNUM CNT16);
BY USUBJID VISITNUM ;
IF A AND B;
RUN;

PROC SQL;
CREATE TABLE MNWSRWDS2_1 AS
SELECT DISTINCT STUDYID, USUBJID, MEAN(AVAL) AS AVAL, VISITNUM, "MNWSRWDS" AS PARAMCD LENGTH = 8, "MNWS-R withdrawal score" AS PARAM
  LENGTH = 100,
"DERIVED" AS PARAMTYP LENGTH = 10, 16 AS PARAMN, VISIT, PARCAT1, PARCAT1N, PARCAT2, PARCAT2N, QSDTC
FROM MNWSRWDS1_1
GROUP BY STUDYID, USUBJID, VISITNUM, VISIT, PARCAT1, PARCAT1N, PARCAT2, PARCAT2N, QSDTC
ORDER BY USUBJID, VISITNUM;
QUIT;

DATA MNWSRWDS2_2;
LENGTH PARAMN 8. PARCAT1 PARCAT2 $200. PARAM $100. PARAMCD $8. AVALC $140. PARAMTYP $10.;
MERGE MNWSRWDS(IN=A) CNT16(IN=B KEEP=USUBJID VISITNUM CNT16);
BY USUBJID VISITNUM;
IF A AND NOT B;
PARAMCD = "MNWSRWDS";
PARAM = "MNWS-R withdrawal score";
PARAMN = 16;
PARAMTYP = "DERIVED";
PARCAT1 = PROPCASE(QSCAT);
PARCAT1N = 2;
PARCAT2N = 1;
PARCAT2 = "Validated";
AVAL = .;
AVALC = " ";
RUN;

PROC SORT DATA=MNWSRWDS2_2 NODUPKEY DUPOUT=DUP;
BY USUBJID VISITNUM QSDTC;
RUN;

DATA MNWSRWDS_FINAL;
SET MNWSRWDS2_1(IN=A) MNWSRWDS2_2(IN=B);
IF A THEN DO;
IF AVAL NE . THEN AVALC = STRIP(PUT(AVAL, BEST.));

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END;
RUN;

/* For FTNDSC */

proc sort data=qs(where=(17<= paramn <= 22 and aval ne .)) out=ftnd ;
by usubjid visitnum;
run;

data cnt23;
set ftnd;
by usubjid visitnum;
if first.visitnum then cnt23 = 0;
cnt23 + 1;
if last.visitnum;
if cnt23 = 6;
run;

data ftnd1_1;
merge ftnd(in=a) cnt23(in=b KEEP=USUBJID VISITNUM CNT23);
by usubjid visitnum;
if a and b;
run;

PROC SQL;
CREATE TABLE FTND2_1 AS
SELECT DISTINCT STUDYID, USUBJID, SUM(AVAL) AS AVAL, VISITNUM, "FTNDSC" AS PARAMCD LENGTH = 8, "Fagerstrom score" AS PARAM LENGTH =
100,
"DERIVED" AS PARAMTYP LENGTH = 10, 23 AS PARAMN, VISIT, PARCAT1, PARCAT1N, PARCAT2, PARCAT2N, QSDTC
FROM FTND1_1
GROUP BY STUDYID, USUBJID, VISITNUM, VISIT, PARCAT1, PARCAT1N, PARCAT2, PARCAT2N, QSDTC
ORDER BY USUBJID, VISITNUM;
QUIT;

DATA FTND2_2;
LENGTH PARAMN 8. PARCAT1 PARCAT2 $200. PARAM $100. PARAMCD $8. AVALC $140. PARAMTYP $10.;
MERGE FTND(IN=A) CNT23(IN=B KEEP=USUBJID VISITNUM CNT23);
BY USUBJID VISITNUM;
IF A AND NOT B;
PARAMCD = "FTNDSC";
PARAM = "Fagerstrom score";
PARAMN = 23;
PARAMTYP = "DERIVED";
PARCAT1 = PROPCASE(QSCAT);
PARCAT1N = 1;
PARCAT2N = .;
PARCAT2 = " ";
AVAL = .;
AVALC = " ";
RUN;

PROC SORT DATA=FTND2_2 NODUPKEY DUPOUT=DUP1;
BY USUBJID VISITNUM QSDTC;
RUN;

DATA FTNDSC_FINAL;
length avalcat1 $50.;
SET FTND2_1(IN=A) FTND2_2(IN=B);
IF A THEN DO;
IF AVAL NE . THEN AVALC = STRIP(PUT(AVAL, BEST.));
IF 0 <= AVAL <= 3 THEN AVALCAT1 = "Mild";
else if 4 <= AVAL <= 6 THEN AVALCAT1 = "Moderate";
else if 7 <= AVAL <= 10 THEN AVALCAT1 = "Severe";
END;
RUN;

/* OVERALL */

DATA QS_OVERALL;
SET QSESEA QSESCPUS QSESAHI MNWSRWDS_FINAL QS FTNDSC_FINAL ;
IF (. < PARAMN <= 23 or paramn in (66,67,68)) then do;
if QSDTC NE " " and substr(qsdtc,11,1) = "T" THEN QSDTC1 = INPUT(QSDTC, IS8601DT.);
if qsdtc ne " " and substr(qsdtc,11,1) = " " then qsdtc2 = input(qsdtc, is8601da.);
end;
/*FORMAT QSDTC1 IS8601DT.;*/
RUN;

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PROC SORT DATA=QS_OVERALL;
BY STUDYID USUBJID VISITNUM PARAMN;
RUN;

data adsl;
set adam.adsl;
keep studyid usubjid subjid subjidn siteid age race sex sexc sexn dthfl height weightbl bmi ucpdgr1
ucpdgr1n enrfl enfl complfl fupfl scrffl exfl exnotrfl safbfl safaf1 fasfl pprot1fl
pprot2fl pprot3fl pprot4fl randfl trtsdt trtsdtm trtstmf trtsday trtedtm trtetmf trteday trt01pn trtedt
trt01p trt01an trt01a RANDDT RANDDTM DISCCAT comp1fl comp2fl comp3fl comp4fl;
run;

proc sort data=adsl;
by STUDYID usubjid;
run;

data qs_ADSL;
merge qs_OVERALL(in=a) adsl(in=b);
by STUDYID usubjid;
if a;
run;

DATA ABLFL_MNW;
SET QS_ADSL;
WHERE . < PARAMN <= 23 or paramn in (66, 67, 68) ;
IF (. < QSDTC1 <= trtsdtm) or (qsdtc1 = . and . < qsdtc2 <= trtsdt);
RUN;

proc sort data=ablfl_MNW;
by usubjid paramn visitnum;
run;

data ablfl_MNW1;
set ablfl_MNW;
by usubjid paramn visitnum;
if last.paramn;
ablfl = "Y";
basec = avalc;
base = aval;
bsdt = qsdtc1;
run;

proc sql;
create table qs_ablfl as
select distinct a.*, b.ablfl, c.base, c.basec, c.bsdt
from qs_adsl as a
left join ablfl_MNW1 as b
on a.usubjid = b.usubjid and a.visitnum = b.visitnum and a.param = b.param AND A.QSDTC = B.QSDTC
left join ablfl_MNW1 as c
on a.usubjid = c.usubjid and a.param = c.param
order by a.usubjid, a.visitnum, a.paramn;
quit;

data qs_chg;
set qs_ablfl;
if nmiss(aval, base) = 0 and qsdtc1 >= bsdt then do;
chg = aval - base;
if base = 0 then base1 = 1;
else base1 = base;
pchg = ((aval-base)/base1)*100;
end;
run;

data qs_ftndsc;
set qs_chg;
where paramcd in ("FTNDSC");
qsdtc2 = input(qsdtc, is8601dt.);
format qsdtc2 is8601dt.;
if . < qsdtc2 < randdtm ;
run;

proc sort data=qs_ftndsc;
by usubjid visitnum;
run;

data qs_ftndsc1;
set qs_ftndsc;

```



```

by usubjid visitnum;
if last.visitnum;
basecat1 = avalcat1;
bsdt1 = qsdtc2;
FORMAT BSDT1 IS8601DT.;
run;

proc sql;
create table qs_ftoverall as
select distinct a.*, b.basecat1, bsdt1
from qs_chg as a
left join qs_ftndsc1 as b
on a.usubjid = b.usubjid and a.param = b.param
order by a.usubjid, a.visitnum, a.paramn;
quit;

data qs_ftoverall1;
length shift1 $50. DTYPE $10.;
set qs_ftoverall;
if paramcd = "FTNDSC" then do;
DTYPE = "SUM";
if qsdtc ne " " then qsdtc1 = input(qsdtc, is8601dt.);
if qsdtc1 > bsdt1 > . then do;
if basecat1 ne " " and avalcat1 ne " " then shift1 = strip(basecat1)||" to "||strip(avalcat1);
end;
end;
if paramcd = "MNWSRWDS" then dtype = "AVERAGE";
IF QSDTC1 = . AND QSDTC NE " " THEN QSDTC1 = INPUT(QSDTC, IS8601DA.);
run;

PROC SORT DATA=QS_FTOVERALL1(WHERE=(QSDTC NE " " AND AVALC NE " ")) OUT=QS_ANL;
BY USUBJID paramn visitnum QSDTC1;
RUN;

proc sort data=qs_anl;
by usubjid paramn visitnum ;
run;

DATA QS_ANL1;
LENGTH ANL01FL $2.;
SET QS_ANL;
BY USUBJID paramn visitnum ;
IF FIRST.visitnum;
ANL01FL = "Y";
RUN;

PROC SQL;
CREATE TABLE QS_ANL2 AS
SELECT DISTINCT A.*, B.ANL01FL
FROM QS_FTOVERALL1 AS A
LEFT JOIN QS_ANL1 AS B
ON A.USUBJID = B.USUBJID AND A.VISITNUM = B.VISITNUM AND A.PARAMN = B.PARAMN AND A.QSDTC = B.QSDTC
ORDER BY A.USUBJID, A.VISITNUM, A.PARAMN, A.QSDTC1;
QUIT;

DATA QS_ANL2;
SET QS_ANL2;
IF RANDFL NE "Y" THEN ANL01FL = " ";
RUN;

PROC SORT DATA=QS_ANL2 (WHERE=(AVALC NE " " AND PARAMCD = "MNWSRWDS")) OUT=QS_MNWS;
BY USUBJID PARAMN VISITNUM QSDTC1;
RUN;

DATA QS_MNWS1;
LENGTH AEOEFL $2.;
SET QS_MNWS;
BY USUBJID PARAMN VISITNUM QSDTC1;
IF LAST.PARAMN;
AEOEFL = "Y";
RUN;

PROC SQL;
CREATE TABLE QS_MNWS2 AS
SELECT DISTINCT A.*, B.AEOEFL
FROM QS_ANL2 AS A
LEFT JOIN QS_MNWS1 AS B
ON A.USUBJID = B.USUBJID AND A.VISITNUM = B.VISITNUM AND A.PARAMN = B.PARAMN AND A.QSDTC1 = B.QSDTC1

```

```
ORDER BY A.USUBJID, A.VISITNUM, A.PARAMN, A.QSDTC1;  
QUIT;
```

```
/* For AWRANGE */
```

```
DATA RANGE;  
SET SDTM.EX SDTM.DX;  
IF VISITNUM >= 100;  
IF DXSTDTC = " " THEN DXSTDTC1 = EXSTDTC;  
ELSE DXSTDTC1 = DXSTDTC;  
IF DXSTDTC1 NE " " AND LENGTH(STRIP(DXSTDTC1)) = 10 THEN DXSTDTC2 = STRIP(DXSTDTC1)||"T00:00:00";  
ELSE IF DXSTDTC1 NE " " AND LENGTH(STRIP(DXSTDTC1)) = 16 THEN DXSTDTC2 = COMPRESS(DXSTDTC1)||":00";  
DXSTDTC3 = INPUT(DXSTDTC2, IS8601DT.);  
TIME = INPUT(SCAN(DXSTDTC2, 2, "T"), TIME8.);  
FORMAT DXSTDTC3 IS8601DT. TIME TIME5.;  
RUN;
```

```
proc sort data=range;  
by usubjid visitnum time;  
run;
```

```
data range1;  
set range;  
by usubjid visitnum time;  
if first.visitnum;  
run;
```

```
proc sql;  
create table qs_range as  
select distinct a.*, b.time  
from qs_mnws2 as a  
left join range1 as b  
on a.usubjid = b.usubjid and a.visitnum = b.visitnum  
order by a.usubjid, a.visitnum, a.paramn, a.qsdct1;  
quit;
```

```
data qs_range1;  
length aperiodc $10. avisit $40. devwc $10. awrange $50. ASPERC $40. APUPERC $10. TRTA TRTP $40.;  
set qs_range;  
APERIOD = 1;  
APERIODC = "Period 1";  
qsdctc = qsdct;  
IF QSDTCx NE " " THEN do;  
adt = input(scan(qsdctc,1,"T"), is8601da.);  
atm = input(scan(qsdctc,2,"T"), time5.);  
if substr(qsdctc,11,1) = "T" then adtm = input(qsdctc, is8601dt.);  
format adtm datetime13.;  
end;  
format adt date9. atm time5.;  
if nmiss(adtm, trtsdt) = 0 then do;  
if adtm < trtsdt then aday = adtm - trtsdt;  
if adtm >= trtsdt then aday = adtm - trtsdt + 1;  
end;  
if parcat1n = 2 and aval ne . then do;  
AWLO=.;  
IF ATM>DHMS(0,10,0,0) THEN AWHI='10:00'T;  
ELSE AWHI=ATM;  
if visitnum = 106 then awhi = '06:30'T;  
if trt01a = "SA" then awhi = '10:00'T;  
if awhi ne . then AWRANGE="<"||STRIP(PUT(AWHI,TIME5.));  
  
IF QSSTAT NE 'NOT DONE' THEN DO;  
IF ATM>AWHI THEN DO;  
DEVN=CEIL((ATM-AWHI)/60);  
DEVWC=COMPRESS(PUT(CEIL((ATM-AWHI)/60),BEST.));  
END;  
END;  
  
IF NOT MISSING(DEVWC) THEN DO;  
IF INDEX(DEVWC, '-')=0 THEN DEVWC=CATS(CATS('+',DEVWC), ' min');  
ELSE IF INDEX(DEVWC, '-') THEN DEVWC=CATS(DEVWC, ' min');  
END;  
END;
```

```
if qscat in ("BEHAVIORAL RISK FACTOR SURVEILLANCE SYSTEM QUESTIONNAIRE",  
"SMOKING QUESTIONNAIRE", "SUPPLEMENTAL QUESTION") then do;  
awlo = '20:00'T;  
awhi = '23:00'T;
```

```

awrange = "20:00 to 23:00";
If ATM<AWLO then do;
  IF NMISST(ATM, AWLO) = 0 THEN DEVN=FLOOR((ATM-AWLO)/60);
    IF NMISST(ATM, AWLO) = 0 THEN DEVWC=COMPRESS(PUT(CEIL((ATM-AWLO)/60),BEST.));
end;
Else if ATM>AWHI then do;
  IF NMISST(ATM, AWHI) = 0 THEN DEVN=CEIL((ATM-AWHI)/60);
  IF NMISST(ATM, AWHI) = 0 THEN DEVWC = COMPRESS(PUT(CEIL((ATM-AWHI)/60), BEST.));
END;
END;

AVISITN = VISITNUM;
AVISIT = VISIT;
IF QSCAT in ('MINNESOTA NICOTINE DEPENDENCE/WITHDRAWAL SCALE','PROCHASKA STAGE OF CHANGE QUESTIONNAIRE')
AND UPCASE(DISCCAT) NOT IN (" " "COMPLETED") THEN DO;
/*If VISIT='DAY 6/DISCHARGE CONFINEMENT' and ADAY^= 6 then AVISIT should be set to the closest planned confinement visit. */
IF VISIT = "DAY 6/DISCHARGE CONFINEMENT" AND ADAY ^= 6 THEN DO;
IF 7 <= ADAY <= 31 THEN DO;
AVISIT = "DAY 30";
AVISITN = 130;
END;
IF 32 <= ADAY <= 61 THEN DO;
AVISIT = "DAY 60";
AVISITN = 160;
END;
END;
If VISIT='DAY 91/DISCHARGE AMBULATORY' then do;
if 7 <= aday <= 31 then do;
AVISIT='DAY 30';
avisitn = 130;
end;
else if 32 <= ADAY <= 61 then do;
AVISIT='DAY 60';
avisitn = 160;
end;
end;
end;

if . < AVISITN < 101 then ASPER=1;
Else If 101<=AVISITN<=106 then ASPER=2;
Else if 106<AVISITN<=191 then ASPER=3;
Else if AVISITN>191 then ASPER=4;

If ASPER = 1 THEN ASPERC = 'Pre-Randomization Period';
ELSE IF ASPER = 2 THEN ASPERC = 'Confinement Period';
ELSE IF ASPER = 3 THEN ASPERC = 'Ambulatory Period';
ELSE IF ASPER = 4 THEN ASPERC = 'Safety Follow-up Period';

If 101<=AVISITN<=106 then APUPER=1;
Else If 106<AVISITN<=131 then APUPER=2;
Else if 131<AVISITN<=161 then APUPER=3;
Else if 161<AVISITN<=191 then APUPER=4;

If APUPER = 1 THEN APUPERC = 'Period 1';
ELSE IF APUPER = 2 THEN APUPERC = 'Period 2';
ELSE IF APUPER = 3 THEN APUPERC = 'Period 3';
ELSE IF APUPER = 4 THEN APUPERC = 'Period 4';

TRTP = TRT01P;
TRTPN = TRT01PN;
TRTA = TRT01A;
TRTAN = TRT01AN;
format awlo awhi time5.;
RUN;

data adqsnd;
set qs_range1;
if paramtyp = " " then param = upcase(substr(strip(param),1,1))||lowercase(substr(strip(param),2));
if avalc ne " " and length(strip(avalc)) > 1 then avalc = upcase(substr(strip(avalc),1,1))||lowercase(substr(strip(avalc),2));
avisit = propcase(avisit);
run;

*****;
* create output dataset ;
*****;

options replace;

```

```
%m_attrib_adam (dset=ADQSND);

proc sort data=adqsnd out=adam.adqsnd(label="Nicotine Dependence Analysis Dataset") nodupkey dupout=dupx;
by USUBJID AVISITN PARCAT1 PARAMCD qsdtc qsseq;
run;

options noreplace;

proc printto; run;

%m_logchk;
```