

```

options notes nosource;
proc datasets lib=work nolist memtype=data kill; quit;
* macro to save output and log to appropriate areas ;
%_mprintto;
%put NOTE:
=====;
%put NOTE: Covance Study Number : 000000106326;
%put NOTE: Client Protocol ID : ZRHM-PK-05-JP;
%put NOTE: Program Name : d_2ADQSSU.sas;
%put NOTE: Purpose : create ADQSSU dataset;
%put NOTE: ;
%put NOTE: Input Data : STDLIB.ADQSSU SDTM.QS ADAM.ADSL;
%put NOTE: Output : ADAM.ADQSSU;
%put NOTE: Macros Called : _MPRINTTO _SCRAMBLE;
%put NOTE: ;
%put NOTE: Programmed by : cvn_kbooth;
%put NOTE: Creation Date : 2014-04-14;
%put NOTE: SAS Version : 9.3;
%put NOTE: ;
%put NOTE: == Latest Run
=====;
%put NOTE: Run by : &sysuserid;
%put NOTE: Date/Time :
%sysfunc(putn(%sysfunc(date()),e8601da.))T%sysfunc(putn(%sysfunc(time()),
e86011z.));
%put NOTE: ;
%put NOTE: == Modification History
=====;
%put NOTE: Date Initials No. Reason;
%put NOTE: 22Apr2014 KB 1) Added a format to AVISITN;
%put NOTE: 05Aug2014 KB 2) Added EXNOTRFL and NICOGR2 variables
to keep;
%put NOTE: 05Aug2014 KB 3) Added DEVN;
%put NOTE: 05Aug2014 KB 4) Amended format issue;
%put NOTE: 05Aug2014 KB 5) Amended format of AVISITN;
%put NOTE: 08Aug2014 KB 6) Amended key variables;
%put NOTE: 21Sep2014 KB 7) Amended ATPT derivation due to
change in SDTM;
%put NOTE: ;
%put NOTE: ;
%put NOTE:
=====;
options notes source source2 nofullstimer validvarname=upcase missing='
';
ods _all_ close;
ods listing;

*=====;
* START OF PROGRAM CODE ;
*=====;
*****;
* bring in ADSL ;
*****;

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data adsl;
    set adam.adsl;
    keep studyid usubjid subjid: siteid age sex: race height weightb1
bmi ucpdgr1 ucpdgr1n nicogr1 nicogr1n NICOGR2 NICOGR2N targr1 targr1n /*
2) KB 05Aug2014 */
    enrfl scrfl complfl saffl pprotfl randfl trt: trt01:
trt02: tr01: tr02: dthfl enfl exfl fupfl analgr1 analgr1n EXNOTRFL; /* 2)
KB 05Aug2014 */
run;

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*****;
* bring in QS ;
*****;

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data qs;
    set sdtm.qs(where = (qscat = 'QUESTIONNAIRE ON SMOKING URGES'));
    format paramcd $8. parcat1 $200. parcat2 $200. avisit atpt $40.
paramn parcat1n parcat2n atptn 8. aval best. param $100. avalc $50. adt
date9.
    adtm datetime13. atm time5. AVISITN /*BEST.*/8.; /* 1) KB 22Apr2014
*/ /* 5) KB 05Aug2014 */
    * parameter variables ;
    parcat1 = propcase(qscat);
    parcat1n = 1;

    if qstestcd in ('QSU01' 'QSU03' 'QSU06' 'QSU07' 'QSU10') then do;
        parcat2 = 'Factor 1 - Reward';
        parcat2n = 1;
    end;
    else if qstestcd in ('QSU02' 'QSU04' 'QSU05' 'QSU08' 'QSU09') then
do;
        parcat2 = 'Factor 2 - Relief';
        parcat2n = 2;
    end;

    paramcd = qstestcd;
    param = propcase(qstest, '.');

    paramn = input(substr(qstestcd,4),best.);

    * analysis variables ;
    if qsstresc='STRONGLY DISAGREE' then aval=1;
    else if qsstresc='DISAGREE' then aval=2;
    else if qsstresc='SOMEWHAT DISAGREE' then aval=3;
    else if qsstresc='DO NOT AGREE OR DISAGREE' then aval=4;
    else if qsstresc='SOMEWHAT AGREE' then aval=5;
    else if qsstresc='AGREE' then aval=6;
    else if qsstresc='STRONGLY AGREE' then aval=7;
    else put 'USER WARN' 'ING: check response as not in codelist: '
qstestcd = qsstresc = ;
    avalc = propcase(qsstresc, '.');

    * visit details ;
    avisit = propcase(visit);

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    avisitn = visitnum;

    * dates;
    if length(qsdtc) gt 10 then do;
/*      adtm = input(qsdtc,e8601dt.);*/
      ADTM =
DHMS(INPUT(SCAN(QSDTC,1,'T'),YYMMDD10.),HOUR(INPUT(SCAN(QSDTC,2,'T'),TIME
5.)),MINUTE(INPUT(SCAN(QSDTC,2,'T'),TIME5.)),0); /* 4) KB 05Aug2014 */
      adt = datepart(adtm);
      atm = timepart(adtm);
    end;
    else if length(qsdtc) = 10 then adt = input(qsdtc,yyymmdd10.);

    * Determining time points;
    if qstpt = /*'INITIAL ASSESSMENT QSU'*/'WITHIN 15 MINUTES PRIOR TO
PRODUCT USE' then do; /* 7) KB 21Sep2014 */
      atpt='15 min < T0';
      atptn=0;
    end;
    else if qstpt=/*'WINDOW 1'*/'15MIN' then do; /* 7) KB 21Sep2014 */
      atpt='T0 + 15 min';
      atptn=6;
    end;
    else if qstpt=/*'WINDOW 2'*/'30MIN' then do; /* 7) KB 21Sep2014 */
      atpt='T0 + 30 min';
      atptn=8;
    end;
    else if qstpt=/*'WINDOW 3'*/'45MIN' then do; /* 7) KB 21Sep2014 */
      atpt='T0 + 45 min';
      atptn=9;
    end;
    else if qstpt=/*'WINDOW 4'*/'1H' then do; /* 7) KB 21Sep2014 */
      atpt='T0 + 60 min';
      atptn=10;
    end;
    else if qstpt=/*'WINDOW 5'*/'2H' then do; /* 7) KB 21Sep2014 */
      atpt='T0 + 2 h';
      atptn=11;
    end;
    else if qstpt=/*'WINDOW 6'*/'4H' then do; /* 7) KB 21Sep2014 */
      atpt='T0 + 4 h';
      atptn=12;
    end;
    else if qstpt=/*'WINDOW 7'*/'6H' then do; /* 7) KB 21Sep2014 */
      atpt='T0 + 6 h';
      atptn=13;
    end;
    else if qstpt=/*'WINDOW 8'*/'9H' then do; /* 7) KB 21Sep2014 */
      atpt='T0 + 9 h';
      atptn=14;
    end;
    else if qstpt=/*'WINDOW 9'*/'12H' then do; /* 7) KB 21Sep2014 */
      atpt='T0 + 12 h';
      atptn=15;

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end;
else put "USER WARN" "ING: Check QSTPTs for missing ones " qstpt=;

keep usubjid qsseq param: parcat: aval: avisit: adt: atm qsstat
qsreasnd qsdte qsdty atpt atptn epoch;
run;

* derive factor scores ;
proc sort data = qs;
  by usubjid parcat1n parcat2n avisitn adtm adt atm atpt atptn epoch;
run;

proc summary data = qs noprint;
  var aval;
  by usubjid parcat1n parcat1 parcat2n parcat2 avisitn avisit adtm
  adt atm atpt atptn epoch;
  output      out = mfactor(drop = _)      mean = mean n = n nmiss =
  nmiss;
run;

* derive overall score;
proc sort data = qs;
  by usubjid parcat1n avisitn adtm adt atm atpt atptn epoch;
run;

proc summary data = qs noprint;
  var aval;
  by usubjid parcat1n parcat1 avisitn avisit adtm adt atm atpt atptn
  epoch;
  output      out = mttotal(drop = _)      mean = mean n = n nmiss =
  nmiss;
run;

data mean(drop = n nmiss);
  set mfactor(in = a) mttotal(in = b);
  format paramcd $8. paramn 8. param $100. paramtyp dtype $10. aval
  best. avalc $50.;
  paramtyp = 'DERIVED';
  dtype = 'AVERAGE';
  if nmiss = 0 or (nmiss > 0 and (n/nmiss)*100 > 50) then do;
  aval=mean;
  avalc = strip(put(aval,best.));
  if parcat2n = 1 then do;
    paramcd = 'QSUFAC1';
    paramn = 11;
    param = 'Reward';
  end;
  else if parcat2n = 2 then do;
    paramcd = 'QSUFAC2';
    paramn = 12;
    param = 'Relief';
  end;
  else do;
    paramcd = 'QSUTOTAL';

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                paramn = 13;
                param = 'Total Score';
            end;
        end;
    else do;
        aval = .;          * > 50% missing;
        avalc = ' ';
    end;
run;

proc sort data=mean(where=(atpt='15 min < T0')) out=mean2;
    by usubjid parcat1n parcat2n avisitn atm;
run;

data mean3;
    set mean2;
    by usubjid parcat1n parcat2n avisitn atm;
    attrib ablfl2 length=$2.;

    if not missing(atm) and not missing(aval) then ablfl2='Y';
run;

proc sort data=mean3(where=(ablfl2='Y')) out=mean4;
    by usubjid parcat2n avisit;
run;

data mean5;
    set mean4;
    by usubjid parcat2n avisit;
    attrib ablfl length=$2.;

    if (first.avisit or last.avisit) then ablfl='Y';
run;

proc sort data=mean5;
    by usubjid parcat1n parcat2n avisitn atm;
run;

proc sort data=mean;
    by usubjid parcat1n parcat2n avisitn atm;
run;

data mean6;
    merge mean mean5;
    by usubjid parcat1n parcat2n avisitn atm;
run;

proc sort data=mean6;
    by usubjid parcat1n parcat2n avisitn atm;
run;

data mean7;
    set mean6;
    by usubjid parcat1n parcat2n avisitn atm;

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        attrib aeofl length=$2.;

        if last.avisitn and last.atm then aeofl='Y';
run;

* set together ;
data qs2;
    set qs mean7;
run;

data change;
    set qs2;
run;

proc sort data = change;
    by usubjid paramn avisitn atptn ;
run;

data change2;
    set change;
    by usubjid paramn avisitn atptn ;
    format anl01fl $2.;

    * determine if any unscheduled;
    if index(upcase(avisitn),'UNSCHEDULED') or paramcd = 'QSALL' then
anl01fl = ' ';
    else if last.atptn and first.atptn = 0 then anl01fl = ' ';
    else anl01fl = 'Y';
    if anl01fl = ' ' then put 'Check reason for exclusion from
analysis: ' usubjid = param = avisitn = ;
run;

*merge back onto data;
data qs3;
    set change2;
run;

*****;
* Combine ADSL and QS data *;
*****;
* treatment period;
%_mtotper;

data slqssu;
    merge adsl qs3(in = a);
    by usubjid;
    if a;          * only include subjects with data ;
    format aperiod trtan trtpn aday /*DEVN*/ 8. trta trtp $40. aperiodc
$8. awlo awhi time8. awrange $50.; /* 4) KB 05Aug2014 */ /* 5) KB
08Aug2014 */
    aday = adt - trtsdt + 1;
    * allocate treatment and period;
    if aday in (0 1) then aperiod=1;
    else if aday in (2 3) then aperiod=2;

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    %_mperall(dvar1 = adtm, dvar2 = adt);
    if not missing(aperiod) then do;
        aperiodc = 'Period ' || put(aperiod,1.);
    end;

    if trta='NRT gum' and atpt='T0 + 15 min' then do;
        atpt='T0 + 20 min';
        atptn=7;
    end;

    if atpt='15 min < T0' then do;
        if avisit='Day 1' then do;
            awlo=tr01stm-dhms(0,0,15,0);
            awhi=tr01stm;
            awrange=strip(put(awlo,time8.))||'-
'||strip(put(awhi,time8.));
        end;
        else if avisit='Day 3' then do;
            awlo=tr02stm-dhms(0,0,15,0);
            awhi=tr02stm;
            awrange=strip(put(awlo,time8.))||'-
'||strip(put(awhi,time8.));
        end;
    end;
    else if atpt='T0 + 15 min' then do;
        if avisit='Day 1' then do;
            awlo=tr01stm+dhms(0,0,15,0);
            awhi=tr01stm+dhms(0,0,25,0);
            awrange=strip(put(awlo,time8.))||'-
'||strip(put(awhi,time8.));
        end;
        else if avisit='Day 3' then do;
            awlo=tr02stm+dhms(0,0,15,0);
            awhi=tr02stm+dhms(0,0,25,0);
            awrange=strip(put(awlo,time8.))||'-
'||strip(put(awhi,time8.));
        end;
    end;
    else if atpt='T0 + 20 min' then do;
        if avisit='Day 1' then do;
            awlo=tr01stm+dhms(0,0,20,0);
            awhi=tr01stm+dhms(0,0,30,0);
            awrange=strip(put(awlo,time8.))||'-
'||strip(put(awhi,time8.));
        end;
        else if avisit='Day 3' then do;
            awlo=tr02stm+dhms(0,0,20,0);
            awhi=tr02stm+dhms(0,0,30,0);
            awrange=strip(put(awlo,time8.))||'-
'||strip(put(awhi,time8.));
        end;
    end;
    else if atpt='T0 + 30 min' then do;
        if avisit='Day 1' then do;

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        awlo=tr01stm+dhms(0,0,30,0);
        awhi=tr01stm+dhms(0,0,40,0);
        awrange=strip(put(awlo,time8.))||'-
'||strip(put(awhi,time8.));
    end;
    else if avisit='Day 3' then do;
        awlo=tr02stm+dhms(0,0,30,0);
        awhi=tr02stm+dhms(0,0,40,0);
        awrange=strip(put(awlo,time8.))||'-
'||strip(put(awhi,time8.));
    end;
end;
else if atpt='T0 + 45 min' then do;
    if avisit='Day 1' then do;
        awlo=tr01stm+dhms(0,0,45,0);
        awhi=tr01stm+dhms(0,0,55,0);
        awrange=strip(put(awlo,time8.))||'-
'||strip(put(awhi,time8.));
    end;
    else if avisit='Day 3' then do;
        awlo=tr02stm+dhms(0,0,45,0);
        awhi=tr02stm+dhms(0,0,55,0);
        awrange=strip(put(awlo,time8.))||'-
'||strip(put(awhi,time8.));
    end;
end;
else if atpt='T0 + 60 min' then do;
    if avisit='Day 1' then do;
        awlo=tr01stm+dhms(0,1,0,0);
        awhi=tr01stm+dhms(0,1,10,0);
        awrange=strip(put(awlo,time8.))||'-
'||strip(put(awhi,time8.));
    end;
    else if avisit='Day 3' then do;
        awlo=tr02stm+dhms(0,1,0,0);
        awhi=tr02stm+dhms(0,1,10,0);
        awrange=strip(put(awlo,time8.))||'-
'||strip(put(awhi,time8.));
    end;
end;
else if atpt='T0 + 2 h' then do;
    if avisit='Day 1' then do;
        awlo=tr01stm+dhms(0,2,0,0);
        awhi=tr01stm+dhms(0,2,10,0);
        awrange=strip(put(awlo,time8.))||'-
'||strip(put(awhi,time8.));
    end;
    else if avisit='Day 3' then do;
        awlo=tr02stm+dhms(0,2,0,0);
        awhi=tr02stm+dhms(0,2,10,0);
        awrange=strip(put(awlo,time8.))||'-
'||strip(put(awhi,time8.));
    end;
end;
end;

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else if atpt='T0 + 4 h' then do;
  if avisit='Day 1' then do;
    awlo=tr01stm+dhms(0,4,0,0);
    awhi=tr01stm+dhms(0,4,10,0);
    awrange=strip(put(awlo,time8.))||'-
'||strip(put(awhi,time8.));
  end;
  else if avisit='Day 3' then do;
    awlo=tr02stm+dhms(0,4,0,0);
    awhi=tr02stm+dhms(0,4,10,0);
    awrange=strip(put(awlo,time8.))||'-
'||strip(put(awhi,time8.));
  end;
end;
else if atpt='T0 + 6 h' then do;
  if avisit='Day 1' then do;
    awlo=tr01stm+dhms(0,6,0,0);
    awhi=tr01stm+dhms(0,6,10,0);
    awrange=strip(put(awlo,time8.))||'-
'||strip(put(awhi,time8.));
  end;
  else if avisit='Day 3' then do;
    awlo=tr02stm+dhms(0,6,0,0);
    awhi=tr02stm+dhms(0,6,10,0);
    awrange=strip(put(awlo,time8.))||'-
'||strip(put(awhi,time8.));
  end;
end;
else if atpt='T0 + 9 h' then do;
  if avisit='Day 1' then do;
    awlo=tr01stm+dhms(0,9,0,0);
    awhi=tr01stm+dhms(0,9,10,0);
    awrange=strip(put(awlo,time8.))||'-
'||strip(put(awhi,time8.));
  end;
  else if avisit='Day 3' then do;
    awlo=tr02stm+dhms(0,9,0,0);
    awhi=tr02stm+dhms(0,9,10,0);
    awrange=strip(put(awlo,time8.))||'-
'||strip(put(awhi,time8.));
  end;
end;
else if atpt='T0 + 12 h' then do;
  if avisit='Day 1' then do;
    awlo=tr01stm+dhms(0,12,0,0);
    awhi=tr01stm+dhms(0,12,10,0);
    awrange=strip(put(awlo,time8.))||'-
'||strip(put(awhi,time8.));
  end;
  else if avisit='Day 3' then do;
    awlo=tr02stm+dhms(0,12,0,0);
    awhi=tr02stm+dhms(0,12,10,0);
    awrange=strip(put(awlo,time8.))||'-
'||strip(put(awhi,time8.));
  end;
end;

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        end;
    end;

    if param not in ('Reward','Relief','Total Score') then anl01fl = '
';
run;

data slqssu2;
    set slqssu;
    format devwc $10. DEVN 8.; /* 5) KB 08Aug2014 */

    if qsstat ne 'NOT DONE' then do;
        if atm<awlo then do;
            devwc=compress(put(floor((atm-awlo)/60),best.));
        end;
        else if atm>awhi then do;
            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;

    IF NOT MISSING(AWLO) AND ATM<AWLO then DEVN=(FLOOR((ATM-AWLO)/60));
/* 5) KB 05Aug2014 */
    ELSE IF NOT MISSING(AWHI) AND ATM>AWHI then DEVN=CEIL((ATM-AWHI)/60);
/* 5) KB 05Aug2014 */

run;

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

options replace;

data adqssu;
    set stdlib.adqssu slqssu2;
    drop trt01p: trt01a: trt02p: trt02a: mean ablf1 ablf12 aeofl;
run;

proc sort data = adqssu out = adam.adqssu(label = 'Smoking Urges Analysis
Dataset');
/*    by usubjid avisitn;*/
    BY USUBJID AVISITN PARAMCD ATPTN; /* 6) KB 08Aug2014 */
run;

options noreplace;

%_scramble(set=adqssu, id=usubjid subjid subjidn age sex sexc sexn race
dthfl height weightbl bmi ucpdgr1 ucpdgrln nicogr1

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        nicogrln targr1 targrln analgr1 analgrln, dates=devwc
awrange awlo awhi atpt atptn avisit avisitn
        qsdtc qsdym adt adtm atm aday aperiod aperiodc epoch,
        nullc=trtp trta trtseqp trtsega trtstmf tr01stmf tr02stmf,
nulln=trtsdtm trtsdt trtsday trtedtm trtedt trteday tr01sdt tr01stm
tr01sdtm tr01edt tr01etm tr01edtm /* 13) KB 29Mar2014 */
        tr02sdt tr02stm tr02sdtm tr02edt tr02etm tr02edtm trtpn trtan
trtseqp trtsega, nullcc=7, nullnc=22);

proc printto; run;
*=====;
* END OF PROGRAM CODE ;
*=====;

```