

```

%_mprintto;
options notes nosource;
proc datasets lib=work nolist memtype=data kill; quit;
/* Standard - leave this */
%let TFL_Part=%scan(&_SASPROGRAMFILE,-3,%str(/));

/* Standard - leave this */
data _null_;
    tmp="%TFL_Part";
    if tmp not in ("dev" "qc") then call symput("TFL_Part", "prod");
    call symput('TFLpath', compress("&_SASPROGRAMFILE",""));
run;
%put NOTE:
=====;
%put NOTE: Covance Study Number : 000000106326;
%put NOTE: Client Protocol ID   : ZRHM-PK-05-JP;
%put NOTE: Program Name        : t_anlpk32.sas;
%put NOTE: Purpose              : table and figure of primary PK data by
sex and nicotine data;
%put NOTE: ;
%put NOTE: Input Data           : ADAM.ADPP;
%put NOTE: Output               : L_15_04_03_02(PK) T_15_2_3_02(PK) ;
%put NOTE: Macros Called        : _MPRINTTO;
%put NOTE: ;
%put NOTE: Programmed by        : cvn_ahall;
%put NOTE: Creation Date        : 2014-02-06;
%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: 24Jun2014  AMH         1) Conservative rounding for the CV,
SD and 95% CI ;
%put NOTE: 24Jun2014  AMH         2) Small n in statistics row;
%put NOTE: 24Jun2014  AMH         3) correct gmean statistic to read:
Geometric LS Mean (CV%);
%put NOTE: 24Jun2014  AMH         4) Ammend Footnotes;
%put NOTE: 24Jun2014  AMH         5) Add PK listing to reference list;
%put NOTE: 24Jun2014  AMH         6) Add where clause used on dataset;
%put NOTE: 24Jun2014  APH         7) Amend Menthol to menthol in
footnote;
%put NOTE: 07Aug2014  AMH         8) Ammend typo (Nicotine) in listing
title;
%put NOTE: 07Aug2014  AMH         9) CEnter Output;
%put NOTE: ;
%put NOTE:
=====;

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options notes source source2 nofullstimer validvarname=upcase missing=' '
NOQUOTELENMAX/*turn off warnings about quoted strings to long*;;
ods _all_ close;
ods listing;

/*formats macro and appendix output macros*/
%include
"/cvn/projects/prj/development/000000106326/dev/adhoc/TMPLTMIX.sas";

*=====;
* START OF PROGRAM CODE ;
*=====;

*****;
* read in data ;
*****;
/* Calculate totals for products */

data adsl;
    set adam.adsl(where=(pprotfl='Y'));
    if analgrln=1 then do;
        if index(trt01a,'THS 2.2') or index(trt02a,'THS 2.2') then
colord=1;
        output;
        if index(trt01a,'CC') or index(trt02a,'CC') then colord=2;
        output;
    end;
    else if analgrln=2 then do;
        if index(trt01a,'THS 2.2') or index(trt02a,'THS 2.2') then
colord=1;
        output;
        if index(trt01a,'NRT') or index(trt02a,'NRT') then colord=2;
        output;
    end;
    else if missing(analgrln) then delete;
run;

proc sort data=adsl nodupkey out=adsl1;
    by analgrln analgrl colord sexn subjid;
run;

proc freq data=adsl1(where=(not missing(colord))) noprint;
    table analgrln*analgrl*colord*sexn/ out=totals2(drop=percent
rename=(count=total));
run;

data _null_;
    set totals2;
    where analgrln=1;
    call
symput('tot'||strip(put(colord,best.))||strip(put(sexn,best.))||'1',strip
(put(total,best.)));
run;

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proc sort data=adsl nodupkey out=adsl1;
    by analgr1n analgr1 colord nicogr1n subjid;
run;

proc freq data=adsl1(where=(not missing(colord))) noprint;
    table analgr1n*analgr1*colord*nicogr1n/ out =totals3(drop=percent
rename=(count=total));
run;

data _null_;
    set totals3;
    where analgr1n=1;
    call
symput('tot' || strip(put(colord,best.)) || strip(put(nicogr1n,best.)) || '2',s
trip(put(total,best.)));
run;

data adpp;
    attrib byvarlab length=$50 treat length=$15;
    set adam.adpp;
    where anl01fl='Y' and analgr1n=1 and paramcd in ('CMAX','AUCLST') and
not missing(aval);
    if paramcd='CMAX' then param=tranwrd(param,'max','`{sub max}');
    if paramcd='AUCLST' then param=tranwrd(param,'(0-last)','`{sub(0-
last)}');
    treat=trta;
    byvarn=sexn; byvarlab=sexc; output;
    byvarn=nicogr1n+2; byvarlab=nicogr1; output;
run;

/*Count number of datapoints for each subject and parameter*/
proc sql;
create table adpp1 as
select *, count(distinct trtan) as trtcount
from adpp
group by paramcd, subjid;
quit;

/* take logs and exclude subjects with <2 timepoints*/
data adpp2 noanal;
    set adpp1;
    if trtcount>1 and aval not in (.,0) then do;
        logaval=log(aval);
        output adpp2;
    end;
    else output noanal;
run;

/*treatment and parameter formats to display text rather than numbers for
listing*/
%fmt(datain=adpp2, start=byvarn, label=byvarlab, name=byvar);

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%fmt(datain=adpp2, start=paramn, label=param, name=param);

data adppmod;
    set adpp2;
    format paramn param. byvarn byvar. ;
run;

proc sort data=adppmod; by paramn byvarn subjid; run;

title1 j=1 "PAGESPLIT"; /*do not change*/
title2 j=1 'Parameter: #byval1 By Group: #byval2';
title3 j=1 'Proc GLM Procedure';
TITLE4 J=L "The where clause used on the dataset adam.adpp: anl01fl='Y'
and pprotfl='Y'"; /* 6) AMH 24Jun2014 */
%let tflno=L_15_04_03_02(PK);

%mixout1(fileout=/cvn/projects/prj/data/000000106326/TFL/&TFL_Part./&tflno);
options ps=27;

proc glm data=adppmod order=internal;
by paramn byvarn;
class subjid trtseqa treat aperiodc;
model logaval= trtseqa subjid(trtseqa) aperiodc treat ;
lsmeans treat / pdiff=control('mCC') alpha=0.05 cl;
output out=pred p=pred r=resid;
ods output lsmeancl=lsmeans;
ods output lsmeandiffcl=diffs;
ods output FitStatistics=mse;
run;

/*Residual Plots*/
title3 j=1 'Residual Plots';
options ps=26; /*change this for proc plot*/

proc rank data=pred out=resid normal=vw ;
by paramn byvarn;
ranks nscore;
var resid;
run;

proc plot data=resid hpercent=50;
by paramn byvarn;
plot resid*pred / vref=0;
plot resid*nscore;
run;
quit;

%mixout2(blankn=70, halfblnk=Y,title=Listing 15.4.3.2 Analysis of
Primary Pharmacokinetic Paramters of Nicotine by Sex and Nicotine Level -
Group-1 PK Population);

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/*data counts*/
proc univariate data=adppmod noprint;
  by paramn byvarn;
  class treat;
  var logaval;
  output out=num1 n=n1;
run;

data diffs1;
  merge diffs mse;
  by paramn byvarn;
run;

/*Manipulate datasets for output all relevent stats on each row*/
/*_____*/
data tabout;
  length out $100 stat $100;
  set lsmeans(in=a) diffs1(in=b) num1(in=c) ;
  analgr1n=1;
  /*ordering columns of treatmments*/
  if b then colord=3;
  else if treat='THS 2.2 Menthol' then colord=1;
  else if treat='mCC' then colord=2;

  /* N row*/
  if c then do;
    ord=1;
    stat=/'N'/'n'; /* 2) AMH 24Jun2014 */
    out=compress(put(n1,best.));
    output;
  end;

  if a or b then do;
    /*Back transformation*/
    if a then estimatee=exp(lsmean);
    if b then estimatee=exp(difference);
    lowerc=exp(lowercl);
    upperc=exp(uppercl);
    geocv=100*sqrt(exp(rootmse**2)-1);
  /*Gmean (CV%) row*/
    ord=2;
    stat=/'GMean (CV%)'/'Geometric LS Mean (CV%)'; /* 2) AMH
24Jun2014 */
    if colord=3 then
out=compress(put(round(100*estimatee,0.01),8.2))||'
('||compress(put(/'round(geocv,0.01)'/CEIL(GEOCV*100)/100,8.2))||')'; /*
1) AMH 24Jun2014 */
    else out=compress(put(round(estimatee,0.01),8.2));
    output;
  /*95% CI row*/
    ord=3;
    stat='95% CI';

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        if colord=3 then
out=compress(put(/*round(100*lowere,0.01)*/FLOOR(100*100*LOWERE)/100,8.2)
)||',
'||compress(put(/*round(100*uppere,0.01)*/CEIL(100*100*UPPERE)/100,8.2));
/* 1) AMH 24Jun2014 */
        else
out=compress(put(/*round(lowere,0.01)*/FLOOR(100*LOWERE)/100,8.2))||',
'||compress(put(/*round(uppere,0.01)*/CEIL(100*UPPERE)/100,8.2)); /* 1)
AMH 24Jun2014 */
        output;
        end;

/*Precision Row*/
        if b then do;
            ord=4;
            stat='Precision';
            out=compress(put(/*round*/ceil(100*100*max(abs(estimatee-
lowere),abs(estimatee-uppere)))/100/*,0.01)*/,8.2)); /* 1) AMH 24Jun2014
*/
            output;
            end;

run;

/*page numbers*/
data paging;
    set tabout;
    by analgrln;
    if byvarn<3 then page=1;
    else page=2;
    colord1=(2*colord)+mod(byvarn-1,2)-1;
    if last.analgrln then call symput("tpage",compress(put(page,best.)));
run;

proc sort data=paging;
    by page analgrln paramn ord colord1;
run;

proc transpose data=paging out=ttabout(drop=_NAME_) prefix=col;
    by page analgrln paramn ord stat;
    id colord1;
    var out;
run;

/* Standard - macro for paging */
%macro outrtf(blankn=68, halfblnk=N, ref=);

/* treatment column headers and footnotes */
/*group 1*/

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%let col11=THS 2.2 Menthol;
%let col21=mCC;
%let col31=THS 2.2 Menthol:mCC Ratio (%);

%let lab11=Male;
%let lab21=Female;
%let lab12=<= 0.6mg;
%let lab22=> 0.6 mg#- 1 mg;

%let foot1=%str(mCC = menthol conventional cigarettes); /* 7) APH
24Jun2014 */

%if &halfblnk=N %then %let halfblnk=;
%else %if &halfblnk=Y %then %let halfblnk=~;

/* Standard - just change the number to match the listing you're working
on. Also change the letters in the*/
/* bracket, eg ccb = current cigarette brands. Make sure to do this at
the top of the code too. */

%let tflno=T_15_02_03_02(PK);

/* Standard - leave this */
%let TFL_Part=%scan(&_SASPROGRAMFILE,-3,%str());

/* Standard - leave this */
data _null_;
    tmp="%TFL_Part";
    if tmp not in ("dev" "qc") then call symput("TFL_Part", "prod");
    call symput('TFLpath', compress("&_SASPROGRAMFILE",""));
run;

/* Standard - leave this */
options number nodate orientation=landscape papersize=&p_pgsz missing='
' NOQUOTELNMAX/*turn off warnings about quoted strings too long*/;
ods escapechar='`';
%let linetop = \brdrt\brdrs\brdrw30; * needs to be 1.5pt so calculated
in twips (1/20 pt) ;
%let linebot = \brdrb\brdrs\brdrw30;
%let linebot2 = \brdrb\brdrs\brdrw15;

ods path stdlib.tl06326 (read) ;
ods results off;
ods rtf toc_data/* contents*/
file="/cvn/projects/prj/data/000000106326/TFL/&TFL_Part./&tflno..rtf"
style=tl06326 startpage=yes headery=1440 footery=1440 ;
ods noproctitle;

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%do i=1 %to &tpage;

ODS PROCLABEL = ' ';
title ;
footnote;
%let wd=0;

data comp;
    set ttabout end=eof;
    by paramn ord;
    where page=&i;
    flag=1;
    call symput('grp',compress(put(analgrln,best.)));
    /* Amend title as needed */
    _firtitl="Table 15.2.3.2    Analysis of Primary Pharmacokinetic
Parameters of Nicotine by Sex and Nicotine Level - \line Group-1 PK
Population";
    _upcas=(length(_firtitl)-
length(compress(_firtitl,'ABCDEFGHIJKLMNOPQRSTUVWXYZ')))/2;
    len=&blankn.-length("(Page &i of &tpage)");
    if eof then do;
        call symput('_FSRTITL', trim(left(_firtitl)));
        call symput('_blankn', compress(put(len,best.)));
    end;
    drop _firtitl _upcas len;
run;

ods listing close;

* most set up in template others below;
* title arial 12pt bold with 12pt paragraph space below;
* all headers to be arial 11pt bold;
* data arial 10pt;
* headers to be central, text values left aligned and numeric centered
around decimal point;
/* Update with your variables as needed */
proc report data = comp headline headskip missing nowd spanrows split =
'#'
%IF &I=1 %THEN %DO; CONTENTS=' ' %END; %ELSE %DO; CONTENTS='' %END;;
    column flag page paramn ord stat ("&&col1&grp &linebot" col1 col2)
    ("&&col2&grp &linebot" col3 col4) ("&&col3&grp &linebot" col5 col6);

    define flag / order noprint;
        define page          / order order = internal noprint;
        define paramn        / group style={just=left cellwidth=2.2cm}
"Variable";
        define ord           / order order=internal noprint;
        define stat          / display style={just=left cellwidth=2.4cm}
"Statistic";

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```

        define col1          / display style={just=c/*d*/ cellwidth=1.2cm}
style(header)={just=center} "&&lab1&i#(N=&&tot11&i)";
        define col2          / display style={just=c/*d*/ cellwidth=1.2cm}
style(header)={just=center} "&&lab2&i#(N=&&tot12&i)";
        define col3          / display style={just=c/*d*/ cellwidth=1.2cm}
style(header)={just=center} "&&lab1&i#(N=&&tot21&i)";
        define col4          / display style={just=c/*d*/ cellwidth=1.2cm}
style(header)={just=center} "&&lab2&i#(N=&&tot22&i)";
        define col5          / display style={just=c/*d*/ cellwidth=1.4cm}
style(header)={just=center} "&&lab1&i";
        define col6          / display style={just=c/*d*/ cellwidth=1.4cm}
style(header)={just=center} "&&lab2&i";

        break after page / page;

        break before flag / page %IF &I=1 %THEN %DO;
                CONTENTS="&_FSRTITL" %END; %ELSE %DO; CONTENTS='' %END;;

        compute before page / style={protectspecialchars=off};
                line "&linetop";
        endcomp;
/**/
/*      compute after page / style={just=left cellwidth=5cm
protectspecialchars=off};*/
/*      line "&linebot" ;*/
/*      endcomp;*/

        compute before _page_ / style={just=left protectspecialchars=off};
                line "\b\fs24\sa24&_FSRTITL." ; * \b = bold, \fs24 is font
size 12pt, \sa24 is space after 12pt;
                line "&linebot";
        endcomp;

        compute after paramn;
                line " ";
        endcomp;

/* 4) AMH 24Jun2014 */
        compute after _page_ / style={just=left protectspecialchars=off
pretext="&linetop."};
/*      line 'Note: GMean and 95%CI are the adjusted geometric least
squares means and confidence intervals from an ANOVA model conducted on
log-transformed data with sequence, subject within sequence, period and
product exposure as fixed effect factors. Geometrical CV% of the ratio is
estimated from the residual mean square error.';*/
                line "Note:  &&foot&grp; THS = Tobacco Heating System.";
                LINE 'Note: Geometric LS Mean and 95% CI are the adjusted
geometric least squares means based on an ANOVA model. Geometrical CV% of
the ratio is estimated only for the ratio. Precision is the largest
difference between the 95% CI bounds and the mean';
/*      line "Note: Precision is the largest difference between the 95%
CI bounds and the Mean";*/
                line "";
                line "Appendix &ref.";

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        line "Path: &TFLpath." &_blankn.*"\~\~" "(Page &i of
&tpage)";
        line "Program Run: &sysdate   &sysuserid   Program Status:
&status";
        endcomp;

run;
%end;
ods rtf close;
ods results on;
ods path reset;

%mend ;

%outrtf(blankn=70, halfblnk=N, ref=15.4.3.2 and 15.3.3.1); /* 5) AMH
24Jun2014 */

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

```