

```

%_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_anlpk31.sas;
%put NOTE: Purpose              : table and figure of primary PK data;
%put NOTE: ;
%put NOTE: Input Data           : ADAM.ADPP;
%put NOTE: Output               : L_15_04_03_01(PK) T_15_2_3_01(PK) ;
%put NOTE: Macros Called        : _MPRINTTO;
%put NOTE: ;
%put NOTE: Programmed by        : cvn_ahall;
%put NOTE: Creation Date        : 2014-04-06;
%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        2) Conservative rounding for the CV, SD
and 95% CI;
%put NOTE: 24Jun2014  AMH        3) Small n in statistics row;
%put NOTE: 24Jun2014  AMH        4) correct gmean statistic to read:
Geometric LS Mean (CV%);
%put NOTE: 24Jun2014  AMH        5) Update footnotes;
%put NOTE: 24Jun2014  AMH        6) Add PK listing to reference list;
%put NOTE: 24Jun2014  AMH        7) Add where clause used on dataset to
listing;
%put NOTE: 07Aug2014  AMH        8) Ammend Typo in titles;
%put NOTE: 07Aug2014  AMH        9) Center outptut;
%put NOTE: 07Aug2014  AMH        10) add proc freq to output ;
%put NOTE: ;
%put NOTE:
=====;
options notes source source2 nofullstimer validvarname=upcase missing=' '
NOQUOTELNMAX/*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 ;
*=====;

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 subjid;
run;

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

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

*****;
* read in data ;
*****;
proc sort data=adam.adpp(where=(crit3fl ne 'Y' and pprotfl='Y' and
analgrln=1 and paramcd in ('CMAX','AUCLST') and not missing(aval)))
  out=adpp;
  by subjid paramcd;

```

```

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 paramcd='CMAX' then param1=tranwrd(param,'max','`{sub max}');
if paramcd='AUCLST' then param1=tranwrd(param,'(0-last)','`{sub(0-
last)}');
    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=paramn, label=param1, name=param); /* 11) AMH
07Aug2014 */

data adppmod;
    attrib treat length=$15;
    set adpp2;
    format paramn param. ;
    treat=trta;
run;

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

title1 j=1 "PAGESPLIT"; /*10) AMH 02Jul2014 */
/*title2 j=1 'Parameter: #byvall'; */
/*title3 j=1 'Proc GLM Procedure';*/
/*TITLE2 J=L 'Proc Freq Procedure';*/
/* TITLE3 J=L "The where clause used on the dataset adam.adpp:
pprotfl='Y' and anl01fl='Y'"; */ /* 7) AMH 20Jun2014 */ /* 11) AMH
02Jul2014 */
%let tflno=L_15_04_03_01(PK);

%mixout1(fileout=/cvn/projects/prj/data/000000106326/TFL/&TFL_Part./&tfln
o);
options ps=28;

/**/

```

```

/*PROC FREQ DATA=ADPPMOD; */
/*      TABLE PARAM*TREAT / CROSSLIST;*/
/*RUN;*/

title2 j=1 'Parameter: #byvall1'; /* 11) AMH 02Jul2014 */
title3 j=1 'Proc GLM Procedure';
TITLE4 J=L "The where clause used on the dataset adam.adpp: pprotfl='Y'
and anl01fl='Y'";

proc glm data=adppmod order=internal;
by paramn;
class subjid trtsega treat aperiodc;
model logaval= trtsega subjid(trtsega) 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=27; /*change this for proc plot*/

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

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

%mixout2(blankn=70, halfblnk=Y,title=Listing 15.4.3.1 Analysis of
Primary Pharmacokinetic Parameters of Nicotine - Group-1 PK Population);
/* 8) AMH 07Aug2014 */

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

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

```

```

/*Manipulate datasets for output all relevent stats on each row*/
/*_____*/
data tabout;
  length out $100 stat $100;
  set lsmeans(in=a) diffls1(in=b) num1(in=c) ;
  analgrln=1;
  /*ordering columns of treatmnts*/
  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';
    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);
    lowere=exp(lowercl);
    uppere=exp(uppercl);
    geocv=100*sqrt(exp(rootmse**2)-1);
    /*Gmean (CV%) row*/
    ord=2;
    stat=/'GMean (CV%)'/'Geometric LS Mean (CV%)'; /* 3) 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))||')'; /*
2) AMH 24Jun2014 */
    else out=compress(put(round(estimatee,0.01),8.2));
    output;
    /*95% CI row*/
    ord=3;
    stat='95% CI';
    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));
/* 2) 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)); /* 2)
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)); /* 2) AMH
24Jun2014 */
        output;
    end;

run;

options replace;

/*transpose for output*/
proc sort data=tabout;
    by analgrln paramn ord colord;
run;

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

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

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

/*group 1*/
%let col11=THS 2.2 Menthol#(N=&tot11);
%let col21=mCC#(N=&tot21);
%let col31=THS 2.2 Menthol:mCC#Ratio (%);
%let foot1=%str(mCC = menthol conventional cigarettes); /* 5) AMH
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_01(PK);

    options replace;
    data table.T_15_02_03_1;
    set ttabout;
    run;
    options noreplace;

```

```

/* 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;

/*page numbers*/
data paging;
    set ttabout;
    by analgrln;
    page=1;
    if last.analgrln then call symput("tpage",compress(put(page,best.)));
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;

%do i=1 %to &tpage;

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

data comp;
    set paging end=eof;
    by paramn ord;
    where page=&i;
    flag=1;
    call symput('grp',compress(put(analgrln,best.)));
    /* Amend title as needed */
    _firtitl="Table 15.2.3.1 Analysis of Primary Pharmacokinetic
Parameters of Nicotine - 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 coll col2 col3;

    define flag / order noprint;
        define page          / order order = internal noprint;
        define paramn        / group order=internal style={just=left
cellwidth=2.5cm} "Variable";
        define ord           / order order=internal noprint;
        define stat          / display style={just=left cellwidth=3cm}
"Statistic";
        define coll          / display style={just=c/*d*/ cellwidth=3cm}
style(header)={just=center} "&&coll&grp"; /* 9) AMH 07Aug2014 */
        define col2         / display style={just=c/*d*/ cellwidth=3cm}
style(header)={just=center} "&&col2&grp"; /* 9) AMH 07Aug2014 */
        define col3         / display style={just=c/*d*/ cellwidth=3cm}
style(header)={just=center} "&&col3&grp"; /* 9) AMH 07Aug2014 */

        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;

    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.";
        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=15.4.3.1 and 15.3.3.1); /* 6) AMH
24Jun2014 */

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

```