

```

%_mprintto;
options notes nosource;
proc datasets lib=work nolist memtype=data kill; quit;
%put NOTE:
=====;
%put NOTE: Covance Study Number : 000000106326;
%put NOTE: Client Protocol ID   : ZRHM-PK-05-JP;
%put NOTE: Program Name        : f_pkprim.sas;
%put NOTE: Purpose              : Figure of primary parameters of
nicotine group-1;
%put NOTE: ;
%put NOTE: Input Data           : ADAM.ADPP;
%put NOTE: Output               : f_15_1_1_1(pkprim);
%put NOTE: Macros Called        : _MPRINTTO;
%put NOTE: ;
%put NOTE: Programmed by        : cvn_jhardman;
%put NOTE: Creation Date        : 2014-06-05;
%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: 11Aug2014  JMH        1) Added CI to Gmean and amended
symbols to be consistent with PK-02;
%put NOTE: 22Sept14   CK         2) Add excel output;
%put NOTE: 22Sept14   CK         3) Move title and footnoet outside
graph;
%put NOTE:
=====;
options notes source source2 nofullstimer validvarname=upcase missing='
';
ods _all_ close;
ods listing;

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

/* 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=F_15_01_01_01(pkprim);

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

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/* 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;

/* Example of basic GTL syntax */
ods _all_ close;
%let temp=/cvn/projects/prj/development/000000106326/dev/macro/;

/* Ensure ODS listing, html etc is turned off to prevent */
/* temporary or junk image files being produced */
options notes source source2 nofullstimer validvarname=upcase
nonumber nodate orientation=portrait papersize=&p_pgsz missing=' ';
ods graphics on; /* As we are effectively using ODS graphics we need to
ensure that it is turned on */
ods graphics / height=18cm width=18cm noborder noscale; /* Removes border
around the image */
ods path reset;
/* please include styles template */
%include "&temp.figtmp.sas";

ods rtf toc_data
file="/cvn/projects/prj/data/000000106326/TFL/&TFL_Part/&tflno..rtf"
style=t106326_g startpage=yes headery=1440 footery=1440 ;
ods escapechar='|';
ods exclude all;

proc sort data = adam.adpp(where=(pprotfl='Y' and analgr1 = "Group-1" and
paramn in(1 2) and anl01fl='Y')) out = adpp;
    by paramn trtan;
run;

data adpp2;
    set adpp;

    if param='AUC(0-last) (h*ng/mL)' then paramn=2;
    else if param='Cmax (ng/mL)' then paramn=1;

    if trtan=4 then trtan=1;
    else if trtan=5 then trtan=2;
run;

data gmean;
    set adpp2;
    statval=aval;
    if statval>0 then ln_statval=log(statval);
    else if statval=0 then flag=1;

run;

```

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proc sort data=gmean;
  by paramn avalu trtan trta flag;
run;

proc means data=gmean alpha=0.05 noprint;
  output out=gmean1b mean=mean std=std1 lclm=lci1 uclm=uci1 nmiss=miss;
  var ln_statval;
  by paramn param avalu trtan trta;
run;

proc means data=gmean(where=(flag=1)) noprint;
  output out=gmean1a(keep=param paramn avalu trtan trta flag) mean=mean;
  var ln_statval;
  by paramn param avalu trtan trta flag;
run;

data gmean1c;
  merge gmean1a gmean1b;
  by paramn param avalu trtan trta;
run;

data gmean2;
  set gmean1c;
  if flag ne 1 then do;
    gmean=exp(mean);
    LCLM=EXP(LCI1); /* 1) JMH 11Aug2014 */
    UCLM=EXP(UCI1); /* 1) JMH 11Aug2014 */
  end;

  keep paramn param trtan trta gmean LCLM UCLM; /* 1) JMH 11Aug2014 */
run;

title;
footnote;

data pp_gmean; /* paging is derived normally as with RTF type TFL */

  set gmean2 adpp2;

  if not missing(gmean) then do;
    geomean=round(gmean,0.01);
  end;
run;

data pp_gmean2;
  set pp_gmean;
  format trtan 8.1;

  if geomean ne . then do;
    if trta='THS 2.2 Menthol' then trtan=trtan-0.1;
    else if trta='mCC' then trtan=trtan+0.1;
  end;

```

```

run;

proc sort data=pp_gmean2;
    by paramn param trtan;
run;

data paging;
    set pp_gmean2 end=last;
    by paramn param trtan;
    if first.paramn then ln+1;

    page = 1;

    if param='AUC(0-last) (h*ng/mL)' then plotnum=2;
    else if param='Cmax (ng/mL)' then plotnum=1;

    if last then call symput("maxpage", compress(put(page,best.)));
    if last then call symput("plot",compress(put(plotnum,best.)));
run;

proc sort data=paging ;
    by page ln plotnum;
run;

/* 2) START CK 22Sep2014 */
PROC SQL;
CREATE TABLE PAGING2 AS
SELECT USUBJID, PARAM, TRTA, GMEAN, LCLM, UCLM, AVAL
FROM PAGING;
QUIT;

PROC EXPORT
DATA=PAGING2
DBMS=XLSX
OUTFILE="/cvn/projects/prj/data/000000106326/TFL/&TFL_Part./&tflno..xlsx"
REPLACE;
SHEET=Sheet1;
/* 2) END CK 22Sep2014 */

proc format;
    value xaxis

                                0=" "
                                0.5=" "
                                1="THS 2.2 Menthol"
                                1.5=" "
                                2="mCC";

run;

%macro graph();

%do i=1 %to &maxpage; /* paging can either be done through a do loop or
multiple macro calls */

data paging&i.;

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set paging;
by page ln plotnum;
where page=&i.;

    if plotnum=1 then do;
        gmean1=geomean;
        aval1=aval;
                                LCI1=LCLM;    /* 1) JMH 11Aug2014 */
                                UCI1=UCLM;    /* 1) JMH 11Aug2014 */
    end;
    else if plotnum=2 then do;
        gmean2=geomean;
        aval2=aval;
                                LCI2=LCLM;    /* 1) JMH 11Aug2014 */
                                UCI2=UCLM;    /* 1) JMH 11Aug2014 */
    end;

run;

proc sort data=paging&i.;
    by usubjid paramn param trtan trta;
run;

    data plot&i.;
        set paging&i.;
    run;

proc sort data=plot&i. out=paramlbl&i.(keep=param analgrln analgr1 paramn
param plotnum) nodupkey;
    by paramn param;
run;

%let twoplots=0;

data _null_;
    set paramlbl&i.;
    if plotnum eq 2 then call symput('twoplots',1);

    call symput("paramlbl", trim(left((param))));
    call symput("analgrln", trim(left((analgrln))));
    call symput("analgr1", trim(left((analgr1))));
    call symput("paramn", trim(left((paramn))));
    call symput("plotnum", trim(left((plotnum))));
    call symput('param'||compress(plotnum),trim(left(param)));
run;

proc template;
define statgraph splot /store = work.templat;

    begingraph / border=false ;
        /* 3) CK 22Sep14 */

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```

/*          entrytitle halign=left "Figure 15.1.1.1 Primary
Pharmacokinetic Parameters of Nicotine - Group -1 PK Population"; */
/*      ENTRYTITLE HALIGN=LEFT "Figure 15.1.1.1 Primary Pharmacokinetic
Parameters of Nicotine -"; */ /* 1) JR 10Jun2014 */
/*      ENTRYTITLE HALIGN=LEFT "Group -1 PK Population"; */
/*      entrytitle halign=left " "; */

/*      entryfootnote halign=left " "; */
/*      ENTRYFOOTNOTE HALIGN=LEFT {unicode '25a0'x} ' Geometric Means
and 95%CI, O Original values' ; */ /* 1) JMH 11Aug2014 */
/*      entryfootnote halign=left "Note: mCC = menthol conventional
cigarettes; THS = Tobacco Heating System."; */ /* 1) JMH 11Aug2014 */
/*      entryfootnote halign=left "● Geometric Means, O
Original values"; */
/*      entryfootnote halign=left "Note: mCC = Menthol conventional
cigarettes; THS = Tobacco Heating System."; */
/*      entryfootnote halign=left " "; */
/*      entryfootnote halign=left "Appendix 15.2.4.5, 15.3.3.1"; */
/*      entryfootnote halign=left "Path: &TFLpath." halign=right "(Page
&i of &maxpage)"; */
/*      entryfootnote halign=left "Program Run: &sysdate  &sysuserid
Program Status: &status"; */

/* needs to be wrapped by an extra layout lattice to be able to set plots
side by side or one on top of the other */
    layout lattice / columns=1 rows=2 columngutter=2px
columnndatarange=union rowndatarange=union;

    cell;
        cellheader;
            entry halign=left " ";
            entry halign=left "Parameter: &param1.";
            entry halign=left " ";
        endcellheader;
        layout overlay / cycleattrs=true
                                xaxisopts=(label=" ")
linearopts=(tickvaluelist=(1 2)                                viewmin=0.8
viewmax=2.2))
                                yaxisopts=(label="&param1.")
cycleattrs=true;

                                seriesplot x=trtan y=avall / primary=true
group=subjid display=(markers)

                                markerattrs=graphdatal(symbol=circle color=black)
lineattrs=(color=black pattern=solid);
                                scatterplot x=trtan y=gmean1 / YERRORLOWER=LCI1
YERRORUPPER=UCI1
markerattrs=graphdatadefault(symbol=SQUAREFILLED/*circlefilled*/ /* 1)
JMH 11Aug2014 */

                                color=black);

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        endlayout;
    endcell;

%if &twoplots. eq 1 %then %do;

    cell;
        cellheader;
            entry halign=left " ";
            entry halign=left "Parameter: &param2.";
            entry halign=left " ";
        endcellheader;
        layout overlay /
                                xaxisopts=(label=" "
linearopts=(tickvaluelist=(1 2)                                viewmin=0.8
viewmax=2.2))
                                yaxisopts=(label="&param2.")
cycleattrs=true;

                                seriesplot x=trtan y=aval2 / primary=true
group=subjid display=(markers)

                                markerattrs=graphdata1(symbol=circle color=black)
lineattrs=(color=black pattern=solid);
                                scatterplot x=trtan y=gmean2 / YERRORLOWER=LCI2
YERRORUPPER=UCI2
markerattrs=graphdatadefault(symbol=SQUAREFILLED/*circlefilled*/ /* 1)
JMH 11Aug2014 */

                                color=black);

        endlayout;
    endcell;

%end;

endLayout;

    endgraph;
end;
run;

ods select all;
/* 3) START CK 22Sep2014 */
ODS ESCAPECHAR='^';
ODS RTF PREPAGE="^S={outputwidth=100% just=l font_size=12pt
font_weight=bold background=white foreground=black
font_face=arial}^R/RTF'\QL' Figure 15.1.1.1 Primary Pharmacokinetic
Parameters of Nicotine - Group -1 PK Population";
/* 3) END CK 22Sep2014 */

proc sgrender data=plot&i. template=splot; /* applies the above
template to the specified data */

```

```

        format trtan xaxis.;

run;

/* 3) START CK 22Sep2014 */
ODS RTF TEXT="^S={outputwidth=100% just=l font_size=9pt background=white
foreground=black font_face=arial}^R/RTF'\QL'";
ODS RTF TEXT="^S={outputwidth=100% just=l font_size=9pt background=white
foreground=black font_face=arial}^R/RTF'\QL' ^{unicode '25a0'x} Geometric
Means and 95%CI, O Original values";
ODS RTF TEXT="^S={outputwidth=100% just=l font_size=9pt background=white
foreground=black font_face=arial}^R/RTF'\QL' Note: mCC = menthol
conventional cigarettes; THS = Tobacco Heating System.";
ODS RTF TEXT="^S={outputwidth=100% just=l font_size=9pt background=white
foreground=black font_face=arial}^R/RTF'\QL'";
ODS RTF TEXT="^S={outputwidth=100% just=l font_size=9pt background=white
foreground=black font_face=arial}^R/RTF'\QL' Appendix 15.2.4.5,
15.3.3.1";
ODS RTF TEXT="^S={outputwidth=100% just=l font_size=9pt background=white
foreground=black font_face=arial}^R/RTF'\QL' Path: &TFLpath.
(Page &i of &maxpage)";
ODS RTF TEXT="^S={outputwidth=100% just=l font_size=9pt background=white
foreground=black font_face=arial}^R/RTF'\QL' Program Run: &sysdate
&sysuserid Program Status: &status";
/* 3) END CK 22Sep2014 */

/*ods exclude all;*/ /*To be excluded from all codes*/

%end;

%mend graph;

%graph;

proc printto;
run;

ods rtf close;
ods listing;
ods select all;

*=====;
* END OF PROGRAM CODE;
*=====;

```