

```

%_mprintto;
options notes nosource;
proc datasets lib=work nolist memtype=data kill; quit;
%put NOTE:
=====;
%put NOTE: Covance Study Number : 000000106324;
%put NOTE: Client Protocol ID   : ZRHR-REXC-03-EU;
%put NOTE: Program Name        : f_hpma2.sas;
%put NOTE: Purpose              : Figure of 3-HPMA excreted over 24 hrs
FAS;
%put NOTE: ;
%put NOTE: Input Data           : ADAM.ADBX;
%put NOTE: Output               : f_15_1_2_2 (hpma);
%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: 11Jun2014  JMH        1) Amended title and footnote;
%put NOTE: 11Jun2014  JMH        2) Put the 1 in the y axis label in
square brackets;
%put NOTE: 19Jun2014  JMH        3) Added units to y axis label;
%put NOTE: 19Jun2014  KB         4) Removed footnote;
%put NOTE: 22Jun2014  JMH        5) Amended axis and added footnote;
%put NOTE: 23Jun2014  JMH        6) Amended y axis;
%put NOTE: 24Jun2014  JMH        7) Removd Day -1;
%put NOTE: 06Aug2014  JMH        8) Added proc printto;
%put NOTE: 15Sep2014  JMH        9) Added XLS output;
%put NOTE: 15Sep2014  JMH       10) Amended title and footnotes;
%put NOTE: ;
%put NOTE:
=====;
options notes source source2 nofullstimer validvarname=upcase missing='
';
ods _all_ close;
ods listing;

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

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/* 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_02_02(hpma);

/* 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;

/* Example of basic GTL syntax */
ods _all_ close;
%let temp=/cvn/projects/prj/development/000000106324/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=12cm width=16cm noborder; /* Removes border around
the image */
ods path reset;
/* please include styles template */
%include "&temp.figtmpplt.sas";

ods rtf toc_data
file="/cvn/projects/prj/data/000000106324/TFL/&TFL_Part/&tflno..rtf"
style=t106324_g startpage=yes headery=1440 footery=1440 ;

ods exclude all;

data adbx1;
    set adam.adbx(where=(anl02fl='Y' and fasfl ='Y' and lbstat ne 'NOT
DONE' and paramcd in ('U3HPM24U')));
run;

data adbx2;
    set adbx1;
run;

data gmean;
    set adbx2;
    statval=aval;
    if statval ne 0 then ln_statval=log(statval);

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        else gflag=1;
run;

proc sort data=gmean; by param avalu trtan trta avisitn avisit; run;

proc means data=gmean(where=(gflag=1)) noprint;
    output out=gmeanla(keep=param avalu trtan trta avisitn avisit gflag)
mean=mean ;
    var ln_statval;
    by param avalu trtan trta avisitn avisit gflag;
run;

proc means data=gmean alpha=0.05 noprint;
    output out=gmeanlb mean=mean std=stdl lclm=lci1 uclm=uci1;
    var ln_statval;
    by param avalu trtan trta avisitn avisit;
run;

data gmean2;
    merge gmeanla gmeanlb;
    by param avalu trtan trta avisitn avisit;
    attrib tpt format = best.;

if gflag ne 1 then do;
    gmean=exp(mean);
    lclm=exp(lci1);
    uclm=exp(uci1);
end;

    avisit1=left(strip(tranwrd(avisit,'Day ','')));
    tpt=input(avisit1,best.);

    keep param avalu trtan trta avisitn avisit gmean lclm uclm tpt;
run;

/*Use a proc summary to find the maximum value of the Y axis which needs
to be presented for the first plot*/
proc summary data=gmean2;
    by param;
    var uclm;
    output out =axislmax max=max1;
run;

proc summary data=gmean2;
    by param;
    var lclm;
    output out =axislmin min=min1;
run;

data maxaxis1;
    merge axislmax axislmin;
    by param;

    max2=(ceil(max1));

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        min2=(floor(min1));

        /*Use mod 2 to ensure axis limit is an even number so the increment
can be 2*/
        if mod(max2,2)=0 then max=max2;
        else if mod(max2,2)=1 then max=max2+1;

        if mod(min2,2)=0 then min=min2;
        else if mod(min2,2)=1 then min=min2-1;

        keep param max: min;;
run;

data adbx3;
    merge gmean2 maxaxis1;
    by param;

    IF AVISITN=99 THEN DELETE; /* 7) JMH 24Jun2014 */

run;

/* 9) start JMH 15Sep2014 */
PROC SQL;
CREATE TABLE ADBX3_X AS
SELECT PARAM, TRTA, AVISIT, GMEAN, LCLM, UCLM
FROM ADBX3;
QUIT;

PROC EXPORT
DATA=ADBX3_X
DBMS=XLSX
OUTFILE="/cvn/projects/prj/data/000000106324/TFL/&TFL_Part./&tflno..xlsx"
REPLACE;
SHEET=Sheet1;
/* 9) end JMH 15Sep2014 */

PROC FORMAT; /* 5) JMH 22Jun2014 */
    VALUE XAXIS
/*
        -1='-1'*/ /* 7) JMH 24Jun2014 */
        0='Baseline'
        1='1'
        2='2'
        3='3'
        4='4'
        5='5';

RUN;

title;
footnote;

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

    set adbx3 end=last;

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page = 1;
if last then call symput("maxpage", compress(page));

run;

%macro graph();

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

    data plot;
        set paging;
        where page = &i;
        call symput("unit",strip(avalu));
        call symput("max1",max);
    run;

    proc template;
        define statgraph splot /store = work.templat;
            begingraph /;
/*
                entrytitle halign=left "Figure 15.1.2.2 Urinary 3-HPMA
Quantity Excreted over 24 hours Mean and 95% CI - FAS" /*;*/
                /* ENTRYTITLE HALIGN=LEFT "Figure 15.1.2.2 Urinary 3-HPMA
Quantity Excreted over 24 hours (&unit) Geometric Mean and 95% CI - FAS"
/*;*/ /* 1) JMH 11Jun2014 */ /* 10) JMH 15Sep2014 */
/*
                                entrytitle halign=left " "
/*;*/ /* 10) JMH 15Sep2014 */
                layout overlay / border=false
xaxisopts=(linearopts=(tickvaluesequence=(start=0/*-1*/ end=5
increment=1)) label="Study Day")
yaxisopts=(LINEAROPTS=(TICKVALUESEQUENCE=(START=0 END=2000 INCREMENT=500)
VIEWMIN=0 VIEWMAX=2000) label=/"3-HPMA (&UNIT) [1]"/"3-HPMA (&UNIT)"
/*LABELATTRS=(SIZE=10.5PT)*/) cycleattrs=false; /* 2) JMH 11Jun2014 */
/* 3) JMH 19Jun2014 */ /* 4) KB 19Jun2014 */ /* 6) JMH 23Jun2014 */ /*
7) JMH 24Jun2014 */
                seriesplot x=tpt y=gmean / index=trtan primary=true
group=trta display=(markers) legendlabel="mean" name="series";
                /*referenceline y=0.5 / ;*/ /*This would be the BLOQ
value*/
                scatterplot x=tpt y=gmean / index=trtan group=trta
yerrorlower=lclm yerrorupper=uclm
                legendlabel="mean" name="scatter" ;
                discretelegend "series";
            endlayout;
            /* footnotes work using the same option as the entrytitle
statement */
            /* 10) start JMH 15Sep2014 */
/*
                entryfootnote halign=left " " ;*/
/*
                                entryfootnote halign=left
"Note: [1] Urinary 3-HPMA Quantity Excreted over 24 hours";*/
                                /*ENTRYFOOTNOTE HALIGN=LEFT
"Note: [1] Urinary 3-HPMA Quantity Excreted over 24 hours (&unit)"; *//*
1) JMH 11Jun2014 */ /* 4) KB 19Jun2014 */

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/*                                     entryfootnote halign=left
"Note: CC = Conventional cigarettes; SA = Smoking abstinence; THS =
Tobacco Heating System";*/
/*                                     ENTRYFOOTNOTE HALIGN=LEFT
"Baseline is defined as the last assessment prior to 06:29 AM on Day
1.";*/ /* 5) JMH 22Jun2014 */
/*                                     entryfootnote halign=left "
";*/
/*                                     entryfootnote halign=left "Appendix 15.2.4.4,
15.3.3.1";*/
/*ENTRYFOOTNOTE HALIGN=LEFT "Appendix 15.2.4.4"; */ /* 1)
JMH 11Jun2014 */
/*                                     entryfootnote halign=left "Path: &TFLpath."
halign=right "(Page &i of &maxpage)"; */
/*                                     entryfootnote halign=left "Program Run: &sysdate
&sysuserid   Program Status: &status";*/
/* 10) end JMH 15Sep2014 */
    endgraph;
    end;
run;

ods select all;

/* 10) start JMH 15Sep2014 */
ODS ESCAPECHAR='^';
ODS RTF PREPAGE="^S={outputwidth=100% just=1 font_size=12pt
font_weight=bold background=white foreground=black
font_face=arial}^R/RTF'\QL' Figure 15.1.2.2 Urinary 3-HPMA Quantity
Excreted over 24 hours (&unit) Geometric Mean and 95% CI - FAS";
/* 10) end JMH 15Sep2014 */

proc sgrender data=plot template=splot; /* applies the above
template to the specified data */
    FORMAT TPT XAXIS.; /* 5) JMH 22Jun2014 */
run;

/* 10) start JMH 15Sep2014 */
ODS RTF TEXT="^S={outputwidth=100% just=1 font_size=9pt background=white
foreground=black font_face=arial}^R/RTF'\QL'";
ODS RTF TEXT="^S={outputwidth=100% just=1 font_size=9pt background=white
foreground=black font_face=arial}^R/RTF'\QL' Note: CC = Conventional
cigarettes; SA = Smoking abstinence; THS = Tobacco Heating System.";
ODS RTF TEXT="^S={outputwidth=100% just=1 font_size=9pt background=white
foreground=black font_face=arial}^R/RTF'\QL' Note: Baseline is the last
assessment prior to first product use in CC/THS 2.2 arms on Day 1 or last
assessment prior to 06:29 AM in SA arm on Day 1.";
ODS RTF TEXT="^S={outputwidth=100% just=1 font_size=9pt background=white
foreground=black font_face=arial}^R/RTF'\QL'";
ODS RTF TEXT="^S={outputwidth=100% just=1 font_size=9pt background=white
foreground=black font_face=arial}^R/RTF'\QL' Appendix 15.2.4.4";
ODS RTF TEXT="^S={outputwidth=100% just=1 font_size=9pt background=white
foreground=black font_face=arial}^R/RTF'\QL' Path: &TFLpath.
(Page &i of &maxpage)";

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```
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";
```

```
/* 10) end JMH 15Sep2014 */
```

```
%end;
```

```
%mend graph;
```

```
%graph;
```

```
PROC PRINTTO; RUN; /* 8) JMH 06Aug2014 */
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```
/*ods exclude all;*/ /*Do not use this line of code as it causes issues  
when running tables and listings after figures*/
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```
ods _all_ close;
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ods graphics / reset;
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