

```

%_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_mhbmachg.sas;
%put NOTE: Purpose              : Figure of MHBMA change from baseline
FAS;
%put NOTE: ;
%put NOTE: Input Data           : ADAM.ADBX;
%put NOTE: Output               : f_15_1_1_6(mhbm);
%put NOTE: Macros Called        : _MPRINTTO;
%put NOTE: ;
%put NOTE: Programmed by        : cvn_jhardman;
%put NOTE: Creation Date        : 2014-06-06;
%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: 09Jun2014  JR        1) Amended 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  JMH       4) Plotted 0 and Day 0, and a
horizontal line at y =0;
%put NOTE: 19Jun2014  JMH       5) Added % into the title;
%put NOTE: 19Jun2014  JMH       6) Plotted 0 on teh y axis;
%put NOTE: 19Jun2014  JMH       7) Amended axis and footnote for
baseline;
%put NOTE: 19Jun2014  JMH       8) Removed flag and footntoe;
%put NOTE: 23Jun2014  JMH       9) Amended y axis;
%put NOTE: 06Aug2014  JMH      10) Added proc printto;
%put NOTE: 15Sep2014  JMH      11) Added XLS output ;
%put NOTE: 16Sep2014  JMH      12) Amended title and footnotes;
%put NOTE: 19SEP2014  JM       13) Updated title to keep unit display
in one line;
%put NOTE: ;
%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_06(mhbm);

/* 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_pgsize 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.figtmp1t.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 ('UMHBMCRE')));
run;

data adbx2;
    set adbx1;

```

```

        where avisitn /*gt*/GE 100; /*Only need days after baseline*/ /* 4)
JMH 19Jun2014 */
        IF AVISITN = 100 THEN PCHG=0; /* 4) JMH 19Jun2014 */
run;

```

```

data mean;
    set adbx2;
    statval=pchg;
run;

```

```

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

```

```

proc means data=mean alpha=0.05 noprint;
    output out=mean1 mean=mean std=std1 lclm=lcil uclm=ucil;
    var statval;
    by param avalu trtan trta avisitn avisit;
run;

```

```

data mean2;
    set mean1 ;
    by param avalu trtan trta avisitn avisit;
    attrib tpt format = best.;

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

    keep param avalu trtan trta avisitn avisit mean lcil ucil 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=mean2;
    by param;
    var ucil;
    output out =axis1max max=max1;
run;

```

```

proc summary data=mean2;
    by param;
    var lcil;
    output out =axis1min min=min1;
run;

```

```

data maxaxis1;
    merge axis1max axis1min;
    by param;

    max2=(ceil(max1));
    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 abs(mod(min2,2))=0 then min=min2;
        else if abs(mod(min2,2))=1 then min=min2-1;

        keep param max: min;;
run;

data adbx3;
    merge mean2 maxaxis1;
    by param;

run;

/* 11) start JMH 15Sep2014 */
PROC SQL;
CREATE TABLE ADBX3_X AS
SELECT PARAM, TRTA, AVISIT, MEAN, LCI1, UCI1
FROM ADBX3;
QUIT;

PROC EXPORT
DATA=ADBX3_X
DBMS=XLSX
OUTFILE="/cvn/projects/prj/data/000000106324/TFL/&TFL_Part./&tflno..xlsx"
REPLACE;
SHEET=Sheet1;
/* 11) end JMH 15Sep2014 */

PROC FORMAT; /* 7) JMH 19Jun2014 */
    VALUE XAXIS
        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;
    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);
        call symput("min1",min);
    run;

    proc template;
        define statgraph splot /store = work.templat;
            begingraph /;
/*          entrytitle halign=left "Figure 15.1.1.6 MHBMA Urinary
Concentration Adjusted for Creatinine (&unit) Change from Baseline Mean
and 95% CI - FAS" /*;*/
                /*ENTRYTITLE HALIGN=LEFT "Figure 15.1.1.6 MHBMA Urinary
Concentration Adjusted for Creatinine (&unit) % Change from Baseline Mean
and 95% CI - FAS" /*;*/ /* 5) JMH 19Jun2014 */ /* 12) JMH 16Sep2014 */
/*          entrytitle halign=left " " /*;*/ /* 12) JMH 16Sep2014 */
                layout overlay / border=false
xaxisopts=(linearopts=(tickvaluesequence=(start=0/*1*/ end=5
increment=1)) label="Study Day")
yaxisopts=(linearopts=(tickvaluesequence=(start=-100/*-95*/
end=50/*100*//*105*/ increment=25/*40*/) viewmin=-100/*-95*/
viewmax=50/*100*//*105*/) label=/"MHBMA (&UNIT) [1]"/"MHBMA (&UNIT)"
/*LABELATTRS=(SIZE=9.5PT)*/) cycleattrs=false; /* 2) JMH 11Jun2014 */ /*
3) JMH 19Jun2014 */ /* 4) JMH 19Jun2014 */ /* 6) JMH 19Jun2014 */ /*
7) JMH 19Jun2014 */ /* 9) JMH 23Jun2014 */
                seriesplot x=tpt y=mean / index=trtan primary=true
group=trta display=(markers) legendlabel="mean" name="series";
                /*referenceline y=0.5 / ;*/ /*This would be the BLOQ
value*/
                                                                    REFERENCELINE
Y=0 /*; /* 4) JMH 19Jun2014 */
                scatterplot x=tpt y=mean / index=trtan group=trta
yerrorlower=lci1 yerrorupper=uci1
                legendlabel="mean" name="scatter" ;
                discretelegend "series";
            endlayout;
            /* footnotes work using the same option as the entrytitle
statement */
            /* 12) start JMH 16Sep2014 */
/*          entryfootnote halign=left " "/*;*/
                /*ENTRYFOOTNOTE HALIGN=LEFT
"Note: Baseline = Day 0"; /*/* 1) JR 09Jun2014 */
/*          entryfootnote halign=left
"Note: CC = Conventional cigarettes; SA = Smoking abstinence; THS =
Tobacco Heating System";*/
/*          ENTRYFOOTNOTE HALIGN=LEFT
"Note: % change from baseline, where baseline is defined as the last
assessment prior to 06:29 AM on Day 1."/*;*/ /* 7) JMH 19Jun2014 */

```

```

/*                                     entryfootnote halign=left
"Note: [1] MHBMA Urinary Concentration Adjusted for Creatinine
(&unit)";*/ /* 8) JMH 19Jun2014 */
/*                                     entryfootnote halign=left "
";*/
/*                                     entryfootnote halign=left "Appendix 15.2.3.7,
15.3.3.1";*/
/*                                     entryfootnote halign=left "Appendix 15.2.3.7";*/ /* 1)
JR 09Jun2014 */
/*                                     entryfootnote halign=left "Path: &TFLpath."
halign=right "(Page &i of &maxpage)"; */
/*                                     entryfootnote halign=left "Program Run: &sysdate
&sysuserid   Program Status: &status";*/
/* 12) end JMH 16Sep2014 */
    endgraph;
    end;
run;

ods select all;

/* 12) start JMH 16Sep2014 */
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 15.1.1.6 MHBMA Urinary Concentration
Adjusted for Creatinine      (&unit) % Change from Baseline Mean and 95%
CI - FAS"; /*13) JM 19SEP2014*/
/* 12) end JMH 16Sep2014 */

proc sgrender data=plot template=plot; /* applies the above
template to the specified data */
    FORMAT TPT XAXIS.; /* 7) JMH 19Jun2014 */
run;

/* 12) start JMH 16Sep2014 */
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' Note: CC = Conventional
cigarettes; SA = Smoking abstinence; 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' Note: % change from
baseline, where 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=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 15.2.3.7";
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";
/* 12) end JMH 16Sep2014 */

%end;
%mend graph;
%graph;
PROC PRINTTO; RUN; /* 10) JMH 06Aug2014 */
/*ods exclude all;*/ /*Do not use this line of code as it causes issues
when running tables and listings after figures*/
ods _all_ close;
ods graphics / reset;
```