

Titles and Footnotes macro

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ABSTRACT

In clinical research reporting, explanatory titles and footnotes are required on tables, figures and listings. As a project progresses there is often a need to change, add, or remove these titles and footnotes. This task can often be time consuming and tedious. In order to reduce the time spent making these changes to each individual program, we have developed a macro that makes this process easy, efficient, and allows for easier re-use of code across projects.

The project titles and footnotes should be defined within a .CSV file at the onset of a project, and held in a central location. A simple call to the macro reads in the text from the .CSV file, and generates properly justified title and footnote statements in the report for any ODS destination. If a single title or footnote is to be used frequently it shall only be defined once within the .CSV file. This allows for modifications and global changes to be made in just one place, without making any changes to the program that is generating the report. Hence, this macro reduces both programming and validation time when these simple changes are required.

INTRODUCTION

This macro has been developed to produce titles and footnotes for any table and listing in a project from a central repository of possible titles/footnotes resulting in:

- Reduction in time spent creating titles and footnotes within individual programs.
- Easy modification of global changes to study titles and footnotes.
- Titles and Footnotes that are used in numerous tables and listings will only need to be defined once.
- Title and footnotes may be updated in the .csv file without making changes to a program.

The macro can be used to generate titles and footnotes for .lst, .txt, .rtf, .pdf output files.

MACRO USAGE AND FUNCTIONALITY

MACRO USAGE

The macro creates titles and footnotes by simply making the following call:

Creating titles: %title(tfl_no, ttype);

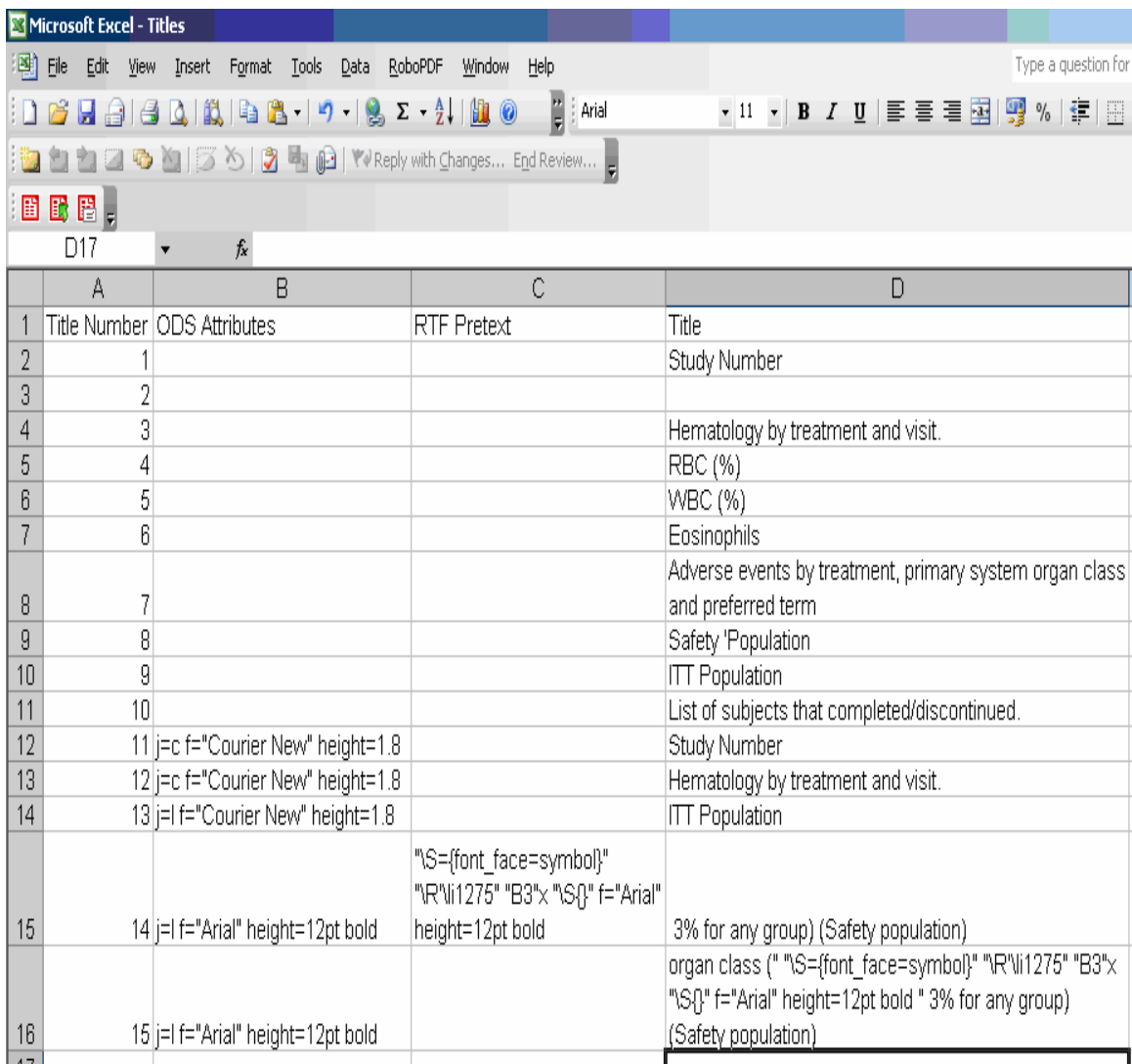
Creating footnotes: %footnote(tfl_no, ftype);

ASSUMPTIONS AND LIMITATIONS OF THE MACRO

- The macro generates titles to be used in title statements or as macro variables within column or compute statements of proc report.
- The macro generates footnotes to be used in footnote statements or as macro variables in compute statements of proc report.
- The input data structures must be as described below. These csv files must be read into SASWORK datasets before calling the macros. This is done in a setup macro.
- Any pre-text RTF code should be defined within the RTF attribute column in the title and/or footnote .csv files. Any other inline RTF code should be defined within the title/footnote text.
- Any ODS attributes should be defined in the ODS attributes column in the title and/or footnote .csv files.

WHAT IS REQUIRED AS INPUT?

1. Titles.csv file



	A	B	C	D
1	Title Number	ODS Attributes	RTF Pretext	Title
2	1			Study Number
3	2			
4	3			Hematology by treatment and visit.
5	4			RBC (%)
6	5			WBC (%)
7	6			Eosinophils
8	7			Adverse events by treatment, primary system organ class and preferred term
9	8			Safety Population
10	9			ITT Population
11	10			List of subjects that completed/discontinued.
12	11	j=c f="Courier New" height=1.8		Study Number
13	12	j=c f="Courier New" height=1.8		Hematology by treatment and visit.
14	13	j=l f="Courier New" height=1.8		ITT Population
15	14	j=l f="Arial" height=12pt bold	"\S={font_face=symbol}" "\R\li1275" "B3"x "\S{j} f="Arial" height=12pt bold	3% for any group) (Safety population)
16	15	j=l f="Arial" height=12pt bold		organ class (" \S={font_face=symbol}" "\R\li1275" "B3"x "\S{j} f="Arial" height=12pt bold " 3% for any group) (Safety population)

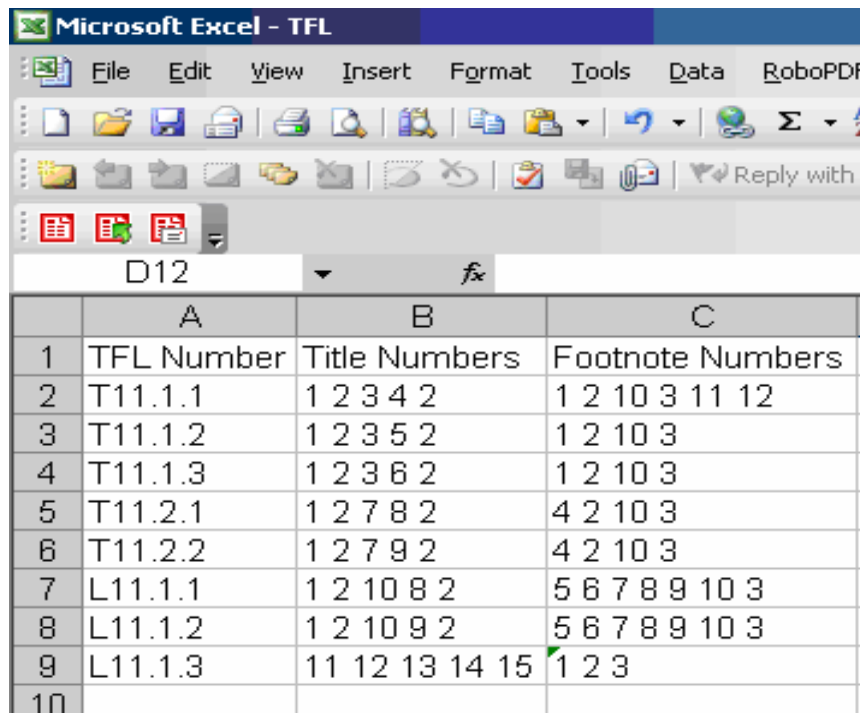
Column	Name	Contents
A	Title Number	A unique positive number from 1 to the number of titles in the study.
B	ODS Attributes	ODS attributes, for justification, font type, size etc. should be defined here. Should be left blank otherwise.
C	RTF Attributes	RTF pre-text attributes should be defined here. Should be left blank otherwise.
D	Title	The title as it appears on the TFL specifications/ templates, and how it should appear in the output. (Any inline-text RTF code required should be embedded within the text as appropriate).

2. Footnotes.csv

	A	B	C	D
1	Footnote Number	ODS Attributes	RTF Attributes	Footnote
2	1	j=l f="Arial" height=1.1		Only subjects with baseline and post baseline measurements : reported
3	2	j=l f="Arial" height=1.1		Baseline is the Visit 3 (week 1) value
4	3	j=l f="Arial" height=1.1		&sysdate9 &sysime
5	4			Adverse events that onset prior to Visit 3 are not include
6	5			Reason for discontinuation:
7	6			1 = Subject" withdrew consent
8	7			2 = Adverse Event
9	8			3 = Abnormal" lab result
10	9			4 = Other' xyz
11	10			
12	11	j=l f="Courier New" height=1.1 bold	f="Arial" height=12pt	3% for any group) (Safety population)
13	12	j=l f="Courier New" height=1.1 bold		organ class (" "S={font_face=symbol}" "R"li1275" "B3"x "Sj"
14				f="Arial" height=12pt bold " 3% for any group) (Safety population

Column	Name	Contains
A	Footnote Number	A unique positive number from 1 to the number of footnotes in the study.
B	ODS Attributes	ODS attributes, for justification, font type, size etc should be defined here. Should be left blank otherwise.
C	RTF Attributes	RTF pre-text attributes should be defined here. Should be left blank otherwise.
D	Footnote	The footnote as it appears on the TFL specifications/ templates, and how it should appear in the output. (Any inline-text RTF code required should be embedded within the text as appropriate).

3. TFL.csv file



	A	B	C
1	TFL Number	Title Numbers	Footnote Numbers
2	T11.1.1	1 2 3 4 2	1 2 10 3 11 12
3	T11.1.2	1 2 3 5 2	1 2 10 3
4	T11.1.3	1 2 3 6 2	1 2 10 3
5	T11.2.1	1 2 7 8 2	4 2 10 3
6	T11.2.2	1 2 7 9 2	4 2 10 3
7	L11.1.1	1 2 10 8 2	5 6 7 8 9 10 3
8	L11.1.2	1 2 10 9 2	5 6 7 8 9 10 3
9	L11.1.3	11 12 13 14 15	1 2 3

Column	Name	Contents
A	TFL Number	Lists all table and listing numbers to be produced. This is a unique number for each output.
B	Title Number	Lists the associated title numbers in the titles.csv file, each separated by a space.
C	Footnote Number	Lists the associated footnote numbers in the footnote.csv file., each separated by a space.

MACRO PARAMETERS

The macro call that generates the titles is defined as follows:

```
%title(tfl_no, ttype);
```

A description of the input parameters, their type and if they are compulsory are given below:

Input Parameter	Compulsory	Type	Description
<i>Tfl_no</i>	Yes	Char	This macro parameter is the unique TFL number as per the TFL.csv file described above
<i>ttype</i>	No	Char	This macro parameter should be populated with either "title" or "". "title" => The titles* should be produced by using title statements (e.g. title1 "First title";) "" => The titles should be produced as macro variables** for use in either in a column statement or compute before statement.

* The number of titles to be produced should not exceed 10.

** The macro variables produced are `title1`, `title2`, ..., `titlen`, where n is the number of titles. An additional macro variable `numtitles` is produced, containing the number of titles.

The macro call that generates the footnotes is defined as follows:

```
%footnote(tfl_no, ftype);
```

A description of the input parameters, their type and if they are compulsory are given below:

Input Parameter	Compulsory	Type	Description
<i>Tfl_no</i>	Yes	Char	This macro parameter is the unique TFL number as per the TFL.csv file described above
<i>ftype</i>	No	Char	This macro parameter should be populated with either "footnote" or "". "footnote" => The footnotes* should be produced by using footnote statements (e.g. Footnote1 "First footnote";) "" => The footnotes should be produced as macro variables** for use in compute statements.

* The number of footnotes to be produced should not exceed 10.

** The macro variables produced are `footnote1`, `footnote2`, ..., `footnoten`, where n is the number of footnotes. An additional macro variable `numfoot` is produced, containing the number of footnotes.

SAMPLE CODE

CREATING TITLES WITHIN THE COLUMN STATEMENT & FOOTNOTES WITHIN A COMPUTE AFTER STATEMENT IN THE PROC REPORT

```
title;
footnote;

%title(tfl_no=L11.1.1);
%footnote(tfl_no=L11.1.1);
%macro report;
  proc report data=sashelp.class ps=56 ls=166 center nowindows
    headline headskip split="#";
    column (
      %do i=1 %to &numtitle;
        &&title&i
      %end;
      name age sex
    );
    define name / display width=15 "NAME";
    define age / display width=15 "AGE";
    define sex / display width=15 "SEX";
    compute after _page_ ;
      %do i=1 %to &numfoot;
        line @2 &&footnote&i;
      %end;
    endcomp;
  run;
%mend report;
%report;
```

In the above program the call to the macros generates the macro variables &title1, &title2, &footnote1, &footnote2, etc. These can then be used within a column statement or compute statements to produce the titles and footnotes.

The surrounding %report macro is required because of the %do %end loops which are based on the macro variables &numtitle and &numfoot which are dynamic counts of the number of titles and footnotes and are automatically produced.

CREATING TITLES WITHIN THE TITLE STATEMENTS & FOOTNOTES WITHIN FOOTNOTE STATEMENTS

```
title;
footnote;

%title(tfl_no=L11.1.1,ttype=title);
%footnote(tfl_no=L11.1.1,ftype=footnote);
proc report data=sashelp.class ps=56 ls=166 nocenter nowindows headline
  headskip split="#";
  column (" " " " " " name age sex);
  define name / display width=15 "NAME";
  define age / display width=15 "AGE";
  define sex / display width=15 "SEX";
run;
```

In the above program the call to the macros generates the title and footnote statements and executes them automatically. Hence the macro allows the user to generate titles using title statements, column statements, and/or compute before statements. Similarly the user can produce footnotes using either footnote statements and/or compute statements.

SAMPLE OUTPUT

SAMPLE 1

Study Number			
List of subjects that completed/discontinued.			
Safety Population			
NAME	AGE	SEX	
Alfred	14	M	
Alice	13	F	
Barbara	13	F	
Carol	14	F	
Henry	14	M	
James	12	M	
Jane	12	F	
Janet	15	F	
Jeffrey	13	M	
John	12	M	
Joyce	11	F	
Judy	14	F	
Louise	12	F	
Mary	15	F	
Phillip	16	M	
Robert	12	M	
Ronald	15	M	
Thomas	11	M	
William	15	M	

Reason for discontinuation:
1 = Subject" withdrew consent
2 = Adverse Event
3 = Abnormal" lab result
4 = other' xyz

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SAMPLE 2

Study Number			
List of subjects that completed/discontinued.			
Safety Population			
NAME	AGE	SEX	
Alfred	14	M	
Alice	13	F	
Barbara	13	F	
Carol	14	F	
Henry	14	M	
James	12	M	
Jane	12	F	
Janet	15	F	
Jeffrey	13	M	
John	12	M	
Joyce	11	F	
Judy	14	F	
Louise	12	F	
Mary	15	F	
Phillip	16	M	
Robert	12	M	
Ronald	15	M	
Thomas	11	M	
William	15	M	

Reason for discontinuation:
1 = Subject" withdrew consent
2 = Adverse Event
3 = Abnormal" lab result
4 = other' xyz

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CONCLUSION

This macro was developed in order to reduce programming time of titles and footnotes, by creating them within a centrally located csv file. When the same title or footnote is required in more than one report it needs only to be defined once. Hence when global changes are required they will only need to be made in one place. This is a generic macro that can be used to generate titles and footnotes for .lst, .txt, .rtf, .pdf output files.

CONTACT INFORMATION

The macro code can be made available by contacting:

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