

Saving Time: Large Reports using a SAS[®] Macros and ODS RTF

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Overview

- Large surveys or clinical trials often have hundreds of variables which need to be summarized.
 - We can automate the reporting using a macro method together with the SAS Output Delivery System.
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Introduction

- Reporting large data sets can be very time-consuming.
 - So many variables, so little time to type their names!
 - Many variables have to be handled in the same way (summary statistics, or frequencies).
 - Document management in collating the output can be considerable.
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Example

- Use the data set SASUSER.CARS
 - Survey of car owners
 - Data: country of manufacture, type, size, owner, gender, home-owning status, number of incomes in household, marital and family status.
 - All categorical variables, requiring summarizing with frequencies and percentages, by marital status.
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Method to automate reporting: Step 1

- Obtain a data set containing the variables required for reporting.

```
data example;  
*retain <variable list, in order>;  
set sasuser.cars  
  (keep = norigin--nincome  
       nsex marital);  
label . . . ;  
format . . . ;  
run;
```

Step 2

- Read from a data set containing the variable names, labels and formats of the target data set, i.e. use SASHELP.VCOLUMN

```
data _null_;  
set sashelp.vcolumn  
  (where = (libname = "WORK" and  
            memname = "EXAMPLE" and  
            name ne "marital"))  
end=last;
```

Step 3

- Create a macro variable for each variable to reported.

```
call symput('var' ||  
            trim(left(put(_n_,8.))) ,  
            trim(name)) ;
```

Step 4

- Create a macro variable 'n' to store the total number of variables to be reported.

```
if last then  
  call symput('n',  
              trim(left(put(_n_,8.)))) ;
```

Recap

- We have macro variables 'var1' through 'var<n>', storing the names of the variables required for reporting.
 - We have a macro variable 'n' to store the total number of variables.
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Step 5

- Use a macro loop around a reporting procedure

```
%macro repeat1;  
%do i = 1 %to &n;  
    title ". . . &&lab&i";  
    proc tabulate data=example;  
        . . . &&var&i  
    run;  
%end;  
%mend;  
%repeat1;
```

Step 6

- Enhance this macro by writing (all) the output to a named Word file.

```
ods rtf file="Tables.rtf" style=printer;  
%do i = 1 %to &n;  
    title ". . . &&lab&i";  
    proc tabulate;  
        . . .  
    run;  
%end;  
ods rtf close;
```

Step 7

- Create a data set which can be used in Word as a hyperlinked table of contents (method adapted from a paper by David Shannon, SUGI 27).

```
data toc;  
%do i = 1 %to &n;  
    tabledesc = ". . . &&lab&i";  
    pageno=compbl  
        ('{\field {\*\fldinst PAGEREF '  
        || "var&i" || ' \h}}');  
    output;  
%end;  
run;
```

Step 8

- Enhance your Word file by including a hyperlinked table of contents.

```
ods rtf file="Tables.rtf";
proc report data=toc;
. . .
%do i = 1 %to &n;
    ods rtf bookmark="var&i";
    proc tabulate data=example;
        . . . ;
%end;
```

Hyperlinked table of contents in Word

Table	Page
Table 1: Origin of car, by family status	2
Table 2: Car size, by family status	3
Table 3: Car type, by family status	4
Table 4: Home owning status, by family status	5
Table 5: Number of incomes, by family status	6
Table 6: Sex, by family status	7

Table 1: Origin of car, by family status

	Marital and family status								All	
	Married		Married w kids		Single		Single w kids			
Origin of car	N	%	N	%	N	%	N	%	N	%
American	37	36%	52	47%	33	30%	6	40%	128	38%
Japanese	51	50%	44	40%	63	57%	8	53%	166	49%
European	14	14%	15	14%	15	14%	1	7%	45	13%
All	102	100%	111	100%	111	100%	15	100%	339	100%

Questions and Answers (1)

- Q: What is the benefit of using this method?
 - A: Faster coding, output collation and document management.
 - Q: Will I need to write more code if I have more variables?
 - A: No.
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Questions and Answers (2)

- Q: I don't want to use PROC TABULATE. Can I still use this method?
 - A: Yes, by placing the macro loops around your customized reporting method.
 - Q: I don't like the style of the tables in the Word output. Can I change it?
 - A: Yes, by creating a custom style in PROC TEMPLATE.
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Conclusion

- A dynamic macro loop has been used to count and process variables which need to be reported in the same way.
 - The output has been directed to a Word file, with its own hyperlinked table of contents
 - The method can be adapted to customised reporting needs by placing the macro loops accordingly.
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Acknowledgements

- The material for the hyperlinked Table of Contents in Word was adapted from:
Shannon, David. “To ODS RTF and Beyond”,
Proceedings of the Twenty-Seventh Annual SAS® Users Group International Conference. April 2002.
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About the Speaker

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