

A SAS Macro for Dynamic Page Breaks

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Fig 1. Demographics table - Page 1 of 2

	Placebo	Active
Age (year)		
n	3	13
mean (SD)	14.3 (0.58)	12.8 (1.52)
median	14.0	12.0
min, max	14, 15	11, 16
Sex		
Male	2 (67)	6 (46)
Female	1 (33)	7 (54)
Race		
Caucasian	1 (33)	3 (23)
Black	0	2 (15)
Hispanic	0	2 (15)
Asian	0	2 (15)
Other	2 (67)	4 (31)
Height (cm)		
n	3	13
mean (SD)	65.0 (3.50)	61.1 (5.57)

Fig 2. Demographics table - Page 2 of 2

	Placebo	Active
median	63.5	59.8
min, max	63, 69	51, 72
Weight (Kg)		
n	3	13
mean (SD)	109.2 (5.77)	97.3 (26.42)
median	112.5	90.0
min, max	103, 113	51, 150

Figure 1 and Figure 2 shows an abrupt break in a demographics table output where 'Height' statistics are shown in two different pages, as page 1 cannot accommodate any more rows.

Using Conditional Statements

Fig 3. Demographics table - Page 1 of 2

	Placebo	Active
Age (year)		
n	3	13
mean (SD)	14.3 (0.58)	12.8 (1.52)
median	14.0	12.0
min, max	14, 15	11, 16
Sex		
Male	2 (67)	6 (46)
Female	1 (33)	7 (54)
Race		
Caucasian	1 (33)	3 (23)
Black	0	2 (15)
Hispanic	0	2 (15)
Asian	0	2 (15)
Other	2 (67)	4 (31)

Fig 4. Demographics table - Page 2 of 2

	Placebo	Active
Height (cm)		
n	3	13
mean (SD)	65.0 (3.50)	61.1 (5.57)
median	63.5	59.8
min, max	63, 69	51, 72
Weight (Kg)		
n	3	13
mean (SD)	109.2 (5.77)	97.3 (26.42)
median	112.5	90.0
min, max	103, 113	51, 150

Figure 3 and Figure 4 shows that 'Height' statistics are pushed to page 2. We can do this by creating variable using IF-THEN-ELSE conditional statements and using this variable in PROC REPORT-BREAK-PAGE.

%PAGENO Macro description

This macro has seven keyword macro parameters.

Macro parameter	Description
&indata	name of the input dataset. By default, this macro considers the latest created dataset before the macro call.
&outdata	name of the output dataset. By default, this macro creates an output dataset named "pg_final".
&mxlnpg	maximum number of rows desired per page in the rtf or listing output.
&grpvars	list of grouping variables separated by space. It can be one to many character or numeric variables.
&statvarc	variable with row labels along with its corresponding length in proc report separated by comma.
&debug	possible values are 0 and 1. Default value is 0. &debug=1 generates all the intermediate datasets.
&colsdlm	List of character variables and delimiter separated by comma.

&mxlnpg, &grpvars and &statvarc are the three macro parameters that are mandatory for each call. We can use other parameters as and when required.

Table shell

Analysis of change from baseline in RBC

ROW LABELS	Placebo	Active
Number of subjects in efficacy analysis population	xx	xx
Baseline		
n	xx	xx
Mean	xx.x	xx.x
Change from baseline at Week xx		
n	xx	xx
Adjusted mean	xx.x	xx.x
Standard error	xx.xx	xx.xx
95% CI	(xx.x, xx.x)	(xx.x, xx.x)
Difference with placebo	xx.x	xx.x
95% CI for difference	(xx.x, xx.x)	(xx.x, xx.x)
p-value (compared to placebo)	xx.xxxx	xx.xxxx
...		

Scenario 1

	avisit	text	col1	col2	_rows	PG_BREAK
1		Number of subjects in efficacy analysis population	15	17	1	1
2	Baseline	Baseline			1	1
3	Baseline	n	12	15	1	1
4	Baseline	Mean	1539.1	1504.5	1	1
5	WEEK 4	Change from baseline at Week 4			1	1
6	WEEK 4	n	2	1	1	1
7	WEEK 4	Adjusted mean	40.1	57.3	1	1
8	WEEK 4	Standard error	45.91	45.41	1	1
9	WEEK 4	95% CI	(-65.3,175.5)	(-47.0,191.6)	1	1
10	WEEK 4	Difference with placebo	-6.8	10.4	1	1
11	WEEK 4	95% CI for difference	(-140.2,156.7)	(-121.8,172.7)	1	1
12	WEEK 4	p-value (compared to placebo)	-14.088	-14.267	1	1
13	WEEK 8	Change from baseline at Week 8			1	2
14	WEEK 8	n	10	14	1	2
15	WEEK 8	Adjusted mean	102.3	107	1	2
16	WEEK 8	Standard error	36.48	33.63	1	2
17	WEEK 8	95% CI	(15.7,219.0)	(26.0,218.0)	1	2
18	WEEK 8	Difference with placebo	46.9	51.6	1	2
19	WEEK 8	95% CI for difference	(-66.2,190.0)	(-56.4,189.7)	1	2
20	WEEK 8	p-value (compared to placebo)	-14.659	-14.714	1	2
21	WEEK 12	Change from baseline at Week 12			1	3
22	WEEK 12	n	10	11	1	3
23	WEEK 12	Adjusted mean	91.9	293.9	1	3
24	WEEK 12	Standard error	74.76	70.32	1	3
25	WEEK 12	95% CI	(-70.5,284.4)	(140.3,477.6)	1	3
26	WEEK 12	Difference with placebo	2.9	204.9	1	3
27	WEEK 12	95% CI for difference	(-205.8,241.6)	(3.3,436.5)	1	3
28	WEEK 12	p-value (compared to placebo)	-14.126	-14.954	1	3

```
%pageno(grpvars= avisit, statvarc= %str(text,55), mxlnpg=15);
```

Proc Report

```
proc report data=pg_final list nowd missing split= '|';  
  column pg_break avisit text coll col2;  
  define pg_break/ order noprint order=internal ;  
  define avisit / order noprint order=internal ;  
  define text/ display " " width=55 just=left;  
  define coll/ display "Placebo" width=15 ;  
  define col2/ display "Active" width=15 ;  
  break after pg_break/page;  
  break after avisit/skip;  
run;
```

Scenario 2

	avisit	text	col1	col2	_rows	PG_BREAK
1		Number of subjects in efficacy analysis population	15	17	3	1
2	Baseline	Baseline			1	1
3	Baseline	n	12	15	1	1
4	Baseline	Mean	1539.1	1504.5	1	1
5	WEEK 4	Change from baseline at Week 4			2	2
6	WEEK 4	n	2	1	1	2
7	WEEK 4	Adjusted mean	40.1	57.3	1	2
8	WEEK 4	Standard error	45.91	45.41	1	2
9	WEEK 4	95% CI	(-65.3,175.5)	(-47.0,191.6)	1	2
10	WEEK 4	Difference with placebo	-6.8	10.4	1	2
11	WEEK 4	95% CI for difference	(-140.2,156.7)	(-121.8,172.7)	1	2
12	WEEK 4	p-value (compared to placebo)	-14.088	-14.267	2	2
13	WEEK 8	Change from baseline at Week 8			2	3
14	WEEK 8	n	10	14	1	3
15	WEEK 8	Adjusted mean	102.3	107	1	3
16	WEEK 8	Standard error	36.48	33.63	1	3
17	WEEK 8	95% CI	(15.7,219.0)	(26.0,218.0)	1	3
18	WEEK 8	Difference with placebo	46.9	51.6	1	3
19	WEEK 8	95% CI for difference	(-66.2,190.0)	(-56.4,189.7)	1	3
20	WEEK 8	p-value (compared to placebo)	-14.659	-14.714	2	3
21	WEEK 12	Change from baseline at Week 12			2	4
22	WEEK 12	n	10	11	1	4
23	WEEK 12	Adjusted mean	91.9	293.9	1	4
24	WEEK 12	Standard error	74.76	70.32	1	4
25	WEEK 12	95% CI	(-70.5,284.4)	(140.3,477.6)	1	4
26	WEEK 12	Difference with placebo	2.9	204.9	1	4
27	WEEK 12	95% CI for difference	(-205.8,241.6)	(3.3,436.5)	1	4
28	WEEK 12	p-value (compared to placebo)	-14.126	-14.954	2	4

`%pageno(grpvars= avisit, statvarc=%str(text, 25), mxlnpg=14);`

Fig 5. Text wrap

	Placebo	Active
Number of subjects in efficacy analysis population	15	17

Scenario 3

	avisit	text	col1	col2	_rows0	_dlmrows	_rows	PG_BREAK
1		Number of subjects in efficacy analysis population	15	17	2	1	2	1
2	Baseline	Baseline			1	1	1	1
3	Baseline	n	12	15	1	1	1	1
4	Baseline	Mean	1539.1	1504.5	1	1	1	1
5	WEEK 4	Change from baseline at Week 4			1	1	1	2
6	WEEK 4	n	2	1	1	1	1	2
7	WEEK 4	Adjusted mean	40.1	57.3	1	1	1	2
8	WEEK 4	Standard error	45.91	45.41	1	1	1	2
9	WEEK 4	95% CI	(-65.3,1175.5)	(-47.0,1191.6)	1	2	2	2
10	WEEK 4	Difference with placebo	-6.8	10.4	1	1	1	2
11	WEEK 4	95% CI for difference	(-140.2,1156.7)	(-121.8,1172.7)	1	2	2	2
12	WEEK 4	p-value (compared to placebo)	-14.088	-14.267	2	1	2	2
13	WEEK 8	Change from baseline at Week 8			1	1	1	3
14	WEEK 8	n	10	14	1	1	1	3
15	WEEK 8	Adjusted mean	102.3	107	1	1	1	3
16	WEEK 8	Standard error	36.48	33.63	1	1	1	3
17	WEEK 8	95% CI	(15.7,1219.0)	(26.0,1218.0)	1	2	2	3
18	WEEK 8	Difference with placebo	46.9	51.6	1	1	1	3
19	WEEK 8	95% CI for difference	(-66.2,1190.0)	(-56.4,1189.7)	1	2	2	3
20	WEEK 8	p-value (compared to placebo)	-14.659	-14.714	2	1	2	3
21	WEEK 12	Change from baseline at Week 12			2	1	2	4
22	WEEK 12	n	10	11	1	1	1	4
23	WEEK 12	Adjusted mean	91.9	293.9	1	1	1	4
24	WEEK 12	Standard error	74.76	70.32	1	1	1	4
25	WEEK 12	95% CI	(-70.5,1284.4)	(140.3,1477.6)	1	2	2	4
26	WEEK 12	Difference with placebo	2.9	204.9	1	1	1	4
27	WEEK 12	95% CI for difference	(-205.8,1241.6)	(3.3,1436.5)	1	2	2	4
28	WEEK 12	p-value (compared to placebo)	-14.126	-14.954	2	1	2	4

```
%pageno(grpvars= avisit, statvarc= %str(text,30), mxlnpg=14,
        colsdlm=%str(col1 col2, |));
```

Scenario 4

	avisit	text	col1	col2	_dlmrows	_rows	PG_BREAK
1		Number of subjects in efficacy analysis population	15	17	3	3	1
2	Baseline	Baseline			1	1	1
3	Baseline	n	12	15	1	1	1
4	Baseline	Mean	1539.1	1504.5	1	1	1
5	WEEK 4	Change from baseline at Week 4			3	3	2
6	WEEK 4	n	2	1	1	1	2
7	WEEK 4	Adjusted mean	40.1	57.3	1	1	2
8	WEEK 4	Standard error	45.91	45.41	1	1	2
9	WEEK 4	95% CI	(-65.3, 175.5)	(-47.0, 191.6)	2	2	2
10	WEEK 4	Difference with placebo	-6.8	10.4	1	1	2
11	WEEK 4	95% CI for difference	(-140.2, 156.7)	(-121.8, 172.7)	2	2	2
12	WEEK 4	p-value (compared to placebo)	-14.088	-14.267	2	2	2
13	WEEK 8	Change from baseline at Week 8			3	3	3
14	WEEK 8	n	10	14	1	1	3
15	WEEK 8	Adjusted mean	102.3	107	1	1	3
16	WEEK 8	Standard error	36.48	33.63	1	1	3
17	WEEK 8	95% CI	(15.7, 219.0)	(26.0, 218.0)	2	2	3
18	WEEK 8	Difference with placebo	46.9	51.6	1	1	3
19	WEEK 8	95% CI for difference	(-66.2, 190.0)	(-56.4, 189.7)	2	2	3
20	WEEK 8	p-value (compared to placebo)	-14.659	-14.714	2	2	3
21	WEEK 12	Change from baseline at Week 12			3	3	4
22	WEEK 12	n	10	11	1	1	4
23	WEEK 12	Adjusted mean	91.9	293.9	1	1	4
24	WEEK 12	Standard error	74.76	70.32	1	1	4
25	WEEK 12	95% CI	(-70.5, 284.4)	(140.3, 477.6)	2	2	4
26	WEEK 12	Difference with placebo	2.9	204.9	1	1	4
27	WEEK 12	95% CI for difference	(-205.8, 241.6)	(3.3, 436.5)	2	2	4
28	WEEK 12	p-value (compared to placebo)	-14.126	-14.954	2	2	4

```
%pageno(grpvars= avisit, statvarc= %str(text,30), mxlnpg=17,
        colsdlm=%str(text col1 col2, |));
```

Scenario 5

	paramcd	avisit	text	col1	col2	_rows	PG_BREAK
1	RBC		Number of subjects in efficacy analysis population	15	17	2	1
2	RBC	Baseline	Baseline			1	1
3	RBC	Baseline	n	12	15	1	1
4	RBC	Baseline	Mean	1539.1	1504.5	1	1
5	RBC	WEEK 4	Change from baseline at Week 4			1	1
6	RBC	WEEK 4	n	2	1	1	1
7	RBC	WEEK 4	Adjusted mean	40.1	57.3	1	1
8	RBC	WEEK 4	Standard error	45.91	45.41	1	1
9	RBC	WEEK 4	95% CI	(-65.3,175.5)	(-47.0,191.6)	1	1
10	RBC	WEEK 4	Difference with placebo	-6.8	10.4	1	1
11	RBC	WEEK 4	95% CI for difference	(-140.2,156.7)	(-121.8,172.7)	1	1
12	RBC	WEEK 4	p-value (compared to placebo)	-14.088	-14.267	1	1
13	RBC	WEEK 8	Change from baseline at Week 8			1	2
14	RBC	WEEK 8	n	10	14	1	2
15	RBC	WEEK 8	Adjusted mean	102.3	107	1	2
16	RBC	WEEK 8	Standard error	36.48	33.63	1	2
17	RBC	WEEK 8	95% CI	(15.7,219.0)	(26.0,218.0)	1	2
18	RBC	WEEK 8	Difference with placebo	46.9	51.6	1	2
19	RBC	WEEK 8	95% CI for difference	(-66.2,190.0)	(-56.4,189.7)	1	2
20	RBC	WEEK 8	p-value (compared to placebo)	-14.659	-14.714	1	2
21	WBC		Number of subjects in efficacy analysis population	15	17	2	3
22	WBC	Baseline	Baseline			1	3
23	WBC	Baseline	n	12	15	1	3
24	WBC	Baseline	Mean	1539.1	1504.5	1	3
25	WBC	WEEK 4	Change from baseline at Week 4			1	3
26	WBC	WEEK 4	n	2	1	1	3
27	WBC	WEEK 4	Adjusted mean	40.1	57.3	1	3
28	WBC	WEEK 4	Standard error	45.91	45.41	1	3
29	WBC	WEEK 4	95% CI	(-65.3,175.5)	(-47.0,191.6)	1	3
30	WBC	WEEK 4	Difference with placebo	-6.8	10.4	1	3
31	WBC	WEEK 4	95% CI for difference	(-140.2,156.7)	(-121.8,172.7)	1	3
32	WBC	WEEK 4	p-value (compared to placebo)	-14.088	-14.267	1	3

%pageno (grpvars=paramcd avisit, statvarc= %str(text, 42), mxlnpg=17);

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Thank You!