

So Many PROCs, So Little Time:

A Primer of Efficient Report Writing in Base SAS®

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ABSTRACT

Almost any report can be generated in at least two ways using SAS software, and almost every report can be written using the DATA step report writing capabilities (using the FILE-PUT mode), but why reinvent the wheel if a PROC already exists that will give you the desired report with a minimal amount of effort? This presentation will explore various common types of reports and what factors you should consider in deciding which procedure is best suited to your needs. It is not meant to be a detailed guide about PROC statement coding, but rather a guide on how to decide which procedure fits the needs of a given situation. Examples will be presented of differing types of reports with discussion of the most efficient ways of programming those reports in terms of programmer time.

INTRODUCTION

The versatility of SAS software allows almost identical reports to be produced in multiple ways – the difference may be in how many hours you want to spend writing the code. Another factor that may come into play is the CPU time used each time you produce the report. If you are running a batch job daily or weekly on a very large data set, it is probably worthwhile to spend more programming time to develop a more efficient program. This paper is not meant to show you CPU efficiency comparisons. These are dependent on the size of your data sets, your operating system, what kind of report you are trying to generate, and a number of other factors. In order to check CPU efficiency you need to benchmark your programs. This is much less critical if you are working on a PC or on an ad-hoc or one-time report.

What issues do you need to consider when deciding what PROC will produce your report with the least amount of programming effort on your part? The following are some of the most important issues.

- Is it a detail or summary report?
- What information do you need in the report?
- Do you need a specific layout or customized information?
- Do you need cross-tabulations or hierarchical groupings?

Let's consider each of these items to see which PROC(s) will let you produce the desired report most easily. All of the procedures discussed in this paper are available in Base SAS. Output from the code given in this paper is shown in the Appendix. (Note: Tables 2 through 5 only include the last page of output generated by these procedures.)

IS IT A DETAIL OR SUMMARY REPORT?

What is the difference between a detail report and a summary report? A detail report gives you at least one row of information in your report for every observation in the data set (assuming you are not using a WHERE statement in the procedure to limit which observations are processed.) A summary report generally does some form of collapsing of observations so that each row in the report represents information from more than one observation.

Which procedures produce what types of report? In general:

- PROC PRINT produces a detail report, although it can include summary information across observations overall and/or within subgroups. PROC PRINT can also produce a summary report if the data has been outputted to a summary data set through a procedure like PROC MEANS, PROC SUMMARY or PROC UNIVARIATE.
- PROC TABULATE produces summary tables.
- PROC REPORT produces detail or summary reports.

This presentation focuses on the above procedures.

DOES ADDITIONAL INFORMATION OR DATA NEED TO BE INCLUDED?

Do you need additional columns of information in the report that do not already exist as variables in the data set? An example of this might be the sum or average of two existing variables in the data set. If that information is only necessary for the report, why go through an additional DATA step to create a new variable? PROC REPORT will allow you to create new columns of information within the PROC step.

If you need the same information represented in more than one way in a report (for example, a medical code represented as a coded value in the data set as well as an interpreted or formatted value), then PROC REPORT will allow you to show both columns in the same report. PROC PRINT will also do this, but requires that you create a new variable in the DATA step. (It will not print the same variable with two different formats in the same report.) Using PROC FORMAT to create a format to associate with the coded value in conjunction with PROC REPORT will allow you to use both the coded and formatted value in the same report without creating a new variable.

The following code sets up the formats for selected variables, uses PROC DATASETS to display the descriptor portion of the permanent SAS data set SCPAPER.MBP, and creates the temporary data set, WORK.MBP2.

```
LIBNAME SCPAPER 'C:\SAS\SCPAPER';

OPTIONS LINESIZE=142 PAGESIZE=42 NODATE NONUMBER;

PROC FORMAT;
  VALUE $GENDER
    'M'='Male'
    'F'='Female';
  VALUE $RACE
    '1'='White'
    '2'='Black'
    '3'='Oriental'
    '4'='Other';
  VALUE $RCODE
    '001'='Baseline DBP > 90, decreased by 10% or more'
    '002'='Baseline DBP > 90, decreased by 5% up to 10%'
    '003'='Baseline DBP > 90, decreased by 0% up to 5%'
    '004'='Baseline DBP > 90, increased'
    '005'='Baseline DBP <= 90';
```

```

VALUE NCENTER
  1='Dr. Green'
  2='Dr. Jones'
  3='Dr. Wright';

RUN;

**** CONTENTS OF ORIGINAL DATA SET ****;
**** SCPAPER.MBP (TABLE 1) ****;

PROC DATASETS LIB=SCPAPER;
  CONTENTS DATA=MBP;
  TITLE1 'TABLE 1';
  TITLE2 'CONTENTS OF SCPAPER.MBP DATA SET';
RUN;

**** CREATING WORK DATA SET OF MBP2 ****;

DATA MBP2;
  SET SCPAPER.MBP;
  CSTDIA=STDIA-BSTDIA;
  LABEL CSTDIA='Change in Diastolic BP';
RUN;

```

Appendix Table 1 shows the six demographic and diastolic blood pressure variables present in the original data set, SCPAPER.MBP. The data set WORK.MBP2 contains these variables, plus an additional created variable - CSTDIA (Change in Diastolic Blood Pressure). Tables 2 and 3 present detail reports using PROC PRINT and PROC REPORT, respectively. Table 3 includes two additional columns of information generated with PROC REPORT. The Physician Name column is created based on the value for CENTER, and Change in Diastolic Blood Pressure is computed with a COMPUTE block. The code that generated Table 3 also creates a new data set called WORK.NEWMBP which includes the newly computed variables. The following code produces Appendix Tables 2 and 3.

```

**** PROC PRINT FOR WORK.MBP2 ****;
**** DETAIL REPORT (TABLE 2) ****;

PROC PRINT DATA=MBP2 SPLIT='/' NOOBS;
  VAR PTNO CENTER NRACE GENDER
    BSTDIA STDIA CSTDIA;
  FORMAT NRACE $RACE. GENDER $GENDER.;
  LABEL PTNO='Patient/Number'
    CENTER='Center'
    NRACE='Race'
    GENDER='Gender'
    BSTDIA='Baseline/Diastolic/BP'
    STDIA='Final/Diastolic/BP'
    CSTDIA='Change in/Diastolic/BP';
  TITLE1 'TABLE 2';
  TITLE2
    'PROC PRINT OF WORK.MBP2 - DETAIL REPORT';
RUN;

**** PROC REPORT FOR SCPAPER.MBP ****;
**** DETAIL REPORT (TABLE 3) ****;
**** CREATES OUTPUT DATA SET WORK.NEWMBP ****;

PROC REPORT DATA=SCPAPER.MBP NOWD
  HEADSKIP SPACING=3 OUT=NEWMBP;
  COLUMN PTNO CENTER CENTER=NCENTER NRACE
    GENDER BSTDIA STDIA CSTDIA;
  DEFINE PTNO/DISPLAY WIDTH=7 FORMAT=3.
    CENTER 'Patient Number';
  DEFINE CENTER/DISPLAY WIDTH=6 FORMAT=1.
    CENTER 'Center';
  DEFINE NCENTER/WIDTH=10 FORMAT=NCENTER.
    CENTER 'Physician Name';
  DEFINE NRACE/DISPLAY WIDTH=9 CENTER
    FORMAT=$RACE. 'Race';
  DEFINE GENDER/DISPLAY WIDTH=6 FORMAT=$GENDER.
    'Gender';
  DEFINE BSTDIA/ANALYSIS MEAN WIDTH=9

```

```

  FORMAT=3. CENTER SPACING=5
    'Baseline/Diastolic/BP';
  DEFINE STDIA/ANALYSIS MEAN WIDTH=9 FORMAT=3.
    CENTER 'Final/Diastolic/BP';
  DEFINE CSTDIA/COMPUTED WIDTH=9 FORMAT=3.
    CENTER 'Change in/Diastolic/BP';
  COMPUTE CSTDIA;
    CSTDIA=STDIA-MEAN-BSTDIA-MEAN;
  ENDCOMP;
  TITLE1 'TABLE 3';
  TITLE2
    'PROC REPORT OF SCPAPER.MBP - DETAIL REPORT';
RUN;

```

DO YOU NEED A SPECIFIC LAYOUT OR CUSTOMIZED INFORMATION?

This could include, but is not limited to the following:

- providing customized information for subgroups or at the beginning or end of a report,
- underlining column headers,
- allowing variable values to extend across more than one line.

When developing a detail report, the simplest option you should consider is PROC PRINT. If you need sums for subgroups or at the end of a report, PROC PRINT will give these to you. However, if in addition to or instead of sums, you need other statistics or information (which can include customized text), then PROC REPORT is probably the more appropriate approach. Also, if you need to underline the column headers or you have variable values that will extend past the page width (based on the number of variables you are trying to print and the PAGESIZE= option), then PROC REPORT will provide these capabilities.

Appendix Tables 4 and 5 present detail tables, although Table 5 also includes summary information. Table 4 uses PROC PRINT to produce a detail report on WORK.MBP3 (which was created in a data step from WORK.MBP2 so that the physician name and comment variables were available for printing). PROC REPORT was used to generate Table 5. In this table the column headers are underlined, the comment variable values can extend across multiple lines, and customized text with summary statistics are provided overall and for each center. The following code produces these tables.

```

**** CREATING DATA SET WORK.MBP3 ****;
**** AND PROC PRINT ****;
**** DETAIL REPORT (TABLE 4) ****;

DATA MBP3; SET MBP2;
  LENGTH COMMENT $ 3;
  NCENTER=CENTER;
  RATIO=CSTDIA/BSTDIA;
  IF BSTDIA GT 90 THEN DO;
    IF RATIO NE . AND RATIO LE -.10
      THEN COMMENT='001';
    ELSE IF -.10 LT RATIO LE -.05
      THEN COMMENT='002';
    ELSE IF -.05 LT RATIO LE 0
      THEN COMMENT='003';
    ELSE IF RATIO GT 0 THEN COMMENT='004';
  END;
  ELSE IF BSTDIA LE 90 THEN COMMENT='005';
  FORMAT NCENTER NCENTER. COMMENT $RCODE.;
RUN;

PROC SORT DATA=MBP3;
  BY CENTER NCENTER;
RUN;

PROC PRINT DATA=MBP3 SPLIT='/' NOOBS;

```

```

ID CENTER NCENTER;
BY CENTER NCENTER;
VAR PTNO NRACE GENDER BSTDIAM
STDIA M CSTDIAM COMMENT;
FORMAT NRACE $RACE. GENDER $GENDER.;
LABEL PTNO='Patient/Number'
CENTER='Center'
NRACE='Race'
GENDER='Gender'
COMMENT='Comment'
NCENTER='Physician/Name'
BSTDIAM='Baseline/Diastolic/BP'
STDIA M='Final/Diastolic/BP'
CSTDIAM='Change in/Diastolic/BP';
TITLE1 'TABLE 4';
TITLE2
'PROC PRINT OF WORK.MBP3 - DETAIL REPORT';
RUN;

**** PROC REPORT FOR SCPAPER.MBP ****;
**** WITH SUMMARY INFORMATION ****;
**** DETAIL REPORT (TABLE 5) ****;

PROC REPORT DATA=SCPAPER.MBP NOWD
HEADSKIP HEADLINE SPACING=3;
COLUMN CENTER CENTER=NCENTER PTNO NRACE GENDER
BSTDIAM STDIA M CSTDIAM COMMENT;
DEFINE PTNO/DISPLAY WIDTH=7 FORMAT=3.
CENTER 'Patient Number';
DEFINE CENTER/ORDER WIDTH=6 FORMAT=1.
CENTER 'Center';
DEFINE NCENTER/ORDER WIDTH=10 FORMAT=NCENTER.
'Physician Name';
DEFINE NRACE/DISPLAY WIDTH=9 CENTER
FORMAT=$RACE. 'Race';
DEFINE GENDER/DISPLAY WIDTH=6 FORMAT=$GENDER.
'Gender';
DEFINE BSTDIAM/ANALYSIS MEAN WIDTH=9 FORMAT=3.
CENTER SPACING=5 'Baseline/Diastolic/BP';
DEFINE STDIA M/ANALYSIS MEAN WIDTH=9 FORMAT=3.
CENTER 'Final/Diastolic/BP';
DEFINE CSTDIAM/COMPUTED WIDTH=9 FORMAT=3.
CENTER 'Change in/Diastolic/BP';
DEFINE COMMENT/COMPUTED WIDTH=25 SPACING=5
FLOW FORMAT=$RCODE. 'Comment';

COMPUTE CSTDIAM;
CSTDIAM=STDIA M.BSTDIAM.MEAN;
ENDCOMP;

COMPUTE COMMENT/CHARACTER;
IF BSTDIAM.MEAN GT 90 AND
(CSTDIAM/BSTDIAM.MEAN) LE -.10
THEN COMMENT='001';
ELSE IF BSTDIAM.MEAN GT 90 AND
-.10 LT (CSTDIAM/BSTDIAM.MEAN) LE -.05
THEN COMMENT='002';
ELSE IF BSTDIAM.MEAN GT 90 AND
-.05 LT (CSTDIAM/BSTDIAM.MEAN) LE 0
THEN COMMENT='003';
ELSE IF BSTDIAM.MEAN GT 90 AND
(CSTDIAM/BSTDIAM.MEAN) GT 0
THEN COMMENT='004';
ELSE IF BSTDIAM.MEAN LE 90 THEN COMMENT='005';
ENDCOMP;

BREAK AFTER CENTER/SKIP;
COMPUTE AFTER CENTER;
PCHANGE=(CSTDIAM/BSTDIAM.MEAN)*100;
LINE @3 ' ';
LINE @22 111*'-';
LINE @22
'|The average change in diastolic blood'
@61 'pressure for'
@74 CENTER NCENTER. @85 'was'
@89 CSTDIAM 6.2
@96 'with an average % change of'
@124 PCHANGE 7.2 @132 '|';
LINE @22 111*'-';
LINE @3 ' ';

```

```

ENDCOMP;

RBREAK AFTER/SKIP;
COMPUTE AFTER;
PCHANGE=(CSTDIAM/BSTDIAM.MEAN)*100;
LINE @3 ' ';
LINE @22 103*'-';
LINE @22
'|The average change in diastolic blood'
@61 'pressure overall'
@78 'was' @82 CSTDIAM 6.2
@89 'with an average % change of'
@116 PCHANGE 7.2 @124 '|';
LINE @22 103*'-';
LINE @3 ' ';
ENDCOMP;

TITLE1 'TABLE 5';
TITLE2
'PROC REPORT OF SCPAPER.MBP - DETAIL REPORT';
RUN;

```

DO YOU NEED CROSS-TABULATIONS OR HIERARCHICAL GROUPINGS?

Both of these types of tables are summary reports where you display some sort of statistic(s) within a combination of variable values in either the row and/or column dimensions. PROC PRINT can produce this type of report after outputting the summary information from some other procedure. However, this type of report is usually generated with PROC TABULATE or PROC REPORT because of the greater flexibility and need for fewer steps.

Appendix Tables 6, 7 and 8 all show the diastolic blood pressure summarized by demographic data. Table 6 provides the same information as the other tables, but may not be as desirable for reporting purposes. Tables 7 and 8 produce very similar reports. Table 7 (PROC TABULATE) requires less programming code, while Table 8 (PROC REPORT) allows more flexibility in spacing between columns of information, underlining of headers, and customized text (if desired). The following code generates Appendix Tables 6, 7 and 8.

```

**** PROC MEANS-PRINT FOR WORK.NEWMBP2 ****;
**** SUMMARY REPORT (TABLE 6) ****;

PROC MEANS DATA=MBP2 MAXDEC=2 NOPRINT;
CLASS GENDER NRACE;
VAR BSTDIAM STDIA M CSTDIAM;
OUTPUT OUT=NEWMBP2 N=BSTDIAM STDIA M CSTDIAM
MEAN=MEANBST MEANST CMEANST
STD=STDBST STDST CSTDST;
RUN;

PROC PRINT DATA=NEWMBP2 LABEL NOOBS;
VAR GENDER NRACE _TYPE_ BSTDIAM MEANBST STDBST
STDIA M MEANST STDST CSTDIAM CMEANST CSTDST;
FORMAT MEANBST MEANST CMEANST
STDBST STDST CSTDST 8.2;
LABEL BSTDIAM='Baseline Diastolic BP - N'
STDIA M='Final Diastolic BP - N'
CSTDIAM='Change in Diastolic BP - N'
MEANBST='Baseline Diastolic BP - Mean'
MEANST='Final Diastolic BP - Mean'
CMEANST='Change in Diastolic BP-Mean'
STDBST='Baseline Diastolic BP - Std. Dev.'
STDST='Final Diastolic BP - Std. Dev.'
CSTDST='Change in Diastolic BP - Std. Dev.';
TITLE1 'TABLE 6';
TITLE2
'PROC MEANS-PRINT OUTPUT OF WORK.NEWMBP2';
TITLE3 'SUMMARY REPORT';
RUN;

```

```

**** PROC TABULATE FOR WORK.MBP2 ****;
**** SUMMARY REPORT (TABLE 7) ****;

OPTIONS MISSING='0';

PROC TABULATE DATA=MBP2 NOSEPS;
  CLASS GENDER NRACE;
  VAR BSTDIAM STDIAM CSTDIAM;
  TABLE (NRACE ALL), GENDER*
    (BSTDIAM*(N*F=3. MEAN*F=6.2 STD*F=6.2)
     STDIAM*(N*F=3. MEAN*F=6.2 STD*F=6.2)
     CSTDIAM*(N*F=3. MEAN*F=6.2 STD*F=6.2))
    /RTS=15;
  KEYLABEL ALL='All'
    N='No.'
    MEAN='Mean'
    STD='Std Dev.';
  LABEL BSTDIAM='Baseline Diastolic BP'
    STDIAM='Final Diastolic BP'
    CSTDIAM='Change in Diastolic BP';
  FORMAT NRACE $RACE. GENDER $GENDER.;
  TITLE1 'TABLE 7';
  TITLE2
    'PROC TABULATE OUTPUT OF WORK.MBP2';
  TITLE3 'SUMMARY REPORT';
RUN;

**** PROC REPORT FOR WORK.NEWMBP ****;
**** SUMMARY REPORT (TABLE 8) ****;

PROC REPORT DATA=NEWMBP NOWD HEADSKIP
  HEADLINE SPACING=1;
  COLUMN NRACE (GENDER,
    (( 'Baseline/Diastolic BP'
     BSTDIAM BSTDIAM=MEANBST BSTDIAM=STDBST)
    ( 'Final/Diastolic BP'
     STDIAM STDIAM=MEANST STDIAM=STDST)
    ( 'Change in/Diastolic BP'
     CSTDIAM CSTDIAM=CMEANST CSTDIAM=CSTDST)));
  DEFINE NRACE/GROUP ORDER=INTERNAL WIDTH=6
    FORMAT=$RACE.;
  DEFINE GENDER/ACROSS FORMAT=$GENDER.
    SPACING=2 '_Gender_';
  DEFINE BSTDIAM/ANALYSIS N WIDTH=3 FORMAT=3.
    CENTER SPACING=3 'No.';
  DEFINE MEANBST/ANALYSIS MEAN WIDTH=8
    FORMAT=8.2 CENTER 'Mean';
  DEFINE STDBST/ANALYSIS STD WIDTH=6
    FORMAT=6.2 CENTER 'Std. Dev.';
  DEFINE STDIAM/N WIDTH=3 FORMAT=3.
    CENTER SPACING=3 'No.';
  DEFINE MEANST/MEAN WIDTH=8 FORMAT=8.2
    CENTER 'Mean';
  DEFINE STDST/ STD WIDTH=6 FORMAT=6.2
    CENTER 'Std. Dev.';
  DEFINE CSTDIAM/ANALYSIS N WIDTH=3 FORMAT=3.
    CENTER SPACING=3 'No.';
  DEFINE CMEANST/ANALYSIS MEAN WIDTH=8
    FORMAT=8.2 CENTER 'Mean';
  DEFINE CSTDST/ANALYSIS STD WIDTH=6
    FORMAT=6.2 CENTER 'Std. Dev.';

  BREAK AFTER NRACE/SKIP;

  RBREAK AFTER/ SKIP SUMMARIZE;

  COMPUTE AFTER;
  NRACE='All';
  ENDCOMP;
  TITLE1 'TABLE 8';
  TITLE2
    'PROC REPORT OUTPUT OF WORK.NEWMBP';
  TITLE3 'SUMMARY REPORT';
RUN;

```

CONCLUSION

This paper has attempted to demonstrate some of the versatility available in SAS when generating reports. PROC PRINT, PROC TABULATE and PROC REPORT are just several of the many ways to produce a report using SAS software. An additional procedure in Base SAS that can be used to generate reports is PROC SQL. This procedure was not covered in this paper due to time and space limitations, but should also be considered for report-writing. Hopefully, this paper will help guide you on which approach will give you the report you desire with the least amount of programming effort.

REFERENCES

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APPENDIX

TABLE 1
CONTENTS OF SCPAPER.MBP DATA SET

DATASETS PROCEDURE

-----Alphabetic List of Variables and Attributes-----

#	Variable	Type	Len	Pos	Format	Label
1	BSTDIA	Num	8	0		Baseline Diastolic BP
6	CENTER	Num	8	32		Center
3	GENDER	Char	3	16	\$GENDER.	Gender
4	RACE	Char	5	19	\$RACE.	Race
5	PTNO	Num	8	24		Patient Number
2	STDIA	Num	8	8		Final Diastolic BP

TABLE 2
PROC PRINT OF WORK.MBP2 - DETAIL REPORT

Patient Number	Center	Race	Gender	Baseline Diastolic BP	Final Diastolic BP	Change in Diastolic BP
71	3	Black	Female	103	91	-12
72	3	Black	Female	100	99	-1
73	3	Other	Female	104	103	-1
74	3	Black	Male	99	97	-2
75	3	White	Male	95	93	-2
76	3	White	Female	93	86	-7
77	3	White	Female	101	98	-3
78	3	White	Female	95	91	-4
79	3	White	Female	94	95	1
80	3	White	Female	93	84	-9
81	3	White	Female	93	95	2

TABLE 3
PROC REPORT OF SCPAPER.MBP - DETAIL REPORT

Patient Number	Center	Physician Name	Race	Gender	Baseline Diastolic BP	Final Diastolic BP	Change in Diastolic BP
71	3	Dr. Wright	Black	Female	103	91	-12
72	3	Dr. Wright	Black	Female	100	99	-1
73	3	Dr. Wright	Other	Female	104	103	-1
74	3	Dr. Wright	Black	Male	99	97	-2
75	3	Dr. Wright	White	Male	95	93	-2
76	3	Dr. Wright	White	Female	93	86	-7
77	3	Dr. Wright	White	Female	101	98	-3
78	3	Dr. Wright	White	Female	95	91	-4
79	3	Dr. Wright	White	Female	94	95	1
80	3	Dr. Wright	White	Female	93	84	-9
81	3	Dr. Wright	White	Female	93	95	2

TABLE 4
PROC PRINT OF WORK.MBP3 - DETAIL REPORT

Center	Physician Name	Patient Number	Race	Gender	Baseline Diastolic BP	Final Diastolic BP	Change in Diastolic BP	Comment
2	Dr. Jones	64	Black	Female	102	104	2	Baseline DBP > 90, increased
		65	White	Female	84	95	11	Baseline DBP <= 90
		66	White	Female	98	104	6	Baseline DBP > 90, increased
		67	White	Female	107	106	-1	Baseline DBP > 90, decreased by 0% up to 5%
		68	White	Female	102	104	2	Baseline DBP > 90, increased
		69	White	Female	90	92	2	Baseline DBP <= 90
3	Dr. Wright	70	White	Male	99	78	-21	Baseline DBP > 90, decreased by 10% or more
		71	Black	Female	103	91	-12	Baseline DBP > 90, decreased by 10% or more
		72	Black	Female	100	99	-1	Baseline DBP > 90, decreased by 0% up to 5%
		73	Other	Female	104	103	-1	Baseline DBP > 90, decreased by 0% up to 5%
		74	Black	Male	99	97	-2	Baseline DBP > 90, decreased by 0% up to 5%
		75	White	Male	95	93	-2	Baseline DBP > 90, decreased by 0% up to 5%
		76	White	Female	93	86	-7	Baseline DBP > 90, decreased by 5% up to 10%
		77	White	Female	101	98	-3	Baseline DBP > 90, decreased by 0% up to 5%
		78	White	Female	95	91	-4	Baseline DBP > 90, decreased by 0% up to 5%
		79	White	Female	94	95	1	Baseline DBP > 90, increased
		80	White	Female	93	84	-9	Baseline DBP > 90, decreased by 5% up to 10%
		81	White	Female	93	95	2	Baseline DBP > 90, increased

TABLE 5
PROC REPORT OF SCPAPER.MBP - DETAIL REPORT

Center	Physician Name	Patient Number	Race	Gender	Baseline Diastolic BP	Final Diastolic BP	Change in Diastolic BP	Comment
3	Dr. Wright	70	White	Male	99	78	-21	Baseline DBP > 90, decreased by 10% or more
		71	Black	Female	103	91	-12	Baseline DBP > 90, decreased by 10% or more
		72	Black	Female	100	99	-1	Baseline DBP > 90, decreased by 0% up to 5%
		73	Other	Female	104	103	-1	Baseline DBP > 90, decreased by 0% up to 5%
		74	Black	Male	99	97	-2	Baseline DBP > 90, decreased by 0% up to 5%
		75	White	Male	95	93	-2	Baseline DBP > 90, decreased by 0% up to 5%
		76	White	Female	93	86	-7	Baseline DBP > 90, decreased by 5% up to 10%
		77	White	Female	101	98	-3	Baseline DBP > 90, decreased by 0% up to 5%
		78	White	Female	95	91	-4	Baseline DBP > 90, decreased by 0% up to 5%
		79	White	Female	94	95	1	Baseline DBP > 90, increased
		80	White	Female	93	84	-9	Baseline DBP > 90, decreased by 5% up to 10%
		81	White	Female	93	95	2	Baseline DBP > 90, increased

[The average change in diastolic blood pressure for Dr. Wright was -4.92 with an average % change of -5.05

=====

[The average change in diastolic blood pressure overall was -2.26 with an average % change of -2.35 |
 =====

TABLE 6
PROC MEANS-PRINT OF WORK.NEWMBP2
SUMMARY REPORT

Gender	Race	_TYPE_	Baseline Diastolic BP - N	Baseline Diastolic BP - Mean	Baseline Diastolic BP - Std. Dev.	Final Diastolic BP - N	Final Diastolic BP - Mean	Final Diastolic BP - Std. Dev.	Change in Diastolic BP - N	Change in Diastolic BP-Mean	Change in Diastolic BP - Std. Dev.
		0	81	96.22	5.79	81	93.96	8.11	81	-2.26	6.24
	White	1	67	95.54	5.97	67	93.13	8.39	67	-2.40	6.46
	Black	1	11	99.45	3.42	11	98.91	4.37	11	-0.55	5.16
	Other	1	3	98.67	3.79	3	94.33	7.51	3	-5.33	3.79
Female		2	53	95.64	5.51	53	93.79	7.91	53	-1.85	6.12
Male		2	28	97.32	6.22	28	94.29	8.62	28	-3.04	6.50
Female	White	3	44	94.70	5.52	44	92.73	8.00	44	-1.98	6.32
Female	Black	3	7	100.00	1.91	7	99.71	4.27	7	-0.29	5.35
Female	Other	3	2	101.00	4.24	2	96.50	9.19	2	-4.50	4.95
Male	White	3	23	97.13	6.57	23	93.91	9.23	23	-3.22	6.79
Male	Black	3	4	98.50	5.45	4	97.50	4.80	4	-1.00	5.60
Male	Other	3	1	97.00	0	1	90.00	0	1	-7.00	0

TABLE 7
PROC TABULATE OF WORK.MBP2
SUMMARY REPORT

	Gender																	
	Female									Male								
	Baseline Diastolic BP			Final Diastolic BP			Change in Diastolic BP			Baseline Diastolic BP			Final Diastolic BP			Change in Diastolic BP		
	No.	Mean	Std Dev.	No.	Mean	Std Dev.	No.	Mean	Std Dev.	No.	Mean	Std Dev.	No.	Mean	Std Dev.	No.	Mean	Std Dev.
Race																		
White	44	94.70	5.52	44	92.73	8.00	44	-1.98	6.32	23	97.13	6.57	23	93.91	9.23	23	-3.22	6.79
Black	7	100.00	1.91	7	99.71	4.27	7	-0.29	5.35	4	98.50	5.45	4	97.50	4.80	4	-1.00	5.60
Other	2	101.00	4.24	2	96.50	9.19	2	-4.50	4.95	1	97.00	0	1	90.00	0	1	-7.00	0
All	53	95.64	5.51	53	93.79	7.91	53	-1.85	6.12	28	97.32	8.22	28	94.29	8.62	28	-3.04	6.50

TABLE B
PROC REPORT OF WORK.NEWMBP
SUMMARY REPORT

Race	Gender																	
	Female						Male											
	Baseline Diastolic BP			Final Diastolic BP			Change in Diastolic BP			Baseline Diastolic BP			Final Diastolic BP			Change in Diastolic BP		
	No.	Mean	Std. Dev.	No.	Mean	Std. Dev.	No.	Mean	Std. Dev.	No.	Mean	Std. Dev.	No.	Mean	Std. Dev.	No.	Mean	Std. Dev.
White	44	94.70	5.52	44	92.73	8.00	44	-1.98	6.32	23	97.13	6.57	23	93.91	9.23	23	-3.22	6.79
Black	7	100.00	1.91	7	98.71	4.27	7	-0.29	5.35	4	98.50	5.45	4	97.50	4.80	4	-1.00	5.60
Other	2	101.00	4.24	2	96.50	9.19	2	-4.50	4.95	1	97.00	0	1	90.00	0	1	-7.00	0
All	53	95.64	5.51	53	93.79	7.91	53	-1.85	6.12	28	97.32	6.22	28	94.29	8.62	28	-3.04	6.50