GENERATION OF SERIAL REPORTS AND GRAPHS IN A PRODUCTION ENVIRONMENT

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ABSTRACT

IN THE INDUSTRIAL SETTING, THERE IS AN EFFICIENT WAY TO GENERATE SERIAL CUSTOMIZED PRODUCTION GRAPHICS FROM MULTI-INPUT DATA. CURRENTLY, REPORTS ARE RECEIVED FROM A COMMERCIAL REPORTING AGENCY ON A PC DISKETTE. A REPORT IS RECEIVED ON A BI-WEEKLY BASIS PROVIDING TRACKING OF A PRODUCT'S MARKET SHARE IN ALL U.S. DISTRICTS FOR A 13 WEEK PERIOD. THE CURRENT ROUTINE TO HANDLE PRODUCTION OF THE REPORTS AND GRAPHICS IS LABOR INTENSIVE. THE REPORT DATA ON THE DISKETTE MUST BE REFORMATTED TO A FLAT FILE USING COBOL AND THE REPORTS AND GRAPHICS ARE PRODUCED BY USING SEVERAL SOFTWARE PACKAGES. EACH OF THE PLOTS WERE PREVIOUSLY GENERATED INDIVIDUALLY.

A MORE EFFICIENT ROUTINE WAS DESIGNED USING SAS* IN A CMS OR TSO ENVIRONMENT TO PRODUCE THE REPORTS AND GRAPHICS FROM THE REPORT DATA GENERATED BY THE COMMERCIAL REPORTING AGENCY. THE REPORT DATA IS REFORMATTED AND A SAS DATASET PRODUCED USING SAS CODE. SINCE VERSION 5, SAS/GRAPH* SOFTWARE INCLUDES THE ANNOTATE FACILITY WHICH ENABLES CUSTOMIZED GRAPHS TO BE EASILY GENERATED. MACRO LANGUAGE ALLOWS FOR THE PRODUCTION OF SERIAL REPORTS AND CUSTOMIZED GRAPHICS. SAS SOFTWARE IS ADVANTAGEOUS SINCE IT ALLOWS: 1) THE ABILITY TO OUTPUT ALL OF THE REPORTS AND GRAPHS BY DISTRICT IN A TIMELY MANNER, 2) THE USE OF A SINGLE SOFTWARE PACKAGE, AND 3) MORE EFFICIENT PROGRAMMING CODE.

INTRODUCTION

IN AN INDUSTRIAL SETTING, MANY CUSTOMIZED PLOTS AND REPORTS ARE GENERATED USING SEVERAL TYPES OF DATA INPUT. WHEN A LARGE NUMBER OF CUSTOMIZED GRAPHIC PLOTS HAVE THE SAME VARIABLES BUT ARE DERIVED FROM SUBSETS OF THE DATA, AN EFFICIENT WAY TO PRODUCE GRAPHICS IS DONE BY DEVELOPING A PROGRAM THAT PRODUCES SERIAL CUSTOMIZED PRODUCTION GRAPHICS. THIS PROGRAM ALLOWS THE USER TO PRODUCE A LARGE NUMBER OF CUSTOMIZED PLOTS IN A TIMELY AND "ON-NEED" BASIS.

WE DEVELOPED A CUSTOMIZED PRODUCTION GRAPHICS PROGRAM TO VISUALLY DISPLAY SALES INFORMATION FOR EACH SALES DISTRICT. THE REPORTS AND GRAPHS ARE THEN DISTRIBUTED TO THE REGIONAL MANAGERS. THE SALES DATA IS OBTAINED THROUGH A COMMERCIAL REPORTING AGENCY ON A PC DISKETTE. THIS INFORMATION IS CONVERTED TO A SAS DATASET. SAS/GRAPH VERSION 5 SOFTWARE AND THE USE OF THE ANNOTATE FACILITY ENABLE US TO PRODUCE CUSTOMIZED GRAPHICS AND THE MACRO LANGUAGE ALLOWS EFFICIENT GENERATION OF SERIAL PRODUCTION PLOTS.

PROCEDURE

THE COMMERCIAL REPORTING DISKETTE INFORMATION IS UPLOADED TO A CMS OR TSO ENVIRONMENT (SEE TABLE 1). LINES OF THE REPORT ARE THEN READ INTO A SAS DATASET. FROM THIS DATA, THE DATES, NATIONAL, REGIONAL, DISTRICT NUMBERS, AND MARKET SHARE SALES DATA ARE EXTRACTED USING SUBSTR STATEMENTS (SEE TABLE 2). ANOTHER DATASET IS DEVELOPED WHICH INCLUDES THESE EXTRACTED VARIABLES (SEE TABLE 3). THIS PROCESS ALLOWS FOR THE EXTRACTION OF INFORMATION NEEDED TO PRODUCE THE REPORTS ANO GRAPHS (SEE APPPENDIX A, WHICH PROVIDES THE ENTIRE PROGRAM CODE).

TO PROVIDE THE ABILITY FOR EACH GRAPH TO BE LABELLED UNIQUELY, MACRO VARIABLES ARE GENERATED AND STORED FOR DISTRICT NUMBER, AND X-AXIS AND Y-AXIS PARAMETERS ARE USED IN THE AXIS STATEMENTS. THE SYMPUT FUNCTION IN MACRO LANGUAGE PROVIDES THE CAPABILITY TO PLOT ALL DATA-DEPENDENT AXIS VARIABLES.

CODE FOR THE X- AND Y-AXIS PARAMETERS USED IN THE AXIS STATEMENTS FOLLOWS:

```
DATA XYAXIS;  SET TWO END=EOF;
BY DISTNUM YEAR MONTH WKNUM;

IF LAST.DISTNUM;
  LASTNUM=WKNUM;
  FRSTNUM=LASTNUM-(SUBDIV*(WEEKSIN-1));
  XTRANUM=LASTNUM+SUBDIV;

CNT+1;

CALL SYMPUT('DISTR'!!
  LEFT(PUT(CNT,3.)),DISTNUM);
CALL SYMPUT('FRST'!!
  LEFT(PUT(CNT,3.)),FRSTNUM);
CALL SYMPUT('XTRA'!!
  LEFT(PUT(CNT,3.)),XTRANUM);
CALL SYMPUT('LAST'!!
  LEFT(PUT(CNT,3.)),LASTNUM);

IF EOF THEN CALL SYMPUT('ALL',CNT);

THE FOLLOWING EXTENDS THE LOWER AND UPPER LIMIT
TO THE NEXT HALF UNIT TO PROVIDE A UNIFORM Y-AXIS
FOR ALL GRAPHS.

IF EOF THEN CALL SYMPUT('SUBDIVD',SUBDIV);

IF EOF THEN DO;
  MINYAX=&MNYAX;
  MAXYAX=&MXYAX;
  MINYAX=(INT(2*MINYAX))/2;
  MAXYAX=(INT(2*MAXYAX)+1)/2;
  CALL SYMPUT('MNYAX',MINYAX);
  CALL SYMPUT('MXYAX',MAXYAX);
END;

IT SHOULD BE NOTED THAT THE MINYAX AND MAXYAX ARE
CREATED AT THE END OF DATA ONE.

ONCE THE MACRO VARIABLES ARE GENERATED, THEY CAN
BE UTILIZED IN A GENERIC PROGRAM TO ESTABLISH THE

ANNOTATE DATASET NEEDED TO CUSTOMIZE THE GRAPHICS
OUTPUT.

THE ANNOTATE DATASET CONTAINS THE LABELS FOR THE
X-AXIS AND THE LEGEND LABELS FOR THE GRAPHED LINES.
THE FOLLOWING ESTABLISHES THE ANNOTATE DATASET.
NOTE:  ALL SECTIONS OF THE FOLLOWING ARE PART OF
THE SUGIANO ANNOTATE DO-END LOOP.

%MACRO SUGIANO;
  %DO I=1   %TO &ALL;

DATA A&&DISTR&I
  (KEEP FUNCTION X Y XSYS YSYS HSYS TEXT POSITION
   STYLE SIZE WHEN COLOR);
SET TWO;  BY DISTNUM YEAR MONTH WKNUM;

IF DISTNUM="&&DISTR&I";

FUNCTION='LABEL    ';     LENGTH TEXT $8;

THE FOLLOWING SET OF STATEMENTS USING THE ANNOTATE FACILITY, PRODUCES THE LABELLING OF THE DAY
AND MONTH FOR THE X-AXIS:

IF FIRST.MONTH AND WKNUM NE &&LAST&I THEN DO;
  TEXT=PUT(WKNUM,WORDDATE3.);  WHEN='A';
  XSYS='2';  YSYS='3';  HSYS='2';  POSITION='5';
  STYLE='COMPLEX';  SIZE=0.16;  X=WKNUM;  Y=11;
  OUTPUT;
END;

THESE ANNOTATE FACILITY STATEMENTS PRODUCE THE
NATIONAL, REGIONAL, AND DISTRICT LEGEND LABELS
TO THE RIGHT OF THE GRAPHED LINES:

IF WKNUM=&&LAST&I THEN DO;
  WHEN='A';  XSYS='2';  YSYS='2';  HSYS='2';
  POSITION='6';  STYLE='COMPLEX';  SIZE=0.12;
  X=WKNUM+0.35;  SPACE=.3;

THE FOLLOWING PRODUCES THE COLOR LEGEND LABELS.
.
.
Y=VALUE; COLOR='GREEN'; TEXT='DISTRICT'; OUTPUT;
Y=VALUE; COLOR='RED';   TEXT='NATIONAL'; OUTPUT;
Y=VALUE; COLOR='BLUE';  TEXT='REGIONAL'; OUTPUT;

ADDITIONAL CODE IS NECESSARY TO PREVENT LEGEND
LABELS FROM OVERLAPPING (SEE APPENDIX A FOR ADDITIONAL CODE WHICH IS TO BE INSERTED WHERE THE 2
VERTICAL DOTS ARE PRINTED).

THE SERIAL CUSTOMIZED PRODUCTION PLOTS ARE GENERATED BY USING THE PREVIOUS ANNOTATE DATASET AND
MACRO, AND BY EXECUTING:

DATA OUTPLOT;  SET TWO; IF DISTNUM="&&DISTR&I";

PROC GPLOT GOUT=OUTGRAF.SUGI;
  PLOT NATVAL* WKNUM=1
       RVAL  * WKNUM=2
       VALUE * WKNUM=3/OVERLAY HAXIS=AXIS1
       VAXIS=AXIS2 ANNOTATE=A&&DISTR&I;
FORMAT WKNUM DDMMYY2.;
```

```
AXIS1 LABEL=(F=COMPLEX H=1.4 C=BLUE 'WEEK')
  VALUE=(T=14 ' ')  MINOR=NONE  OFFSET=(0)
  ORIGIN=(10 PCT, 15 PCT)
  ORDER=(&&FRST&I TO && XTRA&I BY SUBDIVD);
AXIS2 LABEL=(F=COMPLEX R=0 A=90 H=1.2
  C=BLUE 'PERCENT NEWPROD MARKET SHARE')
  ORDER=(0 TO 4.5 BY .5) MINOR=(N=1) OFFSET=(0);

SYMBOL1 C=RED   V=TRIANGLE I=JOIN  W=2 L=2;
SYMBOL2 C=BLUE  V=STAR     I=JOIN  W=2 L=8;
SYMBOL3 C=GREEN V=SQUARE   I=JOIN  W=2 L=1;

TITLE1 F=TRIPLEX C=BLUE
  UNDERLIN=2 'NEWPROD SHARE OF MARKET DOLLARS';
TITLE3 F=COMPLEX C=RED
  "DISTRICT NUMBER:  &&DISTR&I";
%MEND;  *---END OF SUGIANO DO-END LOOP;
%MEND SUGIANO;
%SUGIANO
```

SIMILARLY, SERIAL REPORTS ARE GENERATED USING AN ADDITIONAL MACRO BESIDES THE MACRO VARIABLES PREVIOUSLY GENERATED.

SUMMARY

THIS ROUTINE ALLOWS FOR THE SERIAL CUSTOMIZED PRODUCTION GRAPHICS FROM SUBSETS OF A SAS DATASET. EACH GRAPH IS UNIQUELY LABELLED DUE TO THE ANNOTATE FACILITY AND THE MACRO LANGUAGE. THE PLOTS ARE PRODUCED WITH EASE IN A TIMELY MANNER AND PROGRAMMING IS EFFICIENT USING SAS.

ACKNOWLEDGEMENTS

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REFERENCES

- SAS/GRAPH USER'S GUIDE, VERSION 5 EDITION. SAS INSTITUTE, INC., CARY, N.C.
- SAS USER'S GUIDE: BASICS, VERSION 5 EDITION. SAS INSTITUTE, INC., CARY, N.C.

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APPENDIX A

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 OPTIONS MISSING=' ' NONUMBER DQUOTE SYMBOLGEN;

*-------------------------------------------------*
*  PGM:  REVMACZ SAS A FROM SUGIMACZ SAS A        *
*        FEB. 25, 1988                  TAH       *
*-------------------------------------------------* ;

PROC FORMAT;
  VALUE $MONNUM
     'JAN'='01'
     'FEB'='02'
     'MRC'='03'
     'APR'='04'
     'MAY'='05'
     'JNE'='06'
     'JLY'='07'
     'AUG'='08'
     'SEP'='09'
     'OCT'='10'
     'NOV'='11'
     'DEC'='12';

DATA ONE;
  CMS FILEDEF DATA1 DISK SUGI1 DATA A;
  INFILE DATA1;
    INPUT
      MYLINE $ 1-132;

DROP MYLINE  MONSTR  STARTWK  YRSTR  TESTYR  DAYSTR  I  LOC
     MINYAX  MAXYAX;

LENGTH MONSTR $2  VALUE 8;
RETAIN WEEKSIN  SUBDIV
       MINYAX  MAXYAX  MONSTR  STARTWK;

*-------------------------------------------------------------*
*  INDICATES 13 WEEKS (DIVISIONS OF 7)                        *
*-------------------------------------------------------------* ;
WEEKSIN=13;
SUBDIV=7;

*-------------------------------------------------------------*
*  INITIATES THE MIN AND MAX YAXIS VALUES                     *
*-------------------------------------------------------------* ;
IF MINYAX=' ' THEN MINYAX=999;
IF MAXYAX=' ' THEN MAXYAX=-999;

YRSTR='87';
TESTYR='/'||YRSTR;

*-------------------------------------------------------------*
*  DETERMINES FIRST MONTH OF THE REPORT.                      *
*-------------------------------------------------------------* ;
IF SUBSTR(MYLINE,1,3)='WK/' AND MONSTR='  ' THEN

  MONSTR=PUT(SUBSTR(MYLINE,4,3),$MONNUM.);

*-------------------------------------------------------------*
*  DETERMINES FIRST WEEK AND CREATES A DATA VARIABLE          *
*  CALLED 'STARTWK'.                                          *
*-------------------------------------------------------------* ;
IF SUBSTR(MYLINE,3,3)=TESTYR AND DAYSTR='  ' THEN DO;
  DAYSTR=SUBSTR(MYLINE,1,2);
  STARTWK=INPUT((MONSTR||DAYSTR||YRSTR),MMDDYY6.);
END;

*-------------------------------------------------------------*
*  KEEPS ONLY DATA LINES.  THE FIRST WEEK'S DECIMAL POINT     *
*  OCCURS IN POSITION 27 FOR DISTRICT DATA, IN POSITION 25    *
*  FOR REGION DATA AND POSITION 23 FOR NEWPROD/NATL TOTAL     *
*-------------------------------------------------------------* ;
IF SUBSTR(MYLINE,27,1)='.' OR SUBSTR(MYLINE,25,1)='.' OR
   SUBSTR(MYLINE,23,1)='.';

*-------------------------------------------------------------*
*  RECREATES 5 CHARACTER DISTRICT NUMBER (WHICH IS ACTUALLY   *
*  A 5 DIGIT TERRITORY NUMBER).                               *
*-------------------------------------------------------------* ;
IF SUBSTR(MYLINE,1,3) = 'NEW' THEN DISTNUM = '_____';
  ELSE IF SUBSTR(MYLINE,2,2) = ' ' THEN DISTNUM =
    SUBSTR(MYLINE,1,1)||'____';
  ELSE IF SUBSTR(MYLINE,1,1) NE ' ' THEN DISTNUM =
    SUBSTR(MYLINE,1,3)||'__';

*-------------------------------------------------------------*
*  SHIFTS DATA WITHIN THE VARIABLE 'MYLINE' TO ALIGN ALL      *
*  DATA ELEMENTS.                                             *
*-------------------------------------------------------------* ;
IF SUBSTR(MYLINE,2,2)= ' ' THEN MYLINE =
  SUBSTR(MYLINE,1,10) !! ' ' !! SUBSTR(MYLINE,11,120);
    ELSE IF SUBSTR(MYLINE,1,3) NE 'NEW' THEN MYLINE =
      SUBSTR(MYLINE,1,10) !!    ' ' !! SUBSTR(MYLINE,11,118);

*-------------------------------------------------------------*
*  STRIPS EACH WEEK OF A REGION, DISTRICT OR NATL TOTAL AND   *
*  OUTPUTS IT AS 1 OBS.  INCLUDES SAS DATE VALUE (WKNUM),     *
*  ITS FORMATTED VALUE (WKNAME), AND THE DATA ITSELF (VALUE)  *
*-------------------------------------------------------------* ;
DO I=1 TO WEEKSIN;
  WKNUM=STARTWK + SUBDIV*(I-1);
  WKNAME=PUT(WKNUM,MMDDYY8.);
  LOC=(I*7)+16;
  VALUE=PUT(SUBSTR(MYLINE,LOC,6),6.1);
  MINYAX=MIN(VALUE,MINYAX);
  MAXYAX=MAX(VALUE,MAXYAX);
  OUTPUT;
END;

CALL SYMPUT('MNYAX',MINYAX);
CALL SYMPUT('MXYAX',MAXYAX);

PROC SORT;  BY DISTNUM;

*-------------------------------------------------------------*
*  OUTPUTS REGION, DISTRICT AND NATL TOTALS INTO THEIR OWN    *
*  RESPECTIVE DATASETS.                                       *
*-------------------------------------------------------------* ;
DATA NAT REG DISTR;  SET ONE;  BY DISTNUM;

  FIRSTNUM=SUBSTR(DISTNUM,1,1);   ***** REGION NUMBER *****;

  IF DISTNUM='     ' THEN OUTPUT NAT;
    ELSE IF SUBSTR(DISTNUM,2,4)='____' THEN OUTPUT REG;
    ELSE OUTPUT DISTR;

PROC SORT DATA=REG;    BY WKNUM FIRSTNUM DISTNUM;

PROC SORT DATA=DISTR;  BY WKNUM FIRSTNUM DISTNUM;

*-------------------------------------------------------------*
*  MERGE REGION TOTAL WITH DISTRICT TOTAL.                    *
*-------------------------------------------------------------* ;
DATA TWO;  MERGE REG(RENAME=(VALUE=RVAL)) DISTR;  BY WKNUM FIRSTNUM;

PROC SORT DATA=NAT;  BY WKNUM;

*-------------------------------------------------------------*
*  MERGE NATL TOTAL WITH REGION AND DISTRICT TOTAL.           *
*-------------------------------------------------------------* ;
DATA TWO;  MERGE NAT(RENAME=(VALUE=NATVAL)) TWO;  BY WKNUM;

  YEAR=YEAR(WKNUM);  MONTH=MONTH(WKNUM);

PROC SORT;  BY DISTNUM YEAR MONTH WKNUM;

DATA XYAXIS;  SET TWO END=EOF;  BY DISTNUM YEAR MONTH WKNUM;
  IF LAST.DISTNUM;
    LASTNUM=WKNUM;
    FRSTNUM=LASTNUM-(SUBDIV*(WEEKSIN-1));
    XTRANUM=LASTNUM+SUBDIV;

CNT+1;

  CALL SYMPUT('DISTR'||LEFT(PUT(CNT,3.)),DISTNUM);
  CALL SYMPUT('FRST'||LEFT(PUT(CNT,3.)),FRSTNUM);
  CALL SYMPUT('XTRA'||LEFT(PUT(CNT,3.)),XTRANUM);
  CALL SYMPUT('LAST'||LEFT(PUT(CNT,3.)),LASTNUM);

IF EOF THEN CNT=1;
IF EOF THEN CALL SYMPUT('ALL',CNT);

*-------------------------------------------------------------*
*  EXTENDS THE LOWER AND UPPER LIMIT TO THE NEXT HALF UNIT    *
*-------------------------------------------------------------*;

IF EOF THEN CALL SYMPUT('SUBDIVD',SUBDIV);

IF EOF THEN DO;
  MINYAX=&MNYAX;
  MAXYAX=&MXYAX;
  MINYAX=(INT(2*MINYAX))/2;
  MAXYAX=((INT(2*MAXYAX))+1)/2;
  CALL SYMPUT('MNYAX',MINYAX);
  CALL SYMPUT('MXYAX',MAXYAX);
END;
```

```
DATA _NULL_;
*-------------------------------------------------------------*
*  THIS DATA STEP NEEDS TO BE HERE SO THE NEWLY-CREATED MACRO *
*  MAY BE PROPERLY CALLED.                                    *
*-------------------------------------------------------------* ;

*-------------------------------------------------------------*
*  THE FOLLOWING 'GOPTIONS' ARE PUT INTO EFFECT ONCE BEFORE   *
*  THE SERIES OF PROC GPLOTS ARE CALLED.                      *
*-------------------------------------------------------------* ;
GOPTIONS NOTEXT82 ROTATE NOPROMPT GOUTMODE=APPEND;
GOPTIONS NODISPLAY HPOS=100 VPOS=60
        C=(WHITE,RED,GREEN,BLUE);

%MACRO SUGIANO;
  %DO I=1  %TO &ALL;

DATA A&&DISTR&I
  (KEEP=FUNCTION X Y XSYS YSYS HSYS TEXT
        POSITION STYLE SIZE WHEN COLOR FONT);
  SET TWO;  BY DISTNUM YEAR MONTH WKNUM;

IF DISTNUM="&&DISTR&I";

FUNCTION='LABEL    ';
LENGTH TEXT $8;

*-------------------------------------------------------------*
* THE FOLLOWING DO-END SERIES CONTROLS LABELLING OF MONTHS    *
* UNDER THE GRAPH.                                            *
*-------------------------------------------------------------* ;
  IF FIRST.MONTH AND WKNUM NE &&LAST&I THEN DO;
    TEXT=PUT(WKNUM,WORDDATE3.);
    WHEN='A';
    XSYS='2';
    YSYS='9';
    HSYS='2';
    POSITION='5';
    STYLE='COMPLEX';
    SIZE=0.16;
    X=WKNUM;
    Y=11;
    OUTPUT;
  END;

*-------------------------------------------------------------*
* THIS NEXT SERIES CONTROLS NAT, REG, DIST LABELLING TO THE   *
* RIGHT OF THE GRAPHED LINES.                                 *
*-------------------------------------------------------------* ;
IF WKNUM=&&LAST&I THEN DO;
  WHEN='A';
  XSYS='2';
  YSYS='2';
  HSYS='2';
  POSITION='6';
  STYLE='COMPLEX';
  SIZE=0.12;
  X=WKNUM+0.35;
  SPACE=.3;

*-------------------------------------------------------------*
*  THE MIDDLE POINT WILL BE THE SHORTEST DISTANCE FROM THE    *
*  MEAN.  ALL CASES OF ORDER WILL BE TESTED TO PREVENT A      *
*  LABEL FROM BEING LESS THAN ZERO OR FROM OVERLAPPING        *
*  ANOTHER LABEL.                                             *
*-------------------------------------------------------------* ;
MEANVAL=MEAN(OF NATVAL RVAL VALUE);
  ANAT=ABS(NATVAL-MEANVAL);
  ARVAL=ABS(RVAL-MEANVAL);
  AVAL=ABS(VALUE-MEANVAL);

*-------------------------------------------------------------*
*  IF NATIONAL IS THE MIDDLE VALUE (LABEL).                   *
*-------------------------------------------------------------* ;
IF ANAT=MIN(OF ANAT ARVAL AVAL) THEN DO;
IF NATVAL LT (SPACE+.02) THEN NATVAL=(SPACE+.02);
  IF RVAL GE VALUE THEN DO;
    IF RVAL-NATVAL LT SPACE THEN RVAL=NATVAL+SPACE;
    IF NATVAL-VALUE LT SPACE THEN VALUE=NATVAL-SPACE;
END;

ELSE DO;
  IF VALUE-NATVAL LT SPACE THEN VALUE=NATVAL+SPACE;
  IF NATVAL-RVAL LT SPACE THEN RVAL=NATVAL-SPACE;
END;
END;

*-------------------------------------------------------------*
*  IF REGIONAL IS THE MIDDLE VALUE (LABEL).                   *
*-------------------------------------------------------------* ;
ELSE IF
  ARVAL=MIN(OF ANAT ARVAL AVAL) THEN DO;
  IF RVAL LT (SPACE+.02) THEN RVAL=(SPACE+.02);
    IF NATVAL GE VALUE THEN DO;
      IF NATVAL-RVAL LT SPACE THEN NATVAL=RVAL+SPACE;
      IF RVAL-VALUE LT SPACE THEN VALUE=RVAL-SPACE;
END;

ELSE DO;

  IF VALUE-RVAL LT SPACE THEN VALUE=RVAL+SPACE;
  IF RVAL-NATVAL LT SPACE THEN NATVAL=RVAL-SPACE;
END;
END;

*-------------------------------------------------------------*
*  IF DISTRICT IS THE MIDDLE VALUE (LABEL).                   *
*-------------------------------------------------------------* ;
ELSE DO;
IF VALUE LT (SPACE+.02) THEN VALUE=(SPACE+.02);
  IF RVAL GE NATVAL THEN DO;
    IF RVAL-VALUE LT SPACE THEN RVAL=VALUE+SPACE;
      IF VALUE-NATVAL LT SPACE THEN NAT=VALUE-SPACE;
END;

ELSE DO;
  IF NATVAL-VALUE LT SPACE THEN NATVAL=VALUE+SPACE;
  IF VALUE-RVAL LT SPACE THEN RVAL=VALUE-SPACE;
END;
END;

  Y=VALUE;  COLOR='GREEN';  TEXT='DISTRICT';   OUTPUT;  *DIST;
  Y=NATVAL; COLOR='RED';    TEXT='NATIONAL';   OUTPUT;  *NAT;
  Y=RVAL;   COLOR='BLUE';   TEXT='REGIONAL';   OUTPUT;  *REG;
END;

DATA OURPLOT;  SET TWO;

IF DISTNUM="&&DISTR&I";

PROC GPLOT GOUT=OURGRAF.SUGI;
  PLOT NATVAL * WKNUM=1
       RVAL   * WKNUM=2
       VALUE  * WKNUM=3 / OVERLAY  HAXIS=AXIS1 VAXIS=AXIS2
                          ANNOTATE=A&&DISTR&I;

  FORMAT WKNUM DDMMYY2.;

  AXIS1 LABEL=(F=COMPLEX  H=1.4 C=BLUE 'WEEK')
        VALUE=(T=14 '  ')
        MINOR=NONE
        OFFSET=(0)
        ORIGIN=(10 PCT, 15 PCT)
        ORDER=(&&FRST&I TO &&XTRA&I BY &SUBDIVD);
  AXIS2 LABEL=(F=COMPLEX R=0 A=90 H=1.2 C=BLUE
        'PERCENT NEWPROD MARKET SHARE')
        ORDER=(0 TO 4.5 BY .5)
        MINOR=(N=1)
        OFFSET=(0);

SYMBOL1  C=RED    V=TRIANGLE  I=JOIN  W=2   L=2;    * NAT;
SYMBOL2  C=BLUE   V=STAR      I=JOIN  W=2   L=8;    * REG;
SYMBOL3  C=GREEN  V=SQUARE    I=JOIN  W=2   L=1;    * DIST;

TITLE1 F=TRIPLEX C=BLUE

       UNDERLIN=2 'NEWPROD SHARE OF MARKET DOLLARS'
       UNDERLIN=0;
TITLE3 F=COMPLEX C=RED "DISTRICT NUMBER:  &&DISTR&I";

#FOOTNOTE1 F=COMPLEX C=WHITE J=L H=1
          'SUGIMACZ SAS: BY JEFF JOSEPH & TRISHA HORMAN';
#FOOTNOTE2 F=COMPLEX C=WHITE J=L H=1
                       ABBOTT LABORATORIES, SUGI, MARCH 88';

%END;
%MEND SUGIANO;
%SUGIANO
/*
```

TABLE 1. COMMERCIAL REPORT INFORMATION UPLOADED TO A CMS OR TSO ENVIRONMENT

NEW-PRODUCT REPORT — MARKET SHARES ACROSS ALL GEOGRAPHIC LEVELS — 10/20/87 — PAGE 1

BY WEEK

	WK/JLY 17/87 -WDOL- CLT/HX WDOL	WK/JLY 24/87 WDOL CLT HX WDOL	WK/JLY 31/87 WDOL CLT HX WDOL	WK/AUG 07/87 WDOL CLT HX WDOL	WK/AUG 14/87 WDOL CLT HX WDOL	WK/AUG 21/87 WDOL CLT HX WDOL	WK/AUG 28/87 WDOL CLT HX WDOL	WK/SEP 04/87 WDOL CLT HX WDOL	WK/SEP 11/87 WDOL CLT HX WDOL	WK/SEP 18/87 WDOL CLT HX WDOL	WK/SEP 25/87 WDOL CLT HX WDOL	WK/OCT 02/87 WDOL CLT HX WDOL	WK/OCT 09/87 WDOL CLT HX WDOL
NEWPRO	0.1	0.5	3.2	3.3	3.4	2.8	2.9	3.1	2.6	2.1	2.2	2.5	3.4
S	0.0	0.1	0.5	0.7	1.0	1.5	2.3	2.5	2.8	3.1	3.4	3.5	4.0
SSI	0.2	0.4	0.8	1.6	1.9	2.1	2.2	2.2	2.2	2.3	1.8	1.7	1.5
1	1.7	1.8	2.1	2.2	2.4	2.6	2.7	2.7	2.4	1.2	1.0	1.5	2.2
114	0.6	0.7	1.1	1.3	1.5	1.9	2.7	2.3	1.8	2.8	2.8	4.2	2.8
120	0.0	0.4	2.3	1.7	1.2	2.9	2.5	2.2	2.4	2.4	2.1	2.3	3.2
122	0.2	0.6	1.8	2.2	3.4	2.5	2.0	1.8	1.9	1.4	2.0	2.2	2.2
124	1.5	1.8	1.2	0.8	4.0	3.4	3.0	3.0	2.1	2.2	2.2	2.1	2.6
125	1.0	1.2	1.5	1.6	2.3	2.7	4.3	2.3	2.7	4.4	3.1	3.2	2.7

TABLE 2. COMMERCIAL REPORT INFORMATION READ INTO A SAS DATASET

OBS — MYLINE

NEW-PRODUCT REPORT — MARKET SHARES ACROSS ALL GEOGRAPHIC LEVELS — 10/20/87 — PAGE 1

BY WEEK

OBS	WK/JLY 17/87 -WDOL- CLT/HX WDOL	WK/JLY 24/87 WDOL CLT HX WDOL	WK/JLY 31/87 WDOL CLT HX WDOL	WK/AUG 07/87 WDOL CLT HX WDOL	WK/AUG 14/87 WDOL CLT HX WDOL	WK/AUG 21/87 WDOL CLT HX WDOL	WK/AUG 28/87 WDOL CLT HX WDOL	WK/SEP 04/87 WDOL CLT HX WDOL	WK/SEP 11/87 WDOL CLT HX WDOL	WK/SEP 18/87 WDOL CLT HX WDOL	WK/SEP 25/87 WDOL CLT HX WDOL	WK/OCT 02/87 WDOL CLT HX WDOL	WK/OCT 09/87 WDOL CLT HX
1	NEWPRO	0.1	0.5	3.2	3.3	3.4	2.8	2.9	3.1	2.6	2.1	2.2	2.5	3.4
2	S	0.0	0.1	0.5	0.7	1.0	1.5	2.3	2.5	2.8	3.1	3.4	3.5	4.0
3	SSI	0.2	0.4	0.8	1.6	1.9	2.1	2.2	2.2	2.2	2.3	1.8	1.7	1.5
4	1	1.7	1.8	2.1	2.2	2.4	2.6	2.7	2.7	2.4	1.2	1.0	1.5	2.2
5	114	0.6	0.7	1.1	1.3	1.5	1.9	2.7	2.3	1.8	2.8	2.8	4.2	2.8
6	120	0.0	0.4	2.3	1.7	1.2	2.9	2.5	2.2	2.4	2.4	2.1	2.3	3.2
7	122	0.2	0.6	1.8	2.2	3.4	2.5	2.0	1.8	1.9	1.4	2.0	2.2	2.2
8	124	1.5	1.8	1.2	0.8	4.0	3.4	3.0	3.0	2.1	2.2	2.2	2.1	2.6
9	125	1.0	1.2	1.5	1.6	2.3	2.7	4.3	2.3	2.7	4.4	3.1	3.2	2.7

TABLE 3. EXTRACTED INFORMATION IN A SAS DATASET FROM COMMERCIAL REPORT INFORMATION

OBS	NATVAL	DISTNUM	WKNUM	WKNAME	FIRSTNUM	RVAL	VALUE	YEAR	MONTH
1	0.5	SSI	10171	11/06/87	S	0.4	0.1	1987	11
2	0.5	114	10171	11/06/87	1	0.2	0.2	1987	11
3	0.5	120	10171	11/06/87	1	0.2	0.1	1987	11
4	0.5	122	10171	11/06/87	1	0.2	0.4	1987	11
5	0.5	124	10171	11/06/87	1	0.2	0.2	1987	11
6	0.5	125	10171	11/06/87	1	0.2	0.3	1987	11
57	0.6	SSI	10178	11/13/87	S	1.1	0.3	1987	11
58	0.6	114	10178	11/13/87	1	0.1	0.3	1987	11
59	0.6	120	10178	11/13/87	1	0.1	0.3	1987	11
60	0.6	122	10178	11/13/87	1	0.1	0.2	1987	11
61	0.6	124	10178	11/13/87	1	0.1	0.3	1987	11
62	0.6	125	10178	11/13/87	1	0.1	0.4	1987	11

FIGURE 1. CUSTOMIZED GRAPH PRODUCED SHOWING PRODUCT'S MARKET SHARE FOR AN 11 WEEK PERIOD FOR THE DISTRICT, REGIONAL, AND NATIONAL SALES.

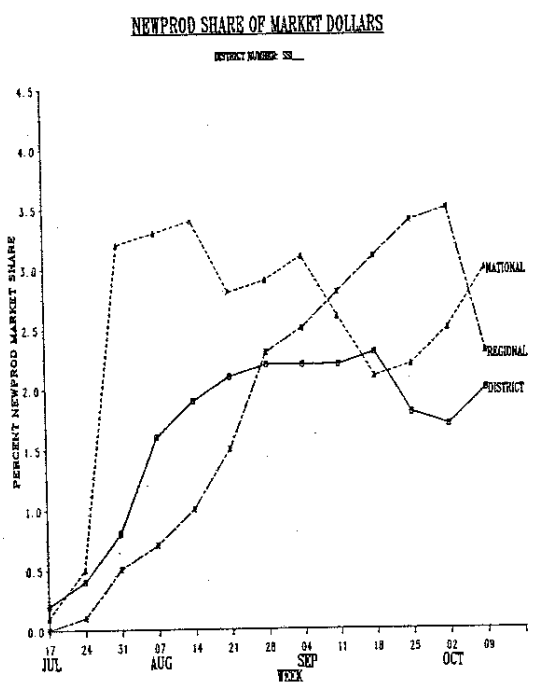

FIGURE 2. CUSTOMIZED GRAPH PRODUCED SHOWING PRODUCT'S MARKET SHARE FOR AN 11 WEEK PERIOD FOR THE DISTRICT, REGIONAL, AND NATIONAL SALES. NOTE THE GRAPH LINE LABELS ARE NON-OVERLAPPING.