

- WHO AM I... Mike Zdeb
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 School of Public Health
 Rensselaer, NY

- TEACH INTRODUCTORY (3 CREDIT) AND ADVANCED
 (1 CREDIT) SAS CLASSES, INTRODUCTORY
 STATISTICS IN-CLASS AND ON-LINE

- WE MAY HAVE THE ONLY STUDENTS FROM
 MONGOLIA, KHAZHAKSTAN, UZBEKISTAN, AND
 NOVOSIBIRSK (IN SIBERIA) WHO ARE 'SAS
 CERTIFIED'

- PAPER (CO-AUTHOR IS ROBERT ALLISON FROM SAS), SAS CODE, DATA ARE ON THE NESUG WEB SITE IN THE 2006 "INS & OUTS" SECTION ...

www.nesug.org

AND ON LEX JANSEN'S WEB SITE...

www.lexjansen.com

(GREAT WEB SITE TO ACCESS NESUG, SUGI, PHARMASUG, ETC. --- ONE STOP SEARCHING)

NESUG 2006 - Urban Legends and SAS

Stanley Fogleman, Harvard Clinical Research Institute

"SAS DOESN'T DO VERY GOOD GRAPHS In a word:
stupefying (ahurissant ?) ... someone spending 15 minutes
or less with the on-line Enterprise Guide tutorial would
discover that this claim is without merit."

a brief digression ... in 1500+ papers given at NESUG (1997 through 2007) ... how many times has an author used the word 'stupefying' ... 5 times, 4 times it's the same author ...

NESUG 2007 **Foundations & Fundamentals**

Example 1: File Matching (Lookup file loaded in a loop)

```
data match ( drop = rc ) ;
  length key $9 s_sat 8 ;

  declare AssociativeArray hh ( ) ;

  rc = hh.DefineKey ( 'key' ) ;
  rc = hh.DefineData ( 's_sat' ) ;
  rc = hh.DefineDone ( ) ;

  do until ( eof1 ) ;
    set small end = eof1 ;
    rc = hh.add ( ) ;
  end ;
  do until ( eof2 ) ;
    set large end = eof2 ;
    rc = hh.find ( ) ;
    if rc = 0 then output ;
  end ;
  stop ;
run ;
```

After all the trials and tribulations of coding hashing algorithms by hand, this simplicity looks rather **stupefying**. But how does this code go about its business?

- LENGTH statement gives SAS the attributes of the key and data elements before the methods defining them could be called.
- DECLARE AssociativeArray statement declares and instantiates the associative array (hash table) HH.
- DefineKey method describes the variable(s) to serve as a key into the table.
- DefineData method is called if there is a non-key satellite information, in this case, S_SAT, to be loaded in the table.
- DefineDone method is called to complete the initialization of the hash object.
- ADD method embeds KEY and S_SAT from SMALL end loads both in the table. Note that for every distinct KEY value

Search PDF Hide

Finished searching for:
stupefying

Finished searching in:
In the index named nesug_all.pdx

Documents found:
5

Total instances found:
5

➔ New Search

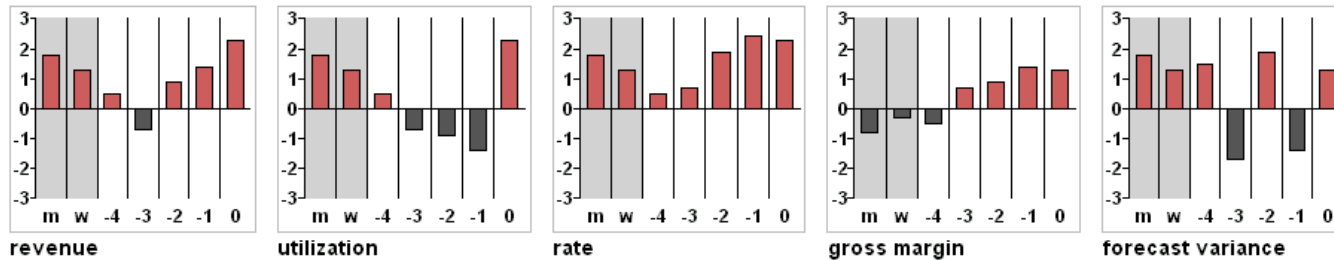
Results:

- Table Lookup by Direct Addressing:
 - rather **stupefying**. But how does thi
- Data Step Programming Using the I
 - rather **stupefying**. But how does thi
- Urban Legends and SAS
 - word: **stupefying**. Again, someone
- DATA Step Hash Objects and How t
 - rather **stupefying**. But how does thi
- Hash Crash and Beyond
 - rather **stupefying**. But how does thi

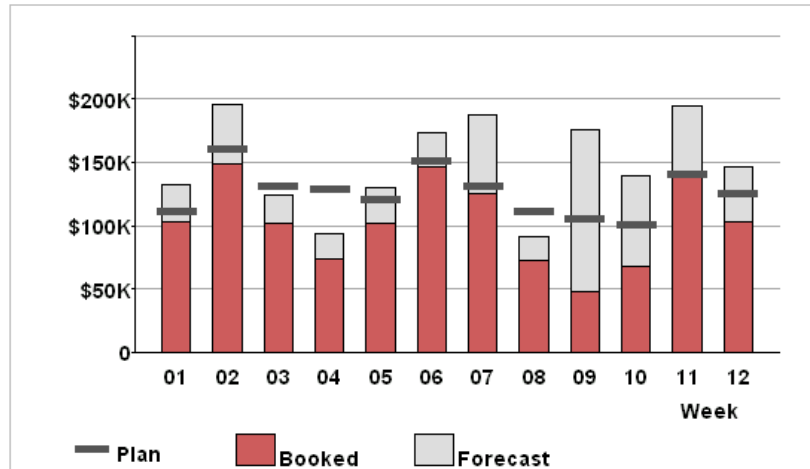
EDB | Executive DashBoard



(FILTER RESULT NAME DISPLAY)
AT A GLANCE



Trend for the Quarter



Pipeline



- ***SAS/GRAPH DOES DO VERY GOOD GRAPHS***
- REQUIRES SOME INVESTMENT OF TIME
- EVEN WITH ENTERPRISE GUIDE, WORTH KNOWING
PIECES OF INFORMATION THAT HELP TO PRODUCE
GOOD GRAPHS

- SAS FEATURE WITH ITS OWN MANUAL=COMPLEX

PROC SQL, PROC TABULATE, MACROS
- SAS/GRAPH HAS(HAD) TWO MANUALS=COMPLEX**2

MANUAL FOR SAS/GRAPH PROCEDURES (GCHART, GPLOT, GMAP, G3D, G_ETC.)

MANUAL FOR SAS/GRAPH GLOBAL STATEMENTS (AXIS, SYMBOL, PATTERN, LEGEND, TITLE, FOOTNOTE, NOTE, ETC.)

■ PLUS...

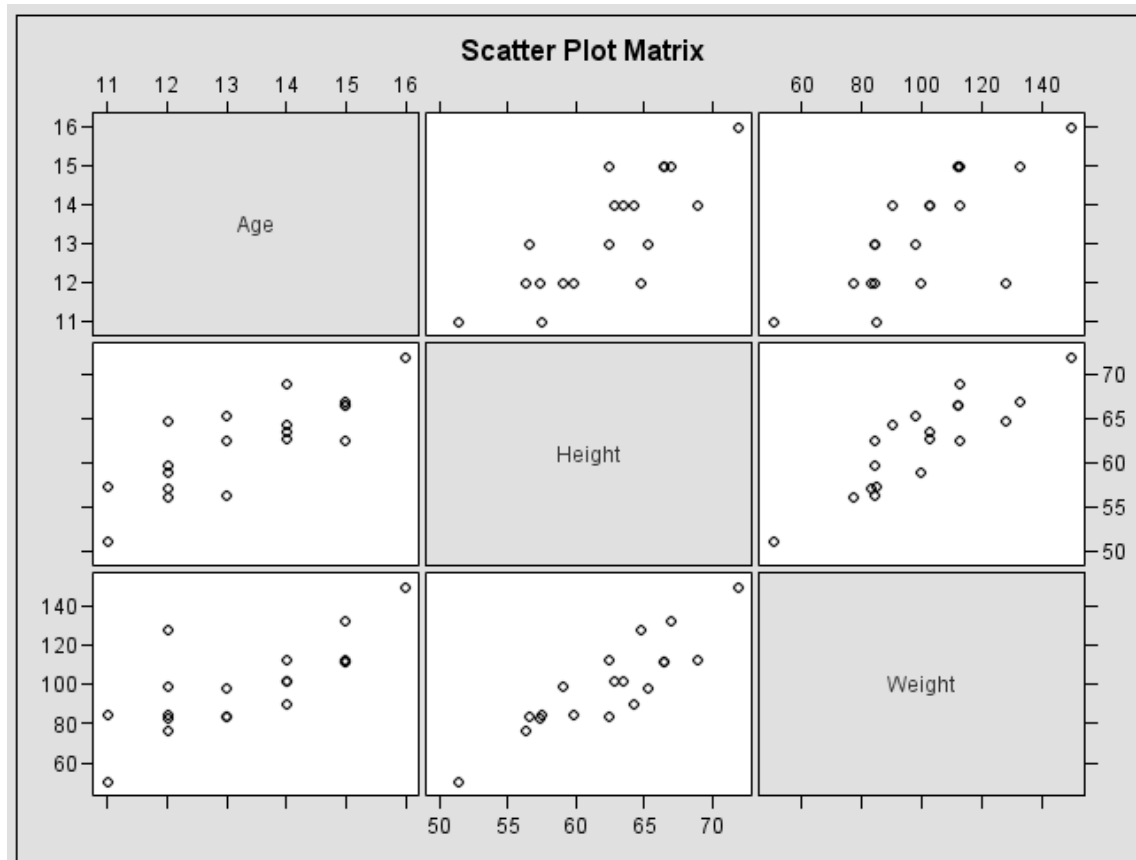
ANNOTATE, GOPTIONS, OUTPUT (HARDCOPY, GRAPHICS FILES, ODS)=COMPLEX**3

PLUS "SAS/GRAPH STYLE" GRAPHICS IN OTHER PROCEDURES (PROC UNIVARIATE AND PROC BOXPLOT) = COMPLEX**4

ODS STATISTICAL GRAPHICS ADDED TO SAS/STAT PROCEDURES = COMPLEX**5

■ ODS STATISTICAL GRAPHICS...

```
proc corr data=sashelp.class plots=matrix;
```



- SUGGESTION, START SLOWLY AND SIMPLY
- USE SAME APPROACH AS WHEN LEARNING OTHER NEW THINGS IN SAS

WHAT HAPPENS WHEN SAS MAKES ALL THE DECISIONS (WHAT IS THE DEFAULT BEHAVIOR)

HOW DO I ADD STATEMENTS TO MODIFY THE DEFAULT BEHAVIOR

■ PLOT GPLOT... BUILD A PLOT STEP-BY-STEP

HEALTH CARE EXPENDITURES IN THE UNITED STATES FROM 1970 THROUGH 2000

CREATE A PLOT THAT SHOWS THE TREND IN EXPENDITURES...

1/ PLOT TOTAL EXPENDITURES BY YEAR

2/ ADD FEDERAL GOVERNMENT EXPENDITURES

MINIMUM: DATA SET, PLOT STATEMENT

*** #1: PLOT NH_TOT VERSUS YEAR
LET SAS DESIGN THE PLOT;**

```
proc gplot data=t112;
plot nh_tot*year;
run;
quit;
```

| year | nh_tot | fg_tot |
|------|--------|--------|
| 1970 | 74.4 | 17.7 |
| 1971 | 82.3 | 20.4 |
| 1972 | 92.3 | 22.9 |
| 1973 | 102.5 | 25.2 |
| 1974 | 116.1 | 30.5 |
| 1975 | 132.9 | 36.4 |
| 1976 | 152.2 | 42.9 |
| 1977 | 172.0 | 47.6 |
| 1978 | 193.7 | 54.3 |
| 1979 | 217.2 | 61.4 |
| 1980 | 250.1 | 72.0 |
| 1981 | 290.2 | 84.0 |
| 1982 | 326.1 | 93.3 |
| 1983 | 358.6 | 103.2 |
| 1984 | 389.6 | 112.6 |
| 1985 | 422.6 | 123.6 |
| 1986 | 454.8 | 133.1 |
| 1987 | 494.1 | 144.0 |
| 1988 | 546.0 | 156.7 |
| 1989 | 602.8 | 175.0 |
| 1990 | 666.2 | 195.4 |
| 1995 | 990.2 | 322.4 |
| 2000 | 1309.4 | 416.0 |

NOTICE ...

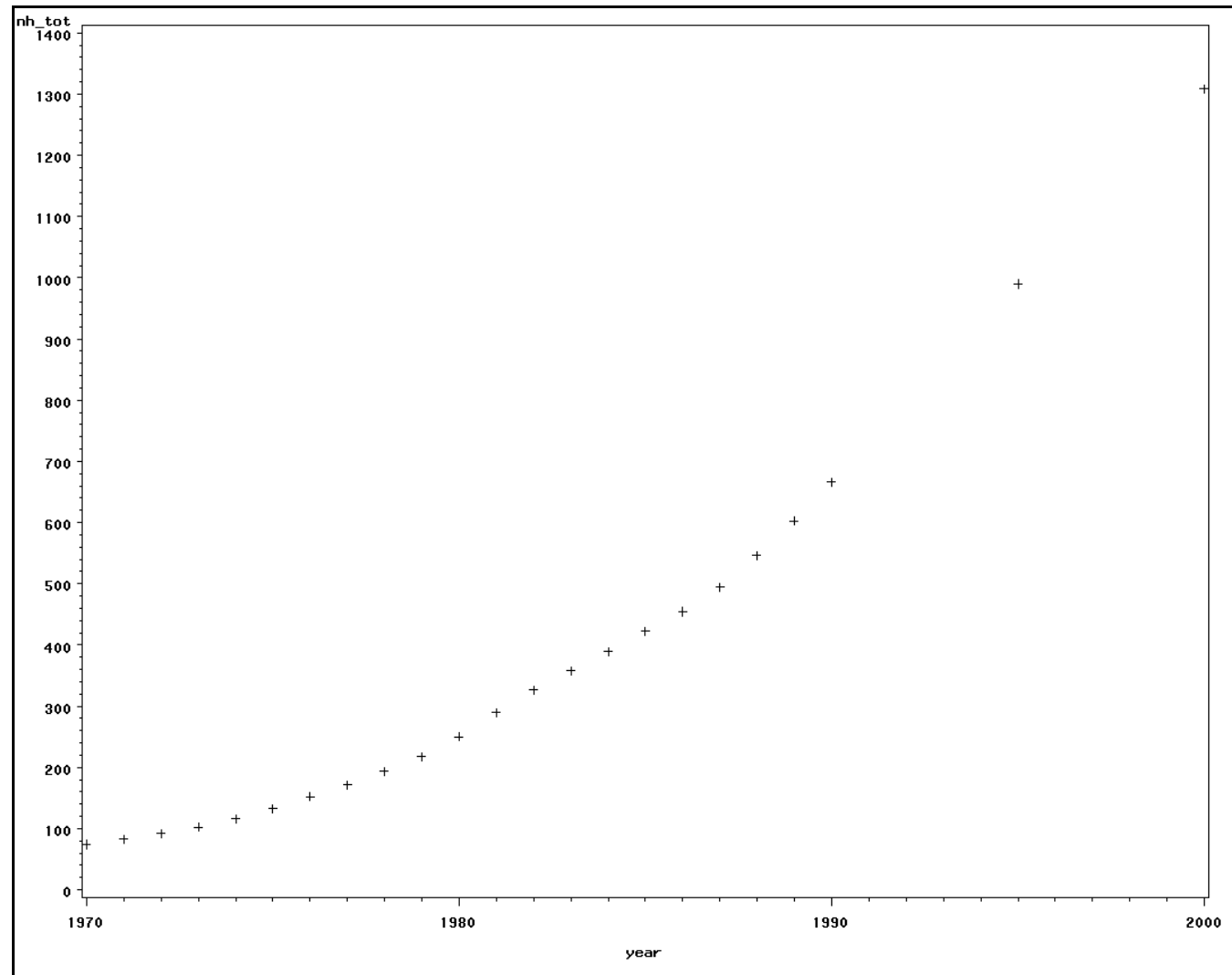
Y*X

SCATTER
WITH +

AXIS SCALES
AXIS LABELS

FRAMED

FONT/SIZE



GLOBAL: SYMBOL

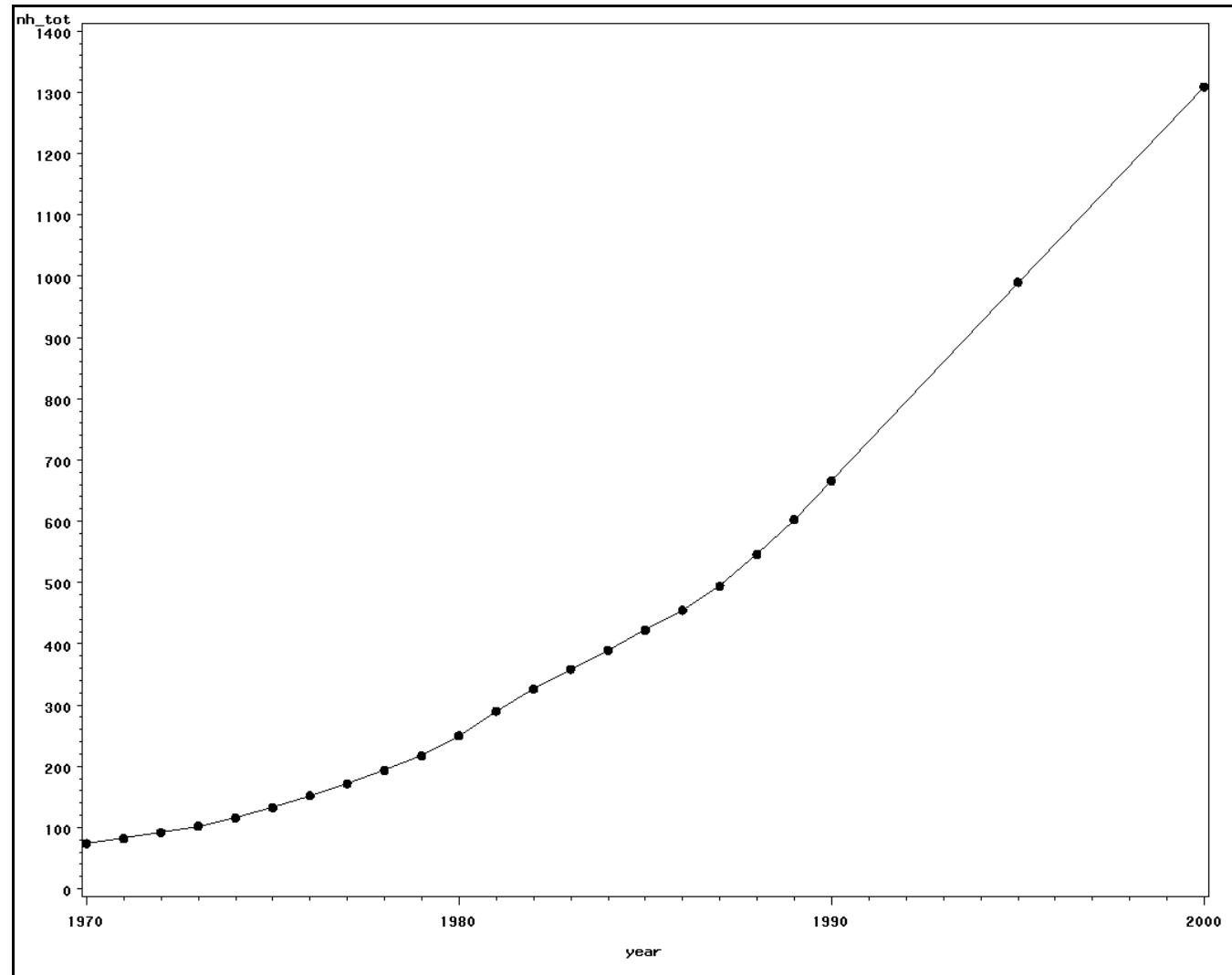
*** #2: CHANGE THE PLOTTING SYMBOL
AND JOIN THE POINTS;**

symbol value=dot interpol=join;

```
proc gplot data=t112;  
plot nh_tot*year;  
run;  
quit;
```

NEW
PLOTING
SYMBOL

POINTS
CONNECTED
WITH LINE
SEGMENTS



SYMBOL STATEMENT ...

Syntax...

```
SYMBOL<1...255>  <COLOR=symbol-color> <MODE=EXCLUDE | INCLUDE>  
<REPEAT=number-of-times> <STEP=distance<units>>  
<appearance-option(s)> <interpolation-option> <SINGULAR=n>;
```

appearance-options can be one or more of these:

```
BWIDTH=box-width  
CI=line-color  
CO=color  
CV=value-color  
FONT=font  
HEIGHT=symbol-height<units>  
LINE=line-type  
POINTLABEL<=(label-description(s)) | NONE>  
VALUE=special-symbol | text-string | NONE  
WIDTH=thickness-factor
```

interpolation-option can be one of these:

general methods

INTERPOL=JOIN

INTERPOL=map/plot-pattern

INTERPOL=NEEDLE

INTERPOL=NONE

INTERPOL=STEP<placement><J><S>

high-low interpolation methods

INTERPOL=BOX<option(s)><00...25>

INTERPOL=HILO<C><option(s)>

INTERPOL=STD<1 | 2 | 3><variance><option(s)>

regression interpolation methods

INTERPOL=R<type><0><CLM | CLI<50...99>>

spline interpolation methods

INTERPOL=L<degree><P><S>

INTERPOL=SM<nn><P><S>

INTERPOL=SPLINE<P><S>

GLOBAL: TITLE, FOOTNOTE (NOT SPECIFIC TO SAS/GRAPH)

* #3: ADD A TITLE AND FOOTNOTE;

```
symbol v=dot i=join;
```

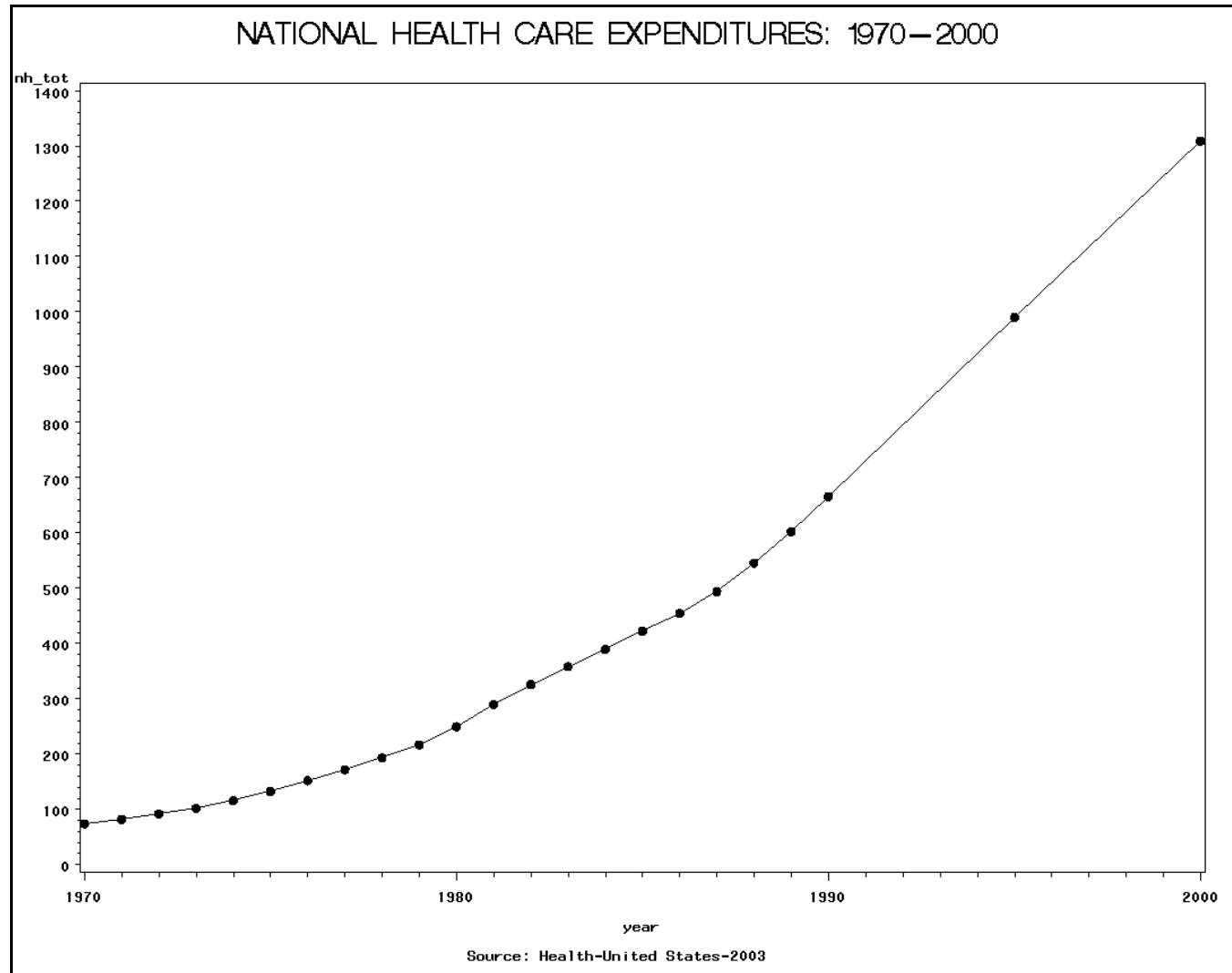
```
title "NATIONAL HEALTH CARE EXPENDITURES: 1970-2000";  
footnote "Source: Health-United States-2003";
```

```
proc gplot data=t112;  
plot nh_tot*year;  
run;  
quit;
```

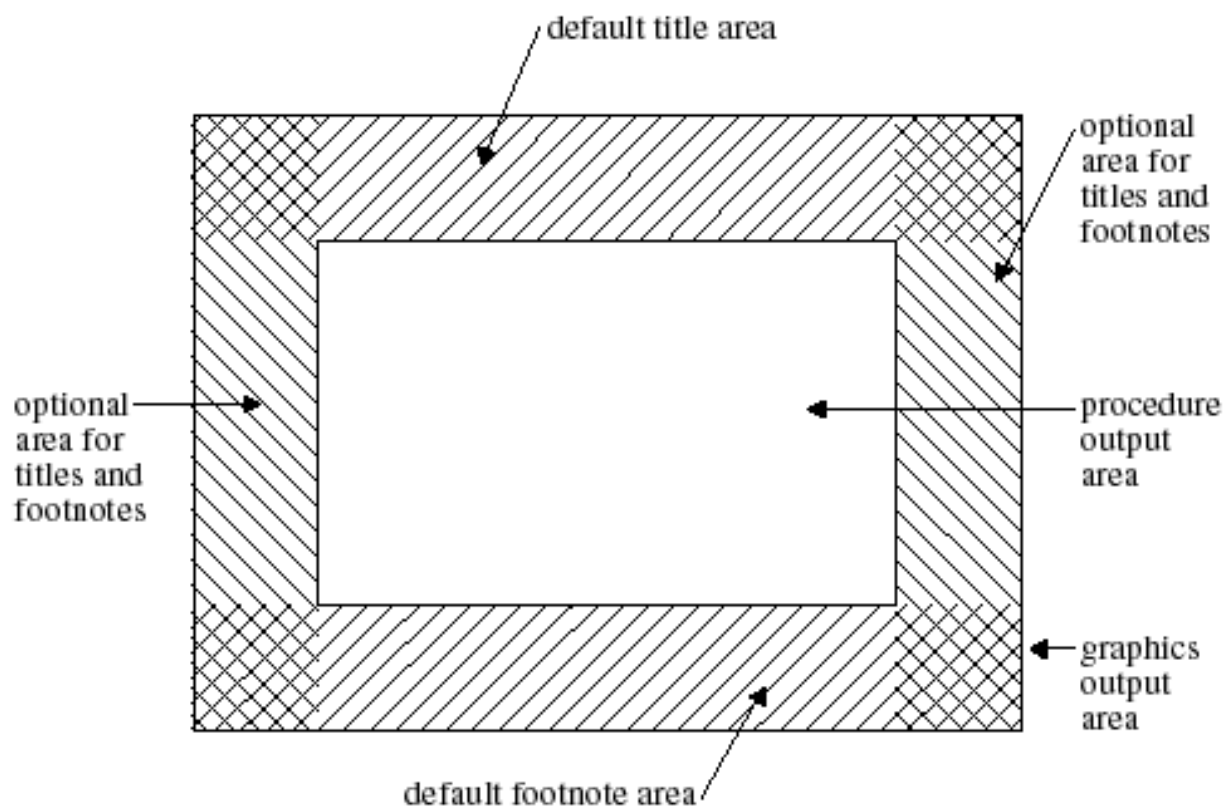
BOTH TITLE
AND
FOOTNOTE
ARE
CENTERED

TITLE FONT
IS LARGER
THAN THAT
OF THE
FOOTNOTE

PLOT SIZE IS
SMALLER



Default Locations for Graphic Elements in the Graphics Output Area



NOTICE: YOU CAN PUT TITLES/FOOTNOTES ON LEFT & RIGHT

OPTIONS: CHANGE DEFAULTS

* #4: USE A GOPTIONS STATEMENT
TO CONTROL THE TEXT FONT AND HEIGHT
(SYMBOL SIZE AFFECTED);

```
options ftext='Arial' htext=2 gunit=pct;
```

```
symbol v=dot i=join;
```

```
title "NATIONAL HEALTH CARE EXPENDITURES: 1970-2000";  
footnote "Source: Health-United States-2003";
```

```
proc gplot data=t112;  
plot nh_tot*year;  
run;  
quit;
```

WHAT DOES **H=2** MEAN

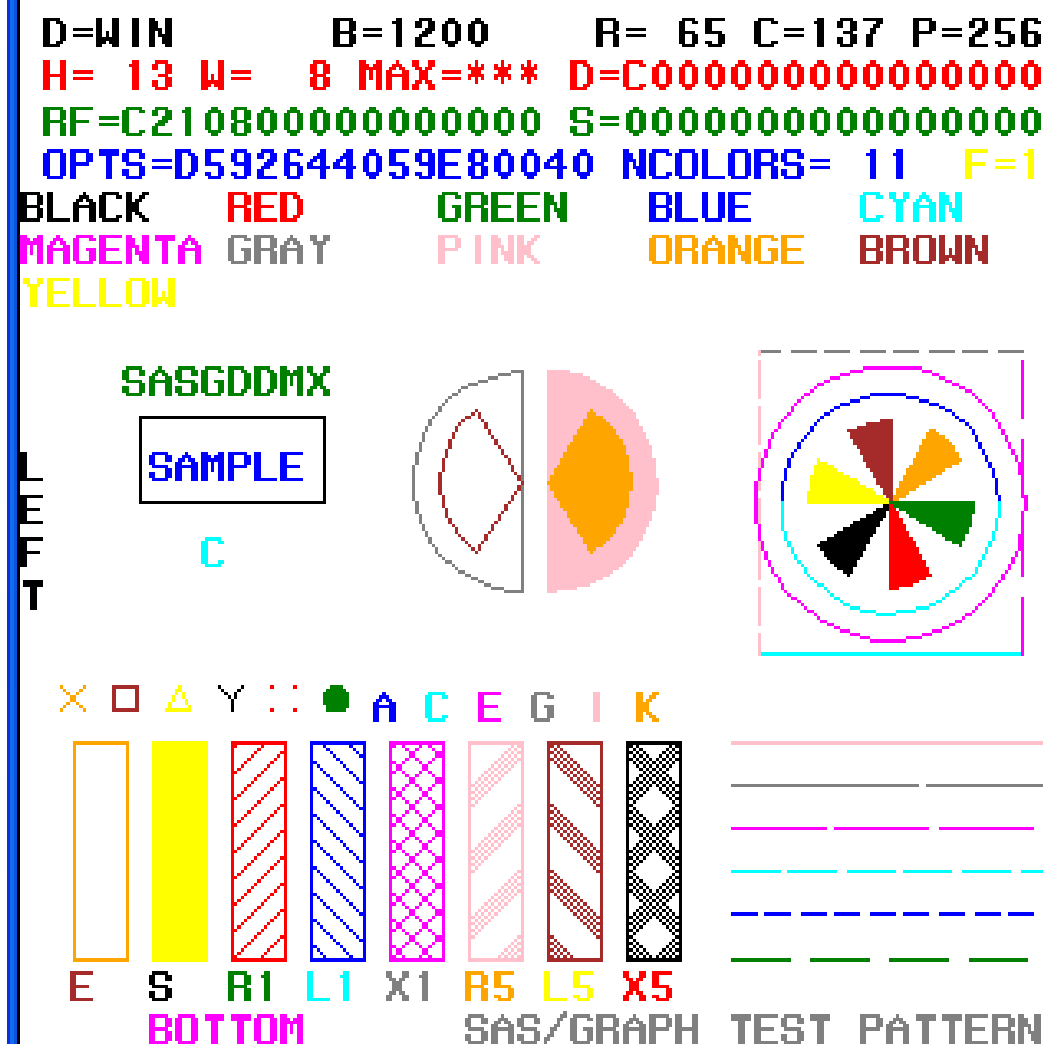
ALL OUTPUT
DESTINATIONS HAVE
CHARACTER CELLS

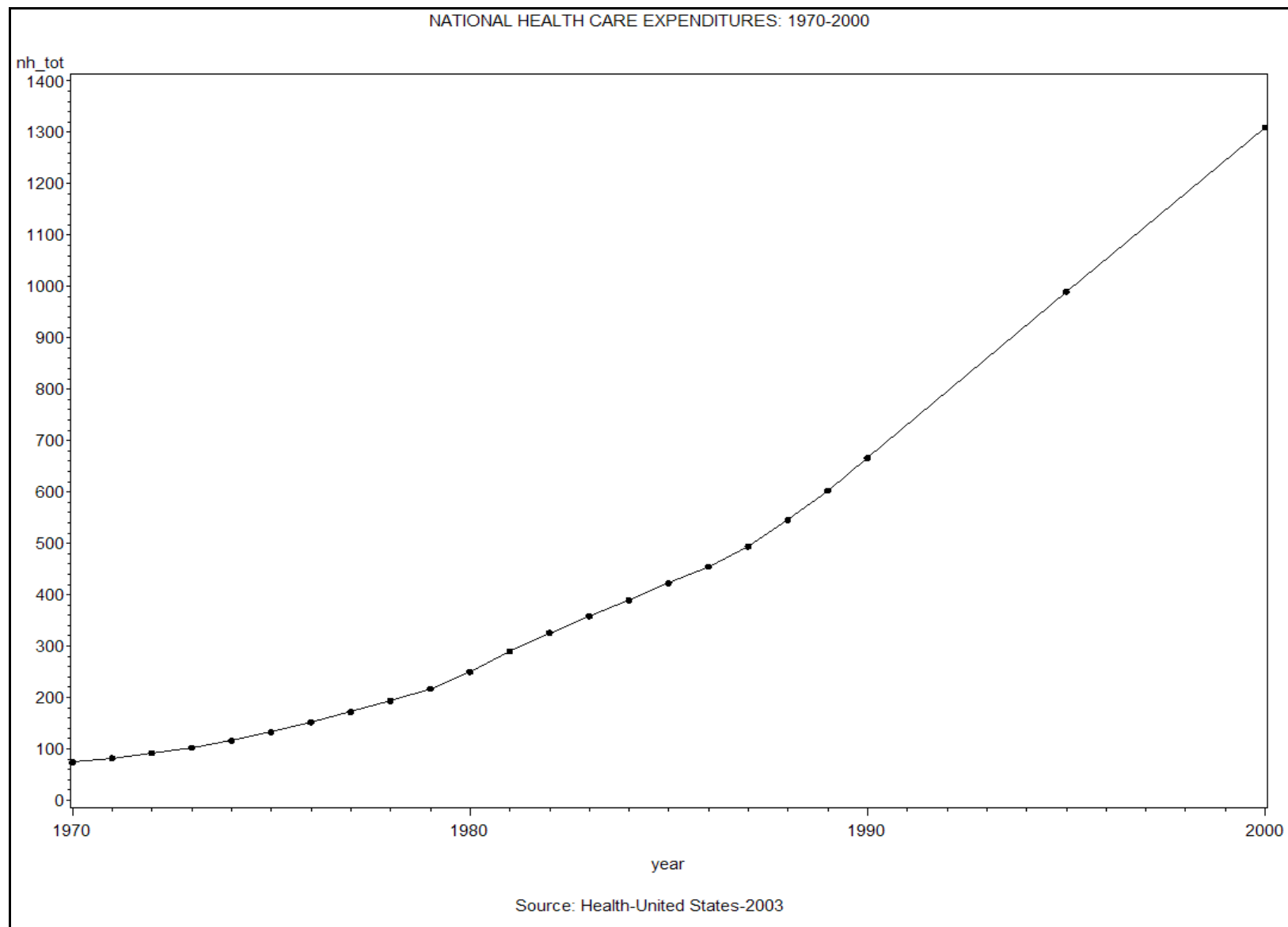
PROC GTESTIT;
RUN;

UPPER RIGHT

R=65 C=137
SO ... H=2/65

(CELLS, CM, IN, PCT, PT)





GLOBAL: OVERRIDE GOPTIONS

* #5: CHANGE THE HEIGHT OF THE TITLE
 RIGHT JUSTIFY THE FOOTNOTE;

```
goptions ftext='Arial' htext=2 gunit=pct;
```

```
symbol v=dot i=join;
```

```
title height=4
```

```
"NATIONAL HEALTH CARE EXPENDITURES: 1970-2000";
```

```
footnote justify=right
```

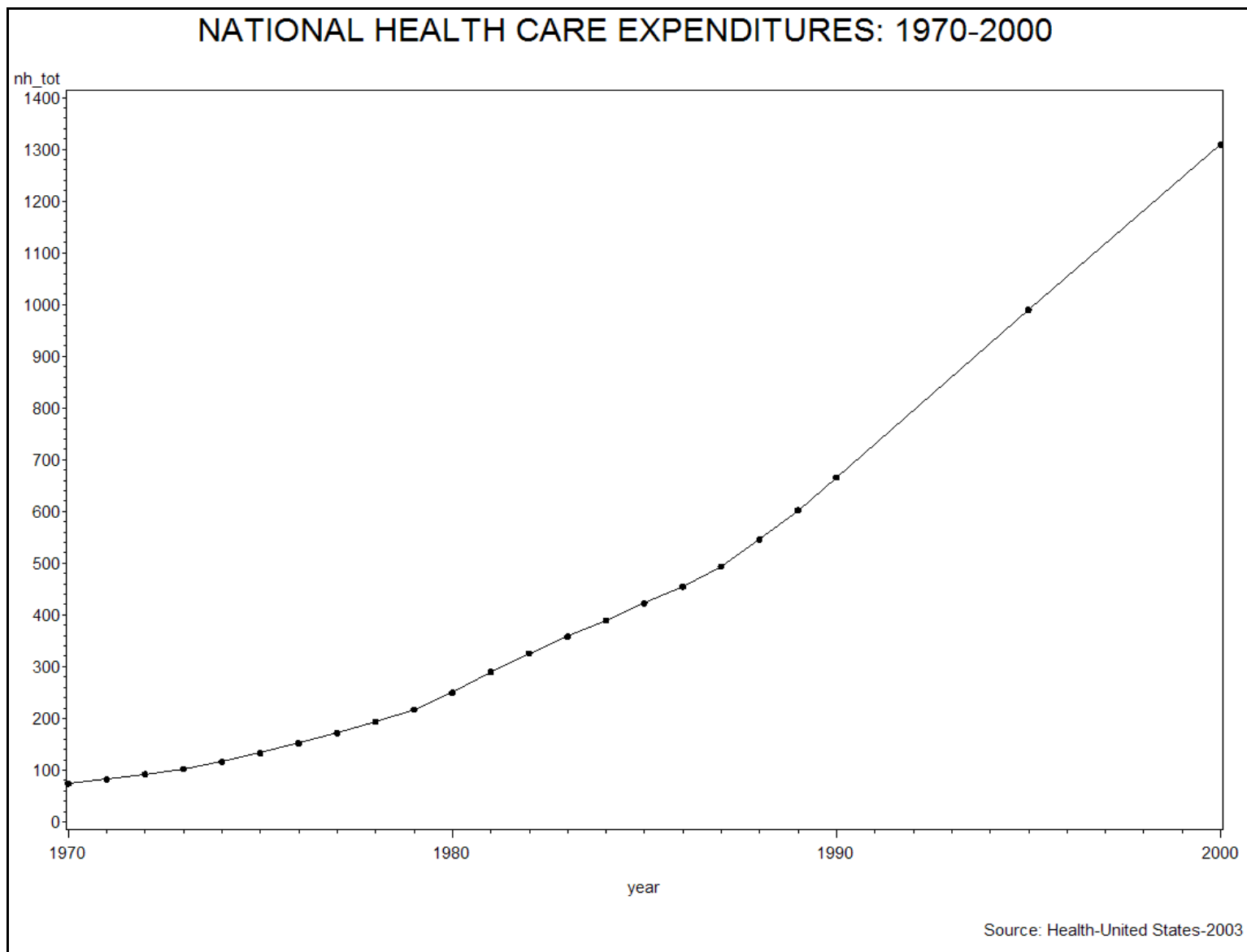
```
"Source: Health-United States-2003";
```

```
proc gplot data=t112;
```

```
plot nh_tot*year;
```

```
run;
```

```
quit;
```



GLOBAL: SYMBOL, TITLE, FOOTNOTE USED
AUTOMATICALLY

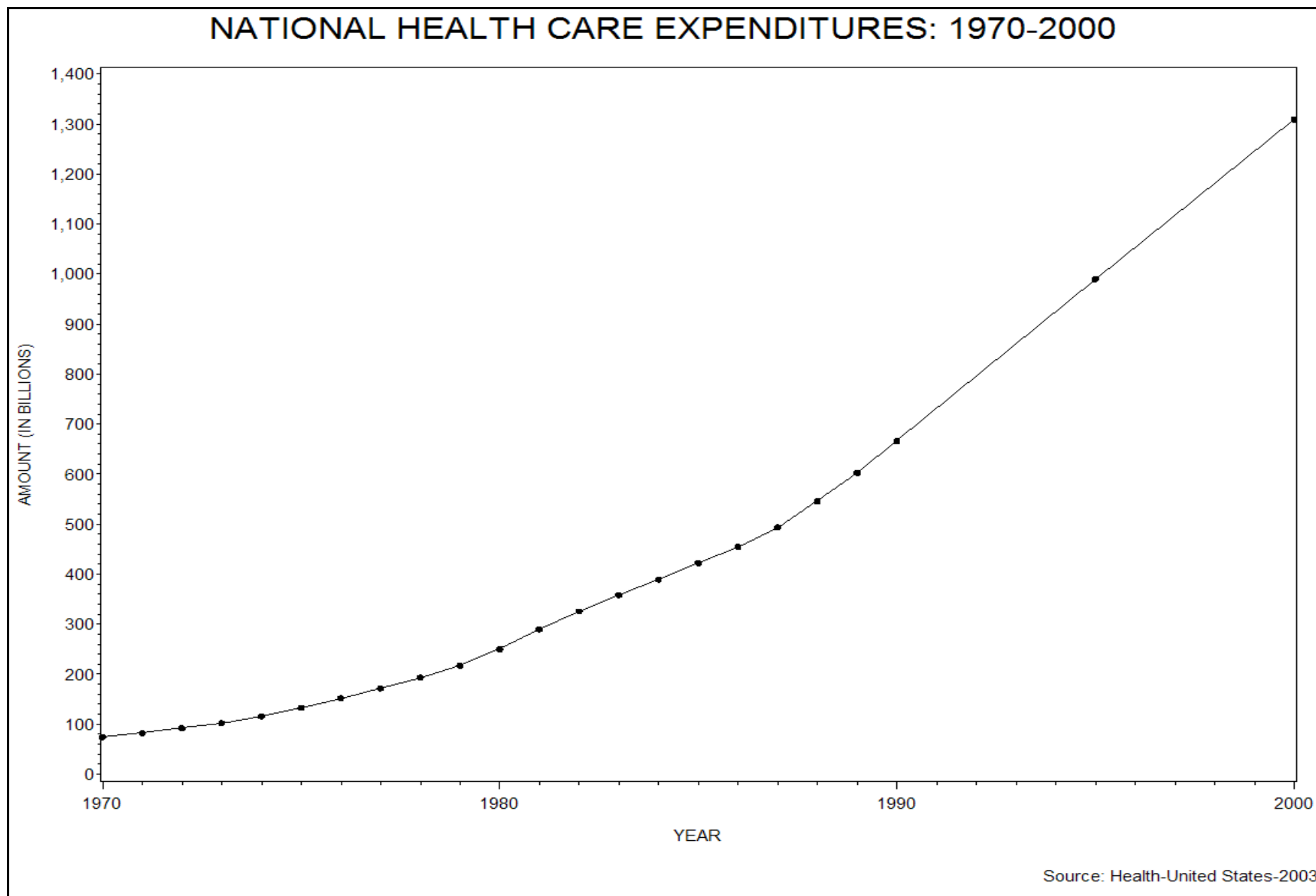
AXIS NOT USED AUTOMATICALLY, MUST
SPECIFY USE

* #6: CHANGE THE Y-AXIS LABEL
BOTH THE CONTENT AND ANGLE;

```
options validvarname=upcase;  
goptions ftext='Arial' htext=2 gunit=pct;  
  
symbol v=dot i=join;  
axis label=(angle=90 "AMOUNT (IN BILLIONS)");
```

```
title1 h=4  
"NATIONAL HEALTH CARE EXPENDITURES: 1970-2000";  
footnote1 j=right  
"Source: Health-United States-2003";
```

```
proc gplot data=t112;  
plot nh_tot*year/vaxis=axis;  
format nh_tot comma.;  
run;  
quit;
```



* #7: ADDITIONAL CHANGES OF BOTH THE X AND Y AXES;

```
options validvarname=upcase;
```

```
goptions ftext='Arial' htext=2 gunit=pct;
```

```
symbol v=dot i=join;
```

```
axis1 label=(angle=90 "AMOUNT (IN BILLIONS)")
```

```
      minor=(n=3);
```

```
axis2 order=(1970 to 2000 by 5) minor=(n=4);
```

```
title h=4 "NATIONAL HEALTH CARE EXPENDITURES: 1970-2000";
```

```
footnote justify=right "Source: Health-United States-2003";
```

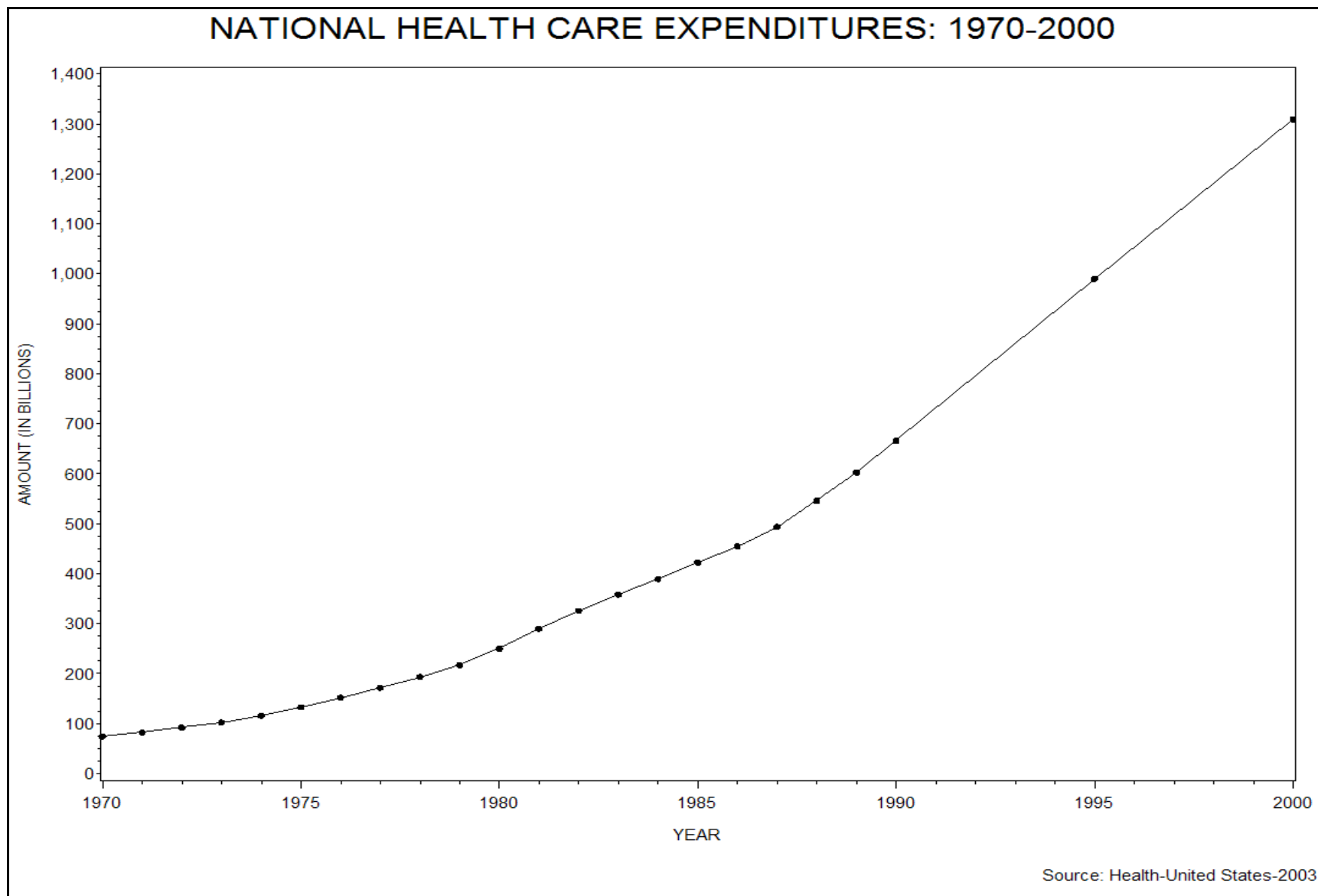
```
proc gplot data=t112;
```

```
plot nh_tot*year/vaxis=axis1 haxis=axis2;
```

```
format nh_tot comma.;
```

```
run;
```

```
quit;
```



```
* #8: ADD COLOR;
```

```
options validvarname=upcase;
```

```
goptions ftext='Arial' htext=2 gunit=pct ctext=green;
```

```
symbol v=dot i=join c=blue h=2.5;
```

```
axis1 label=(angle=90 "AMOUNT (IN BILLIONS)")
```

```
      minor=(n=3) color=blue;
```

```
axis2 order=(1970 to 2000 by 5) minor=(n=4) color=blue;
```

```
title1 h=4 "NATIONAL HEALTH CARE EXPENDITURES: 1970-2000";
```

```
footnote1 j=r "Source: Health-United States-2003";
```

```
proc gplot data=t112;
```

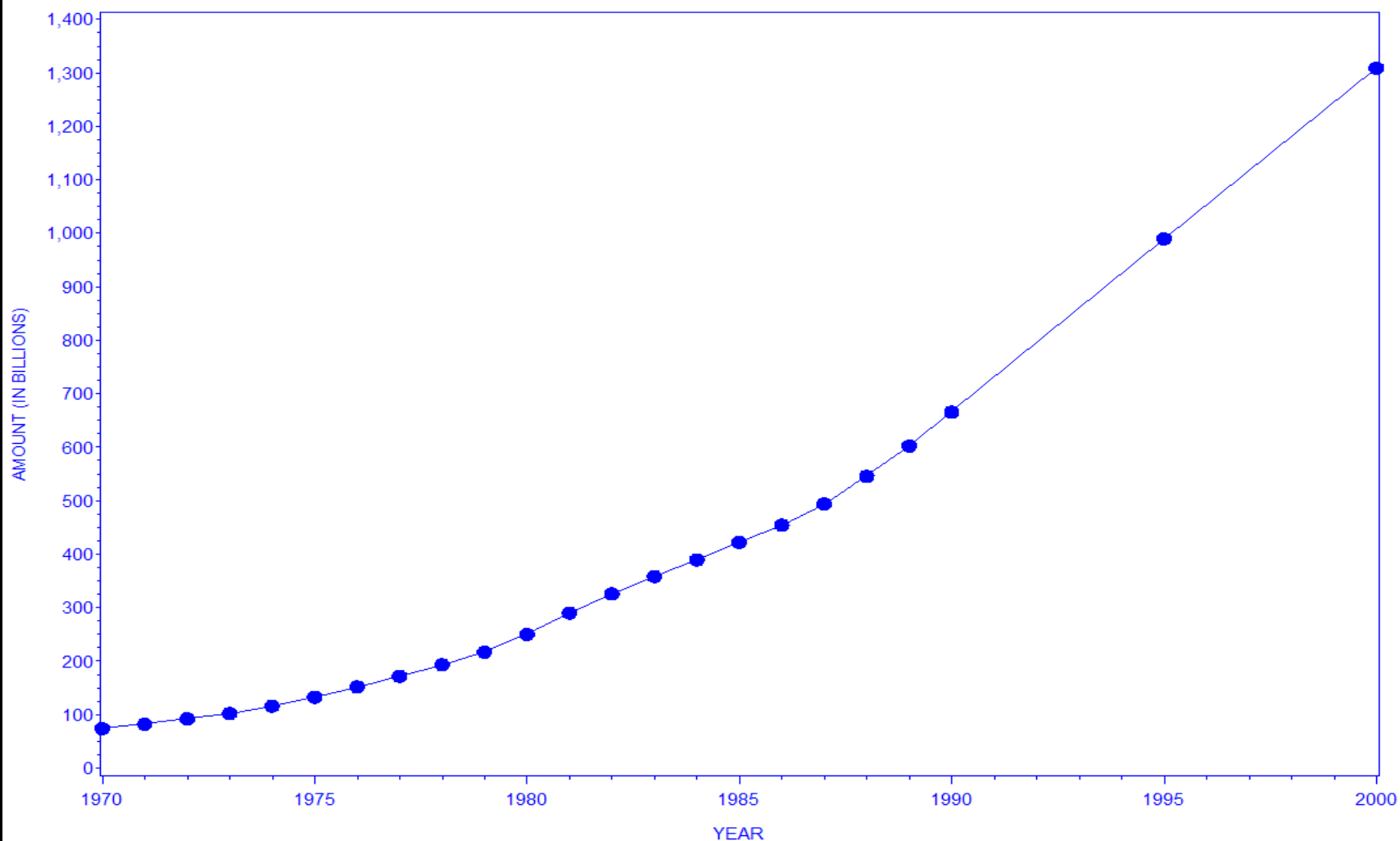
```
plot nh_tot*year/vaxis=axis1 haxis=axis2;
```

```
format nh_tot comma.;
```

```
run;
```

```
quit;
```

NATIONAL HEALTH CARE EXPENDITURES: 1970-2000



Source: Health-United States-2003

```
* #9: LEAVE ALL AXES TEXT GREEN;

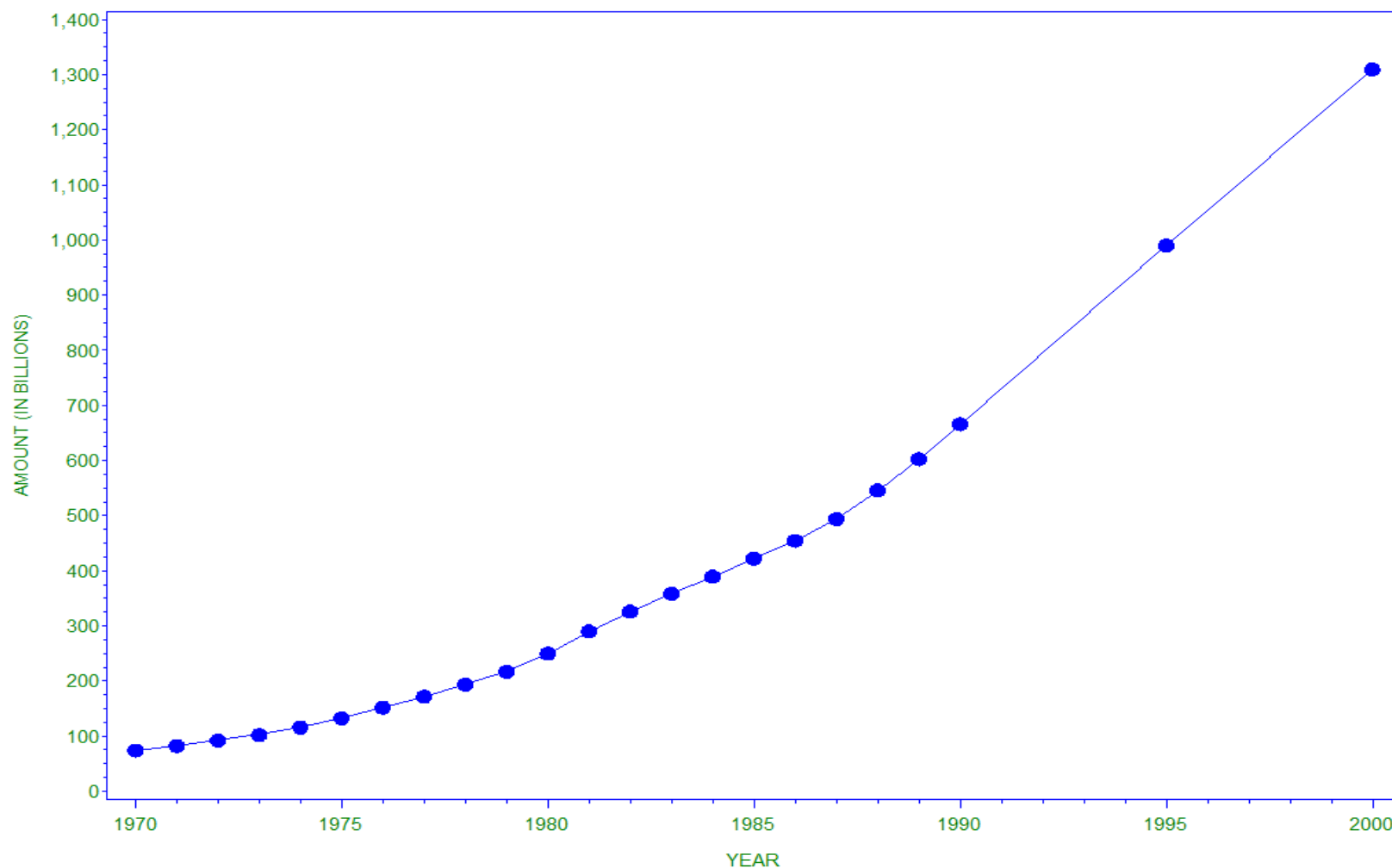
options validvarname=upcase;
options ftext='Arial' htext=2 gunit=pct ctext=green;

symbol v=dot i=join c=blue h=2.5;
axis1 label=(angle=90 rotate=0 "AMOUNT (IN BILLIONS)")
       minor=(n=3);
axis2 order=(1970 to 2000 by 5)
       minor=(n=4) offset=(2,2);

title1 h=4 f='Arial/bo' ls=1
"NATIONAL HEALTH CARE EXPENDITURES: 1970-2000";
title2 h=2 a=90; title3 h=2 a=270;
footnote j=r ls=1 "Source: Health-United States-2003 ";

proc gplot data=t112;
plot nh_tot*year/vaxis=axis1 haxis=axis2 caxis=blue;
format nh_tot comma.;
run;
quit;
```

NATIONAL HEALTH CARE EXPENDITURES: 1970-2000



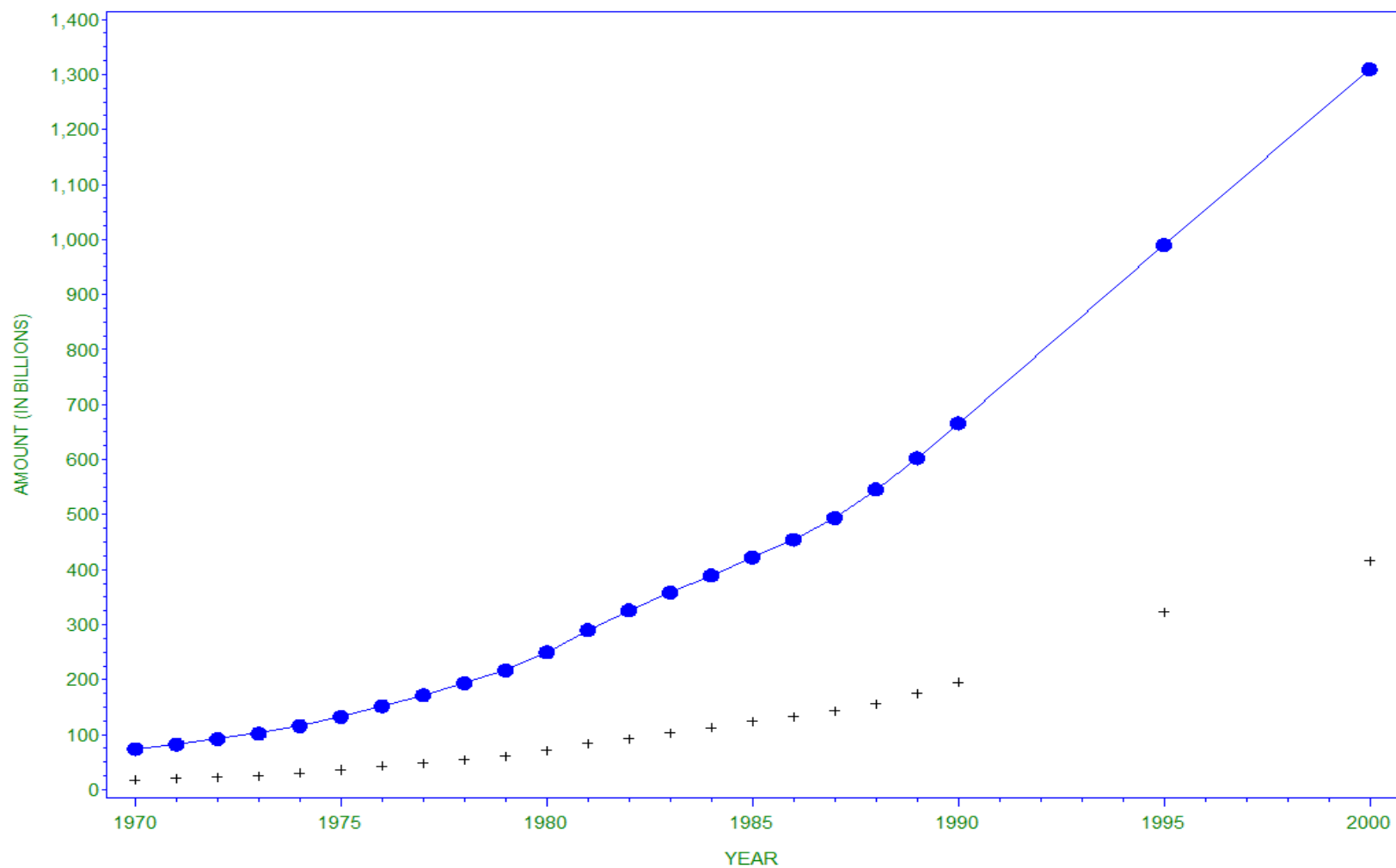
Source: Health-United States-2003

* #10: ADD ANOTHER LINE TO THE PLOT;

```
options validvarname=upcase;
goptions ftext='Arial' htext=2 gunit=pct ctext=green;
symbol v=dot i=join c=blue h=2.5;
axis1 label=(angle=90 rotate=0 "AMOUNT (IN BILLIONS)")
        minor=(n=3);
axis2 order=(1970 to 2000 by 5) minor=(n=4) offset=(2,2);
title1 h=4 f='Arial/bo' ls=1
"NATIONAL HEALTH CARE EXPENDITURES: 1970-2000";
title2 h=2 a=90; title3 h=2 a=270;
footnote j=r ls=1 "Source: Health-United States-2003  ";

proc gplot data=t112;
plot (nh_tot fg_tot)*year/overlay
      vaxis=axis1 haxis=axis2 caxis=blue;
format nh_tot comma.;
run;
quit;
```

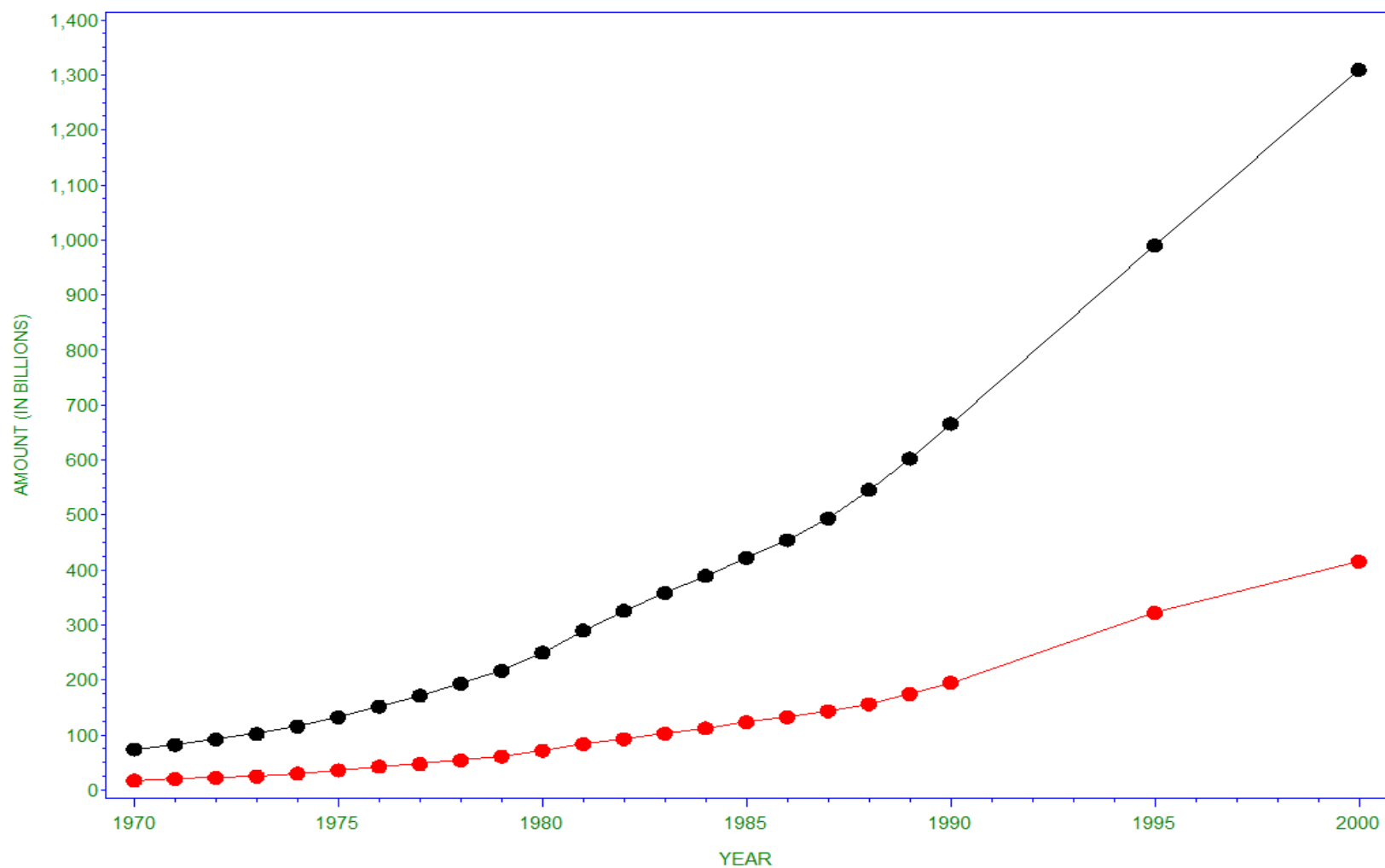
NATIONAL HEALTH CARE EXPENDITURES: 1970-2000



Source: Health-United States-2003

```
* #11: ADD ANOTHER SYMBOL STATEMENT;  
options reset=all;  
options validvarname=upcase;  
options ftext='Arial' htext=2 gunit=pct ctext=green;  
symbol1 v=dot i=join h=2.5 l=1;  
symbol2 v=dot i=join h=2.5 l=3;  
axis1 label=(angle=90 rotate=0 "AMOUNT (IN BILLIONS)")  
        minor=(n=3);  
axis2 order=(1970 to 2000 by 5) minor=(n=4) offset=(2,2);  
title1 h=4 f='Arial/bo' ls=1  
"NATIONAL HEALTH CARE EXPENDITURES: 1970-2000";  
title2 h=2 a=90; title3 h=2 a=270;  
footnote j=r ls=1 "Source: Health-United States-2003  ";  
  
proc gplot data=t112;  
plot (nh_tot fg_tot)*year/overlay  
    vaxis=axis1 haxis=axis2 caxis=blue;  
format nh_tot comma.;  
run;  
quit;
```

NATIONAL HEALTH CARE EXPENDITURES: 1970-2000



Source: Health-United States-2003

* #12: USE GOPTIONS AND THE CYSMBOL OPTION;

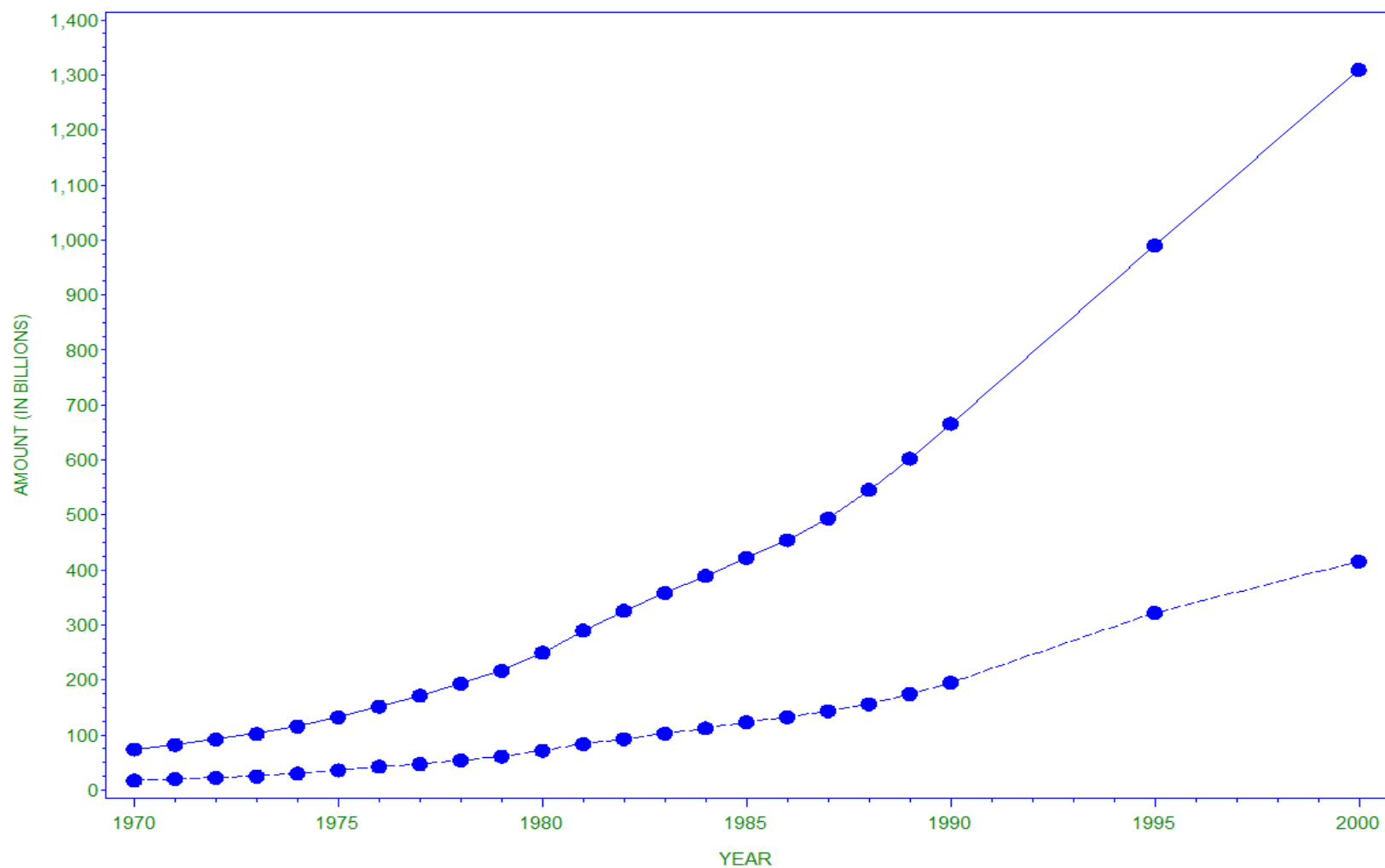
```
options validvarname=upcase;
goptions ftext='Arial' htext=2 gunit=pct
        ctext=green csymbol=blue;

symbol1 v=dot i=join h=2.5 l=1;
symbol2 v=dot i=join h=2.5 l=3;
axis1 label=(angle=90 rotate=0 "AMOUNT (IN BILLIONS)")
       minor=(n=3);
axis2 order=(1970 to 2000 by 5) minor=(n=4) offset=(2,2);

title1 h=4 f='Arial/bo' ls=1
"NATIONAL HEALTH CARE EXPENDITURES: 1970-2000";
title2 h=2 a=90; title3 h=2 a=270;
footnote j=right ls=1
"Source: Health-United States-2003  ";

proc gplot data=t112;
plot (nh_tot fg_tot)*year/overlay
     vaxis=axis1 haxis=axis2 caxis=blue;
format nh_tot comma.;
run;
quit;
```

NATIONAL HEALTH CARE EXPENDITURES: 1970-2000



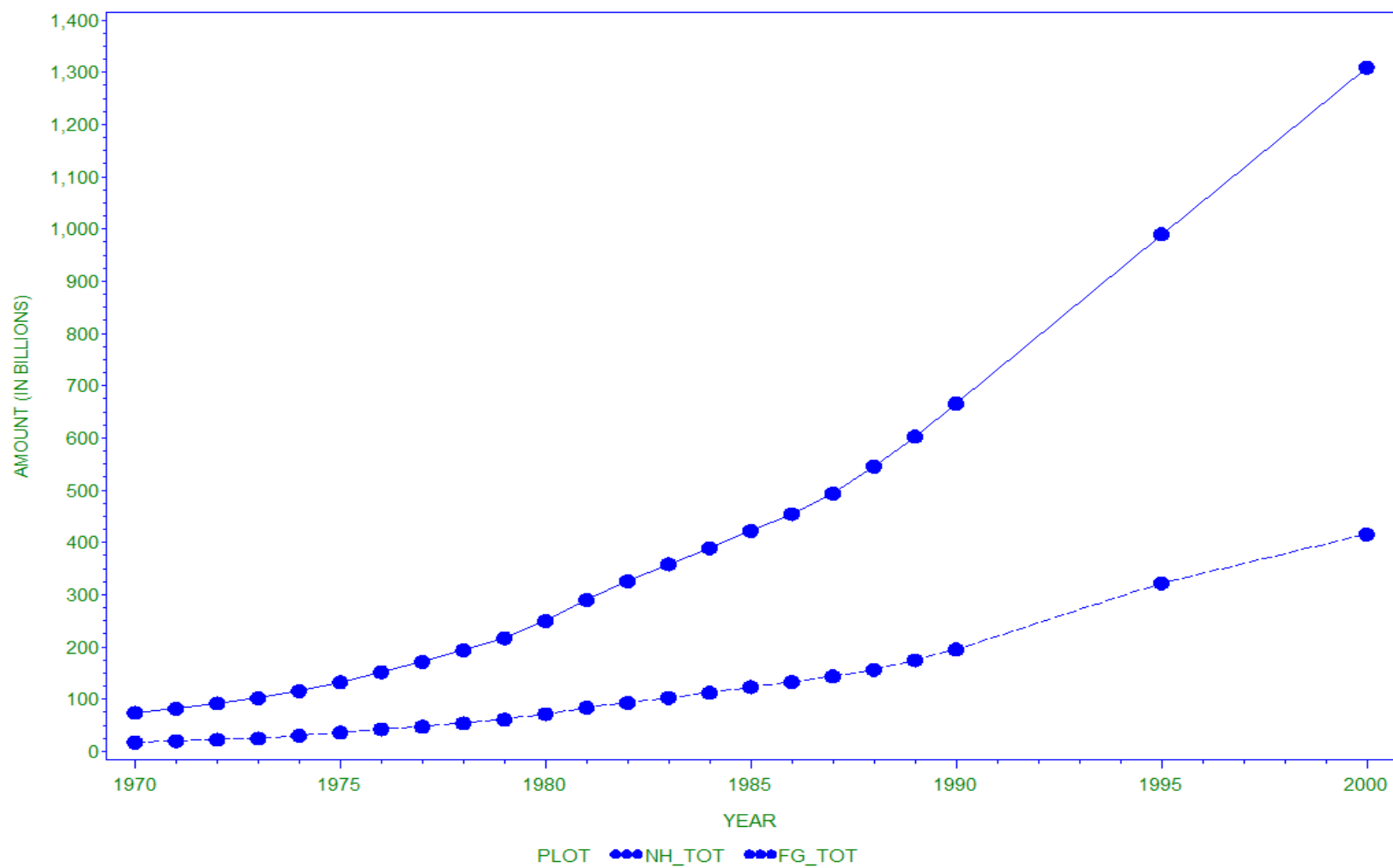
Source: Health-United States-2003

* #13: ADD A LEGEND;

```
options validvarname=upcase;
options ftext='Arial' htext=2 gunit=pct
        ctext=green csymbol=blue;
symbol1 v=dot i=join h=2.5 l=1;
symbol2 v=dot i=join h=2.5 l=3;
axis1 label=(angle=90 rotate=0 "AMOUNT (IN BILLIONS)")
        minor=(n=3);
axis2 order=(1970 to 2000 by 5) minor=(n=4) offset=(2,2);
title1 h=4 f='Arial/bo' ls=1
"NATIONAL HEALTH CARE EXPENDITURES: 1970-2000";
title2 h=2 a=90; title3 h=2 a=270;
footnote j=r ls=1 "Source: Health-United States-2003 ";

proc gplot data=t112;
plot (nh_tot fg_tot)*year/overlay
        vaxis=axis1 haxis=axis2 caxis=blue legend;
format nh_tot comma.;
run; quit;
```

NATIONAL HEALTH CARE EXPENDITURES: 1970-2000



Source: Health-United States-2003

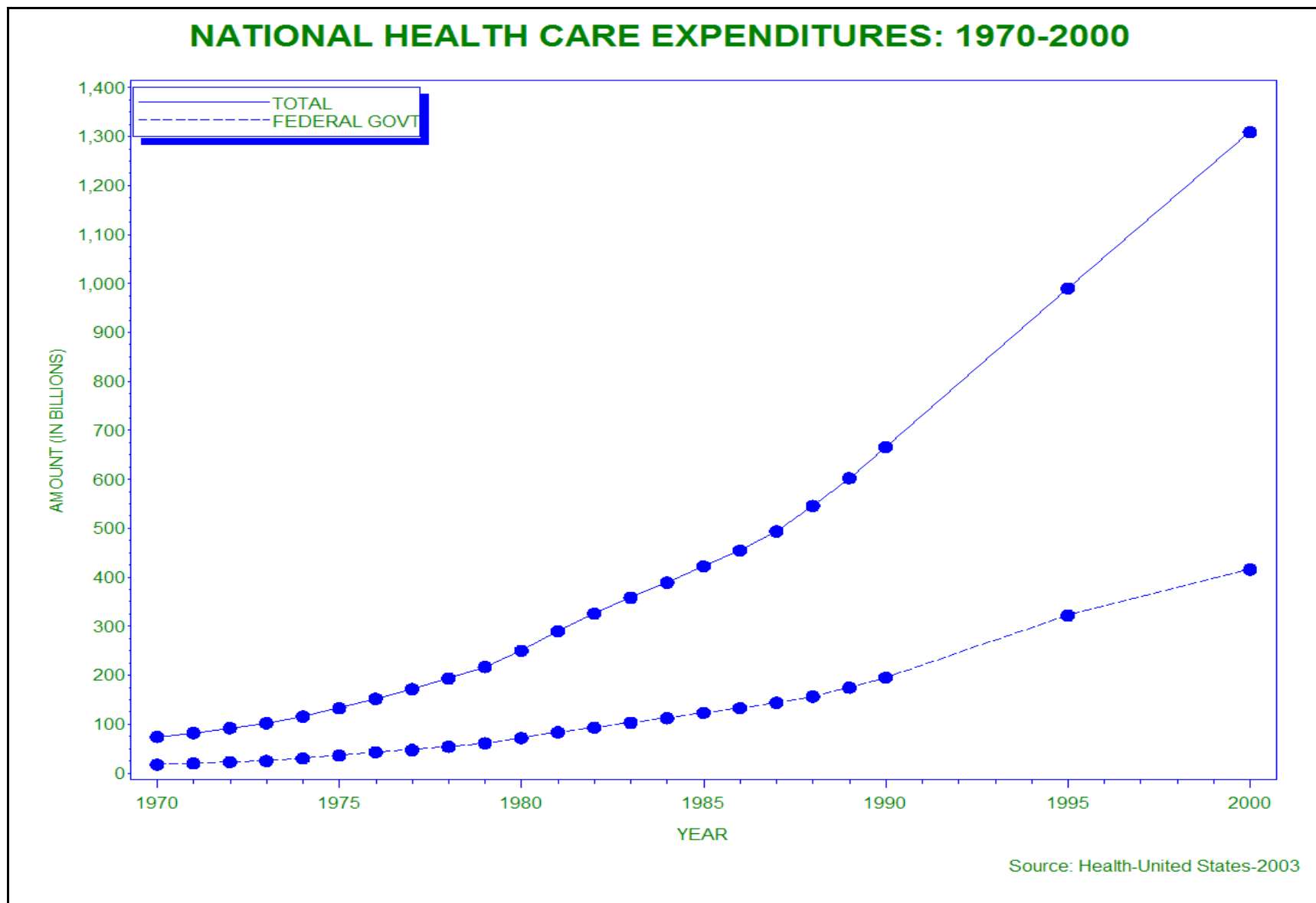
* #14: MODIFY THE DEFAULT LEGEND;

<NO CHANGES IN OPTIONS, GOPTIONS, SYMBOLS, AXES>

```
legend1 label=none
      value=(j=left "TOTAL" j=left "FEDERAL GOVT")
      mode=protect position=(top inside left)
      cborder=blue cshadow=blue
      across=1 shape=line(10);

title1 h=4 f='Arial/bo' ls=1
"NATIONAL HEALTH CARE EXPENDITURES: 1970-2000";
title2 h=2 a=90; title3 h=2 a=270;
footnote j=r ls=1 "Source: Health-United States-2003  ";

proc gplot data=t112;
plot (nh_tot fg_tot)*year/overlay
      vaxis=axis1 haxis=axis2 caxis=blue legend=legend1;
format nh_tot comma.;
run; quit;
```



■ ANNOTATE DATA SET

DATA SET THAT CONTAINS VARIABLES THAT ARE
"UNDERSTOOD" BY SAS/GRAPH PROCEDURES
(ARE YOU FAMILIAR WITH CNTLIN DATA SETS?)

ANALOGOUS TO EDITING THE OUTPUT PRODUCED
BY PROCEDURES WITH A GRAPHICS EDITOR,
EXCEPT ALL INSTRUCTIONS ARE WRITTEN

WHERE, WHAT, HOW

* ANNOTATE DATA SET WITH SPECIAL VARIABLE NAMES;

```
data labels;
```

```
retain xsys ysys '2' function 'label'  
      position '1' style '"Tahoma/bo" '  
      color 'blue' cborder 'blue';
```

```
* find last observation in data set t112;  
set t112 end=last;
```

```
if last then do;  
    text=' FEDERAL GOVERNMENT '; x=year; y=fg_tot;  
output;  
    text=' TOTAL ' ; x=year; y=nh_tot;  
output;  
end;  
run;
```

* ANNOTATE DATA SET WITH SPECIAL VARIABLE NAMES;

```
data labels;  
retain xsys ysys '2' function 'label'  
       position '1' style '"Tahoma/bo" '  
       color 'blue' cborder 'blue';
```

* find last observation in data set t112;

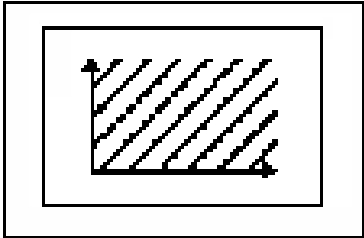
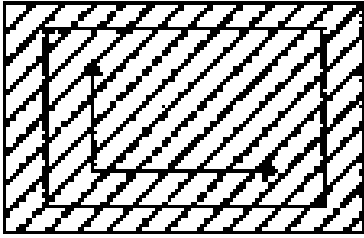
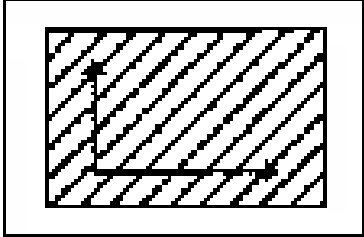
set t112 nobs=lastrec point=lastrec;

```
text=' FEDERAL GOVERNMENT '; x=year; y=fg_tot; output;  
text=' TOTAL '                ; x=year; y=nh_tot; output;
```

stop;

```
run;
```

Areas and Their Coordinate Systems

| | <u>Area</u> | <u>Unit</u> | <u>Coordinate System</u> | |
|---|-----------------------------|-------------|--------------------------|----------|
|  | Data | % | Absolute | Relative |
| | | | 1 | 7 |
|  | Graphics Output Area | % | Absolute | Relative |
| | | | 3 | 9 |
|  | Procedure Output Area | % | Absolute | Relative |
| | | | 5 | E |
| | | | 2 | 8 |
| | | | 4 | A |
| | | | 6 | C |

* #16 USE ANNOTATION TO LABEL THE LINES;

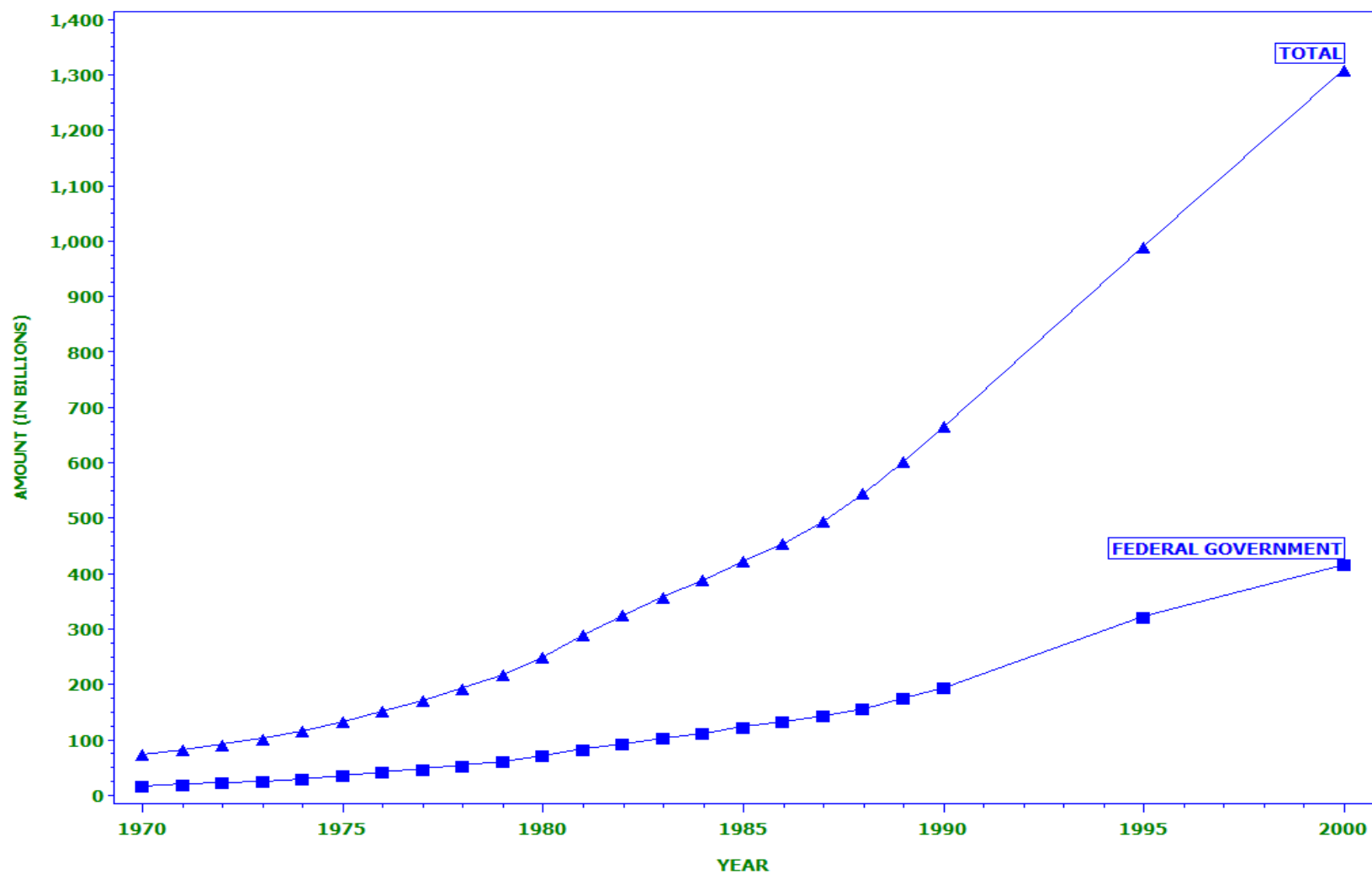
```
options validvarname=upcase;
goptions ftext='Tahoma/bo' htext=2 gunit=pct
         ctext=green csymbol=blue;

symbol1 f=marker v='C' i=join h=1.25;
symbol2 f=marker v='U' i=join h=1.25;
axis1 label=(angle=90 rotate=0 "AMOUNT (IN BILLIONS)")
      minor=(n=3);
axis2 order=(1970 to 2000 by 5) minor=(n=4) offset=(2,2);

title1 h=4 ls=1
"NATIONAL HEALTH CARE EXPENDITURES: 1970-2000";
title2 h=2 a=90; title3 h=2 a=270;
footnote j=right ls=1 "Source: Health-United States-2003 ";

proc gplot data=t112;
plot (nh_tot fg_tot)*year/overlay
     vaxis=axis1 haxis=axis2 caxis=blue annotate=labels;
format nh_tot comma.;
run; quit;
```

NATIONAL HEALTH CARE EXPENDITURES: 1970-2000



Source: Health-United States-2003

- AFTER ALL THIS, WHY USE SAS/GRAPH

DATA IN SAS DATA SETS, STAY WITHIN SAS TO
PRODUCE GRAPHICS

GOPTIONS, PROCEDURE OPTIONS, ANNOTATE
DATA SETS CAN PRODUCE ANY TYPE OF OUTPUT

REPETITIVE PRODUCTION OF GRAPHICS CAN BE
AUTOMATED USING DATA STEP PROGRAMMING
AND MACROS

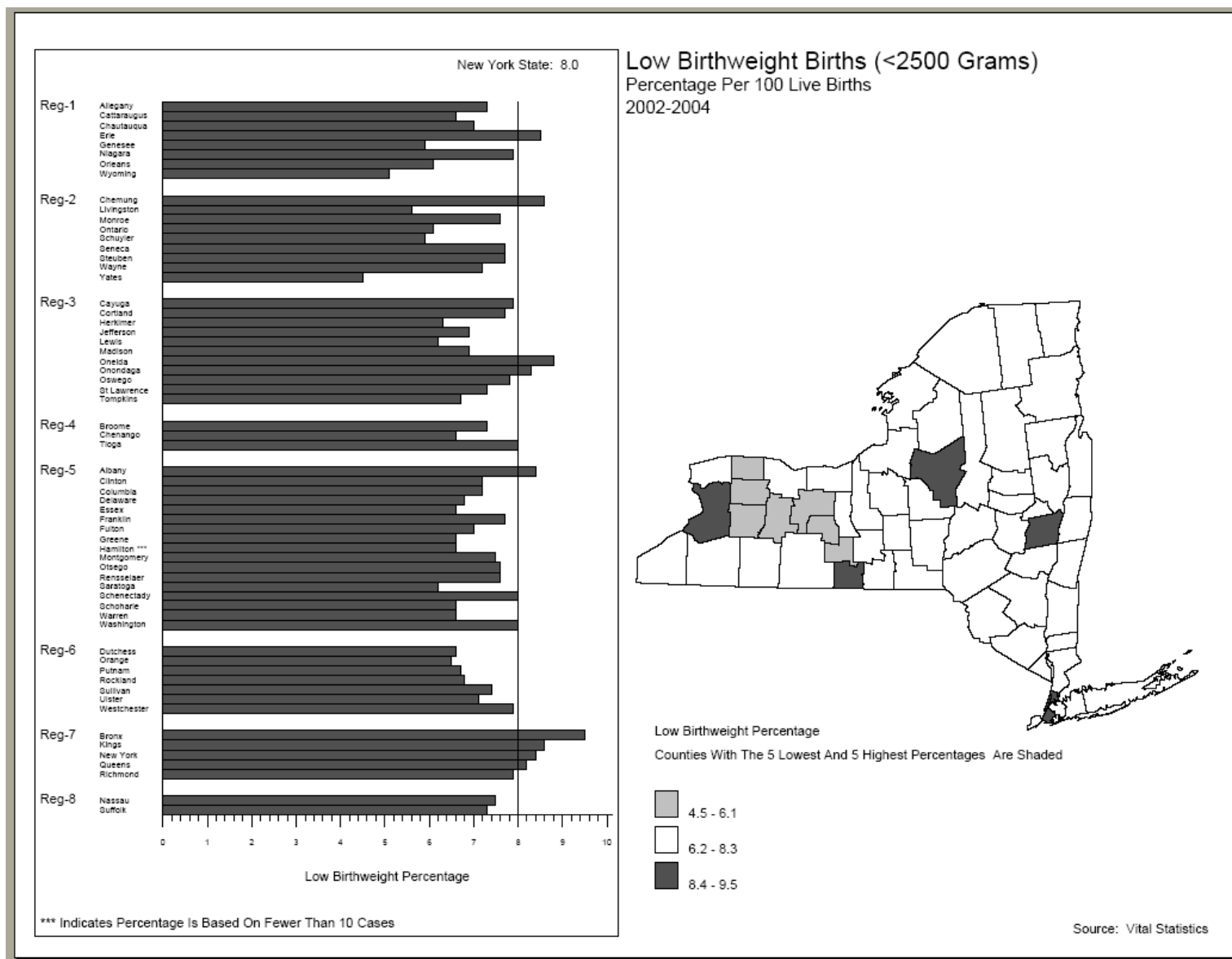
■ COMMUNITY HEALTH DATA SET

| | |
|---------|---------------|
| 100+ | BAR CHART+MAP |
| 6,000+ | PLOT+TABLE |
| UPDATED | 'REGULARLY' |

Indicators

(Go Back To Introduction)

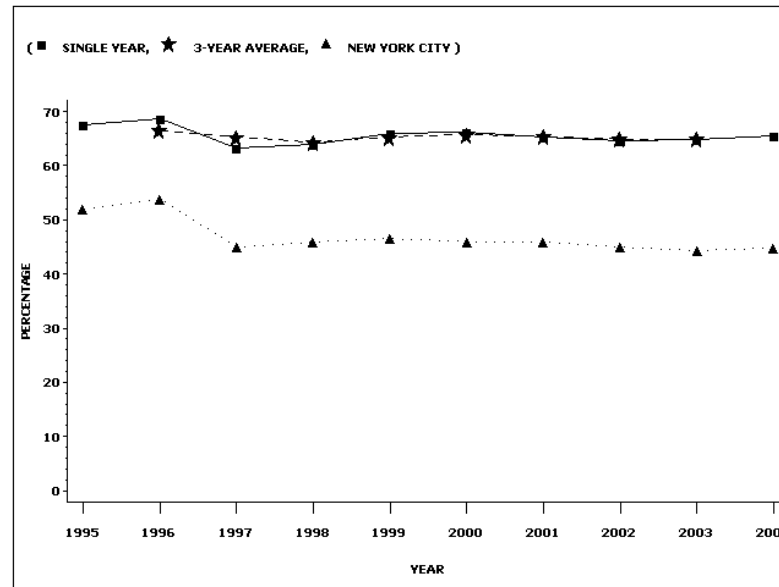
- [Demographic & Socioeconomic Characteristics](#)
- [Physical Activity and Fitness](#)
- [Nutrition](#)
- [Tobacco Use](#)
- [Substance Abuse: Alcohol & Other Drugs](#)
- [Family Planning](#)
- [Violent & Abusive Behavior](#)
- [Unintentional Injuries](#)
- [Oral Health](#)
- [Maternal & Infant Health](#)
- [Child & Adolescent Health](#)
- [Heart Disease & Stroke](#)
- [Cancer](#)
- [Chronic Conditions](#)
- [HIV Infection](#)
- [Sexually Transmitted Disease](#)
- [Immunization](#)
- [Infectious Diseases](#)



NEW YORK STATE
Department of Health
Information for a Healthy New York

You are Here: [Home Page](#) > [Out-of-Wedlock Birth Percentage per 100 Live Births, 2002-2004](#) > Bronx County Out-of-Wedlock Birth Percentage per 100 Live Births

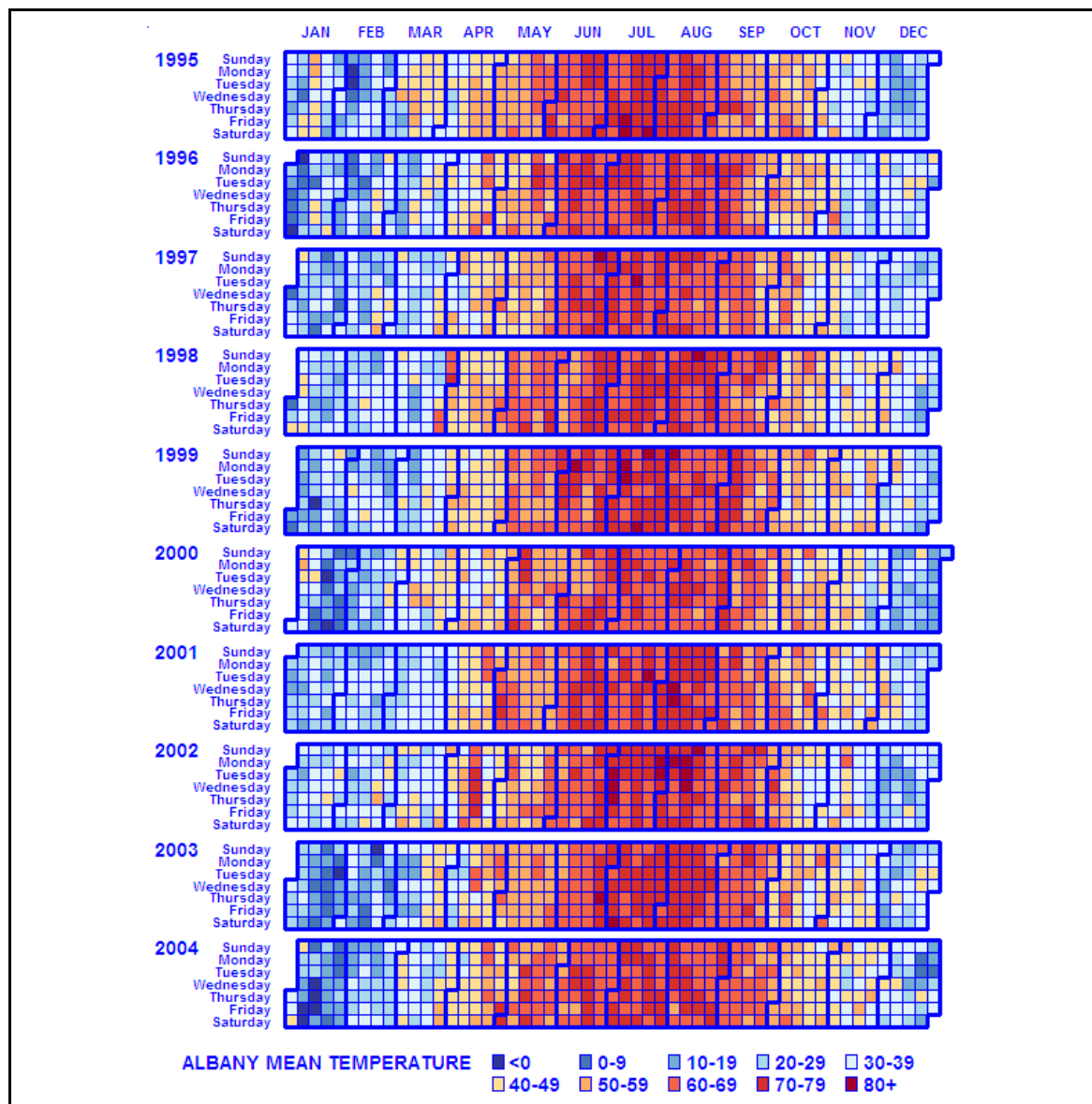
Bronx County Out-of-Wedlock Birth Percentage per 100 Live Births



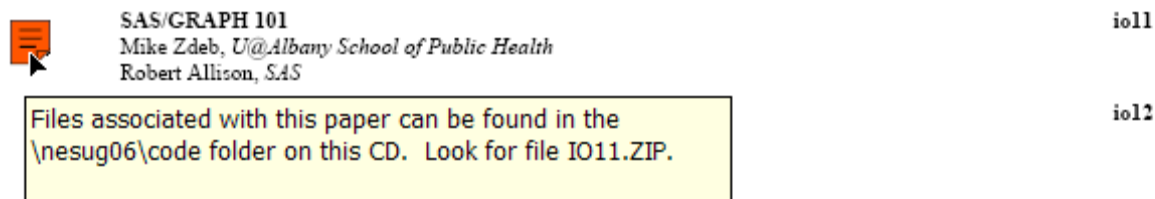
Out-of-Wedlock Birth Percentage per 100 Live Births

| Year | Single Year | 3-Year Average | New York City |
|------|-------------|----------------|---------------|
| 1995 | 67.5 | | 52.0 |
| 1996 | 68.6 | 66.5 | 53.9 |
| 1997 | 63.2 | 65.3 | 45.0 |
| 1998 | 64.0 | 64.4 | 45.9 |
| 1999 | 65.9 | 65.3 | 46.5 |
| 2000 | 66.1 | 65.8 | 46.0 |
| 2001 | 65.3 | 65.3 | 45.9 |
| 2002 | 64.6 | 64.9 | 45.0 |
| 2003 | 64.8 | 65.0 | 44.3 |
| 2004 | 65.4 | | 44.9 |

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- PAPER ON WEB SITE HAS HYPERLINKS TO OTHER SAS/GRAPH RELATED PAPERS
- ALL SAS CODE FROM PAPER ON THE WEB SITE



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- ROBERT ALLISON'S "UNOFFICIAL" WEB SITE WITH EXAMPLES AND SAS CODE

<http://www.robslink.com/SAS/Home.htm>