

Something for Nothing! Converting Plots from SAS/GRAPH® to ODS Graphics

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Agenda

- Introduction
- Scatter Plots, Line Plots and Error Bars
- Regression Plots
- Box Plots
- Vertical and Horizontal Bar Charts
- Pie Charts
- Conclusions

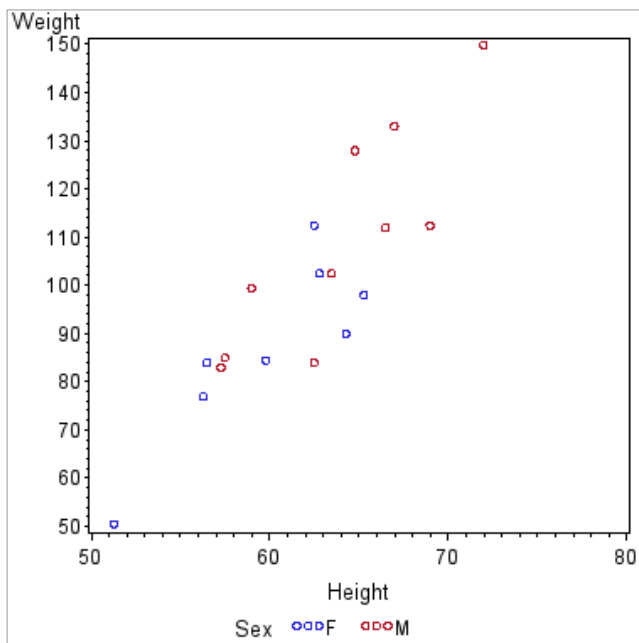
Introduction

A comparison of the output from the most commonly used SAS code for producing plots and charts using SAS/GRAPH and ODS Graphics:

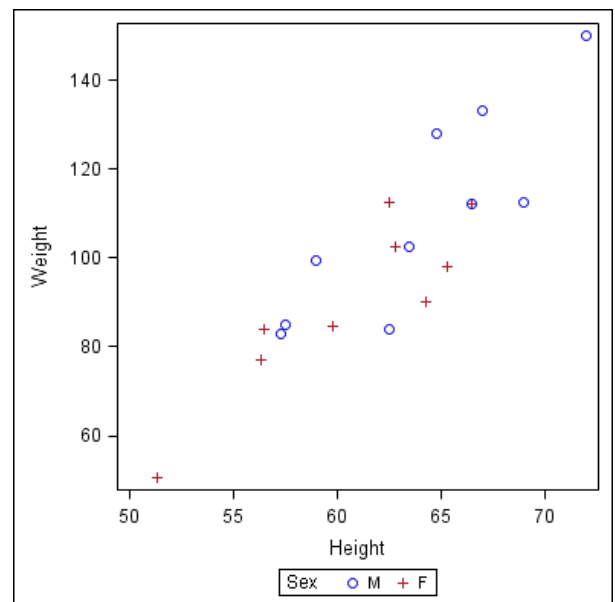
- Easy: Replacing one SAS/GRAPH procedure statement with an ODS Graphics procedure. The conversion may also require some pre-processing of the input data.
- Difficult: Replacing one SAS/GRAPH procedure with code containing PROC TEMPLATE and PROC SGRENDER, or the conversion requires extensive pre-processing of the input data.
- Impossible: There is currently no corresponding ODS Graphics procedure in that version of SAS software to replicate the SAS/GRAPH graph.

Scatter Plots (Easy)

SAS 9.2: PROC GPLOT



SAS 9.2M3: PROC SGPLOT

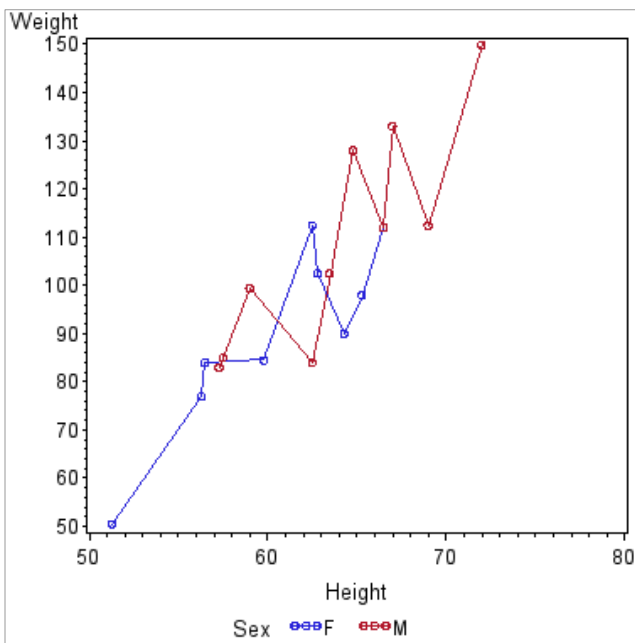


Scatter Plots (Easy)

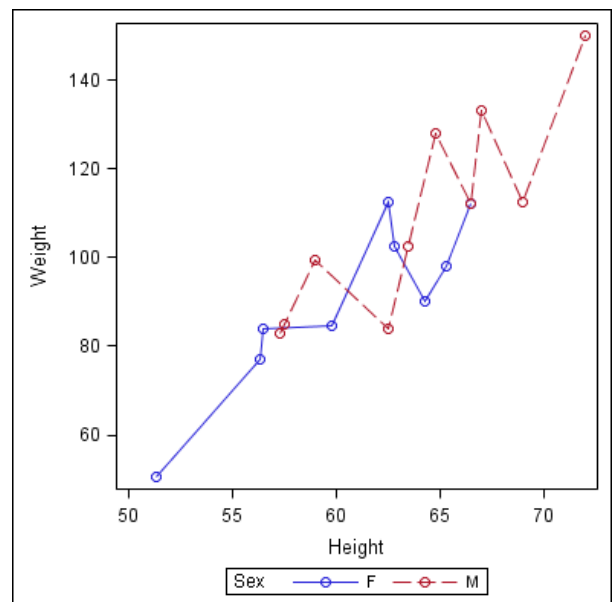
```
PROC SGPLOT DATA = sashelp.class;  
  SCATTER Y = weight X = height / GROUP = sex;  
RUN;
```

Line Plots (Easy)

SAS 9.2: PROC GPLOT



SAS 9.2M3: PROC SGPLOT



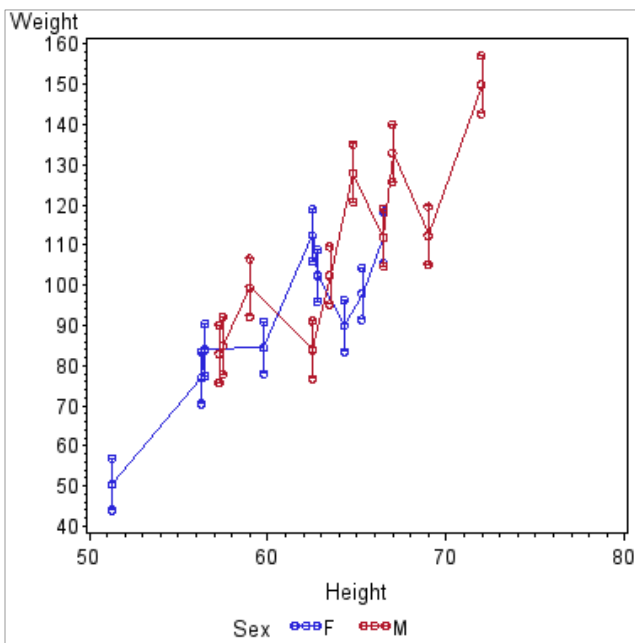
Line Plots (Easy)

```
PROC SORT DATA = sashelp.class OUT = class;  
  BY sex height;  
RUN;
```

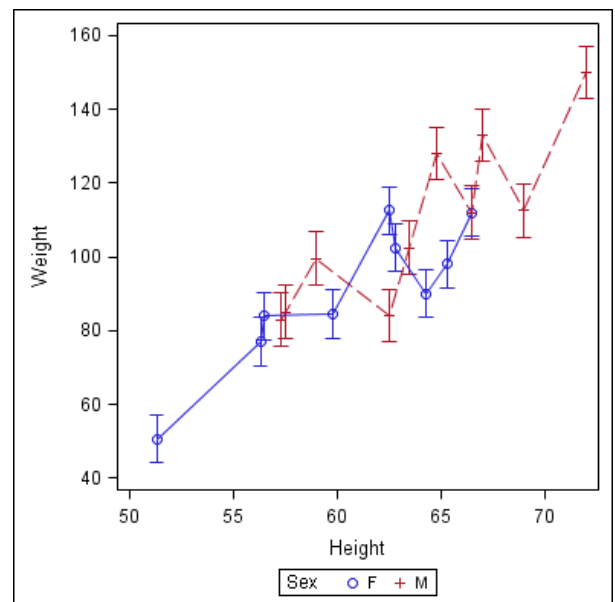
```
PROC SGPLOT DATA = class;  
  SERIES Y = weight X = height / GROUP = sex MARKERS MARKERATTRS =(SYMBOL=CIRCLE);  
RUN;
```

Line Plots with Error Bars (Easy)

SAS 9.2: PROC GPLOT



SAS 9.2M3: PROC SGPLOT



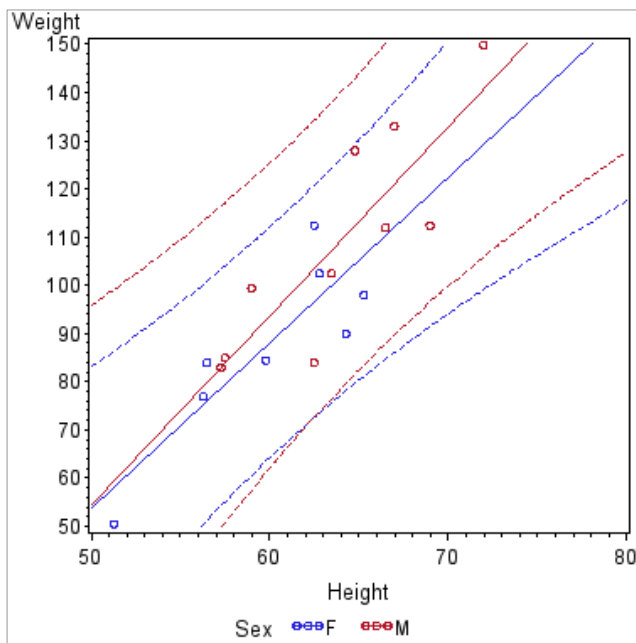
Line Plots with Error Bars (Easy)

```
PROC SORT DATA = sashelp.class OUT = class;  
  BY sex height;  
RUN;  
  
PROC SUMMARY DATA = class NWAY;  
  CLASS sex;  
  VAR weight;  
  OUTPUT OUT = class_se STDERR = weight_se;  
RUN;  
  
DATA class_ods (KEEP = sex height value  
                  value_upper value_lower);  
  MERGE class class_se; BY sex;  
  value = weight;  
  value_upper = weight + weight_se;  
  value_lower = weight - weight_se;  
  OUTPUT;  
RUN;
```

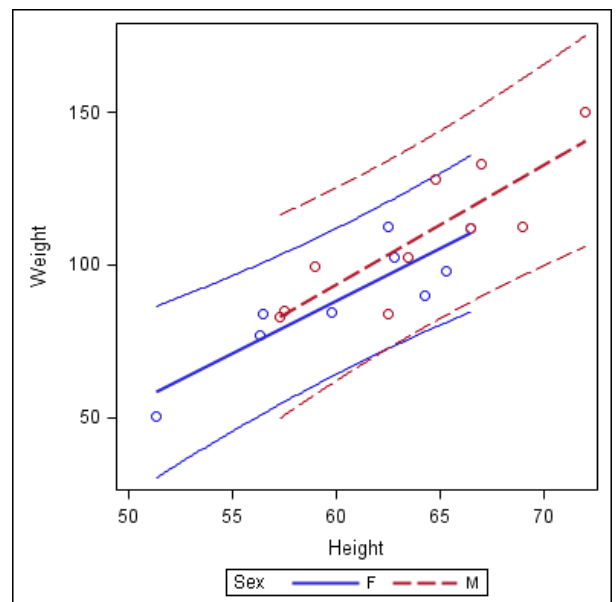
```
PROC SGPLOT DATA = class_ods;  
  SCATTER Y = value X = height /  
    GROUP = sex  
    YERRORUPPER = value_upper  
    YERRORLOWER = value_lower;  
  SERIES Y = value X = height / GROUP = sex;  
  LABEL value = "Weight";  
RUN;
```

Regression Plots (Easy)

SAS 9.2: PROC GPLOT



SAS 9.2M3: PROC SGPLOT



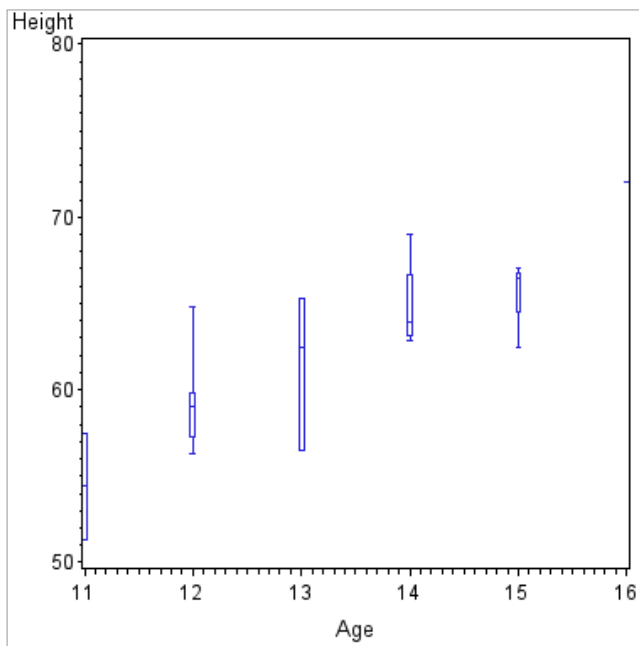
Regression Plots (Easy)

```
PROC SORT DATA = sashelp.class OUT = class;  
  BY sex height;  
RUN;
```

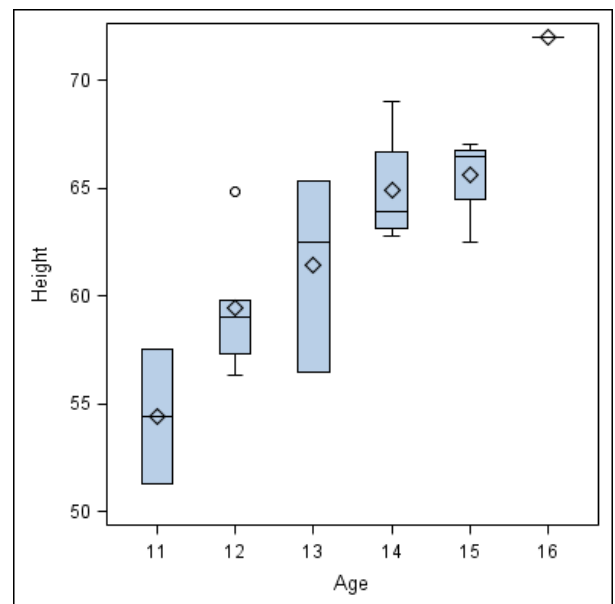
```
PROC SGPLOT DATA = class;  
  REG Y = weight X = height / GROUP = sex CLI MARKERATTRS = (SYMBOL=CIRCLE);  
RUN;
```

Box Plots (Easy)

SAS 9.2: PROC GPLOT



SAS 9.2M3: PROC SGPLOT

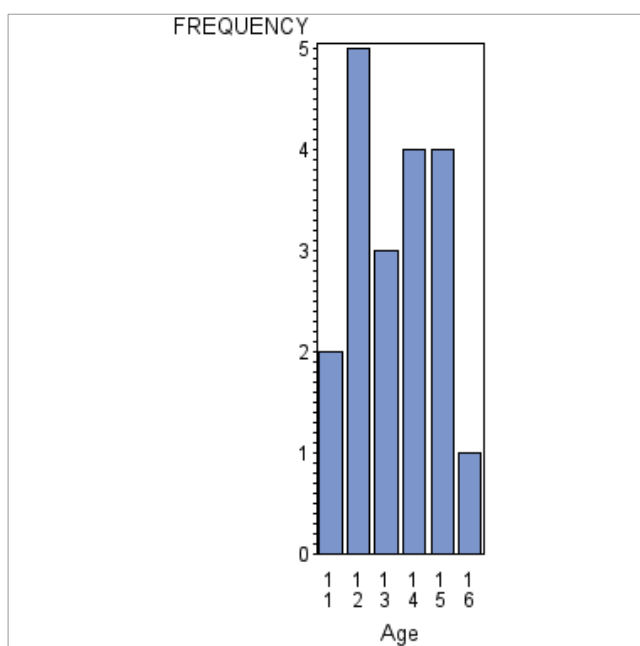


Box Plots (Easy)

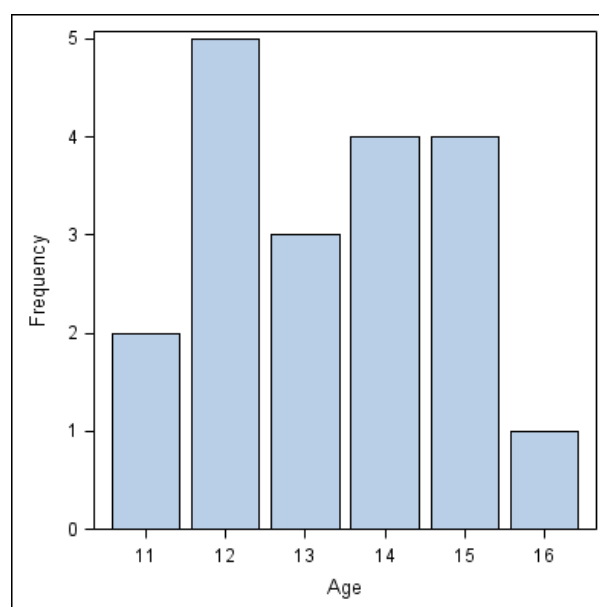
```
PROC SORT DATA = sashelp.class OUT = class;  
  BY age;  
RUN;  
  
PROC SGPLOT DATA = class;  
  VBOX height / CATEGORY = age;  
RUN;
```

Vertical Bar Charts (Easy)

SAS 9.2: PROC GCHART



SAS 9.2M3: PROC SGPLOT

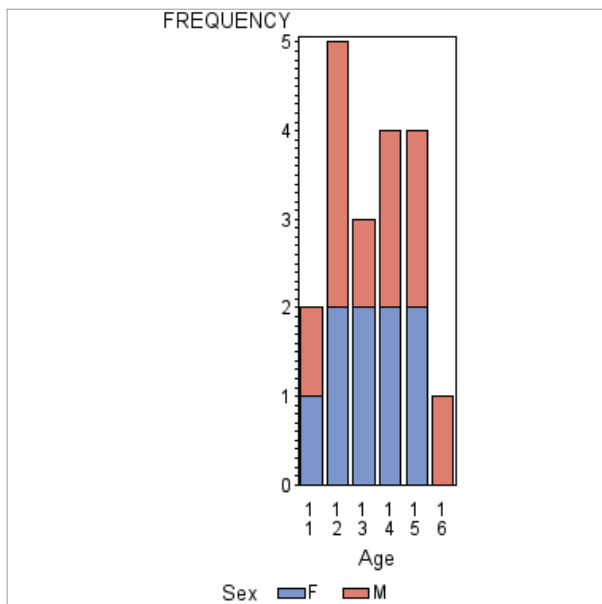


Vertical Bar Charts (Easy)

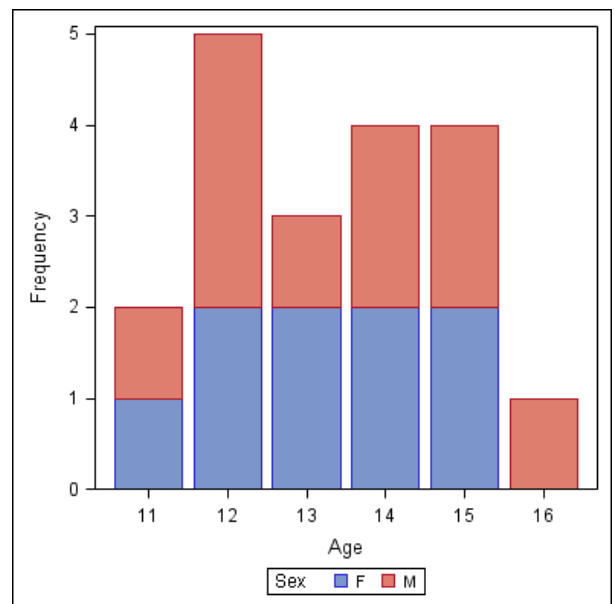
```
PROC SORT DATA = sashelp.class OUT = class;  
  BY sex age;  
RUN;  
  
PROC SGPLOT DATA = class;  
  VBAR age;  
RUN;
```

Vertical Bar Charts (Easy)

SAS 9.2: PROC GCHART



SAS 9.2M3: PROC SGPLOT

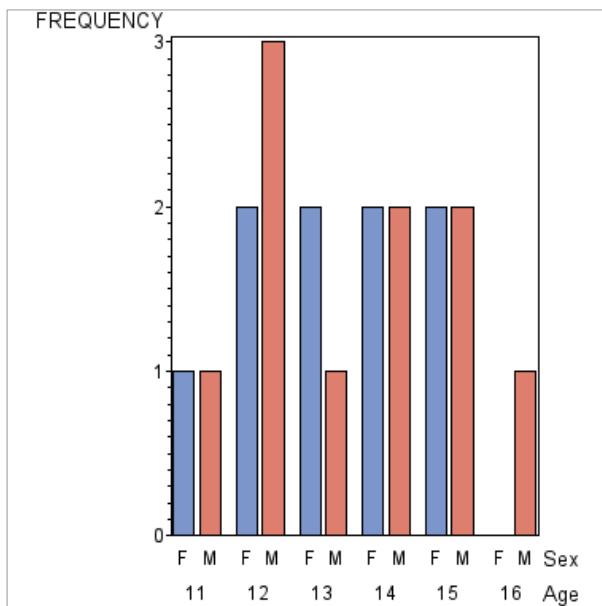


Vertical Bar Charts (Easy)

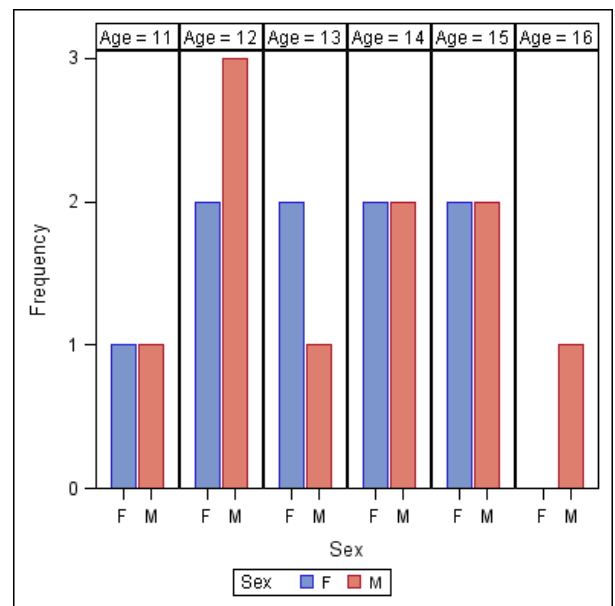
```
PROC SORT DATA = sashelp.class OUT = class;  
  BY sex age;  
RUN;  
  
PROC SGPLOT DATA = class;  
  VBAR age / GROUP = sex;  
RUN;
```

Vertical Bar Charts (Easy)

SAS 9.2: PROC GCHART



SAS 9.2M3: PROC SGPanel

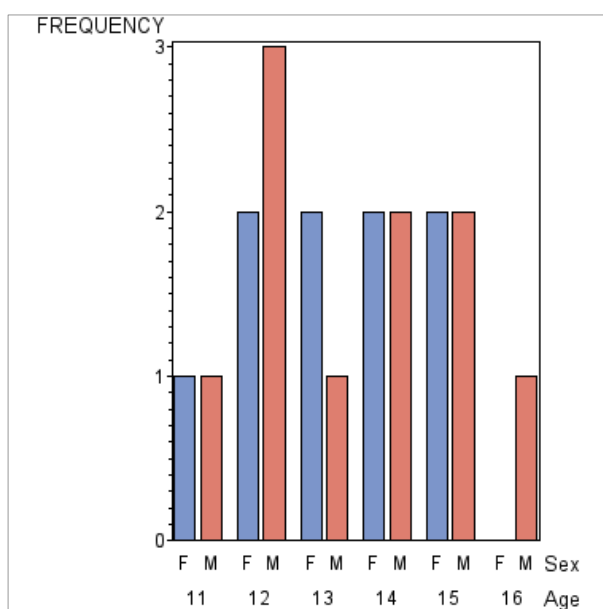


Vertical Bar Charts (Easy)

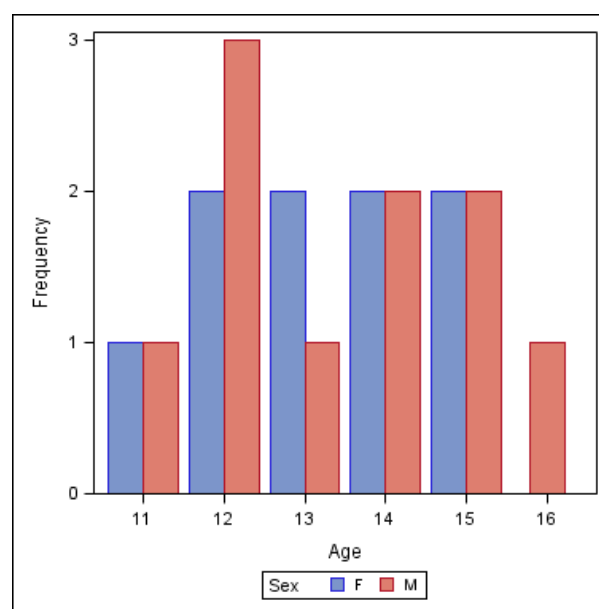
```
PROC SORT DATA = sashelp.class OUT = class;  
  BY sex age;  
RUN;  
  
PROC SGPanel DATA = class;  
  PANELBY age / COLUMNS = 6;  
  VBAR sex / GROUP = sex;  
RUN;
```

Vertical Bar Charts (Easy)

SAS 9.2: PROC GCHART



SAS 9.3M1: PROC SGPLOT

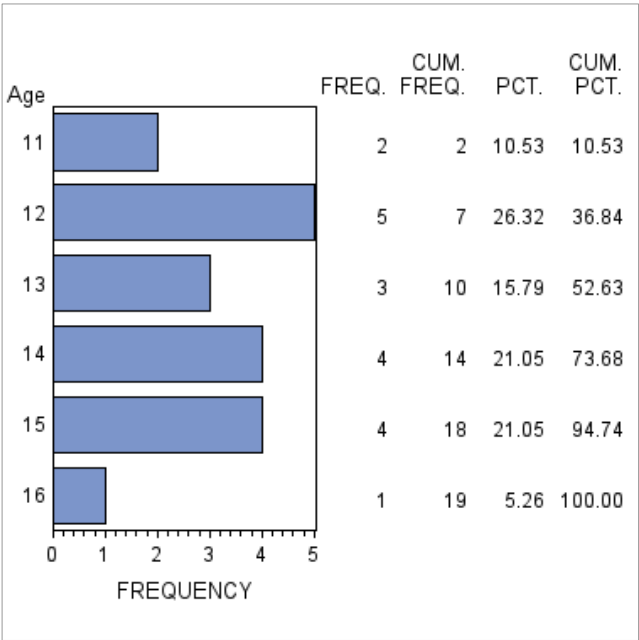


Vertical Bar Charts (Easy)

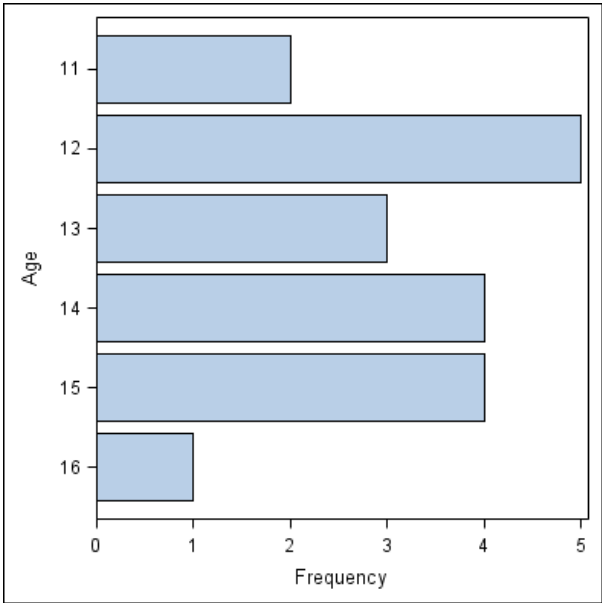
```
PROC SORT DATA = sashelp.class OUT = class;  
  BY sex age;  
RUN;  
  
PROC SGPLOT DATA = class;  
  VBAR age / GROUP = sex GROUPDISPLAY = CLUSTER;  
RUN;
```

Horizontal Bar Charts (Easy)

SAS 9.2: PROC GCHART



SAS 9.2M3: PROC SGPLOT

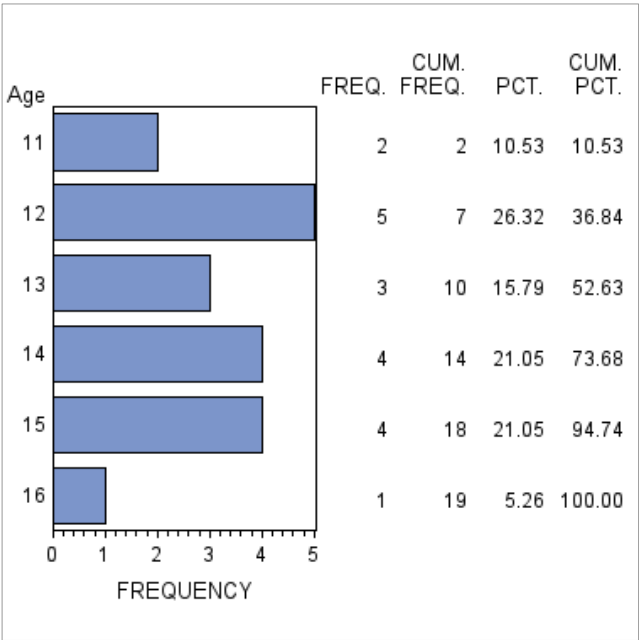


Horizontal Bar Charts (Easy)

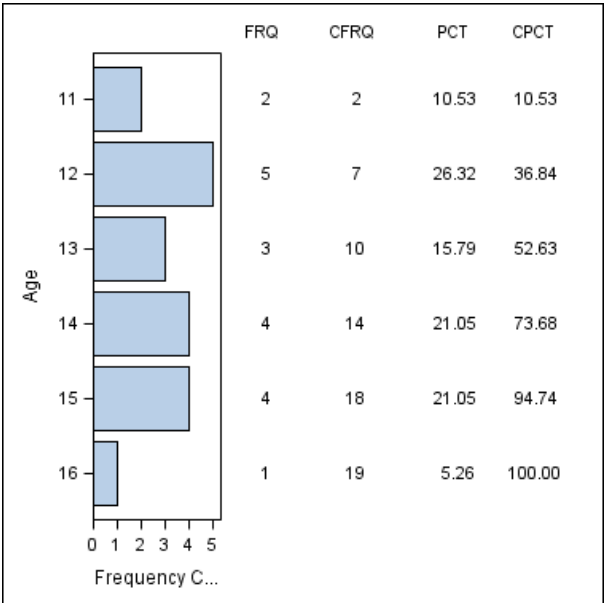
```
PROC SORT DATA = sashelp.class OUT = class;  
  BY sex age;  
RUN;  
  
PROC SGPLOT DATA = class;  
  HBAR age;  
RUN;
```

Horizontal Bar Charts (Difficult)

SAS 9.2: PROC GCHART



SAS 9.4M1: PROC SGPLOT



Horizontal Bar Charts (Difficult)

```
PROC SORT DATA = sashelp.class OUT = class;
  BY age;
RUN;

PROC FREQ DATA = class;
  TABLES age / OUT = class_summ NOPRINT;
RUN;

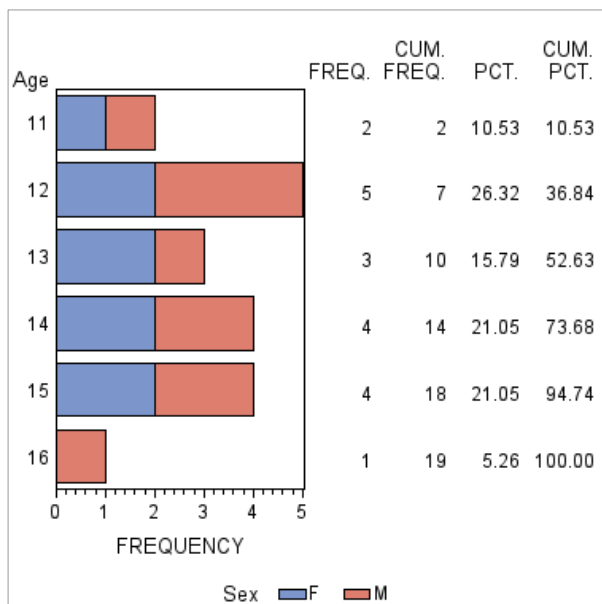
DATA class_summ;
  SET class_summ;
  RETAIN cum_freq cum_pct .;
  freq = count;
  cum_freq + count;
  cum_pct + percent;
  FORMAT freq cum_freq 6.percent cum_pct 6.2;
RUN;
```

Horizontal Bar Charts (Difficult)

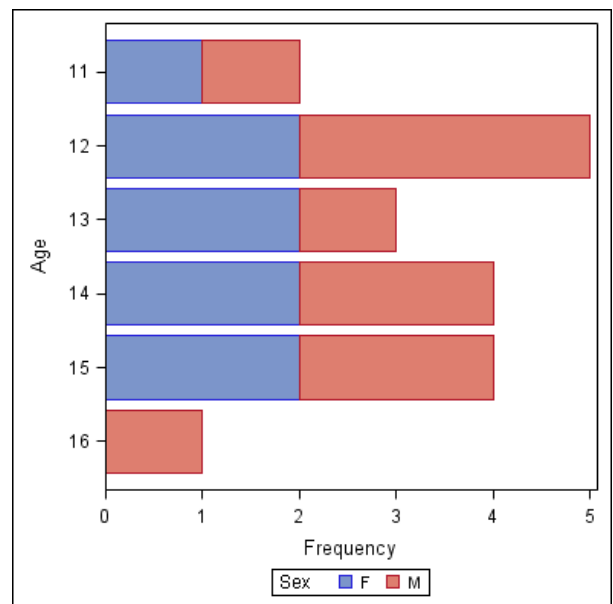
```
PROC SGPLOT DATA = class_summ;  
  HBAR age / STAT = FREQ;  
  YAXISTABLE freq cum_freq percent cum_pct /  
    LOCATION = INSIDE POSITION = RIGHT LABELPOS = TOP;  
RUN;
```

Horizontal Bar Charts (Easy)

SAS 9.2: PROC GCHART



SAS 9.2M3: PROC SGPLOT

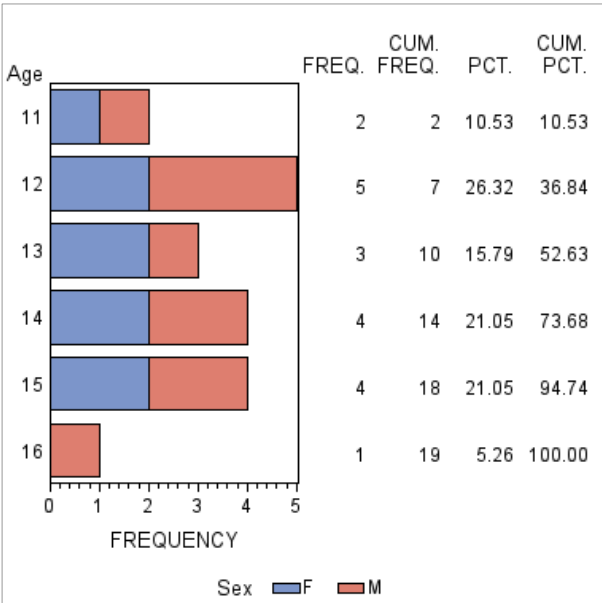


Horizontal Bar Charts (Easy)

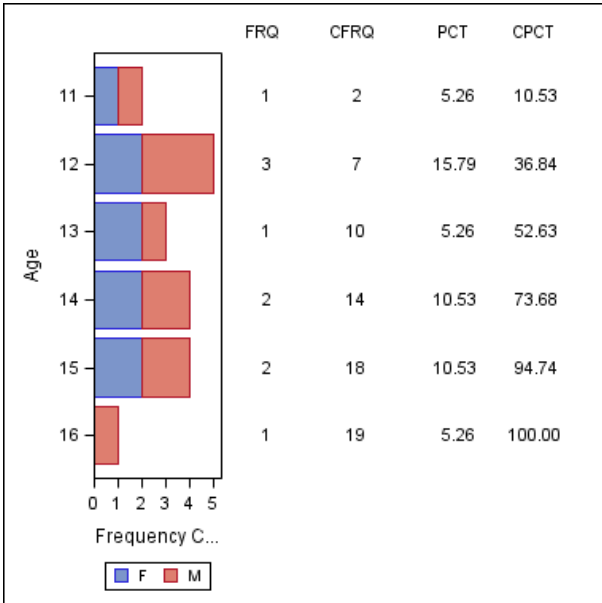
```
PROC SORT DATA = sashelp.class OUT = class;  
  BY sex age;  
RUN;  
  
PROC SGPLOT DATA = class;  
  HBAR age / GROUP = sex;  
RUN;
```

Horizontal Bar Charts (Difficult)

SAS 9.2: PROC GCHART



SAS 9.4M1: PROC SGPLOT



Horizontal Bar Charts (Difficult)

```
PROC SORT DATA = sashelp.class OUT = class;  
  BY sex age;  
RUN;  
  
PROC FREQ DATA = class;  
  TABLES sex * age / OUT = class_stack_summ NOPRINT;  
RUN;
```

Horizontal Bar Charts (Difficult)

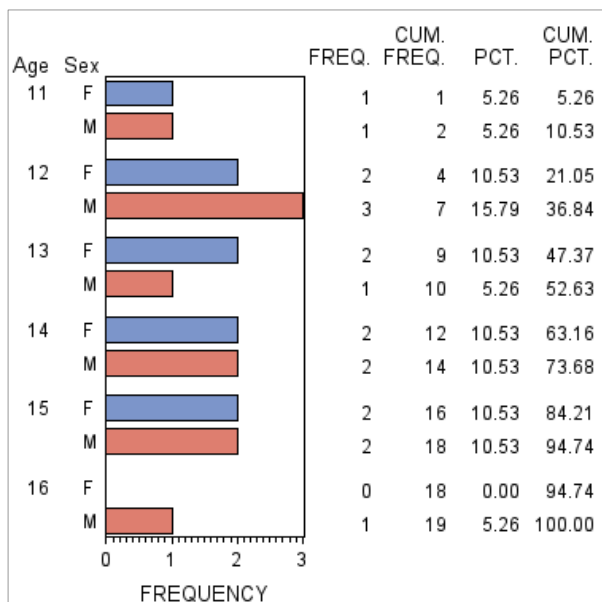
```
DATA class_stack_summ;  
  SET class_stack_summ;  
  BY sex age;  
  RETAIN cum_freq cum_pct .;  
  freq = count;  
  cum_freq + count;  
  cum_pct + percent;  
  FORMAT freq cum_freq 3. percent cum_pct 6.2;  
RUN;  
  
DATA class_stack_summ;  
  SET class_stack_summ;  
  BY sex age;  
  IF NOT LAST.age THEN DO;  
    freq = .;  
    cum_freq = .;  
    percent = .;  
    cum_pct = .;  
  END;  
RUN;
```

Horizontal Bar Charts (Difficult)

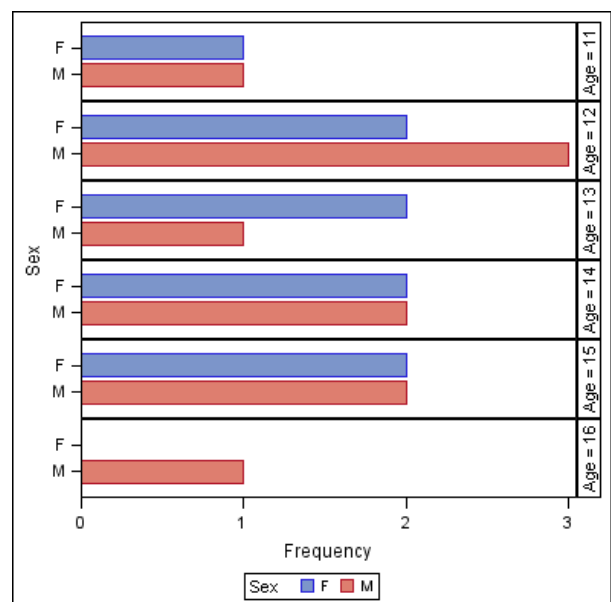
```
PROC SGPLOT DATA = class_stack_summ;  
  HBAR age / GROUP = sex;  
  YAXISTABLE freq cum_freq percent cum_pct /  
    LOCATION = INSIDE POSITION = RIGHT LABELPOS = TOP;  
RUN;
```

Horizontal Bar Charts (Easy)

SAS 9.2: PROC GCHART



SAS 9.2M3: PROC SGPanel

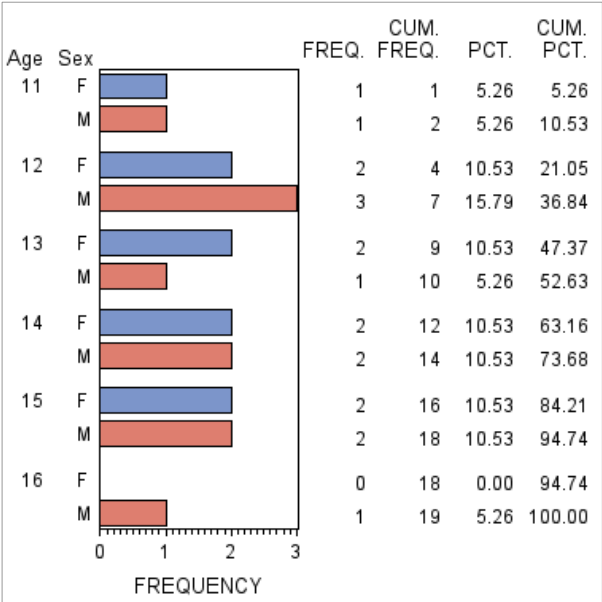


Horizontal Bar Charts (Easy)

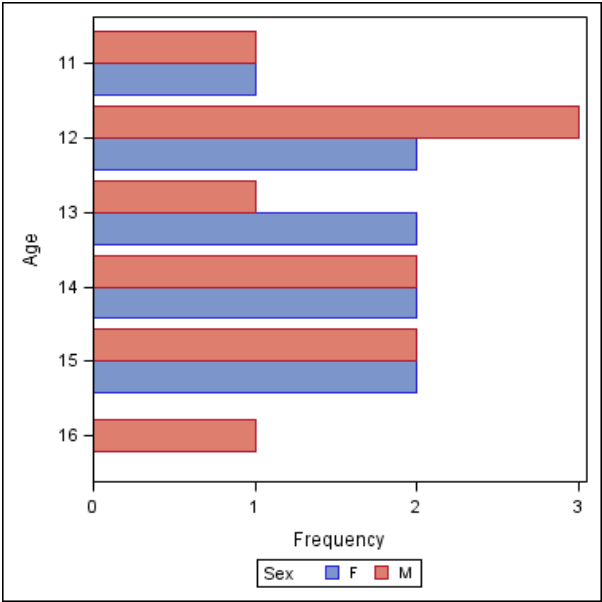
```
PROC SORT DATA = sashelp.class OUT = class;  
  BY sex age;  
RUN;  
  
PROC SGPanel DATA = class;  
  PANELBY age / ROWS = 6;  
  HBAR sex / GROUP = sex;  
RUN;
```

Horizontal Bar Charts (Easy)

SAS 9.2: PROC GCHART



SAS 9.3M1: PROC SGPLOT

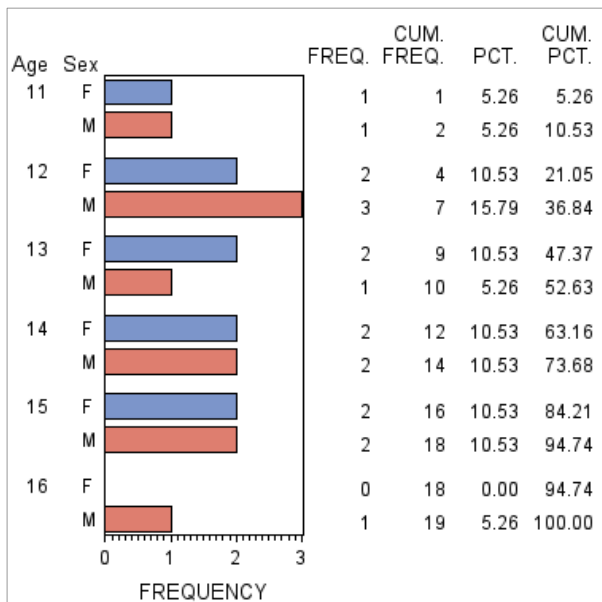


Horizontal Bar Charts (Easy)

```
PROC SORT DATA = sashelp.class OUT = class;  
  BY sex age;  
RUN;  
  
PROC SGPLOT DATA = class;  
  HBAR age / GROUP = sex GROUPDISPLAY = CLUSTER;  
RUN;
```

Horizontal Bar Charts (Impossible)

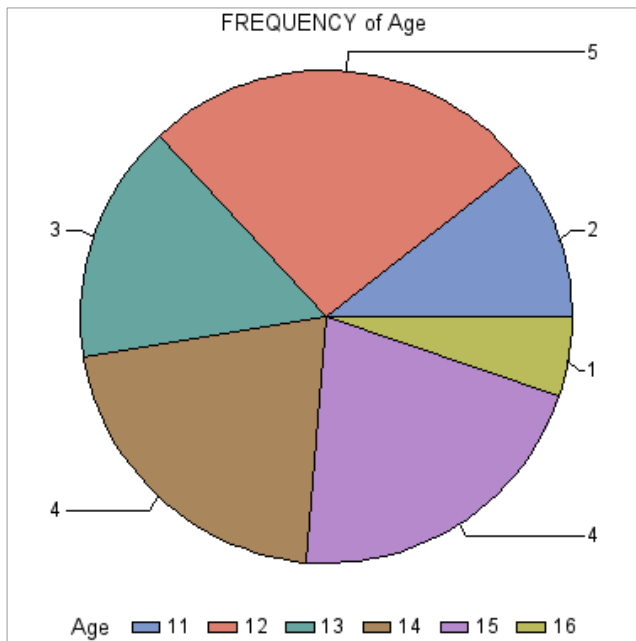
SAS 9.2: PROC GCHART



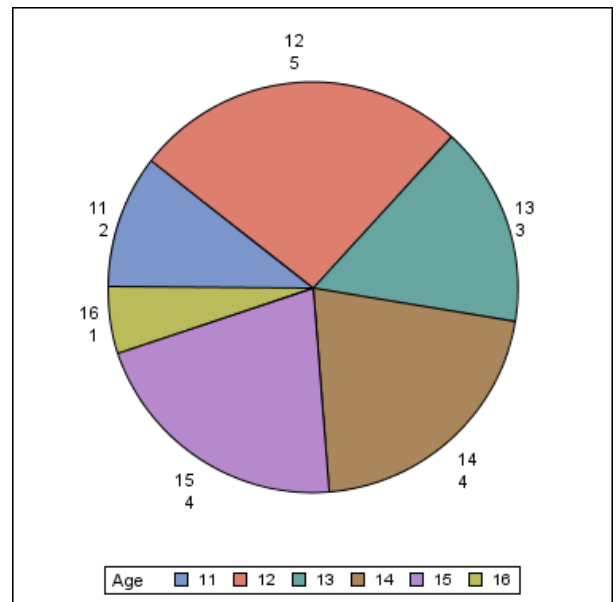
Not possible before
SAS 9.4 Maintenance 2

Pie Charts (Difficult)

SAS 9.2: PROC GCHART



SAS 9.3M1: PROC TEMPLATE



Pie Charts (Difficult)

```
PROC SORT DATA = sashelp.class OUT = class;
  BY age;
RUN;

PROC TEMPLATE;
  DEFINE STATGRAPH pie;
    BEGINGRAPH;
    LAYOUT REGION;
      PIECHART CATEGORY = age / DATALABELLOCATION = OUTSIDE
        CATEGORYDIRECTION = CLOCKWISE START = 180 NAME = 'pie';
    DISCRETELEGEND 'pie' / TITLE = 'Age';
    ENDLAYOUT;
  ENDGRAPH;
END;
RUN;

PROC SGRENDER DATA = class TEMPLATE = pie;
RUN;
```

3D Pie Charts (Impossible)

- This chart is one that I have never really liked. My opinion of this graph is that, rather than being a way to inform the viewer, they are frequently used to mislead the viewer instead.
- It is with great delight that I have discovered that 3D pie charts will not be supported in any release of ODS Graphics in the near future.
- This does not prevent SAS users who wish to create these charts from doing so, but they will be required to license SAS/GRAPH first.

Conclusions

- Do you only create plots, and no charts at all? This probably means that your programs could be converted from SAS/GRAPH to ODS Graphics in SAS 9.2 or 9.3.
- If you create bar charts, do you draw horizontal bar charts that require large amounts of text added alongside the chart? It should still be possible to convert your programs from SAS/GRAPH to ODS Graphics in SAS 9.2 or 9.3.
- If you require horizontal clustered bar charts with large amounts of text added, 2D or 3D pie charts, then keep your SAS/GRAPH licence for now, as PROC GCHART is not going away in the foreseeable future!

Contact Details

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