



APPENDIX

2

Sample SAS Data Sets

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Introduction

This appendix gives information about the two SAS data sets that are used for the book's examples.

If your site has installed the sample data sets, they are found in the sample subdirectory for the product. For example, for a UNIX environment, the location may be `!SASROOT/spectraview/sample`. Please note that this location is the default and is not necessarily the location of the sample programs at your site. Contact your SAS Software Representative for information on how to access the sample library files.

EPA

The EPA data set describes the results of measuring sulfate concentrations.

The following table shows the variables in EPA and how they were assigned to SAS/SPECTRAVIEW variables. Note that the optional BY variable is included.

Table A2.1

Variable	Dimension	Description
HOURS	BY Variable	hour that the reading was taken
LEVEL	Z Variable	layer above ground
LNGITUDE	X Variable	longitude coordinate
LATITUDE	Y Variable	latitude coordinate

Variable	Dimension	Description
SULFATE	Response	sulfate concentration percentage
OZONE	not used	ozone concentration percentage

MORTGAGE

The MORTGAGE data set contains mortgage payment comparisons for various numbers of years, interest rates, and loan amounts. The data set has 16,400 observations.

The following table shows the variables in MORTGAGE and how they were assigned to the required SAS/SPECTRAVIEW variables.

Table A2.2

Variable	Dimension	Description
YEARS	Z Variable	number of years for loan
RATE	X Variable	interest percentage rate
AMOUNT	Y Variable	loan amount
PAYMENT	Response	monthly payment amount

Glossary

autoexec file

an external file containing SAS statements that are executed automatically when the SAS System is invoked. You can use the autoexec file to specify SAS system options, as well as librefs and filerefs.

axis

a one-dimensional line representing the zero point on a scale used to plot values of the x,y,z coordinates. The X axis represents width, the Y axis represents height, and the Z axis represents depth.

axis variables

the data set variables that you specify for the X axis, the Y axis, and the Z axis.

bounding box

a set of lines that outline the three-dimensional volume grid representing the data.

BY variable

an optional variable specification whose values define groups of observations, such as hour, month, or year. Specifying a BY variable allows you to animate an image so that you can see how response values change according to some grouping, like over time.

categorizing data

to group numeric data creating distinct ranges for each axis.

click

to press and quickly release a mouse button.

color palette

lets you customize colors for response value ranges, missing values, an isosurface, and image annotations.

continuous data

data containing few gaps that vary slightly over a large range, like weight and height.

coordinates

the values representing the location of a data point along the X, Y, Z axes.

cutting plane

a visualization technique that produces slices of data, either perpendicular to an axis or not perpendicular to any axis. In addition to the axis cutting planes, you can request two- and three-dimensional surface views (surfaces, charts, stacks, and plots) at a specific cutting plane's location.

data filtering

a data processing option that smooths or sharpens the data in order to deemphasize or highlight variations in response values. SAS/SPECTRAVIEW provides several predefined filters, or you can create your own.

data point

the location in three-dimensional space of an x,y,z coordinate.

data ramp

the column of data value ranges and associated colors on the color palette that you can use to customize response colors in images.

direct volume rendering

a visualization technique that creates a two-dimensional image of the entire volume of data points with transparency.

discrete data

data consisting of distinct values (non-continuous) containing natural gaps, like patient IDs and years.

display windows

the four interface windows that display the images for viewing and manipulation.

drag

to press and hold a mouse button while moving the mouse.

filler points

the data points generated by the software to fill the volume grid in locations not occupied by data points plotted from X, Y, and Z values.

grid

See *volume grid*.

interpolate

to estimate values between two or more known values.

isosurface

a visualization technique that produces a three-dimensional surface by connecting all the data points with one response value.

libref

an arbitrary name that you make up to symbolically represent a SAS library.

major tick marks

the points on an axis that mark the major divisions of the axis scale.

minor tick marks

the divisions of the axis scale that fall between major tick marks.

missing values

a value in the SAS System indicating that no data is stored for the variable in the current observation.

NOR plane

a cutting plane that is not perpendicular (non-orthogonal) to any axis.

observation

the horizontal component of a SAS data set. Each observation contains one data value for each variable in the data set. In SAS/SPECTRAVIEW software, an observation contains the x,y,z coordinates for a data point and the response value for that location.

opacity degree

the setting that determines the data points that are to be visible in an image produced by direct volume rendering.

point cloud

a visualization technique that displays response values with colored markers, showing individual data points.

probe analysis

a customization option that displays the response value for a specific data point in an image.

response histogram

a bar chart that displays both the frequency distribution of data points that share the same response value and the colors that represent those values. You use the histogram to specify a subset of response values for a point cloud and to specify the response value for an isosurface.

response values

the measured responses that are associated with each data point in the volume. The measured response could be, for example, density, porosity, or wind velocity.

response variable

the SAS data set variable whose values are measured responses that are associated with each data point in the volume.

RGB

a color-coding scheme that specifies a color in terms of percentages of red, green, and blue components.

SAS data set

the internal format used by the SAS System. A SAS data set contains descriptor information and its related data values organized as a table of observations (rows) and variables (columns) that can be processed by the SAS System.

solid-volume image

a visualization technique that produces a colored, three-dimensional, solid-block image of the data points, providing an overall view of the data at the volume's border.

sparse data

data that does not contain at least one value for an x,y,z coordinate within the volume grid, like random data.

splat width

the setting that determines how solid the rendered image is to be.

text window

a window in the interface where messages give you instructions, inform you of current conditions and errors, and so on. You also enter values and names in this window.

three-dimensional

having three dimensions, that is, width, height, and depth. A three-dimensional area can be defined by points having three coordinates relative to the X, Y, and Z axis.

TIFF file

a Tagged Image File Format, which is a format for scanned images.

two-dimensional

having height and width but not depth. A two-dimensional plane consists of points or lines defined by coordinates that are relative to two axes, for example, the X axis and the Y axis.

variable

a column in a SAS data set. Each SAS variable can have the following attributes: name, type (character or numeric), length, format, informat, and label.

volume grid

an invisible network of lines that intersect data points in three-dimensional space. The shape and size of the volume grid is determined by the number of distinct X, Y, and Z values.

volume visualization

the process of creating a three-dimensional image that represents data, providing both surface and interior views.

WHERE clause

allows you to specify a subset of data to be read into SAS/SPECTRAVIEW.

X axis

the axis that specifies width in the coordinate system. The first value in an x,y,z coordinate set represents a location in space relative to the X axis.

X variable

the SAS data set variable whose values are plotted on the X axis, which creates the horizontal axis.

Y axis

the axis that specifies height in the coordinate system. The second value in an x,y,z coordinate set represents a location in space relative to the Y axis.

Y variable

the SAS data set variable whose values are plotted on the Y axis, which creates the vertical axis.

Z axis

the axis that specifies depth in the coordinate system. The third value in an x,y,z coordinate set represents a location in space relative to the Z axis.

Z variable

the SAS data set variable whose values are plotted on the Z axis, which creates the depth axis.

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