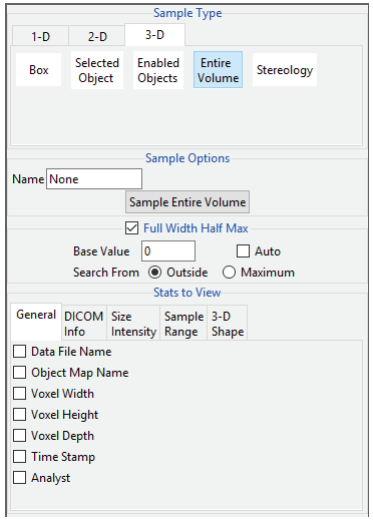
Entire Volume

The entire volume option allows users to sample measurements for the entire data set. The entire volume measurement option does not require an object map.



Sample Options: Provides users the following sampling controls:

- **Name:** Allows users to specify a name for the combined object measurements when reported to the stats log.

Stats to View: The stats to view area allows users to enable and disable measurements and information reported to the stats log.

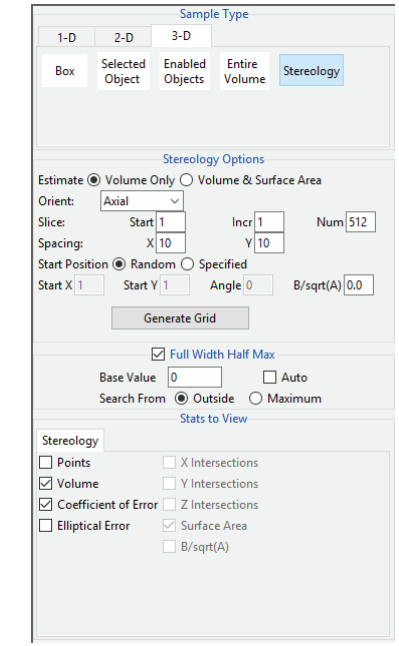
- **General:** Allows users to report general image data parameters in the stats log file (see General under Sample Point(s) > Stats to View.)
- **DICOM Info:** Allows users to report DICOM tag information (see DICOM Info under Sample Point(s) > Stats to View.)
- **Size Intensity:** Reports an array of size intensity information and measurements (see Size Intensity description for Sample 2-D Rectangle.)
- **Sample Range:** Samples voxels within a defined region based on a min/max intensity range (see Sample 2-D Rectangle > Sample Range.)
- **3-D Shape:** Allow users to sample different 3-D shape-based measurement, see the 3-D Shape description under 3-D > Box for details on each of the 3-D shape measurements available.

Sampling the Entire Data Set using Entire Volume

Download the MRI_3D_Head.avw data set from analyzedirect.com/data to follow along.

- Open Input/Output and load MRI_3D_Head.avw into Analyze. Select MRI_3D_Head and open Measure.
- Select File > Load Object Map and load the MRI_3D_Head.obj.
- Select the 3D Sample Type [1] and choose Entire Volume [2].
- Select Size Intensity [3] and make sure that Name, Volume and Mean are checked. Uncheck Area.
- Check Auto Log Stats [4] and click Sample Entire Volume [5].
- The selected stats for the entire volume will be reported in the Stats review area [6] and log file.

Stereology



The Stereology tool estimates volume and surface area using the stereological method of point counting. This method consists of overlaying images entirely with a randomly positioned and oriented systematic array of test points and counting the number of occasions on which a point lies within the feature of interest.

Stereology Options:

- **Estimate:** Choose from the following to determine the type of estimation to conduct:
  - **Volume Only:** Specifies that only volume estimations will be made.
  - **Volume & Surface Area:** Specifies that both volume and surface area estimations will be made.
- **Orient:** Allows users to select the orientation to create the sampling grid in.

Slice:

- **Start:** Specifies the initial slice to be used for the grid. Enter the desired slice number in the text entry box.
- **Incr:** Specifies the interval of the slices used when generating the grid. Enter the desired increment in the text entry box.
- **Number:** Specifies the number of slices to be used for the grid. Enter the desired number in the text entry box.

- **Spacing:**
  - **X:** Allows users to the distance (in pixels) between grid elements in X.
  - **Y:** Allows users to the distance (in pixels) between grid elements in Y.
- **Start Position:** Choose from Random and Specified to specify whether the starting position is randomly selected or specified by the following options. When Random is selected the X Start Position, Y Start Position, and Angle text entry fields are disabled.
- **Random:** Generates a random grid.
- **Specified:**
  - **Start X:** Specifies the x position of the first grid element.
  - **Start Y:** Specifies the y position of the first grid element.
  - **Angle:** Specifies the angle used to position the grid on the image.

Stereology Options (continued)

Stereology Options (continued):

- **B/sqrt(A):** Specifies the value used in correcting the estimation of surface area. This value is determined during the estimation of the volume.
- **Generate Grid:** Generates the grid based on the parameters entered above.

Stats to View

- **Stereology**
  - **Volume:**
    - ***Points:*** Reports the number of points selected.
    - ***Volume:*** Displays the current estimation of the specified volume.
    - ***Coefficient of Error:*** Specifies the current estimation of the error coefficient.
    - ***Elliptical Error:*** More accurate error estimate for objects which are unusually regular, close to an ellipsoidal shape.
  - **Surface Area**
    - ***X Intersection***
    - ***Y Intersection***
    - ***Z Intersection***
    - ***Surface Area:*** Displays the current surface area estimation (in Surface Area mode only).
    - ***B/sqrt(A):*** Specifies the mean boundary length divided by the square root of the mean area of the sampled object on all the slices. This is computed in Surface Area Mode and improves Coefficient of Error Estimates.

Right click options:

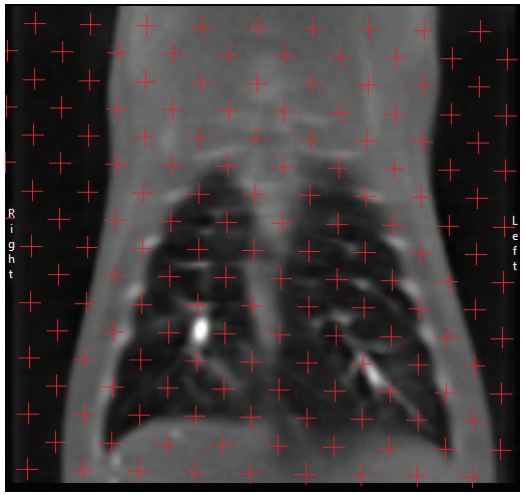
- **Copy Grid Forward:** Copies the current grid forward to the next grid slice. If points have been selected (green points) there selected state will be copied forward also.
- **Middle Button Action:** Allows users to set the action of the middle mouse button. See the Image Display, Controls and Customization section for a full description of this option.

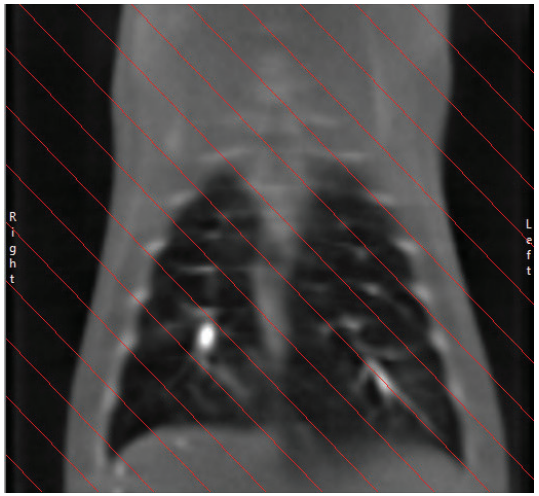
Stereology Options (continued)

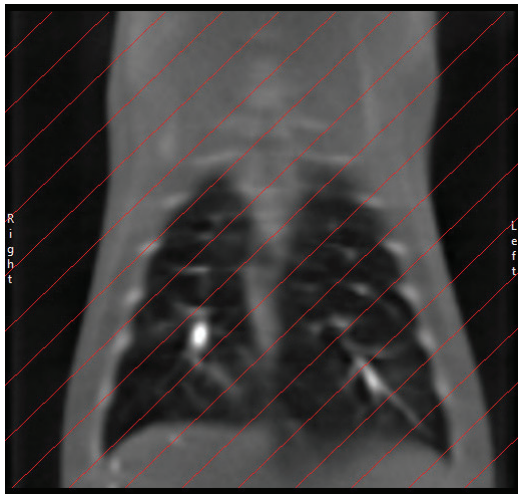
Right Click Options (continued):

- **Mouse Wheel Action:** Allows users to set the action of the middle mouse wheel. See the Image Display, Controls and Customization section for a full description of this option.
- **Copy to Clipboard:** Copies the current slice display to memory.
- **Isotropic:** Active only for anisotropic data. Allows users to toggle between an isotropic or anisotropic display of the data.
- **Show Active Slices Only:** Allow users to automatically skip non-grid slices using the + or – keys or the mouse scroll wheel.

- **Show Grid:** Toggles the display of the volume estimation grid when surface area is selected.
- **Show X Lines:** Toggles the display of the x lines for surface estimation when estimating surface area is active.
- **Show Y Lines:** Toggles the display of the y lines for surface estimation when estimating surface area is active.



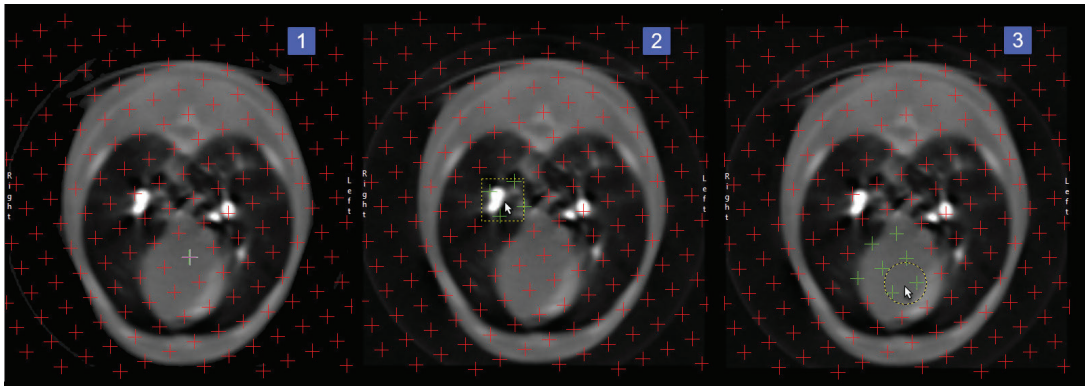




Stereology Options (continued)

Right Click Options (continued):

- **Toggle with 's' key:** When enabled allows users to toggle between Grid, X Lines, and Y Lines.
- **Stereology Cursor:** Allows users to change the shape of the cursor for selecting grid points. Users can choose from; Crosshair [1], Rectangle [2], or Oval [3].



- **Additional Cursor options:** Additional options are available for the Rectangle and Oval cursors:
- ***Rectangle Shape:*** Choose from Square, Wide, or Tall.
- **Rectangle Size:** Tiny, Small, Medium, Large, Extra Large
- **Oval Shape:** Choose from Circular, Wide, or Tall.
- **Oval Size:** Tiny, Small, Medium, Large, Extra Large
- **Keyboard Shortcuts:** The following keyboard shortcuts are available:
- **S:** Toggle through the cursor options.
- **X:** Toggle though cursor shape options.
- **Z:** Toggle through the cursor size options.

Axis Label: Allows users to enable or disable the display of the axis labels on the perimeter of the slice display window.

Border Ruler: Enables/Disables the boarder ruler tool.

Reset: Resets all options to default.