

## Subregion

The Subregion tool can be used to reduce the size of a data set without interpolating within the original data, or to crop to a specific region of interest. Available options are as follows:

**Subregion:** The subregion matrix provides users with an interface to specify the starting (Low) and ending (High) crop points in each orientation (X, Y, Z, and V). Users can also specify increment (Inc) and Number (Num) of slices to crop. The subregion matrix will update when subregions are defined using the interactive cropping tool from the slice display.

- **X:** The X row allows users to specify column attributes for cropping data. Column attributes are automatically updated to reflect changes when modified.
  - **Low:** Low allows users to specify the first column of pixels to be loaded.
  - **Inc:** The increment options allows users to specify increments between the first column of pixels from each image to be loaded.
  - **High:** High allows users to specify the last column of pixels to be loaded.
  - **Num:** Number allows users to enter the number of columns for each image to be loaded.
  - **Max:** The Max field reports the maximum number of columns to be loaded. Note that this field is not editable.
- **Y:** The Y row allows users to specify the row attributes for cropping data. Row attributes are automatically updated to reflect changes when modified.
  - **Low:** Low allows users to specify the first row of pixels to be loaded.
  - **Inc:** The increment options allows users to specify increments between the first row of pixels from each image to be loaded.
  - **High:** High allows users to specify the last row of pixels to be loaded.
  - **Num:** Number allows users to enter the number of rows for each image to be loaded.
  - **Max:** The Max field reports the maximum number of rows to be loaded. Note that this field is not editable.
- **Z:** The Z row allows users to specify the slice attributes for cropping data. Slice attributes are automatically updated to reflect changes when modified.
  - **Low:** Low allows users to specify the first slice to be loaded.
  - **Inc:** The increment options allows users to specify increments between slices.
  - **High:** High allows users to specify the last slice to be loaded.



## Subregion Options (continued)

### Subregion > Z (Continued):

- **Num:** Number allows users to enter the number of slices to be loaded.
- **Max:** The Max field reports the maximum number of slices to be loaded. Note that this field is not editable.
- **Z: Only enabled when a multivolume is selected.** The V row allows users to specify the volume attributes for cropping data. Volume attributes are automatically updated to reflect changes when modified.
  - **Low:** Low allows users to specify the first volume to be loaded.
  - **Inc:** The increment options allows users to specify increments between volumes.
  - **High:** High allows users to specify the last volume to be loaded.
  - **Num:** Number allows users to enter the number of volumes to be loaded.
  - **Max:** The Max field reports the maximum number of volumes to be loaded. Note that this field is not editable.

**Auto Crop:** The Auto Crop tool will automatically calculate the minimum enclosing area to crop image data in the selected orientation. Auto crop will remove empty space around data. This is a useful utility for removing black background slices or automatically cropping binary data. The following options are available:

- **Orientation:** Allows users to select the orientation to be used to calculate the minimum enclosing area. Choose from; Axial, Coronal, or Sagittal.
- **Slice(s):** Allows users to auto crop the current slice or all slices in the current orientation.
- **Crop:** Initiates the auto crop process.

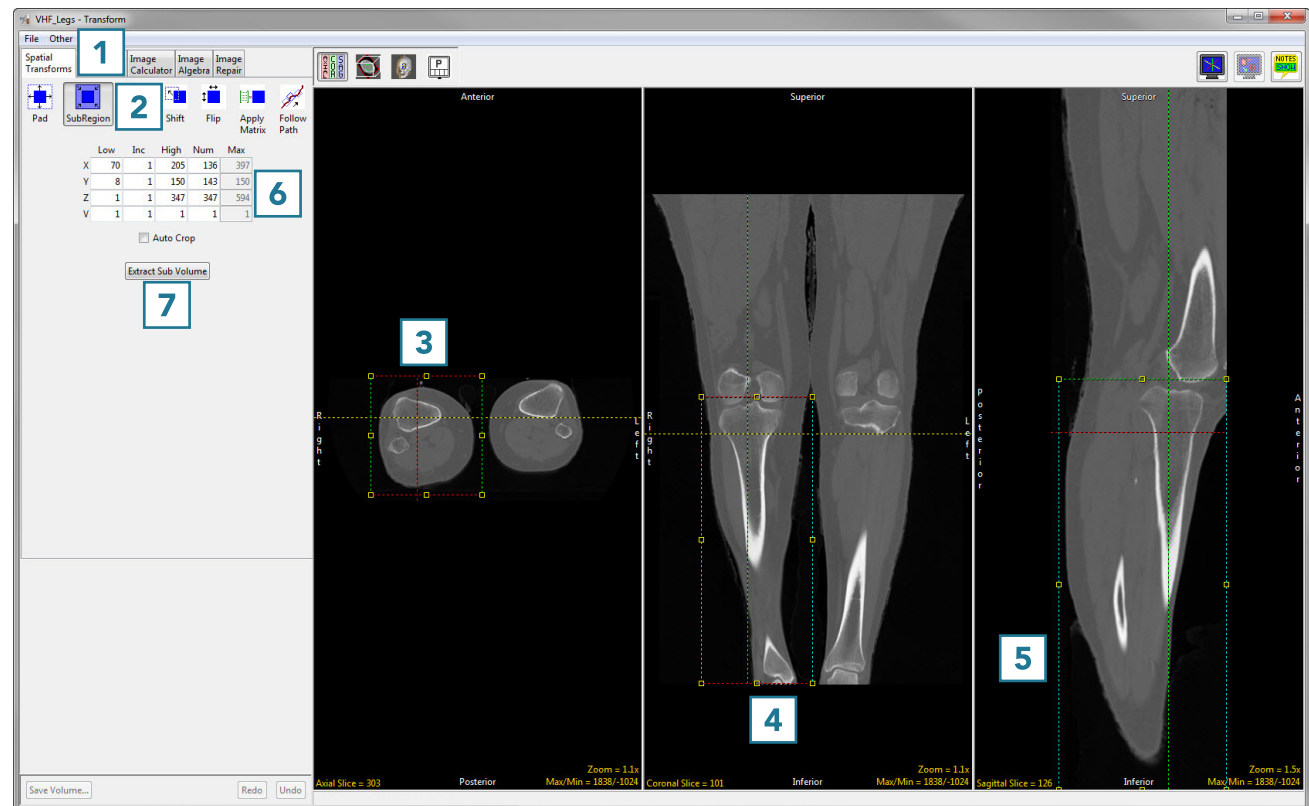
**Extract Sub Volume:** Extracts the sub volume utilizing the parameters specified in the subregion matrix.

## Using the Subregion Tool

Here we will use the Subregion tool can be used to crop a data set to a specific region of interest.

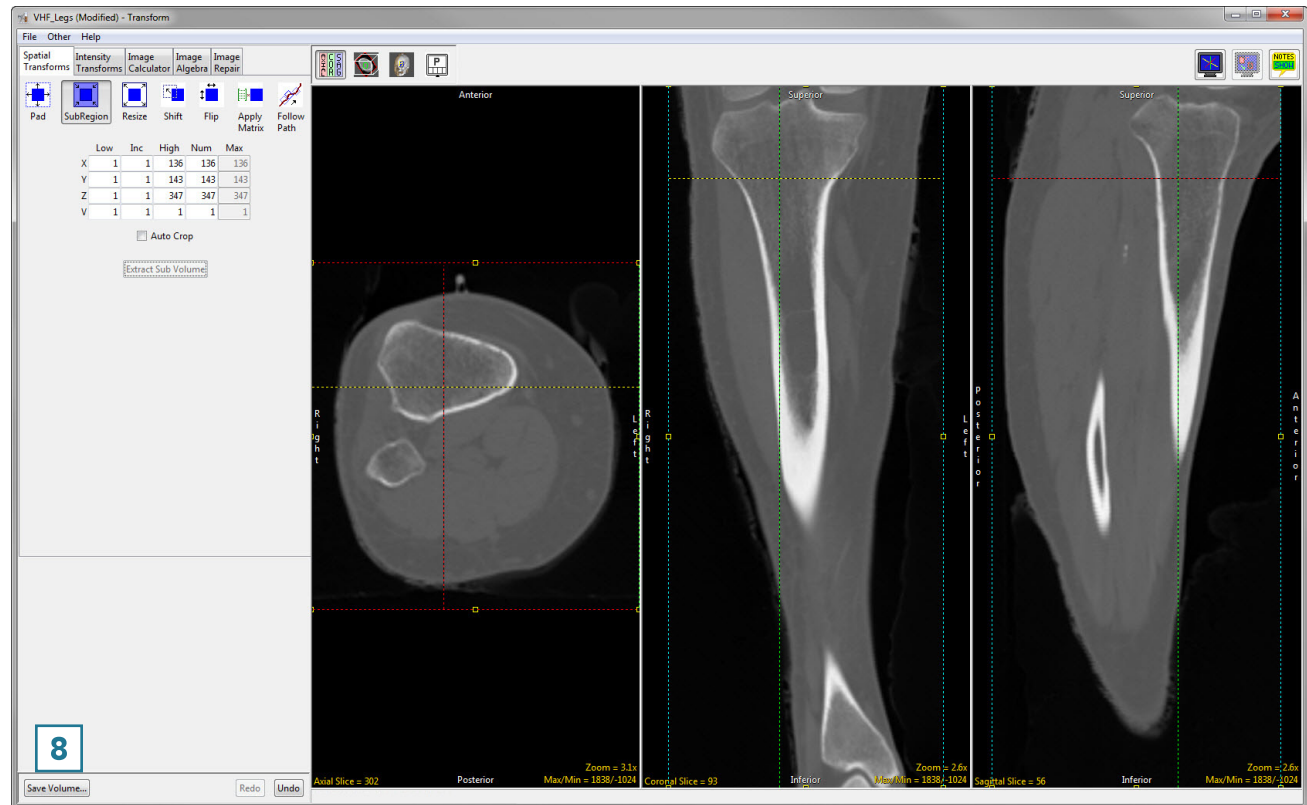
To follow along, download the data set VHF\_Legs from [analyzedirect.com/data](http://analyzedirect.com/data) and load into Analyze using Input/Output.

- Select the data set to crop and open Transform. Navigate to Spatial Transforms [1] and select the Subregion tool [2].
- Use the control points to set the cropped region in the axial [3], coronal [4] and sagittal [5] orientations. Scroll through the slices to ensure the region is correct throughout the data set.
- To set the cropped region to specific slice numbers, use the input boxes [6].
- Click Extract Sub Volume to perform the crop [7].



## Using the Subregion Tool (continued)

- Click Save Volume [8] to save the cropped data set.



- To retain the original volume, choose to create a new workspace volume [9] and rename [10].
- Click Save Volume [11].
- Close Transform.

