

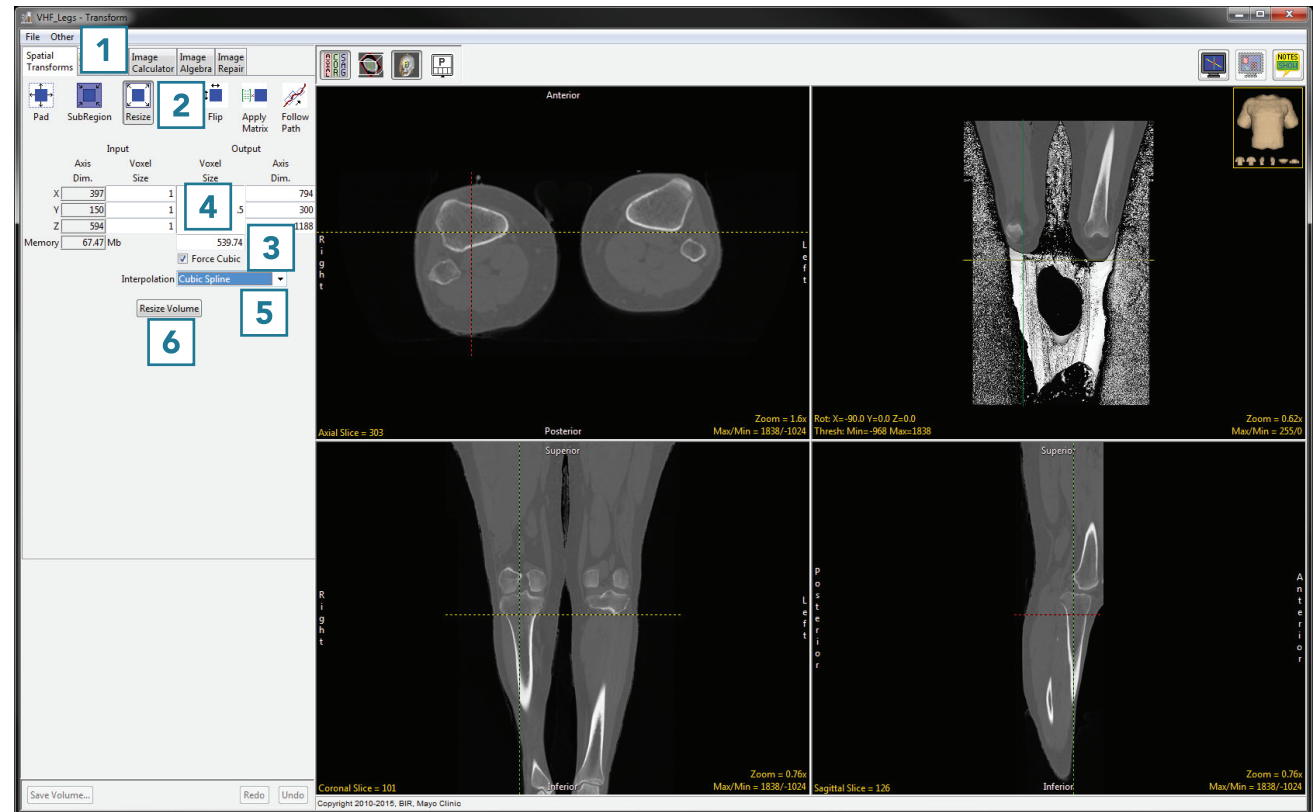
## Using the Resize Tool

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 resize and open Transform. Navigate to Spatial Transforms [1] and select the Resize tool [2].
- Check the Force Cubic checkbox to interpolate between anisotropic voxels [3], set the new voxel size [4] and choose an interpolation type [5].

See the table on the following page for different interpolation types.

- Click Resize Volume [6] to resample the data set.





## Using the Resize Tool (continued)

Each interpolation type is either input driven (ID) or output driven (OD).

Input driven interpolation algorithms process each voxel in the input volume and map each input voxel into the output space. The actual interpolation takes place in the output space, given the projected contributions of each input voxel into that space. Input driven algorithms will always use every voxel in the input volume as part of the interpolation process.

Output driven algorithms step through each voxel in the output data set and find the corresponding set of voxels in the input data set that map into the output. The interpolation of voxels takes place in the input space, depending on the type of interpolation selected. Output driven algorithms are more common in image processing as they guarantee that every voxel in the output data set will be filled with an interpolated value.

## Interpolation Types

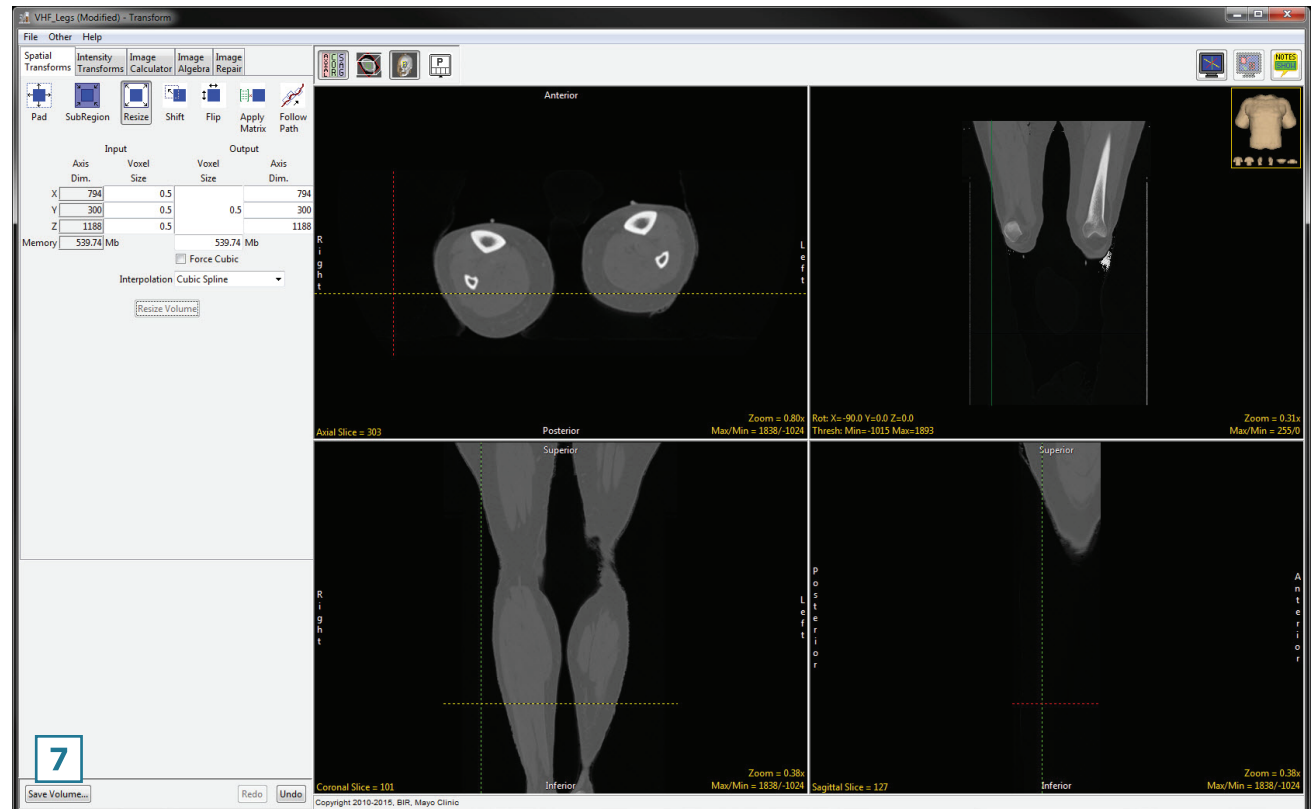
Interpolation Type	Description
Nearest Neighbor*	selects the value of the closest voxel to which the interpolation resampling maps
Linear*	applies a linear interpolation of grayscale intensity based on the distance of neighboring voxels from the interpolated voxel
Cubic Spline**	uses a cubic spline function to determine interpolated value
Windowed Sinc**	uses windowed sinc function $\sin(x)/x$ to determine interpolated value
Shape Based	only available for binary data; calculates Euclidean distance, then performs linear interpolation between distance images

\*The Nearest Neighbor and Linear interpolation types can be specified as ID or OD.

\*\*The Cubic Spline and Windowed Sinc interpolation types are both OD. Since they use higher-order functions, they account for more neighboring voxels and thus may provide a better estimate for the interpolated value. These algorithms are also more compute-intensive.

## Using the Resize Tool (continued)

- Click Save Volume [7] to save the resampled data set.



- To retain the original volume, choose to create a new workspace volume [8], rename [9] then click Save Volume [10].
- Close Transform.

