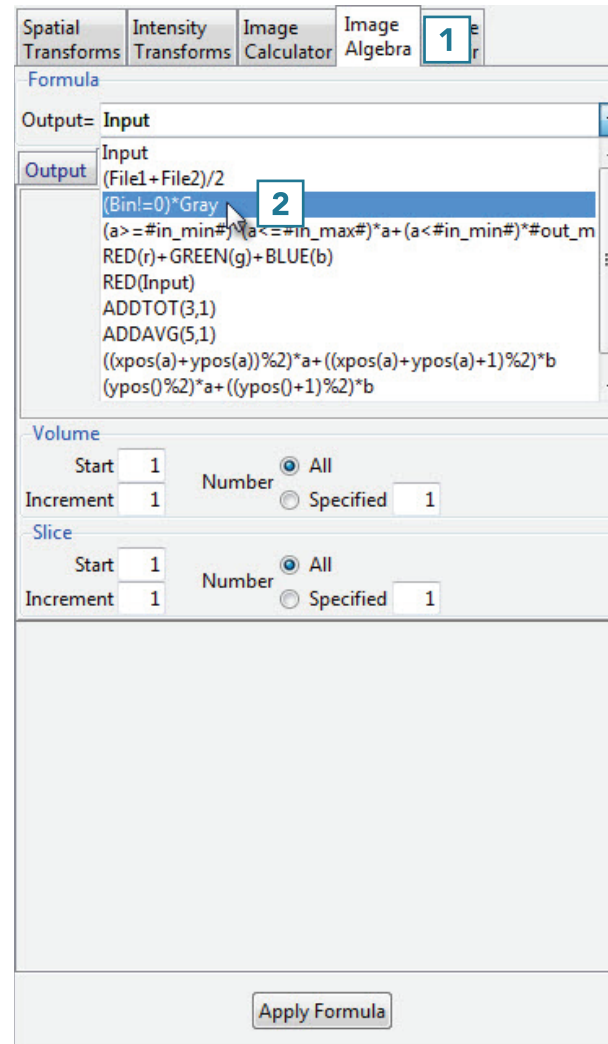# Applying a Binary Mask to a Grayscale Volume

A good example of Image Algebra use involves multiplying a grayscale data set with a binary data set. The binary brain will act as a mask; all voxels in the grayscale data set that fall within the binary mask will be kept, while the voxels that fall outside will be removed.

To follow along, download the MRI_3D_Head and MRI_3D_Head_Bin data sets from analyzedirect.com/data and load into Analyze using Input/Output.

- Open Transform and navigate to Image Algebra [1].
- From the formula drop-down, select the third option down: (Bin!=0)*Gray [2].

Applying a Binary Mask to a Grayscale Volume (continued)

- The input variables will appear as tabs labeled with the variable names.
- Drag and drop the binary data set into the designated space on the Bin tab [3].
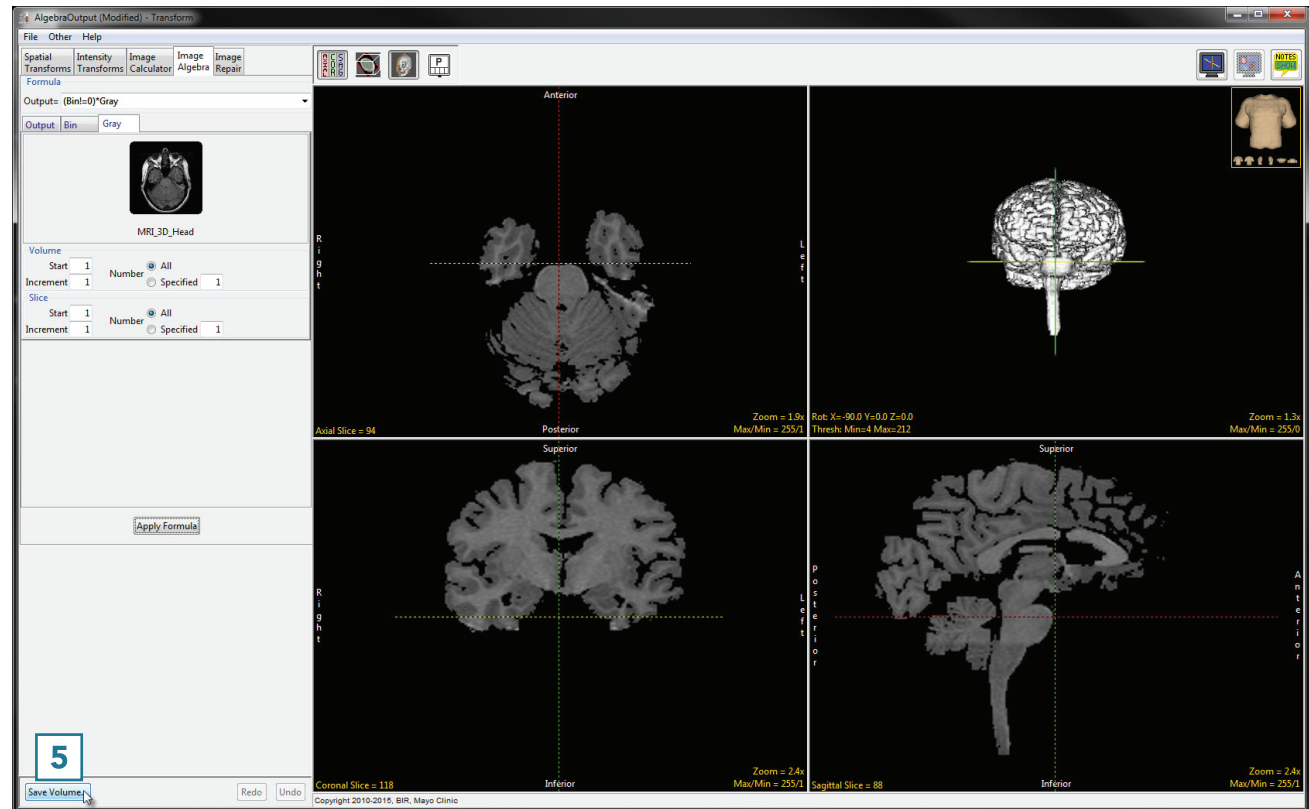- Do the same with the grayscale data set on the Gray tab.
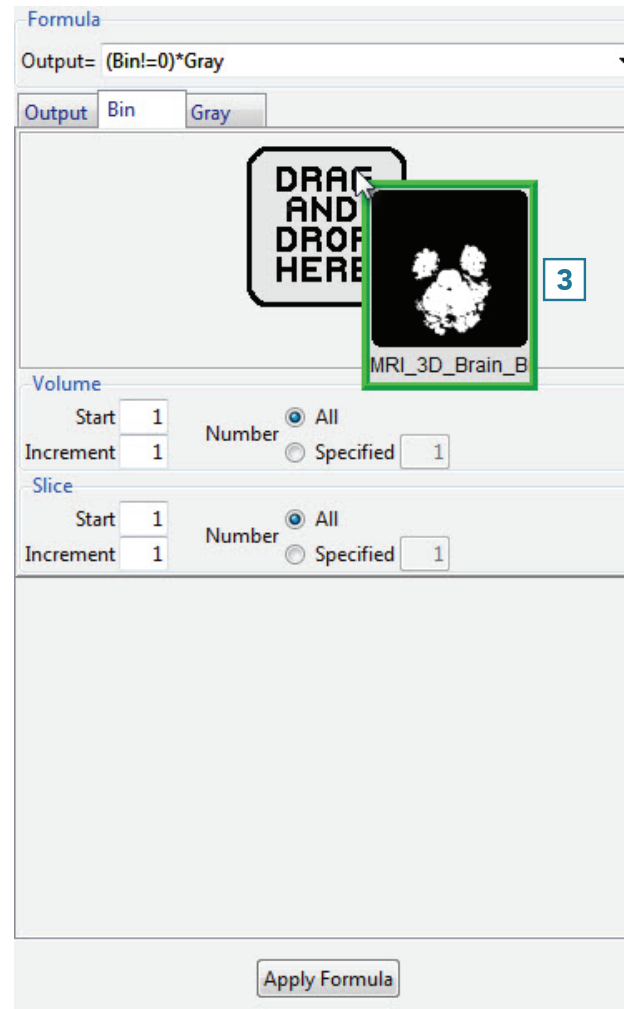
- Once both data sets are loaded into Image Algebra, click the Apply Formula button [4]
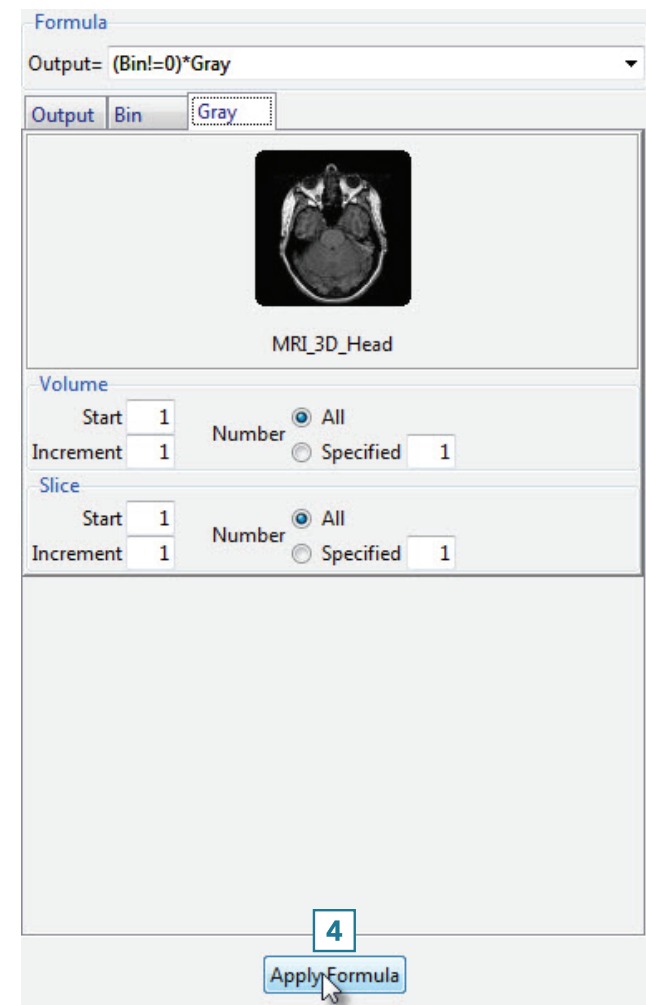
Applying a Binary Mask to a Grayscale Volume (continued)

- The result is shown to the right.
- Click Save Volume [5] to save the masked data set.

- In the Save Transformed window, choose to create a new workspace volume [6] and rename [7].
- Click Save Volume [8].
- Close Transform.