

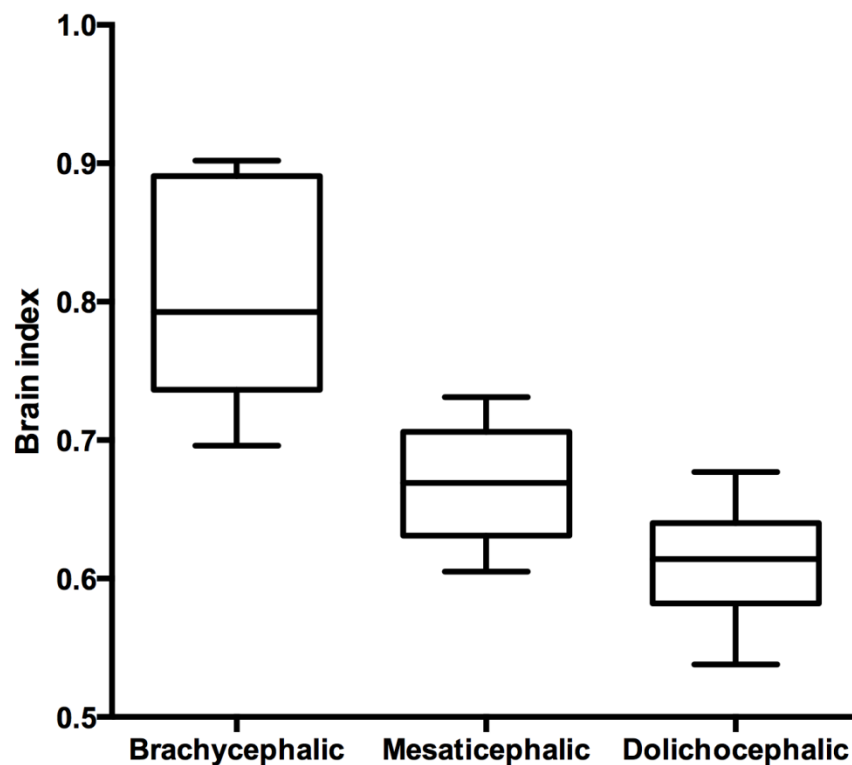
Supplement to the following article published in the April 2016 issue:

Development of representative magnetic resonance imaging-based atlases of the canine brain and evaluation of three methods for atlas-based segmentation. Milne ME, Steward C, Long SN, et al. *Am J Vet Res* 2016;77:395-403.

Available at: <http://avmajournals.avma.org/toc/ajvr/77/4>

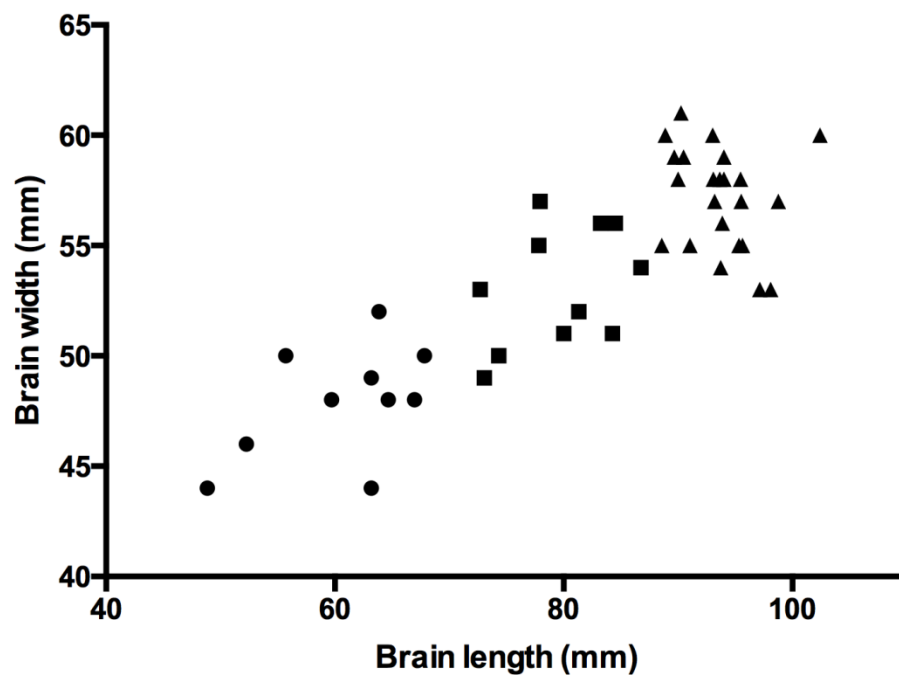
This supplemental content has undergone external peer review. It has been provided by the authors to offer additional information about their work.

Supplemental Figure 1—Box-and-whisker plots of the brain index (width/length) for 44 dogs without clinical signs of epilepsy and without MRI evidence of structural brain disease (template group) that were classified as having a brachycephalic (rounded brain in which the bulk of the olfactory bulb was rotated ventral to the frontal lobes; n = 10), mesaticephalic (brain in which the bulk of the olfactory bulb was located equal or rostral to the frontal lobes; 11), or dolichocephalic (brain with an elongated oval shape and a prominent olfactory bulb that extended rostral to the frontal lobes; 23) brain shape. For each plot, the horizontal line within the box represents the median; the lower and upper edges of the box delimit the 25th and 75th percentiles, respectively; and the whiskers delimit the 5th and 95th percentiles.



Supplemental Figure 2—Scatterplot of brain width versus brain length for the dogs of the template group that were classified as having a brachycephalic (circles), mesaticephalic (squares), or dolichocephalic (triangles) brain shape.

Notice brain width was positively associated with brain length.



Supplemental Table—Final multivariable logistic regression model for the association of segmentation method, brain shape, and anatomic structure with the Jaccard coefficient for 18 dogs without clinical signs of epilepsy and without MRI evidence of structural brain disease (test group) when 3 ABS methods were applied to MRI scans and compared with manual segmentation of the same structures.

Variable	Regression coefficient (95% CI)	Robust SE	Z ratio*
Constant	0.53 (0.20 to 0.85)	0.17	3.20
Segmentation method			
A	Referent	—	—
B	-1.25 (-1.40 to -1.10)	0.08	-16.49
C	-0.62 (-0.95 to -0.28)	0.17	-3.59
Brain shape			
Brachycephalic	0.76 (0.58 to 0.95)	0.09	8.15
Mesaticephalic	Referent	—	—
Dolichocephalic	0.80 (0.50 to 1.10)	0.15	5.20
Anatomic structure			
Brain	0.73 (0.35 to 1.10)	0.19	3.80
Internal brain structures†	Referent	—	—

There were 240 observations in the data set. Segmentation method A involved manual brain extraction followed by application of 1 of 3 brain shape-specific (brachycephalic, mesaticephalic, or dolichocephalic) templates. Segmentation method B involved automatic brain extraction followed by application of 1 of 3 brain shape-specific templates. Segmentation method C involved manual brain extraction followed by application of a combined template for mesaticephalic and dolichocephalic brain shapes.

* $P < 0.001$ for all Z ratios. †Includes the left and right hippocampal formations and the left and right caudate nuclei. — = Not applicable.