S1 Table. Association between puppyhood food variables and incidence of owner-reported allergy/atopy skin symptoms (AASS) in dogs above 1 year old.

| | | 4108 dogs | population | | Multivariate |
|----------------------|---------------------------|---------------------------|---------------------------|---------|--------------|
| Food items | Categories | Cases, % | Controls, % | P value | logistic |
| | | (n=762) | (n=2346) | | regression |
| | Never | 51.8 (1165 ^a) | 56.0 (506 ^b) | | |
| | A couple of times / year | 23.1 (209 ^a) | 25.3 (570 ^a) | | |
| 1. Berries | A couple of times / month | 15.3 (138 ^a) | 16.5 (372a) | .10 | Included |
| | A couple of times / week | 4.9 (44 ^a) | 4.7 (106 ^a) | | |
| | Always or almost always | 0.8 (7 ^a) | 1.6 (36 ^a) | | |
| | Never | 50.4 (465 ^a) | 47.3 (1077 ^a) | | |
| | A couple of times / year | 11.4 (105 ^a) | 13.4 (304 ^a) | | |
| 2. Raw vegetables | A couple of times / month | 19.7 (182 ^a) | 20.4 (465a) | .15 | Included |
| | A couple of times / week | 13.2 (122 ^a) | 12.0 (274 ^a) | | |
| | Always or almost always | 5.3 (49 ^a) | 6.9 (156 ^a) | | |
| | Never | 60.4 (559 ^a) | 51.2 (1196 ^a) | | |
| | A couple of times / year | 9.0 (83 ^b) | 11.3 (264 ^a) | | |
| 3. Cooked vegetables | A couple of times / month | 16.2 (150a) | 15.8 (432 ^a) | <.001 | Included |
| | A couple of times / week | 9.8 (91 ^a) | 11.9 (278a) | | |
| | Always or almost always | 4.6 (43 ^b) | 7.0 (164 ^a) | | |
| | Never | 48.4 (462 ^a) | 46.7 (1097 ^a) | | |
| | A couple of times / year | 23.2 (222 ^a) | 22.9 (537 ^a) | | |
| 4. Cooked potatoes | A couple of times / month | 18.0 (172 ^b) | 21.1 (496 ^a) | .06 | Included |
| | A couple of times / week | 9.2 (88 ^a) | 7.4 (174 ^a) | | |
| | Always or almost always | 1.2 (11 ^a) | 1.9 (45 ^a) | | |
| | Never | 53.2 (397 ^b) | 57.6 (993a) | | |
| 5. Fruits | A couple of times / year | 18.4 (137 ^a) | 15.4 (266 ^a) | | |
| 5. Fruits | A couple of times / month | 20.5 (153 ^b) | 17.0 (293 ^a) | .01 | Included |
| | A couple of times / week | 6.8 (51 ^a) | 7.7 (132 ^a) | | |

| | Always or almost always | 1.1 (8 ^b) | 2.3 (39 ^a) | | |
|-------------------------------|---------------------------|--------------------------|---------------------------|-------|--------------|
| | Never | 71.9 (668 ^a) | 63.3 (1478 ^a) | | |
| | A couple of times / year | 5.9 (55 ^a) | 7.0 (163 ^a) | | |
| 6. Raw tripe | A couple of times / month | 12.9 (120 ^b) | 15.8 (370 ^a) | <.001 | Included |
| | A couple of times / week | 7.5 (70 ^a) | 9.4 (220 ^a) | | |
| | Always or almost always | 1.7 (16 ^b) | 4.5 (105 ^a) | | |
| | Never | 80.3 (736 ^a) | 80.1 (1808 ^a) | | |
| | A couple of times / year | 7 (64 ^a) | 8 (180 ^a) | | |
| 7. Cooked tripe | A couple of times / month | 7.3 (67 ^a) | 7.2 (163 ^a) | .80 | Not included |
| | A couple of times / week | 3.7 (34 ^a) | 3.3 (74 ^a) | | |
| | Always or almost always | 1.7 (16 ^a) | 1.4 (32 ^a) | | |
| | Never | 75.8 (681b) | 67.8 (1526 ^a) | | |
| | A couple of times / year | 7.6 (68b) | 12.0 (269 ^a) | | |
| 8. Cooked organ meats | A couple of times / month | 10.3 (93b) | 13.3 (300a) | <.001 | Included |
| | A couple of times / week | 4.4 (40a) | 5.3 (119 ^a) | | |
| | Always or almost always | 1.9 (17a) | 1.6 (36 ^a) | | |
| | Never | 84.7 (752 ^b) | 77.3 (1697 ^a) | | |
| | A couple of times / year | 3.2 (28 ^b) | 5.7 (126 ^a) | | |
| 9. Raw organ meats | A couple of times / month | 7.5 (67 ^b) | 10.1 (221 ^a) | <.001 | Included |
| | A couple of times / week | 3.5 (31 ^a) | 5.1 (111 ^a) | | |
| | Always or almost always | 1.1 (10 ^a) | 1.8 (40 ^a) | | |
| | Never | 44.0 (433 ^b) | 36.0 (881a) | | |
| | A couple of times / year | 12.3 (121 ^b) | 15.7 (385 ^a) | | |
| 10. Raw bone and cartilage | A couple of times / month | 24.3 (239 ^a) | 25.5 (623 ^a) | <.001 | Included |
| | A couple of times / week | 13.2 (130 ^a) | 15.1 (369 ^a) | | |
| | Always or almost always | 6.2 (61 ^a) | 7.7 (188 ^a) | | |
| | Never | 51.6 (502 ^b) | 47.7 (1148 ^a) | | |
| 11. Cooked bone and cartilage | A couple of times / year | 15.3 (149 ^a) | 18.0 (434 ^a) | | |
| | A couple of times / month | 20.7 (201 ^a) | 22.8 (549 ^a) | .13 | Included |
| | A couple of times / week | 10.2 (99 ^a) | 9.3 (224ª) | | _ |

| | Always or almost always | 2.2 (21 ^a) | 2.1 (50 ^a) | | |
|-------------------------|---------------------------|--------------------------|---------------------------|--------|--------------|
| | Never | 0.5 (4 ^a) | 0.2 (5 ^a) | | |
| | A couple of times / year | 10.7 (91 ^b) | 8.0 (169 ^a) | | |
| 12. Sour milk products | A couple of times / month | 31.1 (264 ^a) | 28.7 (607 ^a) | .02 | Included |
| | A couple of times / week | 35.2 (299 ^a) | 36.4 (771a) | | |
| | Always or almost always | 22.6 (192 ^b) | 26.7 (565 ^a) | | |
| | Never | 57.2 (549 ^a) | 52.5 (1260 ^a) | | |
| | A couple of times / year | 28.7 (275 ^a) | 30.8 (738 ^a) | | |
| 13. Other milk products | A couple of times / month | 10.9 (105 ^a) | 12.2 (293 ^a) | .09 | Included |
| | A couple of times / week | 2.3 (22 ^a) | 3.2 (76 ^a) | | |
| | Always or almost always | 0.8 (8 ^a) | 1.3 (31 ^a) | | |
| | Never | 0.4 (2 ^a) | 0.6 (8a) | | |
| | A couple of times / year | 28.7 (158 ^a) | 29.9 (395 ^a) | | |
| 14. Cheese | A couple of times / month | 46.2 (254 ^a) | 46.7 (618 ^a) | .65 | Not included |
| | A couple of times / week | 21.6 (119 ^a) | 19.0 (252 ^a) | | |
| | Always or almost always | 3.1 (17 ^a) | 3.8 (50 ^a) | | |
| | Never | 33.3 (323 ^a) | 27.8 (657 ^a) | | |
| | A couple of times / year | 7.9 (77 ^b) | 11.8 (280 ^a) | | |
| 15. Vegetable oils | A couple of times / month | 20.4 (198 ^a) | 22.4 (529 ^a) | .001 | Included |
| | A couple of times / week | 22.7 (220a) | 22.0 (521 ^a) | | |
| | Always or almost always | 15.8 (153 ^a) | 16.0 (379 ^a) | | |
| | Never | 65.8 (586 ^a) | 62.9 (1369 ^a) | | |
| | A couple of times / year | 5.8 (52 ^b) | 8.4 (182 ^a) | | |
| 16. Fish oil | A couple of times / month | 11.3 (101 ^b) | 15.1 (329 ^a) | < .001 | Included |
| | A couple of times / week | 10.4 (93 ^a) | 9.1 (199 ^a) | | |
| | Always or almost always | 6.6 (59 ^b) | 4.4 (96 ^a) | | |
| | Never | 86.5 (643 ^b) | 91.6 (1605 ^a) | | |
| | A couple of times / year | 2.6 (19 ^a) | 2.2 (38 ^a) | | |
| 17. Mixed oils | A couple of times / month | 2.8 (21 ^a) | 2.7 (47 ^a) | < .001 | Included |
| | A couple of times / week | 2.6 (19 ^a) | 1.9 (34 ^a) | | |

| | Always or almost always | 5.5 (41 ^b) | 1.7 (29 ^a) | | |
|----------------------|---------------------------|---------------------------|---------------------------|--------|--------------|
| | Never | 82.0 (579 ^b) | 73.7 (1222 ^a) | | |
| | A couple of times / year | 6.7 (47 ^a) | 8.4 (140 ^a) | | |
| 18. Animal fat | A couple of times / month | 5.8 (41 ^b) | 9.6 (159 ^a) | <.001 | Included |
| | A couple of times / week | 4.5 (32 ^a) | 5.6 (92 ^a) | | |
| | Always or almost always | 1.0 (7 ^b) | 2.7 (44 ^a) | | |
| | Never | 55.2 (523 ^b) | 48.2 (1138 ^a) | | |
| | A couple of times / year | 11.7 (111 ^b) | 15.5 (367 ^a) | | |
| 19. Raw eggs | A couple of times / month | 22.3 (211 ^a) | 22.4 (528 ^a) | <.001 | Included |
| | A couple of times / week | 9.9 (94 ^a) | 11.5 (271 ^a) | | |
| | Always or almost always | 0.9 (9 ^b) | 2.4 (57 ^a) | | |
| | Never | 57.7 (532 ^b) | 48.4 (1114 ^a) | | |
| | A couple of times / year | 16.4 (151 ^a) | 18.3 (421 ^a) | | |
| 20. Cooked eggs | A couple of times / month | 18.0 (166 ^b) | 24.0 (552 ^a) | <.001 | Included |
| | A couple of times / week | 5.7 (53 ^a) | 7.2 (166 ^a) | | |
| | Always or almost always | 2.2 (20 ^a) | 2.2 (50 ^a) | | |
| | Never | 3.4 (39 ^a) | 4.6 (130a) | | |
| | A couple of times / year | 1.0 (12 ^a) | 1.5 (41 ^a) | | |
| 21. Dry food | A couple of times / month | 1.0 (12 ^a) | 1.8 (50 ^a) | .02 | Included |
| | A couple of times / week | 4.8 (55 ^a) | 6.3 (178 ^a) | | |
| | Always or almost always | 89.7 (1026 ^b) | 85.8 (2416 ^a) | | |
| | Never | 55.7 (549 ^a) | 53.4 (1280a) | | |
| | A couple of times / year | 13.0 (128 ^a) | 15.0 (359 ^a) | | |
| 22. Wet food* | A couple of times / month | 17.5 (172 ^a) | 18.0 (432a) | .48 | Not included |
| | A couple of times / week | 9.5 (94 ^a) | 8.8 (211 ^a) | | |
| | Always or almost always | 4.3 (42 ^a) | 4.7 (113 ^a) | | |
| 22 M F 11 6 1 | Never | 94.5 (812 ^b) | 99.0 (2088a) | | |
| | A couple of times / year | 0.8 (7 ^a) | 0.3 (7ª) | | |
| 23. Medical dry food | A couple of times / month | 0.8 (7 ^b) | 0.2 (4 ^a) | < .001 | Included |
| | A couple of times / week | 1.0 (9 ^b) | 0.04 (1 ^a) | | |

| | Always or almost always | 2.8 (24 ^b) | 0.5 (10 ^a) | | |
|--------------------------|---------------------------|--------------------------|---------------------------|--------|--------------|
| | Never | 83.9 (762 ^b) | 74.9 (1681 ^a) | | |
| | A couple of times / year | 8.6 (78 ^b) | 14.5 (326 ^a) | | |
| 24. Blood crepes | A couple of times / month | 5.7 (52 ^b) | 8.6 (194 ^a) | < .001 | Included |
| | A couple of times / week | 1.7 (15 ^a) | 1.7 (38 ^a) | | |
| | Always or almost always | 0.1 (1 ^a) | 0.2 (5 ^a) | | |
| | Never | 42.6 (423b) | 34.9 (860 ^a) | | |
| | A couple of times / year | 23.3 (231 ^b) | 26.9 (662 ^a) | | |
| 25. Liver casserole | A couple of times / month | 27.0 (268 ^a) | 28.7 (707 ^a) | <.001 | Included |
| | A couple of times / week | 6.3 (63 ^b) | 8.6 (213 ^a) | | |
| | Always or almost always | 0.8 (8 ^a) | 0.9 (22 ^a) | | |
| | Never | 80.5 (711 ^a) | 79.2 (1740 ^a) | | |
| | A couple of times / year | 9.2 (81 ^b) | 12.0 (263 ^a) | | |
| 26. Dried fish | A couple of times / month | 7.4 (65 ^a) | 7.0 (153 ^a) | .09 | Included |
| | A couple of times / week | 2.7 (24 ^a) | 1.7 (38 ^a) | | |
| | Always or almost always | 0.2 (2 ^a) | 0.1 (3 ^a) | | |
| | Never | 31.9 (314 ^b) | 21.2 (527 ^a) | | |
| | A couple of times / year | 23.1 (227 ^a) | 22.5 (561 ^a) | | |
| 27. Human meal leftovers | A couple of times / month | 26.1 (257 ^a) | 29.2 (728 ^a) | < .001 | Included |
| | A couple of times / week | 14.7 (145 ^b) | 19.6 (489a) | | |
| | Always or almost always | 4.2 (41 ^b) | 7.5 (186 ^a) | | |
| | Never | 26.4 (262 ^b) | 20.0 (500a) | | |
| | A couple of times / year | 22.1 (219 ^b) | 18.7 (466 ^a) | | |
| 28. Cooked porridge | A couple of times / month | 24.9 (247 ^b) | 29.5 (738 ^a) | <.001 | Included |
| | A couple of times / week | 17.5 (174 ^a) | 19.7 (492a) | | |
| | Always or almost always | 9.1 (90 ^b) | 12.1 (302 ^a) | | |
| | Never | 14.9 (152a) | 13.9 (349 ^a) | | |
| 20. Carland size | A couple of times / year | 18.3 (186 ^a) | 18.1 (455 ^a) | | |
| 29. Cooked rice | A couple of times / month | 35.0 (356 ^a) | 34.4 (864 ^a) | .83 | Not included |
| | A couple of times / week | 20.6 (210 ^a) | 21.3 (534 ^a) | | |

| | Always or almost always | 11.1 (113 ^a) | 12.2 (306 ^a) | | |
|---------------------|---------------------------|--------------------------|--------------------------|------|--------------|
| | Never | 9.6 (98 ^a) | 9.2 (236 ^a) | | |
| | A couple of times / year | 12.2 (125 ^a) | 13.8 (354 ^a) | | |
| 30. Treats | A couple of times / month | 26.5 (272 ^a) | 29.7 (761 ^a) | .05 | Included |
| | A couple of times / week | 38.0 (390 ^b) | 33.1 (848 ^a) | | |
| | Always or almost always | 13.7 (141 ^a) | 14.2 (365 ^a) | | |
| | Never | 4.7 (49 ^b) | 6.5 (170 ^a) | | |
| | A couple of times / year | 9.6 (100a) | 11.4 (297 ^a) | | |
| 31. Rawhides | A couple of times / month | 28.1 (294 ^a) | 28.3 (736 ^a) | .04 | Included |
| | A couple of times / week | 36.1 (378 ^a) | 35.0 (911a) | | |
| | Always or almost always | 21.6 (226 ^a) | 18.8 (488 ^a) | | |
| | Never | 79.3 (411 ^a) | 79.0 (874 ^a) | | |
| | A couple of times / year | 1.4 (7 ^a) | 1.6 (18 ^a) | | |
| 32. Raw poultry | A couple of times / month | 5.0 (26a) | 5.2 (58 ^a) | .99 | Not included |
| | A couple of times / week | 8.1 (42 ^a) | 7.8 (86 ^a) | | |
| | Always or almost always | 6.2 (32 ^a) | 6.3 (70 ^a) | | |
| | Never | 36.3 (348 ^a) | 35.5 (847 ^a) | | |
| | A couple of times / year | 9.7 (93 ^a) | 11.7 (278 ^a) | | |
| 33. Cooked poultry | A couple of times / month | 27.5 (264 ^a) | 26.4 (628 ^a) | .55 | Not included |
| | A couple of times / week | 19.5 (187 ^a) | 19.8 (472°) | | |
| | Always or almost always | 7.0 (67 ^a) | 6.6 (158 ^a) | | |
| | Never | 40.0 (362a) | 33.1 (718 ^a) | | |
| | A couple of times / year | 6.0 (54 ^a) | 7.8 (169 ^a) | | |
| 34. Raw red meat | A couple of times / month | 21.9 (198 ^a) | 21.6 (469 ^a) | .002 | Included |
| | A couple of times / week | 18.3 (166 ^b) | 21.9 (475 ^a) | | |
| | Always or almost always | 13.8 (125 ^a) | 15.7 (340a) | | |
| | Never | 44.2 (363 ^a) | 44.8 (884 ^a) | | |
| | A couple of times / year | 6.7 (55 ^a) | 8.3 (164 ^a) | | |
| 35. Cooked red meat | A couple of times / month | 23.5 (193 ^a) | 21.3 (421 ^a) | .51 | Not included |
| | A couple of times / week | 18.3 (150 ^a) | 18.3 (361 ^a) | | |

| | Always or almost always | 7.3 (60 ^a) | 7.2 (142 ^a) | | |
|----------------------------|---------------------------|--------------------------|---------------------------|--------|--------------|
| | Never | 19.0 (194 ^a) | 17.0 (429a) | | |
| | A couple of times / year | 20.2 (206 ^a) | 21.0 (528 ^a) | | |
| 36. Processed meat | A couple of times / month | 35.5 (362 ^a) | 35.0 (882a) | .49 | Not included |
| | A couple of times / week | 22.1 (225 ^a) | 24.1 (606 ^a) | | |
| | Always or almost always | 3.2 (33 ^a) | 2.9 (72 ^a) | | |
| - | Never | 79.6 (716 ^b) | 75.3 (1675 ^a) | | |
| | A couple of times / year | 4.8 (43 ^b) | 6.7 (148 ^a) | | |
| 37. Raw fish | A couple of times / month | 9.8 (88 ^a) | 11.3 (251 ^a) | .09 | Included |
| | A couple of times / week | 5.0 (45 ^a) | 5.5 (123 ^a) | | |
| | Always or almost always | 0.8 (7 ^a) | 1.2 (26 ^a) | | |
| | Never | 54.3 (503b) | 46.0 (1062 ^a) | | |
| | A couple of times / year | 15.7 (145 ^b) | 18.6 (430a) | | |
| 38. Cooked fish | A couple of times / month | 23.3 (216 ^b) | 27.5 (636 ^a) | <.001 | Included |
| | A couple of times / week | 5.8 (54 ^a) | 7.3 (169 ^a) | | |
| | Always or almost always | 0.9 (8 ^a) | 0.6 (13 ^a) | | |
| | Never | 16.1 (162 ^b) | 21.4 (530a) | | |
| | A couple of times / year | 16.9 (170 ^a) | 18.6 (460a) | | |
| 39. Eating sticks outside | A couple of times / month | 26.1 (262 ^a) | 25.6 (635 ^a) | < .001 | Included |
| | A couple of times / week | 30.7 (309 ^b) | 22.9 (566 ^a) | | |
| | Always or almost always | 10.1 (102 ^a) | 11.5 (286 ^a) | | |
| | Never | 10.0 (101 ^a) | 9.0 (229 ^a) | | |
| | A couple of times / year | 18.4 (187 ^a) | 19.8 (501 ^a) | | |
| 40. Eating grass outside | A couple of times / month | 34.4 (349 ^a) | 34.5 (876 ^a) | .83 | Not included |
| | A couple of times / week | 27.2 (276 ^a) | 26.5 (671 ^a) | | |
| | Always or almost always | 10.0 (102 ^a) | 10.2 (259 ^a) | | |
| | Never | 64.3 (597 ^a) | 66.8 (1529 ^a) | | |
| 41. Eating clay and stones | A couple of times / year | 15.8 (147 ^a) | 14.9 (340a) | | |
| outside | A couple of times / month | 11.4 (106 ^a) | 9.3 (214 ^a) | .31 | Not included |
| | A couple of times / week | 6.3 (58 ^a) | 6.2 (143 ^a) | | |

| | Always or almost always | 2.2 (20 ^a) | 2.8 (63 ^a) | | |
|------------------------------|---------------------------|--------------------------|---------------------------|-------|------------|
| | Never | 54.0 (506 ^a) | 57.7 (1347 ^a) | | |
| | A couple of times / year | 25.1 (235 ^b) | 21.7 (507a) | | |
| 42. Eating dirt outside | A couple of times / month | 13.2 (124 ^a) | 12.0 (280a) | .01 | Included |
| | A couple of times / week | 6.8 (64 ^a) | 6.5 (151 ^a) | | |
| | Always or almost always | 0.9 (8 ^b) | 2.1 (50 ^a) | | |
| | Never | 11.6 (118 ^a) | 10.6 (268a) | | |
| 42 Deinking from 1111- | A couple of times / year | 20.3 (206 ^a) | 18.0 (457a) | | |
| 43. Drinking from puddles | A couple of times / month | 32.1 (325 ^a) | 29.3 (743 ^a) | .001 | Included |
| outside | A couple of times / week | 26.8 (272 ^a) | 28.3 (716 ^a) | | |
| | Always or almost always | 9.2 (93 ^b) | 13.8 (349 ^a) | | |
| | Never | 39.0 (379 ^a) | 40.6 (972a) | | |
| | A couple of times / year | 22.3 (217 ^a) | 22.2 (531 ^a) | | |
| 44. Eating feces outside | A couple of times / month | 21.3 (207 ^a) | 20.2 (483 ^a) | .02 | Included |
| | A couple of times / week | 11.5 (112 ^a) | 13.5 (323 ^a) | | |
| | Always or almost always | 5.9 (57 ^b) | 3.6 (85 ^a) | | |
| | Never | 70.0 (651 ^b) | 61.9 (1444 ^a) | | |
| | A couple of times / year | 20.2 (188 ^b) | 23.4 (547 ^a) | | |
| 45. Eating carcasses outside | A couple of times / month | 7.5 (70 ^b) | 11.1 (259 ^a) | <.001 | Included |
| | A couple of times / week | 1.9 (18 ^a) | 2.8 (66 ^a) | | |
| | Always or almost always | 0.3 (3 ^a) | 0.7 (17 ^a) | | |
| 46. Dried animal parts | Never | 13.2 (136 ^a) | 14.1 (356 ^a) | | |
| | A couple of times / year | 12.1 (124 ^b) | 15.1 (382 ^a) | | |
| | A couple of times / month | 41.8 (430 ^a) | 40.6 (1027 ^a) | .10 | Included |
| | A couple of times / week | 29.1 (299 ^a) | 26.3 (665 ^a) | | |
| | Always or almost always | 3.9 (40 ^a) | 3.8 (97 ^a) | | |
| ha.c1 11.00 | | | | | (D 05) * 0 |

 $^{^{}a,b}$ Means the different superscripts are significantly different within the same row (P<.05). *: refers to canned or tinned food, plastic wrapped dog wet food, and other forms of dog wet food in bags. Bolded: significant p-value < .05.