

Line Item	RIDDEN BEHAVIOR ETHOGRAM: QUESTIONNAIRE [Including 4 physical signs]	Number of BITTED horses exhibiting	Number of BITLESS horses exhibiting	% better when bitless
<b>A MAJOR DIVISIONS OF FEAR (The four Fs)</b>				
###	<b>FRIGHT:</b> Inclusive of spooky, anxious, unpredictable, 'hot', nervous, highly-strung [H]	43	3	93
2	<b>FLIGHT:</b> Inclusive of being difficult to slow or stop, bolting, 'rushing,' too forward, 'strong' [H]	28	1	96
3	<b>FIGHT:</b> Opposition, argumentative, confrontational, aggressive, resistant, hot-tempered [H]	31	1	97
4	<b>FREEZE:</b> 'Mulish,' napping, planting feet, balking, 'herd bound' [H]	27	5	81
<b>TOTAL</b>		<b>129</b>	<b>10</b>	<b>92</b>
<b>B OTHER WARNING SIGNS OF HEIGHTENED RISK</b>				
5	Difficult to mount, fidgety, 'cold-backed', moves away prematurely	19	2	89
6	Bucking or bounding and sometimes spinning	13	2	84
7	Rearing, with or without flipping over backwards (somersaulting)	10	3	70
8	Difficult to steer or to travel straight, 'lugging,' 'bearing,' 'pulling in' or 'pulling out,' 'lugs on the bit'	26	5	81
9	Stumbling, often with sluggishness & loss of interest in work	17	6	65
10	Premature fatigue	3	1	67
		<b>217</b>	<b>29</b>	<b>87</b>
<b>C ANXIETY PRIOR TO RIDING &amp; DISCOMFORT AFTER RIDING</b>				
11	Difficult to catch in the paddock	13	1	92
12	Difficulty in putting the bridle on	35	1	97
13	Difficulty in taking the bridle off	16	1	94
14	Stand-offish in stable, unfriendly, pins ears, bites or threatens. Turns head away and swings quarters around [H]	14	0	100
15	Head shyness: to handle, clip or hose around the mouth, ears or forelock	2	0	100
16	Runs wild on the lunge rein when lunged in a bit	9	1	89
17	Sores, chafes, cuts or loss of pigment at angle of lips	17	0	100
18	Bleeding from the mouth, bruising of the gums at the bars or frank cuts.	9	0	100
19	Dropping food from the mouth ('quidding')	5	0	100
		<b>120</b>	<b>4</b>	<b>97</b>
<b>D ORAL PAIN &amp; DISTRESS CAUSED ALMOST EXCLUSIVELY BY THE BIT</b>				

20	Hates the bit: chomping, chewing; 'busy mouth'; tongue & jaw movement; spitting the bit	43	0	100
21	Grabs the bit'	20	0	100
22	Above the bit': 'ahead of the bit'; 'above the vertical'	38	3	92
23	Behind the bit': 'overbent'; hyperflexion; chin on chest (Rollkur); 'over bridled'; 'behind the vertical'; false collection	24	2	92
24	Open mouth ('gaping')	16	1	94
25	Hair-trigger response to the aids, hypersensitivity to the bit OR, less commonly, to the leg aids	18	1	94
26	Teeth grinding (bruxism)	4	1	25
27	Lolling of tongue at exercise/rest	16	1	94
28	Flapping of lower lip	9	1	89
29	Salivation, foaming and frothing at the mouth, drooling and slobbering	17	1	94
30	Bites at the hackamore shank, curb bit, reins, during or after exercise,	12	0	100
31	Crossing jaw, 'yawing' i.e., swing the jaw from side to side	13	1	92
32	Laceration or bruising of the gum over the bars	1	0	100
		231	12	95
<b>E</b>	<b>CONSISTENT WITH BIT-INDUCED FACIAL NEURALGIA</b>			
33	Head shaking, head tossing, 'flipping the nose'	32	11	66
34	Rubbing muzzle on fore-leg at exercise or rest and on handler at rest after exercise	29	11	62
35	Nose close to the ground at exercise	2	0	100
36	Sneezing & snorting	24	12	50
37	Yawning during bridling, during or after exercise	26	5	81
38	Grazing on the fly' or snatching at flank or rider's boots	18	8	56
39	Watery eyes, nasal discharge during/after head-tossing exercise	7	2	71
40	Twitching of the muzzle or masseter on one or both sides	3	0	100
		141	49	65
<b>F</b>	<b>CONSISTENT WITH DIFFICULTY IN BREATHING</b>			
41	Tongue 'behind the bit,' 'swallowing the tongue'	5	0	100
42	Tongue over the bit'	12	0	100
43	Thick-winded', 'roaring,' laryngeal stridor	2	0	100
44	Gurgling,' 'choking-up' or 'choking down'	1	0	100
45	Epistaxis (blood at nostrils)	1	0	100
46	Gagging/coughing at start of exercise	8	2	75
		29	2	90
<b>G</b>	<b>SCHOOLING PROBLEMS &amp; INTERFERENCE WITH STRIDE</b>			
47	Pulling & 'hard-mouthed': heavy on the forehead; leaning on the bit; pounding the ground (not 'floating')	34	4	88
48	Stiff-necked, 'lock jawed,' reluctant to flex at the poll	37	5	86
49	Stiff/choppy stride ('bridle' or "rein" lameness')	22	1	94
50	Lack of finesse in control, general 'unhappiness' when exercised	38	0	100
51	Unfocussed, fussy, fidgety at work	37	1	97
52	Refusal to stand still, constant fidgeting	23	0	100
53	Sweating excessively, hot and restless at exercise, "lathering-up"	12	1	92

54	<b>Difficulty in eating or drinking during endurance or trail rides</b>	3	0	100
55	<b>Ear pinning</b> at exercise, threatens to bite other horses that come alongside	14	4	71
56	<b>Tail swishing</b> , wringing, particularly when cued to canter/rein-back	26	2	92
57	<b>Multiple wrinkles around nostrils, mouth</b>	12	3	75
58	<b>Anxious expression</b> in the eye, restless or staring eye, white of eye	18	3	83
59	<b>Lazy, dull, depressed</b> , resigned, subdued, learned helplessness	16	5	69
60	<b>Incoordination</b> . Differential diagnosis equine protozoal myelitis (EPM)	9	1	89
61	<b>Interference, cascade effect</b> , back pain	18	5	72
62	<b>Tilts head</b> at exercise, unable to keep head facing the line of travel	21	3	86
63	<b>Jigging</b> , prancing, and 'rushing' when required to walk	16	1	94
64	<b>Pig-rooting</b> , 'gagging', 'yawing', 'diving, snatching reins from riders hands	34	4	88
65	<b>Difficulty in reining-back</b> . Inability to rein-back in a straight line	23	7	70
66	<b>Backing-up</b> ('sucking-back'). Reversing rapidly to a forward cue	14	1	93
67	<b>Running into or close to standing objects</b> to 'rub-off' the rider	3	1	67
68	<b>Heads for the stable</b> , during arena or paddock exercise	14	2	86
69	<b>Reluctance to change leads</b> or to lead on one particular leg	16	3	81
70	<b>Uncooperative</b> (not a 'team player'), regards rider as a nag	24	4	83
71	<b>Dragging toes of hind feet</b> , 'toe-scuffing'	13	4	69
72	<b>Crooked traveling (crab fashion)</b> , hind hoof prints tracking to the side of front hoof prints	1	0	100
73	<b>Inverted frame: high-headed; hollow-backed; ewe-neck</b> conformation from a constantly high head carriage	25	4	84
74	<b>Lack of self carriage</b>	7	1	86
75	<b>Not forward, lacking courage, reluctance to maintain canter</b>	32	7	78
76	<b>Stagnation</b> , slow progress in training	29	1	97
		591	78	87

H	RIDER'S FEELINGS AS INDICATORS OF A HORSE'S RIDDEN BEHAVIOUR			
77	<b>Self-evaluation of riding skills as 'poor'</b>	26	2	92
78	<b>Frustration</b> with inability	30	2	93
79	<b>Annoyance</b> bordering on anger with the horse	19	1	95
80	<b>Reluctance to ride</b> , generation of excuses	15	2	87
81	<b>Lack of harmony</b> between horse and rider	34	3	91
82	<b>Riding ceases to give the rider or the horse pleasure</b>	24	2	92
83	<b>Loss of confidence</b> , fear of riding, decision to retire	14	2	86
84	<b>Decision to sell or breed</b> from a 'difficult' horse	10	1	90
85	<b>Economic embarrassment</b>	8	2	75
86	<b>Personal injury</b>	5	1	80
		185	18	90

<b>GRAND TOTAL</b>	<b>1643</b>	<b>202</b>	<b>88</b>
--------------------	-------------	------------	-----------

Table I: Column 1 shows a ridden behavior ethogram with 86 questions designed to assess a horse's acceptance of the bit. Columns 2 to 4 show the results when this questionnaire was used to assess a population of 56 horses.

*Text Key: O = oral-based behaviors; H = hyper- or hypo-reactive behaviors*

*Color Key:*

*Bit-specific Signs*

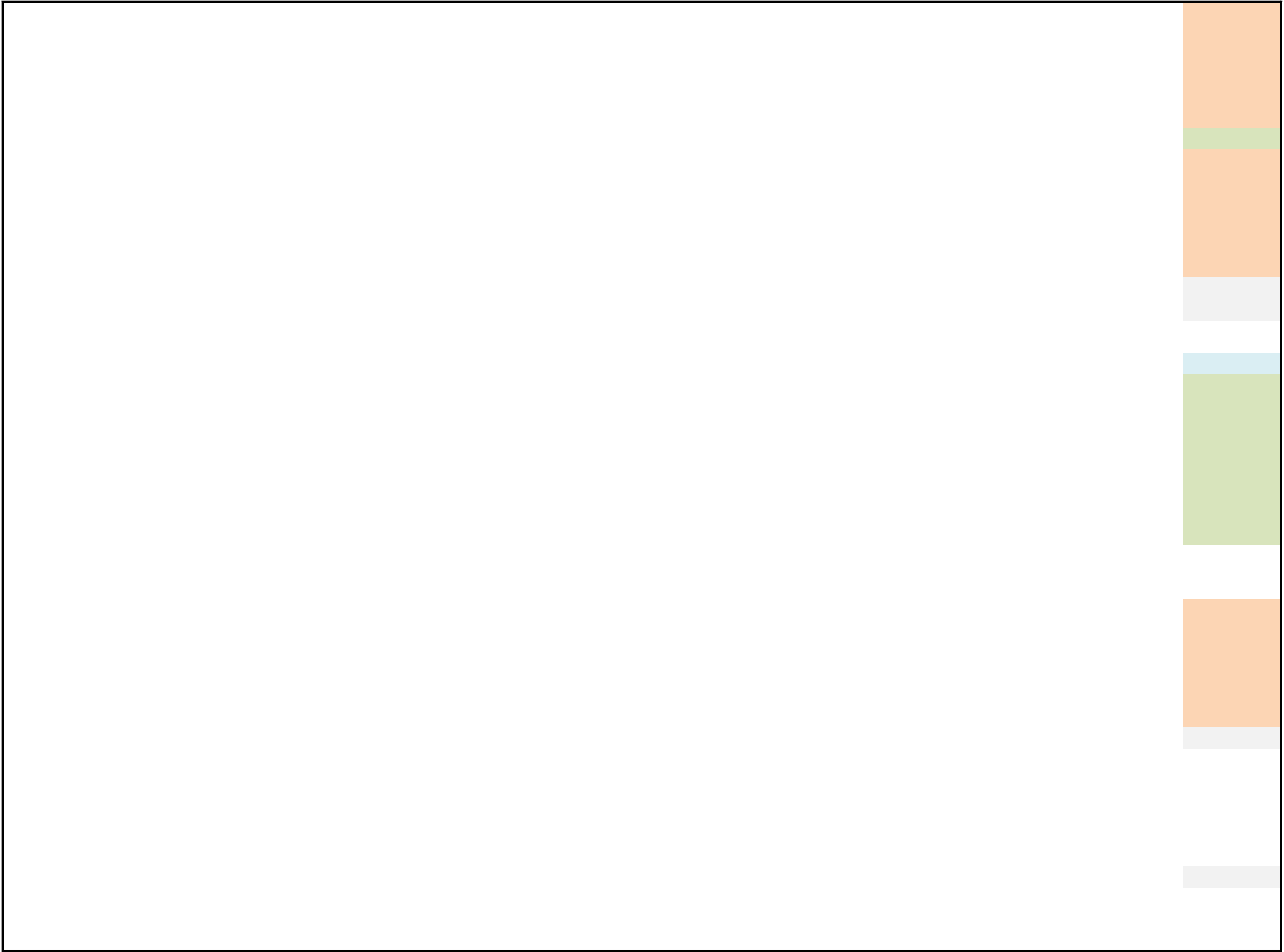
*Signs that, though not 100% bit specific, occurred in over half the population*

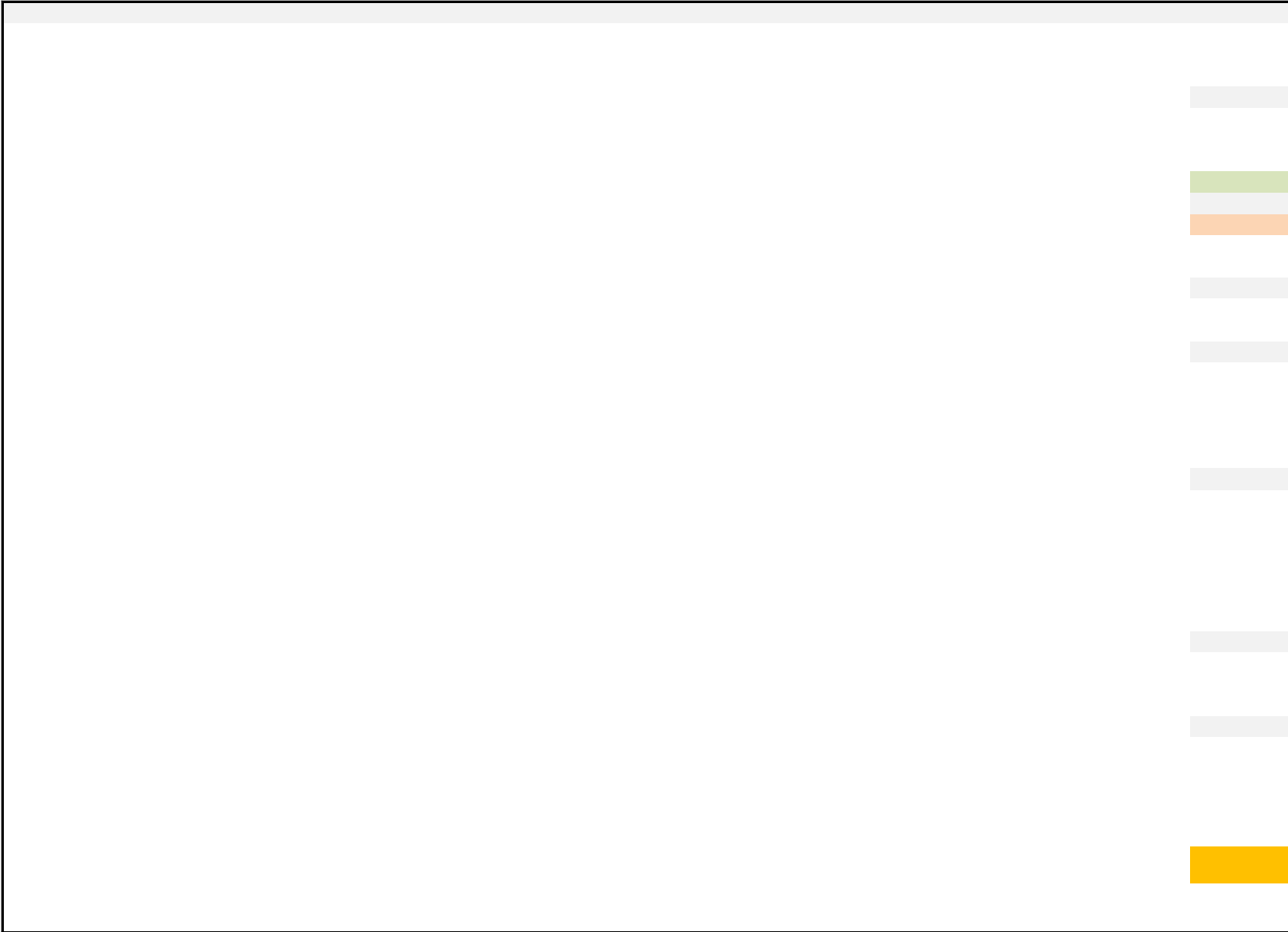
*Line item Font Key*

*CAPITALS: Major divisions*

*Red type: Dangerous items with high risk of injuries to rider and horse*







the bit.