

APPENDIX H

Neurological Assessment

TABLE H-1.
Dependent Variable-Covariate Associations for the Neurological Assessment

Dependent Variable	Level	Age			p-Value	Race		p-Value
		Born ≥1942	Born 1923-1941	Born ≤1922		Black	Nonblack	
Palpebral Fissure	Abnormal	(n=955) 1.1%	(n=1,249) 1.7%	(n=83) 1.2%	0.449	(n=136) 0.0%	(n=2,151) 1.5%	0.278
Neck Range of Motion	Abnormal	(n=955) 3.1%	(n=1,249) 15.9%	(n=83) 37.4%	<0.001	(n=136) 2.2%	(n=2,151) 11.9%	0.001
Cranial Nerve Index	Abnormal	(n=941) 6.5%	(n=1,235) 19.8%	(n=81) 39.5%	<0.001	(n=134) 8.2%	(n=2,123) 15.4%	0.024
Cranial Nerve Index Without Range of Motion	Abnormal	(n=941) 3.5%	(n=1,235) 4.8%	(n=81) 8.6%	0.058	(n=134) 6.0%	(n=2,123) 4.3%	0.462
Pin Prick	Abnormal	(n=945) 4.6%	(n=1,214) 7.4%	(n=76) 9.2%	0.014	(n=129) 6.2%	(n=2,106) 6.3%	0.999
Light Touch	Abnormal	(n=945) 3.6%	(n=1,213) 5.0%	(n=76) 7.9%	0.101	(n=129) 3.9%	(n=2,105) 4.6%	0.932
Muscle Status	Abnormal	(n=953) 1.4%	(n=1,247) 2.6%	(n=82) 6.1%	0.008	(n=136) 2.2%	(n=2,146) 2.2%	0.999
Vibration	Abnormal	(n=945) 0.9%	(n=1,213) 1.7%	(n=76) 7.9%	<0.001	(n=129) 3.1%	(n=2,105) 1.5%	0.280
Patellar Reflex	Abnormal	(n=954) 0.9%	(n=1,247) 2.1%	(n=83) 2.4%	0.093	(n=136) 2.2%	(n=2,148) 1.6%	0.760

TABLE H-1. (continued)

Dependent Variable-Covariate Associations for the Neurological Assessment

Dependent Variable	Level	Age			p-Value	Race		p-Value
		Born >1942	Born 1923-1941	Born ≤1922		Black	Nonblack	
Achilles Reflex	Abnormal	(n=953) 2.0%	(n=1,247) 8.1%	(n=83) 18.1%	<0.001	(n=135) 5.9%	(n=2,148) 5.9%	0.999
Tremor	Abnormal	(n=955) 2.6%	(n=1,249) 3.1%	(n=83) 3.6%	0.731	(n=136) 2.2%	(n=2,151) 3.0%	0.856
Coordination	Abnormal	(n=954) 0.7%	(n=1,246) 1.1%	(n=83) 2.4%	0.283	(n=136) 1.5%	(n=2,147) 1.0%	0.804
Gait	Abnormal	(n=954) 2.3%	(n=1,247) 3.2%	(n=83) 4.8%	0.258	(n=136) 2.9%	(n=2,148) 2.9%	0.999
CNS Index	Abnormal	(n=954) 5.1%	(n=1,246) 5.9%	(n=83) 9.6%	0.221	(n=136) 5.2%	(n=2,147) 5.7%	0.966

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TABLE H-1. (continued)
Dependent Variable-Covariate Associations for the Neurological Assessment

Dependent Variable	Level	Occupation			p-Value	Diabetic Class			p-Value
		Officer	Enlisted Flyer	Enlisted Groundcrew		Normal	Impaired	Diabetic	
Palpebral Fissure	Abnormal	(n=869) 1.4%	(n=383) 1.8%	(n=1,035) 1.3%	0.717	(n=1,740) 1.2%	(n=318) 2.2%	(n=217) 1.8%	0.269
Neck Range of Motion	Abnormal	(n=869) 14.2%	(n=383) 12.3%	(n=1,035) 8.6%	0.001	(n=1,740) 10.1%	(n=318) 13.5%	(n=217) 18.4%	<0.001
Cranial Nerve Index	Abnormal	(n=860) 16.9%	(n=379) 16.6%	(n=1,018) 12.7%	0.024	(n=1,716) 13.6%	(n=314) 17.2%	(n=216) 21.8%	0.003
Cranial Nerve Index Without Range of Motion	Abnormal	(n=860) 3.5%	(n=379) 4.8%	(n=1,018) 5.0%	0.257	(n=1,716) 4.0%	(n=314) 5.4%	(n=216) 5.6%	0.359
Pin Prick	Abnormal	(n=850) 6.4%	(n=375) 4.8%	(n=1,010) 6.7%	0.415	(n=1,711) 5.5%	(n=310) 4.8%	(n=202) 14.9%	<0.001
Light Touch	Abnormal	(n=850) 4.7%	(n=374) 3.7%	(n=1,010) 4.7%	0.729	(n=1,710) 3.6%	(n=310) 4.8%	(n=202) 11.9%	<0.001
Muscle Status	Abnormal	(n=867) 2.1%	(n=381) 2.6%	(n=1,034) 2.1%	0.816	(n=1,735) 2.0%	(n=318) 1.6%	(n=217) 5.1%	0.009
Vibration	Abnormal	(n=850) 1.7%	(n=374) 1.6%	(n=1,010) 1.5%	0.960	(n=1,710) 1.5%	(n=310) 0.7%	(n=202) 3.5%	0.035
Patellar Reflex	Abnormal	(n=868) 1.5%	(n=381) 2.1%	(n=1,035) 1.6%	0.716	(n=1,737) 1.3%	(n=318) 0.6%	(n=217) 5.5%	<0.001

TABLE H-1. (continued)
Dependent Variable-Covariate Associations for the Neurological Assessment

Dependent Variable	Level	Occupation				Diabetic Class			p-Value
		Officer	Enlisted Flyer	Enlisted Groundcrew	p-Value	Normal	Impaired	Diabetic	
Achilles Reflex	Abnormal	(n=868) 6.2%	(n=382) 7.3%	(n=1,033) 5.1%	0.264	(n=1,736) 4.4%	(n=318) 5.7%	(n=217) 18.4%	<0.001
Tremor	Abnormal	(n=869) 2.8%	(n=383) 3.1%	(n=1,035) 3.0%	0.924	(n=1,740) 2.9%	(n=318) 2.2%	(n=212) 3.7%	0.596
Coordination	Abnormal	(n=867) 0.5%	(n=382) 1.0%	(n=1,034) 1.5%	0.099	(n=1,736) 0.9%	(n=318) 1.3%	(n=217) 1.8%	0.356
Gait	Abnormal	(n=868) 1.7%	(n=382) 3.4%	(n=1,034) 3.7%	0.033	(n=1,737) 2.4%	(n=318) 3.1%	(n=217) 5.1%	0.074
CNS Index	Abnormal	(n=867) 4.4%	(n=382) 5.5%	(n=1,034) 6.9%	0.066	(n=1,736) 5.2%	(n=318) 5.0%	(n=217) 8.8%	0.094

TABLE H-1. (continued)
Dependent Variable-Covariate Associations for the Neurological Assessment

Dependent Variable	Level	Current Alcohol Consumption			p-Value	Lifetime Alcohol History			p-Value
		0-1	>1-4	>4		0	>0-40	>40	
Palpebral Fissure	Abnormal	(n=1,811) 1.4%	(n=398) 1.8%	(n=72) 0.0%	0.498	(n=204) 2.0%	(n=1,555) 1.1%	(n=515) 1.9%	0.264
Neck Range of Motion	Abnormal	(n=1,811) 10.9%	(n=398) 13.6%	(n=72) 9.7%	0.294	(n=204) 11.3%	(n=1,555) 10.9%	(n=515) 12.8%	0.482
Cranial Nerve Index	Abnormal	(n=1,790) 14.5%	(n=389) 17.5%	(n=72) 12.5%	0.279	(n=202) 13.9%	(n=1,536) 14.2%	(n=506) 17.6%	0.161
Cranial Nerve Index Without Range of Motion	Abnormal	(n=1,790) 4.4%	(n=389) 4.6%	(n=72) 2.8%	0.779	(n=202) 5.0%	(n=1,536) 3.8%	(n=506) 5.7%	0.179
Pin Prick	Abnormal	(n=1,770) 6.3%	(n=391) 6.4%	(n=68) 5.9%	0.987	(n=193) 6.7%	(n=1,528) 5.8%	(n=501) 7.6%	0.359
Light Touch	Abnormal	(n=1,769) 4.6%	(n=391) 4.6%	(n=68) 2.9%	0.814	(n=193) 4.7%	(n=1,527) 4.1%	(n=501) 5.8%	0.300
Muscle Status	Abnormal	(n=1,807) 2.2%	(n=397) 2.3%	(n=72) 1.4%	0.891	(n=204) 2.9%	(n=1,552) 1.7%	(n=513) 3.5%	0.037
Vibration	Abnormal	(n=1,769) 1.4%	(n=391) 2.8%	(n=68) 0.0%	0.064	(n=193) 0.5%	(n=1,527) 1.3%	(n=501) 2.8%	0.032
Patellar Reflex	Abnormal	(n=1,808) 1.5%	(n=398) 1.8%	(n=72) 2.8%	0.701	(n=204) 2.5%	(n=1,552) 1.1%	(n=515) 2.9%	0.012
Achilles Reflex	Abnormal	(n=1,808) 5.6%	(n=397) 7.1%	(n=72) 8.3%	0.363	(n=204) 7.8%	(n=1,551) 4.8%	(n=515) 8.5%	0.003

TABLE H-1. (continued)
Dependent Variable-Covariate Associations for the Neurological Assessment

Dependent Variable	Level	Current Alcohol Consumption			p-Value	Lifetime Alcohol History			p-Value
		0-1	>1-4	>4		0	>0-40	>40	
Tremor	Abnormal	(n=1,811) 2.8%	(n=398) 3.3%	(n=72) 5.6%	0.353	(n=204) 1.5%	(n=1,555) 2.6%	(n=515) 4.5%	0.038
Coordination	Abnormal	(n=1,808) 1.0%	(n=397) 1.0%	(n=72) 1.4%	0.948	(n=204) 0.5%	(n=1,551) 1.0%	(n=515) 1.2%	0.712
Gait	Abnormal	(n=1,809) 3.2%	(n=397) 1.3%	(n=72) 4.2%	0.097	(n=204) 4.9%	(n=1,552) 1.9%	(n=515) 4.7%	0.001
CNS Index	Abnormal.	(n=1,808) 5.6%	(n=397) 5.3%	(n=72) 8.3%	0.587	(n=204) 6.4%	(n=1,551) 4.5%	(n=515) 8.7%	0.001

TABLE H-1. (continued)
Dependent Variable-Covariate Associations for the Neurological Assessment

Dependent Variable	Level	Industrial Chemical Exposure			Insecticide Exposure			Degreasing Chemical Exposure		
		Yes	No	p-Value	Yes	No	p-Value	Yes	No	p-Value
Palpebral Fissure	Abnormal	(n=1,256) 1.1%	(n=1,031) 1.8%	0.272	(n=1,450) 1.7%	(n=837) 1.0%	0.232	(n=1,376) 1.5%	(n=911) 1.2%	0.658
Neck Range of Motion	Abnormal	(n=1,256) 10.2%	(n=1,031) 12.7%	0.068	(n=1,450) 11.7%	(n=837) 10.6%	0.470	(n=1,376) 10.5%	(n=911) 12.6%	0.128
Cranial Nerve Index	Abnormal	(n=1,241) 14.1%	(n=1,016) 15.9%	0.244	(n=1,435) 16.0%	(n=822) 13.0%	0.060	(n=1,356) 14.9%	(n=901) 15.0%	0.999
Cranial Nerve Index Without Range of Motion	Abnormal	(n=1,241) 4.7%	(n=1,016) 4.0%	0.528	(n=1,435) 4.9%	(n=822) 3.5%	0.158	(n=1,356) 5.1%	(n=901) 3.3%	0.056
Pin Prick	Abnormal	(n=1,227) 5.8%	(n=1,008) 6.9%	0.348	(n=1,419) 6.3%	(n=816) 6.1%	0.918	(n=1,344) 6.5%	(n=891) 6.0%	0.684
Light Touch	Abnormal	(n=1,226) 4.2%	(n=1,008) 5.0%	0.422	(n=1,419) 4.4%	(n=815) 4.8%	0.720	(n=1,343) 4.5%	(n=891) 4.5%	0.999
Muscle Status	Abnormal	(n=1,252) 1.4%	(n=1,030) 3.1%	0.010	(n=1,448) 2.6%	(n=834) 1.6%	0.152	(n=1,373) 2.1%	(n=909) 2.4%	0.638
Vibration	Abnormal	(n=1,226) 1.4%	(n=1,008) 1.8%	0.556	(n=1,419) 1.7%	(n=815) 1.4%	0.664	(n=1,343) 1.4%	(n=891) 1.8%	0.586
Patellar Reflex	Abnormal	(n=1,254) 1.4%	(n=1,030) 1.9%	0.348	(n=1,448) 1.7%	(n=836) 1.6%	0.999	(n=1,375) 1.5%	(n=909) 1.8%	0.786
Achilles Reflex	Abnormal	(n=1,252) 5.3%	(n=1,031) 6.7%	0.180	(n=1,449) 6.2%	(n=834) 5.4%	0.484	(n=1,373) 5.8%	(n=910) 6.2%	0.756

TABLE H-1. (continued)
Dependent Variable-Covariate Associations for the Neurological Assessment

Dependent Variable	Level	Industrial Chemical Exposure			Insecticide Exposure			Degreasing Chemical Exposure		
		Yes	No	p-Value	Yes	No	p-Value	Yes	No	p-Value
Tremor	Abnormal	(n=1,256) 2.7%	(n=1,031) 3.2%	0.566	(n=1,450) 3.2%	(n=837) 2.4%	0.300	(n=1,376) 3.0%	(n=911) 3.0%	0.999
Coordination	Abnormal	(n=1,253) 0.8%	(n=1,030) 1.3%	0.370	(n=1,448) 1.0%	(n=835) 1.0%	0.999	(n=1,373) 1.1%	(n=910) 0.9%	0.786
Gait	Abnormal	(n=1,254) 2.8%	(n=1,030) 3.0%	0.850	(n=1,449) 2.6%	(n=835) 3.4%	0.380	(n=1,373) 3.3%	(n=911) 2.3%	0.216
CNS Index	Abnormal	(n=1,253) 5.6%	(n=1,030) 5.8%	0.876	(n=1,448) 5.8%	(n=835) 5.5%	0.850	(n=1,373) 6.1%	(n=910) 5.2%	0.728

TABLE H-2.
Summary of Group-by-Covariate Interactions for Neurological Variables

Variable	Interaction	Stratification	Statistic	Group		Adj. Relative Risk (95% C.I.)	p-Value
				Ranch Hand	Comparison		
Palpebral Fissure	Group-by-Lifetime Alcohol History	0 Drink-Years	n	97	106	—	0.144
			Number/%				
			Abnormal	0	0.0%	4	3.8%
	>0-40 Drink-Years		Normal	97	100.0%	102	96.2%
			n	669	877	1.32 (0.49,3.52)	0.764
			Number/%				
	>40 Drink-Years		Abnormal	8	1.2%	8	0.9%
			Normal	661	98.8%	869	99.1%
			n	212	301	1.43 (0.41,5.00)	0.800
Cranial Nerve Index Without Range of Motion	Group-by-Insecticide Exposure	No	Number/%				
			Abnormal	15	5.5%	14	2.6%
			Normal	260	94.5%	533	97.4%
			n	275	547	2.17 (1.03,4.57)	0.043
	Yes		Number/%				
			Abnormal	27	3.8%	43	5.9%
			Normal	681	96.2%	684	94.1%
			n	708	727		

TABLE H-2. (continued)
Summary of Group-by-Covariate Interactions for Neurological Variables

Variable	Interaction	Stratification	Statistic	Group		Adj. Relative Risk (95% C.I.)	p-Value
				Ranch Hand	Comparison		
Vibration	Group-by-Diabetic Class	Normal	n	736	974		
			Number/%				
		Abnormal	15	2.0%	10	1.0%	2.16 (0.95,4.93)
	Impaired/Diabetic	Normal	721	98.0%	964	99.0%	0.067
		n	230	282			
		Number/%					
Coordination	Group-by-Occupation	Officer	Abnormal	2	0.9%	7	2.5%
			Normal	228	99.1%	275	97.5%
		n	377	490			
		Number/%					
		Abnormal	3	0.8%	1	0.2%	3.92 (0.41,37.88)
		Normal	374	99.2%	489	99.8%	0.199
	Enlisted Flyer	Enlisted Flyer	n	171	211		
			Number/%				
		Abnormal	1	0.6%	3	1.4%	0.33 (0.03,3.16)
		Normal	170	99.4%	208	98.6%	0.299
	Enlisted Groundcrew	n	444	590			
		Number/%					
		Abnormal	11	2.5%	4	0.7%	3.72 (1.17,11.81)** 0.017**
		Normal	433	97.5%	586	99.3%	

TABLE H-2. (continued)
Summary of Group-by-Covariate Interactions for Neurological Variables

Variable	Interaction	Stratification	Statistic	Group		Adj. Relative Risk (95% C.I.)	p-Value
				Ranch Hand	Comparison		
Coordination (Enlisted Groundcrew)	Group-by- Insecticide Exposure	No	n	129	279	1.96 (0.47,8.08)	0.353
			Number/%				
			Abnormal	4 3.1%	4 1.4%		
			Normal	125 96.9%	275 98.6%		
	Yes		n	315	311	—	0.016
			Number/%				
			Abnormal	7 2.2%	0 0.0%		
			Normal	308 97.8%	311 100.0%		

—Adjusted relative risk/confidence interval not given due to cell with zero frequency.

**Group-by-covariate interaction ($0.01 < p \leq 0.05$)—adjusted relative risk, confidence interval, and p-value derived from a model fitted after deletion of this interaction.

Note: Refer to Tables 11-5, 11-7, and 11-9 for specification of adjusted model.

TABLE H-3.
Summary of Exposure Index-by-Covariate Interactions for Neurological Variables

Variable	Interaction (Occupation)	Stratification	Statistic	Exposure Index						Exposure Index Contrast	Adj. Relative Risk (95% C.I.)	p-Value
				Low		Medium		High				
Palpebral Fissure	Exposure Index-by- Age (Enlisted Groundcrew)	Born >1942	n Number/%	82		122		79		Overall		0.228
			Abnormal	1	1.2%	0	0.0%	2	2.5%	M vs. L	—	0.804
			Normal	81	98.8%	122	100.0%	77	97.5%	H vs. L	2.10 (0.19,23.68)	0.972
	Born 1923-1941	n Number/%	58		33		53		Overall		0.149	
		Abnormal	0	0.0%	2	6.1%	1	1.9%	M vs. L	—	0.258	
		Normal	58	100.0%	31	93.9%	52	98.1%	H vs. L	—	0.954	
	Born <1922	n Number/%	3		1		6		Overall		—	
		Abnormal	0	0.0%	0	0.0%	0	0.0%	M vs. L	—	—	
		Normal	3	100.0%	1	100.0%	6	100.0%	H vs. L	—	—	
H-12	Exposure Index-by- Age	Born >1942	n Number/%	2		1		0		Overall		—
		Black	Abnormal	0	0.0%	0	0.0%	0	—	M vs. L	—	—
		Normal	2	100.0%	1	100.0%	0	—	H vs. L	—	—	
	Exposure Index-by- Race	Born >1942	n Number/%	41		18		11		Overall		—
		Nonblack	Abnormal	0	0.0%	0	0.0%	0	0.0%	M vs. L	—	—
		Normal	41	100.0%	18	100.0%	11	100.0%	H vs. L	—	—	
Cranial Nerve Index Without Range of Motion	Exposure Index-by- Age	Born >1942	n Number/%	2		1		0		Overall		—
		Black	Abnormal	0	0.0%	0	0.0%	0	—	M vs. L	—	—
	Exposure Index-by- Race	Normal	2	100.0%	1	100.0%	0	—	H vs. L	—	—	
		Born >1942	n Number/%	41		18		11		Overall		—
		Nonblack	Abnormal	0	0.0%	0	0.0%	0	0.0%	M vs. L	—	—
		Normal	41	100.0%	18	100.0%	11	100.0%	H vs. L	—	—	

TABLE B-3. (continued)
Summary of Exposure Index-by-Covariate Interactions for Neurological Variables

Variable	Interaction (Occupation)	Stratification	Statistic	Exposure Index			Exposure Index Contrast	Adj. Relative Risk (95% C.I.)	p-Value
				Low	Medium	High			
H-13	Cranial Nerve Index Without Range of Motion (cont.)	Exposure Index-by- Diabetic Class (Officer)	Born >1942	n Number/%	1	0	0	Overall	—
			Nonblack	Abnormal	0 0.0%	0 —	0 —	M vs. L	—
			Impaired	Normal	1 100.0%	0 —	0 —	H vs. L	—
		Born >1942	n Number/%	1	1	0	Overall	—	—
			Nonblack	Abnormal	0 0.0%	0 0.0%	0 —	M vs. L	—
			Diabetic	Normal	1 100.0%	1 100.0%	0 —	H vs. L	—
	Born 1923-1941	Black	n Number/%	0	2	2	Overall	—	0.999
			Abnormal	0 —	0 0.0%	1 50.0%	M vs. L	—	—
			Normal	0 —	2 100.0%	1 50.0%	H vs. L	—	—
		Nonblack	n Number/%	56	62	74	Overall	—	0.249
			Abnormal	4 7.1%	3 4.8%	1 1.4%	M vs. L	0.66 (0.14,3.09)	0.896
	Born 1923-1941	Normal	Normal	52 92.9%	59 95.2%	73 98.6%	H vs. L	0.18 (0.02,1.64)	0.216
		Nonblack	n Number/%	12	16	18	Overall	—	0.384
			Abnormal	0 0.0%	1 6.3%	0 0.0%	M vs. L	—	0.999
			Impaired	12 100.0%	15 93.7%	18 100.0%	H vs. L	—	—
		Diabetic	n Number/%	10	5	15	Overall	—	0.355
			Abnormal	1 10.0%	0 0.0%	0 0.0%	M vs. L	—	0.999
		Normal	9 90.0%	5 100.0%	15 100.0%	H vs. L	—	0.800	

TABLE H-3. (continued)
Summary of Exposure Index-by-Covariate Interactions for Neurological Variables

Variable	Interaction (Occupation)	Stratification	Statistic	Exposure Index			Exposure Index Contrast	Adj. Relative Risk (95% C.I.)	p-Value
				Low	Medium	High			
H-14	Cranial Nerve Index Without Range of Motion (cont.)	Born <1922	n	3	7	1	Overall	—	—
		Nonblack	Number/%						
		Normal	Abnormal	0	0.0%	0	0.0%	M vs. L	—
		Normal	Normal	3	100.0%	7	100.0%	H vs. L	—
	Born <1922	n	2	2	1	Overall	—	—	—
		Nonblack	Number/%						
		Impaired	Abnormal	0	0.0%	0	0.0%	M vs. L	—
		Normal	Normal	2	100.0%	2	100.0%	H vs. L	—
	Born <1922	n	0	5	1	Overall	—	—	—
		Nonblack	Number/%						
		Diabetic	Abnormal	0	—	0	0.0%	M vs. L	—
		Normal	Normal	0	—	5	100.0%	H vs. L	—
Pin Prick	Exposure Index-by- Insecticide Exposure (Enlisted Groundcrew)	No	n	40	41	40	Overall	0.084	
		Number/%							
		Abnormal	3	7.5%	5	12.2%	M vs. L	1.71 (0.38,7.70)	0.740
		Normal	37	92.5%	36	87.8%	H vs. L	—	0.240
	Yes	n	100	112	94	Overall	0.531		
		Number/%							
		Abnormal	8	8.0%	5	4.5%	M vs. L	0.54 (0.17,1.70)	0.432
		Normal	92	92.0%	107	95.5%	H vs. L	0.93 (0.32,2.66)	0.999

TABLE H-3. (continued)
Summary of Exposure Index-by-Covariate Interactions for Neurological Variables

Variable	Interaction (Occupation)	Stratification	Statistic	Exposure Index			Exposure Index Contrast	Adj. Relative Risk (95% C.I.)	p-Value
				Low	Medium	High			
Light Touch	Exposure Index-by- Age	Born >1942	n Number/%	1	2	1	Overall	—	—
		Normal 0	Abnormal	0 0.0%	0 0.0%	0 0.0%	M vs. L	—	—
	Exposure Index-by- Diabetic Class	Born >1942	n Number/%	6	6	6	Overall	—	—
		Normal >40	Abnormal	0 0.0%	0 0.0%	0 0.0%	M vs. L	—	—
	Exposure Index-by- Lifetime Alcohol History (Enlisted Flyer)	Born >1942	n Number/%	4	6	2	Overall	—	0.336
		Normal >40	Abnormal	1 25.0%	0 0.0%	0 0.0%	M vs. L	—	0.800
		Impaired >40	Normal	3 75.0%	6 100.0%	2 100.0%	H vs. L	—	0.999
	Born >1942	n Number/%	0	1	2	Overall	—	0.999	
		Diabetic >40	Abnormal	0 —	0 0.0%	1 50.0%	M vs. L	—	—
		Normal	0 —	1 100.0%	1 50.0%	1 50.0%	H vs. L	—	—
	Born >1942	n Number/%	0	1	0	Overall	—	—	
		Diabetic >40	Abnormal	0 —	1 100.0%	0 —	M vs. L	—	—
		Normal	0 —	0 0.0%	0 —	0 —	H vs. L	—	—
	Born >1942	n Number/%	0	1	0	Overall	—	—	
		Diabetic >40	Abnormal	0 —	0 0.0%	0 —	M vs. L	—	—
		Normal	0 —	1 100.0%	0 —	0 —	H vs. L	—	—

TABLE II-3. (continued)
Summary of Exposure Index-by-Covariate Interactions for Neurological Variables

Variable	Interaction (Occupation)	Stratification	Statistic	Exposure Index			Exposure Index Contrast	Adj. Relative Risk (95% C.I.)	p-Value
				Low	Medium	High			
Light Touch (cont.)	Born 1923-1941	n	4		2	5	Overall		0.748
		Number/%					M vs. L		0.999
		Normal	1	25.0%	0	0.0%	H vs. L	0.75 (0.03,17.51)	0.999
		Abnormal	3	75.0%	2	100.0%	M vs. L		
	Normal >40	n	19		16	19	Overall		—
		Number/%					M vs. L		—
		Abnormal	0	0.0%	0	0.0%	H vs. L		—
		Normal	19	100.0%	16	100.0%	M vs. L		—
	Impaired >40	n	5		9	5	Overall		—
		Number/%					M vs. L		—
		Abnormal	0	0.0%	0	0.0%	H vs. L		—
		Normal	5	100.0%	9	100.0%	M vs. L		—
	Born 1923-1941	n	0		1	0	Overall		—
		Number/%					M vs. L		—
		Abnormal	0	—	0	0.0%	H vs. L		—
		Normal	0	—	1	100.0%	M vs. L		—
	Normal >40	n	7		5	7	Overall		—
		Number/%					M vs. L		—
		Abnormal	0	0.0%	0	0.0%	H vs. L		—
		Normal	7	100.0%	5	100.0%	M vs. L		—
	Impaired >40	n	5		1	3	Overall		0.325
		Number/%					M vs. L		—
		Abnormal	0	0.0%	0	0.0%	H vs. L		—
		Normal	5	100.0%	1	100.0%	M vs. L		0.750

TABLE H-3. (continued)
Summary of Exposure Index-by-Covariate Interactions for Neurological Variables

Variable	Interaction (Occupation)	Stratification	Statistic	Exposure Index			Exposure Index Contrast	Adj. Relative Risk (95% C.I.)	p-Value
				Low	Medium	High			
Light Touch (cont.)	Born 1923-1941	n Number/%	0	1	1	Overall	M vs. L H vs. L	—	—
	Diabetic	Abnormal	0	—	0 0.0%	0 0.0%			
	0	Normal	0	—	1 100.0%	1 100.0%			
	Born 1923-1941	n Number/%	0	3	1	Overall			
	Diabetic	Abnormal	0	—	0 0.0%	0 0.0%			
	>40	Normal	0	—	3 100.0%	1 100.0%			
	Born 1923-1941	n Number/%	0	4	0	Overall	M vs. L H vs. L	—	—
	Diabetic	Abnormal	0	—	0 0.0%	0 —			
	>40	Normal	0	—	4 100.0%	0 —			
	Born <1922	n Number/%	0	1	0	Overall			
	Normal	Abnormal	0	—	0 0.0%	0 —			
	>40	Normal	0	—	1 100.0%	0 —	M vs. L H vs. L	—	—
	Born <1922	n Number/%	0	1	0	Overall	M vs. L H vs. L	—	—
	Normal	Abnormal	0	—	0 0.0%	0 —			
	>40	Normal	0	—	1 100.0%	0 —			

TABLE H-3. (continued)
Summary of Exposure Index-by-Covariate Interactions for Neurological Variables

Variable	Interaction (Occupation)	Stratification	Statistic	Exposure Index						Exposure Index Contrast	Adj. Relative Risk (95% C.I.)	p-Value
				Low		Medium		High				
Light Touch	Exposure Index-by- Insecticide Exposure (Enlisted Groundcrew)	No	n Number/%	40		41		40		Overall		0.072
			Abnormal	1	2.5%	4	9.8%	0	0.0%	M vs. L	4.22 (0.45,39.49)	0.374
	Exposure Index-by- Age (Enlisted Flyer)	Yes	n Number/%	39	97.5%	37	90.2%	40	100.0%	H vs. L	—	0.999
			Abnormal	7	7.0%	4	3.6%	4	4.3%	M vs. L	0.49 (0.14,1.73)	0.416
			Normal	93	93.0%	108	96.4%	90	95.7%	H vs. L	0.59 (0.17,2.09)	0.610
Muscle Status	Born >1942		n Number/%	11		16		11		Overall		—
			Abnormal	0	0.0%	0	0.0%	0	0.0%	M vs. L	—	—
			Normal	11	100.0%	16	100.0%	11	100.0%	H vs. L	—	—
	Born 1923-1941		n Number/%	43		43		42		Overall		0.779
			Abnormal	1	2.3%	2	4.7%	1	2.4%	M vs. L	2.05 (0.18,23.48)	0.999
			Normal	42	97.7%	41	95.3%	41	97.6%	H vs. L	1.02 (0.06,16.93)	0.999
	Born <1922		n Number/%	0		2		0		Overall		—
			Abnormal	0	—	0	0.0%	0	—	M vs. L	—	—
			Normal	0	—	2	100.0%	0	—	H vs. L	—	—

TABLE H-3. (continued)
Summary of Exposure Index-by-Covariate Interactions for Neurological Variables

Variable	Interaction (Occupation)	Stratification	Statistic	Exposure Index			Exposure Index Contrast	Adj. Relative Risk (95% C.I.)	p-Value
				Low	Medium	High			
Muscle Status	Exposure Index-by-Diabetic Class	Normal 0	n Number/%	9	11	14	Overall		0.239
			Abnormal	1 11.1%	0 0.0%	0 0.0%	M vs. L	—	0.900
			Normal	8 88.9%	11 100.0%	14 100.0%	H vs. L	—	0.782
	Exposure Index-by-Lifetime Alcohol History (Enlisted Groundcrew)	Normal >0-40	n Number/%	81	91	67	Overall		0.194
			Abnormal	0 0.0%	2 2.2%	0 0.0%	M vs. L	—	0.556
			Normal	81 100.0%	89 97.8%	67 100.0%	H vs. L	—	—
	Normal >40	n Number/%	21	19	21	Overall		0.121	
			Abnormal	1 4.8%	3 15.8%	0 0.0%	M vs. L	3.75 (0.36,39.59)	0.530
			Normal	20 95.2%	16 84.2%	21 100.0%	H vs. L	—	0.999
	Impaired 0	n Number/%	3	4	3	Overall		—	—
			Abnormal	0 0.0%	0 0.0%	0 0.0%	M vs. L	—	—
			Normal	3 100.0%	4 100.0%	3 100.0%	H vs. L	—	—
	Impaired >0-40	n Number/%	13	10	13	Overall		0.403	
			Abnormal	0 0.0%	0 0.0%	1 7.7%	M vs. L	—	—
			Normal	13 100.0%	10 100.0%	12 92.3%	H vs. L	—	0.999
	Impaired >40	n Number/%	3	4	2	Overall		—	—
			Abnormal	0 0.0%	0 0.0%	0 0.0%	M vs. L	—	—
			Normal	3 100.0%	4 100.0%	2 100.0%	H vs. L	—	—

TABLE H-3. (continued)
Summary of Exposure Index-by-Covariate Interactions for Neurological Variables

Variable	Interaction (Occupation)	Stratification	Statistic	Exposure Index			Exposure Index Contrast	Adj. Relative Risk (95% C.I.)	p-Value
				Low	Medium	High			
H-20	Muscle Status (cont.)	Diabetic 0	n	2	2	4	Overall		0.565
			Number/%						
		Diabetic X0-40	Abnormal	0	0.0%	0	0.0%	M vs. L	—
			Normal	2	100.0%	2	100.0%	H vs. L	—
		Diabetic X40	n	5	10	8	Overall		0.375
			Number/%						
		Diabetic X40	Abnormal	0	0.0%	0	0.0%	M vs. L	—
			Normal	5	100.0%	10	100.0%	H vs. L	—
	Patellar Reflex	Born >1942	n	5	5	6	Overall		0.309
			Number/%						
		Born >1942 Impaired	Abnormal	0	0.0%	1	20.0%	M vs. L	—
			Normal	5	100.0%	4	80.0%	H vs. L	—
	Exposure Index-by- Diabetic Class (Officer)	Born >1942	n	1	0	0	Overall		—
			Number/%						
		Born >1942 Diabetic	Abnormal	0	0.0%	0	—	M vs. L	—
			Normal	1	100.0%	0	—	H vs. L	—
		Born >1942	n	1	1	0	Overall		—
			Number/%						
		Born >1942 Diabetic	Abnormal	0	0.0%	0	0.0%	M vs. L	—
			Normal	1	100.0%	1	100.0%	H vs. L	—

TABLE H-3. (continued)
Summary of Exposure Index-by-Covariate Interactions for Neurological Variables

Variable	Interaction (Occupation)	Stratification	Statistic	Exposure Index			Exposure Index Contrast	Adj. Relative Risk (95% C.I.)	p-Value
				Low	Medium	High			
H-21	Patellar Reflex (cont.)	Born 1923-1941	n	56	65	76	Overall		0.200
			Number/%						
		Normal	Abnormal	0 0.0%	0 0.0%	2 2.6%	M vs. L	—	—
		Normal	Normal	56 100.0%	65 100.0%	74 97.4%	H vs. L	—	0.660
		Born 1923-1941	n	12	16	18	Overall		—
			Number/%						
			Impaired	0 0.0%	0 0.0%	0 0.0%	M vs. L	—	—
		Normal	Normal	12 100.0%	16 100.0%	18 100.0%	H vs. L	—	—
	Diabetic	Born 1923-1941	n	10	5	15	Overall		0.262
			Number/%						
		Diabetic	Abnormal	1 10.0%	1 20.0%	0 0.0%	M vs. L	2.25 (0.11,45.72)	0.999
		Normal	Normal	9 90.0%	4 80.0%	15 100.0%	H vs. L	—	0.800
		Born <1922	n	3	7	1	Overall		—
			Number/%						
			Normal	0 0.0%	0 0.0%	0 0.0%	M vs. L	—	—
		Normal	Normal	3 100.0%	7 100.0%	1 100.0%	H vs. L	—	—

TABLE II-3. (continued)
Summary of Exposure Index-by-Covariate Interactions for Neurological Variables

Variable	Interaction (Occupation)	Stratification	Statistic	Exposure Index			Exposure Index Contrast	Adj. Relative Risk (95% C.I.)	p-Value
				Low	Medium	High			
Patellar Reflex (cont.)	Born <1922 Impaired	n Number/%	2	2	1	Overall	M vs. L H vs. L	— —	0.392 0.999 0.999
			Abnormal Normal	1 50.0% 1 50.0%	0 0.0% 2 100.0%	0 0.0% 1 100.0%			
	Born <1922 Diabetic	n Number/%	0	5	1	Overall	M vs. L H vs. L	— —	— — —
			Abnormal Normal	0 — 0 —	0 0.0% 5 100.0%	0 0.0% 1 100.0%			
Coordination	Exposure Index-by- Race (Enlisted Groundcrew)	Black	n Number/%	15	14	12	Overall	M vs. L H vs. L	0.162 0.518 0.598
				2 13.3% 13 86.7%	0 0.0% 14 100.0%	0 0.0% 12 100.0%			
		Nonblack	n Number/%	127	142	126	Overall	M vs. L H vs. L	0.323 4.60 (0.53,39.90) 3.07 (0.32,29.95)
				1 0.8% 126 99.2%	5 3.5% 137 96.5%	3 2.4% 123 97.6%	0.270 0.616		
	Exposure Index-by- Age	Born >1942 Normal	n Number/%	1	2	1	Overall	M vs. L H vs. L	— —
		0	Abnormal Normal	0 0.0% 1 100.0%	0 0.0% 2 100.0%	0 0.0% 1 100.0%			
Gait	Exposure Index-by- Diabetic Class	Born >1942 Normal	n Number/%	6	6	6	Overall	M vs. L H vs. L	— — —
		>0-40	Abnormal Normal	0 0.0% 6 100.0%	0 0.0% 6 100.0%	0 0.0% 6 100.0%			

TABLE H-3. (continued)

Summary of Exposure Index-by-Covariate Interactions for Neurological Variables

Variable	Interaction (Occupation)	Stratification	Statistic	Exposure Index			Exposure Index Contrast	Adj. Relative Risk (95% C.I.)	p-Value
				Low	Medium	High			
H-23 Gait (cont.)	Exposure Index-by- Lifetime Alcohol History (Enlisted Flyer)	Born >1942	n Number/%	4	6	2	Overall		0.580
		Normal >40	Abnormal	0 0.0%	1 16.7%	0 0.0%	M vs. L	—	0.999
			Normal	4 100.0%	5 83.3%	2 100.0%	H vs. L	—	—
		Born >1942	n Number/%	0	1	2	Overall		—
	Impaired >40	Normal	Abnormal	0 —	0 0.0%	0 0.0%	M vs. L	—	—
			Normal	0 —	1 100.0%	2 100.0%	H vs. L	—	—
		Born >1942	n Number/%	0	1	0	Overall		—
		Diabetic >40	Abnormal	0 —	0 0.0%	0 —	M vs. L	—	—
	Born >1942 Diabetic >40	Normal	Normal	0 —	1 100.0%	0 —	H vs. L	—	—
		Born >1942	n Number/%	0	1	0	Overall		—
		Diabetic >40	Abnormal	0 —	1 100.0%	0 —	M vs. L	—	—
		Normal	Normal	0 —	0 0.0%	0 —	H vs. L	—	—
H-23 Gait (cont.)	Born 1923-1941	n Number/%	5	2	5	Overall		0.466	
		Normal	Abnormal	0 0.0%	0 0.0%	1 20.0%	M vs. L	—	—
		0	Normal	5 100.0%	2 100.0%	4 80.0%	H vs. L	—	0.999
		Born 1923-1941	n Number/%	20	16	19	Overall		—
	Normal >40	Normal	Abnormal	0 0.0%	0 0.0%	0 0.0%	M vs. L	—	—
			Normal	20 100.0%	16 100.0%	19 100.0%	H vs. L	—	—

TABLE H-3. (continued)

Summary of Exposure Index-by-Covariate Interactions for Neurological Variables

Variable	Interaction (Occupation)	Stratification	Statistic	Exposure Index			Exposure Index Contrast	Adj. Relative Risk (95% C.I.)	p-Value
				Low	Medium	High			
H-24	Gait (cont.)	Born 1923-1941	n	5	9	6	Overall		0.293
		Normal >40	Number/%	0 0.0%	0 0.0%	1 16.7%	M vs. L	—	—
		Normal	Abnormal	5 100.0%	9 100.0%	5 83.3%	H vs. L	—	0.999
		Born 1923-1941	n	0	1	0	Overall		—
		Impaired 0	Number/%	0 —	0 0.0%	0 —	M vs. L	—	—
		Normal	Abnormal	0 —	1 100.0%	0 —	H vs. L	—	—
		Born 1923-1941	n	7	6	7	Overall		0.376
		Impaired >40	Number/%	1 14.3%	0 0.0%	0 0.0%	M vs. L	—	0.999
		Normal	Abnormal	7 85.7%	6 100.0%	7 100.0%	H vs. L	—	0.999
		Born 1923-1941	n	5	1	3	Overall		—
		Impaired >40	Number/%	0 0.0%	0 0.0%	0 0.0%	M vs. L	—	—
		Normal	Abnormal	5 100.0%	1 100.0%	3 100.0%	H vs. L	—	—
		Born 1923-1941	n	0	1	1	Overall		—
		Diabetic 0	Number/%	0 —	0 0.0%	0 0.0%	M vs. L	—	—
		Normal	Abnormal	0 —	1 100.0%	1 100.0%	H vs. L	—	—
		Born 1923-1941	n	1	3	1	Overall		—
		Diabetic >40	Number/%	0 0.0%	0 0.0%	0 0.0%	M vs. L	—	—
		Normal	Abnormal	1 100.0%	3 100.0%	1 100.0%	H vs. L	—	—

TABLE H-3. (continued)
Summary of Exposure Index-by-Covariate Interactions for Neurological Variables

Variable	Interaction (Occupation)	Stratification	Statistic	Exposure Index			Exposure Index Contrast	Adj. Relative Risk (95% C.I.)	p-Value
				Low	Medium	High			
H-25	Gait (cont.)	Born 1923-1941	n Number/%	0	4	0	Overall	—	—
		Diabetic ≥40	Abnormal Normal	0 0	— 4	0 0.0% 100.0%	M vs. L H vs. L	— —	— —
		Born <1922	n Number/%	0	1	0	Overall	—	—
		Normal ≥40	Abnormal Normal	0 0	— —	0 0.0% 100.0%	M vs. L H vs. L	— —	— —
	Gait	Born <1922	n Number/%	0	1	0	Overall	—	—
		Normal ≥40	Abnormal Normal	0 0	— —	0 0.0% 100.0%	M vs. L H vs. L	— —	— —
		Exposure Index-by- Lifetime Alcohol History (Enlisted Groundcrew)	0	n Number/%	14	17	21	Overall	0.258
			Abnormal Normal	1 13	7.1% 92.9%	0 0.0% 100.0%	M vs. L H vs. L	— 2.17 (0.20,23.25)	0.904 0.940
	>40	n Number/%	99	111	88	Overall	—	0.250	
		Abnormal Normal	1 98	1.0% 99.0%	2 1.8% 98.2%	4 4.5% 95.5%	M vs. L H vs. L	1.80 (0.16,20.14) 4.67 (0.51,42.57)	0.999 0.300
		n Number/%	29	28	29	Overall	—	0.194	
		Abnormal Normal	3 26	10.3% 89.7%	3 10.7% 89.3%	0 0.0% 100.0%	M vs. L H vs. L	1.04 (0.19,5.65) —	0.999 0.236

TABLE H-3. (continued)
Summary of Exposure Index-by-Covariate Interactions for Neurological Variables

Variable	Interaction (Occupation)	Stratification	Statistic	Exposure Index			Exposure Index Contrast	Adj. Relative Risk (95% C.I.)	p-Value
				Low	Medium	High			
H- 97-26	CNS Index Exposure Index-by- Age (Officer)	Born >1942	n Number/%	46	20	11	Overall		0.501
			Abnormal	2	0	0	M vs. L	—	0.966
			Normal	44	20	11	H vs. L	—	0.999
	Born 1923-1941	n Number/%	78	86	109	Overall		0.573	
		Abnormal	3	3	7	M vs. L	0.90 (0.18,4.61)	0.999	
		Normal	75	83	102	H vs. L	1.72 (0.43,6.85)	0.670	
	Born <1922	n Number/%	5	14	3	Overall		0.741	
		Abnormal	0	1	0	M vs. L	—	0.999	
		Normal	5	13	3	H vs. L	—	—	
H- 97-26	CNS Index Exposure Index-by- Age (Enlisted Flyer)	Born >1942	n Number/%	11	17	11	Overall		0.122
			Abnormal	0	3	0	M vs. L	—	0.416
			Normal	11	14	11	H vs. L	—	—
	Born 1923-1941	n Number/%	43	43	42	Overall		0.576	
		Abnormal	2	1	3	M vs. L	0.49 (0.04,5.59)	0.999	
		Normal	41	42	39	H vs. L	1.58 (0.25,9.95)	0.978	
	Born <1922	n Number/%	0	2	0	Overall		—	
		Abnormal	0	0	0	M vs. L	—	—	
		Normal	0	2	0	H vs. L	—	—	

TABLE H-3. (continued)
Summary of Exposure Index-by-Covariate Interactions for Neurological Variables

Variable	Interaction (Occupation)	Stratification	Statistic	Exposure Index			Exposure Index Contrast	Adj. Relative Risk (95% C.I.)	p-Value
				Low	Medium	High			
H-27	CNS Index	Born >1942 0	n Number/%	9	14	10	Overall		0.942
			Abnormal	1	11.1%	1	M vs. L	0.62 (0.03,11.28)	0.999
	Exposure Index-by- Age	Born >1942 0	Normal	8	88.9%	13	H vs. L	0.89 (0.05,16.66)	0.999
			n Number/%	61	93	53	Overall		0.765
	Exposure Index-by- Lifetime Alcohol History	>0-40	Abnormal	4	6.6%	6	M vs. L	0.98 (0.27,3.64)	0.999
			Normal	57	93.4%	87	H vs. L	0.56 (0.10,3.18)	0.818
	Enlisted Groundcrew)	Born >1942 >40	n Number/%	11	15	16	Overall		0.012
			Abnormal	5	45.5%	1	M vs. L	0.09 (0.01,0.90)	0.064
			Normal	6	54.5%	14	H vs. L	0.08 (0.01,0.84)	0.054
	Born 1923-1941 0	n Number/%	5	3	11	Overall			0.444
			Abnormal	0	0.0%	0	M vs. L	—	—
			Normal	5	100.0%	3	H vs. L	—	0.916
	Born 1923-1941 >40	n Number/%	37	18	30	Overall			0.080
			Abnormal	0	0.0%	2	M vs. L	—	0.206
			Normal	37	100.0%	16	H vs. L	—	0.072
	Born 1923-1941 >40	n Number/%	16	12	12	Overall			0.180
			Abnormal	2	12.5%	3	M vs. L	2.33 (0.32,16.82)	0.714
			Normal	14	87.5%	9	H vs. L	—	0.634

TABLE H-3. (continued)
Summary of Exposure Index-by-Covariate Interactions for Neurological Variables

Variable	Interaction (Occupation)	Stratification	Statistic	Exposure Index			Exposure Index Contrast	Adj. Relative Risk (95% C.I.)	p-Value	
				Low	Medium	High				
CNS Index (cont.)	Born <1922 >40	n	1	0	—	5	Overall			
			Number/%	0	0.0%	0	M vs. L			
		Abnormal Normal	1	100.0%	0	—	H vs. L			
			1	20.0%	1	80.0%	M vs. L			
	>1922 >40	n	2	1	—	1	Overall			
			Number/%	1	50.0%	0	M vs. L			
		Abnormal Normal	1	50.0%	1	100.0%	H vs. L			
			1	0.0%	1	100.0%	H vs. L			

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—Relative risk/confidence interval/p-value not given due to cell with zero frequency; percentages not given because no participants for a particular exposure category.

Notes: Small sample sizes may affect validity of overall p-value. Unadjusted estimate of relative risk and confidence interval, or p-value, based on stratified tables.