

Table F-8. Dependent Variable-Covariate Associations for the Endocrine Assessment (Continued)

Dependent Variable	Level	Personality Type			Body Fat		
		Type A	Type B	p-Value	Obese	Lean/Normal	p-Value
Serum Insulin (μ IU/ml)		(n=704)	(n=1,030)		(n=435)	(n=1,302)	
(continuous) ^b		$\bar{x}$ =44.72	$\bar{x}$ =50.42	0.006	r=0.433		<0.001
(discrete)	Abn. Low	14.9%	11.4%	0.018	2.5%	16.4%	0.001
	Normal	46.7%	44.5%		26.4%	51.6%	
	Abn. High	38.4%	44.2%		71.0%	32.0%	
α -1-C Hemoglobin (percent)		(n=817)	(n=1,298)		(n=620)	(n=1,498)	
(continuous) ^b		$\bar{x}$ =6.36	$\bar{x}$ =6.57	<0.001	r=0.227		<0.001
(discrete)	High	7.5%	12.8%	0.001	17.4%	7.9%	0.001
Total Testosterone (ng/dl)		(n=800)	(n=1,274)		(n=607)	(n=1,470)	
(continuous) ^c		$\bar{x}$ =432.2	$\bar{x}$ =417.1	0.059	r=-0.382		<0.001
(discrete)	Low	7.5%	7.9%	0.787	15.3%	4.7%	0.001
Free Testosterone (pg/ml)		(n=800)	(n=1,274)		(n=607)	(n=1,470)	
(continuous) ^c		$\bar{x}$ =14.37	$\bar{x}$ =13.68	0.001	r=-0.272		<0.001
(discrete)	Low	1.0%	2.1%	0.080	3.1%	1.1%	0.002

Dependent Variable	Level	Family History of Diabetes		
		Yes	No	p-Value
Composite Diabetes Indicator	Diabetic	(n=547) 24.9%	(n=1,525) 14.1%	0.001
Diabetic Severity	Nondiabetic	(n=547) 77.7%	(n=1,525) 88.0%	0.001
	No Treatment	7.5%	4.8%	
	Diet Only	2.2%	1.6%	
	Oral Hypoglycemic	9.1%	4.3%	
	Requiring Insulin	3.5%	1.4%	
Time to Diabetes Onset		(n=547) β =-0.196 ^f	(n=1,544)	<0.001
Fasting Glucose (mg/dl)		(n=556)	(n=1,543)	
(continuous) ^b		$\bar{x}$ =107.1	$\bar{x}$ =99.8	<0.001
(discrete)	High	25.2%	14.4%	0.001
2-Hour Postprandial Glucose (mg/dl)		(n=411)	(n=1,310)	
(continuous) ^b		$\bar{x}$ =108.9	$\bar{x}$ =104.0	0.003
(discrete)	Impaired	19.5%	14.7%	0.024

Table F-8. Dependent Variable-Covariate Associations for the Endocrine Assessment (Continued)

Dependent Variable	Level	Family History of Diabetes		p-Value
		Yes	No	
Fasting Urinary Glucose		(n=556)	(n=1,543)	
	Present	6.1%	3.5%	0.012
2-Hour Postprandial Urinary Glucose		(n=411)	(n=1,306)	
	Present	25.1%	22.7%	0.349
Serum Insulin (μ IU/ml)		(n=411)	(n=1,310)	
(continuous) ^b		$\bar{x}$ =54.32	$\bar{x}$ =46.28	0.001
(discrete)	Abnormal Low	8.5%	14.2%	0.001
	Normal	41.8%	46.4%	
	Abnormal High	49.6%	39.4%	
α -1-C Hemoglobin (percent)		(n=556)	(n=1,543)	
(continuous) ^b		$\bar{x}$ =6.73	$\bar{x}$ =6.40	<0.001
(discrete)	High	16.0%	8.8%	0.001

^a Estimated coefficient relative to non-Blacks.

^b Analysis performed on natural logarithm scale; means transformed from natural logarithm scale.

^c Analysis performed on square root scale; means transformed from square root scale.

^d Estimated coefficient relative to officers.

^e Estimated coefficient relative to personality type B.

^f Estimated coefficient relative to no family history of diabetes.

--: Covariate not applicable for dependent variable.

Note: Correlations (r) are based on total sample size and are not category-specific.

Table F-9. Dependent Variable-Covariate Associations for the Immunologic Assessment

Dependent Variable	Level	Age			Race		
		Born ≥1942	Born <1942	p-Value	Black	Non-Black	p-Value
CD3+ Cells (T Cells) (cells/mm ³) ^a		(n=774)			(n=46)	(n=728)	
		r=-0.099		0.006	$\bar{x}$ =1,363.1 (n=46)	$\bar{x}$ =1,239.6 (n=728)	0.095
CD4+ Cells (Helper T Cells) (cells/mm ³) ^a		(n=774)					
		r=-0.140		<0.001	$\bar{x}$ =958.7 (n=46)	$\bar{x}$ =844.4 (n=728)	0.023
CD8+ Cells (Suppressor T Cells) (cells/mm ³) ^a		(n=774)					
		r=0.007		0.845	$\bar{x}$ =621.4 (n=46)	$\bar{x}$ =575.0 (n=728)	0.278
CD16+56+ Cells (Natural Killer Cells) (cells/mm ³) ^a		(n=774)					
		r=0.102		0.005	$\bar{x}$ =288.1 (n=46)	$\bar{x}$ =267.7 (n=727)	0.326
CD20+ Cells (B Cells) (cells/mm ³) ^a		(n=773)					
		r=-0.240		<0.001	$\bar{x}$ =232.9 (n=46)	$\bar{x}$ =182.2 (n=728)	0.007
CD3+CD4+ Cells (Helper T Cells) (cells/mm ³) ^a		(n=774)					
		r=-0.142		<0.001	$\bar{x}$ =860.6 (n=125)	$\bar{x}$ =770.2 (n=1,904)	0.061
Absolute Lymphocytes (cells/mm ³) ^a		(n=2,029)					
		r=-0.097		<0.001	$\bar{x}$ =1,879.4 (n=125)	$\bar{x}$ =1,772.9 (n=1,904)	0.070
IgA (mg/dl) ^a		(n=2,029)					
		r=0.056		0.012	$\bar{x}$ =247.6 (n=125)	$\bar{x}$ =232.0 (n=1,904)	0.142
IgG (mg/dl) ^a		(n=2,029)					
		r=0.021		0.337	$\bar{x}$ =1,266.8 (n=125)	$\bar{x}$ =1,029.2 (n=1,904)	<0.001
IgM (mg/dl) ^a		(n=2,029)					
		r=-0.063		0.005	$\bar{x}$ =85.4 (n=125)	$\bar{x}$ =98.4 (n=1,904)	0.004
Lupus Panel: ANA Test		(n=905)	(n=1,124)				
	Present	49.9%	53.7%	0.098	47.2% (n=125)	52.4% (n=1,904)	0.304
Lupus Panel: ANA Thyroid Microsomal Antibody		(n=905)	(n=1,124)				
	Present	2.4%	3.2%	0.366	4.0% (n=125)	2.8% (n=1,904)	0.608
Lupus Panel: MSK Smooth Muscle Antibody		(n=905)	(n=1,124)				
	Present	11.9%	12.3%	0.867	19.2% (n=125)	11.7% (n=1,904)	0.018
Lupus Panel: MSK Mitochondrial Antibody		(n=905)	(n=1,124)				
	Present	0.2%	0.4%	0.885	0.0% (n=125)	0.3% (n=1,904)	0.999
Lupus Panel: MSK Parietal Antibody		(n=905)	(n=1,124)				
	Present	3.9%	4.6%	0.466	10.4% (n=125)	3.9% (n=1,904)	0.001
Lupus Panel: Rheumatoid Factor		(n=905)	(n=1,124)				
	Present	9.5%	12.2%	0.064	11.2% (n=125)	11.0% (n=1,904)	0.999

Table F-9. Dependent Variable-Covariate Associations for the Immunologic Assessment (Continued)

Dependent Variable	Level	Occupation			p-Value
		Officer (n=299)	Enlisted Flyer (n=134)	Enlisted Groundcrew (n=341)	
CD3+ Cells (T Cells) (cells/mm ³) ^a		$\bar{x}$ = 1,208.0 (n=299)	$\bar{x}$ = 1,248.6 (n=134)	$\bar{x}$ = 1,280.7 (n=341)	0.142
CD4+ Cells (Helper T Cells) (cells/mm ³) ^a		$\bar{x}$ = 830.7 (n=299)	$\bar{x}$ = 843.9 (n=134)	$\bar{x}$ = 871.7 (n=341)	0.246
CD8+ Cells (Suppressor T Cells) (cells/mm ³) ^a		$\bar{x}$ = 554.9 (n=299)	$\bar{x}$ = 599.1 (n=134)	$\bar{x}$ = 590.0 (n=341)	0.159
CD16+56+ Cells (Natural Killer Cells) (cells/mm ³) ^a		$\bar{x}$ = 271.6 (n=298)	$\bar{x}$ = 266.5 (n=134)	$\bar{x}$ = 267.5 (n=341)	0.901
CD20+ Cells (B Cells) (cells/mm ³) ^a		$\bar{x}$ = 170.8 (n=299)	$\bar{x}$ = 178.8 (n=134)	$\bar{x}$ = 200.9 (n=341)	0.002
Absolute Lymphocytes (cells/mm ³) ^a		$\bar{x}$ = 755.7 (n=802)	$\bar{x}$ = 768.6 (n=320)	$\bar{x}$ = 795.7 (n=907)	0.236
IgA (mg/dl) ^a		$\bar{x}$ = 1,703.3 (n=802)	$\bar{x}$ = 1,788.5 (n=320)	$\bar{x}$ = 1,845.8 (n=907)	<0.001
IgG (mg/dl) ^a		$\bar{x}$ = 225.0 (n=802)	$\bar{x}$ = 237.3 (n=320)	$\bar{x}$ = 238.7 (n=907)	0.030
IgM (mg/dl) ^a		$\bar{x}$ = 1,026.7 (n=802)	$\bar{x}$ = 1,036.8 (n=320)	$\bar{x}$ = 1,058.6 (n=907)	0.019
Lupus Panel: ANA Test		$\bar{x}$ = 95.6 (n=802)	$\bar{x}$ = 99.9 (n=320)	$\bar{x}$ = 98.4 (n=907)	0.360
Lupus Panel: ANA Thyroid Microsomal Antibody	Present	52.2% (n=802)	50.0% (n=320)	52.6% (n=907)	0.720
Lupus Panel: MSK Smooth Muscle Antibody	Present	3.1% (n=802)	2.5% (n=320)	2.8% (n=907)	0.829
Lupus Panel: MSK Mitochondrial Antibody	Present	11.5% (n=802)	12.8% (n=320)	12.5% (n=907)	0.756
Lupus Panel: MSK Parietal Antibody	Present	0.6% (n=802)	0.3% (n=320)	0.0% (n=907)	0.060
Lupus Panel: Rheumatoid Factor	Present	3.6% (n=802)	4.7% (n=320)	4.7% (n=907)	0.482
	Present	12.3% (n=802)	13.1% (n=320)	9.0% (n=907)	0.038

Table F-9. Dependent Variable-Covariate Associations for the Immunologic Assessment (Continued)

Dependent Variable	Level	Current Cigarette Smoking (cigarettes/day)				p-Value
		0-Never	0-Former	>0-20	>20	
CD3+ Cells (T Cells) (cells/mm ³) ^a			(n=773) r=0.233			<0.001
CD4+ Cells (Helper T Cells) (cells/mm ³) ^a			(n=773) r=0.242			<0.001
CD8+ Cells (Suppressor T Cells) (cells/mm ³) ^a			(n=773) r=0.126			<0.001
CD16+56+ Cells (Natural Killer Cells) (cells/mm ³) ^a			(n=773) r=-0.169			<0.001
CD20+ Cells (B Cells) (cells/mm ³) ^a			(n=772) r=0.151			<0.001
CD3+CD4+ Cells (Helper T Cells) (cells/mm ³) ^a			(n=773) r=0.257			<0.001
Absolute Lymphocytes (cells/mm ³) ^a			(n=2,028) r=0.190			<0.001
IgA (mg/dl) ^a			(n=2,028) r=-0.016			0.460
IgG (mg/dl) ^a			(n=2,028) r=-0.114			<0.001
IgM (mg/dl) ^a			(n=2,028) r=0.014			0.532
Lupus Panel: ANA Test		(n=571)	(n=1,060)	(n=261)	(n=136)	
Present		50.8%	49.1%	63.2%	59.6%	0.001
Lupus Panel: ANA Thyroid Microsomal Antibody		(n=571)	(n=1,060)	(n=261)	(n=136)	
Present		3.2%	3.2%	1.5%	1.5%	0.357
Lupus Panel: MSK Smooth Muscle Antibody		(n=571)	(n=1,060)	(n=261)	(n=136)	
Present		11.0%	11.9%	17.2%	8.8%	0.037
Lupus Panel: MSK Mitochondrial Antibody		(n=571)	(n=1,060)	(n=261)	(n=136)	
Present		0.4%	0.2%	0.4%	0.7%	0.699
Lupus Panel: MSK Parietal Antibody		(n=571)	(n=1,060)	(n=261)	(n=136)	
Present		3.9%	4.3%	4.6%	5.9%	0.760
Lupus Panel: Rheumatoid Factor		(n=571)	(n=1,060)	(n=261)	(n=136)	
Present		11.6%	10.5%	11.5%	11.8%	0.889

Table F-9. Dependent Variable-Covariate Associations for the Immunologic Assessment (Continued)

Dependent Variable	Level	Lifetime Cigarette Smoking History (pack-years)			p-Value
		0	>0-10	>10	
CD3+ Cells (T Cells) (cells/mm ³) ^a			(n=772) r=0.058		0.109
CD4+ Cells (Helper T Cells) (cells/mm ³) ^a			(n=772) r=0.070		0.053
CD8+ Cells (Suppressor T Cells) (cells/mm ³) ^a			(n=772) r=0.016		0.650
CD16+56+ Cells (Natural Killer Cells) (cells/mm ³) ^a			(n=772) r=-0.054		0.132
CD20+ Cells (B Cells) (cells/mm ³) ^a			(n=771) r=0.018		0.613
CD3+CD4+ Cells (Helper T Cells) (cells/mm ³) ^a			(n=772) r=0.077		0.032
Absolute Lymphocytes (cells/mm ³) ^a			(n=2,027) r=0.091		<0.001
IgA (mg/dl) ^a			(n=2,027) r=0.018		0.413
IgG (mg/dl) ^a			(n=2,027) r=-0.105		<0.001
IgM (mg/dl) ^a			(n=2,027) r=0.034		0.131
Lupus Panel: ANA Test		(n=571)	(n=540)	(n=916)	
	Present	50.8%	48.3%	55.1%	0.033
Lupus Panel: ANA Thyroid Microsomal Antibody		(n=571)	(n=540)	(n=916)	
	Present	3.2%	3.7%	2.2%	0.216
Lupus Panel: MSK Smooth Muscle Antibody		(n=571)	(n=540)	(n=916)	
	Present	11.0%	11.1%	13.4%	0.270
Lupus Panel: MSK Mitochondrial Antibody		(n=571)	(n=540)	(n=916)	
	Present	0.4%	0.0%	0.4%	0.321
Lupus Panel: MSK Parietal Antibody		(n=571)	(n=540)	(n=916)	
	Present	3.9%	5.2%	4.0%	0.482
Lupus Panel: Rheumatoid Factor		(n=571)	(n=540)	(n=916)	
	Present	11.6%	7.4%	12.8%	0.006

Table F-9. Dependent Variable-Covariate Associations for the Immunologic Assessment (Continued)

Dependent Variable	Level	Current Alcohol Use (drinks/day)			p-Value
		0-1	>1-4	>4	
CD3+ Cells (T Cells) (cells/mm ³) ^a			(n=773) r=0.029		0.415
CD4+ Cells (Helper T Cells) (cells/mm ³) ^a			(n=773) r=0.042		0.249
CD8+ Cells (Suppressor T Cells) (cells/mm ³) ^a			(n=773) r=-0.007		0.854
CD16+56+ Cells (Natural Killer Cells) (cells/mm ³) ^a			(n=773) r=-0.045		0.214
CD20+ Cells (B Cells) (cells/mm ³) ^a			(n=772) r=-0.097		0.007
CD3+CD4+ Cells (Helper T Cells) (cells/mm ³) ^a			(n=773) r=0.044		0.225
Absolute Lymphocytes (cells/mm ³) ^a			(n=2,028) r=0.010		0.649
IgA (mg/dl) ^a			(n=2,028) r=0.048		0.032
IgG (mg/dl) ^a			(n=2,028) r=-0.084		<0.001
IgM (mg/dl) ^a			(n=2,028) r=0.057		0.010
Lupus Panel: ANA Test		(n=1,628)	(n=352)	(n=48)	
	Present	51.0%	56.0%	60.4%	0.119
Lupus Panel: ANA Thyroid Microsomal Antibody		(n=1,628)	(n=352)	(n=48)	
	Present	3.0%	2.6%	0.0%	0.436
Lupus Panel: MSK Smooth Muscle Antibody		(n=1,628)	(n=352)	(n=48)	
	Present	11.9%	13.1%	12.5%	0.833
Lupus Panel: MSK Mitochondrial Antibody		(n=1,628)	(n=352)	(n=48)	
	Present	0.4%	0.0%	0.0%	0.477
Lupus Panel: MSK Parietal Antibody		(n=1,628)	(n=352)	(n=48)	
	Present	4.5%	4.0%	0.0%	0.304
Lupus Panel: Rheumatoid Factor		(n=1,628)	(n=352)	(n=48)	
	Present	10.9%	10.5%	18.8%	0.217

Table F-9. Dependent Variable-Covariate Associations for the Immunologic Assessment (Continued)

Dependent Variable	Level	Lifetime Alcohol History (drink-years)			p-Value
		0	>0-40	>40	
CD3+ Cells (T Cells) (cells/mm ³) ^a			(n=772) r=0.042		0.244
CD4+ Cells (Helper T Cells) (cells/mm ³) ^a			(n=772) r=0.055		0.124
CD8+ Cells (Suppressor T Cells) (cells/mm ³) ^a			(n=772) r=-0.005		0.898
CD16+56+ Cells (Natural Killer Cells) (cells/mm ³) ^a			(n=772) r=-0.051		0.154
CD20+ Cells (B Cells) (cells/mm ³) ^a			(n=771) r=-0.038		0.287
CD3+CD4+ Cells (Helper T Cells) (cells/mm ³) ^a			(n=772) r=0.059		0.104
Absolute Lymphocytes (cells/mm ³) ^a			(n=2,021) r=0.009		0.678
IgA (mg/dl) ^a			(n=2,021) r=0.038		0.086
IgG (mg/dl) ^a			(n=2,021) r=-0.060		0.007
IgM (mg/dl) ^a			(n=2,021) r=0.005		0.835
Lupus Panel: ANA Test		(n=112)	(n=1,324)	(n=585)	
	Present	49.1%	51.1%	54.7%	0.279
Lupus Panel: ANA Thyroid Microsomal Antibody		(n=112)	(n=1,324)	(n=585)	
	Present	1.8%	3.0%	2.6%	0.680
Lupus Panel: MSK Smooth Muscle Antibody		(n=112)	(n=1,324)	(n=585)	
	Present	15.2%	11.6%	12.7%	0.488
Lupus Panel: MSK Mitochondrial Antibody		(n=112)	(n=1,324)	(n=585)	
	Present	0.0%	0.4%	0.2%	0.625
Lupus Panel: MSK Parietal Antibody		(n=112)	(n=1,324)	(n=585)	
	Present	6.3%	4.7%	2.9%	0.116
Lupus Panel: Rheumatoid Factor		(n=112)	(n=1,324)	(n=585)	
	Present	11.6%	10.5%	12.0%	0.625

Table F-9. Dependent Variable-Covariate Associations for the Immunologic Assessment (Continued)

Dependent Variable	Level	Physical Activity Index			p-Value
		Active	Moderate	Sedentary	
CD3+ Cells (T Cells) (cells/mm ³) ^a		(n=202)	(n=149)	(n=418)	
		$\bar{x} = 1,168.8$	$\bar{x} = 1,174.1$	$\bar{x} = 1,315.1$	<0.001
CD4+ Cells (Helper T Cells) (cells/mm ³) ^a		(n=202)	(n=149)	(n=418)	
		$\bar{x} = 807.1$	$\bar{x} = 806.8$	$\bar{x} = 889.2$	0.001
CD8+ Cells (Suppressor T Cells) (cells/mm ³) ^a		(n=202)	(n=149)	(n=418)	
		$\bar{x} = 548.3$	$\bar{x} = 539.1$	$\bar{x} = 608.3$	0.005
CD16+56+ Cells (Natural Killer Cells) (cells/mm ³) ^a		(n=202)	(n=149)	(n=418)	
		$\bar{x} = 267.5$	$\bar{x} = 269.4$	$\bar{x} = 268.8$	0.990
CD20+ Cells (B Cells) (cells/mm ³) ^a		(n=201)	(n=149)	(n=418)	
		$\bar{x} = 168.2$	$\bar{x} = 183.1$	$\bar{x} = 194.9$	0.017
CD3+CD4+ Cells (Helper T Cells) (cells/mm ³) ^a		(n=202)	(n=149)	(n=418)	
		$\bar{x} = 732.5$	$\bar{x} = 728.9$	$\bar{x} = 814.3$	0.001
Absolute Lymphocytes (cells/mm ³) ^a		(n=539)	(n=400)	(n=1,077)	
		$\bar{x} = 1,719.7$	$\bar{x} = 1,722.7$	$\bar{x} = 1,831.0$	<0.001
IgA (mg/dl) ^a		(n=539)	(n=400)	(n=1,077)	
		$\bar{x} = 231.8$	$\bar{x} = 223.1$	$\bar{x} = 237.2$	0.088
IgG (mg/dl) ^a		(n=539)	(n=400)	(n=1,077)	
		$\bar{x} = 1,040.4$	$\bar{x} = 1,030.0$	$\bar{x} = 1,047.1$	0.457
IgM (mg/dl) ^a		(n=539)	(n=400)	(n=1,077)	
		$\bar{x} = 99.8$	$\bar{x} = 94.8$	$\bar{x} = 97.5$	0.344
Lupus Panel: ANA Test		(n=539)	(n=400)	(n=1,077)	
	Present	48.6%	52.5%	53.5%	0.176
Lupus Panel: ANA Thyroid Microsomal Antibody		(n=539)	(n=400)	(n=1,077)	
	Present	1.7%	4.3%	2.9%	0.061
Lupus Panel: MSK Smooth Muscle Antibody		(n=539)	(n=400)	(n=1,077)	
	Present	9.5%	13.5%	12.9%	0.085
Lupus Panel: MSK Mitochondrial Antibody		(n=539)	(n=400)	(n=1,077)	
	Present	0.4%	0.8%	0.1%	0.112
Lupus Panel: MSK Parietal Antibody		(n=539)	(n=400)	(n=1,077)	
	Present	3.9%	4.3%	4.5%	0.871
Lupus Panel: Rheumatoid Factor		(n=539)	(n=400)	(n=1,077)	
	Present	10.2%	9.5%	12.0%	0.314

^a Analysis performed on natural logarithm scale; means transformed from natural logarithm scale.

Note: Correlations (r) are based on total sample size and are not category-specific.

Table F-10. Dependent Variable-Covariate Associations for the Pulmonary Assessment

Dependent Variable	Level	Age			Race		
		Born ≥1942	Born <1942	p-Value	Black	Non-Black	p-Value
Asthma	Yes	(n=928) 3.9%	(n=1,177) 4.2%	0.828	(n=127) 3.1%	(n=1,978) 4.1%	0.770
Bronchitis	Yes	(n=922) 19.8%	(n=1,148) 20.5%	0.768	(n=126) 13.5%	(n=1,944) 20.6%	0.069
Pneumonia	Yes	(n=917) 8.6%	(n=1,113) 13.1%	0.002	(n=125) 12.8%	(n=1,905) 11.0%	0.628
Thorax and Lung Abnormalities	Yes	(n=933) 8.6%	(n=1,188) 13.6%	0.001	(n=128) 5.5%	(n=1,993) 11.8%	0.042
X-ray Interpretation	Abnormal	(n=931) 8.4%	(n=1,188) 11.6%	0.018	(n=128) 6.3%	(n=1,991) 10.4%	0.171
FVC		(n=2,118)			(n=128)	(n=1,990)	
FEV ₁		r=-0.035		0.108	$\bar{x}$ =87.84	$\bar{x}$ =99.81	<0.001
		(n=2,118)			(n=128)	(n=1,990)	
		r=-0.143		<0.001	$\bar{x}$ =86.83	$\bar{x}$ =94.71	<0.001
Ratio of Observed FEV ₁ to Observed FVC ^a		(n=2,118)			(n=128)	(n=1,990)	
		r=0.266		<0.001	$\bar{x}$ =0.791	$\bar{x}$ =0.760	<0.001
Loss of Vital Capacity	None	(n=931) 92.3%	(n=1,187) 89.6%	0.031	(n=128) 78.1%	(n=1,990) 91.6%	0.001
	Mild	7.0%	8.4%		17.2%	7.2%	
	Mod./Sev.	0.8%	1.9%		4.7%	1.2%	
Obstructive Abnormality	None	(n=931) 75.1%	(n=1,187) 52.1%	0.001	(n=128) 63.3%	(n=1,990) 62.2%	0.938
	Mild	21.9%	37.1%		30.5%	30.4%	
	Moderate	2.6%	8.6%		4.7%	6.0%	
	Severe	0.4%	2.2%		1.6%	1.4%	

Table F-10. Dependent Variable-Covariate Associations for the Pulmonary Assessment (Continued)

Dependent Variable	Level	Occupation			p-Value
		Officer	Enlisted Flyer	Enlisted Groundcrew	
Asthma		(n=830)	(n=336)	(n=939)	
	Yes	4.2%	3.3%	4.2%	0.738
Bronchitis		(n=811)	(n=327)	(n=932)	
	Yes	18.0%	22.9%	21.1%	0.108
Pneumonia		(n=792)	(n=319)	(n=919)	
	Yes	12.4%	10.7%	10.1%	0.323
Thorax and Lung Abnormalities		(n=835)	(n=338)	(n=948)	
	Yes	7.7%	18.6%	12.1%	0.001
X-ray Interpretation		(n=835)	(n=338)	(n=946)	
	Abnormal	9.7%	9.8%	10.8%	0.723
FVC		(n=835)	(n=337)	(n=946)	
		$\bar{x} = 100.28$	$\bar{x} = 99.22$	$\bar{x} = 97.99$	0.005
FEV ₁		(n=835)	(n=337)	(n=946)	
		$\bar{x} = 95.57$	$\bar{x} = 91.76$	$\bar{x} = 93.90$	0.002
Ratio of Observed FEV ₁ to Observed FVC ^a		(n=835)	(n=337)	(n=946)	
		$\bar{x} = 0.759$	$\bar{x} = 0.745$	$\bar{x} = 0.771$	<0.001
Loss of Vital Capacity		(n=835)	(n=337)	(n=946)	
	None	92.1%	89.9%	90.0%	0.587
	Mild	6.7%	8.6%	8.5%	
	Moderate/Severe	1.2%	1.5%	1.6%	
Obstructive Abnormality		(n=835)	(n=337)	(n=946)	
	None	61.0%	53.1%	66.6%	0.001
	Mild	32.5%	35.9%	26.6%	
	Moderate	5.4%	7.7%	5.8%	
	Severe	1.2%	3.3%	1.0%	

Table F-10. Dependent Variable-Covariate Associations for the Pulmonary Assessment (Continued)

Dependent Variable	Level	Current Cigarette Smoking (cigarettes/day)				p-Value
		0-Never	0-Former	>0-20	>20	
Asthma	Yes	--	--	--	--	--
Bronchitis	Yes	--	--	--	--	--
Pneumonia	Yes	--	--	--	--	--
Thorax and Lung Abnormalities	Yes	(n=595) 2.2%	(n=1,116) 7.9%	(n=272) 29.8%	(n=137) 43.8%	0.001
X-ray Interpretation	Abnormal	(n=595) 8.4%	(n=1,115) 10.7%	(n=272) 10.3%	(n=136) 14.0%	0.214
FVC			(n=2,117) r=-0.068			0.002
FEV ₁			(n=2,117) r=-0.208			<0.001
Ratio of Observed FEV ₁ to Observed FVC ^a			(n=2,117) r=0.222			<0.001
Loss of Vital Capacity	None	(n=595) 92.9%	(n=1,115) 90.9%	(n=270) 86.7%	(n=137) 88.3%	0.116
	Mild	6.1%	7.5%	11.5%	10.2%	
	Moderate/Severe	1.0%	1.5%	1.9%	1.5%	
Obstructive Abnormality	None	(n=595) 78.0%	(n=1,115) 60.8%	(n=270) 45.9%	(n=137) 38.0%	0.001
	Mild	20.0%	31.4%	40.7%	46.7%	
	Moderate	1.7%	6.3%	10.4%	13.1%	
	Severe	0.3%	1.5%	3.0%	2.2%	

Table F-10. Dependent Variable-Covariate Associations for the Pulmonary Assessment (Continued)

Dependent Variable	Level	Lifetime Cigarette Smoking History (pack-years)			p-Value
		0	>0-10	>10	
Asthma	Yes	(n=590) 4.1%	(n=553) 4.5%	(n=959) 3.6%	0.703
Bronchitis	Yes	(n=582) 16.8%	(n=545) 18.0%	(n=940) 23.5%	0.002
Pneumonia	Yes	(n=575) 9.6%	(n=538) 9.3%	(n=914) 13.0%	0.037
Thorax and Lung Abnormalities	Yes	(n=595) 2.2%	(n=558) 8.1%	(n=965) 19.0%	0.001
X-ray Interpretation	Yes	(n=595) 8.4%	(n=557) 8.6%	(n=964) 12.2%	0.018
FVC			(n=2,115) r=-0.145		<0.001
FEV ₁			(n=2,115) r=-0.302		<0.001
Ratio of Observed FEV ₁ to Observed FVC ^a			(n=2,115) r=0.291		<0.001
Loss of Vital Capacity	None	(n=595) 92.9%	(n=556) 92.4%	(n=964) 88.6%	0.029
	Mild	6.1%	6.3%	9.6%	
	Moderate/Severe	1.0%	1.3%	1.8%	
Obstructive Abnormality	None	(n=595) 78.0%	(n=556) 68.7%	(n=964) 49.0%	0.001
	Mild	20.0%	27.0%	38.8%	
	Moderate	1.7%	3.4%	9.9%	
	Severe	0.3%	0.9%	2.4%	

Table F-10. Dependent Variable-Covariate Associations for the Pulmonary Assessment (Continued)

Dependent Variable	Level	Body Fat			Industrial Chemical Exposure		
		Normal	Obese	p-Value	No	Yes	p-Value
Asthma	Yes	(n=1,489) 4.0%	(n=616) 4.1%	0.999	(n=801) 3.9%	(n=1,304) 4.1%	0.847
Bronchitis	Yes	(n=1,464) 20.2%	(n=606) 20.3%	0.988	(n=786) 17.2%	(n=1,284) 22.0%	0.009
Pneumonia	Yes	(n=1,437) 10.9%	(n=593) 11.5%	0.783	(n=765) 11.4%	(n=1,265) 10.9%	0.803
Thorax and Lung Abnormalities	Yes	(n=1,501) 12.3%	(n=620) 9.2%	0.047	(n=804) 9.7%	(n=1,317) 12.5%	0.062
X-ray Interpretation	Abnormal	(n=1,499) 10.1%	(n=620) 10.5%	0.837	(n=804) 10.2%	(n=1,315) 10.2%	0.999
FVC		(n=2,118)			(n=803)	(n=1,315)	
		$r=-0.224$		<0.001	$\bar{x}=99.77$	$\bar{x}=98.67$	0.102
FEV ₁		(n=2,118)			(n=803)	(n=1,315)	
		$r=-0.070$		0.001	$\bar{x}=95.04$	$\bar{x}=93.72$	0.092
Ratio of Observed FEV ₁ to Observed FVC ^a		(n=2,118)			(n=803)	(n=1,315)	
		$r=-0.178$		<0.001	$\bar{x}=0.761$	$\bar{x}=0.763$	0.587
Loss of Vital Capacity	None	(n=1,498) 92.9%	(n=620) 85.8%	0.001	(n=803) 92.5%	(n=1,315) 89.7%	0.064
	Mild	6.1%	11.9%		6.6%	8.5%	
	Mod./Severe	1.1%	2.3%		0.9%	1.7%	
Obstructive Abnormality	None	(n=1,498) 61.0%	(n=620) 65.2%	0.165	(n=803) 61.8%	(n=1,315) 62.5%	0.587
	Mild	31.4%	28.1%		31.1%	30.0%	
	Moderate	5.9%	6.0%		6.1%	5.9%	
	Severe	1.7%	0.8%		1.0%	1.7%	

^a Analysis performed on natural logarithm of (1 – ratio of observed FEV₁ to observed FVC) scale; means transformed from natural logarithm of (1 – ratio of observed FEV₁ to observed FVC) scale; because of this transformation, a negative correlation implies a positive association between the ratio and the covariate.

--: Covariate not applicable for dependent variable.

Note: Correlations (r) are based on total sample size and are not category-specific.

APPENDIX G

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APPENDIX G. SUMMARY OF ANALYSIS RESULTS

This appendix contains a summary of the results from the exposure analyses performed for this report and contained in Chapters 9 through 18. This summary is organized into 24 tables, grouped by analysis (unadjusted or adjusted), data form (continuous, dichotomous, or polytomous), and model (1, 2, 3, or 4). Each table contains a reference to its corresponding table in Chapters 9 through 18 and a description of the clinical parameter being summarized. The summary statistics, grouped by model and presented for each analysis and data form, are described below.

G.1 Model 1

For analyses of continuous data using Model 1 (Tables G-1 and G-13), the occupational category, Ranch Hand mean, Comparison mean, difference of Ranch Hand and Comparison means along with the associated 95-percent confidence interval (C.I.), and p-value are given for the unadjusted and adjusted analyses. For analyses of dichotomous data using Model 1 (Tables G-5 and G-17), the occupational category, estimated or adjusted relative risk and associated 95-percent confidence interval, and p-value are given for the unadjusted and adjusted analyses. The number and percentage of abnormalities within the Ranch Hand and Comparison groups are given for the unadjusted analyses. For analyses of polytomous data using Model 1 (Tables G-9 and G-21), the contrast (of the specified abnormal category versus the normal category), occupational category, estimated or adjusted relative risk and associated 95-percent confidence interval, and p-value are given for the unadjusted and adjusted analyses. The number and percentage of Ranch Hands and Comparisons within each abnormal level are given for the unadjusted analyses.

G.2 Models 2 and 4

For analyses of continuous data using Models 2 and 4, (Tables G-2 and G-14 for Model 2; Tables G-4 and G-16 for Model 4), the coefficient of determination (R^2), slope, standard error, and p-value are given for the unadjusted and adjusted analyses. For analyses of dichotomous data using Models 2 and 4 (Tables G-6 and G-18 for Model 2; Tables G-8 and G-20 for Model 4), the estimated or adjusted relative risk and associated 95-percent confidence interval, and p-value are given for the unadjusted and adjusted analyses. For analyses of polytomous data using Models 2 and 4 (Tables G-10 and G-22 for Model 2; Tables G-12 and G-24 for Model 4), the contrast (of the specified abnormal category versus the normal category), the estimated or adjusted relative risk and associated 95-percent confidence interval, and p-value are given for the unadjusted and adjusted analyses.

G.3 Model 3

For analyses of continuous data using Model 3 (Tables G-3 and G-17), the R^2 , dioxin category, dioxin category sample size (n) and mean, difference of Ranch Hand dioxin category and Comparison dioxin category means along with the associated 95-percent confidence interval, and p-value are given for the unadjusted and adjusted analyses. For analyses of dichotomous data using Model 3 (Tables G-7 and G-19), the dioxin category, sample size, estimated or adjusted relative risk and associated 95-percent confidence interval for each Ranch Hand category versus Comparison contrast, and p-value are given for the unadjusted and adjusted analyses. The number and percentage of abnormalities within each dioxin category are given for unadjusted analyses. For analyses of polytomous data using Model 3 (Tables G-11

and G-23), the contrast (of the specified abnormal category versus the normal category), dioxin category, sample size, estimated or adjusted relative risk and associated 95-percent confidence interval for each Ranch Hand category versus Comparison contrast, and p-value are given for the unadjusted and adjusted analyses. The number and percentage of each abnormal level within each dioxin category are given for the unadjusted analyses.

A summary of the analysis (unadjusted or adjusted), data form (continuous, dichotomous, or polytomous), and model (1, 2, 3, or 4) for each table in Appendix G is given below.

Appendix G Table	Analysis	Data Form	Model
G-1	Unadjusted	Continuous	1
G-2	Unadjusted	Continuous	2
G-3	Unadjusted	Continuous	3
G-4	Unadjusted	Continuous	4
G-5	Unadjusted	Dichotomous	1
G-6	Unadjusted	Dichotomous	2
G-7	Unadjusted	Dichotomous	3
G-8	Unadjusted	Dichotomous	4
G-9	Unadjusted	Polytomous	1
G-10	Unadjusted	Polytomous	2
G-11	Unadjusted	Polytomous	3
G-12	Unadjusted	Polytomous	4
G-13	Adjusted	Continuous	1
G-14	Adjusted	Continuous	2
G-15	Adjusted	Continuous	3
G-16	Adjusted	Continuous	4
G-17	Adjusted	Dichotomous	1
G-18	Adjusted	Dichotomous	2
G-19	Adjusted	Dichotomous	3
G-20	Adjusted	Dichotomous	4
G-21	Adjusted	Polytomous	1
G-22	Adjusted	Polytomous	2
G-23	Adjusted	Polytomous	3
G-24	Adjusted	Polytomous	4

Table G-1. Summary of Unadjusted Results for Continuous Variables – Model 1 (Ranch Hands vs. Comparisons)

Table Ref.	Clinical Parameter (Units)	Occupational Category	Means		Difference of Means (95% C.I.)	p-Value
			RH	C		
9-6	Body Fat (percent) ^a	All	22.09	22.28	-0.19 --	0.436
		Officer	22.04	21.87	0.17 --	0.656
		Enlisted Flyer	21.69	22.20	-0.51 --	0.390
		Enlisted Groundcrew	22.30	22.67	-0.37 --	0.318
9-8	Erythrocyte Sedimentation Rate (mm/hr) ^b	All	4.82	4.74	0.09 --	0.680
		Officer	4.36	4.41	-0.05 --	0.873
		Enlisted Flyer	5.35	5.83	-0.47 --	0.429
		Enlisted Groundcrew	5.06	4.71	0.35 --	0.263
10-35	PSA (ng/ml) ^a	All	1.104	1.120	-0.016 --	0.671
		Officer	1.195	1.229	-0.034 --	0.613
		Enlisted Flyer	1.241	1.234	0.007 --	0.949
		Enlisted Groundcrew	0.985	1.005	-0.020 --	0.693
13-11	AST (U/l) ^a	All	23.01	22.88	0.13 --	0.705
		Officer	23.40	23.34	0.06 --	0.914
		Enlisted Flyer	22.17	22.48	-0.32 --	0.696
		Enlisted Groundcrew	22.99	22.60	0.39 --	0.447
13-13	ALT (U/l) ^a	All	42.58	42.45	0.13 --	0.803
		Officer	42.21	41.79	0.42 --	0.613
		Enlisted Flyer	41.21	42.59	-1.38 --	0.290
		Enlisted Groundcrew	43.50	42.99	0.51 --	0.537
13-15	GGT (U/l) ^a	All	43.62	42.61	1.01 --	0.340
		Officer	42.32	40.74	1.57 --	0.332
		Enlisted Flyer	44.45	45.29	-0.84 --	0.758
		Enlisted Groundcrew	44.52	43.44	1.09 --	0.506
13-17	Alkaline Phosphatase (U/l) ^a	All	81.81	79.65	2.16 --	0.024
		Officer	78.44	76.74	1.70 --	0.241
		Enlisted Flyer	83.79	83.45	0.34 --	0.889
		Enlisted Groundcrew	84.22	81.04	3.18 --	0.030
13-19	Total Bilirubin (mg/dl) ^a	All	0.518	0.520	-0.002 --	0.857
		Officer	0.546	0.543	0.003 --	0.887
		Enlisted Flyer	0.489	0.513	-0.023 --	0.365
		Enlisted Groundcrew	0.506	0.503	0.003 --	0.869
13-22	Lactic Dehydrogenase (U/l) ^a	All	154.0	153.8	0.3 --	0.822
		Officer	153.9	154.4	-0.5 --	0.799
		Enlisted Flyer	152.3	152.5	-0.3 --	0.927
		Enlisted Groundcrew	154.9	153.7	1.2 --	0.488
13-24	Cholesterol (mg/dl) ^c	All	211.4	211.7	-0.3 --	0.838
		Officer	206.2	210.0	-3.8 --	0.149
		Enlisted Flyer	215.0	216.3	-1.3 --	0.760
		Enlisted Groundcrew	214.7	211.8	3.0 --	0.239

**Table G-1. Summary of Unadjusted Results for Continuous Variables - Model 1
(Ranch Hands vs. Comparisons) (Continued)**

Table Ref.	Clinical Parameter (Units)	Occupational Category	Means		Difference of Means (95% C.I.)	p-Value
			RH	C		
13-26	HDL Cholesterol (mg/dl) ^a	All	44.97	44.84	0.13 --	0.805
		Officer	46.64	46.68	-0.04 --	0.965
		Enlisted Flyer	45.07	43.58	1.49 --	0.240
		Enlisted Groundcrew	43.44	43.69	-0.25 --	0.739
13-28	Cholesterol-HDL Ratio ^a	All	4.66	4.68	-0.02 --	0.723
		Officer	4.39	4.46	-0.07 --	0.425
		Enlisted Flyer	4.72	4.93	-0.21 --	0.155
		Enlisted Groundcrew	4.90	4.81	0.10 --	0.282
13-30	Triglycerides (mg/dl) ^a	All	122.8	120.7	2.1 --	0.539
		Officer	114.9	111.7	3.2 --	0.523
		Enlisted Flyer	123.9	137.7	-13.8 --	0.122
		Enlisted Groundcrew	130.0	123.6	6.4 --	0.230
13-32	Creatine Phosphokinase (U/l) ^a	All	106.3	105.5	0.8 --	0.791
		Officer	105.8	104.3	1.4 --	0.748
		Enlisted Flyer	97.2	101.0	-3.8 --	0.562
		Enlisted Groundcrew	110.8	108.2	2.6 --	0.565
13-34	Serum Amylase (U/l) ^a	All	56.92	56.85	0.07 --	0.942
		Officer	54.88	57.86	-2.98 --	0.048
		Enlisted Flyer	58.46	55.91	2.55 --	0.284
		Enlisted Groundcrew	58.23	56.29	1.95 --	0.182
13-41	Prealbumin (mg/dl)	All	29.54	29.61	-0.07 (-0.50,0.37)	0.766
		Officer	29.65	29.87	-0.22 (-0.92,0.47)	0.532
		Enlisted Flyer	29.56	29.33	0.23 (-0.85,1.31)	0.679
		Enlisted Groundcrew	29.44	29.48	-0.03 (-0.70,0.63)	0.922
13-43	Albumin (mg/dl)	All	4,195.6	4,201.2	-5.6 (-34.9,23.8)	0.709
		Officer	4,172.9	4,204.6	-31.8 (-78.3,14.8)	0.181
		Enlisted Flyer	4,190.0	4,159.9	30.1 (-42.4,102.5)	0.416
		Enlisted Groundcrew	4,218.8	4,211.9	7.0 (-37.3,51.2)	0.758
13-45	α -1-Acid Glycoprotein (mg/dl) ^a	All	84.65	84.15	0.50 --	0.550
		Officer	80.89	82.22	-1.33 --	0.298
		Enlisted Flyer	85.49	85.88	-0.38 --	0.855
		Enlisted Groundcrew	87.92	85.31	2.61 --	0.044
13-47	α -1-Antitrypsin (mg/dl) ^c	All	150.0	146.5	3.5 --	0.002
		Officer	143.9	143.0	0.9 --	0.609
		Enlisted Flyer	155.3	151.1	4.2 --	0.136
		Enlisted Groundcrew	153.5	148.0	5.5 --	0.001
13-49	α -2-Macroglobulin (mg/dl) ^a	All	170.6	171.3	-0.7 --	0.726
		Officer	170.6	171.0	-0.4 --	0.901
		Enlisted Flyer	177.0	177.4	-0.4 --	0.935
		Enlisted Groundcrew	168.1	169.6	-1.5 --	0.608
13-51	Apolipoprotein B (mg/dl) ^c	All	110.5	111.5	-1.1 --	0.320
		Officer	106.4	109.6	-3.3 --	0.053
		Enlisted Flyer	113.2	115.2	-2.0 --	0.463
		Enlisted Groundcrew	113.1	112.0	1.2 --	0.479

**Table G-1. Summary of Unadjusted Results for Continuous Variables – Model 1
(Ranch Hands vs. Comparisons) (Continued)**

Table Ref.	Clinical Parameter (Units)	Occupational Category	Means		Difference of Means (95% C.I.)	p-Value
			RH	C		
13-53	C3 Complement (mg/dl) ^a	All	118.9	118.5	0.4 --	0.640
		Officer	114.9	114.6	0.3 --	0.814
		Enlisted Flyer	120.3	120.7	-0.4 --	0.862
		Enlisted Groundcrew	122.1	121.3	0.8 --	0.537
13-55	C4 Complement (mg/dl) ^a	All	25.71	25.91	-0.20 --	0.395
		Officer	24.73	25.54	-0.81 --	0.024
		Enlisted Flyer	26.52	25.50	-1.02 --	0.076
		Enlisted Groundcrew	26.31	26.38	-0.06 --	0.862
13-57	Haptoglobin (mg/dl) ^c	All	135.2	126.5	8.7 --	0.002
		Officer	122.4	116.3	6.1 --	0.140
		Enlisted Flyer	147.8	137.4	10.4 --	0.141
		Enlisted Groundcrew	142.5	132.3	10.2 --	0.016
13-59	Transferrin (mg/dl) ^a	All	252.7	249.6	3.1 --	0.044
		Officer	250.0	248.4	1.6 --	0.510
		Enlisted Flyer	254.5	251.5	3.0 --	0.439
		Enlisted Groundcrew	254.5	250.0	4.5 --	0.056
14-7	Systolic Blood Pressure (mm Hg) ^a	All	124.9	125.6	-0.7 --	0.383
		Officer	125.9	126.2	-0.2 --	0.865
		Enlisted Flyer	127.0	127.3	-0.3 --	0.875
		Enlisted Groundcrew	123.1	124.5	-1.4 --	0.241
14-9	Diastolic Blood Pressure (mm Hg) ^c	All	74.55	74.61	-0.06	0.883
		Officer	74.17	74.21	-0.04	0.952
		Enlisted Flyer	75.22	75.10	0.12	0.905
		Enlisted Groundcrew	74.63	74.80	-0.17	0.780
15-3	RBC Count (million/mm ³)	All	4.95	4.96	-0.02 (-0.05,0.02)	0.318
		Officer	4.89	4.92	-0.03 (-0.09,0.02)	0.234
		Enlisted Flyer	4.92	4.97	-0.04 (-0.12,0.04)	0.333
		Enlisted Groundcrew	5.01	5.00	0.01 (-0.04,0.06)	0.753
15-5	WBC Count (thousand/mm ³) ^a	All	6.67	6.65	0.02 --	0.789
		Officer	6.33	6.33	0.00 --	0.970
		Enlisted Flyer	6.72	6.86	-0.14 --	0.474
		Enlisted Groundcrew	6.97	6.86	0.11 --	0.358
15-7	Hemoglobin (gm/dl)	All	15.32	15.33	0.00 (-0.09,0.09)	0.979
		Officer	15.23	15.29	-0.06 (-0.20,0.08)	0.389
		Enlisted Flyer	15.29	15.38	-0.08 (-0.30,0.13)	0.445
		Enlisted Groundcrew	15.42	15.34	0.09 (-0.05,0.22)	0.206
15-9	Hematocrit (percent)	All	45.56	45.59	-0.04 (-0.31,0.24)	0.798
		Officer	45.24	45.48	-0.24 (-0.67,0.19)	0.274
		Enlisted Flyer	45.49	45.72	-0.23 (-0.90,0.44)	0.504
		Enlisted Groundcrew	45.88	45.65	0.22 (-0.18,0.63)	0.279
15-11	Platelet Count (thousand/mm ³) ^c	All	207.0	203.9	3.1 --	0.150
		Officer	196.6	205.1	-8.5 --	0.012
		Enlisted Flyer	213.8	198.8	14.9 --	0.005
		Enlisted Groundcrew	213.9	204.6	9.3 --	0.004

**Table G-1. Summary of Unadjusted Results for Continuous Variables – Model 1
(Ranch Hands vs. Comparisons) (Continued)**

Table Ref.	Clinical Parameter (Units)	Occupational Category	Means		Difference of Means (95% C.I.)	p-Value
			RH	C		
15-13	Prothrombin Time (seconds) ^a	All	10.48	10.49	-0.01 --	0.870
		Officer	10.54	10.52	0.02 --	0.720
		Enlisted Flyer	10.46	10.49	-0.03 --	0.748
		Enlisted Groundcrew	10.45	10.47	-0.02 --	0.714
15-16	Absolute Neutrophils (segs) (thousand/mm ³) ^a	All	3.84	3.81	0.03 --	0.612
		Officer	3.59	3.61	-0.02 --	0.804
		Enlisted Flyer	3.92	3.95	-0.02 --	0.885
		Enlisted Groundcrew	4.06	3.95	-0.01 --	0.263
15-17	Absolute Neutrophils (bands) (Nonzero Measurements) (thousand/mm ³) ^a	All	0.201	0.189	0.012 --	0.123
		Officer	0.194	0.180	0.014 --	0.250
		Enlisted Flyer	0.190	0.204	-0.014 --	0.478
		Enlisted Groundcrew	0.213	0.193	0.021 --	0.089
15-19	Absolute Lymphocytes (thousand/mm ³) ^a	All	1.76	1.75	0.00 --	0.920
		Officer	1.70	1.67	0.04 --	0.392
		Enlisted Flyer	1.71	1.79	-0.08 --	0.248
		Enlisted Groundcrew	1.83	1.82	0.01 --	0.891
15-20	Absolute Monocytes (thousands/mm ³) ^c	All	0.477	0.481	-0.004 --	0.648
		Officer	0.463	0.471	-0.008 --	0.594
		Enlisted Flyer	0.470	0.507	-0.037 --	0.118
		Enlisted Groundcrew	0.492	0.482	0.011 --	0.455
15-21	Absolute Eosinophils (Nonzero Measurements) (thousand/mm ³) ^a	All	0.159	0.161	-0.002 --	0.684
		Officer	0.160	0.153	0.007 --	0.422
		Enlisted Flyer	0.162	0.164	-0.002 --	0.895
		Enlisted Groundcrew	0.157	0.167	-0.011 --	0.183
15-23	Absolute Basophils (Nonzero Measurements) (thousand/mm ³) ^a	All	0.078	0.080	-0.002 --	0.315
		Officer	0.076	0.077	-0.001 --	0.838
		Enlisted Flyer	0.079	0.082	-0.003 --	0.577
		Enlisted Groundcrew	0.079	0.082	-0.003 --	0.322
16-6	Time to Diabetes Onset (years)	All	--	--	--	0.603
		Officer	--	--	--	0.916
		Enlisted Flyer	--	--	--	0.740
		Enlisted Groundcrew	--	--	--	0.715
16-9	TSH (μIU/ml) ^a	All	1.88	1.81	-0.08 --	0.130
		Officer	2.01	1.89	0.12 --	0.170
		Enlisted Flyer	1.72	1.82	-0.10 --	0.428
		Enlisted Groundcrew	1.84	1.73	0.11 --	0.139
16-11	Thyroxine (μg/dl) ^c	All	7.07	7.04	0.03 --	0.601
		Officer	6.76	6.84	-0.08 --	0.373
		Enlisted Flyer	7.28	7.24	0.03 --	0.818
		Enlisted Groundcrew	7.27	7.15	0.12 --	0.154
16-14	Fasting Glucose (mg/dl) ^a	All	101.4	101.8	-0.3 --	0.745
		Officer	101.0	100.0	1.1 --	0.468
		Enlisted Flyer	103.2	104.9	-1.7 --	0.507
		Enlisted Groundcrew	101.0	102.3	-1.3 --	0.388

**Table G-1. Summary of Unadjusted Results for Continuous Variables – Model 1
(Ranch Hands vs. Comparisons) (Continued)**

Table Ref.	Clinical Parameter (Units)	Occupational Category	Means		Difference of Means (95% C.I.)	p-Value
			RH	C		
16-16	2-Hour Postprandial Glucose (mg/dl) ^a	All	105.2	104.9	0.3 --	0.818
		Officer	106.1	101.8	4.3 --	0.053
		Enlisted Flyer	107.8	111.3	-3.5 --	0.342
		Enlisted Groundcrew	103.4	105.8	-2.3 --	0.274
16-20	Serum Insulin (μ IU/ml) ^a	All	47.95	47.92	0.03 --	0.990
		Officer	45.60	42.40	3.20 --	0.283
		Enlisted Flyer	49.81	54.92	-5.11 --	0.369
		Enlisted Groundcrew	49.49	51.33	-1.84 --	0.574
16-22	α -1-C Hemoglobin (percent) ^a	All	6.48	6.49	-0.01 --	0.919
		Officer	6.37	6.31	0.07 --	0.387
		Enlisted Flyer	6.53	6.67	-0.14 --	0.280
		Enlisted Groundcrew	6.57	6.59	-0.03 --	0.714
16-24	Total Testosterone (ng/dl) ^c	All	423.1	422.6	0.5 --	0.945
		Officer	406.9	413.4	-6.4 --	0.606
		Enlisted Flyer	439.6	428.4	11.2 --	0.577
		Enlisted Groundcrew	431.2	428.7	2.5 --	0.835
16-26	Free Testosterone (pg/ml) ^c	All	13.96	13.92	0.04 --	0.852
		Officer	12.91	13.26	-0.36 --	0.269
		Enlisted Flyer	14.03	13.95	0.08 --	0.878
		Enlisted Groundcrew	14.89	14.49	0.40 --	0.209
16-28	Estradiol (pg/ml) ^c	All	40.06	40.63	-0.57 --	0.434
		Officer	38.38	41.81	-3.43 --	0.003
		Enlisted Flyer	42.87	40.70	2.17 --	0.238
		Enlisted Groundcrew	40.49	39.60	0.89 --	0.418
16-30	LH (mIU/ml) ^a	All	3.86	3.86	0.00 --	0.979
		Officer	4.09	3.82	0.27 --	0.131
		Enlisted Flyer	3.67	4.02	-0.34 --	0.194
		Enlisted Groundcrew	3.74	3.85	-0.11 --	0.491
16-32	FSH (mIU/ml) ^a	All	6.05	5.98	0.07 --	0.666
		Officer	6.62	6.11	0.51 --	0.071
		Enlisted Flyer	6.02	5.99	0.03 --	0.941
		Enlisted Groundcrew	5.59	5.86	-0.27 --	0.257
17-4	CD3+ Cells (T Cells) (cells/mm ³) ^a	All	1,231.0	1,257.7	-26.7 --	0.431
		Officer	1,230.0	1,190.2	39.8 --	0.449
		Enlisted Flyer	1,197.2	1,286.8	-89.6 --	0.270
		Enlisted Groundcrew	1,247.1	1,301.3	-54.2 --	0.308
17-5	CD4+ Cells (Helper T Cells) (cells/mm ³) ^a	All	842.0	857.0	-15.0 --	0.511
		Officer	838.0	824.7	13.3 --	0.708
		Enlisted Flyer	808.4	870.2	-61.8 --	0.254
		Enlisted Groundcrew	861.4	877.9	-16.5 --	0.646
17-6	CD8+ Cells (Suppressor T Cells) (cells/mm ³) ^a	All	564.5	587.1	-22.6 --	0.254
		Officer	558.7	551.7	7.0 --	0.818
		Enlisted Flyer	563.9	625.6	-61.7 --	0.207
		Enlisted Groundcrew	571.0	601.7	-30.7 --	0.319

**Table G-1. Summary of Unadjusted Results for Continuous Variables – Model 1
(Ranch Hands vs. Comparisons) (Continued)**

Table Ref.	Clinical Parameter (Units)	Occupational Category	Means		Difference of Means (95% C.I.)	p-Value
			RH	C		
17-7	CD16+56+ Cells (Natural Killer Cells) (cells/mm ³) ^a	All	259.3	275.9	-16.6 --	0.082
		Officer	266.2	276.1	-9.9 --	0.521
		Enlisted Flyer	236.7	290.2	-53.5 --	0.018
		Enlisted Groundcrew	262.4	270.6	-8.2 --	0.572
17-8	CD20+ Cells (B Cells) (cells/mm ³) ^a	All	184.0	185.5	-1.5 --	0.858
		Officer	175.3	167.1	8.1 --	0.496
		Enlisted Flyer	170.2	185.2	-15.0 --	0.420
		Enlisted Groundcrew	200.4	201.1	-0.7 --	0.961
17-9	CD3+CD4+ Cells (Helper T Cells) (cells/mm ³) ^a	All	767.4	780.9	-13.4 --	0.541
		Officer	763.1	749.6	13.5 --	0.693
		Enlisted Flyer	737.4	791.9	-54.5 --	0.296
		Enlisted Groundcrew	785.6	801.8	-16.1 --	0.641
17-10	Absolute Lymphocytes (cells/mm ³) ^a	All	1,781.2	1,777.9	3.2 --	0.909
		Officer	1,730.0	1,685.2	44.8 --	0.292
		Enlisted Flyer	1,753.3	1,817.2	-63.8 --	0.360
		Enlisted Groundcrew	1,840.2	1,849.6	-9.5 --	0.828
17-11	IgA (mg/dl) ^a	All	232.4	233.3	-0.9 --	0.860
		Officer	224.8	225.2	-0.4 --	0.958
		Enlisted Flyer	238.1	236.6	1.4 --	0.912
		Enlisted Groundcrew	237.3	239.5	-2.2 --	0.779
17-12	IgG (mg/dl) ^a	All	1,035.5	1,047.3	-11.8 --	0.273
		Officer	1,022.2	1,029.8	-7.7 --	0.649
		Enlisted Flyer	1,021.8	1,048.9	-27.2 --	0.307
		Enlisted Groundcrew	1,053.3	1,062.2	-8.9 --	0.587
17-13	IgM (mg/dl) ^a	All	96.3	98.4	-2.1 --	0.373
		Officer	95.2	95.9	-0.6 --	0.862
		Enlisted Flyer	94.6	104.4	-9.7 --	0.102
		Enlisted Groundcrew	98.0	98.7	-0.8 --	0.831
18-8	FVC (percent of predicted)	All	99.31	98.93	0.38 (-0.91,1.68)	0.564
		Officer	100.48	100.14	0.33 (-1.73,2.39)	0.753
		Enlisted Flyer	99.64	98.88	0.75 (-2.45,3.96)	0.645
		Enlisted Groundcrew	98.14	97.90	0.24 (-1.71,2.18)	0.811
18-9	FEV ₁ (percent of predicted)	All	94.13	94.28	-0.15 (-1.66,1.37)	0.849
		Officer	95.47	95.65	-0.18 (-2.58,2.23)	0.886
		Enlisted Flyer	91.09	92.30	-1.21 (-4.95,2.54)	0.527
		Enlisted Groundcrew	94.14	93.74	0.40 (-1.87,2.67)	0.729
18-10	Ratio of Observed FEV ₁ to Observed FVC ^d	All	0.760	0.763	-0.003 --	0.366
		Officer	0.756	0.761	-0.005 --	0.376
		Enlisted Flyer	0.741	0.748	-0.007 --	0.431
		Enlisted Groundcrew	0.772	0.771	0.001 --	0.843

^a Means transformed from natural logarithm scale; difference of means after transformation to original scale; confidence interval not given because analysis was performed on natural logarithm scale; p-value based on difference of means on natural logarithm scale.

**Table G-1. Summary of Unadjusted Results for Continuous Variables – Model 1
(Ranch Hands vs. Comparisons) (Continued)**

^b Means transformed from natural logarithm (clinical parameter + 0.1) scale; difference of means after transformation to original scale; confidence interval not given because analysis was performed on natural logarithm (clinical parameter + 0.1) scale; p-value based on difference of means on natural logarithm (clinical parameter + 0.1) scale.

^c Means transformed from square root scale; difference of means after transformation to original scale; confidence interval not given because analysis was performed on square root scale; p-value based on difference of means on square root scale.

^d Means transformed from natural logarithm (1 – clinical parameter) scale; difference of means after transformation to original scale; confidence interval not given because analysis was performed on natural logarithm (1 – clinical parameter) scale; p-value based on difference of means on natural logarithm (1 – clinical parameter) scale.

Note: RH = Ranch Hand; C = Comparison.

Table G-2. Summary of Unadjusted Results for Continuous Variables – Model 2 (Ranch Hands: Log₂ (Initial Dioxin))

Table Ref.	Clinical Parameter (Units)	R ²	Slope (Standard Error) ^a	p-Value
9-6	Body Fat (percent) ^b	0.006	0.015 (0.009)	0.081
9-8	Erythrocyte Sedimentation Rate (mm/hr) ^c	0.009	0.029 (0.034)	0.387
10-35	PSA (ng/ml) ^b	0.037	-0.071 (0.027)	0.010
13-11	AST (U/l) ^b	0.011	0.003 (0.012)	0.813
13-13	ALT (U/l) ^b	0.036	0.013 (0.010)	0.199
13-15	GGT (U/l) ^b	0.013	0.004 (0.019)	0.823
13-17	Alkaline Phosphatase (U/l) ^b	0.009	-0.004 (0.009)	0.646
13-19	Total Bilirubin (mg/dl) ^b	0.013	-0.014 (0.016)	0.368
13-22	Lactic Dehydrogenase (U/l) ^b	0.009	-0.001 (0.006)	0.908
13-24	Cholesterol (mg/dl) ^d	0.017	0.129 (0.046)	0.005
13-26	HDL Cholesterol (mg/dl) ^b	0.053	-0.009 (0.009)	0.312
13-28	Cholesterol-HDL Ratio ^b	0.055	0.028 (0.009)	0.003
13-30	Triglycerides (mg/dl) ^b	0.025	0.033 (0.023)	0.140
13-32	Creatine Phosphokinase (U/l) ^b	0.013	0.005 (0.021)	0.800
13-34	Serum Amylase (U/l) ^b	0.052	-0.024 (0.013)	0.070
13-41	Prealbumin (mg/dl)	0.030	-0.041 (0.178)	0.818
13-43	Albumin (mg/dl)	0.023	13.830 (10.970)	0.208
13-45	α-1-Acid Glycoprotein (mg/dl) ^b	<0.001	0.000 (0.008)	0.992
13-47	α-1-Antitrypsin (mg/dl) ^d	0.013	0.066 (0.036)	0.071
13-49	α-2-Macroglobulin (mg/dl) ^b	<0.001	-0.004 (0.009)	0.698
13-51	Apolipoprotein B (mg/dl) ^d	0.014	0.107 (0.041)	0.009
13-53	C3 Complement (mg/dl) ^b	0.071	0.012 (0.005)	0.023
13-55	C4 Complement (mg/dl) ^b	0.002	-0.003 (0.007)	0.701
13-57	Haptoglobin (mg/dl) ^d	0.002	0.084 (0.097)	0.387
13-59	Transferrin (mg/dl) ^b	0.001	0.003 (0.005)	0.594
14-7	Systolic Blood Pressure (mm Hg) ^b	0.049	-0.006 (0.005)	0.238
14-9	Diastolic Blood Pressure (mm Hg) ^d	0.023	0.025 (0.019)	0.190
15-3	RBC Count (million/mm ³) ^b	0.019	0.023 (0.014)	0.102
15-5	WBC Count (thousand/mm ³) ^b	0.022	0.019 (0.009)	0.035
15-7	Hemoglobin (gm/dl)	0.011	0.078 (0.034)	0.023
15-9	Hematocrit (percent)	0.011	0.241 (0.104)	0.021
15-11	Platelet Count (thousand/mm ³) ^d	0.016	0.145 (0.057)	0.012
15-13	Prothrombin Time (seconds) ^b	0.004	-0.001 (0.003)	0.572
15-16	Absolute Neutrophils (segs) (thousand/mm ³) ^b	0.015	0.019 (0.012)	0.115
15-17	Absolute Neutrophils (Nonzero Measurements) (bands) (thousand/mm ³) ^b	0.004	-0.031 (0.032)	0.343
15-19	Absolute Lymphocytes (thousand/mm ³) ^b	0.021	0.023 (0.012)	0.063
15-20	Absolute Monocytes (thousand/mm ³) ^d	0.003	0.003 (0.006)	0.568
15-21	Absolute Eosinophils (Nonzero Measurements) (thousand/mm ³) ^b	0.001	0.005 (0.025)	0.836
15-23	Absolute Basophils (Nonzero Measurements) (thousand/mm ³) ^b	0.013	0.009 (0.022)	0.685
16-6	Time to Diabetes Onset (years) ^c	--	-0.021 (0.023)	0.356
16-9	TSH (μIU/ml) ^b	0.002	-0.015 (0.021)	0.475
16-11	Thyroxine (μg/dl) ^d	0.012	0.010 (0.008)	0.250
16-14	Fasting Glucose (mg/dl) ^b	0.102	0.011 (0.008)	0.174

**Table G-2. Summary of Unadjusted Results for Continuous Variables – Model 2
(Ranch Hands: Log₂ (Initial Dioxin)) (Continued)**

Table Ref.	Clinical Parameter (Units)	R ²	Slope (Standard Error) ^a	p-Value
16-16	2-Hour Postprandial Glucose (mg/dl) ^b	0.076	-0.010 (0.011)	0.363
16-20	Serum Insulin (μIU/ml) ^b	0.092	0.020 (0.036)	0.571
16-22	α-1-C Hemoglobin (percent) ^b	0.107	0.017 (0.006)	0.009
16-24	Total Testosterone (ng/dl) ^d	0.118	0.287 (0.144)	0.047
16-26	Free Testosterone (pg/ml) ^d	0.084	0.066 (0.022)	0.003
16-28	Estradiol (pg/ml) ^d	0.007	0.084 (0.049)	0.087
16-30	LH (mIU/ml) ^b	0.001	-0.016 (0.023)	0.496
16-32	FSH (mIU/ml) ^b	0.008	-0.035 (0.021)	0.099
17-4	CD3+ Cells (T Cells) (cells/mm ³) ^b	0.013	0.023 (0.023)	0.317
17-5	CD4+ Cells (Helper T Cells) (cells/mm ³) ^b	0.018	0.027 (0.023)	0.254
17-6	CD8+ Cells (Suppressor T Cells) (cells/mm ³) ^b	0.001	0.012 (0.029)	0.688
17-7	CD16+56+ Cells (Natural Killer Cells) (cells/mm ³) ^b	0.038	-0.029 (0.032)	0.370
17-8	CD20+ Cells (B Cells) (cells/mm ³) ^b	0.052	0.081 (0.035)	0.024
17-9	CD3+CD4+ Cells (Helper T Cells) (cells/mm ³) ^b	0.018	0.030 (0.024)	0.226
17-10	Absolute Lymphocytes (cells/mm ³) ^b	0.019	0.019 (0.012)	0.121
17-11	IgA (mg/dl) ^b	0.007	0.021 (0.017)	0.224
17-12	IgG (mg/dl) ^b	0.002	-0.001 (0.009)	0.922
17-13	IgM (mg/dl) ^b	0.005	0.007 (0.019)	0.711
18-8	FVC (percent of predicted)	0.018	0.332 (0.491)	0.499
18-9	FEV ₁ (percent of predicted)	0.006	0.870 (0.581)	0.135
18-10	Observed FEV ₁ to Observed FVC ^f	0.053	-0.026 (0.011)	0.023

^a Adjusted for percent body fat at the time of the blood measurement for dioxin.

^b Slope and standard error based on natural logarithm of clinical parameter versus log₂ (initial dioxin).

^c Slope and standard error based on natural logarithm of (clinical parameter + 0.1) versus log₂ (initial dioxin).

^d Slope and standard error based on square root of clinical parameter versus log₂ (initial dioxin).

^e Slope and standard error based on time to diabetes onset versus log₂ (initial dioxin) under a censored Weibull distribution.

^f Slope and standard error based on natural logarithm of (1 – clinical parameter) versus log₂ (initial dioxin).

--: R-squared not presented because analysis was based on a censored Weibull distribution.

Table G-3. Summary of Unadjusted Results for Continuous Variables – Model 3 (Ranch Hands and Comparisons by Dioxin Category)

Table Ref.	Clinical Parameter (Units)	R ²	Dioxin Category	n	Adj. Mean ^a	Difference of Means vs. Comparisons (95% C.I.)	p-Value
9-6	Body Fat (percent) ^b	0.025	Comparison	1,213	22.26		
			Background RH	381	20.64	-1.62 --	<0.001
			Low RH	239	23.04	0.78 --	0.045
			High RH	243	23.57	1.31 --	0.001
			Low plus High RH	482	23.30	1.04 --	0.001
9-8	Erythrocyte Sedimentation Rate (mm/hr) ^c	0.022	Comparison	1,213	4.74		
			Background RH	381	4.48	-0.26 --	0.323
			Low RH	239	5.06	0.32 --	0.350
			High RH	243	5.12	0.38 --	0.259
			Low plus High RH	482	5.09	0.35 --	0.176
10-35	PSA (ng/ml) ^b	0.009	Comparison	1,152	1.127		
			Background RH	365	1.099	-0.028 --	0.587
			Low RH	222	1.205	0.078 --	0.227
			High RH	236	1.023	-0.104 --	0.079
			Low plus High RH	458	1.108	-0.019 --	0.692
13-11	AST (U/l) ^b	0.011	Comparison	1,194	22.84		
			Background RH	376	22.54	-0.30 --	0.501
			Low RH	236	23.39	0.55 --	0.306
			High RH	240	23.36	0.52 --	0.334
			Low plus High RH	476	23.37	0.53 --	0.193
13-13	ALT (U/l) ^b	0.039	Comparison	1,194	42.37		
			Background RH	376	41.32	-1.05 --	0.129
			Low RH	236	43.14	0.77 --	0.368
			High RH	240	44.27	1.90 --	0.027
			Low plus High RH	476	43.71	1.34 --	0.041

Table G-3. Summary of Unadjusted Results for Continuous Variables – Model 3 (Ranch Hands and Comparisons by Dioxin Category) (Continued)

Table Ref.	Clinical Parameter (Units)	R ²	Dioxin Category	n	Adj. Mean ^a	Difference of Means vs. Comparisons (95% C.I.)	p-Value
13-15	GGT (U/l) ^b	0.026	Comparison	1,194	42.21		
			Background RH	376	40.81	-1.40 --	0.296
			Low RH	236	43.99	1.78 --	0.283
			High RH	240	47.38	5.17 --	0.003
			Low plus High RH	476	45.67	3.46 --	0.007
13-17	Alkaline Phosphatase (U/l) ^b	0.003	Comparison	1,194	79.57		
			Background RH	376	81.50	1.93 --	0.130
			Low RH	236	82.34	2.78 --	0.070
			High RH	240	81.36	1.79 --	0.238
			Low plus High RH	476	81.85	2.28 --	0.051
13-19	Total Bilirubin (mg/dl) ^b	0.002	Comparison	1,194	0.520		
			Background RH	376	0.526	0.006 --	0.673
			Low RH	236	0.516	-0.004 --	0.828
			High RH	240	0.506	-0.014 --	0.418
			Low plus High RH	476	0.511	-0.009 --	0.500
13-22	Lactic Dehydrogenase (U/l) ^b	0.027	Comparison	1,192	153.7		
			Background RH	376	154.3	0.6 --	0.693
			Low RH	236	153.6	-0.1 --	0.941
			High RH	240	154.1	0.4 --	0.816
			Low plus High RH	476	153.8	0.1 --	0.916
13-24	Cholesterol (mg/dl) ^d	0.006	Comparison	1,194	211.7		
			Background RH	376	208.8	-2.9 --	0.183
			Low RH	236	209.3	-2.4 --	0.351
			High RH	240	217.4	5.7 --	0.032
			Low plus High RH	476	213.4	1.7 --	0.422
13-26	HDL Cholesterol (mg/dl) ^b	0.059	Comparison	1,193	44.79		
			Background RH	376	45.54	0.75 --	0.269
			Low RH	235	45.23	0.44 --	0.585
			High RH	240	43.58	-1.21 --	0.130
			Low plus High RH	475	44.39	-0.40 --	0.519

Table G-3. Summary of Unadjusted Results for Continuous Variables – Model 3 (Ranch Hands and Comparisons by Dioxin Category) (Continued)

Table Ref.	Clinical Parameter (Units)	R ²	Dioxin Category	n	Adj. Mean ^a	Difference of Means vs. Comparisons (95% C.I.)	p-Value
13-28	Cholesterol-HDL Ratio ^b	0.046	Comparison	1,193	4.69		
			Background RH	376	4.55	-0.14 --	0.068
			Low RH	235	4.58	-0.11 --	0.220
			High RH	240	4.95	0.26 --	0.005
			Low plus High RH	475	4.76	0.07 --	0.282
13-30	Triglycerides (mg/dl) ^b	0.057	Comparison	1,194	120.3		
			Background RH	375	114.5	-5.8 --	0.172
			Low RH	236	119.7	-0.6 --	0.897
			High RH	240	140.4	20.1 --	<0.001
			Low plus High RH	476	129.7	9.4 --	0.023
13-32	Creatine Phosphokinase (U/l) ^b	0.026	Comparison	1,194	105.4		
			Background RH	376	105.6	0.2 --	0.961
			Low RH	236	108.2	2.8 --	0.547
			High RH	240	106.3	0.9 --	0.843
			Low plus High RH	476	107.2	1.8 --	0.602
13-34	Serum Amylase (U/l) ^b	0.039	Comparison	1,194	56.88		
			Background RH	376	55.87	-1.01 --	0.419
			Low RH	236	60.54	3.66 --	0.019
			High RH	240	54.89	-1.99 --	0.178
			Low plus High RH	476	57.63	0.75 --	0.523
13-41	Prealbumin (mg/dl)	0.017	Comparison	1,194	29.62		
			Background RH	376	29.53	-0.09 (-0.67,0.49)	0.760
			Low RH	236	29.47	-0.15 (-0.85,0.54)	0.665
			High RH	240	29.65	0.03 (-0.66,0.73)	0.927
			Low plus High RH	476	29.56	-0.06 (-0.59,0.47)	0.825
13-43	Albumin (mg/dl)	0.017	Comparison	1,194	4,199.7		
			Background RH	376	4,200.6	0.9 (-37.7,39.6)	0.962
			Low RH	236	4,155.3	-44.5 (-90.8,1.8)	0.060
			High RH	240	4,228.9	29.2 (-16.9,75.3)	0.215
			Low plus High RH	476	4,192.4	-7.3 (-42.6,28.0)	0.685

Table G-3. Summary of Unadjusted Results for Continuous Variables – Model 3 (Ranch Hands and Comparisons by Dioxin Category) (Continued)

Table Ref.	Clinical Parameter (Units)	R ²	Dioxin Category	n	Adj. Mean ^a	Difference of Means vs. Comparisons (95% C.I.)	p-Value
13-45	α -1-Acid Glycoprotein (mg/dl) ^b	0.003	Comparison	1,194	84.29		
			Background RH	376	83.02	-1.27 --	0.256
			Low RH	236	84.82	0.53 --	0.692
			High RH	240	87.02	2.73 --	0.045
			Low plus High RH	476	85.92	1.63 --	0.114
13-47	α -1-Antitrypsin (mg/dl) ^d	0.008	Comparison	1,194	146.8		
			Background RH	376	147.9	1.1 --	0.470
			Low RH	236	148.9	2.1 --	0.244
			High RH	240	154.0	7.2 --	<0.001
			Low plus High RH	476	151.4	4.6 --	0.001
13-49	α -2-Macroglobulin (mg/dl) ^b	0.001	Comparison	1,194	171.2		
			Background RH	376	170.2	-1.0 --	0.706
			Low RH	236	170.2	-1.0 --	0.747
			High RH	240	170.2	-1.0 --	0.741
			Low plus High RH	476	170.2	-1.0 --	0.669
13-51	Apolipoprotein B (mg/dl) ^d	0.005	Comparison	1,194	111.5		
			Background RH	376	108.8	-2.7 --	0.057
			Low RH	236	108.9	-2.6 --	0.131
			High RH	240	114.6	3.1 --	0.073
			Low plus High RH	476	111.8	0.3 --	0.843
13-53	C3 Complement (mg/dl) ^b	0.096	Comparison	1,194	118.5		
			Background RH	376	116.7	-1.8 --	0.107
			Low RH	236	119.5	1.0 --	0.399
			High RH	240	122.3	3.8 --	0.003
			Low plus High RH	476	120.9	2.4 --	0.013
13-55	C4 Complement (mg/dl) ^b	0.012	Comparison	1,194	25.90		
			Background RH	376	25.41	-0.49 --	0.109
			Low RH	236	26.03	0.13 --	0.733
			High RH	240	25.91	0.01 --	0.986
			Low plus High RH	476	25.97	0.07 --	0.816

Table G-3. Summary of Unadjusted Results for Continuous Variables – Model 3 (Ranch Hands and Comparisons by Dioxin Category) (Continued)

Table Ref.	Clinical Parameter (Units)	R ²	Dioxin Category	n	Adj. Mean ^a	Difference of Means vs. Comparisons (95% C.I.)	p-Value
13-57	Haptoglobin (mg/dl) ^d	0.006	Comparison	1,194	126.7		
			Background RH	376	131.4	4.7 --	0.210
			Low RH	236	134.5	7.8 --	0.078
			High RH	240	141.7	15.0 --	0.001
			Low plus High RH	476	138.1	11.4 --	0.001
13-59	Transferrin (mg/dl) ^b	0.004	Comparison	1,194	249.5		
			Background RH	376	250.9	1.4 --	0.480
			Low RH	236	251.9	2.4 --	0.328
			High RH	240	255.9	6.4 --	0.010
			Low plus High RH	476	253.9	4.4 --	0.019
14-7	Systolic Blood Pressure (mm Hg) ^b	0.040	Comparison	1,195	125.5		
			Background RH	376	125.4	-0.1 --	0.935
			Low RH	233	125.9	0.4 --	0.730
			High RH	243	123.4	-2.1 --	0.079
			Low plus High RH	476	124.6	-0.9 --	0.346
14-9	Diastolic Blood Pressure (mm Hg) ^d	0.014	Comparison	1,195	74.57		
			Background RH	376	74.14	-0.43 --	0.432
			Low RH	233	74.19	-0.38 --	0.569
			High RH	243	75.65	1.08 --	0.099
			Low plus High RH	476	74.93	0.36 --	0.468
15-3	RBC Count (million/mm ³)	0.011	Comparison	1,211	4.96		
			Background RH	381	4.95	-0.01 (-0.06,0.03)	0.540
			Low RH	239	4.92	-0.05 (-0.01,0.01)	0.094
			High RH	239	4.98	0.02 (-0.04,0.07)	0.506
			Low plus High RH	478	4.95	-0.01 (-0.05,0.03)	0.510
15-5	WBC Count (thousand/mm ³) ^b	0.010	Comparison	1,211	6.64		
			Background RH	381	6.57	-0.07 --	0.493
			Low RH	239	6.56	-0.08 --	0.491
			High RH	239	6.92	0.28 --	0.029
			Low plus High RH	478	6.73	0.09 --	0.324

Table G-3. Summary of Unadjusted Results for Continuous Variables – Model 3 (Ranch Hands and Comparisons by Dioxin Category) (Continued)

Table Ref.	Clinical Parameter (Units)	R ²	Dioxin Category	n	Adj. Mean ^a	Difference of Means vs. Comparisons (95% C.I.)	p-Value
15-7	Hemoglobin (gm/dl)	0.002	Comparison	1,211	15.33		
			Background RH	381	15.30	-0.03 (-0.14,0.09)	0.641
			Low RH	239	15.26	-0.07 (-0.21,0.07)	0.319
			High RH	239	15.46	0.12 (-0.01,0.26)	0.080
			Low plus High RH	478	15.36	0.03 (-0.08,0.13)	0.617
15-9	Hematocrit (percent)	0.003	Comparison	1,211	45.61		
			Background RH	381	45.56	-0.06 (-0.41,0.30)	0.756
			Low RH	239	45.30	-0.31 (-0.74,0.12)	0.153
			High RH	239	45.93	0.32 (-0.11,0.75)	0.147
			Low plus High RH	478	45.61	0.00 (-0.32,0.33)	0.987
15-11	Platelet Count (thousand/mm ³) ^d	0.016	Comparison	1,205	204.6		
			Background RH	379	202.1	-2.5 --	0.374
			Low RH	238	204.6	-0.1 --	0.987
			High RH	238	217.2	12.6 --	<0.001
			Low plus High RH	476	210.8	6.2 --	0.017
15-13	Prothrombin Time (seconds) ^b	0.002	Comparison	987	10.49		
			Background RH	309	10.53	0.04 --	0.476
			Low RH	182	10.46	-0.03 --	0.667
			High RH	193	10.44	-0.05 --	0.411
			Low plus High RH	375	10.45	-0.04 --	0.409
15-16	Absolute Neutrophils (segs) (thousand/mm ³) ^b	0.007	Comparison	1,211	3.81		
			Background RH	381	3.75	-0.06 --	0.430
			Low RH	239	3.80	-0.01 --	0.906
			High RH	239	4.03	0.22 --	0.028
			Low plus High RH	478	3.91	0.10 --	0.172
15-17	Absolute Neutrophils (bands) (Nonzero Measurements) (thousand/mm ³) ^b	0.005	Comparison	1,002	0.189		
			Background RH	316	0.191	0.002 --	0.783
			Low RH	196	0.211	0.022 --	0.079
			High RH	201	0.209	0.020 --	0.113
			Low plus High RH	397	0.210	0.021 --	0.029

Table G-3. Summary of Unadjusted Results for Continuous Variables – Model 3 (Ranch Hands and Comparisons by Dioxin Category) (Continued)

Table Ref.	Clinical Parameter (Units)	R ²	Dioxin Category	n	Adj. Mean ^a	Difference of Means vs. Comparisons (95% C.I.)	p-Value
15-19	Absolute Lymphocytes (thousand/mm ³) ^b	0.005	Comparison	1,211	1.75		
			Background RH	381	1.77	0.02 --	0.671
			Low RH	239	1.71	-0.04 --	0.383
			High RH	239	1.78	0.03 --	0.575
			Low plus High RH	478	1.74	-0.01 --	0.839
15-20	Absolute Monocytes (thousand/mm ³) ^d	0.011	Comparison	1,211	0.480		
			Background RH	381	0.464	-0.016 --	0.221
			Low RH	239	0.469	-0.011 --	0.480
			High RH	239	0.502	0.022 --	0.136
			Low plus High RH	478	0.486	0.006 --	0.606
15-21	Absolute Eosinophils (Nonzero Measurements) (thousand/mm ³) ^b	0.001	Comparison	1,064	0.161		
			Background RH	337	0.163	0.002 --	0.805
			Low RH	206	0.155	-0.006 --	0.513
			High RH	211	0.154	-0.007 --	0.434
			Low plus High RH	417	0.155	-0.006 --	0.346
15-23	Absolute Basophils (Nonzero Measurements) (thousand/mm ³) ^b	0.003	Comparison	562	0.080		
			Background RH	168	0.078	-0.002 --	0.410
			Low RH	92	0.076	-0.004 --	0.222
			High RH	109	0.080	0.000 --	0.930
			Low plus High RH	201	0.078	-0.002 --	0.482
16-6	Time to Diabetes Onset (years)	--	Comparison	1,195	--		
			Background RH	379	--	--	0.013
			Low RH	235	--	--	0.254
			High RH	240	--	--	0.233
			Low plus High RH	475	--	--	0.134
16-9	TSH (μIU/ml) ^b	0.002	Comparison	1,161	1.80		
			Background RH	367	1.91	0.11 --	0.129
			Low RH	233	1.89	0.09 --	0.273
			High RH	234	1.81	0.01 --	0.942
			Low plus High RH	467	1.85	0.05 --	0.446

Table G-3. Summary of Unadjusted Results for Continuous Variables – Model 3 (Ranch Hands and Comparisons by Dioxin Category) (Continued)

Table Ref.	Clinical Parameter (Units)	R ²	Dioxin Category	n	Adj. Mean ^a	Difference of Means vs. Comparisons (95% C.I.)	p-Value
16-11	Thyroxine (µg/dl) ^d	0.004	Comparison	1,161	7.04		
			Background RH	367	6.95	-0.09 --	0.221
			Low RH	233	7.13	0.09 --	0.344
			High RH	234	7.23	0.19 --	0.053
			Low plus High RH	467	7.18	0.14 --	0.059
16-14	Fasting Glucose (mg/dl) ^b	0.089	Comparison	1,212	101.6		
			Background RH	381	100.3	-1.3 --	0.298
			Low RH	238	100.8	-0.8 --	0.618
			High RH	242	103.9	2.3 --	0.121
			Low plus High RH	480	102.4	0.8 --	0.485
16-16	2-Hour Postprandial Glucose (mg/dl) ^b	0.066	Comparison	996	104.7		
			Background RH	342	105.3	0.6 --	0.718
			Low RH	186	107.1	2.4 --	0.296
			High RH	183	104.5	-0.2 --	0.942
			Low plus High RH	369	105.8	1.1 --	0.521
16-20	Serum Insulin (µIU/ml) ^b	0.122	Comparison	996	47.35		
			Background RH	342	45.29	-2.06 --	0.393
			Low RH	186	51.97	4.62 --	0.157
			High RH	183	52.74	5.36 --	0.105
			Low plus High RH	369	52.35	5.00 --	0.046
16-22	α-1-C Hemoglobin (percent) ^b	0.087	Comparison	1,212	6.48		
			Background RH	381	6.38	-0.10 --	0.116
			Low RH	238	6.44	-0.04 --	0.588
			High RH	242	6.70	0.22 --	0.005
			Low plus High RH	480	6.57	0.09 --	0.138
16-24	Total Testosterone (ng/dl) ^d	0.121	Comparison	1,189	423.0		
			Background RH	372	429.8	6.8 --	0.499
			Low RH	234	404.6	-18.4 --	0.118
			High RH	238	429.4	6.4 --	0.592
			Low plus High RH	472	417.0	-6.0 --	0.508

Table G-3. Summary of Unadjusted Results for Continuous Variables – Model 3 (Ranch Hands and Comparisons by Dioxin Category) (Continued)

Table Ref.	Clinical Parameter (Units)	R ²	Dioxin Category	n	Adj. Mean ^a	Difference of Means vs. Comparisons (95% C.I.)	p-Value
16-26	Free Testosterone (pg/ml) ^d	0.085	Comparison	1,189	13.95		
			Background RH	372	13.85	-0.10 --	0.703
			Low RH	234	13.23	-0.72 --	0.022
			High RH	238	14.85	0.90 --	0.006
			Low plus High RH	472	14.03	0.08 --	0.745
16-28	Estradiol (pg/ml) ^d	0.003	Comparison	1,213	40.68		
			Background RH	381	39.71	-0.97 --	0.323
			Low RH	239	39.58	-1.10 --	0.350
			High RH	243	41.43	0.75 --	0.523
			Low plus High RH	482	40.51	-0.17 --	0.852
16-30	LH (mIU/ml) ^b	0.003	Comparison	1,213	3.85		
			Background RH	381	4.01	0.16 --	0.264
			Low RH	239	3.83	-0.02 --	0.900
			High RH	243	3.74	-0.11 --	0.504
			Low plus High RH	482	3.78	-0.07 --	0.601
16-32	FSH (mIU/ml) ^b	0.002	Comparison	1,213	5.97		
			Background RH	381	6.21	0.24 --	0.283
			Low RH	239	6.28	0.31 --	0.258
			High RH	243	5.66	-0.31 --	0.229
			Low plus High RH	482	5.96	-0.01 --	0.955
17-4	CD3+ Cells (T Cells) (cells/mm ³) ^b	0.005	Comparison	440	1,252.1		
			Background RH	142	1,220.8	-31.3 --	0.490
			Low RH	84	1,225.9	-26.2 --	0.636
			High RH	91	1,242.7	-9.4 --	0.862
			Low plus High RH	175	1,234.6	-17.5 --	0.676
17-5	CD4+ Cells (Helper T Cells) (cells/mm ³) ^b	0.006	Comparison	440	854.9		
			Background RH	142	830.4	-24.5 --	0.421
			Low RH	84	835.6	-19.3 --	0.605
			High RH	91	862.2	7.3 --	0.842
			Low plus High RH	175	849.3	-5.6 --	0.844

Table G-3. Summary of Unadjusted Results for Continuous Variables – Model 3 (Ranch Hands and Comparisons by Dioxin Category) (Continued)

Table Ref.	Clinical Parameter (Units)	R ²	Dioxin Category	n	Adj. Mean ^a	Difference of Means vs. Comparisons (95% C.I.)	p-Value
17-6	CD8+ Cells (Suppressor T Cells) (cells/mm ³) ^b	0.002	Comparison	440	584.1		
			Background RH	142	565.3	-18.8 --	0.479
			Low RH	84	571.8	-12.3 --	0.706
			High RH	91	552.4	-31.7 --	0.307
			Low plus High RH	175	561.6	-22.5 --	0.355
17-7	CD16+56+ Cells (Natural Killer Cells) (cells/mm ³) ^b	0.018	Comparison	440	275.4		
			Background RH	142	258.9	-16.5 --	0.192
			Low RH	84	281.1	5.7 --	0.726
			High RH	91	243.3	-32.1 --	0.028
			Low plus High RH	175	260.7	-14.7 --	0.209
17-8	CD20+ Cells (B Cells) (cells/mm ³) ^b	0.005	Comparison	440	185.0		
			Background RH	142	183.9	-1.1 --	0.918
			Low RH	83	166.7	-18.3 --	0.141
			High RH	91	195.5	10.5 --	0.419
			Low plus High RH	174	181.1	-3.9 --	0.694
17-9	CD3+CD4+ Cells (Helper T Cells) (cells/mm ³) ^b	0.005	Comparison	440	778.6		
			Background RH	142	753.7	-24.9 --	0.395
			Low RH	84	761.5	-17.1 --	0.632
			High RH	91	790.8	12.2 --	0.731
			Low plus High RH	175	776.6	-2.0 --	0.940
17-10	Absolute Lymphocytes (cells/mm ³) ^b	0.005	Comparison	1,164	1,775.7		
			Background RH	371	1,786.3	10.6 --	0.777
			Low RH	222	1,752.0	-23.7 --	0.598
			High RH	231	1,794.5	18.8 --	0.676
			Low plus High RH	453	1,773.5	-2.2 --	0.959
17-11	IgA (mg/dl) ^b	0.004	Comparison	1,164	233.6		
			Background RH	371	226.8	-6.8 --	0.297
			Low RH	222	232.3	-1.3 --	0.868
			High RH	231	240.9	7.3 --	0.373
			Low plus High RH	453	236.6	3.0 --	0.629

Table G-3. Summary of Unadjusted Results for Continuous Variables – Model 3 (Ranch Hands and Comparisons by Dioxin Category) (Continued)

Table Ref.	Clinical Parameter (Units)	R ²	Dioxin Category	n	Adj. Mean ^a	Difference of Means vs. Comparisons (95% C.I.)	p-Value
17-12	IgG (mg/dl) ^b	0.002	Comparison	1,164	1,048.1		
			Background RH	371	1,031.9	-16.2 --	0.254
			Low RH	222	1,041.7	-6.4 --	0.713
			High RH	231	1,039.6	-8.5 --	0.621
			Low plus High RH	453	1,040.7	-7.4 --	0.572
17-13	IgM (mg/dl) ^b	0.004	Comparison	1,164	98.2		
			Background RH	371	96.1	-2.1 --	0.487
			Low RH	222	95.8	-2.4 --	0.525
			High RH	231	96.4	-1.8 --	0.619
			Low plus High RH	453	96.1	-2.1 --	0.459
18-8	FVC (percent of predicted)	0.039	Comparison	1,211	99.14		
			Background RH	381	99.33	0.19 (-1.50,1.88)	0.825
			Low RH	238	98.34	-0.80 (-2.83,1.23)	0.439
			High RH	243	99.79	0.66 (-1.36,2.67)	0.523
			Low plus High RH	481	99.07	-0.06 (-1.61,1.48)	0.935
18-9	FEV ₁ (percent of predicted)	0.003	Comparison	1,211	94.38		
			Background RH	381	93.94	-0.44 (-2.46,1.57)	0.668
			Low RH	238	92.89	-1.48 (-3.90,0.93)	0.229
			High RH	243	95.50	1.12 (-1.28,3.53)	0.360
			Low plus High RH	481	94.21	-0.17 (-2.01,1.67)	0.859
18-10	Observed FEV ₁ to Observed FVC ^c	0.034	Comparison	1,211	0.763		
			Background RH	381	0.757	-0.006 --	0.192
			Low RH	238	0.757	-0.006 --	0.341
			High RH	243	0.770	0.007 --	0.164
			Low plus High RH	481	0.764	0.001 --	0.764

^a Adjusted for percent body fat at the time of the blood measurement for dioxin.

^b Means transformed from natural logarithm scale; difference of means after transformation to original scale; confidence interval not given because analysis was performed on natural logarithm scale; p-value based on difference of means on natural logarithm scale.

Table G-3. Summary of Unadjusted Results for Continuous Variables – Model 3 (Ranch Hands and Comparisons by Dioxin Category) (Continued)

^c Means transformed from natural logarithm (clinical parameter + 0.1) scale; difference of means after transformation to original scale; confidence interval not given because analysis was performed on natural logarithm (clinical parameter + 0.1) scale; p-value based on difference of means on natural logarithm (clinical parameter + 0.1) scale.

^d Means transformed from square root scale; difference of means after transformation to original scale; confidence interval not given because analysis was performed on square root scale; p-value based on difference of means on square root scale.

^e Means transformed from natural logarithm (1 – clinical parameter) scale; difference of means after transformation to original scale; confidence interval not given because analysis was performed on natural logarithm (1 – clinical parameter) scale; p-value based on difference of means on natural logarithm (1 – clinical parameter) scale.

Note: RH = Ranch Hand.

Comparison: 1987 Dioxin $\leq$ 10 ppt.

Background: (Ranch Hand): 1987 Dioxin $\leq$ 10 ppt.

Low (Ranch Hand): 1987 Dioxin > 10 ppt, 10 ppt < Initial Dioxin $\leq$ 94 ppt.

High (Ranch Hand): 1987 Dioxin > 10 ppt, Initial Dioxin > 94 ppt.

Table G-4. Summary of Unadjusted Results for Continuous Variables – Model 4 (Ranch Hands: Log₂ (1987 Dioxin + 1))

Table Ref.	Clinical Parameter (Units)	R ²	Slope (Standard Error)	p-Value
9-6	Body Fat (percent) ^a	0.072	0.046 (0.006)	<0.001
9-8	Erythrocyte Sedimentation Rate (mm/hr) ^b	0.009	0.063 (0.022)	0.004
10-35	PSA (ng/ml) ^a	0.005	-0.037 (0.018)	0.043
13-11	AST (U/l) ^a	0.005	0.017 (0.008)	0.033
13-13	ALT (U/l) ^a	0.023	0.029 (0.007)	<0.001
13-15	GGT (U/l) ^a	0.012	0.040 (0.013)	0.002
13-17	Alkaline Phosphatase (U/l) ^a	<0.001	-0.004 (0.006)	0.555
13-19	Total Bilirubin (mg/dl) ^a	0.001	-0.007 (0.011)	0.499
13-22	Lactic Dehydrogenase (U/l) ^a	0.002	0.005 (0.004)	0.211
13-24	Cholesterol (mg/dl) ^c	0.008	0.077 (0.030)	0.009
13-26	HDL Cholesterol (mg/dl) ^a	0.016	-0.023 (0.006)	<0.001
13-28	Cholesterol-HDL Ratio ^a	0.030	0.033 (0.007)	<0.001
13-30	Triglycerides (mg/dl) ^a	0.028	0.072 (0.015)	<0.001
13-32	Creatine Phosphokinase (U/l) ^a	0.004	0.024 (0.014)	0.084
13-34	Serum Amylase (U/l) ^a	0.005	-0.019 (0.009)	0.035
13-41	Prealbumin (mg/dl)	<0.001	-0.047 (0.124)	0.704
13-43	Albumin (mg/dl)	<0.001	-2.471 (7.678)	0.748
13-45	α -1-Acid Glycoprotein (mg/dl) ^a	0.001	0.005 (0.005)	0.336
13-47	α -1-Antitrypsin (mg/dl) ^c	0.003	0.040 (0.025)	0.109
13-49	α -2-Macroglobulin (mg/dl) ^a	<0.001	-0.004 (0.006)	0.522
13-51	Apolipoprotein B (mg/dl) ^c	0.011	0.083 (0.027)	0.002
13-53	C3 Complement (mg/dl) ^a	0.040	0.021 (0.004)	<0.001
13-55	C4 Complement (mg/dl) ^a	0.004	0.009 (0.005)	0.070
13-57	Haptoglobin (mg/dl) ^c	0.002	0.074 (0.065)	0.254
13-59	Transferrin (mg/dl) ^a	0.004	0.005 (0.003)	0.082
14-7	Systolic Blood Pressure (mm Hg) ^a	<0.001	0.001 (0.003)	0.693
14-9	Diastolic Blood Pressure (mm Hg) ^c	0.007	0.031 (0.013)	0.014
15-3	RBC Count (million/mm ³)	0.003	0.013 (0.009)	0.136
15-5	WBC Count (thousand/mm ³) ^a	0.007	0.015 (0.006)	0.013
15-7	Hemoglobin (gm/dl)	0.003	0.035 (0.023)	0.133
15-9	Hematocrit (percent)	0.001	0.077 (0.071)	0.278
15-11	Platelet Count (thousand/mm ³) ^c	0.009	0.109 (0.039)	0.005
15-13	Prothrombin Time (seconds) ^a	0.002	-0.002 (0.002)	0.220
15-16	Absolute Neutrophils (segs) (thousand/mm ³) ^a	0.007	0.020 (0.008)	0.017
15-17	Absolute Neutrophils (bands) (Nonzero Measurements) (thousand/mm ³) ^a	0.001	0.015 (0.021)	0.482
15-19	Absolute Lymphocytes (thousand/mm ³) ^a	0.002	0.009 (0.008)	0.239
15-20	Absolute Monocytes (thousand/mm ³) ^c	0.004	0.007 (0.004)	0.059
15-21	Absolute Eosinophils (Nonzero Measurements) (thousand/mm ³) ^a	0.001	-0.017 (0.017)	0.330
15-23	Absolute Basophils (Nonzero Measurements) (thousand/mm ³) ^a	<0.001	0.006 (0.014)	0.674
16-6	Time to Diabetes Onset (years) ^d	--	-0.098 (0.021)	<0.001
16-9	TSH (μ IU/ml) ^a	<0.001	-0.000 (0.015)	0.977
16-11	Thyroxine (μ g/dl) ^c	0.008	0.015 (0.006)	0.009
16-14	Fasting Glucose (mg/dl) ^a	0.019	0.020 (0.005)	<0.001

**Table G-4. Summary of Unadjusted Results for Continuous Variables – Model 4
(Ranch Hands: Log₂ (1987 Dioxin + 1)) (Continued)**

Table Ref.	Clinical Parameter (Units)	R ²	Slope (Standard Error)	p-Value
16-16	2-Hour Postprandial Glucose (mg/dl) ^a	0.003	0.011 (0.007)	0.115
16-20	Serum Insulin (μIU/ml) ^a	0.025	0.100 (0.023)	<0.001
16-22	α-1-C Hemoglobin (percent) ^a	0.033	0.021 (0.004)	<0.001
16-24	Total Testosterone (ng/dl) ^c	0.010	-0.296 (0.101)	0.003
16-26	Free Testosterone (pg/ml) ^c	0.001	-0.010 (0.015)	0.489
16-28	Estradiol (pg/ml) ^c	0.002	0.039 (0.031)	0.212
16-30	LH (mIU/ml) ^a	0.005	-0.030 (0.015)	0.042
16-32	FSH (mIU/ml) ^a	0.003	-0.024 (0.015)	0.105
17-4	CD3+ Cells (T Cells) (cells/mm ³) ^a	0.003	0.015 (0.015)	0.316
17-5	CD4+ Cells (Helper T Cells) (cells/mm ³) ^a	0.004	0.017 (0.015)	0.255
17-6	CD8+ Cells (Suppressor T Cells) (cells/mm ³) ^a	0.001	0.009 (0.019)	0.640
17-7	CD16+56+ Cells (Natural Killer Cells) (cells/mm ³) ^a	<0.001	0.006 (0.021)	0.772
17-8	CD20+ Cells (B Cells) (cells/mm ³) ^a	0.004	0.026 (0.023)	0.260
17-9	CD3+CD4+ Cells (Helper T Cells) (cells/mm ³) ^a	0.005	0.019 (0.016)	0.228
17-10	Absolute Lymphocytes (cells/mm ³) ^a	0.002	0.010 (0.008)	0.222
17-11	IgA (mg/dl) ^a	0.005	0.022 (0.011)	0.051
17-12	IgG (mg/dl) ^a	<0.001	0.002 (0.005)	0.652
17-13	IgM (mg/dl) ^a	<0.001	-0.001 (0.012)	0.937
18-8	FVC (percent of predicted)	0.001	-0.312 (0.338)	0.356
18-9	FEV ₁ (percent of predicted)	0.002	0.496 (0.402)	0.217
18-10	Observed FEV ₁ to Observed FVC ^e	0.018	-0.031 (0.008)	<0.001

^a Slope and standard error based on natural logarithm of clinical parameter versus log₂ (initial dioxin).

^b Slope and standard error based on natural logarithm of (clinical parameter + 0.1) versus log₂ (initial dioxin).

^c Slope and standard error based on square root of clinical parameter versus log₂ (initial dioxin).

^d Slope and standard error based on time to diabetes onset versus log₂ (initial dioxin) under a censored Weibull distribution.

^e Slope and standard error based on natural logarithm of (1 - clinical parameter) versus log₂ (initial dioxin).

--: R-squared not presented because analysis was based on a censored Weibull distribution.

Table G-5. Summary of Unadjusted Results for Dichotomous Variables – Model 1 (Ranch Hands vs. Comparisons)

Table Ref.	Clinical Parameter	Occupational Category	Number (%) Abnormal		Est. Relative Risk (95% C.I.)	p-Value
			RH	C		
9-3	Self-perception of Health	All	124 (14.3)	130 (10.4)	1.44 (1.10,1.87)	0.007
		Officer	30 (8.8)	34 (6.9)	1.31 (0.78,2.18)	0.308
		Enlisted Flyer	26 (17.2)	23 (12.3)	1.48 (0.81,2.72)	0.203
		Enlisted Groundcrew	68 (18.0)	73 (12.8)	1.50 (1.05,2.15)	0.028
9-4	Appearance of Illness or Distress	All	15 (1.7)	14 (1.1)	1.55 (0.74,3.23)	0.242
		Officer	3 (0.9)	4 (0.8)	1.09 (0.24,4.89)	0.913
		Enlisted Flyer	3 (2.0)	2 (1.1)	1.87 (0.31,11.37)	0.494
		Enlisted Groundcrew	9 (2.4)	8 (1.4)	1.71 (0.66,4.48)	0.272
9-5	Relative Age Appearance	All	90 (10.3)	104 (8.3)	1.27 (0.95,1.71)	0.112
		Officer	22 (6.5)	25 (5.1)	1.29 (0.72,2.33)	0.392
		Enlisted Flyer	22 (14.6)	21 (11.2)	1.35 (0.71,2.56)	0.361
		Enlisted Groundcrew	46 (12.2)	58 (10.2)	1.22 (0.81,1.84)	0.337
9-7	Body Fat	All	244 (28.1)	376 (30.1)	0.91 (0.75,1.10)	0.316
		Officer	88 (25.8)	123 (24.9)	1.05 (0.76,1.44)	0.767
		Enlisted Flyer	37 (24.5)	58 (31.0)	0.72 (0.45,1.17)	0.186
		Enlisted Groundcrew	119 (31.5)	195 (34.2)	0.88 (0.67,1.17)	0.382
9-9	Erythrocyte Sedimentation Rate	All	72 (8.3)	88 (7.0)	1.19 (0.86,1.65)	0.289
		Officer	20 (5.9)	34 (6.9)	0.84 (0.48,1.49)	0.557
		Enlisted Flyer	17 (11.3)	14 (7.5)	1.57 (0.75,3.29)	0.235
		Enlisted Groundcrew	35 (9.3)	40 (7.0)	1.35 (0.84,2.17)	0.212
10-3	Skin Neoplasms	All	325 (40.4)	402 (34.4)	1.29 (1.07,1.55)	0.007
		Officer	150 (45.6)	183 (38.1)	1.36 (1.02,1.81)	0.034
		Enlisted Flyer	56 (40.0)	50 (28.9)	1.64 (1.02,2.63)	0.040
		Enlisted Groundcrew	119 (35.4)	169 (32.8)	1.12 (0.84,1.50)	0.433
10-4	Malignant Skin Neoplasms	All	144 (17.9)	187 (16.0)	1.14 (0.90,1.45)	0.274
		Officer	77 (23.4)	95 (19.8)	1.24 (0.88,1.74)	0.218
		Enlisted Flyer	29 (20.7)	22 (12.7)	1.79 (0.98,3.29)	0.059
		Enlisted Groundcrew	38 (11.3)	70 (13.6)	0.81 (0.53,1.24)	0.329
10-5	Benign Skin Neoplasms	All	225 (26.2)	264 (21.3)	1.31 (1.07,1.61)	0.010
		Officer	96 (28.6)	107 (22.0)	1.42 (1.03,1.96)	0.031
		Enlisted Flyer	34 (22.7)	32 (17.3)	1.40 (0.82,2.40)	0.220
		Enlisted Groundcrew	95 (25.4)	125 (22.0)	1.21 (0.89,1.64)	0.229
10-6	Skin Neoplasms of Uncertain Behavior or Unspecified Nature	All	7 (0.9)	8 (0.7)	1.27 (0.46,3.52)	0.645
		Officer	0 (0.0)	3 (0.6)	--	0.397 ^a
		Enlisted Flyer	0 (0.0)	1 (0.6)	--	0.999 ^a
		Enlisted Groundcrew	7 (2.1)	4 (0.8)	2.72 (0.79,9.36)	0.113
10-7	Basal Cell Carcinoma	All	121 (15.0)	155 (13.3)	1.16 (0.89,1.49)	0.269
		Officer	67 (20.4)	80 (16.7)	1.28 (0.89,1.83)	0.181
		Enlisted Flyer	26 (18.6)	19 (11.0)	1.85 (0.98,3.50)	0.060
		Enlisted Groundcrew	28 (8.3)	56 (10.9)	0.75 (0.46,1.20)	0.226

**Table G-5. Summary of Unadjusted Results for Dichotomous Variables - Model 1
(Ranch Hands vs. Comparisons) (Continued)**

Table Ref.	Clinical Parameter	Occupational Category	Number (%) Abnormal		Est. Relative Risk (95% C.I.)	p-Value
			RH	C		
10-8	Basal Cell Carcinoma (Ear, Face, Head, and Neck)	All	93 (11.6)	120 (10.3)	1.14 (0.86,1.52)	0.370
		Officer	49 (14.9)	60 (12.5)	1.23 (0.82,1.84)	0.328
		Enlisted Flyer	22 (15.7)	17 (9.8)	1.71 (0.87,3.37)	0.120
		Enlisted Groundcrew	22 (6.6)	43 (8.4)	0.77 (0.45,1.31)	0.334
10-9	Basal Cell Carcinoma (Trunk)	All	40 (5.0)	47 (4.0)	1.25 (0.81,1.92)	0.318
		Officer	29 (8.8)	29 (6.0)	1.50 (0.88,2.57)	0.135
		Enlisted Flyer	6 (4.3)	3 (1.7)	2.54 (0.62,10.33)	0.194
		Enlisted Groundcrew	5 (1.5)	15 (2.9)	0.50 (0.18,1.40)	0.188
10-10	Basal Cell Carcinoma (Upper Extremities)	All	21 (2.6)	38 (3.3)	0.80 (0.46,1.37)	0.405
		Officer	17 (5.2)	24 (5.0)	1.04 (0.55,1.96)	0.915
		Enlisted Flyer	1 (0.7)	2 (1.2)	0.62 (0.06,6.85)	0.693
		Enlisted Groundcrew	3 (0.9)	12 (2.3)	0.38 (0.11,1.35)	0.134
10-11	Basal Cell Carcinoma (Lower Extremities)	All	5 (0.6)	5 (0.4)	1.45 (0.42,5.04)	0.556
		Officer	4 (1.2)	3 (0.6)	1.96 (0.44,8.80)	0.381
		Enlisted Flyer	0 (0.0)	0 (0.0)	--	--
		Enlisted Groundcrew	1 (0.3)	2 (0.4)	0.77 (0.07,8.48)	0.828
10-12	Squamous Cell Carcinoma	All	20 (2.5)	22 (1.9)	1.33 (0.72,2.45)	0.367
		Officer	11 (3.3)	16 (3.3)	1.00 (0.46,2.19)	0.994
		Enlisted Flyer	3 (2.1)	2 (1.2)	1.87 (0.31,11.36)	0.495
		Enlisted Groundcrew	6 (1.8)	4 (0.8)	2.32 (0.65,8.29)	0.194
10-13	Nonmelanoma	All	134 (16.7)	176 (15.1)	1.13 (0.88,1.44)	0.345
		Officer	73 (22.2)	89 (18.5)	1.25 (0.89,1.77)	0.203
		Enlisted Flyer	29 (20.7)	21 (12.1)	1.89 (1.02,3.49)	0.042
		Enlisted Groundcrew	32 (9.5)	66 (12.8)	0.72 (0.46,1.12)	0.143
10-14	Melanoma	All	16 (2.0)	13 (1.1)	1.80 (0.86,3.77)	0.117
		Officer	9 (2.7)	7 (1.5)	1.90 (0.70,5.16)	0.207
		Enlisted Flyer	0 (0.0)	1 (0.6)	--	0.999 ^a
		Enlisted Groundcrew	7 (2.1)	5 (1.0)	2.17 (0.68,6.90)	0.189
10-15	Systemic Neoplasms (All Sites Combined)	All	267 (31.2)	370 (29.8)	1.07 (0.89,1.29)	0.482
		Officer	110 (33.1)	168 (34.4)	0.95 (0.70,1.27)	0.716
		Enlisted Flyer	49 (33.3)	55 (29.4)	1.20 (0.75,1.91)	0.443
		Enlisted Groundcrew	108 (28.7)	147 (26.0)	1.15 (0.86,1.54)	0.352
10-16	Malignant Systemic Neoplasms	All	67 (7.8)	75 (6.0)	1.32 (0.94,1.86)	0.112
		Officer	32 (9.6)	39 (7.9)	1.23 (0.76,2.01)	0.403
		Enlisted Flyer	18 (12.1)	11 (5.9)	2.20 (1.00,4.81)	0.049
		Enlisted Groundcrew	17 (4.5)	25 (4.4)	1.03 (0.55,1.93)	0.937
10-17	Benign Systemic Neoplasms	All	217 (25.4)	299 (24.1)	1.07 (0.88,1.31)	0.495
		Officer	82 (24.7)	130 (26.6)	0.91 (0.66,1.25)	0.545
		Enlisted Flyer	40 (27.2)	47 (25.1)	1.11 (0.68,1.82)	0.668
		Enlisted Groundcrew	95 (25.3)	122 (21.6)	1.23 (0.91,1.67)	0.186

**Table G-5. Summary of Unadjusted Results for Dichotomous Variables – Model 1
(Ranch Hands vs. Comparisons) (Continued)**

Table Ref.	Clinical Parameter	Occupational Category	Number (%) Abnormal		Est. Relative Risk (95% C.I.)	p-Value
			RH	C		
10-18	Systemic Neoplasms of Uncertain Behavior or Unspecified Nature	All	16 (1.9)	25 (2.0)	0.93 (0.49,1.75)	0.814
		Officer	11 (3.3)	13 (2.6)	1.26 (0.56,2.84)	0.583
		Enlisted Flyer	1 (0.7)	2 (1.1)	0.63 (0.06,6.96)	0.702
		Enlisted Groundcrew	4 (1.1)	10 (1.8)	0.60 (0.19,1.92)	0.388
10-19	Malignant Systemic Neoplasms (Eye, Ear, Face, Head, and Neck)	All	9 (1.1)	12 (1.0)	1.09 (0.46,2.60)	0.848
		Officer	6 (1.8)	4 (0.8)	2.23 (0.63,7.98)	0.216
		Enlisted Flyer	1 (0.7)	3 (1.6)	0.41 (0.04,4.03)	0.448
		Enlisted Groundcrew	2 (0.5)	5 (0.9)	0.60 (0.12,3.11)	0.543
10-20	Malignant Systemic Neoplasms (Oral Cavity, Pharynx, and Larynx)	All	4 (0.5)	7 (0.6)	0.83 (0.24,2.84)	0.762
		Officer	2 (0.6)	2 (0.4)	1.48 (0.21,10.54)	0.697
		Enlisted Flyer	1 (0.7)	2 (1.1)	0.63 (0.06,6.96)	0.702
		Enlisted Groundcrew	1 (0.3)	3 (0.5)	0.50 (0.05,4.83)	0.550
10-21	Malignant Systemic Neoplasms (Thymus, Heart, and Mediastinum)	All	2 (0.2)	0 (0.0)	--	0.325 ^a
		Officer	1 (0.3)	0 (0.0)	--	0.845 ^a
		Enlisted Flyer	0 (0.0)	0 (0.0)	--	--
		Enlisted Groundcrew	1 (0.3)	0 (0.0)	--	0.836 ^a
10-22	Malignant Systemic Neoplasms (Thyroid Gland)	All	2 (0.2)	2 (0.2)	1.45 (0.20,10.33)	0.710
		Officer	2 (0.6)	1 (0.2)	2.96 (0.27,32.79)	0.376
		Enlisted Flyer	0 (0.0)	0 (0.0)	--	--
		Enlisted Groundcrew	0 (0.0)	1 (0.2)	--	0.999 ^a
10-23	Malignant Systemic Neoplasms (Bronchus and Lung)	All	10 (1.2)	3 (0.2)	4.88 (1.34,17.79)	0.008
		Officer	5 (1.5)	2 (0.4)	3.73 (0.72,19.33)	0.117
		Enlisted Flyer	3 (2.0)	1 (0.5)	3.82 (0.39,37.13)	0.248
		Enlisted Groundcrew	2 (0.5)	0 (0.0)	--	0.310 ^a
10-24	Malignant Systemic Neoplasms (Liver)	All	2 (0.2)	2 (0.2)	1.45 (0.20,10.33)	0.710
		Officer	0 (0.0)	1 (0.2)	--	0.999 ^a
		Enlisted Flyer	1 (0.7)	0 (0.0)	--	0.909 ^a
		Enlisted Groundcrew	1 (0.3)	1 (0.2)	1.51 (0.09,24.18)	0.772
10-25	Malignant Systemic Neoplasms (Colon and Rectum)	All	7 (0.8)	8 (0.6)	1.27 (0.46,3.52)	0.645
		Officer	3 (0.9)	2 (0.4)	2.22 (0.37,13.38)	0.383
		Enlisted Flyer	2 (1.3)	2 (1.1)	1.26 (0.18,9.04)	0.819
		Enlisted Groundcrew	2 (0.5)	4 (0.7)	0.75 (0.14,4.13)	0.743
10-26	Malignant Systemic Neoplasms (Kidney and Bladder)	All	11 (1.3)	6 (0.5)	2.68 (0.99,7.28)	0.046
		Officer	5 (1.5)	5 (1.0)	1.48 (0.43,5.16)	0.537
		Enlisted Flyer	3 (2.0)	0 (0.0)	--	0.172 ^a
		Enlisted Groundcrew	3 (0.8)	1 (0.2)	4.55 (0.47,43.89)	0.190
10-27	Malignant Systemic Neoplasms (Prostate)	All	26 (3.0)	39 (3.1)	0.97 (0.58,1.60)	0.893
		Officer	13 (3.9)	25 (5.1)	0.76 (0.38,1.50)	0.427
		Enlisted Flyer	7 (4.7)	4 (2.1)	2.26 (0.65,7.86)	0.201
		Enlisted Groundcrew	6 (1.6)	10 (1.8)	0.90 (0.33,2.50)	0.844

**Table G-5. Summary of Unadjusted Results for Dichotomous Variables – Model 1
(Ranch Hands vs. Comparisons) (Continued)**

Table Ref.	Clinical Parameter	Occupational Category	Number (%) Abnormal		Est. Relative Risk (95% C.I.)	p-Value
			RH	C		
10-28	Malignant Systemic Neoplasms (Testicles)	All	3 (0.4)	0 (0.0)	--	0.134 ^a
		Officer	1 (0.3)	0 (0.0)	--	0.845 ^a
		Enlisted Flyer	1 (0.7)	0 (0.0)	--	0.909 ^a
		Enlisted Groundcrew	1 (0.3)	0 (0.0)	--	0.836 ^a
10-29	Malignant Systemic Neoplasms (Connective and Other Soft Tissues)	All	1 (0.1)	2 (0.2)	0.73 (0.07,8.01)	0.790
		Officer	0 (0.0)	0 (0.0)	--	--
		Enlisted Flyer	1 (0.7)	0 (0.0)	--	0.909 ^a
		Enlisted Groundcrew	0 (0.0)	2 (0.4)	--	0.667 ^a
10-30	Hodgkin's Disease	All	1 (0.1)	3 (0.2)	0.48 (0.05,4.65)	0.507
		Officer	1 (0.3)	2 (0.4)	0.74 (0.07,8.16)	0.803
		Enlisted Flyer	0 (0.0)	0 (0.0)	--	--
		Enlisted Groundcrew	0 (0.0)	1 (0.2)	--	0.999 ^a
10-31	Non-Hodgkin's Lymphoma	All	1 (0.1)	3 (0.2)	0.48 (0.05,4.65)	0.507
		Officer	0 (0.0)	2 (0.4)	--	0.657 ^a
		Enlisted Flyer	0 (0.0)	0 (0.0)	--	--
		Enlisted Groundcrew	1 (0.3)	1 (0.2)	1.51 (0.09,24.18)	0.772
10-32	Other Malignant Systemic Neoplasms of Lymphoid and Histiocytic Tissue	All	2 (0.2)	4 (0.3)	0.72 (0.13,3.97)	0.706
		Officer	1 (0.3)	2 (0.4)	0.74 (0.07,8.16)	0.803
		Enlisted Flyer	0 (0.0)	1 (0.5)	--	0.999 ^a
		Enlisted Groundcrew	1 (0.3)	1 (0.2)	1.51 (0.09,24.18)	0.772
10-33	Malignant Skin and Systemic Neoplasms	All	186 (21.9)	234 (18.9)	1.20 (0.97,1.49)	0.099
		Officer	95 (28.8)	116 (23.8)	1.29 (0.94,1.77)	0.112
		Enlisted Flyer	39 (26.4)	31 (16.8)	1.78 (1.04,3.02)	0.034
		Enlisted Groundcrew	52 (13.9)	87 (15.4)	0.89 (0.62,1.29)	0.546
10-34	All Skin and Systemic Neoplasms	All	473 (55.8)	620 (50.4)	1.25 (1.05,1.49)	0.014
		Officer	202 (61.4)	266 (55.2)	1.29 (0.97,1.72)	0.079
		Enlisted Flyer	84 (57.5)	92 (49.7)	1.37 (0.88,2.12)	0.158
		Enlisted Groundcrew	187 (50.3)	262 (46.5)	1.17 (0.90,1.51)	0.253
10-36	PSA	All	54 (6.5)	73 (6.1)	1.07 (0.74,1.53)	0.730
		Officer	31 (9.7)	29 (6.3)	1.59 (0.94,2.69)	0.086
		Enlisted Flyer	10 (7.1)	15 (8.3)	0.84 (0.37,1.93)	0.681
		Enlisted Groundcrew	13 (3.5)	29 (5.3)	0.66 (0.34,1.29)	0.223
11-3	Inflammatory Diseases	All	7 (0.8)	1 (0.1)	10.11 (1.24,82.35)	0.006
		Officer	2 (0.6)	0 (0.0)	--	0.327 ^a
		Enlisted Flyer	2 (1.3)	0 (0.0)	--	0.391 ^a
		Enlisted Groundcrew	3 (0.8)	1 (0.2)	4.56 (0.47,44.05)	0.189
11-4	Hereditary and Degenerative Diseases	All	80 (9.2)	108 (8.7)	1.08 (0.79,1.46)	0.639
		Officer	30 (8.8)	37 (7.5)	1.19 (0.72,1.97)	0.492
		Enlisted Flyer	19 (12.6)	19 (10.2)	1.27 (0.65,2.50)	0.484
		Enlisted Groundcrew	31 (8.3)	52 (9.1)	0.90 (0.56,1.43)	0.643

**Table G-5. Summary of Unadjusted Results for Dichotomous Variables – Model 1
(Ranch Hands vs. Comparisons) (Continued)**

Table Ref.	Clinical Parameter	Occupational Category	Number (%) Abnormal		Est. Relative Risk (95% C.I.)	p-Value
			RH	C		
11-5	Peripheral Disorders	All	188 (21.8)	241 (19.3)	1.16 (0.94,1.44)	0.169
		Officer	78 (23.0)	91 (18.5)	1.32 (0.94,1.85)	0.113
		Enlisted Flyer	36 (24.0)	44 (23.7)	1.02 (0.62,1.69)	0.941
		Enlisted Groundcrew	74 (19.8)	106 (18.6)	1.08 (0.77,1.50)	0.658
11-6	Other Neurological Disorders	All	173 (20.1)	211 (17.0)	1.23 (0.98,1.54)	0.070
		Officer	29 (8.6)	38 (7.7)	1.12 (0.68,1.86)	0.656
		Enlisted Flyer	46 (30.5)	45 (24.2)	1.37 (0.85,2.22)	0.198
		Enlisted Groundcrew	98 (26.3)	128 (22.6)	1.22 (0.90,1.65)	0.200
11-7	Smell	All	20 (2.3)	19 (1.5)	1.54 (0.81,2.89)	0.186
		Officer	5 (1.5)	10 (2.0)	0.73 (0.25,2.14)	0.562
		Enlisted Flyer	6 (4.0)	1 (0.5)	7.70 (0.92,64.65)	0.060
		Enlisted Groundcrew	9 (2.4)	8 (1.4)	1.73 (0.66,4.51)	0.266
11-8	Visual Fields	All	2 (0.2)	5 (0.4)	0.57 (0.11,2.97)	0.493
		Officer	0 (0.0)	1 (0.2)	--	0.999 ^a
		Enlisted Flyer	1 (0.7)	2 (1.1)	0.61 (0.06,6.83)	0.691
		Enlisted Groundcrew	1 (0.3)	2 (0.4)	0.76 (0.07,8.36)	0.819
11-9	Light Reaction	All	1 (0.1)	12 (1.0)	0.12 (0.02,0.92)	0.007
		Officer	0 (0.0)	3 (0.6)	--	0.399 ^a
		Enlisted Flyer	1 (0.7)	4 (2.1)	0.31 (0.03,2.76)	0.291
		Enlisted Groundcrew	0 (0.0)	5 (0.9)	--	0.173 ^a
11-10	Ocular Movement	All	14 (1.6)	17 (1.4)	1.19 (0.58,2.43)	0.632
		Officer	2 (0.6)	5 (1.0)	0.58 (0.11,2.99)	0.513
		Enlisted Flyer	3 (2.0)	2 (1.1)	1.87 (0.31,11.37)	0.494
		Enlisted Groundcrew	9 (2.4)	10 (1.8)	1.37 (0.55,3.42)	0.493
11-11	Facial Sensation	All	2 (0.2)	2 (0.2)	1.44 (0.20,10.27)	0.714
		Officer	1 (0.3)	1 (0.2)	1.46 (0.09,23.35)	0.791
		Enlisted Flyer	0 (0.0)	1 (0.5)	--	0.999 ^a
		Enlisted Groundcrew	1 (0.3)	0 (0.0)	--	0.834 ^a
11-12	Jaw Clench	All	2 (0.2)	0 (0.0)	--	0.327 ^a
		Officer	2 (0.6)	0 (0.0)	--	0.325 ^a
		Enlisted Flyer	0 (0.0)	0 (0.0)	--	--
		Enlisted Groundcrew	0 (0.0)	0 (0.0)	--	--
11-13	Smile	All	7 (0.8)	4 (0.3)	2.54 (0.74,8.69)	0.129
		Officer	1 (0.3)	2 (0.4)	0.72 (0.07,8.02)	0.793
		Enlisted Flyer	1 (0.7)	0 (0.0)	--	0.915 ^a
		Enlisted Groundcrew	5 (1.3)	2 (0.4)	3.83 (0.74,19.85)	0.110
11-14	Palpebral Fissure	All	7 (0.8)	12 (1.0)	0.84 (0.33,2.14)	0.713
		Officer	2 (0.6)	5 (1.0)	0.58 (0.11,2.99)	0.513
		Enlisted Flyer	1 (0.7)	1 (0.5)	1.24 (0.08,19.99)	0.879
		Enlisted Groundcrew	4 (1.1)	6 (1.1)	1.01 (0.28,3.61)	0.986

**Table G-5. Summary of Unadjusted Results for Dichotomous Variables – Model 1
(Ranch Hands vs. Comparisons) (Continued)**

Table Ref.	Clinical Parameter	Occupational Category	Number (%) Abnormal		Est. Relative Risk (95% C.I.)	p-Value
			RH	C		
11-15	Balance	All	7 (0.8)	7 (0.6)	1.44 (0.50,4.13)	0.494
		Officer	5 (1.5)	2 (0.4)	3.66 (0.71,19.00)	0.122
		Enlisted Flyer	0 (0.0)	1 (0.5)	--	0.999 ^a
		Enlisted Groundcrew	2 (0.5)	4 (0.7)	0.76 (0.14,4.16)	0.749
11-16	Speech	All	4 (0.5)	10 (0.8)	0.57 (0.18,1.84)	0.334
		Officer	1 (0.3)	2 (0.4)	0.72 (0.07,8.02)	0.793
		Enlisted Flyer	0 (0.0)	1 (0.5)	--	0.999 ^a
		Enlisted Groundcrew	3 (0.8)	7 (1.2)	0.65 (0.17,2.52)	0.531
11-17	Tongue Position Relative to Midline	All	2 (0.2)	0 (0.0)	--	0.327 ^a
		Officer	2 (0.6)	0 (0.0)	--	0.325 ^a
		Enlisted Flyer	0 (0.0)	0 (0.0)	--	--
		Enlisted Groundcrew	0 (0.0)	0 (0.0)	--	--
11-18	Palate and Uvula Movement	All	1 (0.1)	0 (0.0)	--	0.854 ^a
		Officer	1 (0.3)	0 (0.0)	--	0.852 ^a
		Enlisted Flyer	0 (0.0)	0 (0.0)	--	--
		Enlisted Groundcrew	0 (0.0)	0 (0.0)	--	--
11-19	Cranial Nerve Index	All	56 (6.6)	72 (5.8)	1.15 (0.80,1.65)	0.452
		Officer	17 (5.2)	26 (5.3)	0.98 (0.52,1.83)	0.941
		Enlisted Flyer	13 (8.6)	10 (5.4)	1.66 (0.71,3.89)	0.246
		Enlisted Groundcrew	26 (7.0)	36 (6.4)	1.11 (0.66,1.88)	0.683
11-20	Neck Range of Motion	All	165 (19.1)	188 (15.1)	1.33 (1.06,1.67)	0.016
		Officer	70 (20.6)	81 (16.4)	1.32 (0.92,1.88)	0.126
		Enlisted Flyer	41 (27.2)	29 (15.5)	2.03 (1.19,3.46)	0.009
		Enlisted Groundcrew	54 (14.4)	78 (13.7)	1.06 (0.73,1.54)	0.764
11-21	Pinprick	All	57 (6.9)	67 (5.7)	1.24 (0.86,1.79)	0.244
		Officer	20 (6.2)	22 (4.7)	1.35 (0.72,2.51)	0.350
		Enlisted Flyer	19 (13.1)	14 (7.7)	1.81 (0.87,3.75)	0.110
		Enlisted Groundcrew	18 (5.1)	31 (5.8)	0.87 (0.48,1.57)	0.638
11-22	Light Touch	All	38 (4.6)	45 (3.8)	1.23 (0.79,1.91)	0.363
		Officer	15 (4.7)	13 (2.8)	1.71 (0.80,3.65)	0.163
		Enlisted Flyer	12 (8.3)	10 (5.5)	1.55 (0.65,3.70)	0.322
		Enlisted Groundcrew	11 (3.1)	22 (4.1)	0.74 (0.36,1.55)	0.432
11-23	Muscle Status	All	39 (4.5)	37 (3.0)	1.54 (0.98,2.44)	0.064
		Officer	13 (3.8)	18 (3.7)	1.05 (0.51,2.17)	0.897
		Enlisted Flyer	10 (6.6)	7 (3.7)	1.82 (0.68,4.91)	0.235
		Enlisted Groundcrew	16 (4.3)	12 (2.1)	2.06 (0.97,4.42)	0.062
11-24	Patellar Reflex	All	24 (2.8)	35 (2.8)	0.99 (0.58,1.67)	0.962
		Officer	12 (3.5)	16 (3.3)	1.09 (0.51,2.34)	0.823
		Enlisted Flyer	1 (0.7)	7 (3.8)	0.17 (0.02,1.40)	0.100
		Enlisted Groundcrew	11 (2.9)	12 (2.1)	1.40 (0.61,3.21)	0.425

**Table G-5. Summary of Unadjusted Results for Dichotomous Variables – Model 1
(Ranch Hands vs. Comparisons) (Continued)**

Table Ref.	Clinical Parameter	Occupational Category	Number (%) Abnormal		Est. Relative Risk (95% C.I.)	p-Value
			RH	C		
11-25	Achilles Reflex	All	153 (17.7)	203 (16.3)	1.10 (0.88,1.39)	0.410
		Officer	67 (19.7)	82 (16.7)	1.22 (0.86,1.75)	0.267
		Enlisted Flyer	30 (19.9)	37 (19.9)	1.00 (0.58,1.71)	0.995
		Enlisted Groundcrew	56 (15.0)	84 (14.8)	1.01 (0.70,1.46)	0.947
11-26	Biceps Reflex	All	12 (1.4)	12 (1.0)	1.45 (0.65,3.24)	0.369
		Officer	5 (1.5)	6 (1.2)	1.21 (0.37,4.00)	0.753
		Enlisted Flyer	2 (1.3)	2 (1.1)	1.24 (0.17,8.92)	0.830
		Enlisted Groundcrew	5 (1.3)	4 (0.7)	1.91 (0.51,7.14)	0.339
11-27	Babinski Reflex	All	8 (0.9)	13 (1.0)	0.88 (0.36,2.14)	0.785
		Officer	3 (0.9)	2 (0.4)	2.18 (0.36,13.12)	0.394
		Enlisted Flyer	1 (0.7)	3 (1.6)	0.40 (0.04,3.93)	0.435
		Enlisted Groundcrew	4 (1.1)	8 (1.4)	0.76 (0.23,2.53)	0.650
11-29	Polyneuropathy Prevalence Index	All	130 (15.8)	179 (15.1)	1.06 (0.83,1.35)	0.668
		Officer	55 (17.1)	75 (16.0)	1.08 (0.74,1.58)	0.694
		Enlisted Flyer	29 (20.0)	39 (21.4)	0.92 (0.53,1.57)	0.752
		Enlisted Groundcrew	46 (13.0)	65 (12.2)	1.08 (0.72,1.61)	0.725
11-30	Multiple Polyneuropathy Index	All	41 (5.0)	38 (3.2)	1.58 (1.01,2.49)	0.046
		Officer	16 (5.0)	17 (3.6)	1.39 (0.69,2.79)	0.358
		Enlisted Flyer	13 (9.0)	9 (5.0)	1.89 (0.79,4.56)	0.155
		Enlisted Groundcrew	12 (3.4)	12 (2.3)	1.52 (0.68,3.43)	0.309
11-31	Confirmed Polyneuropathy Indicator	All	11 (1.4)	7 (0.6)	2.30 (0.89,5.95)	0.082
		Officer	2 (0.6)	6 (1.3)	0.49 (0.10,2.43)	0.381
		Enlisted Flyer	4 (2.8)	0 (0.0)	--	0.079 ^a
		Enlisted Groundcrew	5 (1.4)	1 (0.2)	7.62 (0.89,65.47)	0.064
11-32	Tremor	All	60 (6.9)	91 (7.3)	0.95 (0.68,1.33)	0.753
		Officer	22 (6.5)	29 (5.9)	1.11 (0.62,1.96)	0.728
		Enlisted Flyer	15 (9.9)	15 (8.0)	1.26 (0.60,2.68)	0.540
		Enlisted Groundcrew	23 (6.1)	47 (8.3)	0.73 (0.43,1.22)	0.224
11-33	Coordination	All	19 (2.2)	31 (2.5)	0.88 (0.49,1.57)	0.663
		Officer	10 (2.9)	8 (1.6)	1.84 (0.72,4.70)	0.205
		Enlisted Flyer	1 (0.7)	4 (2.2)	0.30 (0.03,2.74)	0.288
		Enlisted Groundcrew	8 (2.1)	19 (3.4)	0.63 (0.27,1.45)	0.279
11-34	Romberg Sign	All	7 (0.8)	7 (0.6)	1.44 (0.50,4.13)	0.494
		Officer	5 (1.5)	2 (0.4)	3.66 (0.71,19.00)	0.122
		Enlisted Flyer	0 (0.0)	1 (0.5)	--	0.999 ^a
		Enlisted Groundcrew	2 (0.5)	4 (0.7)	0.76 (0.14,4.16)	0.749
11-35	Gait	All	50 (5.8)	57 (4.6)	1.28 (0.87,1.89)	0.214
		Officer	19 (5.6)	26 (5.3)	1.06 (0.58,1.95)	0.844
		Enlisted Flyer	11 (7.3)	11 (5.9)	1.26 (0.53,2.98)	0.604
		Enlisted Groundcrew	20 (5.3)	20 (3.5)	1.55 (0.82,2.92)	0.178

**Table G-5. Summary of Unadjusted Results for Dichotomous Variables – Model 1
(Ranch Hands vs. Comparisons) (Continued)**

Table Ref.	Clinical Parameter	Occupational Category	Number (%) Abnormal		Est. Relative Risk (95% C.I.)	p-Value
			RH	C		
11-36	CNS Index	All	107 (12.4)	148 (11.9)	1.05 (0.80,1.37)	0.731
		Officer	39 (11.5)	53 (10.8)	1.08 (0.69,1.67)	0.745
		Enlisted Flyer	24 (15.9)	28 (15.0)	1.07 (0.59,1.94)	0.816
		Enlisted Groundcrew	44 (11.7)	67 (11.8)	0.99 (0.66,1.49)	0.977
12-3	Psychoses	All	34 (3.9)	48 (3.8)	1.02 (0.65,1.60)	0.927
		Officer	9 (2.6)	12 (2.4)	1.09 (0.45,2.61)	0.853
		Enlisted Flyer	10 (6.6)	7 (3.7)	1.82 (0.68,4.91)	0.235
		Enlisted Groundcrew	15 (4.0)	29 (5.1)	0.78 (0.41,1.47)	0.435
12-4	Alcohol Dependence	All	62 (7.2)	83 (6.7)	1.08 (0.77,1.52)	0.655
		Officer	15 (4.4)	26 (5.3)	0.83 (0.43,1.58)	0.566
		Enlisted Flyer	14 (9.3)	16 (8.6)	1.09 (0.52,2.32)	0.818
		Enlisted Groundcrew	33 (8.8)	41 (7.2)	1.24 (0.77,2.00)	0.377
12-5	Drug Dependence	All	2 (0.2)	4 (0.3)	0.72 (0.13,3.94)	0.700
		Officer	0 (0.0)	1 (0.2)	--	0.999 ^a
		Enlisted Flyer	0 (0.0)	0 (0.0)	--	--
		Enlisted Groundcrew	2 (0.5)	3 (0.5)	1.01 (0.17,6.08)	0.990
12-6	Anxiety	All	232 (26.9)	334 (26.8)	1.00 (0.83,1.22)	0.969
		Officer	56 (16.5)	88 (17.9)	0.91 (0.63,1.31)	0.605
		Enlisted Flyer	48 (32.0)	56 (30.0)	1.10 (0.69,1.75)	0.685
		Enlisted Groundcrew	128 (34.3)	190 (33.6)	1.03 (0.78,1.36)	0.813
12-7	Other Neuroses	All	467 (54.6)	660 (53.2)	1.06 (0.89,1.26)	0.529
		Officer	136 (40.2)	226 (46.0)	0.79 (0.60,1.05)	0.099
		Enlisted Flyer	93 (62.4)	112 (60.5)	1.08 (0.69,1.69)	0.726
		Enlisted Groundcrew	238 (64.7)	322 (57.1)	1.38 (1.05,1.08)	0.021
12-8	SCL-90-R Anxiety	All	82 (9.5)	140 (11.2)	0.83 (0.62,1.10)	0.197
		Officer	14 (4.1)	28 (5.7)	0.71 (0.37,1.37)	0.309
		Enlisted Flyer	15 (10.0)	30 (16.0)	0.58 (0.30,1.13)	0.108
		Enlisted Groundcrew	53 (14.1)	82 (14.4)	0.98 (0.67,1.42)	0.905
12-9	SCL-90-R Depression	All	115 (13.3)	201 (16.1)	0.80 (0.62,1.02)	0.073
		Officer	28 (8.2)	47 (9.5)	0.85 (0.52,1.39)	0.512
		Enlisted Flyer	19 (12.7)	40 (21.4)	0.53 (0.29,0.97)	0.038
		Enlisted Groundcrew	68 (18.1)	114 (20.0)	0.88 (0.63,1.23)	0.469
12-10	SCL-90-R Hostility	All	61 (7.0)	111 (8.9)	0.78 (0.56,1.08)	0.124
		Officer	11 (3.2)	23 (4.7)	0.68 (0.33,1.42)	0.304
		Enlisted Flyer	11 (7.3)	21 (11.2)	0.63 (0.29,1.34)	0.228
		Enlisted Groundcrew	39 (10.4)	67 (11.8)	0.87 (0.57,1.32)	0.513
12-11	SCL-90-R Interpersonal Sensitivity	All	117 (13.5)	205 (16.4)	0.80 (0.62,1.02)	0.066
		Officer	25 (7.3)	40 (8.1)	0.90 (0.53,1.51)	0.679
		Enlisted Flyer	22 (14.7)	42 (22.5)	0.59 (0.34,1.05)	0.072
		Enlisted Groundcrew	70 (18.7)	123 (21.6)	0.83 (0.60,1.15)	0.272