

APPENDIX N-1.

Dependent Variable-Covariate Associations for the Endocrine Assessment

This appendix contains results of tests of association between each dependent variable and candidate covariates for the adjusted analysis. Pearson's chi-square test (continuity-adjusted for 2×2 tables) is used for the significance testing of the associations between each discrete dependent variable and the candidate covariate. When a candidate covariate is continuous in nature (for example, age), the covariate is discretized prior to the analysis of the discrete dependent variable. Pearson's correlation coefficient is used for significance testing of the associations between each continuous dependent variable and a continuous candidate covariate. When a candidate covariate is discrete in nature, means (transformed back to the original scale, if necessary) are presented and an analysis of variance is used to investigate the difference between the means.

Table N-1-1.
Dependent Variable-Covariate Associations for the Endocrine Assessment

Dependent Variable	Level	Age			Race		
		Born ≥ 1942	Born < 1942	p-Value	Black	Non-Black	p-Value
Past Thyroid Disease	Yes	(n=953)	(n=1,267)	0.009	(n=131)	(n=2,089)	0.782
		4.0%	6.6%		4.6%	5.6%	
Composite Diabetes Indicator	Yes	(n=953)	(n=1,272)	<0.001	(n=131)	(n=2,094)	0.091
		8.2%	19.1%		19.9%	14.1%	
Diabetic Severity	No Treatment	(n=954)	(n=1,274)	<0.001	(n=131)	(n=2,097)	0.021
	Diet Only	5.1%	11.0%		13.0%	8.2%	
	Oral Hypoglycemic	1.8%	3.5%		0.8%	2.9%	
	Insulin Dependent	0.9%	2.5%		4.6%	1.7%	
Time to Diabetes Onset (years) ^a		(n=2,227)		<0.001	(n=131)	(n=2,096)	0.069
		$\beta = -0.024$			$\beta = -0.160^b$		
Thyroid Gland	Abnormal	(n=946)	(n=1,227)	0.987	(n=130)	(n=2,043)	0.999
		0.6%	0.7%		0.8%	0.7%	
Testicular Volume: Minimum (cm ³)		(n=2,207)		<0.001	(n=130)	(n=2,077)	<0.001
		$r = -0.153$			$\bar{x} = 14.30$	$\bar{x} = 16.02$	
Testicular Volume: Total (cm ³)		(n=2,207)		<0.001	(n=130)	(n=2,077)	<0.001
		$r = -0.140$			$\bar{x} = 30.55$	$\bar{x} = 34.20$	
Retinopathy Results (Diabetics)	Abnormal	(n=78)	(n=241)	0.326	(n=26)	(n=293)	0.999
		1.3%	4.6%		3.9%	3.8%	
Neuropathy Results (Diabetics)	Abnormal	(n=78)	(n=243)	0.107	(n=26)	(n=295)	0.125
		3.9%	10.7%		19.2%	8.1%	
Radial Pulses (Diabetics)	Abnormal	(n=78)	(n=243)	0.757	(n=26)	(n=295)	0.999
		0.0%	1.2%		0.0%	1.0%	
Femoral Pulses (Diabetics)	Abnormal	(n=78)	(n=243)	0.486	(n=26)	(n=295)	0.999
		1.3%	3.7%		3.9%	3.1%	
Popliteal Pulses (Diabetics)	Abnormal	(n=78)	(n=243)	0.273	(n=26)	(n=295)	0.999
		1.3%	4.9%		3.9%	4.1%	
Dorsalis Pedis Pulses (Diabetics)	Abnormal	(n=78)	(n=243)	0.082	(n=26)	(n=295)	0.651
		7.7%	16.5%		19.2%	13.9%	
Posterior Tibial Pulses (Diabetics)	Abnormal	(n=78)	(n=243)	0.032	(n=26)	(n=295)	0.665
		1.3%	9.5%		11.5%	7.1%	
Leg Pulses (Diabetics)	Abnormal	(n=78)	(n=243)	0.043	(n=26)	(n=295)	0.413
		7.7%	18.1%		23.1%	14.9%	
Peripheral Pulses (Diabetics)	Abnormal	(n=78)	(n=243)	0.030	(n=26)	(n=295)	0.474
		7.7%	18.9%		23.1%	15.6%	

^aEstimated from a failure time analysis model, using the censored Weibull distribution.

^bEstimated coefficient relative to non-Blacks.

Table N-1-1. (Continued)
Dependent Variable-Covariate Associations for the Endocrine Assessment

Dependent Variable	Level	Age			Race		
		Born ≥1942	Born <1942	p-Value	Black	Non-Black	p-Value
Thyroid Stimulating Hormone (TSH) (μIU/ml) (continuous) (discrete)	Abnormal High	(n=944) r=0.088 1.7%	(n=1,225) 2.9%	<0.001 0.077	(n=131) $\bar{x}=1.19$ 0.0%	(n=2,038) $\bar{x}=1.62$ 2.5%	<0.001 0.125
Thyroxine (T ₄) (μg/dl) (continuous) (discrete)	Abnormal Low	(n=944) r=0.013 0.5%	(n=1,225) 0.7%	0.545 0.748	(n=131) $\bar{x}=7.77$ 0.8%	(n=2,038) $\bar{x}=7.82$ 0.6%	0.711 0.999
Anti-Thyroid Antibodies	Abnormal	(n=944) 3.1%	(n=1,225) 3.0%	0.999	(n=131) 2.3%	(n=2,038) 3.1%	0.799
Fasting Glucose (mg/dl) (All Participants) (continuous) (discrete)	Abnormal High	(n=953) r=0.191 7.0%	(n=1,274) 17.8%	<0.001 <0.001	(n=131) $\bar{x}=109.06$ 21.4%	(n=2,096) $\bar{x}=104.03$ 12.7%	0.008 0.007
Fasting Glucose (mg/dl) (Diabetics) (continuous) (discrete)	Abnormal High	(n=78) r=0.050 59.0%	(n=243) 72.4%	0.367 0.036	(n=26) $\bar{x}=160.58$ 84.6%	(n=295) $\bar{x}=140.48$ 67.8%	0.058 0.119
Fasting Glucose (mg/dl) (Nondiabetics) (continuous) (discrete)	Abnormal High	(n=875) r=0.169 2.4%	(n=1,031) 5.0%	<0.001 0.005	(n=105) $\bar{x}=99.10$ 5.7%	(n=1,801) $\bar{x}=99.04$ 3.7%	0.946 0.419
2-Hour Postprandial Glucose (Nondiabetics) (mg/dl) (continuous) (discrete)	Impaired	(n=875) r=0.188 8.9%	(n=1,029) 16.8%	<0.001 <0.001	(n=105) $\bar{x}=103.09$ 9.5%	(n=1,799) $\bar{x}=103.56$ 13.4%	0.867 0.321
Fasting Urinary Glucose (All Participants)	Present	(n=951) 1.6%	(n=1,273) 4.2%	0.001	(n=131) 6.1%	(n=2,093) 2.9%	0.068
Fasting Urinary Glucose (Diabetics)	Present	(n=78) 19.2%	(n=242) 21.5%	0.790	(n=26) 30.8%	(n=294) 20.1%	0.301
2-Hour Postprandial Urinary Glucose (Nondiabetics)	Present	(n=873) 15.9%	(n=1,028) 20.5%	0.012	(n=104) 16.4%	(n=1,797) 18.5%	0.668

Table N-1-1. (Continued)
Dependent Variable-Covariate Associations for the Endocrine Assessment

Dependent Variable	Level	Age			Race		
		Born ≥1942	Born <1942	p-Value	Black	Non-Black	p-Value
Serum Insulin (mIU/ml) (All Participants) (continuous) (discrete)		(n=2,227) r=0.103		<0.001	(n=131) $\bar{x}=56.9$		0.048
		(n=953)	(n=1,274)		(n=2,096) $\bar{x}=67.0$		
	Abnormal Low	6.0%	3.5%	<0.001	6.1%	4.4%	0.502
	Abnormal High	51.1%	60.9%		52.7%	57.0%	
Serum Insulin (mIU/ml) (Diabetics) (continuous) (discrete)		(n=321) r=-0.004		0.939	(n=26) $\bar{x}=27.5$		0.001
		(n=78)	(n=243)		(n=295) $\bar{x}=61.0$		
	Abnormal Low	0.0%	0.8%	0.186	7.7%	0.0%	<0.001
	Abnormal High	50.0%	60.1%		38.5%	59.3%	
Serum Insulin (mIU/ml) (Nondiabetics) (continuous) (discrete)		(n=1,906) r=0.147		<0.001	(n=105) $\bar{x}=68.2$		0.987
		(n=875)	(n=1,031)		(n=1,801) $\bar{x}=68.1$		
	Abnormal Low	6.5%	4.1%	<0.001	5.7%	5.2%	0.970
	Abnormal High	51.2%	61.1%		56.2%	56.6%	
Serum Glucagon (pg/ml) (All Participants) (continuous) (discrete)		(n=1,931) r=0.105		<0.001	(n=114) $\bar{x}=54.7$		0.213
		(n=787)	(n=1,144)		(n=1,817) $\bar{x}=56.5$		
	Abnormal	0.0%	0.4%	0.250	0.9%	0.2%	0.575
Serum Glucagon (pg/ml) (Diabetics) (continuous) (discrete)		(n=285) r=0.048		0.417	(n=22) $\bar{x}=67.8$		0.620
		(n=64)	(n=221)		(n=263) $\bar{x}=65.4$		
	Abnormal	0.0%	1.8%	0.631	4.6%	1.1%	0.718
Serum Glucagon (pg/ml) (Nondiabetics) (continuous)		(n=1,646) r=0.066		0.007	(n=92) $\bar{x}=52.0$		0.024
					(n=1,554) $\bar{x}=55.1$		
	Abnormal						
α -1-C Hemoglobin (percent) (All Participants) (continuous) (discrete)		(n=2,227) r=0.165		<0.001	(n=131) $\bar{x}=7.80$		<0.001
		(n=953)	(n=1,274)		(n=2,096) $\bar{x}=7.12$		
	Abnormal	21.3%	30.5%	<0.001	48.1%	25.2%	<0.001

Table N-1-1. (Continued)
Dependent Variable-Covariate Associations for the Endocrine Assessment

Dependent Variable	Level	Age			Race		
		Born ≥1942	Born <1942	p-Value	Black	Non-Black	p-Value
α-1-C Hemoglobin (percent)							
(Diabetics)		(n=321)					
(continuous)		r=0.068					
(discrete)		(n=78)	(n=243)				
	Abnormal	71.8%	79.8%	0.225	(n=26)	(n=295)	0.001
				0.183	̄x=10.65	̄x=8.89	
					88.5%	77.0%	0.267
α-1-C Hemoglobin (percent)							
(Nondiabetics)		(n=1,906)					
(continuous)		r=0.091					
(discrete)		(n=875)	(n=1,031)	<0.001	(n=105)	(n=1,801)	
	Abnormal	16.8%	18.9%	0.255	̄x=7.22	̄x=6.87	<0.001
Urinary Protein (Diabetics)	Abnormal	(n=78)	(n=242)				
		12.8%	14.5%	0.861	(n=26)	(n=294)	
					15.4%	14.0%	0.999
Serum Proinsulin (ng/ml)							
(Diabetics)		(n=307)					
(continuous)		r=0.002					
(discrete)		(n=73)	(n=234)				
	Abnormal	41.1%	42.3%	0.978	(n=25)	(n=282)	0.019
				0.962	̄x=0.426	̄x=0.803	
Serum C Peptide (ng/ml)							
(Diabetics)		(n=307)					
(continuous)		r=0.024					
(discrete)		(n=73)	(n=234)				
	Abnormal	56.2%	62.8%	0.673	(n=25)	(n=282)	0.003
				0.378	̄x=4.83	̄x=8.93	
Total Testosterone (ng/ml)							
(continuous)		(n=2,207)					
(discrete)		r=-0.104					
	Abnormal	(n=950)	(n=1,257)	<0.001	(n=130)	(n=2,077)	
		4.5%	5.4%	0.400	̄x=528.4	̄x=501.8	0.112
Free Testosterone (pg/ml)							
(continuous)		(n=2,207)					
(discrete)		r=-0.292					
	Abnormal	(n=950)	(n=1,257)	<0.001	(n=130)	(n=2,077)	0.062
		21.9%	14.6%	<0.001	̄x=19.45	̄x=18.42	
Sex Hormone Binding Globulin	Abnormal	(n=950)	(n=1,257)	0.420	20.8%	17.6%	
		17.1%	17.8%	0.679	(n=130)	(n=2,077)	
					26.2%	17.0%	0.010
Total Testosterone to Sex Hormone Binding Globulin Ratio	Abnormal	(n=950)	(n=1,257)	<0.001	(n=130)	(n=2,077)	
		5.7%	13.1%		7.7%	10.0%	0.478

Table N-1-1. (Continued)
Dependent Variable-Covariate Associations for the Endocrine Assessment

Dependent Variable	Level	Age			Race		
		Born ≥1942	Born <1942	p-Value	Black	Non-Black	p-Value
Estradiol (pg/ml) (continuous) (discrete)	Abnormal	(n=2,232) r=-0.081 (n=955)	(n=1,277) 3.6%	<0.001 0.469	(n=131) $\bar{x}=37.04$	(n=2,101) $\bar{x}=31.87$	<0.001 0.114
Luteinizing Hormone (LH) (mIU/ml) (continuous) (discrete)	Abnormal	(n=2,232) r=0.165 (n=955)	(n=1,277) 3.1%	<0.001 <0.001	(n=131) $\bar{x}=4.11$	(n=2,101) $\bar{x}=3.93$	0.352 0.999
Follicle Stimulating Hormone (FSH) (mIU/ml) (continuous) (discrete)	Abnormal	(n=2,232) r=0.257 (n=955)	(n=1,277) 6.3%	<0.001 <0.001	(n=131) $\bar{x}=3.93$	(n=2,101) $\bar{x}=4.39$	0.070 0.343

Table N-1-1. (Continued)
Dependent Variable-Covariate Associations for the Endocrine Assessment

Dependent Variable	Level	Occupation			Personality Type			
		Officer	Enlisted Flyer	Enlisted Groundcrew	p-Value	Type A	Type B	
Past Thyroid Disease	Yes	(n=863) 6.0%	(n=364) 4.1%	(n=993) 5.5%	0.408	(n=948) 5.4%	(n=1,270) 5.6%	0.903
Composite Diabetes Indicator	Yes	(n=867) 13.0%	(n=364) 16.8%	(n=994) 14.8%	0.215	(n=949) 12.2%	(n=1,274) 16.1%	0.012
Diabetic Severity		(n=867)	(n=365)	(n=996)		(n=950)	(n=1,276)	
No Treatment		7.0%	10.1%	9.1%	0.422	7.0%	9.6%	0.098
Diet Only		2.5%	3.0%	2.9%		2.7%	2.8%	
Oral Hypoglycemic		1.7%	1.9%	1.9%		1.6%	2.0%	
Insulin Dependent		1.7%	1.6%	0.8%		1.0%	1.6%	
Time to Diabetes Onset (years) ^a		(n=867) $\beta = -0.111^b$	(n=365) $\beta = -0.049^b$	(n=995)	0.261	(n=950) $\beta = 0.111^c$	(n=1,275)	0.027
Thyroid Gland	Abnormal	(n=839) 0.6%	(n=355) 0.6%	(n=979) 0.8%	0.810	(n=932) 0.8%	(n=1,239) 0.7%	0.975
Testicular Volume: Minimum (cm ³)		(n=857) $\bar{x} = 15.67$	(n=363) $\bar{x} = 15.85$	(n=987) $\bar{x} = 16.16$	0.157	(n=940) $\bar{x} = 16.01$	(n=1,265) $\bar{x} = 15.86$	0.540
Testicular Volume: Total (cm ³)		(n=857) $\bar{x} = 33.61$	(n=363) $\bar{x} = 34.18$	(n=987) $\bar{x} = 34.22$	0.435	(n=940) $\bar{x} = 34.31$	(n=1,265) $\bar{x} = 33.77$	0.251
Retinopathy Results (Diabetics)	Abnormal	(n=111) 3.6%	(n=61) 4.9%	(n=147) 3.4%	0.867	(n=114) 2.6%	(n=205) 4.4%	0.628
Neuropathy Results (Diabetics)	Abnormal	(n=113) 7.1%	(n=61) 13.1%	(n=147) 8.8%	0.413	(n=116) 6.9%	(n=205) 10.2%	0.422
Radial Pulses (Diabetics)	Abnormal	(n=113) 1.8%	(n=61) 0.0%	(n=147) 0.7%	0.465	(n=116) 0.9%	(n=205) 1.0%	0.999
Femoral Pulses (Diabetics)	Abnormal	(n=113) 3.5%	(n=61) 4.9%	(n=147) 2.0%	0.526	(n=116) 3.5%	(n=205) 2.9%	0.999
Popliteal Pulses (Diabetics)	Abnormal	(n=113) 5.3%	(n=61) 4.9%	(n=147) 2.7%	0.536	(n=116) 3.5%	(n=205) 4.4%	0.907

^aEstimated from a failure time analysis model, using the censored Weibull distribution.

^bEstimated coefficient relative to officers.

^cEstimated coefficient relative to Type B.

Table N-1-1. (Continued)
Dependent Variable-Covariate Associations for the Endocrine Assessment

Dependent Variable	Level	Occupation			Personality Type			
		Officer	Enlisted Flyer	Enlisted Groundcrew	p-Value	Type A	Type B	
Dorsalis Pedis Pulses (Diabetics)	Abnormal	(n=113) 15.0%	(n=61) 14.8%	(n=147) 13.6%	0.942	(n=116) 12.1%	(n=205) 15.6%	0.481
Posterior Tibial Pulses (Diabetics)	Abnormal	(n=113) 8.9%	(n=61) 8.2%	(n=147) 6.1%	0.690	(n=116) 6.9%	(n=205) 7.8%	0.939
Leg Pulses (Diabetics)	Abnormal	(n=113) 15.0%	(n=61) 16.4%	(n=147) 15.7%	0.972	(n=116) 14.7%	(n=205) 16.1%	0.855
Peripheral Pulses (Diabetics)	Abnormal	(n=113) 16.8%	(n=61) 16.4%	(n=147) 15.7%	0.967	(n=116) 14.7%	(n=205) 17.1%	0.684
Thyroid Stimulating Hormone (TSH) (μ IU/ml) (continuous) (discrete)	Abnormal High	(n=837) $\bar{x}=1.68$ 3.0%	(n=356) $\bar{x}=1.49$ 1.7%	(n=976) $\bar{x}=1.56$ 2.1%	0.003 0.280	(n=931) $\bar{x}=1.57$ 2.8%	(n=1,236) $\bar{x}=1.61$ 2.0%	0.406 0.304
Thyroxine (T_4) (μ g/dl) (continuous) (discrete)	Abnormal Low	(n=837) $\bar{x}=7.57$ 1.2%	(n=356) $\bar{x}=7.96$ 0.3%	(n=976) $\bar{x}=7.98$ 0.3%	<0.001 0.040	(n=931) $\bar{x}=7.79$ 0.6%	(n=1,236) $\bar{x}=7.83$ 0.7%	0.427 0.999
Anti-Thyroid Antibodies	Abnormal	(n=837) 3.4%	(n=356) 2.8%	(n=976) 2.9%	0.808	(n=931) 3.4%	(n=1,236) 2.8%	0.427
Fasting Glucose (mg/dl) (All Participants) (continuous) (discrete)	Abnormal High	(n=867) $\bar{x}=104.48$ 12.8%	(n=364) $\bar{x}=105.87$ 14.6%	(n=996) $\bar{x}=103.62$ 13.1%	0.203 0.695	(n=950) $\bar{x}=103.43$ 11.4%	(n=1,275) $\bar{x}=105.00$ 14.6%	0.078 0.031
Fasting Glucose (mg/dl) (Diabetics) (continuous) (discrete)	Abnormal High	(n=113) $\bar{x}=144.68$ 71.7%	(n=61) $\bar{x}=143.41$ 70.5%	(n=147) $\bar{x}=139.43$ 66.7%	0.674 0.665	(n=116) $\bar{x}=145.53$ 69.8%	(n=205) $\bar{x}=140.06$ 68.8%	0.340 0.945
Fasting Glucose (mg/dl) (Nondiabetics) (continuous) (discrete)	Abnormal High	(n=754) $\bar{x}=99.51$ 4.0%	(n=303) $\bar{x}=99.60$ 3.3%	(n=849) $\bar{x}=98.43$ 3.8%	0.021 0.872	(n=834) $\bar{x}=98.64$ 3.2%	(n=1,070) $\bar{x}=99.36$ 4.2%	0.068 0.328
2-Hour Postprandial Glucose (Nondiabetics) (mg/dl) (continuous) (discrete)	Impaired	(n=754) $\bar{x}=102.17$ 11.1%	(n=303) $\bar{x}=107.66$ 15.8%	(n=847) $\bar{x}=103.31$ 14.1%	0.018 0.075	(n=833) $\bar{x}=100.89$ 10.4%	(n=1,069) $\bar{x}=105.61$ 15.3%	<0.001 0.003

Table N-1-1. (Continued)
Dependent Variable-Covariate Associations for the Endocrine Assessment

Dependent Variable	Level	Occupation			p-Value	Personality Type		
		Officer	Enlisted Flyer	Enlisted Groundcrew		Type A	Type B	p-Value
Fasting Urinary Glucose (All Participants)	Present	(n=867) 2.7%	(n=363) 3.9%	(n=994) 3.1%	0.529	(n=949) 2.9%	(n=1,273) 3.2%	0.701
Fasting Urinary Glucose (Diabetics)	Present	(n=113) 20.4%	(n=61) 21.3%	(n=146) 21.2%	0.982	(n=116) 23.3%	(n=204) 19.6%	0.527
2-Hour Postprandial Urinary Glucose (Nondiabetics)	Present	(n=751) 14.3%	(n=303) 21.8%	(n=847) 20.9%	0.001	(n=833) 17.7%	(n=1,066) 19.0%	0.505
Serum Insulin (mIU/ml) (All Participants) (continuous)		(n=867) $\bar{x}=63.8$	(n=364) $\bar{x}=70.2$	(n=996) $\bar{x}=67.4$	0.190	(n=950) $\bar{x}=59.9$	(n=1,275) $\bar{x}=71.6$	<0.001
(discrete)	Abnormal Low	5.0%	3.9%	4.4%	0.241	5.4%	3.9%	<0.001
	Abnormal High	54.7%	61.8%	56.6%		51.9%	60.3%	
Serum Insulin (mIU/ml) (Diabetics) (continuous)		(n=113) $\bar{x}=68.4$	(n=61) $\bar{x}=49.5$	(n=147) $\bar{x}=52.9$	0.133	(n=116) $\bar{x}=50.9$	(n=205) $\bar{x}=61.1$	0.190
(discrete)	Abnormal Low	0.0%	3.3%	0.0%	0.003	0.0%	1.0%	0.030
	Abnormal High	68.1%	50.8%	52.4%		49.1%	62.4%	
Serum Insulin (mIU/ml) (Nondiabetics) (continuous)		(n=754) $\bar{x}=63.1$	(n=303) $\bar{x}=75.4$	(n=849) $\bar{x}=70.2$	0.003	(n=834) $\bar{x}=61.3$	(n=1,070) $\bar{x}=73.8$	<0.001
(discrete)	Abnormal Low	5.7%	4.0%	5.2%	0.018	6.1%	4.5%	0.003
	Abnormal High	52.7%	64.0%	57.4%		52.3%	59.9%	
Serum Glucagon (pg/ml) (All Participants) (continuous)		(n=745) $\bar{x}=56.0$	(n=331) $\bar{x}=55.7$	(n=855) $\bar{x}=57.0$	0.273	(n=816) $\bar{x}=56.0$	(n=1,113) $\bar{x}=56.7$	0.288
(discrete)	Abnormal	0.0%	0.0%	0.5%	0.080	0.1%	0.3%	0.846
Serum Glucagon (pg/ml) (Diabetics) (continuous)		(n=104) $\bar{x}=64.6$	(n=53) $\bar{x}=63.4$	(n=128) $\bar{x}=67.4$	0.430	(n=100) $\bar{x}=64.9$	(n=185) $\bar{x}=66.0$	0.665
(discrete)	Abnormal	0.0%	0.0%	3.1%	0.083	1.0%	1.6%	0.999
Serum Glucagon (pg/ml) (Nondiabetics) (continuous)		(n=641) $\bar{x}=54.7$	(n=278) $\bar{x}=54.4$	(n=727) $\bar{x}=55.3$	0.514	(n=716) $\bar{x}=54.8$	(n=928) $\bar{x}=55.0$	0.800

Table N-1-1. (Continued)
Dependent Variable-Covariate Associations for the Endocrine Assessment

Dependent Variable	Level	Occupation			p-Value	Personality Type		
		Officer	Enlisted Flyer	Enlisted Groundcrew		Type A	Type B	p-Value
α -1-C Hemoglobin (percent) (All Participants) (continuous)	Abnormal	(n=867)	(n=364)	(n=996)	0.003	(n=950)	(n=1,275)	0.128
(discrete)		$\bar{x}=7.07$	$\bar{x}=7.32$	$\bar{x}=7.18$		$\bar{x}=7.12$	$\bar{x}=7.19$	
		23.2%	33.2%	27.1%		24.6%	28.0%	
α -1-C Hemoglobin (percent) (Diabetics) (continuous)	Abnormal	(n=113)	(n=61)	(n=147)	0.758	(n=116)	(n=205)	0.565
(discrete)		$\bar{x}=8.90$	$\bar{x}=9.19$	$\bar{x}=9.03$		$\bar{x}=9.12$	$\bar{x}=8.96$	
		77.0%	80.3%	77.6%		80.2%	76.6%	
α -1-C Hemoglobin (percent) (Nondiabetics) (continuous)	Abnormal	(n=754)	(n=303)	(n=849)	0.001	(n=834)	(n=1,070)	0.445
(discrete)		$\bar{x}=6.83$	$\bar{x}=6.99$	$\bar{x}=6.90$		$\bar{x}=6.88$	$\bar{x}=6.90$	
		15.1%	23.8%	18.4%		16.9%	18.7%	
Urinary Protein (Diabetics)	Abnormal	(n=113)	(n=61)	(n=146)	0.527	(n=116)	(n=204)	0.950
Serum Proinsulin (ng/ml) (Diabetics) (continuous)	Abnormal	(n=109)	(n=58)	(n=140)	0.247	(n=110)	(n=197)	0.021
(discrete)		$\bar{x}=0.87$	$\bar{x}=0.65$	$\bar{x}=0.74$		$\bar{x}=0.62$	$\bar{x}=0.86$	0.429
Serum C Peptide (ng/ml) (Diabetics) (continuous)	Abnormal	(n=109)	(n=58)	(n=140)	0.469	(n=110)	(n=197)	0.483
(discrete)		$\bar{x}=9.20$	$\bar{x}=8.03$	$\bar{x}=8.35$		$\bar{x}=8.23$	$\bar{x}=8.79$	0.781
Total Testosterone (ng/ml) (continuous)	Abnormal	(n=857)	(n=361)	(n=989)	0.014	(n=939)	(n=1,266)	0.085
(discrete)		$\bar{x}=489.8$	$\bar{x}=505.5$	$\bar{x}=514.5$		$\bar{x}=511.2$	$\bar{x}=497.6$	0.347
Free Testosterone (pg/ml) (continuous)	Abnormal	(n=857)	(n=361)	(n=989)	<0.001	(n=939)	(n=1,266)	0.001
(discrete)		$\bar{x}=17.37$	$\bar{x}=18.68$	$\bar{x}=19.39$		$\bar{x}=18.97$	$\bar{x}=18.12$	0.016
Sex Hormone Binding Globulin	Abnormal	(n=857)	(n=361)	(n=989)	0.312	(n=939)	(n=1,266)	0.036
		18.8%	15.2%	17.2%		15.4%	19.0%	

Table N-1-1. (Continued)
Dependent Variable-Covariate Associations for the Endocrine Assessment

Dependent Variable	Level	Occupation			Personality Type		
		Officer	Enlisted Flyer	Enlisted Groundcrew	p-Value	Type A	Type B
Total							
Testosterone to Sex Hormone Binding Globulin Ratio	Abnormal	(n=857) 10.7%	(n=361) 11.1%	(n=989) 8.7%	0.241	(n=939) 10.3%	(n=1,266) 9.5%
Estradiol (pg/ml) (continuous)		(n=869) $\bar{x}=31.45$	(n=364) $\bar{x}=32.13$	(n=999) $\bar{x}=32.81$	0.085	--	--
(discrete)		3.5%	5.0%	3.9%	0.466	--	--
Luteinizing Hormone (LH) (mIU/ml) (continuous)	Abnormal	(n=869) $\bar{x}=3.99$	(n=364) $\bar{x}=3.98$	(n=999) $\bar{x}=3.88$	0.476	--	--
(discrete)		2.2%	2.2%	1.5%	0.493	--	--
Follicle Stimulating Hormone (FSH) (mIU/ml) (continuous)	Abnormal	(n=869) $\bar{x}=4.59$	(n=364) $\bar{x}=4.44$	(n=999) $\bar{x}=4.15$	0.005	--	--
(discrete)		5.3%	5.5%	3.0%	0.024	--	--

Table N-1-1. (Continued)
Dependent Variable-Covariate Associations for the Endocrine Assessment

Dependent Variable	Level	Body Fat			Family History of Diabetes		
		Obese > 25%	Lean or Normal ≤ 25%	p-Value	Yes	No	p-Value
Composite Diabetes Indicator	Yes	(n=567) 26.1%	(n=1,658) 10.4%	<0.001	(n=521) 21.9%	(n=1,668) 12.0%	<0.001
Diabetic Severity		(n=568) 15.9%	(n=1,660) 6.0%	<0.001	(n=521) 10.9%	(n=1,671) 7.5%	<0.001
	No Treatment	4.8%	2.1%		4.8%	2.2%	
	Diet Only	3.9%	1.1%		3.8%	1.3%	
	Oral Hypoglycemic	1.6%	1.2%		2.3%	1.0%	
	Insulin Dependent						
Time to Diabetes Onset (years) ^a		(n=2,227) $\beta = -0.035$		<0.001	(n=521) $\beta = -0.283^b$	(n=1,670)	<0.001
Testicular Volume: Minimum (cm ³)		(n=2,207) $r = 0.034$		0.105	--	--	--
Testicular Volume: Total (cm ³)		(n=2,207) $r = 0.037$		0.080	--	--	--
Retinopathy Results (Diabetics)	Abnormal	(n=148) 2.0%	(n=171) 5.3%	0.223	(n=113) 7.1%	(n=199) 1.5%	0.025
Neuropathy Results (Diabetics)	Abnormal	(n=148) 6.8%	(n=173) 11.0%	0.262	(n=114) 7.9%	(n=200) 9.5%	0.784
Radial Pulses (Diabetics)	Abnormal	(n=148) 0.7%	(n=173) 1.2%	0.999	(n=114) 0.9%	(n=200) 1.0%	0.999
Femoral Pulses (Diabetics)	Abnormal	(n=148) 3.4%	(n=173) 2.9%	0.999	(n=114) 2.6%	(n=200) 3.5%	0.930
Popliteal Pulses (Diabetics)	Abnormal	(n=148) 4.1%	(n=173) 4.1%	0.999	(n=114) 3.5%	(n=200) 4.5%	0.897
Dorsalis Pedis Pulses (Diabetics)	Abnormal	(n=148) 11.5%	(n=173) 16.8%	0.236	(n=114) 14.0%	(n=200) 14.0%	0.999
Posterior Tibial Pulses (Diabetics)	Abnormal	(n=148) 4.7%	(n=173) 9.8%	0.129	(n=114) 7.9%	(n=200) 7.5%	0.999
Leg Pulses (Diabetics)	Abnormal	(n=148) 12.2%	(n=173) 18.5%	0.160	(n=114) 16.7%	(n=200) 14.5%	0.726
Peripheral Pulses (Diabetics)	Abnormal	(n=148) 12.2%	(n=173) 19.7%	0.096	(n=114) 16.7%	(n=200) 15.5%	0.911
Fasting Glucose (mg/dl)							
(All Participants)		(n=568) $r = 0.209$	(n=1,659)				
(continuous)				<0.001	(n=521) $\bar{x} = 108.12$	(n=1,670) $\bar{x} = 103.21$	<0.001
(discrete)	Abnormal High	23.1%	9.8%	<0.001	18.2%	11.6%	<0.001

^aEstimated from a failure time analysis model, using the censored Weibull distribution.

^bEstimated coefficient relative to no family history of diabetes.

Table N-1-1. (Continued)
Dependent Variable-Covariate Associations for the Endocrine Assessment

Dependent Variable	Level	Body Fat			Family History of Diabetes		
		Obese > 25%	Lean or Normal ≤ 25%	p-Value	Yes	No	p-Value
Fasting Glucose (mg/dl) (Diabetics) (continuous) (discrete)	Abnormal High	(n=148) r=0.048	(n=173) 73.7% 65.3%	0.395 0.136	(n=114) $\bar{x}=145.48$	(n=200) 66.7% 70.5%	0.377 0.562
Fasting Glucose (mg/dl) (Nondiabetics) (continuous) (discrete)	Abnormal High	(n=420) r=0.165	(n=1,486) 5.2% 3.4%	<0.001 0.102	(n=407) $\bar{x}=99.49$	(n=1,470) 4.7% 3.5%	0.287 0.367
2-Hour Postprandial Glucose (Nondiabetics) (mg/dl) (continuous) (discrete)	Impaired	(n=419) r=0.265	(n=1,485) 23.2% 10.4%	<0.001 <0.001	(n=407) $\bar{x}=108.53$	(n=1,468) 17.0% 12.1%	<0.001 0.014
Fasting Urinary Glucose (All Participants)	Present	(n=566) 6.0%	(n=1,658) 2.1%	<0.001	(n=520) 4.8%	(n=1,668) 2.5%	0.010
Fasting Urinary Glucose (Diabetics)	Present	(n=147) 22.5%	(n=173) 19.7%	0.635	(n=114) 21.9%	(n=199) 20.1%	0.811
2-Hour Postprandial Urinary Glucose (Nondiabetics)	Present	(n=418) 20.3%	(n=1,483) 17.9%	0.281	(n=407) 19.4%	(n=1,466) 18.1%	0.587
Serum Insulin (mIU/ml) (All Participants) (continuous) (discrete)	Abnormal Low Abnormal High	(n=2,227) r=0.347	(n=1,659) 1.2% 5.7%	<0.001	(n=521) $\bar{x}=69.0$	(n=1,670) 5.0% 55.8%	0.310 0.065
Serum Insulin (mIU/ml) (Diabetics) (continuous) (discrete)	Abnormal Low Abnormal High	(n=321) r=0.223	(n=173) 0.0% 1.2%	<0.001	(n=114) $\bar{x}=47.1$	(n=200) 0.5% 61.5%	0.030 0.236

Table N-1-1. (Continued)
Dependent Variable-Covariate Associations for the Endocrine Assessment

Dependent Variable	Level	Body Fat			Family History of Diabetes		
		Obese >25%	Lean or Normal ≤25%	p-Value	Yes	No	p-Value
Serum Insulin (mIU/ml) (Nondiabetics) (continuous) (discrete)	Abnormal Low	(n=1,906) $r=0.415$	(n=420) (n=1,486)	<0.001	(n=407) $\bar{x}=76.8$	(n=1,470) $\bar{x}=66.1$	0.002
		1.7% 77.4%	6.2% 50.7%	<0.001	3.7% 62.9%	5.6% 55.0%	0.013
	Abnormal High	(n=1,931) $r=0.095$	(n=500) (n=1,431)	<0.001	(n=458) $\bar{x}=57.1$	(n=1,442) $\bar{x}=56.1$	0.227
		0.6% 2.3%	0.1% 0.7%	0.094 0.504	0.4% 1.9%	0.1% 1.1%	0.531
Serum Glucagon (pg/ml) (All Participants) (continuous) (discrete)	Abnormal	(n=285) $r=0.104$	(n=131) (n=154)	0.080	(n=103) $\bar{x}=68.5$	(n=175) $\bar{x}=64.2$	0.105
		2.3% 38.9%	0.7% 22.4%	0.504 <0.001	1.9% 35.1%	1.1% 24.2%	0.985 <0.001
	Abnormal	(n=1,646) $r=0.027$	(n=568) (n=1,659)	0.267	(n=355) $\bar{x}=54.1$	(n=1,267) $\bar{x}=55.1$	0.212
		0.267 0.846	0.267 0.013	0.267 0.013	0.267 81.6%	0.267 76.5%	0.212 0.364
α -1-C Hemoglobin (percent) (All Participants) (continuous) (discrete)	Abnormal	(n=2,227) $r=0.163$	(n=568) (n=1,659)	<0.001	(n=521) $\bar{x}=7.46$	(n=1,670) $\bar{x}=7.07$	<0.001
		38.9% 84.5%	22.4% 72.3%	<0.001 0.013	35.1% 81.6%	24.2% 76.5%	<0.001 0.364
	Abnormal	(n=321) $r=0.011$	(n=148) (n=173)	0.846	(n=114) $\bar{x}=9.44$	(n=200) $\bar{x}=8.79$	0.025
		84.5% 22.9%	72.3% 16.6%	0.013 0.004	81.6% 22.1%	76.5% 17.1%	0.364 0.024
Urinary Protein (Diabetics) (discrete)	Abnormal	(n=147) 15.0%	(n=173) 13.3%	0.789	(n=114) 15.8%	(n=199) 13.1%	0.618

Table N-1-1. (Continued)
Dependent Variable-Covariate Associations for the Endocrine Assessment

Dependent Variable	Level	Body Fat			Family History of Diabetes		
		Obese > 25%	Lean or Normal ≤ 25%	p-Value	Yes	No	p-Value
Serum Proinsulin (ng/ml) (Diabetics) (continuous) (discrete)	Abnormal	(n=307) r=0.249		<0.001	(n=112) $\bar{x}=0.760$		0.885
		(n=140)	(n=167)		(n=189)	$\bar{x}=0.776$	
		49.3%	35.9%	0.025	45.5%	40.7%	0.488
Serum C Peptide (ng/ml) (Diabetics) (continuous) (discrete)	Abnormal	(n=307) r=0.195		0.001	(n=112) $\bar{x}=7.31$		0.010
		(n=140)	(n=167)		(n=189)	$\bar{x}=9.35$	
		67.1%	56.3%	0.068	54.5%	65.6%	0.072
Total Testosterone (ng/ml) (continuous) (discrete)	Abnormal	(n=2,207) r=-0.347		<0.001	--	--	--
		(n=565)	(n=1,642)		--	--	--
		12.0%	2.6%	<0.001	--	--	--
Free Testosterone (pg/ml) (continuous) (discrete)	Abnormal	(n=2,207) r=-0.236		<0.001	--	--	--
		(n=565)	(n=1,642)		--	--	--
		27.1%	14.6%	<0.001	--	--	--
Sex Hormone Binding Globulin	Abnormal	(n=565)	(n=1,642)		--	--	--
Total Testosterone to Sex Hormone Binding Globulin Ratio	Abnormal	(n=565)	(n=1,642)	0.214	--	--	--
		10.8%	9.6%	0.443	--	--	--

Table N-1-1. (Continued)
Dependent Variable-Covariate Associations for the Endocrine Assessment

Dependent Variable	Level	Diabetic Severity				p-Value
		No Treatment	Diet Only	Oral Hypoglycemic	Insulin Dependent	
Retinopathy Results (Diabetics)	Abnormal	(n=189) 0.5%	(n=61) 3.3%	(n=41) 7.3%	(n=28) 21.4%	<0.001
Neuropathy Results (Diabetics)	Abnormal	(n=189) 3.7%	(n=62) 3.2%	(n=41) 17.1%	(n=29) 44.8%	<0.001
Radial Pulses (Diabetics)	Abnormal	(n=189) 0.5%	(n=62) 1.6%	(n=41) 2.4%	(n=29) 0.0%	0.589
Femoral Pulses (Diabetics)	Abnormal	(n=189) 2.7%	(n=62) 3.2%	(n=41) 0.0%	(n=29) 10.3%	0.090
Popliteal Pulses (Diabetics)	Abnormal	(n=189) 2.7%	(n=62) 3.2%	(n=41) 2.4%	(n=29) 17.2%	0.002
Dorsalis Pedis Pulses (Diabetics)	Abnormal	(n=189) 11.6%	(n=62) 12.9%	(n=41) 17.1%	(n=29) 31.0%	0.045
Posterior Tibial Pulses (Diabetics)	Abnormal	(n=189) 6.9%	(n=62) 3.2%	(n=41) 7.3%	(n=29) 20.7%	0.029
Leg Pulses (Diabetics)	Abnormal	(n=189) 13.2%	(n=62) 12.9%	(n=41) 19.5%	(n=29) 31.0%	0.076
Peripheral Pulses (Diabetics)	Abnormal	(n=189) 13.8%	(n=62) 12.9%	(n=41) 22.0%	(n=29) 31.0%	0.071
Fasting Glucose (mg/dl) (Diabetics) (continuous)	Abnormal High	(n=189) $\bar{x}=130.64$	(n=62) $\bar{x}=141.57$	(n=41) $\bar{x}=187.22$	(n=29) $\bar{x}=166.60$	<0.001
		64.6%	61.3%	92.7%	82.8%	0.001
Fasting Urinary Glucose (Diabetics)	Present	(n=188) 11.7%	(n=62) 21.0%	(n=41) 43.9%	(n=29) 48.3%	<0.001
Serum Insulin (mIU/ml) (Diabetics) (continuous)	Abnormal Low	(n=189) $\bar{x}=81.70$	(n=62) $\bar{x}=38.83$	(n=41) $\bar{x}=23.38$	(n=29) $\bar{x}=45.30$	<0.001
	Abnormal High	1.1%	0.0%	0.0%	0.0%	<0.001
		68.3%	45.2%	26.8%	58.6%	

Table N-1-1. (Continued)
Dependent Variable-Covariate Associations for the Endocrine Assessment

Dependent Variable	Level	Diabetic Severity				p-Value
		No Treatment	Diet Only	Oral Hypoglycemic	Insulin Dependent	
Serum Glucagon (pg/ml)						
(Diabetics)		(n=165)	(n=54)	(n=41)	(n=25)	
(continuous)		$\bar{x}=61.6$	$\bar{x}=67.0$	$\bar{x}=75.4$	$\bar{x}=75.3$	<0.001
(discrete)	Abnormal	1.2%	0.0%	2.4%	4.0%	0.503
α -1-C Hemoglobin (percent)						
(Diabetics)		(n=189)	(n=62)	(n=41)	(n=29)	
(continuous)		$\bar{x}=8.41$	$\bar{x}=8.79$	$\bar{x}=11.00$	$\bar{x}=11.37$	<0.001
(discrete)	Abnormal	72.0%	71.0%	100.0%	100.0%	<0.001
Urinary Protein						
(Diabetics)	Abnormal	(n=188)	(n=62)	(n=41)	(n=29)	
		10.1%	11.3%	24.4%	31.0%	0.004
Serum Proinsulin (ng/ml)						
(Diabetics)		(n=175)	(n=62)	(n=41)	(n=29)	
(continuous)		$\bar{x}=0.930$	$\bar{x}=0.531$	$\bar{x}=0.651$	$\bar{x}=0.579$	0.004
(discrete)	Abnormal	24.0%	58.1%	82.9%	58.6%	<0.001
Serum C Peptide (ng/ml)						
(Diabetics)		(n=175)	(n=62)	(n=41)	(n=29)	
(continuous)		$\bar{x}=11.41$	$\bar{x}=6.70$	$\bar{x}=4.03$	$\bar{x}=2.10$	<0.001
(discrete)	Abnormal	78.3%	48.4%	41.5%	13.8%	<0.001

Table N-1-1. (Continued)
Dependent Variable-Covariate Associations for the Endocrine Assessment

Dependent Variable	Level	Family History of Heart Disease			Current Cigarette Smoking (cigarettes/day)				p-Value
		No	Yes	p-Value	0-Never	0-Former	>0-20	>20	
Radial Pulses (Diabetics)	Abnormal	(n=139) 0.7%	(n=179) 1.1%	0.999	(n=73) 1.4%	(n=169) 1.2%	(n=47) 0.0%	(n=32) 0.0%	0.799
Femoral Pulses (Diabetics)	Abnormal	(n=139) 3.6%	(n=179) 2.8%	0.933	(n=73) 0.0%	(n=169) 1.2%	(n=47) 12.8%	(n=32) 6.3%	<0.001
Popliteal Pulses (Diabetics)	Abnormal	(n=139) 5.0%	(n=179) 3.4%	0.641	(n=73) 0.0%	(n=169) 1.2%	(n=47) 17.0%	(n=32) 9.4%	<0.001
Dorsalis Pedis Pulses (Diabetics)	Abnormal	(n=139) 18.7%	(n=179) 11.2%	0.083	(n=73) 6.9%	(n=169) 13.0%	(n=47) 27.7%	(n=32) 18.8%	0.012
Posterior Tibial Pulses (Diabetics)	Abnormal	(n=139) 10.1%	(n=179) 5.6%	0.198	(n=73) 0.0%	(n=169) 6.5%	(n=47) 19.2%	(n=32) 12.5%	0.001
Leg Pulses (Diabetics)	Abnormal	(n=139) 20.9%	(n=179) 11.7%	0.039	(n=73) 6.9%	(n=169) 14.2%	(n=47) 29.8%	(n=32) 21.9%	0.005
Peripheral Pulses (Diabetics)	Abnormal	(n=139) 20.9%	(n=179) 12.9%	0.078	(n=73) 8.2%	(n=169) 14.8%	(n=47) 29.8%	(n=32) 21.9%	0.013

Dependent Variable	Level	Lifetime Cigarette Smoking History (pack-years)				Cholesterol (mg/dl)			p-Value
		0	>0-10	>10	p-Value	0-200	200-239	>239	
Radial Pulses (Diabetics)	Abnormal	(n=73) 1.4%	(n=82) 0.0%	(n=166) 1.2%	0.590	(n=104) 1.9%	(n=113) 0.0%	(n=104) 1.0%	0.339
Femoral Pulses (Diabetics)	Abnormal	(n=73) 0.0%	(n=82) 3.7%	(n=166) 4.2%	0.213	(n=104) 2.9%	(n=113) 3.5%	(n=104) 2.9%	0.949
Popliteal Pulses (Diabetics)	Abnormal	(n=73) 0.0%	(n=82) 4.9%	(n=166) 5.4%	0.133	(n=104) 2.9%	(n=113) 5.3%	(n=104) 3.9%	0.658
Dorsalis Pedis Pulses (Diabetics)	Abnormal	(n=73) 6.9%	(n=82) 9.8%	(n=166) 19.9%	0.012	(n=104) 16.4%	(n=113) 10.6%	(n=104) 16.4%	0.376

Table N-1-1. (Continued)
Dependent Variable-Covariate Associations for the Endocrine Assessment

Dependent Variable	Level	Lifetime Cigarette Smoking History (pack-years)				Cholesterol (mg/dl)			
		0	>0-10	>10	p-Value	0-200	200-239	>239	p-Value
Posterior Tibial Pulses (Diabetics)	Abnormal	(n=73) 0.0%	(n=82) 6.1%	(n=166) 11.5%	0.007	(n=104) 6.7%	(n=113) 8.0%	(n=104) 7.7%	0.937
Leg Pulses (Diabetics)	Abnormal	(n=73) 6.9%	(n=82) 11.0%	(n=166) 21.7%	0.006	(n=104) 17.3%	(n=113) 11.5%	(n=104) 18.3%	0.327
Peripheral Pulses (Diabetics)	Abnormal	(n=73) 8.2%	(n=82) 11.0%	(n=166) 22.3%	0.008	(n=104) 18.3%	(n=113) 11.5%	(n=104) 19.2%	0.238

Dependent Variable	Level	HDL Cholesterol (mg/dl)			Lifetime Alcohol History (drink-years)			
		>35	0-35	p-Value	0	>0-40	>40	p-Value
Radial Pulses (Diabetics)	Abnormal	(n=187) 1.1%	(n=121) 0.8%	0.999	(n=24) 0.0%	(n=190) 1.1%	(n=101) 0.0%	0.516
Femoral Pulses (Diabetics)	Abnormal	(n=187) 2.7%	(n=121) 4.1%	0.707	(n=24) 0.0%	(n=190) 2.1%	(n=101) 5.0%	0.261
Popliteal Pulses (Diabetics)	Abnormal	(n=187) 2.7%	(n=121) 6.6%	0.165	(n=24) 0.0%	(n=190) 4.2%	(n=101) 4.0%	0.594
Dorsalis Pedis Pulses (Diabetics)	Abnormal	(n=187) 13.4%	(n=121) 16.5%	0.547	(n=24) 4.2%	(n=190) 12.1%	(n=101) 20.8%	0.044
Posterior Tibial Pulses (Diabetics)	Abnormal	(n=187) 7.0%	(n=121) 9.1%	0.641	(n=24) 4.2%	(n=190) 5.8%	(n=101) 9.9%	0.362
Leg Pulses (Diabetics)	Abnormal	(n=187) 15.5%	(n=121) 16.5%	0.936	(n=24) 4.2%	(n=190) 12.6%	(n=101) 22.8%	0.021
Peripheral Pulses (Diabetics)	Abnormal	(n=187) 16.6%	(n=121) 16.5%	0.999	(n=24) 4.2%	(n=190) 13.7%	(n=101) 22.8%	0.034