

APPENDIX N
Renal Assessment

TABLE N-1.
Dependent Variable-Covariate Associations for Renal Assessment

Dependent Variable	Level	Age			P-Value	Race		
		Born ≥1942	Born 1923- 1941	Born ≤1922		Black	Nonblack	P-Value
History of Kidney Disease/ Stones	Yes	(n=956) 7.7%	(n=1,252) 13.1%	(n=84) 15.5%	<0.001	(n=136) 11.8%	(n=2,156) 10.9%	0.838
Urinary Protein	Present	(n=956) 3.5%	(n=1,253) 5.4%	(n=84) 8.3%	0.030	(n=137) 8.8%	(n=2,156) 4.4%	0.047
Urinary Occult Blood	Abnormal	(n=956) 7.1%	(n=1,253) 8.2%	(n=84) 7.1%	0.614	(n=137) 13.9%	(n=2,156) 7.3%	0.015
Urinary White Blood Cell Count	Abnormal	(n=956) 6.1%	(n=1,253) 7.7%	(n=84) 10.7%	0.149	(n=137) 13.9%	(n=2,156) 6.7%	0.006
Blood Urea Nitrogen	--	(n=2,291) $r=0.195$	--	--	<0.001	(n=137) $\bar{x}=13.5$	(n=2,154) $\bar{x}=14.8$	0.003
Urine Specific Gravity	--	(n=2,293) $r=-0.100$	--	<0.001	$\bar{x}=1.0209$	(n=137) $\bar{x}=1.0198$	(n=2,156) 0.045	

TABLE N-1. (continued)
Dependent Variable-Covariate Associations for Renal Assessment

Dependent Variable	Level	Occupation			p-Value	Diabetic Class			p-Value
		Officer	Enlisted Flyer	Enlisted Groundcrew		Normal	Impaired	Diabetic	
History of Kidney Disease/ Stones	Yes	(n=874) 10.3%	(n=382) 11.8%	(n=1,036) 11.2%	0.699	(n=1,744) 10.2%	(n=318) 13.2%	(n=218) 12.8%	0.177
Urinary Protein	Present	(n=874) 3.7%	(n=383) 5.2%	(n=1,036) 5.3%	0.201	(n=1,745) 3.6%	(n=318) 4.7%	(n=219) 12.8%	<0.001
Urinary Occult Blood	Abnormal	(n=874) 6.0%	(n=383) 10.2%	(n=1,036) 8.3%	0.022	(n=1,745) 8.1%	(n=318) 6.0%	(n=219) 7.3%	0.401
Urinary White Blood Cell Count	Abnormal	(n=874) 6.6%	(n=383) 6.0%	(n=1,036) 8.0%	0.295	(n=1,745) 6.4%	(n=318) 9.4%	(n=219) 9.1%	0.073
Blood Urea Nitrogen*		(n=873) $\bar{x}=15.3$	(n=383) $\bar{x}=14.2$	(n=1,035) $\bar{x}=14.3$	<0.001	(n=1,745) $\bar{x}=14.6$	(n=318) $\bar{x}=14.5$	(n=219) $\bar{x}=15.2$	0.057
Urine Specific Gravity		(n=874) $\bar{x}=1.0189$	(n=383) $\bar{x}=1.0196$	(n=1,036) $\bar{x}=1.0209$	<0.001	(n=1,745) $\bar{x}=1.0200$	(n=318) $\bar{x}=1.0194$	(n=219) $\bar{x}=1.0199$	0.313

*Transformed from square root scale.

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

TABLE N-2.
Summary of Group-by-Covariate Interactions for Renal Variables

Variable	Interaction	Stratification	Statistic	Group				Adj. Relative Risk (95% C.I.)	p-Value
				Ranch Hand	Comparison				
Urinary Protein	Group-by-Occupation	Officer	n Number/%	377		494			
			Present	18	4.8%	14	2.8%	1.63 (0.80,3.35)	0.182
			Absent	359	95.2%	480	97.2%		
	Enlisted Flyer	Enlisted Flyer	n Number/%	171		211			
			Present	4	2.3%	16	7.6%	0.30 (0.10,0.93)	0.036
			Absent	167	97.7%	195	92.4%		
	Enlisted Groundcrew	Enlisted Groundcrew	n Number/%	442		587			
			Present	25	5.7%	29	4.9%	1.13 (0.65,1.97)	0.670
			Absent	417	94.3%	558	95.1%		
Urinary Occult Blood	Group-by-Race	Black	n Number/%	57		80			
			Abnormal	13	22.8%	6	7.5%	3.75 (1.33,10.60)	0.013
			Normal	44	77.2%	74	92.5%		
	Nonblack	Nonblack	n Number/%	938		1,218			
			Abnormal	70	7.5%	88	7.2%	1.03 (0.74,1.43)	0.858
			Normal	868	92.5%	1,130	92.8%		

TABLE N-2. (continued)
Summary of Group-by-Covariate Interactions for Renal Variables

Variable	Interaction	Stratification	Statistic	Group		Adj. Relative Risk (95% C.I.)	p-Value
				Ranch Hand	Comparison		
Blood Urea Nitrogen	Group-by-Race	Black	n	57	80	--	0.022
			Adj. Mean ^a	13.1	14.5		
			95% C.I. ^a	(12.2,14.1)	(13.7,15.3)	--	0.506
		Nonblack	n	933	1,212		
			Adj. Mean ^a	14.4	14.5		
			95% C.I. ^a	(14.1,14.7)	(14.3,14.8)		

*Transformed from square root scale.

--Adjusted relative risk not applicable for continuous analysis of a variable.

Note: Refer to Table 17-4 for specification of adjusted model.

TABLE N-3.
Exposure Index-by-Covariate Interactions for Renal Variables

Variable	Interaction (Occupation)	Stratification	Statistic	Exposure Index			Exposure Index Contrast	Adj. Relative Risk (95% C.I.)	p-Value
				Low	Medium	High			
Urinary White Blood Cell	Exposure Index-by- Age	Born ≥ 1942 Normal	n	11	15	9	Overall		0.099
			Number/%						
		Born ≥ 1942 Abnormal	Abnormal	2	18.2%	0	0.0%	0	M vs. L
			Normal	9	81.8%	15	100.0%	9	H vs. L
	Exposure Index-by- Diabetic Class (Enlisted Flyer)	Born ≥ 1942 Impaired	n	0	1	2	Overall		—
			Number/%						
		Born ≥ 1942 Diabetic	Abnormal	0	—	0	0.0%	0	M vs. L
			Normal	0	—	1	100.0%	2	H vs. L
	Born 1923-1941	Normal	n	0	2	0	Overall		—
			Number/%						
		Normal	Abnormal	0	—	0	0.0%	0	M vs. L
			Normal	0	—	2	100.0%	0	H vs. L
	Born 1923-1941	Impaired	n	31	27	30	Overall		0.099
			Number/%						
		Impaired	Abnormal	4	12.9%	4	14.8%	0	M vs. L
			Normal	27	87.1%	23	85.2%	30	H vs. L
	Born 1923-1941	Diabetic	n	12	8	10	Overall		0.355
			Number/%						
		Diabetic	Abnormal	0	0.0%	0	0.0%	1	M vs. L
			Normal	12	100.0%	8	100.0%	9	H vs. L

TABLE N-3. (continued)
Exposure Index-by-Covariate Interactions for Renal Variables

Variable	Interaction (Occupation)	Stratification	Statistic	Exposure Index			Exposure Index Contrast	Adj. Relative Risk (95% C.I.)	p-Value
				Low	Medium	High			
Urinary White Blood Cell Count (cont.)	Born <1922 Normal	n	0	2	0	0	Overall	—	—
		Number/%							
		Abnormal	0	—	0	0.0%	M vs. L	—	—
	Born <1922 Impaired	Normal	0	—	2	100.0%	H vs. L	—	—
		n	0	0	0	0	Overall	—	—
		Number/%							
	Born <1922 Diabetic	Abnormal	0	—	0	—	M vs. L	—	—
		Normal	0	—	0	—	H vs. L	—	—
		n	0	0	0	0	Overall	—	—
		Number/%							
		Abnormal	0	—	0	—	M vs. L	—	—
		Normal	0	—	0	—	H vs. L	—	—

TABLE N-3. (continued)
Exposure Index-by-Covariate Interactions for Renal Variables

Variable	Interaction (Occupation)	Stratification	Statistic	Exposure Index			Exposure Index Contrast	Adj. Relative Risk (95% C.I.)	p-Value
				Low	Medium	High			
Urinary White Blood Cell Count (cont.)	Exposure Index-by- Race	Nonblack Normal	n	100	113	94	Overall		0.053
			Number/%						
	Exposure Index-by- Diabetic Class (Enlisted Groundcrew)	Nonblack Impaired	Abnormal	3	3.0%	7	6.2%	11	11.7% M vs. L
			Normal	97	97.0%	106	93.8%	83	88.3% H vs. L
		Nonblack Diabetic	n	19	16	17	Overall		0.627
			Number/%						
		Black Normal	Abnormal	1	5.3%	0	0.0%	1	5.9% M vs. L
			Normal	18	94.7%	16	100.0%	16	94.1% H vs. L
		Black Impaired	n	11	13	17	Overall		0.049
			Number/%						
			Abnormal	3	27.3%	4	30.8%	0	0.0% M vs. L
			Normal	8	72.7%	9	69.2%	17	100.0% H vs. L
		Black Diabetic	n	14	8	10	Overall		0.428
			Number/%						
		Black Impaired	Abnormal	2	14.3%	0	0.0%	2	20.0% M vs. L
			Normal	12	85.7%	8	100.0%	8	80.0% H vs. L
		Black Diabetic	n	1	2	1	Overall		0.135
			Number/%						
		Black Diabetic	Abnormal	1	100.0%	0	0.0%	1	100.0% M vs. L
			Normal	0	0.0%	2	100.0%	0	0.0% H vs. L

TABLE N-3. (continued)
Exposure Index-by-Covariate Interactions for Renal Variables

Variable	Interaction (Occupation)	Stratification	Statistic	Exposure Index			Exposure Index Contrast	Adj. Relative Risk (95% C.I.)	p-Value
				Low	Medium	High			
Blood Urea Nitrogen	Exposure Index-by- Age (Officer)	Born ≥ 1942	n	46	21	11	M vs. L H vs. L	— —	0.534 0.404
			Adj. Mean ^a	13.5	14.0	14.4			
			95% C.I. ^a	(11.8,15.1)	(12.1,16.1)	(12.0,17.1)			
	Born 1923-1941		n	79	89	109	M vs. L H vs. L	— —	0.806 0.941
			Adj. Mean ^a	14.2	14.3	14.2			
			95% C.I. ^a	(12.7,15.9)	(12.8,15.9)	(12.8,15.8)			
	Born ≤ 1922		n	5	14	3	M vs. L H vs. L	— —	0.478 0.760
			Adj. Mean ^a	17.8	16.4	16.9			
			95% C.I. ^a	(14.2,21.8)	(14.0,18.9)	(12.6,21.9)			
Blood Urea Nitrogen	Exposure Index-by- Age (Enlisted Groundcrew)	Born ≥ 1942	n	83	122	81	M vs. L H vs. L	— —	0.183 0.074
			Adj. Mean ^a	13.8	13.2	12.9			
			95% C.I. ^a	(12.9,14.8)	(12.4,14.0)	(12.0,13.8)			
	Born 1923-1941		n	60	33	53	M vs. L H vs. L	— —	0.145 0.262
			Adj. Mean ^a	14.0	15.1	13.3			
			95% C.I. ^a	(13.0,15.0)	(13.8,16.4)	(12.3,14.3)			
	Born ≤ 1922		n	3	1	6	M vs. L H vs. L	— —	0.084 0.166
			Adj. Mean ^a	18.3	26.8	14.7			
			95% C.I. ^a	(14.1,23.0)	(18.4,36.9)	(11.9,17.6)			

—Percentages not given due to zero participants for a particular exposure index classification; adjusted relative risk not applicable for blood urea nitrogen; relative risk/confidence interval/p-value not given due to cells with zero frequency.

^aTransformed from square root scale.

Notes: Relative risks/confidence intervals and p-values given for urinary white blood cell count based on stratified, unadjusted analyses.

Adjusted means/confidence intervals and p-values for blood urea nitrogen based on adjusted analyses. Small sample sizes may affect validity of overall p-value.