

APPENDIX D

APPENDIX D. COEFFICIENTS OF VARIATION FOR QUALITY CONTROL

This appendix contains a table of the coefficients of variation (CVs) for each of the 49 laboratory quality control assays. Included in this table are the target CVs and actual CVs. The targets and standard deviations are given for low, medium, and high level controls. A different entry is provided where control lots were changed. The targets and standard deviations for the separate time periods often change, and these changes should be incorporated into any analysis of these data.

Table D-1. Coefficients of Variation for Quality Control—Trilevel Control Data for the 1997 Air Force Health Study

Test (Variable Name) (units)	Time Period	Target			Actual		
		Low	Medium	High	Low	Medium	High
2-hour Postprandial Glucose (AF2HGL) (mg/dl)	5/1/97–end	3.0	1.6	1.5	2.4	1.9	1.8
α -1-Acid Glycoprotein (AFA1AG) (mg/dl)	5/2/97–8/20/97	5.0	4.8	4.8	2.5	2.9	4.4
	8/21/97–end	8.5	7.5	7.6	3.1	3.6	4.7
α -1-Antitrypsin (AFA1AT) (mg/dl)	5/2/97–8/20/97	6.2	4.2	4.5	7.5	3.6	4.7
	8/21/97–end	12.0	9.9	10.1	8.0	4.1	5.7
α -2-Macroglobulin (AFA2MG) (mg/dl)	5/2/97–8/20/97	4.8	4.4	5.0	4.2	3.9	5.2
	8/21/97–end	12.6	10.0	10.0	5.7	5.5	6.1
Albumin (AFALBU) (mg/dl)	5/2/97–8/20/97	4.8	4.4	4.1	3.4	3.1	3.3
	8/21/97–end	7.6	7.5	7.5	4.6	5.1	5.8
Alkaline Phosphatase (ALKA) (U/l)	5/1/97–6/30/97	10.2	4.5	5.1	10.2	4.1	4.9
	7/1/97–end	10.6	4.7	5.4	12.2	5.5	6.0
ALT (ALT) (U/l)	5/1/97–end	4.5	4.5	4.8	3.6	5.5	3.3
Amylase (AMY) (U/l)	5/1/97–end	2.5	1.8	2.2	2.2	1.3	1.1
Apolipoprotein B (AFAPO) (mg/dl)	5/2/97–8/20/97	5.4	5.2	4.9	2.5	2.8	3.0
	8/21/97–end	10.0	9.0	8.6	4.4	4.4	4.3
AST (ASTA) (U/l)	5/1/97–end	7.6	4.3	3.4	7.3	3.7	2.3
C3 Complement (AFC3C) (mg/dl)	5/2/97–8/20/97	8.6	4.8	4.7	9.3	3.6	4.6
	8/21/97–end	9.5	8.9	8.5	7.7	4.7	5.8

**Table D-1. Coefficients of Variation for Quality Control—Trilevel Control Data for the 1997 Air Force Health Study
(Continued)**

Test (Variable Name) (units)	Time Period	Target			Actual		
		Low	Medium	High	Low	Medium	High
C4 Complement (AFC4C) (mg/dl)	5/2/97–8/20/97	4.8	5.0	4.9	3.5	3.4	3.9
	8/21/97–end	10.0	8.7	9.0	4.6	4.6	4.9
Cholesterol (CHOLA) (mg/dl)	5/1/97–end	3.8	3.2	2.7	3.0	2.3	3.3
Creatine Phosphokinase (CPKA) (U/l)	5/1/97–end	6.1	2.6	3.8	4.2	3.0	2.6
Creatinine (CRETA) (mg/dl)	5/1/97–end	5.6	3.4	2.6	6.4	2.7	2.3
Direct Bilirubin (DBILA) (mg/dl)	5/1/97–end	25.0	20.0	11.1	39.8	10.7	5.8
Estradiol (AFESTR) (pg/ml)	5/1/97–end	9.8	10.0	10.0	12.6	8.7	9.2
Free Testosterone (AFTESF) (pg/ml)	5/1/97–end	14.2	14.7	15.0	21.2	14.0	12.2
FSH (AFFSHR) (mIU/ml)	5/1/97–9/15/97	5.2	5.4	5.0	5.1	4.4	4.8
	9/16/97–end	5.0	5.3	4.9	6.0	4.5	4.7
GGT (GGTA) (U/l)	5/1/97–end	6.0	2.4	3.8	5.4	1.9	1.5
Glucose (GLUCA) (mg/dl)	5/1/97–end	3.0	1.6	1.5	2.4	1.8	1.8
Glycated Hemoglobin (α -1-C Hemoglobin) (AFHA1C) (percent)	5/1/97–end	12.7	10.1	8.2	8.9	7.5	7.8
Haptoglobin (AFHAPT) (mg/dl)	5/2/97–8/20/97	4.9	4.6	4.6	2.9	3.4	3.8
	8/21/97–end	7.5	7.0	7.0	3.7	4.0	4.1
HDL Cholesterol (HDLA) (mg/dl)	5/1/97–end	6.3	11.4	3.7	7.6	6.8	5.2

**Table D-1. Coefficients of Variation for Quality Control—Trilevel Control Data for the 1997 Air Force Health Study
(Continued)**

Test (Variable Name) (units)	Time Period	Target			Actual		
		Low	Medium	High	Low	Medium	High
Hematocrit (HCT) (percent)	4/22/97–5/21/97	4.8	2.6	2.8	1.9	1.4	1.1
	5/22/97–6/25/97	5.1	2.6	3.1	1.3	1.1	1.2
	6/26/97–7/21/97	5.1	2.6	2.7	2.0	1.2	2.1
	7/22/97–8/13/97	5.2	2.6	2.8	1.0	1.3	0.9
	8/14/97–9/8/97	5.1	2.6	2.7	1.1	0.9	0.9
	9/9/97–10/8/97	5.0	2.6	2.7	1.3	1.5	1.8
	10/9/97–11/12/97	5.0	2.7	2.8	1.4	1.4	1.5
	11/13/97–12/10/97	5.0	2.6	2.7	1.6	1.0	2.4
	12/11/97–1/14/98	5.0	2.6	2.8	2.3	1.4	1.7
	1/15/98–2/11/98	5.0	2.6	2.8	1.7	1.4	1.0
	2/12/98–3/18/98	5.1	2.6	2.8	2.2	1.7	1.6
	3/19/98–end	5.0	2.6	2.8	1.1	0.9	1.1

**Table D-1. Coefficients of Variation for Quality Control—Trilevel Control Data for the 1997 Air Force Health Study
(Continued)**

Test (Variable Name) (units)	Time Period	Target			Actual		
		Low	Medium	High	Low	Medium	High
Hemoglobin (HGB) (gm/dl)	4/22/97–5/21/97	2.9	1.6	1.8	1.1	1.0	0.9
	5/22/97–6/25/97	2.9	1.6	1.8	0.8	0.7	1.0
	6/26/97–7/21/97	2.9	1.6	1.8	1.8	0.7	1.0
	7/22/97–8/13/97	3.0	1.6	1.8	1.0	0.6	1.3
	8/14/97–9/8/97	2.9	1.6	1.8	0.5	0.5	0.4
	9/9/97–10/8/97	2.9	1.6	1.8	1.0	0.9	1.3
	10/9/97–11/12/97	2.9	1.6	1.8	1.0	0.9	1.4
	11/13/97–12/10/97	2.9	1.6	1.8	0.9	0.7	1.0
	12/11/97–1/14/98	2.9	1.5	1.8	1.1	0.7	0.8
	1/15/98–2/11/98	2.9	1.6	1.8	0.9	0.8	0.9
	2/12/98–3/18/98	2.9	1.6	1.8	1.1	0.8	0.7
	3/19/98–end	2.9	1.6	1.8	1.1	0.5	0.4
IgA (AFIGA) (mg/dl)	5/2/97–8/20/97	4.9	4.0	4.8	2.9	2.5	3.1
	8/21/97–end	7.6	7.0	7.1	3.8	3.5	3.7
IgG (AFIGG) (mg/dl)	5/2/97–8/20/97	4.7	4.5	5.2	2.3	3.2	3.2
	8/21/97–end	8.0	7.1	6.9	2.9	3.4	3.5
IgM (AFIGM) (mg/dl)	5/2/97–8/20/97	4.3	4.6	4.9	3.3	3.1	3.6
	8/21/97–end	10.0	9.1	8.9	4.3	4.0	4.0
Insulin (AFINS) (μ IU/ml @ 2 hrs.)	5/1/97–2/4/98	7.1	4.4	4.0	5.1	5.2	5.6
	2/5/98–end	7.7	7.4	5.3	6.6	8.3	6.7
LDH (LDHA) (U/l)	5/1/97–end	4.5	3.0	3.3	3.6	3.0	2.7
Luteinizing Hormone (AFLH) (mIU/ml)	5/1/97–end	5.0	4.9	4.9	6.0	5.1	6.1

**Table D-1. Coefficients of Variation for Quality Control—Trilevel Control Data for the 1997 Air Force Health Study
(Continued)**

Test (Variable Name) (units)	Time Period	Target			Actual		
		Low	Medium	High	Low	Medium	High
Mean Corpuscular Hemoglobin (MCH) (pg)	4/22/97–5/21/97	2.8	2.0	2.4	1.1	1.0	0.7
	5/22/97–6/25/97	2.8	2.0	2.4	0.9	1.1	1.0
	6/26/97–7/21/97	2.8	2.0	2.4	1.0	0.9	0.8
	7/22/97–8/13/97	2.9	2.0	2.4	1.4	1.3	1.3
	8/14/97–9/8/97	2.8	2.0	2.4	1.1	0.6	0.6
	9/9/97–10/8/97	2.8	2.0	2.4	1.2	0.8	0.9
	10/9/97–11/12/97	2.8	2.0	2.4	1.3	1.0	1.0
	11/13/97–12/10/97	2.8	2.0	2.4	1.5	0.8	1.1
	12/11/97–1/14/98	2.8	2.0	2.4	1.6	1.3	0.9
	1/15/98–2/11/98	2.8	2.0	2.4	1.3	1.1	1.0
	2/12/98–3/18/98	2.8	2.0	2.4	1.3	1.2	1.1
	3/19/98–end	2.9	2.0	2.4	1.0	0.8	0.9

**Table D-1. Coefficients of Variation for Quality Control—Trilevel Control Data for the 1997 Air Force Health Study
(Continued)**

Test (Variable Name) (units)	Time Period	Target			Actual		
		Low	Medium	High	Low	Medium	High
Mean Corpuscular Hemoglobin Concentration (MCHC) (gm/dl)	4/22/97–5/21/97	2.5	3.8	3.1	1.1	1.5	0.6
	5/22/97–6/25/97	2.5	3.9	3.2	1.3	1.7	1.5
	6/26/97–7/21/97	2.5	3.8	3.1	1.4	0.9	0.9
	7/22/97–8/13/97	2.5	4.0	3.2	1.2	1.2	1.0
	8/14/97–9/8/97	2.5	3.9	3.2	0.9	1.3	0.8
	9/9/97–10/8/97	2.5	3.9	3.1	1.1	1.2	1.0
	10/9/97–11/12/97	2.5	3.9	3.1	0.9	1.2	1.0
	11/13/97–12/10/97	2.5	3.9	3.1	1.7	1.8	1.3
	12/11/97–1/14/98	2.5	3.9	3.1	2.0	2.4	1.4
	1/15/98–2/11/98	2.5	3.9	3.1	1.5	1.8	1.3
	2/12/98–3/18/98	2.5	3.8	3.1	1.8	1.7	2.0
	3/19/98–end	2.5	3.9	3.1	1.1	1.0	1.1

**Table D-1. Coefficients of Variation for Quality Control—Trilevel Control Data for the 1997 Air Force Health Study
(Continued)**

Test (Variable Name) (units)	Time Period	Target			Actual		
		Low	Medium	High	Low	Medium	High
Mean Corpuscular Volume (MCV) (cu. micra)	4/22/97–5/21/97	1.8	1.7	1.7	0.8	0.6	0.7
	5/22/97–6/25/97	1.8	1.7	1.7	1.4	0.8	0.5
	6/26/97–7/21/97	1.8	1.7	1.7	0.9	0.9	1.4
	7/22/97–8/13/97	1.9	1.7	1.7	0.9	1.1	1.0
	8/14/97–9/8/97	1.8	1.7	1.7	0.5	0.5	0.5
	9/9/97–10/8/97	1.8	1.7	1.7	0.7	0.6	0.6
	10/9/97–11/12/97	1.8	1.7	1.7	0.7	0.7	0.7
	11/13/97–12/10/97	1.8	1.7	1.7	1.0	0.7	1.2
	12/11/97–1/14/98	1.8	1.7	1.7	1.2	0.9	0.7
	1/15/98–2/11/98	1.8	1.7	1.7	0.7	0.8	0.7
	2/12/98–3/18/98	1.8	1.7	1.7	1.8	1.3	0.8
	3/19/98–end	1.9	1.7	1.7	0.5	0.3	0.6

**Table D-1. Coefficients of Variation for Quality Control—Trilevel Control Data for the 1997 Air Force Health Study
(Continued)**

Test (Variable Name) (units)	Time Period	Target			Actual		
		Low	Medium	High	Low	Medium	High
Platelet Count (PLT) (thousand/mm ³)	4/22/97–5/21/97	10.1	5.5	4.5	4.8	4.5	2.7
	5/22/97–6/25/97	9.4	5.1	4.3	3.0	2.3	3.3
	6/26/97–7/21/97	9.7	5.2	4.5	2.5	2.7	2.0
	7/22/97–8/13/97	9.4	5.0	4.4	3.2	2.2	2.1
	8/14/97–9/8/97	9.4	5.0	4.5	1.8	1.8	1.6
	9/9/97–10/8/97	9.1	5.0	4.4	2.2	1.8	1.8
	10/9/97–11/12/97	9.1	5.1	4.5	4.5	2.6	2.1
	11/13/97–12/10/97	10.1	5.4	4.6	2.2	2.5	2.8
	12/11/97–1/14/98	9.7	5.3	4.6	2.1	2.0	2.2
	1/15/98–2/11/98	10.0	5.4	4.6	2.7	3.5	2.0
	2/12/98–3/18/98	10.3	5.7	4.8	3.3	2.8	2.6
	3/19/98–end	9.9	5.4	4.7	2.1	1.9	2.4
Prealbumin (AFPRAL) (mg/dl)	5/2/97–8/20/97	4.9	4.5	5.0	2.7	3.2	5.4
	8/21/97–end	7.5	7.1	8.0	3.2	3.7	6.4
Prostate Specific Antigen (AFPSA) (ng/ml)	4/30/97–8/10/97	13.2	9.9	10.0	5.6	6.2	6.3
	8/11/97–11/17/97	5.4	5.6	4.4	7.3	5.8	7.1
	11/18/97–2/11/98	5.7	7.0	10.3	5.3	5.5	7.4
	2/12/98–end	5.1	3.8	4.5	4.2	4.5	5.8
Prothrombin Time (AFPTP) (seconds)	5/1/97–end	2.5	2.9	5.0	1.9	2.0	2.2

**Table D-1. Coefficients of Variation for Quality Control—Trilevel Control Data for the 1997 Air Force Health Study
(Continued)**

Test (Variable Name) (units)	Time Period	Target			Actual		
		Low	Medium	High	Low	Medium	High
Red Blood Cell Count (RBC) (million/mm ³)	4/22/97–5/21/97	2.2	1.5	1.6	1.5	0.9	1.0
	5/22/97–6/25/97	2.2	1.5	1.6	1.0	0.7	1.1
	6/26/97–7/21/97	2.2	1.5	1.6	1.3	0.8	1.1
	7/22/97–8/13/97	2.2	1.5	1.7	0.9	1.7	1.0
	8/14/97–9/8/97	2.2	1.5	1.6	0.8	0.6	0.6
	9/9/97–10/8/97	2.2	1.5	1.6	1.0	1.5	1.5
	10/9/97–11/12/97	2.2	1.5	1.7	1.4	1.4	1.3
	11/13/97–12/10/97	2.2	1.5	1.6	1.5	1.0	1.5
	12/11/97–1/14/98	2.2	1.4	1.6	1.7	0.7	1.1
	1/15/98–2/11/98	2.2	1.5	1.6	1.2	0.8	0.7
	2/12/98–3/18/98	2.2	1.5	1.6	1.1	0.9	1.0
	3/19/98–end	2.2	1.5	1.6	1.0	0.7	0.8
Rheumatoid Factor (AFLATX) (IU/ml)	5/1/97–end	50.0	5.0	5.0	0.0	3.6	3.5
T ₄ (AFT4) (μg/dl)	5/1/97–10/5/97	7.8	7.8	7.7	7.8	5.6	5.0
	10/6/97–end	7.8	7.8	7.7	11.4	6.5	6.3
Total Bilirubin (TBILA) (mg/dl)	5/1/97–end	15.7	5.8	5.1	8.0	2.8	3.2
Total Testosterone (AFTEST) (ng/dl)	5/1/97–12/3/97	10.4	9.8	4.2	11.5	9.5	7.0
	12/4/97–end	8.2	8.2	7.4	9.0	7.2	6.8
Transferrin (AFTRFR) (mg/dl)	5/2/97–8/26/97	4.6	4.7	4.6	4.6	2.8	3.8
	8/27/97–end	7.6	6.9	7.0	3.8	4.1	5.8
Triglycerides (TRIGA) (mg/dl)	5/1/97–end	16.1	3.7	3.8	15.3	2.9	3.0

**Table D-1. Coefficients of Variation for Quality Control—Trilevel Control Data for the 1997 Air Force Health Study
(Continued)**

Test (Variable Name) (units)	Time Period	Target			Actual		
		Low	Medium	High	Low	Medium	High
TSH (AFTSH) (μ IU/ml)	5/1/97–2/14/98	10.0	8.4	8.3	10.1	9.9	11.2
	2/15/98–end	10.0	7.6	7.8	6.1	5.8	5.9
Urinary pH (UAPH)	4/97–end	8.3	6.7	6.3	2.5	3.2	1.2
White Blood Cell Count (WBC) (thousand/mm ³)	4/22/97–5/21/97	5.7	3.8	2.9	2.8	2.4	1.0
	5/22/97–6/25/97	5.9	4.0	2.8	2.4	3.7	0.9
	6/26/97–7/21/97	5.7	3.8	2.8	2.9	1.6	2.3
	7/22/97–8/13/97	5.6	3.8	2.9	2.7	2.4	1.5
	8/14/97–9/8/97	5.7	3.9	2.8	2.5	1.8	0.6
	9/9/97–10/8/97	5.4	3.8	2.8	2.7	2.0	1.3
	10/9/97–11/12/97	5.4	3.9	2.8	2.6	2.6	1.4
	11/13/97–12/10/97	5.4	3.9	2.7	2.3	2.2	1.1
	12/11/97–1/14/98	5.6	4.0	2.8	3.4	2.0	1.0
	1/15/98–2/11/98	5.9	4.0	2.8	2.9	2.8	1.3
	2/12/98–3/18/98	5.7	3.9	2.8	3.6	1.9	1.2
	3/19/98–end	5.6	3.8	2.8	1.6	1.1	0.9