

Appendix 3: Kaupang

A3.1 Smithy data set

Descriptive statistics (next page)

Appendix 3

Descriptive Statistics

		Statistic	Bootstrap ^a			
			Bias	Std. Error	BCa 95% Confidence Interval	
					Lower	Upper
Sn	Mean	227.3021	.1185	47.3774	146.1927	334.2407
	Std. Deviation	217.76074	-11.40288	51.49132	107.55209	290.33200
	N	22	0	0	.	.
Cd	Mean	1.5480	.0352	.8675	.0000	3.3501
	Std. Deviation	4.02774	-.24143	1.19069	2.02965	5.23776
	N	22	0	0	.	.
Ag	Mean	18.302	-.006	1.899	15.057	21.812
	Std. Deviation	9.1316	-.2717	1.5077	6.3768	10.9970
	N	22	0	0	.	.
Sr	Mean	314.8534	.4268	11.3438	292.4788	341.0814
	Std. Deviation	53.19461	-1.64684	8.66307	38.86698	64.73779
	N	22	0	0	.	.
Rb	Mean	95.8637	-.0614	2.8377	90.3767	101.3868
	Std. Deviation	13.82586	-.44029	1.83201	10.37104	16.15125
	N	22	0	0	.	.
As	Mean	17.9347	-.0807	5.7509	8.3491	28.5648
	Std. Deviation	27.04256	-1.56068	6.91287	15.29758	36.05641
	N	22	0	0	.	.
Pb	Mean	2158.0173	10.3024	406.9182	1443.7254	3034.2241
	Std. Deviation	1893.50711	-90.46306	428.42896	1056.09982	2430.56910
	N	22	0	0	.	.
Zn	Mean	354.9107	-.1401	34.1063	291.2005	423.9445
	Std. Deviation	160.47614	-6.61142	29.76750	111.57631	199.63968
	N	22	0	0	.	.
Cu	Mean	4126.3654	5.7236	488.3290	3212.5765	5104.6177
	Std. Deviation	2260.20792	-70.26607	344.16297	1706.96796	2693.62686
	N	22	0	0	.	.
Fe	Mean	33415.7733	16.0702	1073.0927	31264.7640	35639.3447
	Std. Deviation	5199.04432	-170.54567	869.41454	3689.35780	6317.55297
	N	22	0	0	.	.
Mn	Mean	2678.2362	3.0395	281.7681	2174.8501	3214.9435
	Std. Deviation	1284.79200	-35.44388	122.04389	1028.30814	1434.98274
	N	22	0	0	.	.
Cr	Mean	32.6898	.0703	2.5481	28.7572	38.3496
	Std. Deviation	12.12720	-1.25640	4.94375	3.95849	18.83369
	N	22	0	0	.	.

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	Mean	64.5094	.0805	1.7783	60.8549	68.5686
V	Std. Deviation	8.84194	-.30327	1.20645	7.02476	10.13380
	N	22	0	0	.	.
	Mean	3774.3725	6.3745	197.3238	3416.4161	4235.5457
Ti	Std. Deviation	933.43861	-46.41315	205.19665	541.99151	1205.67796
	N	22	0	0	.	.
	Mean	26109.0829	-22.5983	1276.7033	23532.9891	28534.0129
Ca	Std. Deviation	6126.22751	-163.54013	645.79423	4989.20026	6904.98130
	N	22	0	0	.	.
	Mean	17025.4276	-.9349	390.4063	16305.8299	17777.0638
K	Std. Deviation	1830.68880	-47.66129	224.07734	1433.46063	2091.56282
	N	22	0	0	.	.
	Mean	35016.0054	59.5863	1084.4990	32589.3086	37400.4116
Al	Std. Deviation	5182.17031	-294.60844	1079.35610	3499.32922	6360.14768
	N	22	0	0	.	.
	Mean	11304.5824	-14.4913	605.0759	10117.8380	12367.9211
P	Std. Deviation	2936.48002	-79.53080	381.39679	2276.85698	3451.84175
	N	22	0	0	.	.
	Mean	18614.9375	19.7396	543.4442	17513.8060	19813.4679
Si	Std. Deviation	2581.01586	-100.90096	403.54367	1903.17323	3047.47938
	N	22	0	0	.	.
	Mean	1643.7519	1.2400	171.9954	1335.9546	1981.4740
S	Std. Deviation	805.44653	-27.51559	129.45946	581.04138	969.65813
	N	22	0	0	.	.

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Correlation matrix

Correlation matrix using two-tailed Pearson's correlation and bootstrap test, bias corrected and accelerated, at a 95% confidence interval.

		Sn	Cd	Ag	Sr	Rb	As	Pb	Zn	Cu	Fe
Sn	Pearson Correlation	1	.491 [*]	.429 [*]	.100	-.353	.041	.491 [*]	.569 ^{**}	.614 ^{**}	.397
	Sig. (2-tailed)		.020	.047	.659	.107	.856	.020	.006	.002	.067
	Sum of Squares and Cross-products	995814.554	9038.790	17896.373	24215.474	-22312.515	5069.905	4252147.152	417381.317	6350772.733	9445755.179
	Covariance	47419.741	430.419	852.208	1153.118	-1062.501	241.424	202483.198	19875.301	302417.749	449797.866
	N	22	22	22	22	22	22	22	22	22	22
	Bootstrap Bias	0	-.031 ^e	.043	-.014	-.010	.024	-.020	-.021	-.010	.010
	Std. Error	0	.256 ^e	.142	.272	.234	.152	.218	.218	.137	.206
	BCa 95% Lower Confidence Interval	.	-.059 ^e	.091	-.439	-.701	-.271	.103	.056	.338	-.085
	Upper Interval	.	.869 ^e	.861	.561	.115	.516	.834	.855	.810	.744
Cd	Pearson Correlation	.491 [*]	1	.293	.280	-.265	.019	.098	.161	.343	.209
	Sig. (2-tailed)	.020		.185	.207	.234	.932	.663	.475	.118	.351
	Sum of Squares and Cross-products	9038.790	340.677	226.422	1259.539	-309.324	44.242	15758.258	2180.463	65606.060	91910.022
	Covariance	430.419	16.223	10.782	59.978	-14.730	2.107	750.393	103.832	3124.098	4376.668
	N	22	22	22	22	22	22	22	22	22	22
	Bootstrap Bias	-.031 ^e	0 ^e	.025 ^e	.008 ^e	.012 ^e	.024 ^e	.034 ^e	.013 ^e	.019 ^e	-.003 ^e
	Std. Error	.256 ^e	0 ^e	.164 ^e	.153 ^e	.153 ^e	.161 ^e	.153 ^e	.146 ^e	.139 ^e	.139 ^e
BCa 95% Lower	-.054 ^e	. ^e	-.005 ^e	.015 ^e	-.555 ^e	-.245 ^e	-.135 ^e	-.114 ^e	.123 ^e	-.125 ^e	

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	Confidenc e Interval	Upper									
		.862 ^e	.	.749 ^e	.620 ^e	.052 ^e	.536 ^e	.609 ^e	.520 ^e	.701 ^e	.515 ^e
Ag	Pearson Correlation	.429 [*]	.293	1	-.148	-.261	-.178	.403	.468 [*]	.550 ^{**}	.307
	Sig. (2-tailed)	.047	.185		.512	.240	.428	.063	.028	.008	.165
	Sum of Squares and Cross-products	17896.373	226.422	1751.113	-1507.572	-692.723	-924.132	146154.046	14405.014	238327.372	305961.531
	Covariance	852.208	10.782	83.386	-71.789	-32.987	-44.006	6959.716	685.953	11348.922	14569.597
	N	22	22	22	22	22	22	22	22	22	22
	Bootstrap										
	Bias	.043	.025 ^e	0	.036	-.008	.018	.026	.017	.012	.000
	Std. Error	.142	.164 ^e	0	.266	.215	.150	.139	.145	.132	.233
	BCa 95% Lower	.091	-.001 ^e	.	-.572	-.637	-.497	.071	.170	.254	-.174
	Confidenc Upper	.861	.737 ^e	.	.431	.142	.220	.792	.754	.830	.706
	e Interval										
Sr	Pearson Correlation	.100	.280	-.148	1	-.204	-.261	.095	.217	.140	-.055
	Sig. (2-tailed)	.659	.207	.512		.363	.240	.674	.332	.533	.809
	Sum of Squares and Cross-products	24215.474	1259.539	-1507.572	59423.005	-3145.201	-7896.572	201269.167	38906.600	354203.923	-316820.667
	Covariance	1153.118	59.978	-71.789	2829.667	-149.771	-376.027	9584.246	1852.695	16866.853	-15086.698
	N	22	22	22	22	22	22	22	22	22	22
	Bootstrap										
	Bias	-.014	.008 ^e	.036	0	-.019	.017	.000	.024	.032	.054
	Std. Error	.272	.153 ^e	.266	0	.333	.169	.237	.313	.310	.357
	BCa 95% Lower	-.439	.031 ^e	-.572	.	-.777	-.525	-.332	-.337	-.375	-.622
	Confidenc Upper	.561	.598 ^e	.431	.	.415	.202	.521	.783	.748	.709
	e Interval										
Rb	Pearson Correlation	-.353	-.265	-.261	-.204	1	-.183	-.469 [*]	-.701 ^{**}	-.546 ^{**}	-.707 ^{**}
	Sig. (2-tailed)	.107	.234	.240	.363		.414	.028	.000	.009	.000

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	Sum of Squares and Cross-products	-22312.515	-309.324	-692.723	-3145.201	4014.243	-1440.519	-257956.170	-32676.581	-358089.256	-1067395.421
	Covariance	-1062.501	-14.730	-32.987	-149.771	191.154	-68.596	-12283.627	-1556.028	-17051.869	-50828.353
	N	22	22	22	22	22	22	22	22	22	22
d	Bootstrap Bias	-.010	.012 ^e	-.008	-.019	0	.005	-.007	-.008	-.002	.014
	Std. Error	.234	.153 ^e	.215	.333	0	.141	.124	.099	.120	.146
	BCa 95% Lower Confidence Interval	-.701	-.504 ^e	-.637	-.777	.	-.439	-.664	-.862	-.748	-.883
	Upper	.115	-.003 ^e	.142	.415	.	.162	-.251	-.507	-.318	-.384
As	Pearson Correlation	.041	.019	-.178	-.261	-.183	1	.005	-.069	-.043	.315
	Sig. (2-tailed)	.856	.932	.428	.240	.414		.984	.761	.851	.153
	Sum of Squares and Cross-products	5069.905	44.242	-924.132	-7896.572	-1440.519	15357.296	4864.072	-6265.108	-54570.883	930925.454
	Covariance	241.424	2.107	-44.006	-376.027	-68.596	731.300	231.622	-298.338	-2598.613	44329.784
	N	22	22	22	22	22	22	22	22	22	22
d	Bootstrap Bias	.024	.024 ^e	.018	.017	.005	0	-.007	.011	-.009	-.042
	Std. Error	.152	.161 ^e	.150	.169	.141	0	.221	.144	.188	.227
	BCa 95% Lower Confidence Interval	-.271	-.247 ^e	-.497	-.525	-.439	.	-.343	-.312	-.405	-.147
	Upper	.516	.543 ^e	.220	.202	.162	.	.463	.282	.314	.619
Pb	Pearson Correlation	.491 [*]	.098	.403	.095	-.469 [*]	.005	1	.832 ^{**}	.842 ^{**}	.648 ^{**}
	Sig. (2-tailed)	.020	.663	.063	.674	.028	.984		.000	.000	.001
	Sum of Squares and Cross-products	4252147.152	15758.258	146154.046	201269.167	-257956.170	4864.072	75292752.802	5310615.722	75633940.367	133972844.796
	Covariance	202483.198	750.393	6959.716	9584.246	-12283.627	231.622	3585369.181	252886.463	3601616.208	6379659.276
	N	22	22	22	22	22	22	22	22	22	22

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Bootstrap d	Bias	-.020	.034 ^e	.026	.000	-.007	-.007	0	-.025	-.013	.006
	Std. Error	.218	.153 ^e	.139	.237	.124	.221	0	.116	.082	.095
	BCa 95% Lower Confidenc e Interval	.103	-.136 ^e	.071	-.332	-.664	-.343	.	.537	.604	.381
	Upper	.834	.617 ^e	.792	.521	-.251	.463	.	.945	.930	.825
Zn	Pearson Correlation	.569**	.161	.468 ⁺	.217	-.701**	-.069	.832**	1	.824**	.668**
	Sig. (2-tailed)	.006	.475	.028	.332	.000	.761	.000		.000	.001
	Sum of Squares and Cross- products	417381.317	2180.463	14405.01 4	38906.600	-32676.581	-6265.108	5310615.722	540804.392	6275703.474	11707332.59 4
	Covariance	19875.301	103.832	685.953	1852.695	-1556.028	-298.338	252886.463	25752.590	298843.023	557492.028
	N	22	22	22	22	22	22	22	22	22	22
	Bootstrap d	Bias	-.021	.013 ^e	.017	.024	-.008	.011	-.025	0	-.017
	Std. Error	.218	.146 ^e	.145	.313	.099	.144	.116	0	.087	.133
	BCa 95% Lower Confidenc e Interval	.056	-.116 ^e	.170	-.337	-.862	-.312	.537	.	.604	.267
	Upper	.855	.522 ^e	.754	.783	-.507	.282	.945	.	.931	.880
Cu	Pearson Correlation	.614**	.343	.550**	.140	-.546**	-.043	.842**	.824**	1	.574**
	Sig. (2-tailed)	.002	.118	.008	.533	.009	.851	.000	.000		.005
	Sum of Squares and Cross- products	6350772.73 3	65606.06 0	238327.3 72	354203.92 3	- 358089.25 6	- 54570.88 3	75633940.36 7	6275703.47 4	107279336.4 68	141588296.0 11
	Covariance	302417.749	3124.098	11348.92 2	16866.853	-17051.869	-2598.613	3601616.208	298843.023	5108539.832	6742299.810
	N	22	22	22	22	22	22	22	22	22	22
	Bootstrap d	Bias	-.010	.019 ^e	.012	.032	-.002	-.009	-.013	-.017	0
	Std. Error	.137	.139 ^e	.132	.310	.120	.188	.082	.087	0	.142
	BCa 95% Lower	.338	.121 ^e	.254	-.375	-.748	-.405	.604	.604	.	.202

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	Confidenc e Interval	.810	.705 ^e	.830	.748	-.318	.314	.930	.931	.	.820
Fe	Pearson Correlation	.397	.209	.307	-.055	-.707 ^{**}	.315	.648 ^{**}	.668 ^{**}	.574 ^{**}	1
	Sig. (2-tailed)	.067	.351	.165	.809	.000	.153	.001	.001	.005	
	Sum of Squares and Cross- products	9445755.17 9	91910.02 2	305961.5 31	- 316820.66 7	- 1067395.4 21	930925.4 54	133972844.7 96	11707332.5 94	141588296.0 11	567631299.6 21
	Covariance	449797.866	4376.668	14569.59 7	-15086.698	-50828.353	44329.78 4	6379659.276	557492.028	6742299.810	27030061.88 7
	N	22	22	22	22	22	22	22	22	22	22
	Bootstrap Bias	.010	-.003 ^e	.000	.054	.014	-.042	.006	-.002	-.008	0
^d	Std. Error	.206	.139 ^e	.233	.357	.146	.227	.095	.133	.142	0
	BCa 95% Lower	-.085	-.119 ^e	-.174	-.622	-.883	-.147	.381	.267	.202	.
	Confidenc e Interval	.744	.515 ^e	.706	.709	-.384	.619	.825	.880	.820	.
Mn	Pearson Correlation	.390	.124	.478 [*]	.173	-.571 ^{**}	-.138	.517 [*]	.733 ^{**}	.619 ^{**}	.441 [*]
	Sig. (2-tailed)	.073	.581	.024	.441	.006	.540	.014	.000	.002	.040
	Sum of Squares and Cross- products	2289243.92 1	13511.71 7	117826.9 07	248302.67 3	- 212995.43 5	- 100684.7 25	26398358.36 8	3174411.28 9	37760757.98 0	61922060.91 5
	Covariance	109011.615	643.415	5610.805	11823.937	-10142.640	-4794.511	1257064.684	151162.442	1798131.332	2948669.567
	N	22	22	22	22	22	22	22	22	22	22
	Bootstrap Bias	-.020	-.022 ^e	-.012	.013	.006	-.013	.002	.013	-.004	-.004
^d	Std. Error	.208	.231 ^e	.163	.259	.143	.147	.142	.083	.121	.157
	BCa 95% Lower	-.077	-.319 ^e	.116	-.287	-.786	-.417	.179	.533	.330	.043
	Confidenc e Interval	.681	.529 ^e	.723	.707	-.247	.103	.773	.911	.816	.713

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Cr	Pearson Correlation	.494 [†]	.588 ^{**}	-.046	.081	-.386	.228	.016	.188	.150	.437 [†]	
	Sig. (2-tailed)	.020	.004	.837	.719	.076	.307	.944	.402	.505	.042	
	Sum of Squares and Cross-products	27369.986	603.534	-108.138	1102.185	-1359.634	1572.829	7698.789	7682.561	86303.601	578669.886	
	Covariance	1303.333	28.740	-5.149	52.485	-64.744	74.897	366.609	365.836	4109.695	27555.709	
	N	22	22	22	22	22	22	22	22	22	22	
	Bootstrap ^d	Bias	-.201	-.133 ^e	-.039	-.105	.032	.053	.018	-.022	-.046	.054
		Std. Error	.462	.356 ^e	.202	.348	.227	.148	.159	.215	.216	.151
		BCa 95% Lower Confidence Interval	-.510	-.126 ^e	-.489	-.693	-.619	-.533	-.332	-.470	-.413	.
		BCa 95% Upper Confidence Interval	.852	.944 ^e	.194	.456	.167	.780	.459	.552	.444	.
	V	Pearson Correlation	.076	.123	.319	.007	-.442 [†]	.123	.410	.454 [†]	.350	.680 ^{**}
Sig. (2-tailed)		.736	.586	.147	.976	.040	.585	.058	.034	.110	.000	
Sum of Squares and Cross-products		3078.827	91.755	541.394	66.786	-1133.665	618.838	144046.673	13536.629	147039.247	656392.484	
Covariance		146.611	4.369	25.781	3.180	-53.984	29.468	6859.365	644.601	7001.869	31256.785	
N		22	22	22	22	22	22	22	22	22	22	
Bootstrap ^d		Bias	.028	-.006 ^e	.011	-.007	.029	-.010	.013	.002	.005	-.006
		Std. Error	.203	.208 ^e	.216	.250	.208	.169	.145	.163	.133	.104
		BCa 95% Lower Confidence Interval	-.266	-.211 ^e	-.107	-.482	-.754	-.203	.050	-.061	.043	.420
		BCa 95% Upper Confidence Interval	.539	.542 ^e	.738	.480	.134	.404	.746	.760	.616	.841
Ti		Pearson Correlation	-.412	-.219	-.475 [†]	.117	.312	-.154	-.543 ^{**}	-.560 ^{**}	-.603 ^{**}	-.241
	Sig. (2-tailed)	.057	.328	.025	.603	.158	.493	.009	.007	.003	.280	
	Sum of Squares and Cross-products	-	-	-	122401.117	-	-	-	-	-	-	
		1759753.862	17273.651	85094.601		84480.924	81831.801	20151593.441	1761752.340	26730463.960	24537867.937	
		2	1	1			1	1	0	0	7	

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Covariance	-83797.803	-822.555	-4052.124	5828.625	4022.901	-3896.752	-959599.688	-83892.969	-1272879.236	-1168469.902	
N	22	22	22	22	22	22	22	22	22	22	
Bootstrap d	Bias	-.017	-.012 ^e	-.014	-.033	.023	.032	-.031	-.022	-.013	-.035
	Std. Error	.116	.091 ^e	.120	.276	.165	.187	.101	.102	.098	.227
	BCa 95% Lower	-.567	-.393 ^e	-.652	-.529	-.122	-.421	-.685	-.723	-.750	-.690
	Confidenc e Interval	Upper Interval	-.270	-.095 ^e	-.314	.497	.769	.312	-.460	-.440	-.472
Ca	Pearson Correlation	.381	.475 [*]	.619 ^{**}	.218	-.586 ^{**}	-.102	.433 [*]	.681 ^{**}	.561 ^{**}	.439 [*]
	Sig. (2-tailed)	.080	.025	.002	.329	.004	.652	.044	.000	.007	.041
	Sum of Squares and Cross- products	10665856.8 78	246377.2 30	726763.8 06	1494700.3 84	- 1042135.6 50	- 353983.8 03	105367388.6 30	14049921.5 84	163000772.6 20	293781239.6 63
	Covariance	507897.947	11732.24 9	34607.80 0	71176.209	-49625.507	16856.37 2	5017494.697	669043.885	7761941.553	13989582.84 1
N	22	22	22	22	22	22	22	22	22	22	
Bootstrap d	Bias	.012	.003 ^e	.003	.033	.012	.033	.024	.015	.005	-.008
	Std. Error	.170	.135 ^e	.136	.331	.155	.196	.153	.111	.120	.218
	BCa 95% Lower	-.030	.162 ^e	.307	-.373	-.788	-.494	.083	.382	.263	-.141
	Confidenc e Interval	Upper Interval	.679	.749 ^e	.840	.822	-.261	.424	.908	.915	.810
K	Pearson Correlation	-.373	-.210	-.398	-.155	.792 ^{**}	-.229	-.640 ^{**}	-.748 ^{**}	-.687 ^{**}	-.661 ^{**}
	Sig. (2-tailed)	.088	.348	.066	.491	.000	.306	.001	.000	.000	.001
	Sum of Squares and Cross- products	- 3119272.75 2	- 32521.62 6	- 139793.9 45	- 317142.72 9	- 420824.64 4	- 237954.9 65	- 46562524.05 3	- 4615646.49 8	- 59722277.47 7	- 132078059.8 79
	Covariance										

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Covariance		-148536.798	-1548.649	-6656.855	-15102.035	20039.269	11331.189	-2217263.050	-219792.690	-2843917.975	-6289431.423
N		22	22	22	22	22	22	22	22	22	22
Bootstrap d	Bias	-.007	.002 ^e	.000	-.023	.003	.037	-.020	-.017	-.007	.004
	Std. Error	.149	.129 ^e	.174	.324	.065	.205	.110	.100	.090	.138
	BCa 95% Lower Confidenc e Interval	-.624	-.452 ^e	-.673	-.777	.630	-.575	-.809	-.896	-.827	-.864
		-.087	.016 ^e	-.044	.462	.918	.294	-.475	-.617	-.546	-.366
AI	Pearson Correlation	-.117	.007	-.266	-.080	.583 ^{**}	-.184	-.287	-.544 ^{**}	-.394	-.259
	Sig. (2-tailed)	.605	.974	.232	.724	.004	.412	.195	.009	.070	.245
	Sum of Squares and Cross- products	- 2768953.87 7	- 3270.199	- 264034.8 06	- 461375.90 6	877467.66 5	- 542035.6 11	- 59190715.71 1	- 9499207.14 4	- 96918460.06 6	- 146285499.9 88
Covariance		-131854.947	155.724	12573.086	-21970.281	41784.175	25811.220	-2818605.510	-452343.197	-4615164.765	-6965976.190
N		22	22	22	22	22	22	22	22	22	22
Bootstrap d	Bias	-.036	-.008 ^e	-.016	.017	.020	.010	-.060	-.036	-.022	-.044
	Std. Error	.189	.133 ^e	.188	.294	.094	.151	.222	.136	.138	.245
	BCa 95% Lower Confidenc e Interval	-.443	-.236 ^e	-.577	-.641	.297	-.487	-.667	-.747	-.593	-.674
		.128	.214 ^e	.032	.564	.854	.169	-.027	-.387	-.226	.066
P	Pearson Correlation	.346	.330	.475 ⁺	-.025	-.318	-.071	.198	.338	.155	.443 ⁺
	Sig. (2-tailed)	.115	.134	.025	.912	.149	.754	.377	.124	.490	.039

Appendix 3

	Sum of Squares and Cross-products	4644963.50 9	81928.10 9	267625.5 37	-81615.156	271236.10 7	- 118409.3 98	23111876.07 3	3343252.89 9	21633088.93 5	142037012.0 82
	Covariance	221188.739	3901.339	12744.07 3	-3886.436	-12916.005	-5638.543	1100565.527	159202.519	1030147.092	6763667.242
	N	22	22	22	22	22	22	22	22	22	22
d	Bootstrap Bias	.015	-.004 ^e	-.003	.041	-.004	.053	.012	.011	.000	.002
	Std. Error	.147	.177 ^e	.156	.302	.214	.236	.160	.172	.202	.224
	BCa 95% Lower Confidence Interval	-.086	-.136 ^e	.121	-.549	-.629	-.523	-.182	-.084	-.257	-.080
	Upper	.730	.683 ^e	.734	.635	.040	.533	.612	.731	.559	.831
Si	Pearson Correlation	-.230	-.078	-.353	-.041	.677 ^{**}	-.301	-.491 [*]	-.657 ^{**}	-.669 ^{**}	-.533 [*]
	Sig. (2-tailed)	.304	.729	.107	.856	.001	.173	.020	.001	.001	.011
	Sum of Squares and Cross-products	- 2710521.93 6	- 17086.51 1	- 174798.0 46	- 118587.72 2	507122.07 1	- 441184.2 50	- 50346165.01 6	- 5713208.20 9	- 82002371.43 1	- 150334690.2 18
	Covariance	-129072.473	-813.643	-8323.716	-5647.034	24148.670	- 21008.77 4	-2397436.429	-272057.534	-3904874.830	-7158794.772
	N	22	22	22	22	22	22	22	22	22	22
p ^d	Bootstrap Bias	-.030	-.014 ^e	-.011	-.032	.007	.047	-.038	-.023	-.017	-.011
	Std. Error	.180	.106 ^e	.204	.336	.087	.242	.180	.112	.103	.229
	BCa 95% Lower Confidence Interval	-.556	-.304 ^e	-.686	-.704	.444	-.659	-.757	-.822	-.809	-.863
	Upper	.028	.058 ^e	.014	.500	.860	.278	-.279	-.519	-.551	-.123
S	Pearson Correlation	.479 [*]	.116	.467 [*]	-.027	-.514 [*]	.153	.950 ^{**}	.799 ^{**}	.794 ^{**}	.728 ^{**}
	Sig. (2-tailed)	.024	.608	.028	.904	.015	.498	.000	.000	.000	.000

Appendix 3

Sum of Squares and Cross-products	1762918.013	7878.322	72123.029	-24578.565	120088.627	69822.244	30425107.667	2168384.232	30364563.996	64002732.648	
Covariance	83948.477	375.158	3434.430	-1170.408	-5718.506	3324.869	1448814.651	103256.392	1445931.619	3047749.174	
N	22	22	22	22	22	22	22	22	22	22	
Bootstrap ^d	Bias	-.009	.019 ^e	.011	.015	.000	-.035	.002	-.020	-.018	-.006
	Std. Error	.199	.130 ^e	.155	.283	.137	.246	.015	.126	.107	.105
	BCa 95% Lower Confidence Interval	.118	-.119 ^e	.066	-.503	-.727	-.291	.909	.467	.481	.443
Upper	.786	.505 ^e	.772	.527	-.250	.544	.982	.937	.926	.884	

Correlations

	Mn	Cr	V	Ti	Ca	K	Al	P	Si	S	
S Pearson Correlation	.390	.494 [*]	.076	-.412	.381	-.373	-.117	.346	-.230	.479 [*]	
n Sig. (2-tailed)	.073	.020	.736	.057	.080	.088	.605	.115	.304	.024	
Sum of Squares and Cross-products	2289243.921	27369.986	3078.827	1759753.862	10665856.878	3119272.752	2768953.877	4644963.509	2710521.936	1762918.013	
Covariance	109011.615	1303.333	146.611	-83797.803	507897.947	-148536.798	-131854.947	221188.739	-129072.473	83948.477	
N	22	22	22	22	22	22	22	22	22	22	
Bootstrap ^d	Bias	-.020	-.201	.028	-.017	.012	-.007	-.036	.015	-.030	-.009
	Std. Error	.208	.462	.203	.116	.170	.149	.189	.147	.180	.199

Appendix 3

	BCa 95% Confiden ce Interval	Low er Upp er	-.077	-.510	-.266	-.567	-.030	-.624	-.443	-.086	-.556	.118
			.681	.852	.539	-.270	.679	-.087	.128	.730	.028	.786
C	Pearson Correlation		.124	.588**	.123	-.219	.475 ⁺	-.210	.007	.330	-.078	.116
d	Sig. (2-tailed)		.581	.004	.586	.328	.025	.348	.974	.134	.729	.608
	Sum of Squares and Cross-products		13511.717	603.534	91.755	-17273.651	246377.230	-32521.626	3270.199	81928.109	-17086.511	7878.322
	Covariance		643.415	28.740	4.369	-822.555	11732.249	-1548.649	155.724	3901.339	-813.643	375.158
	N		22	22	22	22	22	22	22	22	22	22
	Bootstra p ^d	Bias	-.022 ^e	-.133 ^e	-.006 ^e	-.012 ^e	.003 ^e	.002 ^e	-.008 ^e	-.004 ^e	-.014 ^e	.019 ^e
		Std. Error	.231 ^e	.356 ^e	.208 ^e	.091 ^e	.135 ^e	.129 ^e	.133 ^e	.177 ^e	.106 ^e	.130 ^e
	BCa 95% Confiden ce Interval	Low er Upp er	-.319 ^e	-.125 ^e	-.220 ^e	-.464 ^e	.162 ^e	-.501 ^e	-.268 ^e	-.135 ^e	-.397 ^e	-.119 ^e
			.529 ^e	.943 ^e	.563 ^e	-.041 ^e	.750 ^e	.080 ^e	.254 ^e	.680 ^e	.121 ^e	.505 ^e
A	Pearson Correlation		.478 ⁺	-.046	.319	-.475 ⁺	.619**	-.398	-.266	.475 ⁺	-.353	.467 ⁺
g	Sig. (2-tailed)		.024	.837	.147	.025	.002	.066	.232	.025	.107	.028
	Sum of Squares and Cross-products		117826.907	-108.138	541.394	-85094.601	726763.806	-139793.945	-264034.806	267625.537	-174798.046	72123.029
	Covariance		5610.805	-5.149	25.781	-4052.124	34607.800	-6656.855	-12573.086	12744.073	-8323.716	3434.430
	N		22	22	22	22	22	22	22	22	22	22
	Bootstra p ^d	Bias	-.012	-.039	.011	-.014	.003	.000	-.016	-.003	-.011	.011
		Std. Error	.163	.202	.216	.120	.136	.174	.188	.156	.204	.155

Appendix 3

	BCa 95% Confiden ce Interval	Low er Upp er	.116	-.489	-.107	-.652	.307	-.673	-.577	.121	-.686	.066
			.723	.194	.738	-.314	.840	-.044	.032	.734	.014	.772
Sr	Pearson Correlation		.173	.081	.007	.117	.218	-.155	-.080	-.025	-.041	-.027
	Sig. (2-tailed)		.441	.719	.976	.603	.329	.491	.724	.912	.856	.904
	Sum of Squares and Cross-products		248302.673	1102.185	66.786	122401.117	1494700.38 4	-317142.729	-461375.906	-81615.156	-118587.722	-24578.565
	Covariance		11823.937	52.485	3.180	5828.625	71176.209	-15102.035	-21970.281	-3886.436	-5647.034	-1170.408
	N		22	22	22	22	22	22	22	22	22	22
	Bootstra p ^d	Bias Std. Error		.013 .259	-.105 .348	-.007 .250	-.033 .276	.033 .331	-.023 .324	.017 .294	.041 .302	-.032 .336
	BCa 95% Confiden ce Interval	Low er Upp er	-.287	-.693	-.482	-.529	-.373	-.777	-.641	-.549	-.704	-.503
			.707	.456	.480	.497	.822	.462	.564	.635	.500	.527
R b	Pearson Correlation		-.571**	-.386	-.442*	.312	-.586**	.792**	.583**	-.318	.677**	-.514*
	Sig. (2-tailed)		.006	.076	.040	.158	.004	.000	.004	.149	.001	.015
	Sum of Squares and Cross-products		- 212995.435	- 1359.634	- 1133.665	84480.924	- 1042135.65 0	420824.644	877467.665	-271236.107	507122.071	- 120088.627
	Covariance		-10142.640	-64.744	-53.984	4022.901	-49625.507	20039.269	41784.175	-12916.005	24148.670	-5718.506
	N		22	22	22	22	22	22	22	22	22	22
	Bootstra p ^d	Bias Std. Error		.006 .143	.032 .227	.029 .208	.023 .165	.012 .155	.003 .065	.020 .094	-.004 .214	.007 .087

Appendix 3

	BCa 95% Confiden ce Interval	Low er Upp er											
A	Pearson Correlation												
s	Sig. (2-tailed)												
	Sum of Squares and Cross-products												
	Covariance												
	N												
	Bootstra p ^d												
	Bias												
	Std. Error												
	BCa 95% Confiden ce Interval	Low er Upp er											
P	Pearson Correlation												
b	Sig. (2-tailed)												
	Sum of Squares and Cross-products												
	Covariance												
	N												

Appendix 3

p ^d	Bootstra Bias	.002	.018	.013	-.031	.024	-.020	-.060	.012	-.038	.002
	Std. Error	.142	.159	.145	.101	.153	.110	.222	.160	.180	.015
	BCa Lower 95% Confidence Interval	.179	-.332	.050	-.685	.083	-.809	-.667	-.182	-.757	.909
	Upper	.773	.459	.746	-.460	.908	-.475	-.027	.612	-.279	.982
Z	Pearson Correlation	.733**	.188	.454*	-.560**	.681**	-.748**	-.544**	.338	-.657**	.799**
	Sig. (2-tailed)	.000	.402	.034	.007	.000	.000	.009	.124	.001	.000
	Sum of Squares and Cross-products	3174411.289	7682.561	13536.629	1761752.340	14049921.584	4615646.498	9499207.144	3343252.899	5713208.209	2168384.232
	Covariance	151162.442	365.836	644.601	-83892.969	669043.885	-219792.690	-452343.197	159202.519	-272057.534	103256.392
	N	22	22	22	22	22	22	22	22	22	22
p ^d	Bootstra Bias	.013	-.022	.002	-.022	.015	-.017	-.036	.011	-.023	-.020
	Std. Error	.083	.215	.163	.102	.111	.100	.136	.172	.112	.126
	BCa Lower 95% Confidence Interval	.533	-.470	-.061	-.723	.382	-.896	-.747	-.084	-.822	.467
	Upper	.911	.552	.760	-.440	.915	-.617	-.387	.731	-.519	.937
C	Pearson Correlation	.619**	.150	.350	-.603**	.561**	-.687**	-.394	.155	-.669**	.794**
	Sig. (2-tailed)	.002	.505	.110	.003	.007	.000	.070	.490	.001	.000
	Sum of Squares and Cross-products	37760757.980	86303.601	147039.247	26730463.960	163000772.620	59722277.477	96918460.066	21633088.935	82002371.431	30364563.996

Appendix 3

Covariance		1798131.33 2	4109.695	7001.869	1272879.23 6	- 7761941.55 3	- 2843917.97 5	- 4615164.76 5	1030147.09 2	- 3904874.83 0	1445931.61 9
N		22	22	22	22	22	22	22	22	22	22
Bootstrap p ^d	Bias	-.004	-.046	.005	-.013	.005	-.007	-.022	.000	-.017	-.018
	Std. Error	.121	.216	.133	.098	.120	.090	.138	.202	.103	.107
	BCa Lower 95% Confidence Interval	.330	-.413	.043	-.750	.263	-.827	-.593	-.257	-.809	.481
	BCa Upper 95% Confidence Interval	.816	.444	.616	-.472	.810	-.546	-.226	.559	-.551	.926
F e	Pearson Correlation	.441 [*]	.437 [*]	.680 ^{**}	-.241	.439 [*]	-.661 ^{**}	-.259	.443 [*]	-.533 [*]	.728 ^{**}
	Sig. (2-tailed)	.040	.042	.000	.280	.041	.001	.245	.039	.011	.000
	Sum of Squares and Cross-products	61922060.9 15	578669.8 86	656392.4 84	- 24537867.9 37	293781239. 663	- 132078059. 879	- 146285499. 988	142037012. 082	- 150334690. 218	64002732.6 48
	Covariance	2948669.56 7	27555.70 9	31256.78 5	- 1168469.90 2	13989582.8 41	- 6289431.42 3	- 6965976.19 0	6763667.24 2	- 7158794.77 2	3047749.17 4
N		22	22	22	22	22	22	22	22	22	22
Bootstrap p ^d	Bias	-.004	.054	-.006	-.035	-.008	.004	-.044	.002	-.011	-.006
	Std. Error	.157	.151	.104	.227	.218	.138	.245	.224	.229	.105
	BCa Lower 95% Confidence Interval	.043	.	.420	-.690	-.141	-.864	-.674	-.080	-.863	.443
	BCa Upper 95% Confidence Interval	.713	.	.841	.109	.827	-.366	.066	.831	-.123	.884

Appendix 3

M n	Pearson Correlation	1	.331	.370	-.531 [*]	.506 [*]	-.712 ^{**}	-.610 ^{**}	.103	-.645 ^{**}	.493 [*]
	Sig. (2-tailed)		.132	.090	.011	.016	.000	.003	.649	.001	.020
	Sum of Squares and Cross-products	34664499.998	108324.464	88352.444	-13364905.961	83661813.637	35143887.108	85278362.325	8146074.990	44904657.807	10720547.538
	Covariance	1650690.476	5158.308	4207.259	-636424.093	3983895.887	1673518.434	4060874.396	387908.333	2138317.038	510502.264
	N	22	22	22	22	22	22	22	22	22	22
	Bootstrap Bias	0	-.067	-.001	-.003	-.006	.003	-.007	.004	-.001	.000
	Std. Error	0	.256	.171	.120	.153	.089	.094	.209	.107	.150
	BCa Lower 95% Confidence Interval	.	-.338	-.040	-.736	.128	-.854	-.759	-.336	-.825	.165
	Upper	.	.667	.676	-.273	.767	-.520	-.433	.503	-.416	.743
	Interval										
Cr	Pearson Correlation	.331	1	.145	-.040	.222	-.241	-.046	.255	-.084	.063
	Sig. (2-tailed)	.132		.518	.861	.320	.280	.840	.252	.710	.782
	Sum of Squares and Cross-products	108324.464	3088.448	327.431	-9447.411	347017.882	-112348.010	-60479.383	190790.612	-55267.769	12852.427
	Covariance	5158.308	147.069	15.592	-449.877	16524.661	-5349.905	-2879.971	9085.267	-2631.799	612.020
	N	22	22	22	22	22	22	22	22	22	22
	Bootstrap Bias	-.067	0	.071	.035	-.059	.024	-.007	-.006	-.016	.025
	Std. Error	.256	0	.239	.196	.255	.191	.187	.173	.186	.175
	BCa Lower 95% Confidence Interval	-.338	.	-.260	-.311	-.537	-.471	-.330	-.290	-.397	-.304
	Upper										
	Interval										

Appendix 3

	Confidence Interval	.667	.804	.457	.525	.178	.288	.584	.207	.562	
V	Pearson Correlation	.370	.145	1	-.083	.337	-.416	-.100	.221	-.348	.432*
	Sig. (2-tailed)	.090	.518		.713	.125	.054	.657	.324	.113	.045
	Sum of Squares and Cross-products	88352.444	327.431	1641.778	-14411.609	383490.820	-141333.512	-96548.026	120238.384	-166638.618	64608.037
	Covariance	4207.259	15.592	78.180	-686.267	18261.468	-6730.167	-4597.525	5725.637	-7935.172	3076.573
	N	22	22	22	22	22	22	22	22	22	22
	Bootstrap Bias	-.001	.071	0	-.014	-.012	-.004	-.046	-.004	-.028	.007
p ^d	Std. Error	.171	.239	0	.192	.213	.209	.252	.202	.203	.151
	BCa Lower 95% Confidence Interval	-.040	-.260	.	-.416	-.169	-.728	-.575	-.212	-.664	.056
	Upper	.676	.804	.	.237	.690	-.023	.223	.570	-.086	.741
Ti	Pearson Correlation	-.531*	-.040	-.083	1	-.589**	.700**	.731**	-.208	.699**	-.642**
	Sig. (2-tailed)	.011	.861	.713		.004	.000	.000	.352	.000	.001
	Sum of Squares and Cross-products	13364905.961	9447.411	14411.609	18297460.431	70696315.614	25130970.157	74279340.030	11989346.183	35372202.942	10136919.895
	Covariance	636424.093	-449.877	-686.267	871307.640	3366491.220	1196712.865	3537111.430	-570921.247	1684390.616	482710.471
	N	22	22	22	22	22	22	22	22	22	22
	Bootstrap Bias	-.003	.035	-.014	0	-.008	.000	.012	-.026	.009	-.026
p ^d	Std. Error	.120	.196	.192	0	.135	.110	.086	.235	.089	.107

Appendix 3

	BCa	Low										
	95%	er										
	Confiden	Upp										
	ce	er										
	Interval											
C	Pearson Correlation		.506 [*]	.222	.337	-.589 ^{**}	1	-.618 ^{**}	-.562 ^{**}	.708 ^{**}	-.545 ^{**}	.527 [*]
a	Sig. (2-tailed)		.016	.320	.125	.004		.002	.006	.000	.009	.012
	Sum of Squares and Cross-products		83661813.6 37	347017.8 82	383490.8 20	- 70696315.6 14	788143932. 425	- 145587401. 347	- 374670597. 422	267644010. 335	- 181000980. 221	54612911.2 42
	Covariance		3983895.88 7	16524.66 1	18261.46 8	- 3366491.22 0	37530663.4 49	- 6932733.39 7	- 17841457.0 20	12744952.8 73	- 8619094.29 6	2600614.82 1
	N		22	22	22	22	22	22	22	22	22	22
	Bootstrap Bias		-.006	-.059	-.012	-.008	0	.006	.004	-.003	.000	.011
p ^d	Std. Error		.153	.255	.213	.135	0	.176	.172	.132	.199	.176
	BCa	Low										
	95%	er										
	Confiden	Upp										
	ce	er										
	Interval											
K	Pearson Correlation		-.712 ^{**}	-.241	-.416	.700 ^{**}	1	-.618 ^{**}	.774 ^{**}	-.252	.860 ^{**}	-.722 ^{**}
	Sig. (2-tailed)		.000	.280	.054	.000		.002	.000	.257	.000	.000
	Sum of Squares and Cross-products		- 35143887.1 08	- 112348.0 10	- 141333.5 12	- 25130970.1 57	- 145587401. 347	- 70379851.1 45	- 154288683. 838	- 28487992.2 28	- 85379486.6 02	- 22370927.2 32

Appendix 3

Covariance	-	-	-	1196712.86	-	3351421.48	7347080.18	-	4065689.83	-
	1673518.43	5349.905	6730.167	5	6932733.39	3	3	1356571.05	8	1065282.24
	4				7			8	8	9
N	22	22	22	22	22	22	22	22	22	22
Bootstra Bias	.003	.024	-.004	.000	.006	0	.025	.005	.011	-.004
p ^d Std. Error	.089	.191	.209	.110	.176	0	.095	.234	.051	.105
BCa Low 95% er	-.854	-.471	-.728	.313	-.853	.	.513	-.614	.713	-.872
Confiden Upp ce er	-.520	.178	-.023	.894	-.243	.	.965	.212	.961	-.516
Interval										
AI Pearson Correlation	-.610**	-.046	-.100	.731**	-.562**	.774**	1	-.147	.863**	-.386
Sig. (2-tailed)	.003	.840	.657	.000	.006	.000		.514	.000	.076
Sum of Squares and Cross-products	-	-	-	74279340.0	-	154288683.	563952671.	-	242337990.	-
	85278362.3	60479.38	96548.02	30	374670597.	838	165	46994643.0	687	33801025.2
	25	3	6		422			85		24
Covariance	-	-	-	3537111.43	-	7347080.18	26854889.1	-	11539904.3	-
	4060874.39	2879.971	4597.525	0	17841457.0	3	03	2237840.14	18	1609572.63
	6				20			7		0
N	22	22	22	22	22	22	22	22	22	22
Bootstra Bias	-.007	-.007	-.046	.012	.004	.025	0	-.018	-.009	-.060
p ^d Std. Error	.094	.187	.252	.086	.172	.095	0	.248	.059	.249
BCa Low 95% er	-.759	-.330	-.575	.296	-.808	.513	.	-.582	.698	-.807
Confiden Upp ce er	-.433	.288	.223	.893	-.209	.965	.	.266	.944	-.070
Interval										

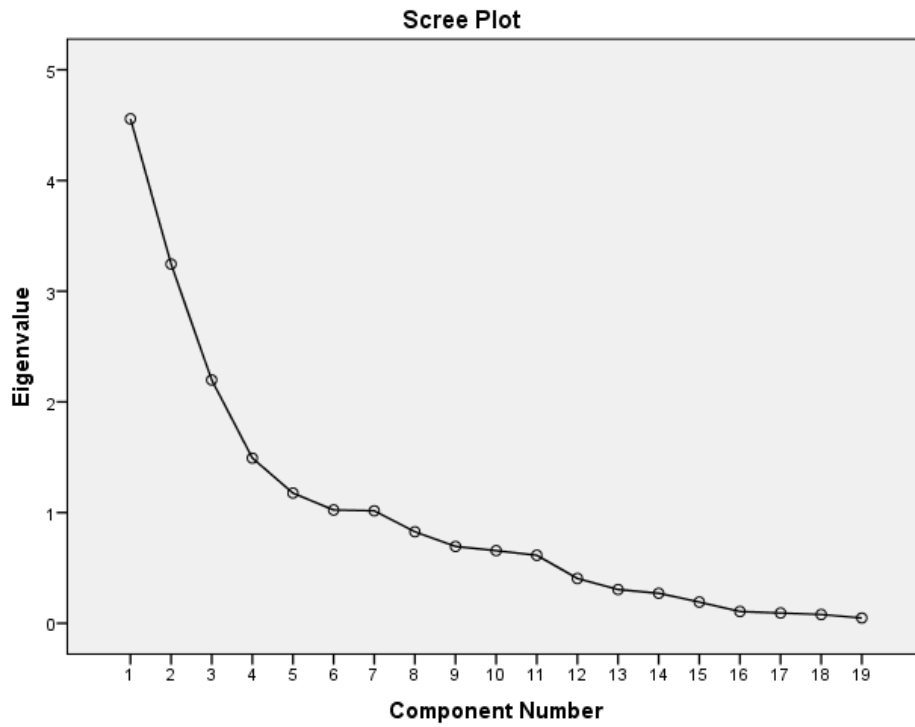
Appendix 3

P	Pearson Correlation	.103	.255	.221	-.208	.708**	-.252	-.147	1	-.110	.346
	Sig. (2-tailed)	.649	.252	.324	.352	.000	.257	.514		.626	.115
	Sum of Squares and Cross-products	8146074.990	190790.612	120238.384	11989346.183	267644010.335	28487992.228	46994643.085	181081213.202	17484867.564	17161497.704
	Covariance	387908.333	9085.267	5725.637	570921.247	12744952.873	1356571.058	2237840.147	8622914.914	-832612.741	817214.176
	N	22	22	22	22	22	22	22	22	22	22
	Bootstrap Bias	.004	-.006	-.004	-.026	-.003	.005	-.018	0	-.011	.004
p ^d	Std. Error	.209	.173	.202	.235	.132	.234	.248	0	.263	.198
	BCa Lower 95% Confidence Interval	-.336	-.290	-.212	-.643	.349	-.614	-.582	.	-.555	-.164
	Upper	.503	.584	.570	.175	.913	.212	.266	.	.338	.767
Si	Pearson Correlation	-.645**	-.084	-.348	.699**	-.545**	.860**	.863**	-.110	1	-.577**
	Sig. (2-tailed)	.001	.710	.113	.000	.009	.000	.000	.626		.005
	Sum of Squares and Cross-products	44904657.807	55267.769	166638.618	35372202.942	181000980.221	85379486.602	242337990.687	17484867.564	139894500.325	25209356.666
	Covariance	2138317.038	2631.799	7935.172	1684390.616	8619094.296	4065689.838	11539904.318	-832612.741	6661642.873	1200445.556
	N	22	22	22	22	22	22	22	22	22	22
	Bootstrap Bias	-.001	-.016	-.028	.009	.000	.011	-.009	-.011	0	-.027
p ^d	Std. Error	.107	.186	.203	.089	.199	.051	.059	.263	0	.205

Appendix 3

	BCa Lower 95% Confidence Interval											
	BCa Upper 95% Confidence Interval											
S	Pearson Correlation	.493*	.063	.432*	-.642**	.527*	-.722**	-.386	.346	-.577**	1	
	Sig. (2-tailed)	.020	.782	.045	.001	.012	.000	.076	.115	.005		
	Sum of Squares and Cross-products	10720547.538	12852.427	64608.037	-10136919.895	54612911.242	-22370927.232	-33801025.224	17161497.704	-25209356.666	13623626.494	
	Covariance	510502.264	612.020	3076.573	-482710.471	2600614.821	-1065282.249	-1609572.630	817214.176	1200445.556	648744.119	
	N	22	22	22	22	22	22	22	22	22	22	
	Bootstrap Standard Error	.000	.025	.007	-.026	.011	-.004	-.060	.004	-.027	0	
p ^d	BCa Lower 95% Confidence Interval	.165	-.304	.056	-.792	.121	-.872	-.807	-.164	-.860		
	BCa Upper 95% Confidence Interval	.743	.562	.741	-.533	.929	-.516	-.070	.767	-.282		

A3.2 House data set PCA paramters



Total Variance Explained

Component	Extraction Sums of Squared Loadings	Rotation Sums of Squared Loadings		
	Cumulative %	Total	% of Variance	Cumulative %
1	23.983	3.136	16.504	16.504
2	41.060	3.124	16.444	32.948
3	52.629	2.294	12.076	45.024
4	60.483	1.792	9.431	54.456
5	66.674	1.755	9.237	63.693
6	72.061	1.181	6.213	69.906
7	77.410	1.173	6.171	76.077
8	81.763	1.080	5.686	81.763

Kaiser-Meyer-Olkin Results

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.	.653
Bartlett's Test of Sphericity	Approx. Chi-Square
	1246.865
	df
	171
	Sig.
	.000

A3.3 Core Descriptions

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Appendix 3

Core number	Core layer	Layer depth (from core top in cm)	Sampling pXRF	sub-sample number	sub-sample depth	Munsell	Matrix	Observations	Dry / wet	Notes
1891	1891/1	0-6	2cm handheld, 50-100-50-100			10YR 2/2	Coarse, poorly consolidated sand with organic content. Mid to dark brown, heterogeneous. Lower boundary clear, marked by coarse gravel, poss broken crucible frag, which is part of lower context	6cm not done as crucible frag	DRY	
	1891/2	6-16	2cm handheld, 50-100-50-100	16cm (1891/2/16)		10YR 2/1	Fine, charcoal rich organic matrix in coarse, fine sand matrix. Common fine, angular gravels throughout, poorly sorted. Rare burnt bone frags. High organic content at top showing some compaction, lowering organic content with depth, lower boundary clear, horizontal. Rare fine roots. Very burnt stones (crumbled) near top	from 8-14cm pXRF	DRY	
	1891/3	16-24	core fragmented, subsampled every 2cm	18cm (1891/3/18) 20cm (1891/3/20) 22cm (1891/3/22)			Similar to above, but lower organic content, higher ash component, more common SA to SR fine gravels. Becoming increasingly gravelly, burnt stones and gravels, rare burnt clay (fine), rare larger burnt pebbles, all angular. Rare burnt bone (fine) . One large piece of			

Appendix 3

							burnt clay at 22cm			
	1891/4	24-30	core fragment ed, subsampl ed every 2cm	24cm (1891/4/24) 26 (1891/4/26) 28 (1891/4/28)		10YR 4/4	Coarse to fine poorly sorted sands, fines upward Rare gravels, sub rounded. Beach sands, storm beach from marine transgression.	Sub soil/Bk.	DRY	
Core number	Core layer	Layer depth (from core top in cm)	Sampling pXRF	sub-sample number	sub-sample depth	Munsell	Matrix	Observations	Dry /wet	
1892	1892/1	0-22	2cm handheld , 50-100-50-100	subsampl ed at 6cm (1892/1/6) 12cm (1891/1/12) 18cm (1892/1/18)		10YR 2/2	Organic rich, slightly compacted sandy loam. Poss fines upward, but is poorly sorted. Clusters of fine gravels, some burnt. AT lower interface (19-21cm) one large SA pebble. Clear lower interface, 1-2cm leaching, lowering of organic content. Fine to medium roots at lower interface. Frequent mould frags and ashy clumps throughout. Burnt bone concentration at 11-12 cm	No sample taken at 20cm	DRY	0-10cm: Compacted, organic, charcoal rich, with rare, fine inclusions of gravels, burnt, mould (1cm), burnt bone, burnt pebble (2-3cm), with gravel around from stone shattering. 10-12cm: possible dump of material. High organic, charcoal rich fine matrix, with mould frag (1-2cm), finer burnt bone frags, burnt clay frag (2cm), quite compacted.

Appendix 3

	1892/2	22-30	2cm handheld, 50-100-50-100	22cm (1892/2/22) 24cm (1892/2/24) 26cm (1892/2/26) and 28cm (1892/2/28)		10YR 4/4	Poorly sorted storm beach deposits. At 24cm there is some hyper-coatings, probably P and Fe, clear over the sands and gravels in a horizontal layer, non-cemented. This could explain the peak in P here.	Sub soil/Bk. Sand collapsed partly during in-situ measurements, none taken at 28cm, subsamples taken to confirm P leaching.	DRY	
Core number	Core layer	Layer depth (from core top in cm)	Sampling pXRF	sub-sample number	sub-sample depth	Munsell	Matrix	Observations	Dry /wet	
1934	1934/1	0-5	Core collapsed on opening, all subsampled at 2cm intervals to 20cm, then 24 and 28cm.			2.5Y 4/1-3/1	Redeposited blue grey clay silt, fairly massive, sharp lower boundary. Cracks? Or burrows infilled with humic matter and pea-grit, poorly consolidated. Fine to medium inclusions of gravel, burnt clay and charcoal, rare, random. Relic iron stained root channels. Rare SR gravels, varied geology.	Pas weathered in open, cracks/burrowing/rooting infilled?		

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	1934/2	5-11				10YR 2/2	Humic loam, dense humic matter, clay silt inclusions, some medium to large, heterogeneous, SR gravels, few, random. Fine roots, few, sharp, gradually sloping lower boundary.	Parcel ditch infill?		Noted on core as parcel ditch with clay upper layer. Poss marked wrong as core 1934, when it is core 1935.
	1934/3	11-30				10YR 3/4	Poorly consolidated, moderately sorted sand, with SA-SR gravels in sorted lens'. Upper 11-19cm weakly humic from leaching/ bioturb. Silty sand lens, 1cm, at 16cm, horizontal.			
Core number	Core layer	Layer depth (from core top in cm)	Sampling pXRF	sub-sample number	sub-sample depth	Munsell	Matrix	Observations	Dry /wet	
1936	1936/1	0-9 (12)	2cm handheld, 50-100-50-100	4cm (1936/1/4) 6cm (1936/1/6) 8cm (1936/1/8) 10cm (1936/1/10) 12?	Core collapsed during 1st analysis at 2cm. All sub sampled.	10YR 2/2	Coarse sandy loam, moderate to low clustered, inclusion organic content. Poorly sorted and consolidated. Mid brown hue, with intermixed beach sands and fine gravels. Rare fine inclusions of marine blue clay silt, charcoal and burnt clay. Inclusions only in organic clasts, not in sandy matrix. Rare fine roots in organic clasts.	Sloping lower boundary, very clear, sharp, little to no mixing. Boundary from 9-12cm, even and consistent. Poss ditch or posthole cut by core, only edges of feature?	DRY	

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	1936/2	9 (12)-30	sub-sampled as collapsed	14cm (1936/1/14) 16cm (1936/1/16) 18cm (1936/1/18) 20cm (1936/1/20) 22cm (1936/1/22) 24cm (1936/1/24) 26cm (1936/1/26)		10YR 4/4	Beach sands, horizontally stratified, fairly poorly sorted. Clear layering, with some mixed and erosion between deposits. Coarse sands and gravels interlayered with medium to coarse sands. Gravels SR to SA, mixed.	Poorly consolidated	DRY	
Core number	Core layer	Layer depth (from core top in cm)	Sampling pXRF	sub-sample number	sub-sample depth	Munsell	Matrix	Observations	Dry /wet	
1937	1937/1	0-12		4cm (1937/1/4) 8cm (1937/1/8)		10YR 2/1	Organic sandy loam, fairly compact. Poorly sorted. Heterogonous anthropogenic. Rare to common small pebbles (SR), frequent fine gravels. Moderate to high organic content (5-10%). AT 8-10cm visible secondary ferrous and P staining. Slightly sloping lower boundary, clear, sharp (>1cm mixing).	More rapid accumulation of in-washing and waste.	DRY	core poss series of in-washing and dumps. Appears domestic

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	1937/2	12-22		12cm (1937/2/8) 16cm (1937/2/16) 20cm (1937/2/20)	Medium root affecting samples 8cm, 12cm, 16cm	10Yr 2/1	Compact, high organic content loam, unsorted fine pebbles/ gravels. Larger (1-2cm) rare burnt bone frags. Very sharp lower boundary, near horizontal. Common small to medium pebbles, mostly SR	Possibly slow accumulation of domestic waste	DRY	
	1937/3	22-24.5		22-24.5cm 1937/3/22	Entirely subsampled.	10YR 4/4-10YR 5/4	Unknown loamy silt, stratified, compact, with fine matrix inclusions of sand. Buff/brown with rare dark organic laminations. Very sharp boundaries. Silty clay texture, with sand in matrix. Anthropogenic.	Poorly heated clay-mould??	DRY	
	1937/4	24.5-28		26cm (1937/4/26)		10YR 2/2	Heterogeneous coarse loam, moderate to high organic content, frequent fine gravels, large (1-2cm) burnt bone inclusions and common charcoal frags. Clear horizontal boundaries, upper no mixing, lower c.1cm.	Dump of waste?	DRY	
	1937/5	28-30		28-30cm (1937/5/28)		10 YR 4/3	Coarse beach sands and gravels with some mixing and leaching from above. Some secondary phosphate staining. Rare fine roots.	disturbed beach sand	DRY	
Core number	Core layer	Layer depth (from core top in cm)	Sampling pXRF	sub-sample number	sub-sample depth	Munsell	Matrix	Observations	Dry /wet	

Appendix 3

1938	1938/1	0-10	2-6cm inclusive handheld . Core began to collapse, so subsampled at 6, 8 and 10cm				Layered coarse sandy loam with varied organic content from anthro inputs. Sloping deposition and lower interface. Dark brown, with layers of organic rich lenses at 3.5-4 and 6-7cm, more coarse and/fine gravels in-between. Gravels common and mainly SR, sim to subsoil. Burnt bone frags (rare) in organic rich lenses.	A series of infills or dumps in the ditch, poss occupation waste.	DRY	
	1938/2	10-30	12, 14, 16, 18, 24 and 28cm				Coarse beach sand, some finer lenses, moderately sorted.		DRY	
Core number	Core layer	Layer depth (from core top in cm)	Sampling pXRF	sub-sample number	sub-sample depth	Munsell	Matrix	Observations	Dry /wet	
1939	1939/1	0-2	2cm		all subsampled as collapsing.	10YR 3/2	Coarse sandy loam, moderately organic, sloping, sharp lower boundary.	Secondary backfill/ more recent infilling?	DRY	
	1939/2	2-12	4cm, 6cm, 8cm, 10cm.			10YR 4/1	Coarse sandy loam with moderate organic content. Sharp upper and lower boundaries. SA-SR coarser gravels, poorly sorted. Rare charcoal flecks. Heterogeneous, esp geology, inc calcareous gravels, rare burnt bone. Rare fine roots.	Backfill, poss primary.	DRY	

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	1939/3	12-30	14cm, 16cm, 18cm, 20cm, 24cm, 28cm.			10YR 5/4	Layered coarse sand and gravels. Coarse beach gravels?	Gravels SA-SR, moderately sorted.	DRY	
Core number	Core layer	Layer depth (from core top in cm)	Sampling pXRF	sub-sample number	sub-sample depth	Munsell	Matrix	Observations	Dry /wet	
1940	1940/1	0-3	Too poorly consolidated; all subsampled 2cm intervals.				Heterogeneous coarse loam, sandy with random charcoal and gravels, humic. Poorly consolidated, burrowed and rooted. Clasts of blue clay silt in the backfill at 21-23cm. Fine roots throughout.			NB: renumbered after analysis. The more compact 2-3cm was more intensely humic and compressed, and part of an occupation layer over the house.
1940	1940/1	3-23	Too poorly consolidated; all subsampled 2cm intervals.				Heterogeneous coarse loam, sandy with random charcoal and gravels, humic. Poorly consolidated, burrowed and rooted. Clasts of blue clay silt in the backfill at 21-23cm. Fine roots throughout.			Posthole backfill, heterogeneous. Posthole poss to 26cm. Blue clay silt at base poss primary deposit to rest the post on. Very compacted.
	1940/2	23-30					Poorly consolidated gravel. Poss humic leaching.		DRY	
Core number	Core layer	Layer depth (from core top in cm)	Sampling pXRF	sub-sample number	sub-sample depth	Munsell	Matrix	Observations	Dry /wet	

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1943	1943/1	0-7				10YR 3/1	Compact, heterogeneous organic sandy loam, with rare large SR pebbles, charcoal, fairly low gravel %, humic and compact.	Poorly sorted/unsorted. Anthropogenic slow infilling/ backfill?	DRY	
	1943/2	7-13	8cm, 10cm, 12cm			10YR 3/2	Weakly organic heterogeneous backfill, sandy loam, with few SR gravels and larger pebble at lower interface. More gradual (1-2cm) lower interface, 1cm mixing upper interface. Anthropogenic infilling/gradual backfill.	Leached interface (FE and P), some compaction, highly heterogeneous.	DRY	

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	1943/3	13-30	14, 16,20,24, 28			10YR 5/2	Very poorly sorted sands and gravels- poss not natural looking at the sorting. Rare fine roots, highly heterogeneous with cluster of large gravels and small pebbles at 20-23cm, SA-SR. Compacted finer sand in upper 6cm. Few roots. At 23-24, humic intrusion, poss large roots. This is the parcel ditch, which to me looks exposed and weathered. There is considerable compaction, illuviation of fine material down profile, considerable rooting, and some weak cementation from P and Fe (poss). Considerable bioturbation, burrows and pea-grit from earthworms, humic filled root channels with pea-grit.	This looks wrong. Roots backfilled with humic and R pea-grit, but the natural strat is not there. It is disturbed/redeposited either by rooting or anthro.	DRY	This appears to have some surface weathering from exposure, causing the illuviation of fine material and the secondary cementation. The compaction and massive structure also should be noted. The exposure of the subsoil is demonstrated by the loss of structure and the considerable bioturb. It is a sandy loam with common SR gravels, with pore spaces and racks infilled with illuviated silts. These are cemented in parts.
Core number	Core layer	Layer depth (from core top in cm)	Sampling pXRF	sub-sample number	sub-sample depth	Munsell	Matrix	Observations	Dry /wet	
1942	1942/1	0-7	handheld 2cm, 4cm, 6cm			10YR 2/1	Humic sandy loam, fairly compact, few SR gravels, burnt bone and charcoal. Clear, sharp, near horizontal lower boundary, poorly sorted, gravels random. Common roots, fine, humic channels. Organic, v, fine			Is this in-sinking of the disuse layer?

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							lamination at 3cm, poss rotten wood. Dense, frequent burnt bone, domestic waste.			
	1942/2	7-13	handheld , 8cm, 10cm			10YR 3/1	More gravel rich, less humic sandy loam with tipping humic and gravel rich alternate layers. Clear lower boundary, horizontal, sharp, gravel and charcoal cluster at lower interface. Burnt clay frags mid context. Humic lens with v.fine sand under-in-washing (water)			In-washing/slow accumulation?
	1942/3	13-30	subsamp led			10YR 4/2	Gravelly sand. Slight humic leaching 13-18cm, becoming more gravel rich SA-SR from 21cm. Increasing infilling and moderate cementation from 21cm, inc with depth.			Beach sand? To 18cm, then a more outwash like gravelly subsoil.

Appendix 3