

Supplementary Information

Plant GLM Results

Table P1. ANOVA results for Manganese in Plants

Source	DF	F	p-value
C(Town)	3.0	15.228	1.139e-03
Residual	8.0		

Table P2. Tukey comparisons for Manganese in Plants

Group1	Group2	Mean difference	p-adj	Lower	Upper	Reject
Chingola	Control	-0.15	0.4169	-0.4451	0.1452	False
Chingola	Kitwe	-0.5971	0.0009	-0.8923	-0.3019	True
Chingola	Mufulira	-0.2114	0.1788	-0.5065	0.0838	False
Control	Kitwe	-0.4471	0.0056	-0.7423	-0.152	True
Control	Mufulira	-0.0614	0.907	-0.3565	0.2338	False
Kitwe	Mufulira	0.3858	0.013	0.0906	0.6809	True

Table P3. ANOVA results for Iron in Plants

Source	DF	F	p-value
C(Town)	3.0	563.635	1.208e-09
Residual	8.0		

Table P4. Tukey comparisons for Iron in Plants

Group1	G roup2	Mean difference	p-adj	Lower	Upper	Reject
Chingola	Control	-1.2588	0.0	-1.3887	-1.1289	True
Chingola	Kitwe	-0.8367	0.0	-0.9666	-0.7068	True
Chingola	Mufulira	-1.5704	0.0	-1.7003	-1.4405	True
Control	Kitwe	0.4222	0.0	0.2923	0.5521	True
Control	Mufulira	-0.3116	0.0003	-0.4415	-0.1817	True
Kitwe	Mufulira	-0.7337	0.0	-0.8636	-0.6038	True

Table P5. ANOVA results for Cobalt in Plants

Source	DF	F	p-value
C(Town)	3.0	214.072	5.612e-08
Residual	8.0		

Table P6. Tukey comparisons for Cobalt in Plants

Group1	group2	meandiff	p-adj	lower	upper	reject
Chingola	Control	-3.6773	0.0	-4.1836	-3.1711	True
Chingola	Kitwe	-1.0552	0.0007	-1.5614	-0.549	True
Chingola	Mufulira	-0.5106	0.0481	-1.0168	-0.0043	True
Control	Kitwe	2.6221	0.0	2.1159	3.1284	True
Control	Mufulira	3.1668	0.0	2.6605	3.673	True
Kitwe	Mufulira	0.5446	0.0356	0.0384	1.0509	True

Table P7. ANOVA results for Copper in Plants

Source	DF	F	p-value
C(Town)	3.0	303.256	1.416e-08
Residual	8.0		

Table P8. Tukey comparisons for Copper in Plants

group1	group2	meandiff	p-adj	lower	upper	reject
Chingola	Control	-1.8617	0.0	-2.0797	-1.6438	True
Chingola	Kitwe	-1.6798	0.0	-1.8978	-1.4619	True
Chingola	Mufulira	-1.1884	0.0	-1.4064	-0.9705	True
Control	Kitwe	0.1819	0.1056	-0.0361	0.3998	False
Control	Mufulira	0.6733	0.0	0.4554	0.8913	True
Kitwe	Mufulira	0.4914	0.0004	0.2735	0.7094	True

Table P9. ANOVA results for Zinc in Plants

Source	DF	F	p-value
C(Town)	3.0	331.662	9.929e-09
Residual	8.0		

Table P10. Tukey comparisons for Zinc in Plants

Group1	G roup2	Mean difference	p-adj	Lower	Upper	Reject
Chingola	Control	-1.8938	0.0	-2.2012	-1.5863	True

Chingola	Kitwe	-2.9531	0.0	-3.2606	-2.6456	True
Chingola	Mufulira	-1.999	0.0	-2.3065	-1.6915	True
Control	Kitwe	-1.0593	0.0	-1.3668	-0.7518	True
Control	Mufulira	-0.1052	0.7017	-0.4127	0.2023	False
Kitwe	Mufulira	0.9541	0.0	0.6466	1.2616	True

Soil GLM Results

Table S1. ANOVA results for Manganese in Soil

Source	DF	F	p-value
C(Town)	3.0	105.671	6.609e-18
Residual	36.0		

Table S2. Tukey comparisons for Manganese in Soil

Group1	Group2	Mean difference	p-adj	Lower	Upper	Reject
Chingola	Control	-1.2861	0.0	-1.5095	-1.0626	True
Chingola	Kitwe	-0.0395	0.9639	-0.263	0.1839	False
Chingola	Mufulira	-0.2732	0.0115	-0.4966	-0.0497	True
Control	Kitwe	1.2466	0.0	1.0231	1.47	True
Control	Mufulira	1.0129	0.0	0.7894	1.2363	True
Kitwe	Mufulira	-0.2337	0.0375	-0.4571	-0.0102	True

Table S3. ANOVA results for Iron in Soil

Source	DF	F	p-value
C(Town)	3.0	316.535	6.429e-26
Residual	36.0		

Table S4. Tukey comparisons for Iron in Soil

Group1	Group2	Mean difference	p-adj	Lower	Upper	Reject
Chingola	Control	-2.276	0.0	-2.4915	-2.0605	True
Chingola	Kitwe	-0.9673	0.0	-1.1828	-0.7518	True
Chingola	Mufulira	-1.8386	0.0	-2.0541	-1.6231	True
Control	Kitwe	1.3087	0.0	1.0932	1.5242	True
Control	Mufulira	0.4374	0.0	0.2219	0.6529	True
Kitwe	Mufulira	-0.8713	0.0	-1.0868	-0.6558	True

Table S5. ANOVA results for Cobalt in Soil

Source	DF	F	p-value
C(Town)	3.0	644.610	2.506e-31
Residual	36.0		

Table S6. Tukey comparisons for Cobalt in Soil

Group1	Group2	Mean difference	p-adj	Lower	Upper	Reject
Chingola	Control	-3.1972	0.0	-3.9752	-2.4192	True

Chingola	Kitwe	0.3765	0.5668	-0.4015	1.1545	False
Chingola	Mufulira	-10.8041	0.0	-11.5821	-10.0261	True
Control	Kitwe	3.5737	0.0	2.7957	4.3517	True
Control	Mufulira	-7.6069	0.0	-8.3849	-6.8289	True
Kitwe	Mufulira	-11.1806	0.0	-11.9586	-10.4027	True

Table S7. ANOVA results for Copper in Soil

Source	DF	F	p-value
C(Town)	3.0	134.871	1.236e-19
Residual	36.0		

Table S8. Tukey comparisons for Copper in Soil

Group1	Group2	Mean difference	p-adj	Lower	Upper	Reject
Chingola	Control	-2.2505	0.0	-2.5893	-1.9117	True
Chingola	Kitwe	-0.1246	0.7559	-0.4634	0.2142	False
Chingola	Mufulira	-0.7496	0.0	-1.0884	-0.4108	True
Control	Kitwe	2.126	0.0	1.7872	2.4648	True
Control	Mufulira	1.5009	0.0	1.1621	1.8397	True
Kitwe	Mufulira	-0.6251	0.0001	-0.9639	-0.2863	True

Table S9. ANOVA results for Zinc in Soil

Source	DF	F	p-value
C(Town)	3.0	253.096	3.044e-24

Residual	36.0		
----------	------	--	--

Table S10. Tukey comparisons for Zinc in Soil

Group1	Group2	Mean difference	p-adj	Lower	Upper	Reject
Chingola	Control	-2.8015	0.0	-3.0904	-2.5125	True
Chingola	Kitwe	-1.5992	0.0	-1.8881	-1.3103	True
Chingola	Mufulira	-0.7195	0.0	-1.0084	-0.4306	True
Control	Kitwe	1.2023	0.0	0.9133	1.4912	True
Control	Mufulira	2.082	0.0	1.793	2.3709	True
Kitwe	Mufulira	0.8797	0.0	0.5908	1.1686	True

Water GLM Results

Table W1. ANOVA results for Manganese in Water

Source	DF	F	p-value
C(Town)	3.0	583.644	1.503e-16
Residual	16.0		

Table W2. Tukey comparisons for Manganese in Water

Group1	Group2	Mean difference	p-adj	Lower	Upper	Reject
Chingola	Kitwe	-0.6036	0.0001	-0.8942	-0.3131	True
Chingola	Mufulira	-0.5467	0.0003	-0.8372	-0.2561	True
Chingola	ZABS	-3.8101	0.0	-4.1006	-3.5195	True

Kitwe	Mufulira	0.057	0.9422	-0.2336	0.3475	False
Kitwe	ZABS	-3.2064	0.0	-3.497	-2.9159	True
Mufulira	ZABS	-3.2634	0.0	-3.5539	-2.9729	True

Table W3. ANOVA results for Iron in Water

Source	DF	F	p-value
C(Town)	3.0	249.002	1.236e-13
Residual	16.0		

Table W4. Tukey comparisons for Iron in Water

Group1	Group2	Mean difference	p-adj	Lower	Upper	Reject
Chingola	Kitwe	-1.6994	0.0	-2.0163	-1.3825	True
Chingola	Mufulira	-1.7162	0.0	-2.0331	-1.3993	True
Chingola	ZABS	-3.014	0.0	-3.3309	-2.6971	True
Kitwe	Mufulira	-0.0168	0.9987	-0.3337	0.3001	False
Kitwe	ZABS	-1.3146	0.0	-1.6315	-0.9977	True
Mufulira	ZABS	-1.2978	0.0	-1.6147	-0.9809	True

Table W5. ANOVA results for Cobalt in Water

Source	DF	F	p-value
C(Town)	3.0	11.303	3.149e-04
Residual	16.0		

Table W6. Tukey comparisons for Cobalt in Water

Group1	Group2	Mean difference	p-adj	Lower	Upper	Reject
Chingola	Kitwe	-2.1709	0.0007	-3.423	-0.9188	True
Chingola	Mufulira	-2.1709	0.0007	-3.423	-0.9188	True
Chingola	ZABS	-1.0723	0.1072	-2.3244	0.1798	False
Kitwe	Mufulira	0.0	1.0	-1.2521	1.2521	False
Kitwe	ZABS	1.0986	0.0962	-0.1535	2.3507	False
Mufulira	ZABS	1.0986	0.0962	-0.1535	2.3507	False

Table W7. ANOVA results for Copper in Water

Source	DF	F	p-value
C(Town)	3.0	34.768	3.069e-07
Residual	16.0		

Table W8. Tukey comparisons for Copper in Water

Group1	Group2	Mean difference	p-adj	Lower	Upper	Reject
Chingola	Kitwe	0.6822	0.0003	0.3231	1.0413	True
Chingola	Mufulira	-0.1549	0.6151	-0.514	0.2042	False
Chingola	ZABS	-0.5769	0.0015	-0.9359	-0.2178	True
Kitwe	Mufulira	-0.8371	0.0	-1.1962	-0.478	True
Kitwe	ZABS	-1.259	0.0	-1.6181	-0.9	True
Mufulira	ZABS	-0.4219	0.0187	-0.781	-0.0629	True

Table W9. ANOVA results for Zinc in Water

Source	DF	F	p-value
C(Town)	3.0	18.589	1.824e-05
Residual	16.0		

Table W10. Tukey comparisons for Zinc in Water

Group1	Group2	Mean difference	p-adj	Lower	Upper	Reject
Chingola	Kitwe	-0.454	0.4869	-1.3481	0.4401	False
Chingola	Mufulira	-0.758	0.112	-1.6521	0.1361	False
Chingola	ZABS	1.3968	0.002	0.5027	2.2909	True
Kitwe	Mufulira	-0.304	0.7665	-1.1982	0.5901	False
Kitwe	ZABS	1.8508	0.0001	0.9567	2.7449	True
Mufulira	ZABS	2.1548	0.0	1.2607	3.0489	True

Correlation Matrix

Table C1. Correlation matrix

Metal	Co	Cu	Fe	Mn	Zn
Co	1.00	0.80	0.60	0.68	0.44
Cu	0.80	1.00	0.90	0.85	0.88
Fe	0.60	0.90	1.00	0.77	0.91
Mn	0.68	0.85	0.77	1.00	0.71
Zn	0.44	0.88	0.91	0.71	1.00