Part One. Statistical Report

Part Two. Textbook Exercises

11.42 Relationships among PCB congeners

Consider the following variables: PCB(the total amount of PCB) and four congeners: PCB52, PCB118, PCB138, and PCB180.

(a) Using numerical and graphical summaries, describe the distribution of each of these variables.

Table 1: Numerical Summaries

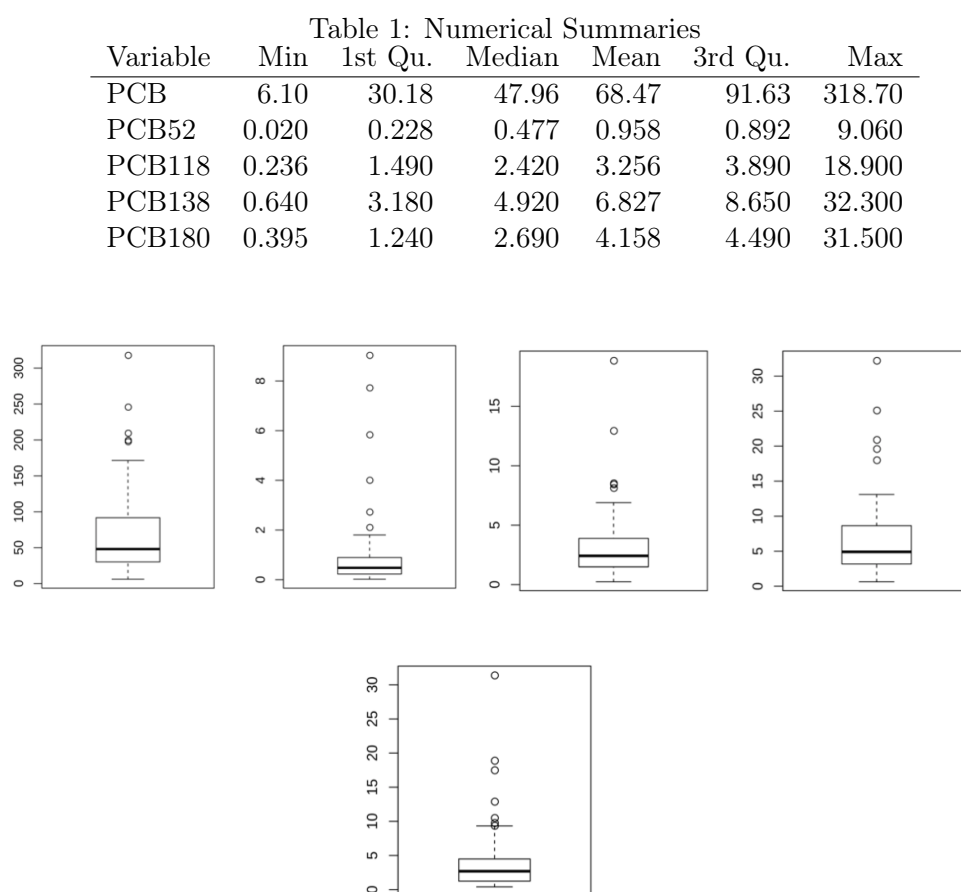| Variable	Min	1st Qu.	Median	Mean	3rd Qu.	Max
PCB	6.10	30.18	47.96	68.47	91.63	318.70
PCB52	0.020	0.228	0.477	0.958	0.892	9.060
PCB118	0.236	1.490	2.420	3.256	3.890	18.900
PCB138	0.640	3.180	4.920	6.827	8.650	32.300
PCB180	0.395	1.240	2.690	4.158	4.490	31.500

Figure 1: Boxplots of PCB, PBC52, PCB118, PCB138 and PCB180

Figure 1 shows that the distribution of PCB and PCB180 is right skewed with about six outliers for both, while all the distribution of others are right skewed with about five outliers.

(b) Using numerical and graphical summaries, describe the relationship between each pair of variables.

Table 2: Correlations

Variable 1	Variable 2	Correlation
PCB	PCB52	0.5963572
PCB	PCB118	0.843298
PCB	PCB138	0.9288353
PCB	PCB180	0.8008549
PCB52	PCB118	0.6849073
PCB52	PCB138	0.3008983
PCB52	PCB180	0.08692971
PCB118	PCB138	0.7293792
PCB118	PCB180	0.4374443
PCB138	PCB180	0.8823022