

Topic 7f: Histograms

Here are a number of tables of data. Generate a histogram for each table.

Table 1 **gnrnd4(1497539102, 78301453)**

156.8	147.1	149.2	149.1	192.9	158.7	171.0	145.5	180.6	172.8	220.8	150.9
145.5	195.7	164.6	219.8	164.3	152.0	205.5	215.8	211.2	211.8	145.4	174.5
148.8	145.8	167.8	172.8	147.7	149.7	204.3	150.6	151.0	151.5	162.0	151.6
167.6	193.6	169.1	163.1	150.0	145.6	153.3	164.6	197.0	175.5	158.3	200.1
146.6	158.3	147.3	145.8	204.5	196.2	154.0	147.5	175.9	169.2	150.0	146.4
146.2	220.3	146.0	172.9	158.1	189.1	151.7	205.8	166.7	186.7	148.7	145.9
205.5	181.8	206.9	157.7	148.1	220.0	146.2	154.3	160.8	192.1	206.0	145.4
197.6	152.1	183.1	215.0	159.8	170.6	147.9	174.9				

Notice how the data is bunched up at the left and how it trails off to the right. Because the "long tail" is on the right this is characterized as **skewed to the right**.

Table 2 **gnrnd4(723859503, 7800145)**

199	187	221	213	201	207	204	195	178	207	213	195	220	214	222
193	152	212	212	178	215	222	210	196	172	188	211	204	220	222
209	213	191	215	220	188	204	194	194	166	192	212	204	189	220
188	196	169	162	218	199	156	210	176	222	220	203	213	204	201
193	206	208	170	205	212	214	214	184	221	195	191	186	174	206
207	212	177	210	221	150	205	207	176	207	202	205	190	214	168
200	180	188	214	191	194									

Notice how the data is bunched up on the right and how it trails off to the left. Because the "long tail" is on the left this is characterized as **skewed to the left**.

Table 3 **gnrnd4(1849829701, 79001403)**

191.4	152.4	164.0	205.1	190.6	147.9	213.4	163.4	167.9	166.3	208.1	164.1
194.6	182.6	203.3	178.3	192.5	174.2	187.2	218.7	163.7	192.4	199.1	155.1
184.2	216.9	160.7	175.9	140.8	187.9	202.5	164.3	193.7	178.2	199.3	163.5
155.6	174.2	198.0	154.6	186.2	143.8	198.8	164.2	215.7	145.4	215.4	160.6
195.7	202.4	146.6	158.8	159.2	203.9	212.3	193.5	145.4	205.0	165.9	219.2
201.7	178.2	152.0	184.8	215.4	206.9	159.2	164.5	211.0	187.9	188.0	189.8
140.8	184.0	160.6	172.2	201.0	211.6	201.9	148.7	162.2	186.2	198.7	177.7
179.7	166.8	198.2	156.1	183.4	202.5	146.5	197.3	141.5	194.2	142.1	176.9
209.1	211.1										

Notice how the values in the table are spread fairly evenly across the histogram. The values do not really bunch up anywhere and they do not trail off at either end. This is called a **uniform** distribution.

Table 4

gnrnd4(1849829704, 18001800)

165.6	181.9	182.4	179.6	198.7	182.6	193.8	183.3	190.2	164.1	189.6	180.7	174.7
155.0	198.0	171.8	182.4	172.1	185.3	203.1	176.5	210.8	177.8	192.0	155.4	200.7
167.9	190.6	182.4	181.2	155.4	168.0	216.7	209.1	182.0	152.8	162.9	212.3	175.6
182.2	168.0	193.6	174.1	207.6	169.3	194.3	156.8	156.7	175.9	205.9	191.3	196.9
195.0	188.4	193.1	188.1	158.3	156.8	166.4	216.7	203.3	177.4	140.6	172.5	206.3
192.2	218.8	180.8	201.7	160.8	179.8	174.1	219.0	178.0	187.5	171.0	145.8	187.9
186.4	176.6	194.7	185.1	179.3	195.8	171.2	178.8	189.7	172.6	178.4	161.5	218.2
174.9	201.3	168.3	164.4	162.3	169.0	184.4						

Notice how the data is bunched up in the middle and that it trails off toward both sides. This is an example of an approximately **normal** distribution.

Table 5

gnrnd5(143879025405, 124001500, 134002100)

214.9	216.5	212.8	212.1	204.4	154.3	168.2	222.5	213.5	222.7	212.9	212.9	118.9	214.8	162.6
155.5	147.6	194.8	219.9	152.9	164.8	201.1	136.2	240.8	159.6	143.9	219.8	211.6	213.0	138.0
181.8	153.3	130.0	163.3	196.3	216.4	159.3	144.6	209.4	203.6	125.6	214.5	144.3	215.8	212.0
209.6	151.3	148.5	219.7	218.4	173.7	144.2	211.4	164.6	177.3	184.1	218.4	197.1	233.1	143.8
203.0	218.0	190.4	149.1	216.6	153.8	200.5	153.4	208.1	215.7	142.9	128.8	165.5	157.8	154.7
140.3	210.2	205.1	154.6	212.9	215.8	143.0	226.3	213.0	229.1	134.3	232.5	209.5	209.8	193.5
152.4	187.6	143.7	219.5	198.6	141.5	210.2	213.1	136.8	143.3	160.6	145.2	160.5	150.4	217.0
133.4	219.6	212.7	144.9	220.0	153.2	151.0	195.9	174.1	133.3	153.8	178.6	143.7	194.5	154.1
165.2	193.8	225.1	205.6	203.8	216.8	232.5	202.8	145.4	142.2	208.0	141.3	213.7	226.3	180.5
240.4	206.1	155.7	204.4	165.7	155.7	166.6	156.3	213.1	217.5	217.9	234.0	218.8	140.7	160.1
119.8	153.8	224.3	206.0	147.1	214.4	150.0	161.2	170.8	218.3	146.0	164.2	191.2	230.5	188.3
199.5	158.3	152.1	218.4	133.6	137.1	226.3	210.6	138.7	164.9	189.3	151.1	229.1	185.8	147.8
150.9	130.0	216.8	195.8	150.2	166.6	193.4	130.8	200.4	156.6	206.3	203.2	234.8	156.4	190.1
138.8	113.5	210.2	193.3	218.3	146.0	231.0	159.6	204.5	157.2	162.4	158.6	157.4	149.7	203.8
138.3	221.9	153.7	144.4	146.1	191.4	152.1	243.9	242.0	203.9	148.2	230.5	207.6	136.9	219.1
235.5	137.4	144.9	152.0	131.4	201.7	203.2	133.7	218.5	125.4	223.2	147.9	165.1	174.7	159.3
142.0	138.5	141.9	201.9	211.9	200.9	148.3	195.4	162.1	207.6	230.6	199.6	149.0	189.0	130.4

Notice how the data has two peaks with a trough between them. This is an example of a **bimodal** distribution.