BIOSTATS 540 - Intermediate Biostatistics

Class Activity

Survival of 347 Patients with Breast Cancer

The following is a table of the survival (years) of 347 patients with breast cancer who were referred to the Department of Radiotherapy, Edinburgh in 1956. To illustrate its meaning, it shows that 62 patients survived less than one year, 45 patients survived to between one and two years, and so on.

Survival of 347 patients with breast cancer

Survival time (years)*	Frequency	Cumulative frequency
<1	62	62
1–2	45	107
2–3	38	145
3–4	28	173
4–5	25	198
5–6	10	208
6–7	14	222
7–8	11	233
8–9	9	242
9–10	8	250
10–11	8	258
11–12	8	266
12–13	9	275
13–14	5	280
14–15	2	282
15–16	3	285
16–17	4	289
17–18	7	296
18–19	1	297
19–20	3	300
At least 20	47	347

*The interval 1–2 years includes survival times of one year and up to, but not including, 2 years. All patients were followed up to the 20th anniversary of first treatment; 300 patients died before 31 December 1976.

#1. What is the most likely (modal) survival time?

#2. Estimate the median survival time. Then estimate the 25th and 75th percentiles.

#3. In your opinion, is the distribution of survival times symmetric, negatively skewed, or positively skewed? How did you arrive at your conclusion?

#4. The estimated mean survival was approximately 5 years for the 300 patients who died before December 31, 1976. Why is it *wrong* to conclude that patients in Edinburgh with breast cancer have a mean survival of 5 years?