Survival Data Analysis & Lab.
Assignment #1

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1. In a survival analysis, the outcome variable is dichotomous. (True / False)
2. In a survival analysis, the event is usually described by a (0,1) variable. (True / False)
3. If the study ends before an individual has gotten the event, then his or her survival time is censored. (True / False)
4. If, for a given individual, the event occurs **before** the person is lost to follow-up or withdraw from the study, then this person's survival time is censored. (True / False)
5. $S(t) = P(T > t)$ is called the hazard function. (True / False)
6. The hazard function is a probability. (True / False)
7. Theoretically, the graph of a survivor function is a smooth curve that decreases from $S(t) = 1$ at $t = 0$ to $S(t) = 0$ at $t = \infty$. (True / False)
8. The survivor function at time t gives the instantaneous potential per unit time for a failure to occur, given survival up to time t. (True / False)
9. The formula for a hazard function involves a conditional probability as one of its components. (True / False)
10. The hazard function theoretically has no upper bound. (True / False)
11. Mathematical models for survival analysis are frequently written in terms of a hazard function. (True / False)
12. One goal of a survival analysis is to compare survivor and/or hazard functions. (True / False)
13. Ordered failure times are censored data. (True / False)
14. Censored data are used in the analysis of survival data up to the time interval of censorship. (True / False)
15. A typical goal of a survival analysis involving several explanatory variables is to obtain an adjusted measure of effect. (True / False)
16. Given the following survival time data (in weeks) for $n = 15$ subjects,

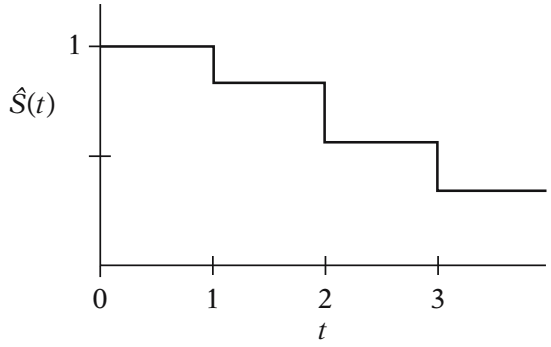
    `1,1,1+,1+,1+,2,2,2,2+,2+,3,3,3+,4+,5+`

    where + denotes censored data. Complete the following table:

$t_{(j)}$	m_j	q_j	$R(t_{(j)})$
0	0	0	15 persons survive ≥ 0 weeks
1			
2			
3			

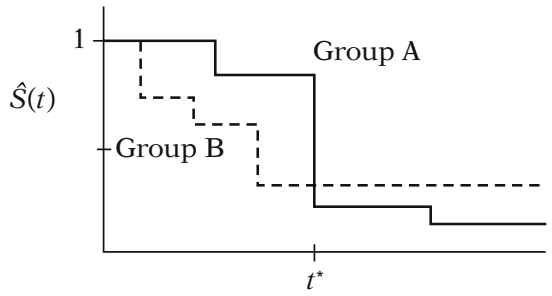
Also, compute the average survival time $(\bar{T})$ and the average hazard rate $(\bar{h})$ using the raw data (ignoring + signs for $\bar{T}$).

17. Suppose that the estimated survivor curve for the above table is given by the following graph:



What is the median survival time for this cohort?

♠ Questions 18–20 consider the comparison of the following two survivor curves:



18. Which group has a better survival prognosis **before** time t^*?

19. Which group has a better survival prognosis **after** time t^*?

20. Which group has a longer median survival time?