Week 3 Quiz

TOTAL POINTS 8

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1. Let $f(x)$ be the probability that a person with feature x dies within 5 years.

   1 point

   Let $S_x(t)$ be the survival function of a person with feature x. Assume t is measured in years.

   Which of the following is true?

   - ○ f(x) = S_x(0)
   - ○ $f(x) = S_x(5)$
   - ◉ f(x) = 1-S_x(5)

2. The survival function is always:

   1 point

   - ◉ Decreasing
   - ○ Increasing
   - ○ Linear

3. Which of the following is a difference between survival data and classification datasets?

   1 point

   - ○ Classification dataset contain information on other features

- [ ] Survival data can be used to build prognostic models
- [x] In survival data the labels are amounts of time and in classification data the labels are binary

4. Which of the following is an example of censoring?

1 point

- [x] The patient withdraws from a study before having an event, and before the study ends.
- [x] Patient does not have the event by the end of the study period.
- [x] Death due to other, unrelated causes (such as an automobile accident)

5. Estimate $P(T > 2 \mid T >= 2)$ from the following dataset:

1 point

i	T_i
1	3
2	5
3	4+
4	2

Hint: $P(T > 2 \mid T >= 2) = (1 - P(T = 2 \mid T >= 2))$.

- [ ] 1/2
- [x] 3/4

- 0
- 1/4

6. Compute the probability of surviving up to 4 years $S(4)$ given the following dataset using the Kaplan Meier estimate:

1 point

i	T_i
1	3
2	5
3	4+
4	2

The Kaplan Meier Estimator is

$S(t) = \prod_{i=0}^{N} (1 - \frac{d_i}{n_i})$

- 0
- 1/2
- 3/4
- 1/4

7. Compute S(5) given the following dataset using the Kaplan Meier estimate (note, it's the same dataset as in the previous question).

1 point

i	T_i
1	3
2	5
3	4+
4	2

The Kaplan Meier Estimator is

$$S(t) = \prod_{i=0}^{N} (1 - \frac{d_i}{n_i})$$

Hint: since we're using the same dataset as in the previous question, you may notice that

$$S(5) = S(4) \times (\frac{d_5}{n_5})$$

- ( ) 1/2
- ( ) 3/4
- (•) 0
- ( ) 1/4

8. True or False: If t is larger than the longest survival time recorded in the dataset, then $S(t) = 0$ according to the Kaplan-Meier estimate.

1 point

The Kaplan Meier Estimator is

$$S(t) = \prod_{i=0}^{N} (1 - \frac{d_i}{n_i})$$

- [x] True
- [ ] False