Why Use a Kaplan-Meier Analysis?

- The goal is to estimate a population survival curve from a sample.
- If every patient is followed until death, the curve may be estimated simply by computing the fraction surviving at each time.
- However, in most studies patients tend to drop out, become lost to followup, move away, etc.
- A Kaplan-Meier analysis allows estimation of survival over time, even when pts drop out or are studied for different lengths of time.
How Does a Kaplan-Meier Curve Work?

• For each interval, survival probability is calculated as # pts surviving divided by # pts at risk. Pts who have died, dropped out, or not reached the time yet are not counted as “at risk.” Pts who are lost are considered “censored” & are not counted in the denominator.

• Probability of surviving to any point is estimated from cumulative probability of surviving each of the preceding time intervals (calculated as the product of preceding probabilities).

• Although the probability calculated at any given interval isn’t very accurate because of the small # of events, the overall probability of surviving to each point is more accurate.
Cumulative probability of survival:

- 20% × 80% = 16%
- 16% × 50% = 8%
Interpretation of Kaplan-Meier Curves

• Vertical axis represents estimated probability of survival for a hypothetical cohort, not actual % surviving.

• Precision of estimates depends on # observations; therefore, estimates at left-hand side are more precise than at right-hand side (because of small #’s due to deaths and dropouts).

• Curves may give the impression that a given event occurs more frequently early than late, because of high survival rate and large # people at beginning.
40% survival rate