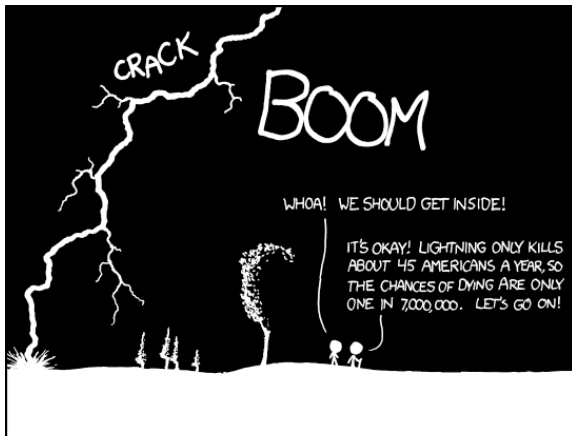


## Week 2 Friday

**Opt Out Deadline for DVB!**

# Conditional Probability

Make sure you know your neighbors' names. Then take 2 minutes to try to explain to each other why this comic might be relevant today:



THE ANNUAL DEATH RATE AMONG PEOPLE  
WHO KNOW THAT STATISTIC IS ONE IN SIX.

Source: <https://xkcd.com/795/>

1. On the Titanic, the probability of surviving was 32%. Among first-class passengers, it was 62%. Was surviving independent of ticket type?

- (A) Yes
- (B) No
- (C) Can't say

2. A survey estimates that 15% of Americans fall below the poverty line, 20% speak a language other than English at home, and 5% fall into both categories.

Suppose a given American speaks a language other than English at home. What is the probability that they fall below the poverty line?

3. You toss a fair coin 5 times. Find the probability that you toss more heads than tails, given that your first two tosses both land heads.

4. A bag contains 5 red marbles and 3 blue marbles. Two marbles are drawn simultaneously from the bag: Alejandra takes one and Beatrice takes the other.

Is the event that Alejandra's marble is blue independent of the event that Beatrice's marble is blue?

- (A) Yes
- (B) No
- (C) Can't say



5. You draw a card at random from a standard 52-card deck. Let  $A$  be the event that your card is an ace. Which of the following events is independent of  $A$ ?

- (A) Your card is not a king.
- (B) Your card is red.
- (C) Your card is a heart.
- (D) None of the above OR more than one of the above.