Bookmark

Problem 7: Sampling families

(3/3 points)

We are given the following statistics about the number of children in the families of a small village.

There are 100 families: 10 families have no children, 40 families have 1 child each, 30 families have 2 children each, 10 families have 3 each, and 10 families have 4 each.

1. If you pick a family at random (each family in the village being equally likely to be picked), what is the expected number of children in that family?

   1.7 ✔

2. If you pick a child at random (each child in the village being equally likely to be picked), what is the expected number of children in that child's family (including the picked child)?

   41/17 ✔

3. Generalize your approach from part 2: Suppose that a fraction p_k of the families have k children each. Let K be the number of children in a randomly selected family, and let $a = \mathbf{E}[K]$ and $b = \mathbf{E}[K^2]$. Let W be the number of children in a randomly chosen child's family. Express $\mathbf{E}[W]$ in terms of a and b using standard notation .

   $\mathbf{E}[W] =$ b/a ✔

You have used 1 of 2 submissions

DISCUSSION

Click “Show Discussion" below to see discussions on this problem.


Download on the
App Store
ANDROID APP ON
Google play