Transcript

Live Video – Repeated Sampling

01. 00:00 / 00:06 - In repeated sampling we have a few simple questions here. Often we consider problems
02. 00:06 / 00:11 - where we draw multiple individuals from a set of individuals, so drawing parts from
03. 00:11 / 00:16 - a box where some are defective; choosing multiple people from a population is kind of what we're
04. 00:16 / 00:20 - going to be looking out. So the formulas that we've been investigating can be used to help
05. 00:20 / 00:26 - us find probabilities in this situation. In this case, though if we select two subjects
06. 00:26 / 00:32 - at random from our sample, are the results independent? So if we pick one person and
07. 00:32 / 00:38 - then we pick another person from this dataset which has 73 people in it, do the probabilities
08. 00:38 / 00:43 - stay the same? If I say what's the probability that you have calcium crystals present then
09. 00:43 / 00:50 - it would be 31 out of 73. Right? But the next time I reach in, what's going to be the numbers?
10. 00:51 / 00:56 - There's definitely going to make this 72, so everything changes... dependent. So if
11. 00:56 / 01:02 - I replace the item, if I put the person back, they are independent; if I don't put the person
12. 01:02 / 01:07 - back, they are dependent unless the population is very large. This is dependent situation
13. 01:07 / 01:12 - because we're going to be changing that denominator as we go. So the question that we're asked
14. 01:12 / 01:19 - here is: find the probability of A and B. What is the probability that both people have
15. 01:20 / 01:24 - a calcium concentration eight or more? So this is not the same A and B we were using
16. 01:24 / 01:30 - earlier. Now A is that the first person has a calcium concentration of 8 or more, and
17. 01:30 / 01:35 - then the next one is the probability that the second person has a calcium concentration
18. 01:35 / 01:39 - of eight or more. So we want both people, so that's an and, I want the first person
19. 01:39 / 01:45 - and the second person to both have calcium concentration of eight or more. So the first
20. 01:45 / 01:50 - time I reach in how many people have a calcium concentration of eight or more total eight
21. 01:50 / 01:57 - or more we're changing it we're making it easy. 8 out of how many total? Now I know
22. 01:57 / 02:04 - the first person was in this row was eight or more. So how many people are left out of
23. 02:05 / 02:12 - 7out of 72. So the first time we reach in it's 8 out of 73, the second time we reach
24. 02:12 / 02:18 - in though this denominator has changed to 72 and we know that the first person was eight
25. 02:18 / 02:23 - or more. So this is really a conditional probability. We're really using this rule but I think it's
26. 02:23 / 02:29 - logical; I don't need the rule other than to remember that I multiply. But what we really
27. 02:29 / 02:34 - did as we said was the probably the first is eight or more. We moved the probability
28. 02:34 / 02:39 - A to the front times the probability seconds eight or more given the first was eight or
29. 02:39 / 02:44 - more. So given the first was eight or more that tells me that this number went from eight
30. 02:44 / 02:51 - to seven and that the denominator went from 73 to 72. In the notes this is like coins
31. 02:51 / 02:52 - from a pocket.