This editorial covers multi-stage sampling. Multi-stage sampling is one kind of random sampling. A multi-stage sample combines any of the other methods of the random sampling techniques. An advantage is that you can really narrow down a large population appropriately. A disadvantage is that in the narrowing down, you're going to lose a little bit of accuracy and be a little bit less precise. Let's go through some examples.

In this first example, we're going to start by randomly selecting three fishing boats from a fleet. And then once we've selected those boats, we're going to group the fish caught on that boat by species, then weigh a random selection of the fish from each species.

So this first part where we're randomly selecting the three fishing boats from a fleet, we could consider that a simple random sample. We're assigning all the boats in the fleet a number and choosing a few of those. In the second part where we're grouping the fish by species and then weighing a random selection from each species, that would be a stratified sample.

Now, we could also consider that first part to be a cluster sample. Because we're weighing all of the species on that one boat, we're really clustering the fleets into the different boats and then weighing all of the fish on it. When we then later stratify, that's where it gets a little bit confusing as to whether or not it's still technically a cluster sample. But it can go either way.

Let's look at another example. In this example, we start by randomly selecting several states and then using all the zip codes within that state. Because we're using all the zip codes, that is a cluster sample.

Next, we're going to randomly select several zip codes and use all of the coffee shops within that zip code, again, a cluster sample. Finally, at each coffee shop, we're going to interview every seventh person that enters the coffee shop. So a sample where you're choosing every blank person-- that is a systematic sample.

We'll look at another. In this sample, it says a single car factory randomly chooses several makes of the cars to examine. So this could be a simple random sample. You give each of the car makes a number. Choose several of those. Within each make, it then measures the tire pressure of every fifth car off the line. That would be a systematic random sample. Because we're choosing every fifth car and not every car, it's systematic.

We'll go through one final example. In this example, there's a list of steps that happen. I'm going to read through all of them. We start by randomly selecting several states. Within those states, we randomly select several counties.

Within those counties, we randomly select several school districts. Within those school districts, we randomly select several schools. Within those schools, we randomly select several classes. And then we take the health records for all of the students in the selected classes.

Each of these stages is a cluster sample. We take several cluster samples in a row. So this process here is multi-stage because there's multiple stages of clustering. And it is a cluster sample because it has a cluster at every stage. So some people would refer to this as multi-stage sampling. Others would just refer to it as a cluster sample and mention that there are multiple stages of the clustering.

So with multi-stage sampling, things are a little less clearly defined than with the other types. But again, it's a great way to combine all of the pieces that we have and do a different kind of sample. This has been your tutorial on multi-stage sampling.