<https://www.youtube.com/watch?v=nnBJeb_I-q8&list=PLblh5JKOoLUK0FLuzwntyYI10UQFUhsY9&index=29>

Hello and welcome to a stat quickie on t-tests.

I work in a large genetics lab and people often ask me questions about T tests.

The first question they ask me is what type of T tests they should use ?

There are two main categories for T tests : paired and unpaired.

Pair T tests are useful when you have before and after measurements taken from the same test subject.

For example if you have a drug for blood pressure say like you take a group of people and you measure their blood pressure.

And then you give them this drug and then after they've taken the drug you test their breath you test their blood pressure again.

So for each person in the study, each individual you have a pair of measurements.

You have a before measurement and then you have an after measurement.

And so when you have data like that, that's paired used a paired t-test when you don't have paired data.

For example say like you have a one group of people and you measure their height.

And we call that group A.

And then we have another group of people and we measure their height .

And we croc when we call that group B then we have unpaired data.

And so that's when you use an unpaired t-test.

And there are two subcategories of unpaired T tests : one assumes that the variance within each group so the variation around the height measurements in Group A is the exact same as the variation around the height measurements in Group B.

So they call that a well actually I don't know what they call that they call that a t-test.

That assumes equal variation or equal variance.

There's another type of t-test that does not assume equal variation so you could have a different measurement of variance in Group A as opposed to group B.

Now I often recommend that people select the test that does not assume that the variation is equal in both groups. Simply because that test is slightly more conservative and if your data can pass this more conservative t-test then you know your data are rock solid.

So I think that's my general recommendation for using t-test you go with, if you have unpaired data go with the test that does not assume equal variance in both groups.

Okay.

Now the second question people ask me is should they use a one-tailed or one sided T test or a two-tailed or two sided t-test ?

Now a two-sided T tests say for example we'll go back to our height measurements.

So we have Group A and Group B and we've measured the heights in both groups.

A two-tailed t-test would test to see if group a is higher than group B.

And it also tests to see if it's significantly smaller than Group B.

So it tests both sides it tests two conditions.

So you've got a tail up here and you've got a tail down here.

Hummm it's it's agnostic to the data it doesn't have some preconceived notion that group a should be taller or group a should be smaller.

It says I'm going to test both sides and just see what group a is a one tailed t-test is a lot less conservative because it it requires you to say oh I know which direction a is gonna be a is has to be higher than B .

And generally speaking in academic journals that's not a good way to go generally speaking you want the data to speak for itself and that's why I always recommend people use two-sided t-test because it's slightly more conservative and it lets the data speak for itself.

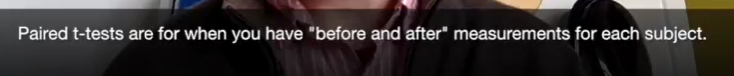
And again the conservative thing means you've got rock silence rock solid data.

So in summary if you've got paired data meaning you've got a single you've got subjects and for each subject you've got two measurements you've got a before and an F Oh Oh then use a pair of t-test but if you don't have paired data so you've got to group two separate groups of people you've measured everything and there's and there's not overlap between who's and which group so if you've got unpaired data use an unpaired t-test and try not to assume equal variance because that'll make the test more conservative and use a two teeth two-tailed t-test because that makes the data speak for itself and again it makes it a little more conservative.

So if your data can pass that test you know it's rock-solid.

2 types de T TESTS :

Paired t-test : mesures provenant du même objet (blood pressure mesure, puis donne drug, puis de nouveau mesure blood pressure=



unpaired t-test :

2 groupes de personnes, on mesure la taille du groupe A et la taille du groupe B 🡺mesures ne proviennent pas du même objet 🡺 unpaired t test.

2 sous catégories : variation identique dans groupe A et B 🡺 test la variation est la même

Ou la variation n’est pas la même

