L3

Most have pattern

1. many more tests

2. Test depends on Ha, the alternative hypothesis, the next common sense

3. A test is only valid if the data fit the assumptions

4. justifying the assumptions = CRUCIAL

To see if the assumption are reasonable

Fisher’s test

L4

9/14

Goal is not to reject the Ho null hypothsis

Is my data conveying any new statement? Came in with a mindset the the null should be correct as concept

Should be about to defend your answer

Power – higher is good; Significance level α, smaller is better

β := P( reject H0|HA) = P(p−value < α|HA).

Alpha – probability that the test wrongly reject Ho ( given the null correct, you reject)

Beta - Power of the test – the probability that the given Ha alternative were correct, reject the null, correctly reject the null (given the alternative is correct, you reject)

They don’t have a sum in one, depends on different things, null and alternative

When can I ensure the test always reject the null? – the null is rejecting all the time – power = 1, highest, not usually used

Alpha (wrongly reject) = 0, always accept the null

Two extreme, there is a trade-oﬀ between higher power and smaller signiﬁcance. However, for ﬁxed α, the likelihood ratio test is one with maximal β. Most tests you learn are equivalent to the likelihood ratio test (for that situation).

Fisher can be used more than tasting the tea

Used to test for independency of row and column or contingency table

What is the chance when I see a table and have this or more extreme in term of how likely it is – p value

If not 2 x 2 table, only two-sided tests

Questions we usually ask for doing the Fisher’s exact test.

Is the survival rate different between environments? Does the class affect survive? Is the guessed independent of the true?

EX. | Titanic,

Test for:

? Statistically significant?

survive vs. sex

mosaic – descriptive – is what you see unlikely due to chance?

Fisher.test(table\_name)

Built in //

P – value!!!

True odd ratio – survival rate male/survival rate of female

Test statistics is always what’s the probability I see in the table…

Survival odd rate is very unlikely to be 1

Very small p value – you can reject very confident // if everybody have the same chance to survive, much fewer female in the data so even less survival rate relatively for male…

2 x 2 table so you can do a one-sided test – use alternative = xxx(less/greater) – tell from the p-value, less = male survive less in this case // alternative is: female survive less = male have a better survive odd, then the p-value in this test is one

WHEN REPORT! LIKE THIS TEMPLETE

If the null is true, then the probability of seeing data like this or more extreme is odd. And this number(p-value) is very small/large // smaller/larger than significant level. ///Check H0///No reason to check Ho??? USED IN THE OTHER DAY ON THE PPT

=== GIVE THE PERSON WHO READ IT A COMPLETE UNDERSTANDING ===

[what is the test you are testing? need to know p-value, what null is, and reject what, what is the alternative way?///If Ho is true => apply to the context -> then the probability of seeing this table like this or more extreme is very small/large -> the alternative is better/there is an significant difference]

\*\*\*test, null, alternative, p-value, conclusion\*\*\*

Male is not better != Female is better -> because it could be neither

Between each classes:

600+ 3+tables

Fisher exact table is trying to computing the p each table exactly, cannot do because too much possible combination in table, 2x2 is much less.

L5

9/19

PERMUTATION // RANDOMIZATION

HW: two R files, draft is just a R code file…make sure there is a clue that ou just typed the exact command for the report

MOST intuitive way – popular – get you employed – been a long time

SHOULD NOT trust it too much – simulation have to be a lot – varies a lot – hopefully gets stable after running simulation a long time.

==== When to use what // how to use R // what are the assumptions?!!! ====

\*\*\*\*\* APPLICATION \*\*\*\*\*UNDERSTANDING

Dependent & Independent