

Week 5

Monday, 28 January 2019

12:29

Confidence intervals

- Frequentist prediction: in the long run 95% of the confidence intervals contains the true value
- The interval of probability which guarantee that next value is within with 95% probability is called **prediction interval**
- The percentage of means that fall within a single confidence interval is called **capture percentage**
- For a single confidence interval, can't say if it contains true parameter or not
- CI can be reported around means and also effect sizes
- **Contrary to intuitive belief, not a statement about future estimates!!**
- Capture percentage: a single 95% CI will capture true value 84.3% of the time in the long run only
- If 95% CI on effect size does not contain 0 ==> $p < 0.05$
- Bayesian is not intuitive and use credible intervals and highest density intervals
- Video: confidence interval give good idea of what other samples results would give but one p-value does not predict next ones, see below with effect size 0.5:

p interval: 80% prediction interval for *p*

p_{obt}	<i>p</i> interval
.001	(.00000002, .070)
.01	(.0000006, .22)
.05	(.000008, .44)
.2	(.000099, .70)↗

- **P-curve analysis**
 - Does the distribution look uniform or right skewed?

- Does the distribution look uniform or right skewed.
- Can be performed even though publication bias as looking distribution where $p < 0.05$ only as non-significant results are usually not published
- Not proof for effect, just amount of evidence towards hypothesis
- Good way to estimate a priori chance of finding true effect when designing study
- <http://www.p-curve.com/app4/>