Tutorial 10

Research Methods for Politcal Science A

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Outline

1. Q&A

Q&A

Question on Assignment 4?

Q&A

What is important in a Research Design?

- Define your Research Question and Hypotheses
- Define your DV and IV
- Operationalise your DV and IV
- Confounders
- Case Selection
- (Methodology)

RD

- Do masks reduce the spread of Covid-19?
- H_1: *An increase in mask usage reduces the spread of Covid-19?*

RD

- DV: Spread of Covid-19
- IV: Mask use

Operationalised:

- DV: 14-day infection rate per 100k people
- IV: Mask mandate (yes/no)

RD

Possible Confounders:

- Not everybody is equally exposed
- Mask mandates aren't introduced alone (usually together with other measures)
- infection rates seem strongly correlated with climate
- urban areas have higher case rate than rural areas

RD

Case selection: We compare urban areas which have similar trends in Covid-19 trajectory, but one had a mask implementation the other did not.
Example: Munich vs. Zurich

Statistics Q1

$\mu = 60$; $\sigma = 10$

40 is 2 sd smaller than μ, about 2% probability that x is smaller than 40

70 is 1 sd larger than μ, hence about 16% probability that x is larger than 70

Statistics Q2

std. deviation of the sampling distribution = standard error

mean of sampling distribution = mean of the population $\neq$ mean of the sample

Statistics Q3

H_{alt1}: The political orientation in the student population is different than in the general public.
H_{alt2}: The political orientation in the student population is more left-wing (smaller) than in the general public.
H_0: There is no difference between the political orientation of the student population and the general population.

H_{alt1} calls for a two-sided test, H_{alt2} for a one-sided test.

Statistics Q3

Two-Sided Test

```
t.sample <- (4.6-5)/(3/sqrt(100))

t.crit   <- qt(p = 0.05/2, df = 100)

t.sample < t.crit
```

```
## [1] FALSE
```

```
t.sample > t.crit*-1
```

```
## [1] FALSE
```

We cannot reject H_{0} because t-sample is neither larger or smaller than $|\pm 1.98|$

Statistics Q3

Two-Sided Test

```
t.sample <- (4.6-5)/(3/sqrt(100))

t.crit   <- qt(p = 0.05, df = 100)

t.sample < t.crit
```

```
## [1] FALSE
```

We cannot reject H_0 because t-sample is not smaller than -1.66

Q&A

Questions?