Problem set 2: Simple regression
Data analysis part, ØKA201

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Excercise 1 (if you did not save what you did in PS1)

a)

Open the data set `icecream.gdt` in Gretl. This can be found in the folder *Data sets* on Canvas.

Generate a new variable `tempC` which shows the average temperature measured in degrees Celcius. Hint: $C = \frac{5}{9} \cdot (F - 32)$ where C is degrees celcius and F is degrees Farenheit.

Hint: ***`Add > Define new variable`*** *and/or look in the user's manual.*

b)

It seems like the description of `price` and `income` is mixed (it should be opposite). Change the descriptive labels.

Hint: Right click and choose "Edit attributes"

Excercise 2

a)

Run a regression of `cons` on `tempC`

$$\text{cons}_t = \beta_0 + \beta_1 \text{tempC}_t + u_t$$

and interpret the estimated slope coefficient.

b)

Run a regression of `cons` on `income`

$$\text{cons}_t = \beta_0 + \beta_1 \text{income}_t + u_t$$

and interpret the estimated slope coefficient.

c)

Run a regression of `cons` on `price`

$$\text{cons}_t = \beta_0 + \beta_1 \text{price}_t + u_t$$

and interpret the estimated slope coefficient.

d)

Create a new variable `inchr` which measures hourly income (calculate this as weekly income divided by 37.5). Run a regression of `cons` on `inchr`

$$\text{cons}_t = \beta_0 + \beta_1 \text{inchr}_t + u_t$$

and interpret the estimated slope coefficient.

e)

Discuss the relationship between your answers in a), b), and c) with the correlation coefficients you calculated in PS1.

f)

Obtain the residuals from the regression in a). How would you interpret the residuals? Are there any outliers?

g)

What is R^2 from the regressions in a, b), and c)?

h)

Set up hypotheses and test whether temperature has a significant effect on ice consumption in the regression in b) using a 1% significance level. Explain what you test and what you find.