

Example of R Markdown for PDF output

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2024-08-13

Problem 1

$$\begin{aligned}\hat{\beta} &= (\mathbf{X}'\mathbf{X})^{-1}(\mathbf{X}'\mathbf{Y}) \\ &= (\mathbf{X}'\mathbf{X})^{-1}(\mathbf{X}'(\mathbf{X}\beta + \mathbf{e})) \\ &= (\mathbf{X}'\mathbf{X})^{-1}\mathbf{X}'\mathbf{X}\beta + (\mathbf{X}'\mathbf{X})^{-1}\mathbf{X}'\mathbf{e} \\ &= \beta + (\mathbf{X}'\mathbf{X})^{-1}\mathbf{X}'\mathbf{e}\end{aligned}$$

Problem 2

```
# === Load packages === #
library(modelsummary)

# === Load Data === #
data(hprice2, package = "wooldridge")

# === Estimate three models === #
reg1 <- lm(log(price) ~ log(nox), data = hprice2)
reg2 <- lm(log(price) ~ log(nox) + rooms, data = hprice2)
reg3 <- lm(log(price) ~ log(nox) + rooms + I(rooms^2), data = hprice2)

# === Show the Results === #
ls_models <-
  list(
    "OLS 1" = reg1,
    "OLS 2" = reg2,
    "OLS 3" = reg3
  )

modelsummary(
  models = ls_models,
  output = "flextable",
  fmt = "%.2f",
  coef_map = c(
    "log(nox)" = "log(Nox)",
    "rooms" = "Rooms",
    "I(rooms^2)" = "Rooms sq"
  ),
  stars = c("*" = .05, "**" = .01, "***" = .001),
  gof_map = c("nobs", "r.squared"),
```

```

title = "Example Regression Results",
notes = list("Note: Std. Errors in parentheses")
)

```

Table 1: Example Regression Results

	OLS 1	OLS 2	OLS 3
log(Nox)	-1.04*** (0.08)	-0.72*** (0.07)	-0.79*** (0.06)
Rooms		0.31*** (0.02)	-0.76*** (0.17)
Rooms sq			0.08*** (0.01)
Num.Obs.	506	506	506
R2	0.264	0.514	0.549

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Note: Std. Errors in parentheses