

TMA4267 Linear statistical models

Spring 2026

Thea Bjørnland

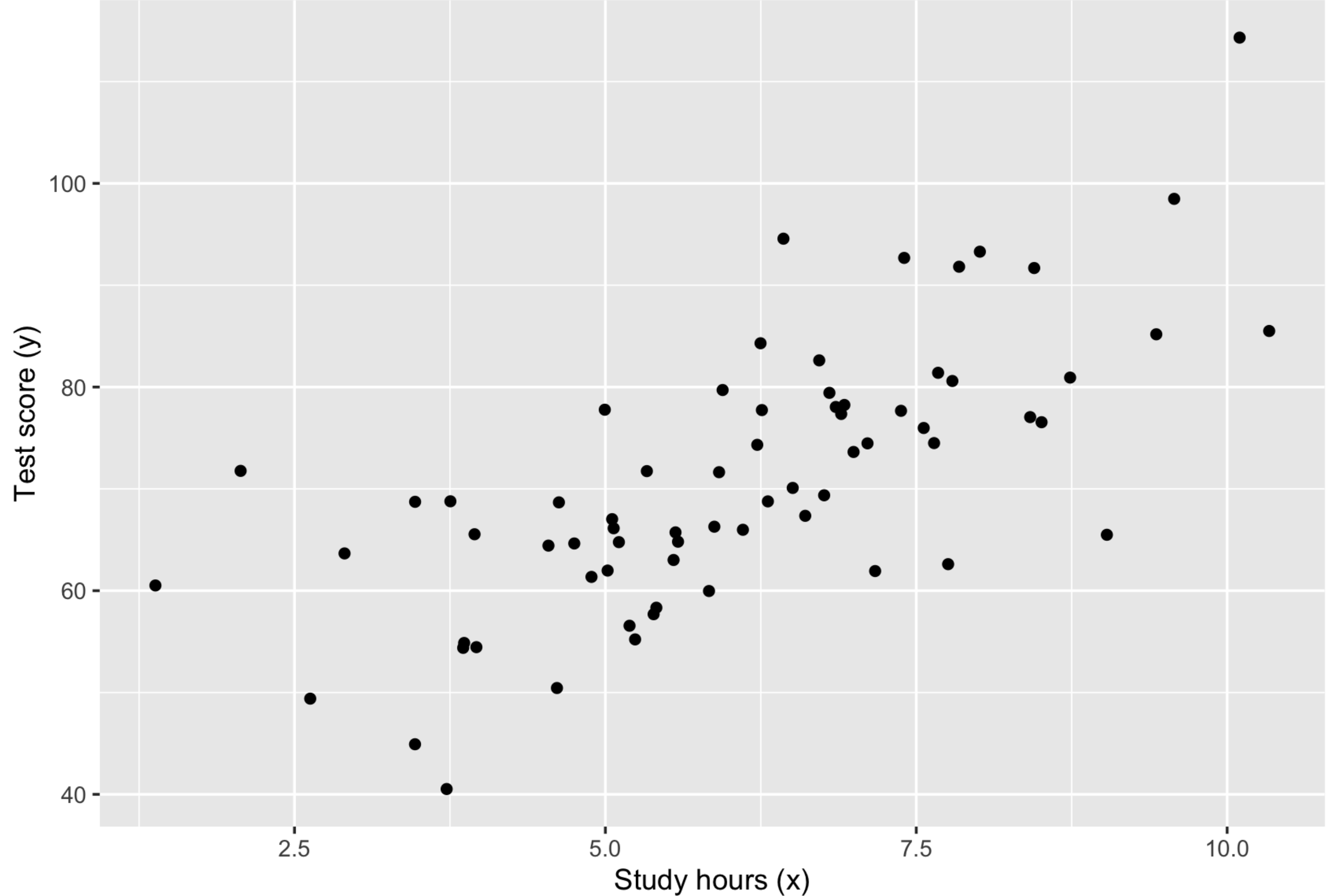
Part 2, Chapters 6, 7, 8, 9, 10

Tentative plan

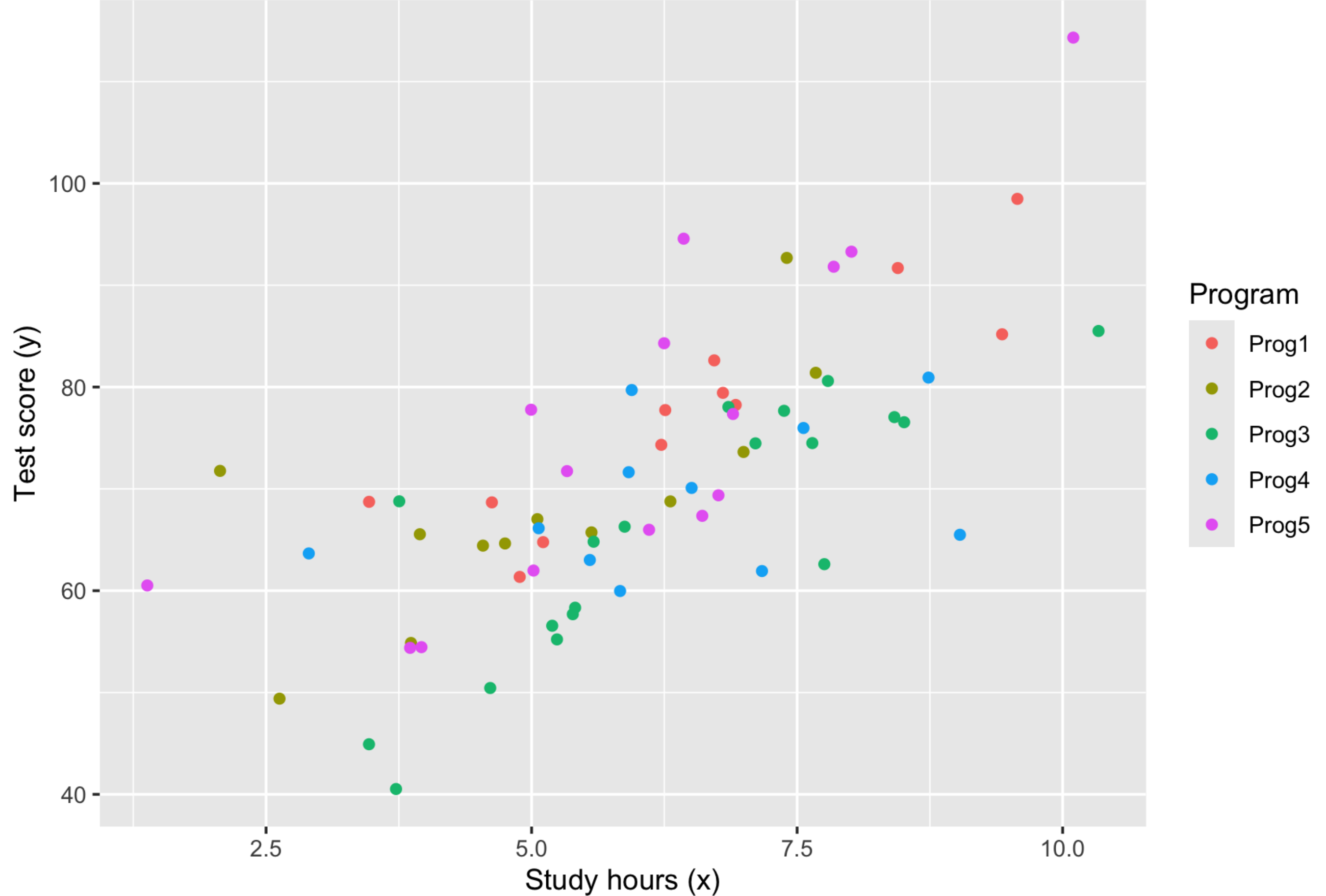
Week	Tuesday	Thursday	Friday
6		Chapter 6 and R	Assignments 1, 2, 3, Install R and RStudio
7	Chapter 7 (7.3, 7.6, 7.7)	Assignment 4 Room VE22 - SMASH	
8	Chapter 7/8	Chapter 7/8	Cancelled*
9	Chapter 7/8/17	Assignment 5	Cancelled*
10	Chapter 7/17	Chapter 17, 9	Cancelled*
11	Chapter 9	Assignment 6 <i>Main building (Hovedbygningen) 326</i>	Cancelled*

* Due to no-show, contact us if you need extra help

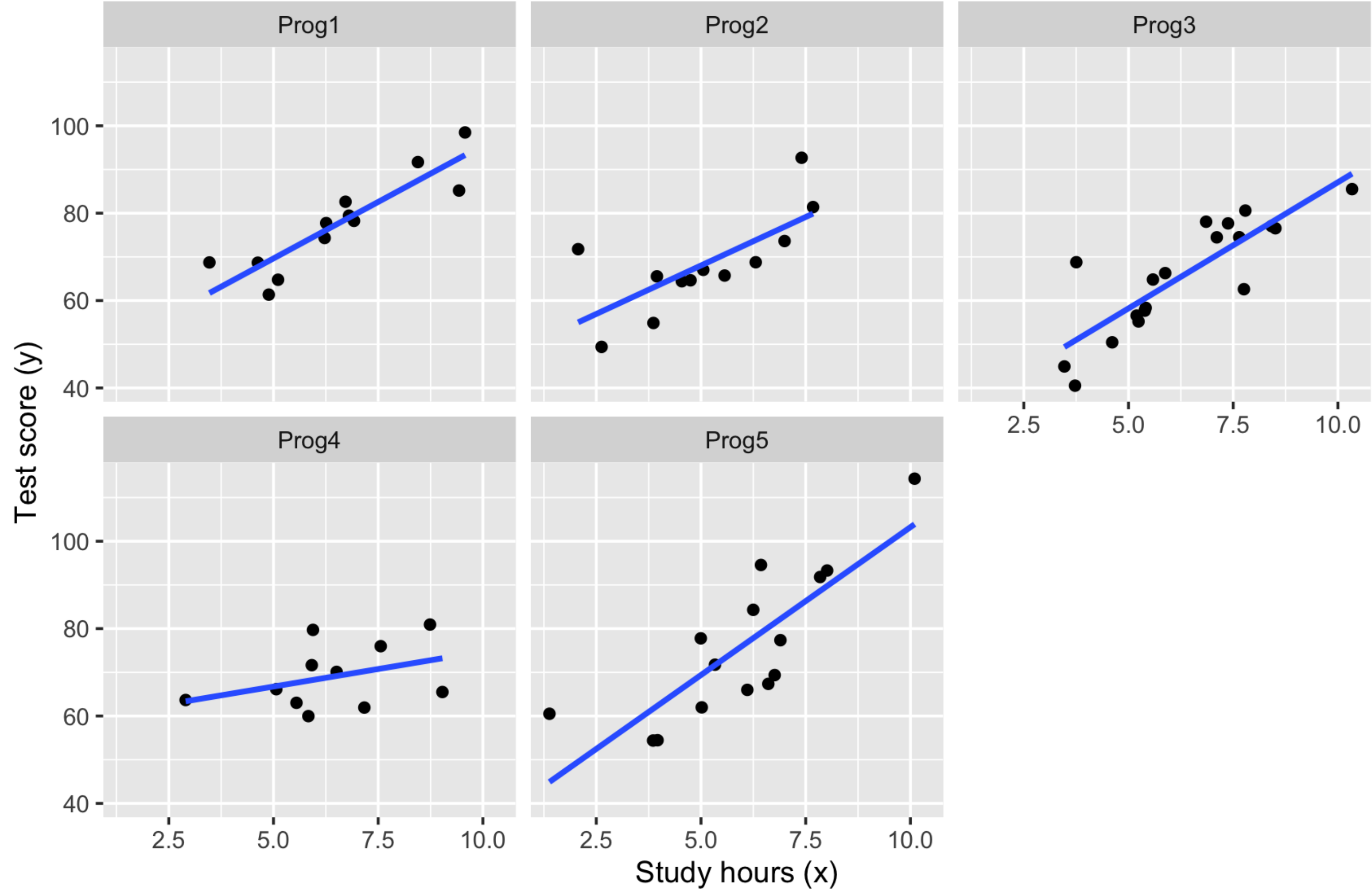
x vs y (all students)



x vs y by study program



Study hours vs Test score by program
(Simple linear regression per program)



Call:

```
lm(formula = y ~ x * program, data = dat_sim)
```

Residuals:

Min	1Q	Median	3Q	Max
-12.9038	-5.0568	-0.8869	4.0918	17.7684

Coefficients:

	Estimate	Std. Error	t value	Pr(> t)	
(Intercept)	43.7749	8.4393	5.187	2.75e-06	***
x	5.1731	1.2436	4.160	0.000105	***
programProg2	2.0619	10.9594	0.188	0.851413	
programProg3	-14.4400	10.6489	-1.356	0.180265	
programProg4	14.9291	12.6555	1.180	0.242876	
programProg5	-8.2289	10.5995	-0.776	0.440645	
x:programProg2	-0.7350	1.8036	-0.408	0.685099	
x:programProg3	0.6014	1.5883	0.379	0.706329	
x:programProg4	-3.5666	1.8956	-1.882	0.064835	.
x:programProg5	1.5940	1.6082	0.991	0.325642	

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Residual standard error: 7.815 on 59 degrees of freedom

Multiple R-squared: 0.6934, Adjusted R-squared: 0.6466

F-statistic: 14.82 on 9 and 59 DF, p-value: 3.244e-12

Linear mixed model fit by REML ['lmerMod']
Formula: $y \sim x + (1 + x \mid \text{program})$
Data: dat_sim

REML criterion at convergence: 485.6

Scaled residuals:

Min	1Q	Median	3Q	Max
-1.69610	-0.79800	-0.06294	0.59726	2.31241

Random effects:

Groups	Name	Variance	Std.Dev.	Corr
program	(Intercept)	54.783	7.402	
	x	1.947	1.395	-0.83
	Residual	61.135	7.819	

Number of obs: 69, groups: program, 5

Fixed effects:

	Estimate	Std. Error	t value
(Intercept)	41.4404	4.6878	8.840
x	4.9277	0.8164	6.036

Correlation of Fixed Effects:

(Intr)	
x	-0.883

	(Intercept)	x
Prog1	0.6657211	0.3930950
Prog2	2.4829580	-0.2040748
Prog3	-6.5053786	0.1345492
Prog4	6.8751903	-1.6707741
Prog5	-3.5184909	1.3472047