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LAMPIRAN

Lampiran 1: Data Tuberkulosis Tahun 2021

	y	x_1	x_2	x_3	x_4	...	x_{21}
Kepulauan Selayar	220	1180,52	146,18	34	8	...	2986
Bulukumba	538	1170,71	10,84	104	3	...	1183
Bantaeng	323	395,96	45,8	46	34	...	36943
Jeneponto	562	797,5	86,2	87	50	...	609
Takalar	635	554,78	25,16	73	0	...	3246
Gowa	1334	1181,38	213,78	181	57	...	115
Sinjai	352	864,72	24,66	54	21	...	11412
Maros	533	1435,04	34,93	80	20	...	6329
Pangkajene Dan Kepulauan	680	889,01	0	80	13	...	1203
Barru	257	1202,16	0	43	7	...	1970
Bone	1012	4571,03	67,61	174	15	...	5434
Soppeng	208	1370,41	37,99	59	24	...	1127
Wajo	697	2628,44	59,72	99	34	...	705
Sidenreng Rappang	432	1790,31	36,27	73	37	...	826
Pinrang	641	1884,36	53,4	90	9	...	624
Enrekang	187	1821,53	15,62	47	10	...	3431
Luwu	526	3048,49	10,43	80	2	...	3112
Tana Toraja	170	2088,87	0	56	0	...	1604
Kota Makassar	3908	177,96	77,92	361	380	...	116838
...	...	...	...	...	...	...	8812
Kota Palopo	388	250,64	95,03	42	32	...	10370

Lampiran 2 : Sintaks dari Program R beserta output

```
#Input Data
qrdata<-read_excel("D:/DATA Thesis/AA.xlsx")
attach(qrdata)

#Deskripsi Data
summary(qrdata)
plot(qrdata)

#Mengidenditifkasi Pencilan/Outlier
boxplot(qrdata)

#Uji multikolinearitas
datanew <- lm(formula =
y~x1+x2+x3+x4+x5+x6+x7+x8+x9+x10+x11+x12+x13+x14+x15+x16+x17+x18+x1
9+x20+x21, qrdata)
vif(datanew)

# Menentukan grup untuk penalti group lasso
Y=cbind(y)
X=cbind(x1,x2,x3,x4,x5,x6,x7,x8,x9,x10,x11,x12,x13,x14,x15,x16,x17,x18,x19,x20,
x21)
group=c(1,1,1,1,2,2,2,2,3,3,3,3,4,4,4,5,5,5,6,6,6)
group

# Jalankan model regresi kuantil dengan penalti group lasso dan cross-validation
fit_0.25 <- qr.glasso(X, Y, group, tau = 0.25, nfolds = 10)
fit_0.5 <- qr.glasso(X, Y, group, tau = 0.5, nfolds = 10)
fit_0.75 <- qr.glasso(X, Y, group, tau = 0.75, nfolds = 10)

# Mendapatkan koefisien untuk setiap kuantil
coef_0.25 <- coef(fit_0.25$final_fit)
coef_0.5 <- coef(fit_0.5$final_fit)
coef_0.75 <- coef(fit_0.75$final_fit)

# Membuat tabel koefisien
coef_table <- data.frame(
  Variable = names(coef_0.25),
  Q_0.25 = round(coef_0.25, 5),
  Q_0.5 = round(coef_0.5, 5),
  Q_0.75 = round(coef_0.75, 5)
```

```
#Mendapatkan Hasil Estimasi Regresi kuantil dengan Penalti Group LASSO
print(coef_table)
```
Output :

Variable		Q_0.25	Q_0.5	Q_0.75
(Intercept)	(Intercept)	-272.45192	-288.19502	-286.48254
x1	x1	-0.00943	-0.00950	-0.00949
x2	x2	0.62013	0.69314	0.68373
x3	x3	5.37901	4.57778	4.69162
x4	x4	-0.17273	-0.09341	-0.10787
x5	x5	0.00029	0.00033	0.00032
x6	x6	0.03471	0.03030	0.03097
x7	x7	11.18028	15.71492	15.34787
x8	x8	-1.78582	-1.56991	-1.58565
x9	x9	-0.45372	0.32498	0.24775
x10	x10	0.23090	0.19601	0.19810
x11	x11	-0.28305	-0.24799	-0.25070
x12	x12	-0.29292	-0.26168	-0.26394
x13	x13	-0.00026	0.00004	0.00003
x14	x14	0.00001	0.00020	0.00018
x15	x15	0.01188	0.01011	0.01029
x16	x16	-0.00300	-0.00268	-0.00272
x17	x17	0.00711	0.00680	0.00685
x18	x18	0.55221	0.55190	0.55741
x19	x19	0.16691	0.14977	0.14786
x20	x20	0.00111	0.00141	0.00136
x21	x21	0.00429	0.00424	0.00422

```
# Print lambda.min values
cat("Lambda min (0.25):", fit_0.25$cv_fit$lambda.min, "\n")
cat("Lambda min (0.5):", fit_0.5$cv_fit$lambda.min, "\n")
cat("Lambda min (0.75):", fit_0.75$cv_fit$lambda.min, "\n")
```
Output :
Lambda min (0.25): 1.188423
Lambda min (0.5): 3.013086
Lambda min (0.75): 2.745411

```
# Summary dari cross-validation
summary(fit_0.25$cv_fit)
```

 Nonzero coefficients: 21

  Nonzero groups: 6

  Maximum R-squared: 0.98

  Maximum signal-to-noise ratio: 53.17

  Scale estimate (sigma) at lambda.min: 100.061

```
summary(fit_0.5$cv_fit)
```

  Nonzero coefficients: 21

  Nonzero groups: 6

  Maximum R-squared: 0.99

  Maximum signal-to-noise ratio: 79.31

  Scale estimate (sigma) at lambda.min: 82.179

```
summary(fit_0.75$cv_fit)
```

  Nonzero coefficients: 21

  Nonzero groups: 6

  Maximum R-squared: 0.97

  Maximum signal-to-noise ratio: 38.71

  Scale estimate (sigma) at lambda.min: 116.864