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LAMPIRAN

Lampiran 1. Data Air Sungai

Warna	pH	Suhu	Salinitas	Florida	Phospat	Ammonia
0	7,53	28,5	0,2	0,2434	0,1	0,14
0	7,45	28,2	0,2	0,2723	0,11	0,235
0	9,12	28,7	0,2	0,3685	0,11	0,0169
1	7,81	27,7	0,2	0,3327	0,21	0,2361
1	6,99	26,9	0,3	0,4025	0,29	0,0145
1	7,04	26,6	0,3	0,4135	0,34	0,013
0	7,18	29,8	0,3	0,4167	0,3	0,132
0	7,1	29,6	0,3	0,3667	0,34	0,0075
0	7,28	26,5	0,2	0,3093	0,26	0,0766
0	8,07	26,6	0,2	0,0814	0,24	0,443
1	6,93	26,6	0,2	0,299	0,16	0,137
1	7,71	28	0,2	0,2426	0,21	0,1441
0	3,23	28,1	0,2	0,3869	0,31	0,546
0	8,9	27,9	0,2	0,378	0,35	0,22
1	6,46	26,2	0,2	0,194	0,12	0,03
1	2,98	26,5	0,1	0,385	0,19	0,101
0	7,89	28,3	0,2	0,055	0,15	0,0219
0	4,76	28	0,2	0,2234	0,16	0,0102
0	8,45	28,5	0,2	0,302	0,18	0,0028
1	7,87	27,7	0,2	0,4298	0,22	0,3125
0	9,87	31,2	0,2	0,2159	0,26	0,0068
1	7,26	27,5	0,2	0,4274	0,35	0,2153
1	9,27	26,7	0,2	0,3315	0,34	0,0037
0	7,25	26,6	0,2	0,4265	0,35	0,0037
0	7,38	28,7	0,3	0,1825	0,37	0,0175
0	10,02	29,1	0,3	0,5102	0,5	0,0116
1	7,02	27,4	0,2	1,0386	0,24	0,0027
0	3,55	26,5	0,2	0,2105	0,23	0,0422
0	7,29	27	0,2	0,1711	0,22	0,522
0	6,71	26,8	0,2	0,211	0,14	0,163
1	9,06	27,8	0,2	0,4063	0,2	0,0408



1	6,98	27,2	0,2	0,4993	0,28	0,062
1	7,28	28	0,2	0,354	0,3	0,016
1	4,32	26,5	0,1	0,416	0,26	0,765
1	6,88	26,2	0,1	0,415	0,22	0,188
0	7,7	28	0,2	0,0028	0,17	0,0172
0	7,81	28,1	0,2	0,1046	0,23	0,0781
0	7,48	28,7	0,2	0,0076	0,16	0,1022
1	8,3	27,8	0,2	0,3988	0,24	0,1634
0	7,09	27,8	0,3	0,377	0,29	0,058
0	4,09	26,8	0,3	0,418	0,28	0,0335
0	7,35	29,1	0,3	0,4255	0,26	0,0071
0	7,13	29	0,3	0,441	0,25	0,0549
1	3,29	27,1	0,2	1,0505	0,24	0,2407
1	7,19	27,7	0,2	0,1416	0,3	0,1787
0	9	28	0,2	0,511	0,25	0,092
0	7,35	28,1	0,2	0,736	0,2	0,0863
1	8,78	28,76	0,3	0,3714	0,3	0,69
1	7,72	27,8	0,2	0,437	0,23	0,062
1	5,26	27,2	0,2	0,4777	0,44	0,441
1	6,99	27	0,2	0,365	0,32	0,132
0	7,88	28,2	0,2	0,2344	0,16	0,0026
0	4,32	28,2	0,2	0,2459	0,16	0,0366
0	7,38	28,8	0,1	0,0076	0,14	0,456
1	7,74	28,1	0,2	0,3172	0,24	0,1002
0	6,87	28,8	0,2	0,4046	0,26	0,0199
0	6,76	28	0,2	0,354	0,24	0,0037
0	8,99	28	0,3	0,322	0,23	0,0245
0	3,07	26,5	0,3	0,202	0,23	0,37
0	6,82	28,4	0,3	0,396	0,25	0,0113
0	7,15	27,2	0,2	0,9442	0,29	0,0027
0	7,25	27,4	0,2	0,2255	0,24	0,584
0	4,65	27	0,2	0,7405	0,21	0,0258
0	7,08	27,5	0,2	0,6196	0,22	0,1285
1	7,09	27,6	0,2	0,335	0,21	0,1085
1	4,67	26,8	0,2	0,4735	0,26	0,0765
1	6,86	26,5	0,2	0,3605	0,15	0,0565
0	7,7	30	0,2	0,05	0,05	0,2367
0	7,8	29	0,2	0,05	0,08	0,2257



1	2,97	28,3	0,2	0,517	0,28	0,339
1	7,06	28,5	0,2	0,456	0,24	0,484
0	6,84	27,8	0,2	0,726	0,25	0,56
1	9,98	31	0,2	0,508	0,2	0,67
1	4,85	27,9	0,2	0,344	0,2	0,2775
1	7,05	29	0,3	0,505	0,33	0,3855

Lampiran 2. Script Pemrograman

```
library(bayesQR)
library(car)
Air=read.delim("clipboard")
Air

#ANALISIS REGRESI LOGISTIK#
logit=glm(warna~pH+suhu+salinitas+florida+phospat+ammonia, family
=binomial(link="logit"), data=Air)
summary(logit)

#DETEKSI MULTIKOLINEARITAS#
vif(logit)

#PREDIKSI AKURASI MODEL REGRESI LOGISTIK#
table(true=Air$warna, pred=round(fitted(logit)))

#ANALISIS REGRESI PROBIT#
probit=glm(warna~pH+suhu+salinitas+florida+phospat+ammonia, famil
y=binomial(link="probit"), data=Air)
summary(probit)

#PENENTUAN PRIOR#
priorqr=
prior(warna~pH+suhu+salinitas+florida+phospat+ammonia, data=Air, a
lasso=TRUE)
str(priorqr)

#ESTIMASI MODEL REGRESI BINARI KUANTIL DENGAN PENALTI LASSO DAN
MENGGUNAKAN INFORMASI PRIOR#
out=bayesQR(warna~pH+suhu+salinitas+florida+phospat+ammonia, data
=Air, quantile=seq(0.05,0.95,0.05), alasso=TRUE,
ndraw=50000, keep=1, prior=priorqr)
```

```
#PRINT HASIL ESTIMASI MODEL REGRESI BINARI KUANTIL DENGAN PENALTI  
LASSO DAN MENGGUNAKAN INFORMASI PRIOR#
```

```
summary(out,burnin=0)
```

```
#PLOT KEKONVERGENAN UNTUK TIAP VARIABEL INDEPENDEN#
```

```
plot(out, var=1, plottype="quantile",main="intercept")
```

```
plot(out, var="pH", plottype="quantile",main="pH")
```

```
plot(out, var="suhu", plottype="quantile",main="suhu")
```

```
plot(out, var="salinitas", plottype="quantile",main="salinitas")
```

```
plot(out, var="florida", plottype="quantile",main="florida")
```

```
plot(out, var="phospat", plottype="quantile",main="phospat")
```

```
plot(out, var="ammonia", plottype="quantile",main="ammonia")
```

Lampiran 3. Output Model Regresi Logistik

a. Hasil verifikasi variabel independen

Variables in the Equation

	B	S.E.	Wald	df	Sig.	Exp(B)
Step 1 ^a pH	-.104	.142	.533	1	.165	.901
Constant	.425	1.013	.176	1	.675	1.530

a. Variable(s) entered on step 1: pH.

Variables in the Equation

	B	S.E.	Wald	df	Sig.	Exp(B)
Step 1 ^a suhu	-.644	.271	5.652	1	.017	.525
Constant	17.606	7.516	5.486	1	.019	44264996.206

a. Variable(s) entered on step 1: suhu.

Variables in the Equation

	B	S.E.	Wald	df	Sig.	Exp(B)
Step 1 ^a salinitas	-9.329	5.379	3.008	1	.083	.000
Constant	1.691	1.160	2.125	1	.145	5.422

a. Variable(s) entered on step 1: salinitas.

Variables in the Equation

	B	S.E.	Wald	df	Sig.	Exp(B)
Step 1 ^a florida	2.683	1.310	4.194	1	.041	14.631
Constant	-1.289	.541	5.681	1	.017	.276

a. Variable(s) entered on step 1: florida.

Variables in the Equation

	B	S.E.	Wald	df	Sig.	Exp(B)
Step 1 ^a phospat	4.354	3.120	1.948	1	.163	77.822
Constant	-1.341	.790	2.885	1	.089	.261

a. Variable(s) entered on step 1: phospat.

Variables in the Equation

	B	S.E.	Wald	df	Sig.	Exp(B)
Step 1 ^a ammonia	2.010	1.258	2.553	1	.110	7.466
Constant	-.636	.318	3.985	1	.046	.530

a. Variable(s) entered on step 1: ammonia.

b. Hasil estimasi regresi logistik

Call:

```
glm(formula = warna ~ pH + suhu + salinitas + florida + phospat + ammonia, family = binomial(link = "logit"), data = Air)
```

Deviance Residuals:

Min	1Q	Median	3Q	Max
-1.8907	-0.8302	-0.4860	1.1091	1.4814

Coefficients:

	Estimate	Std. Error	z value	Pr(> z)
(Intercept)	16.6234	8.3819	1.983	0.0473 *
pH	0.1580	0.1787	0.884	0.3765
suhu	-0.6620	0.3264	-2.028	0.0425 *
salinitas	-9.4160	6.7291	-1.399	0.1617
florida	2.3532	1.4638	1.608	0.1079
phospat	4.6484	4.1628	1.117	0.2641

```
ammonia      2.3488      1.4887      1.578      0.1146
```

```
---
```

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

```
(Dispersion parameter for binomial family taken to be 1)
```

```
Null deviance: 102.353 on 74 degrees of freedom
```

```
Residual deviance: 84.789 on 68 degrees of freedom
```

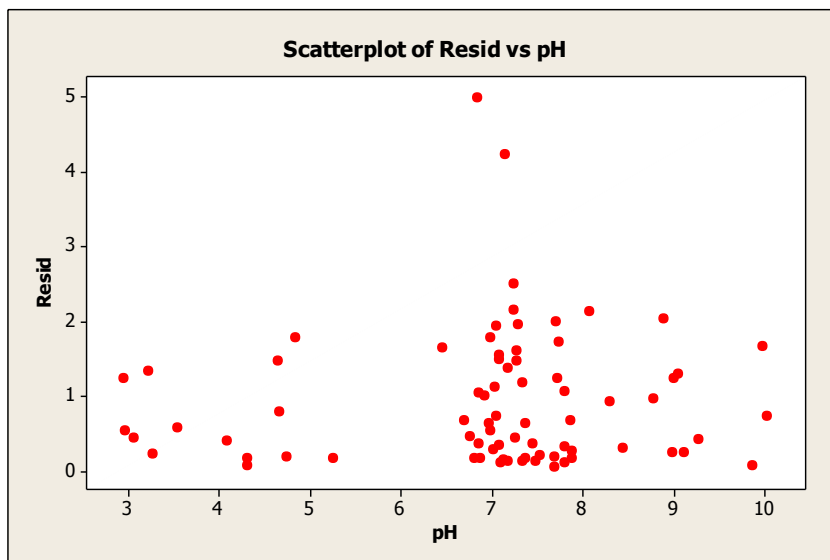
```
AIC: 98.789
```

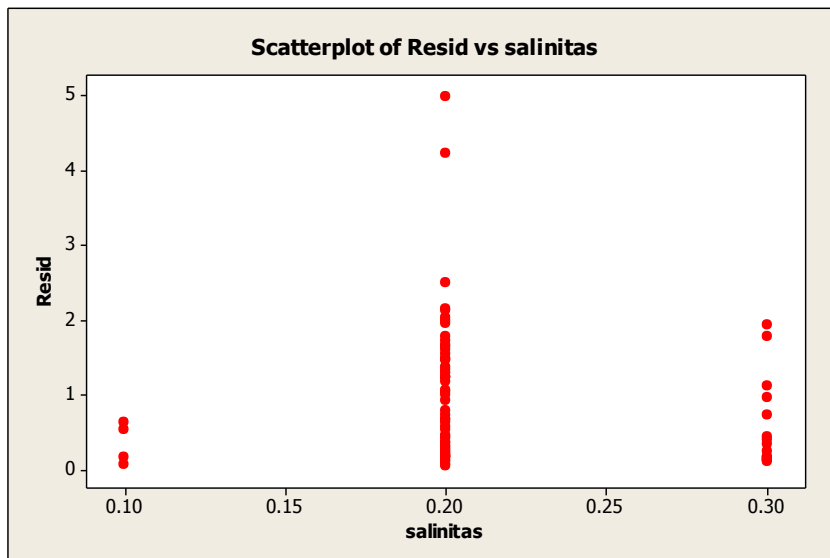
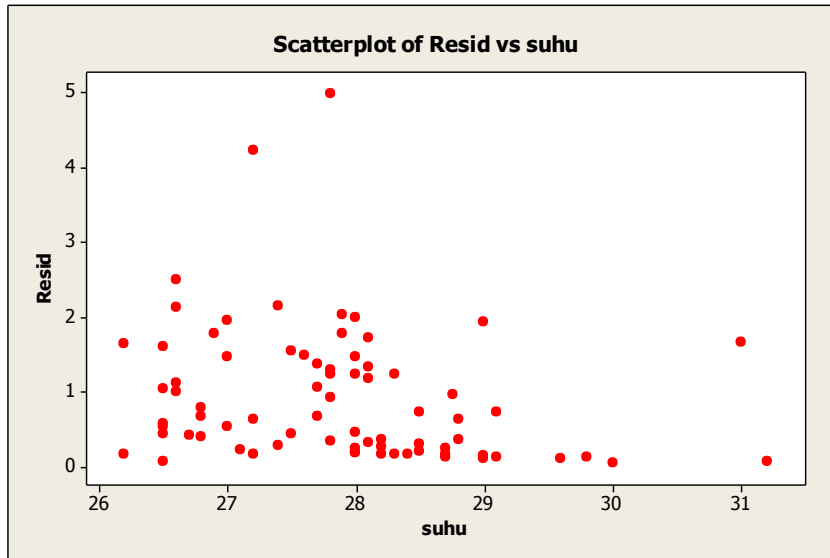
```
Number of Fisher Scoring iterations: 4
```

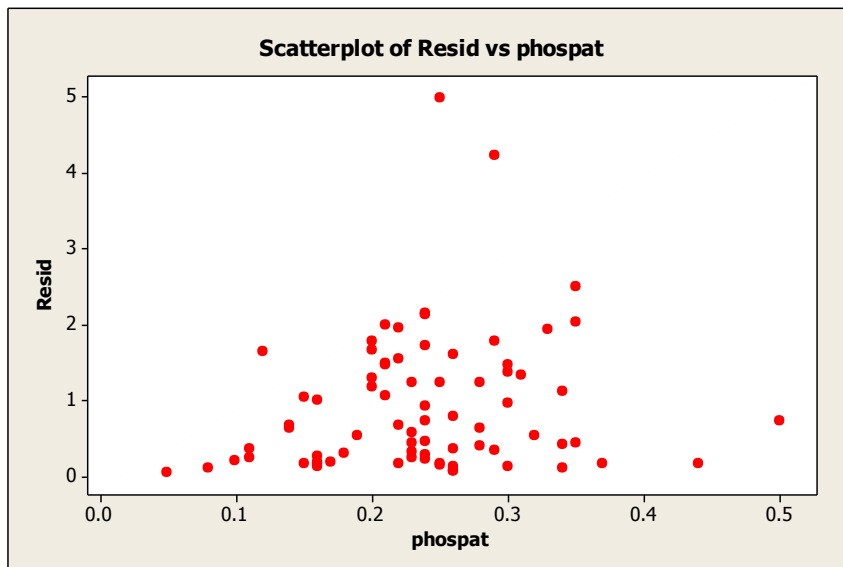
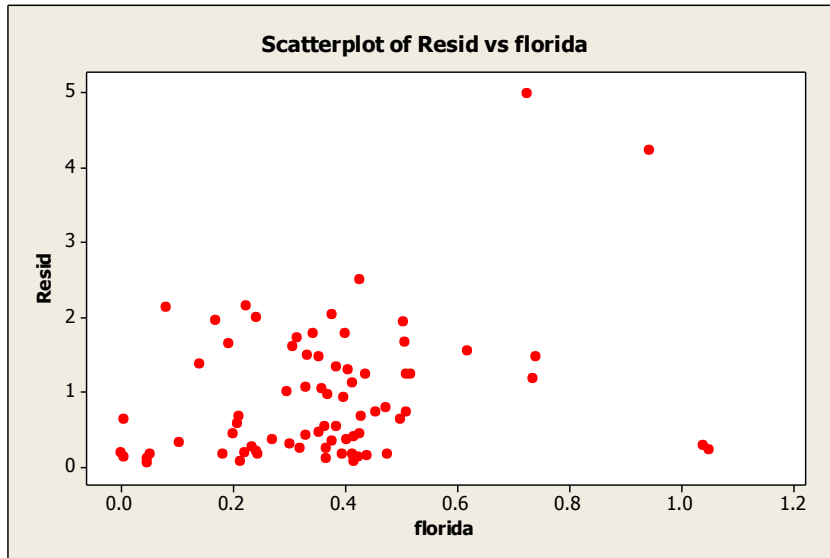
c. Hasil pengujian asumsi No Multikolinearitas

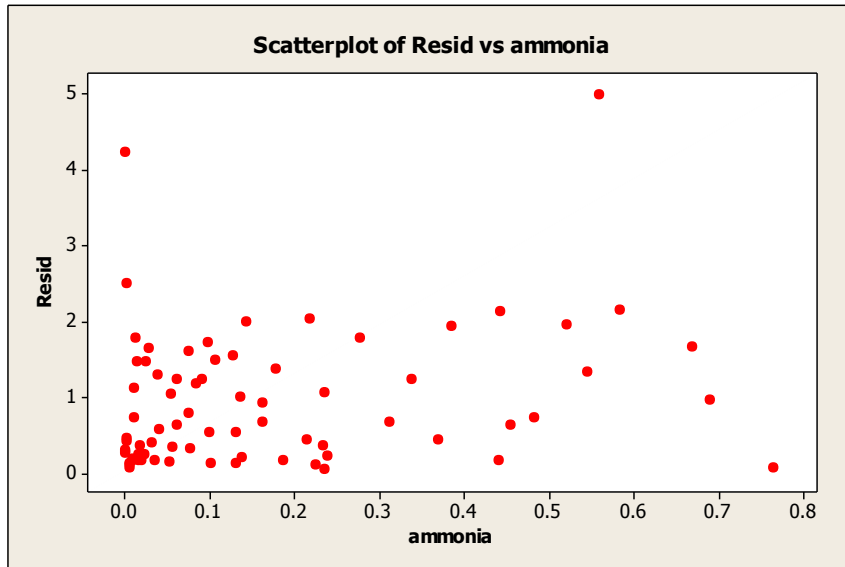
pH	suhu	salinitas	florida	phospat	ammonia
1.289718	1.380156	1.337382	1.137657	1.388754	1.139642

d. Hasil pengujian asumsi Homoskedastisitas









e. Hasil akurasi model regresi logistik

pred

true	0	1
0	30	13
1	17	15

Lampiran 4. Output Model Regresi Probit

Call:

```
glm(formula = warna ~ pH + suhu + salinitas + florida + phospat +  
ammonia, family = binomial(link = "probit"), data = Air)
```

Deviance Residuals:

Min	1Q	Median	3Q	Max
-1.8872	-0.8182	-0.4437	1.1199	1.4920

Coefficients:

	Estimate	Std. Error	z value	Pr(> z)	
(Intercept)	10.33613	4.97646	2.077	0.0378	*
pH	0.09539	0.10827	0.881	0.3783	
suhu	-0.41060	0.19369	-2.120	0.0340	*
salinitas	-5.99604	4.02822	-1.489	0.1366	
florida	1.41773	0.85876	1.651	0.0988	.
phospat	2.99437	2.49050	1.202	0.2292	
ammonia	1.44195	0.89122	1.618	0.1057	

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

(Dispersion parameter for binomial family taken to be 1)

Null deviance: 102.353 on 74 degrees of freedom
Residual deviance: 84.318 on 68 degrees of freedom
AIC: 98.318

Number of Fisher Scoring iterations: 5

Lampiran 5. Output Model Regresi Binari Kuantil Bayesian Terpenalti

List of 3

```
$ c      : num 0.01
$ d      : num 100
$ method: chr "QRb.AL"
- attr(*, "class")= chr "bayesQR.prior"
```

a. Hasil estimasi regresi binari kuantil Bayesian terpenalti dengan $\theta = 0,05$ sampai $\theta = 0,95$

```
Type of dependent variable: binary
Lasso variable selection: yes
Estimated quantile: 0.05
Lower credible bound: 0.025
Upper credible bound: 0.975
Number of burnin draws: 0
Number of retained draws: 50000
```

Summary of the estimated beta:

	Bayes Estimate	lower	upper
(Intercept)	0.00287	-44.94	38.612
pH	-0.26617	-3.15	2.840
suhu	-0.75488	-2.35	0.984
salinitas	-5.00891	-35.95	22.567
florida	10.69421	-5.03	27.804
phospat	5.35165	-23.22	35.979
ammonia	8.53314	-7.22	27.600

```
Type of dependent variable: binary
Lasso variable selection: yes
Estimated quantile: 0.1
Lower credible bound: 0.025
Upper credible bound: 0.975
Number of burnin draws: 0
Number of retained draws: 50000
```

Summary of the estimated beta:

	Bayes Estimate	lower	upper
(Intercept)	8.391	-39.93	37.93
pH	0.140	-1.39	2.11
suhu	-0.793	-2.11	0.98
salinitas	-6.758	-36.68	16.22
florida	6.862	-2.11	16.06
phospat	8.213	-11.02	32.70
ammonia	6.270	-3.62	16.62

```
Type of dependent variable: binary
```



Lasso variable selection: yes
Estimated quantile: 0.15
Lower credible bound: 0.025
Upper credible bound: 0.975
Number of burnin draws: 0
Number of retained draws: 50000

Summary of the estimated beta:

	Bayes Estimate	lower	upper
(Intercept)	0.9558	-25.31	21.123
pH	-0.0546	-1.16	0.916
suhu	-0.2807	-1.04	0.823
salinitas	-10.4216	-43.93	12.132
florida	4.7618	-1.97	10.943
phospat	6.8452	-9.07	25.833
ammonia	4.1740	-3.10	11.592

Type of dependent variable: binary
Lasso variable selection: yes
Estimated quantile: 0.2
Lower credible bound: 0.025
Upper credible bound: 0.975
Number of burnin draws: 0
Number of retained draws: 50000

Summary of the estimated beta:

	Bayes Estimate	lower	upper
(Intercept)	11.6618	-36.401	35.59
pH	0.0749	-0.778	1.12
suhu	-0.6247	-1.592	1.19
salinitas	-9.6850	-33.733	10.84
florida	4.2024	-1.020	9.33
phospat	5.3600	-8.699	20.35
ammonia	3.5884	-2.111	9.53

Type of dependent variable: binary
Lasso variable selection: yes
Estimated quantile: 0.25
Lower credible bound: 0.025
Upper credible bound: 0.975
Number of burnin draws: 0
Number of retained draws: 50000

Summary of the estimated beta:

	Bayes Estimate	lower	upper
(Intercept)	9.1695	-15.021	37.526
pH	0.0731	-0.606	0.777
suhu	-0.4809	-1.563	0.266
salinitas	-10.1125	-39.363	8.119
florida	3.6006	-0.901	8.489
phospat	5.2329	-7.204	18.812

ammonia 3.0209 -2.094 8.352

Type of dependent variable: binary
 Lasso variable selection: yes
 Estimated quantile: 0.3
 Lower credible bound: 0.025
 Upper credible bound: 0.975
 Number of burnin draws: 0
 Number of retained draws: 50000

Summary of the estimated beta:

	Bayes Estimate	lower	upper
(Intercept)	7.4982	-22.444	44.249
pH	0.0249	-0.639	0.659
suhu	-0.3812	-1.779	0.819
salinitas	-10.2216	-32.742	5.723
florida	3.2693	-0.673	7.563
phospat	5.6667	-5.288	18.351
ammonia	2.7602	-1.692	7.585

Type of dependent variable: binary
 Lasso variable selection: yes
 Estimated quantile: 0.35
 Lower credible bound: 0.025
 Upper credible bound: 0.975
 Number of burnin draws: 0
 Number of retained draws: 50000

Summary of the estimated beta:

	Bayes Estimate	lower	upper
(Intercept)	3.6985	-22.178	14.919
pH	0.0567	-0.472	0.565
suhu	-0.2333	-0.676	0.765
salinitas	-9.7500	-29.499	4.762
florida	3.3210	-0.576	7.471
phospat	5.3587	-3.686	16.634
ammonia	2.7483	-1.469	7.154

Type of dependent variable: binary
 Lasso variable selection: yes
 Estimated quantile: 0.4
 Lower credible bound: 0.025
 Upper credible bound: 0.975
 Number of burnin draws: 0
 Number of retained draws: 50000

Summary of the estimated beta:

	Bayes Estimate	lower	upper
(Intercept)	4.2772	-20.116	26.037
pH	0.0245	-0.501	0.532



suhu	-0.2255	-1.030	0.669
salinitas	-10.3549	-29.240	4.463
florida	3.3357	-0.285	7.785
phospat	5.4349	-3.778	17.120
ammonia	2.5935	-1.383	6.954

```
*****
Type of dependent variable: binary
Lasso variable selection: yes
Estimated quantile: 0.45
Lower credible bound: 0.025
Upper credible bound: 0.975
Number of burnin draws: 0
Number of retained draws: 50000
```

```
Summary of the estimated beta:
      Bayes Estimate  lower  upper
(Intercept)      10.831 -25.506 31.613
pH                0.115  -0.432  0.592
suhu             -0.480  -1.286  0.921
salinitas        -8.878 -25.182  4.750
florida          3.660  -0.239  8.783
phospat          4.579  -5.059 17.155
ammonia          2.864  -1.132  7.230
```

```
*****
Type of dependent variable: binary
Lasso variable selection: yes
Estimated quantile: 0.5
Lower credible bound: 0.025
Upper credible bound: 0.975
Number of burnin draws: 0
Number of retained draws: 50000
```

```
Summary of the estimated beta:
      Bayes Estimate  lower  upper
(Intercept)      9.950 -17.8547 28.466
pH                0.153  -0.3259  0.652
suhu             -0.453  -1.1916  0.636
salinitas        -8.463 -23.4015  4.408
florida          3.997  -0.0206  9.394
phospat          4.611  -4.3662 15.411
ammonia          2.951  -0.8557  7.282
```

```
*****
Type of dependent variable: binary
Lasso variable selection: yes
Estimated quantile: 0.55
Lower credible bound: 0.025
Upper credible bound: 0.975
Number of burnin draws: 0
Number of retained draws: 50000
```



Summary of the estimated beta:

	Bayes Estimate	lower	upper
(Intercept)	30.434	-11.002	57.073
pH	0.327	-0.299	0.905
suhu	-1.241	-2.276	0.359
salinitas	-7.733	-24.767	6.172
florida	4.384	-0.189	10.524
phospat	4.623	-4.945	16.187
ammonia	4.350	-0.296	10.077

Type of dependent variable: binary

Lasso variable selection: yes

Estimated quantile: 0.6

Lower credible bound: 0.025

Upper credible bound: 0.975

Number of burnin draws: 0

Number of retained draws: 50000

Summary of the estimated beta:

	Bayes Estimate	lower	upper
(Intercept)	9.748	-34.1500	27.47
pH	0.137	-0.4152	0.67
suhu	-0.418	-1.1159	1.14
salinitas	-10.108	-29.3384	3.62
florida	4.521	-0.0656	10.08
phospat	4.942	-4.6627	17.87
ammonia	3.309	-0.6563	8.15

Type of dependent variable: binary

Lasso variable selection: yes

Estimated quantile: 0.65

Lower credible bound: 0.025

Upper credible bound: 0.975

Number of burnin draws: 0

Number of retained draws: 50000

Summary of the estimated beta:

	Bayes Estimate	lower	upper
(Intercept)	14.111	-9.023	32.341
pH	0.183	-0.399	0.757
suhu	-0.586	-1.289	0.380
salinitas	-10.242	-27.140	3.744
florida	5.124	0.295	11.265
phospat	5.277	-5.042	17.574
ammonia	3.737	-0.524	9.025

Type of dependent variable: binary

Lasso variable selection: yes

Estimated quantile: 0.7

Lower credible bound: 0.025



Upper credible bound: 0.975
Number of burnin draws: 0
Number of retained draws: 50000

Summary of the estimated beta:

	Bayes Estimate	lower	upper
(Intercept)	14.389	-22.388	28.695
pH	0.181	-0.411	0.756
suhu	-0.591	-1.215	0.768
salinitas	-10.181	-29.005	4.043
florida	5.609	0.375	12.200
phospat	5.223	-5.010	17.675
ammonia	4.121	-0.407	9.608

Type of dependent variable: binary
Lasso variable selection: yes
Estimated quantile: 0.75
Lower credible bound: 0.025
Upper credible bound: 0.975
Number of burnin draws: 0
Number of retained draws: 50000

Summary of the estimated beta:

	Bayes Estimate	lower	upper
(Intercept)	11.876	-15.451	30.493
pH	0.161	-0.526	0.773
suhu	-0.487	-1.195	0.569
salinitas	-11.392	-29.867	3.373
florida	6.601	0.460	14.116
phospat	5.354	-5.104	18.832
ammonia	4.581	-0.671	10.974

Type of dependent variable: binary
Lasso variable selection: yes
Estimated quantile: 0.8
Lower credible bound: 0.025
Upper credible bound: 0.975
Number of burnin draws: 0
Number of retained draws: 50000

Summary of the estimated beta:

	Bayes Estimate	lower	upper
(Intercept)	35.03	-13.461	64.212
pH	0.36	-0.421	1.124
suhu	-1.37	-2.688	0.429
salinitas	-12.70	-35.958	4.871
florida	7.84	0.614	16.886
phospat	6.55	-5.648	21.061
ammonia	7.10	0.157	15.141



Type of dependent variable: binary
 Lasso variable selection: yes
 Estimated quantile: 0.85
 Lower credible bound: 0.025
 Upper credible bound: 0.975
 Number of burnin draws: 0
 Number of retained draws: 50000

Summary of the estimated beta:

	Bayes Estimate	lower	upper
(Intercept)	23.811	-12.383	55.478
pH	0.285	-0.711	1.262
suhu	-0.945	-2.280	0.439
salinitas	-12.413	-36.237	7.476
florida	9.795	0.921	20.738
phospat	6.284	-7.601	23.761
ammonia	7.466	-0.933	18.249

Type of dependent variable: binary
 Lasso variable selection: yes
 Estimated quantile: 0.9
 Lower credible bound: 0.025
 Upper credible bound: 0.975
 Number of burnin draws: 0
 Number of retained draws: 50000

Summary of the estimated beta:

	Bayes Estimate	lower	upper
(Intercept)	5.7910	-25.067	33.35
pH	0.0397	-1.511	1.31
suhu	-0.2102	-1.381	1.23
salinitas	-12.1524	-44.422	10.10
florida	13.3493	0.709	25.83
phospat	6.1945	-10.396	27.51
ammonia	7.5768	-2.877	21.92

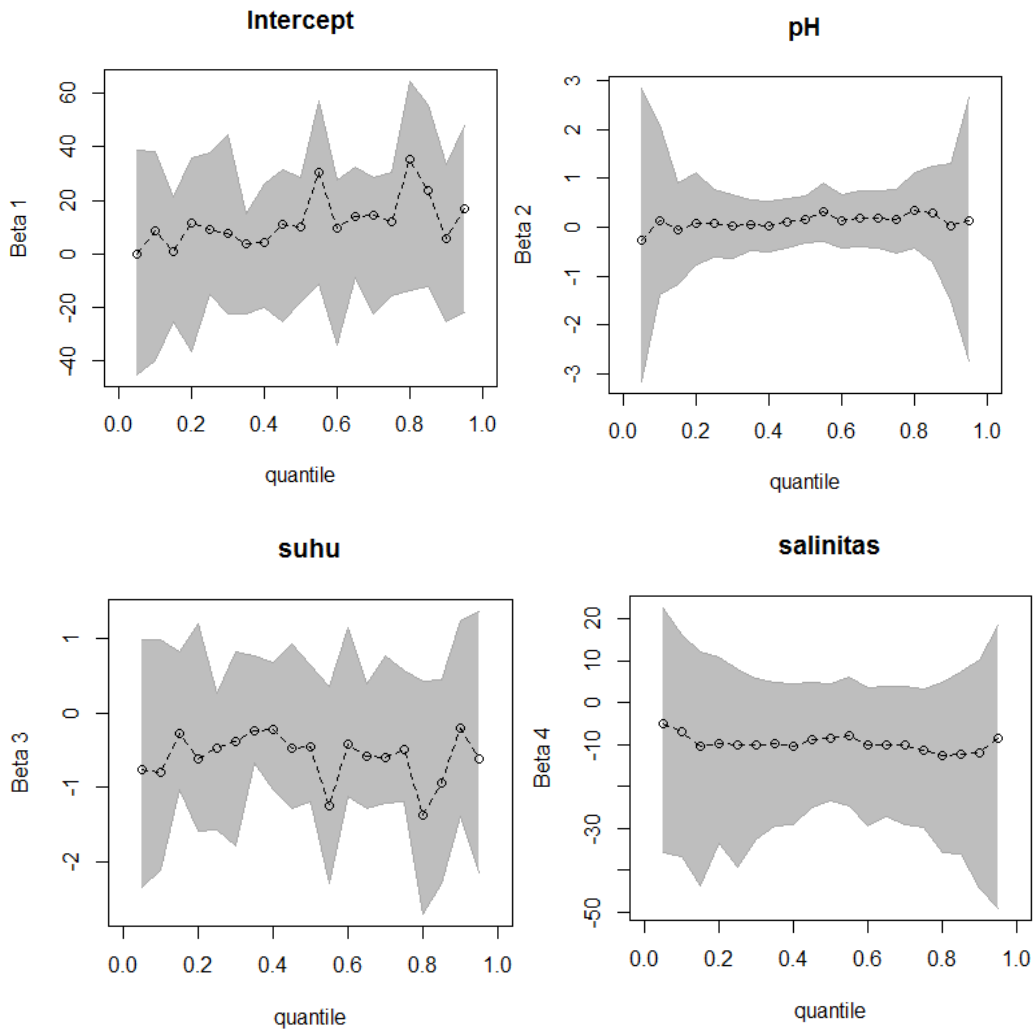
Type of dependent variable: binary
 Lasso variable selection: yes
 Estimated quantile: 0.95
 Lower credible bound: 0.025
 Upper credible bound: 0.975
 Number of burnin draws: 0
 Number of retained draws: 50000

Summary of the estimated beta:

	Bayes Estimate	lower	upper
(Intercept)	16.746	-21.736	47.96
pH	0.132	-2.739	2.67
suhu	-0.608	-2.133	1.35
salinitas	-8.377	-49.036	18.59

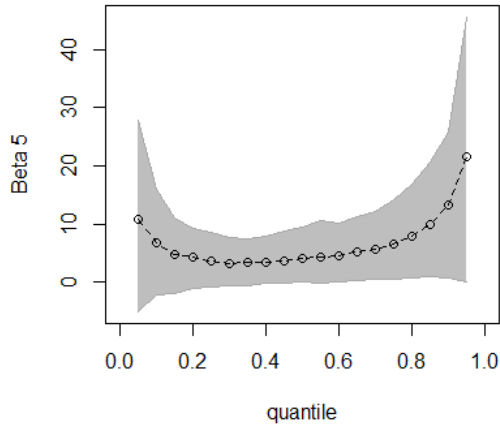
florida	21.451	0.118	45.51
phospat	8.452	-14.764	39.72
ammonia	11.379	-5.096	34.70

b. Quantile plot estimasi beta pada regresi binari kuantil Bayesian terpenalti

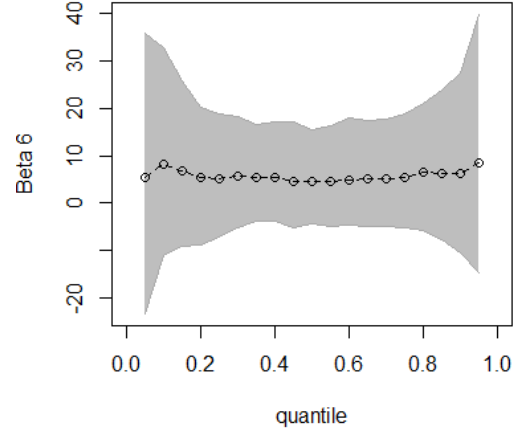




florida



phospat



ammonia

