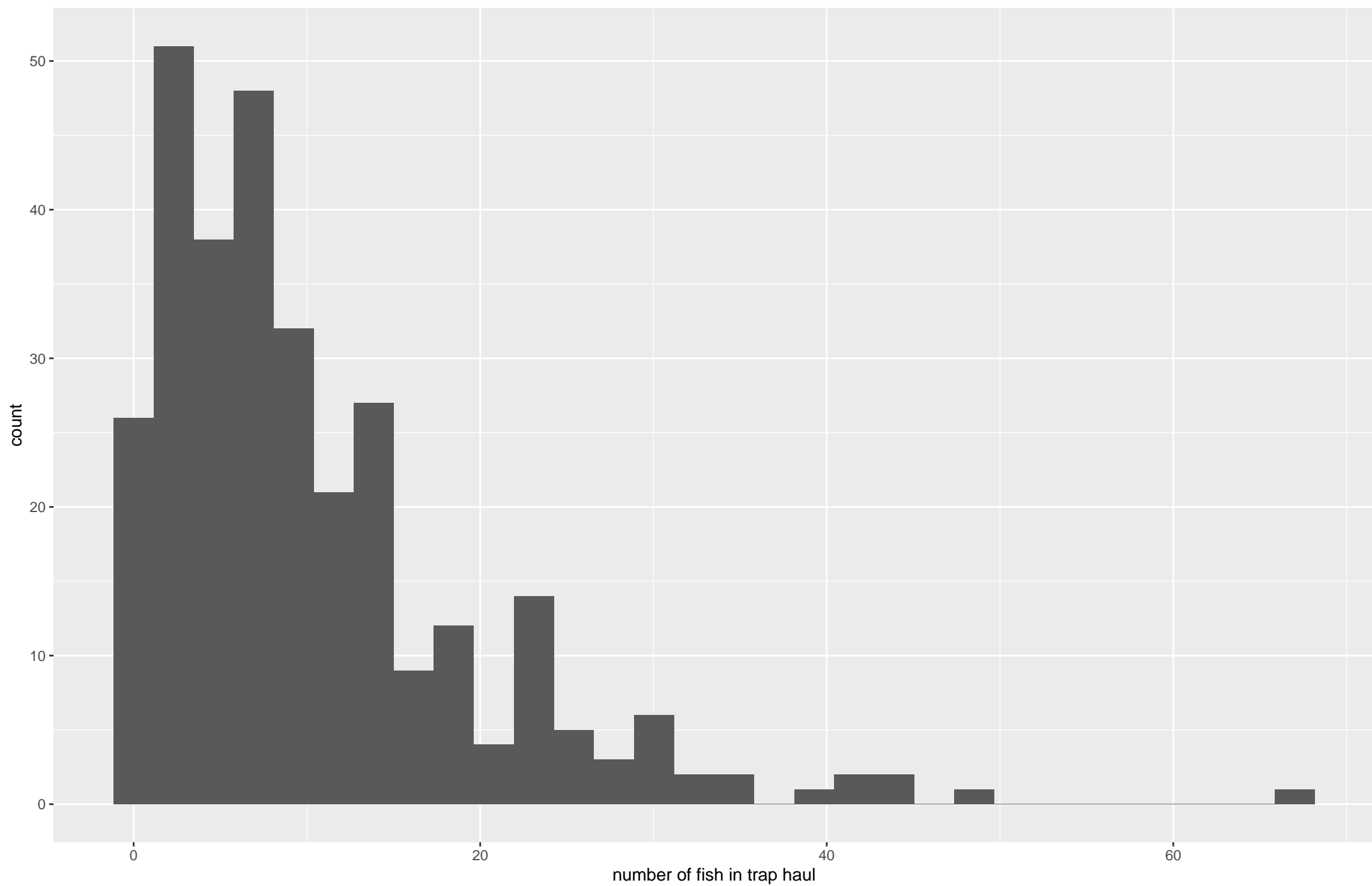
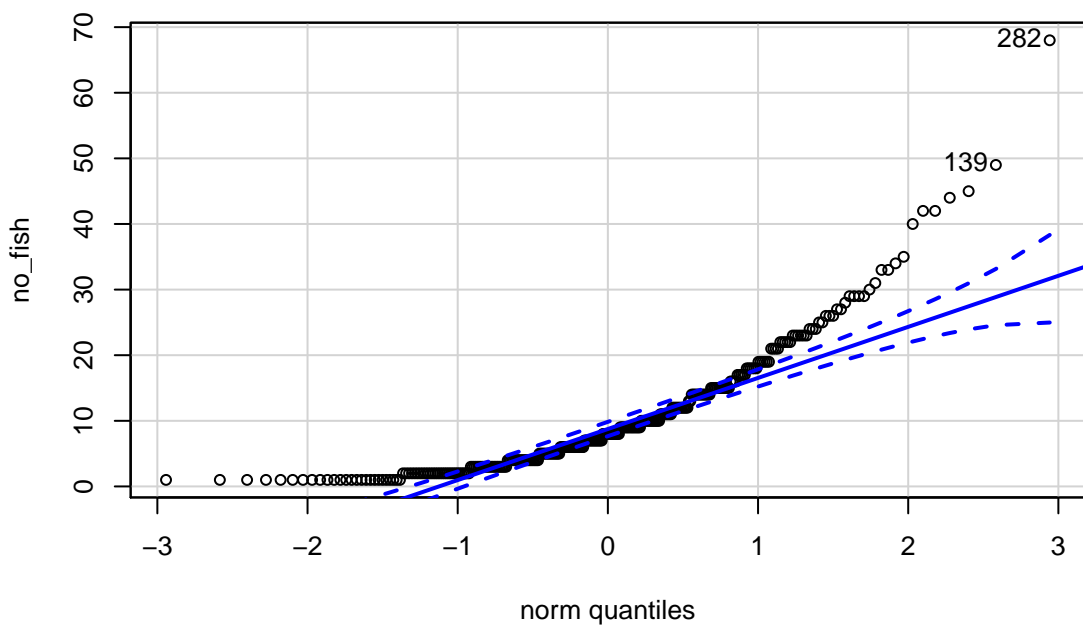


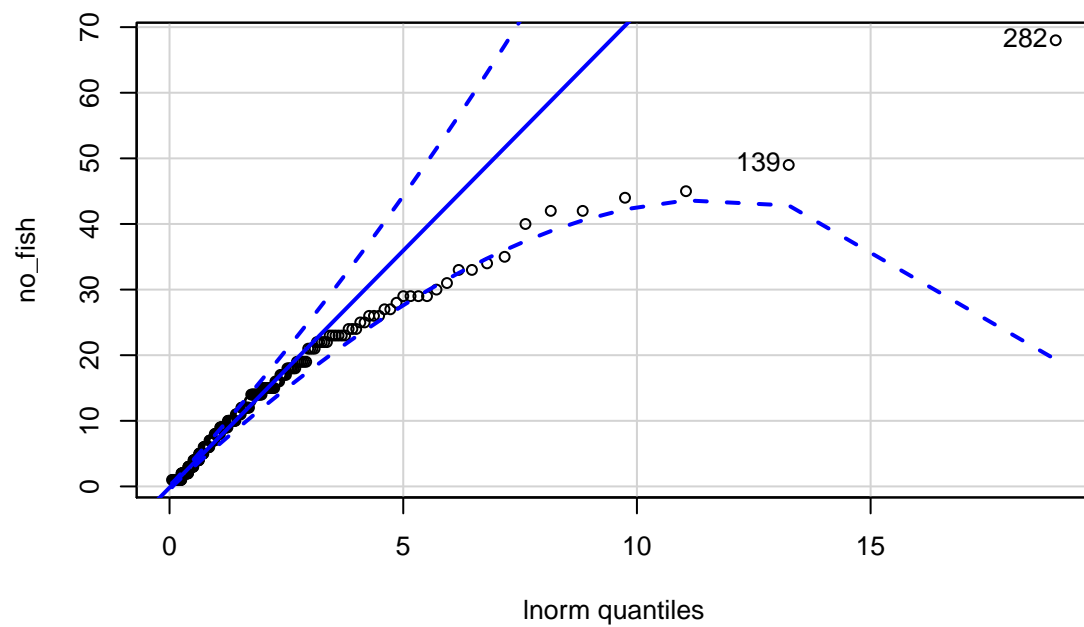
Histogram of number of fish



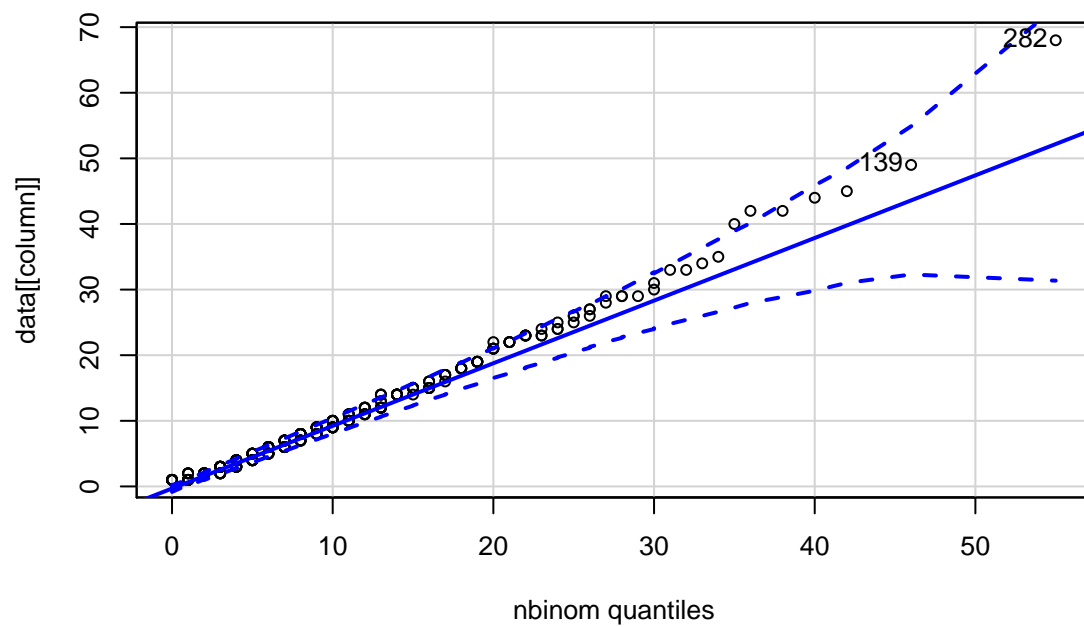
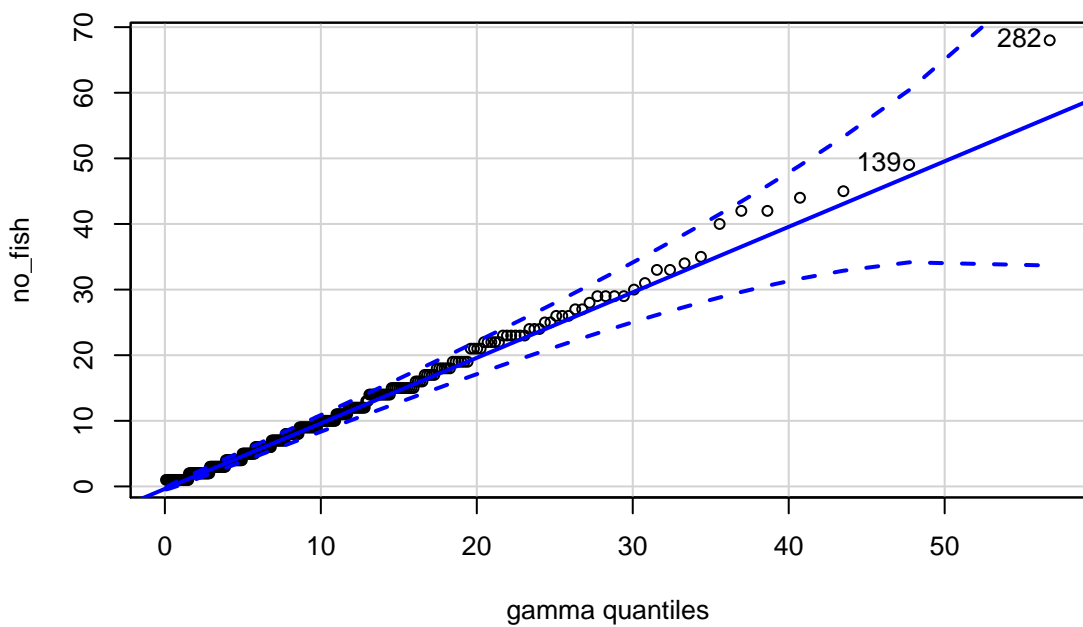
Normal distribution

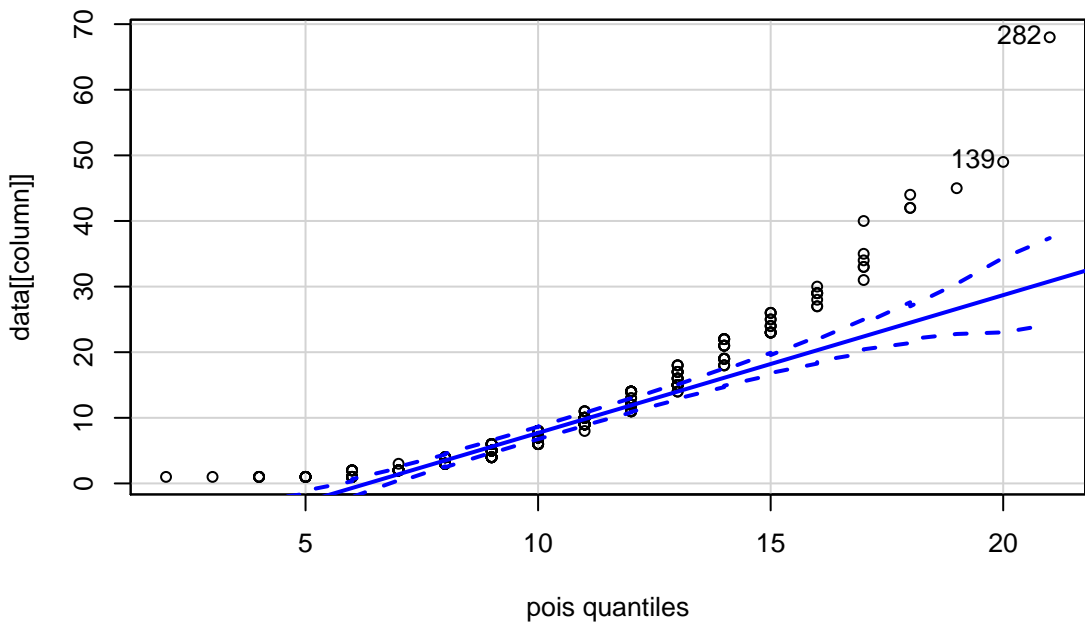


Log-normal distribution



Gamma distribution





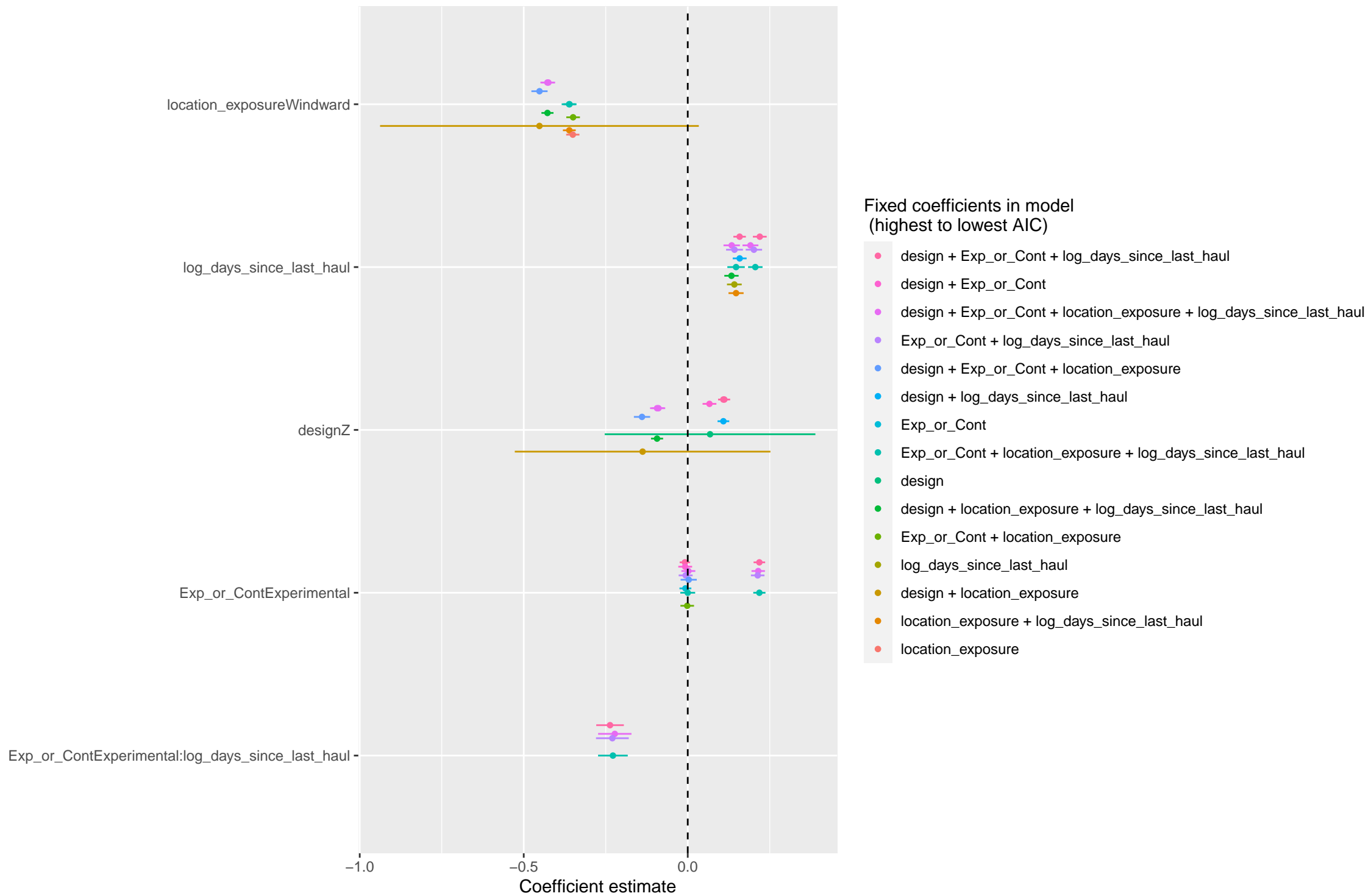
```

Global model call: glmer(formula = no_fish ~ design + log_days_since_last_haul +
  location_exposure + Exp_or_Cont + Exp_or_Cont * log_days_since_last_haul +
  (1 | TrapID) + (1 | Date_YMD), data = trap_haul_no_zero,
  family = negative.binomial(theta = 1.93058596479962), control = glmerControl(optimizer = "bobyqa",
    optCtrl = list(maxfun = 10000)), na.action = "na.fail")
---
Model selection table
  (Int) dsq Exp_or_Cont lct_exp log_dys_snc_lst_hal Exp_or_Cont:log_dys_snc_lst_hal df   logLik   AICc delta weight
5  2.291                +                                5 -1020.055 2050.3  0.00  0.187
13 2.016                +                0.1213          6 -1019.436 2051.2  0.84  0.123
1  2.241                +                                4 -1021.552 2051.2  0.93  0.118
6  2.402  +                +                                6 -1019.814 2051.9  1.60  0.084
9  1.974                +                0.1171          5 -1021.005 2052.2  1.90  0.072
7  2.291                +  +                                6 -1020.055 2052.4  2.08  0.066
14 2.118  +                +                0.1098         7 -1019.335 2053.0  2.74  0.048
2  2.193  +                +                                5 -1021.466 2053.1  2.82  0.046
15 2.016                +  +                0.1214          7 -1019.436 2053.2  2.94  0.043
3  2.245                +                                5 -1021.551 2053.3  2.99  0.042
10 1.867  +                +                0.1304          6 -1020.792 2053.9  3.55  0.032
8  2.402  +                +  +                                7 -1019.813 2054.0  3.69  0.030
11 1.976                +                0.1174          6 -1021.004 2054.3  3.98  0.026
31 1.903                +  +                0.1698         +  8 -1019.272 2055.0  4.72  0.018
16 2.115  +                +  +                0.1104          8 -1019.335 2055.2  4.84  0.017
4  2.199  +                +                                6 -1021.465 2055.2  4.90  0.016
12 1.873  +                +                0.1303          7 -1020.790 2056.0  5.65  0.011
27 1.863                +                0.1662         +  7 -1020.837 2056.0  5.74  0.011
32 2.002  +                +  +                0.1575         +  9 -1019.180 2057.0  6.66  0.007
28 1.752  +                +                0.1810         +  8 -1020.613 2057.7  7.40  0.005
Models ranked by AICc(x)
Random terms (all models):
...1 | TrapID..., ...1 | Date_YMD...

```

	<b>model</b>	<b>sigma</b>	<b>logLik</b>	<b>AIC</b>	<b>BIC</b>	<b>deviance</b>	<b>df.residual</b>
	location_exposure	1.00	-1020.05	2050.11	2068.74	297.84	302.00
	location_exposure + log_days_since_last_haul	1.00	-1019.44	2050.87	2073.23	296.99	301.00
	none	1.00	-1021.55	2051.10	2066.01	298.30	303.00
	design + location_exposure	1.00	-1019.81	2051.63	2073.99	297.19	301.00
	log_days_since_last_haul	1.00	-1021.00	2052.01	2070.64	297.29	302.00
	Exp_or_Cont + location_exposure	1.00	-1020.05	2052.11	2074.47	297.84	301.00
	design + location_exposure + log_days_since_last_haul	1.00	-1019.34	2052.67	2078.76	296.51	300.00
	design	1.00	-1021.47	2052.93	2071.57	298.44	302.00
	Exp_or_Cont + location_exposure + log_days_since_last_haul	1.00	-1019.44	2052.87	2078.96	296.97	300.00
	Exp_or_Cont	1.00	-1021.55	2053.10	2071.74	298.31	302.00
	design + log_days_since_last_haul	1.00	-1020.79	2053.58	2075.94	297.91	301.00
	design + Exp_or_Cont + location_exposure	1.00	-1019.81	2053.63	2079.71	297.27	300.00
	Exp_or_Cont + log_days_since_last_haul	1.00	-1021.00	2054.01	2076.37	297.27	301.00
	Exp_or_Cont + location_exposure + log_days_since_last_haul	1.00	-1019.27	2054.54	2084.36	296.66	299.00
	design + Exp_or_Cont + location_exposure + log_days_since_last_haul	1.00	-1019.33	2054.67	2084.48	296.49	299.00
	design + Exp_or_Cont	1.00	-1021.47	2054.93	2077.29	298.55	301.00
	design + Exp_or_Cont + log_days_since_last_haul	1.00	-1020.79	2055.58	2081.67	297.94	300.00
	Exp_or_Cont + log_days_since_last_haul	1.00	-1020.84	2055.67	2081.76	296.95	300.00
	design + Exp_or_Cont + location_exposure + log_days_since_last_haul	1.00	-1019.18	2056.36	2089.90	296.19	298.00
	design + Exp_or_Cont + log_days_since_last_haul	1.00	-1020.61	2057.23	2087.04	297.58	299.00

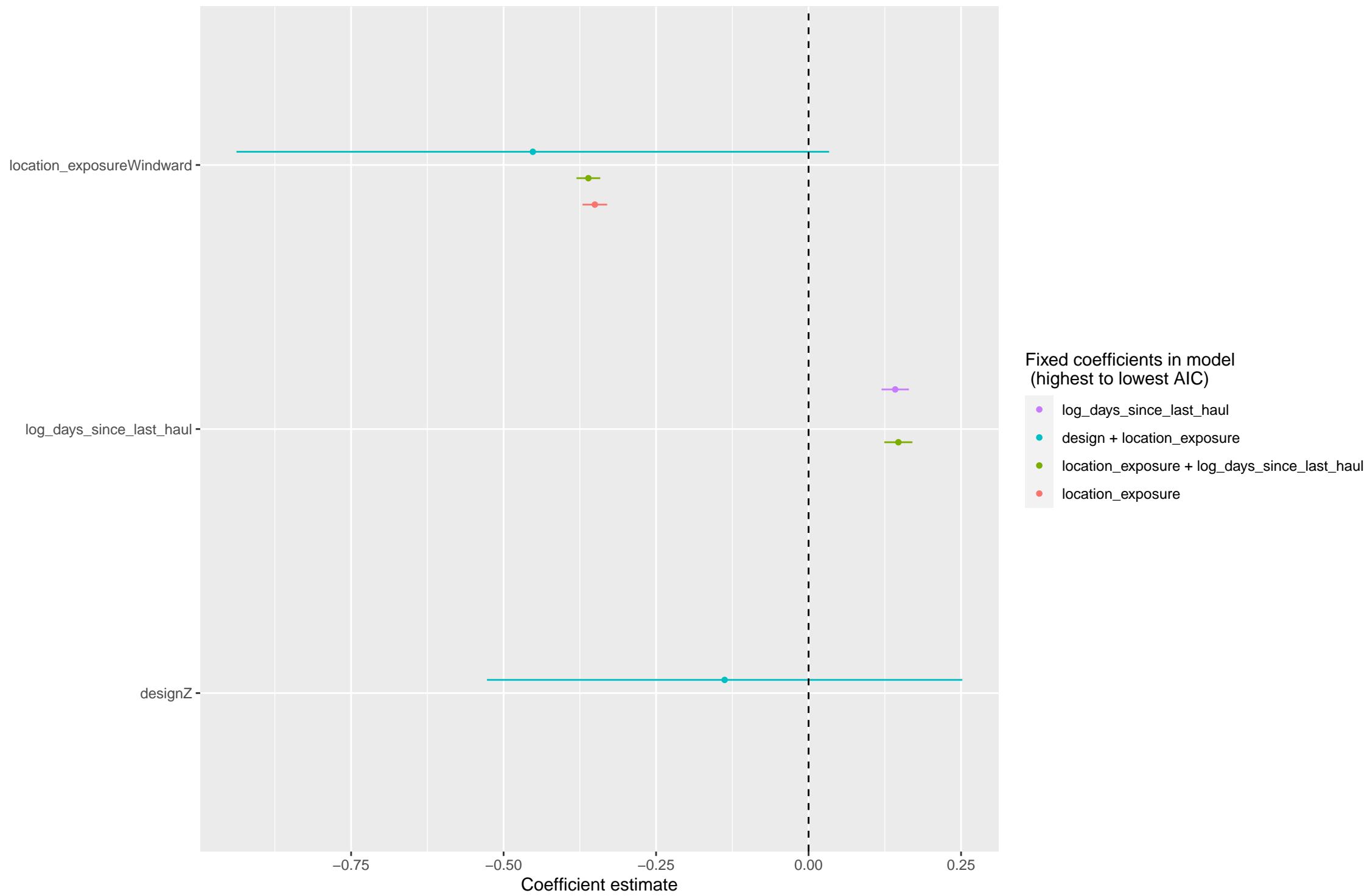
# Predicting number of fish in trap haul



### Models with delta AIC <2

	<b>model</b>	<b>sigma</b>	<b>logLik</b>	<b>AIC</b>	<b>BIC</b>	<b>deviance</b>	<b>df.residual</b>
	location_exposure	1.00	−1020.05	2050.11	2068.74	297.84	302.00
location_exposure + log_days_since_last_haul		1.00	−1019.44	2050.87	2073.23	296.99	301.00
	none	1.00	−1021.55	2051.10	2066.01	298.30	303.00
design + location_exposure		1.00	−1019.81	2051.63	2073.99	297.19	301.00
	log_days_since_last_haul	1.00	−1021.00	2052.01	2070.64	297.29	302.00

Predicting number of fish in trap haul





(Intercept)

Random effect quantiles

0.4

0.0

-0.4

-2

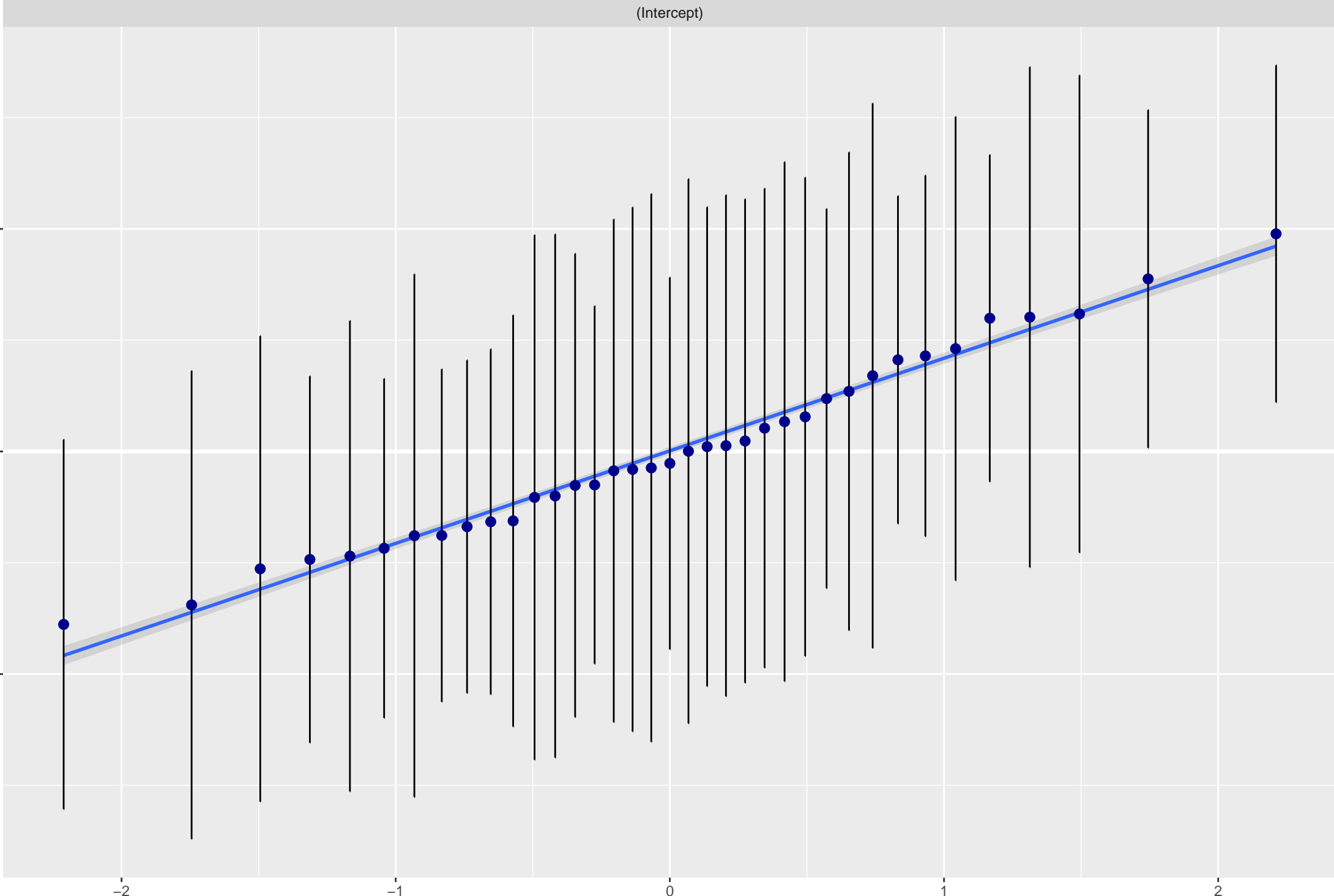
-1

0

1

2

Standard normal quantiles



(Intercept)

Random effect quantiles

0.8  
0.4  
0.0  
-0.4

-2

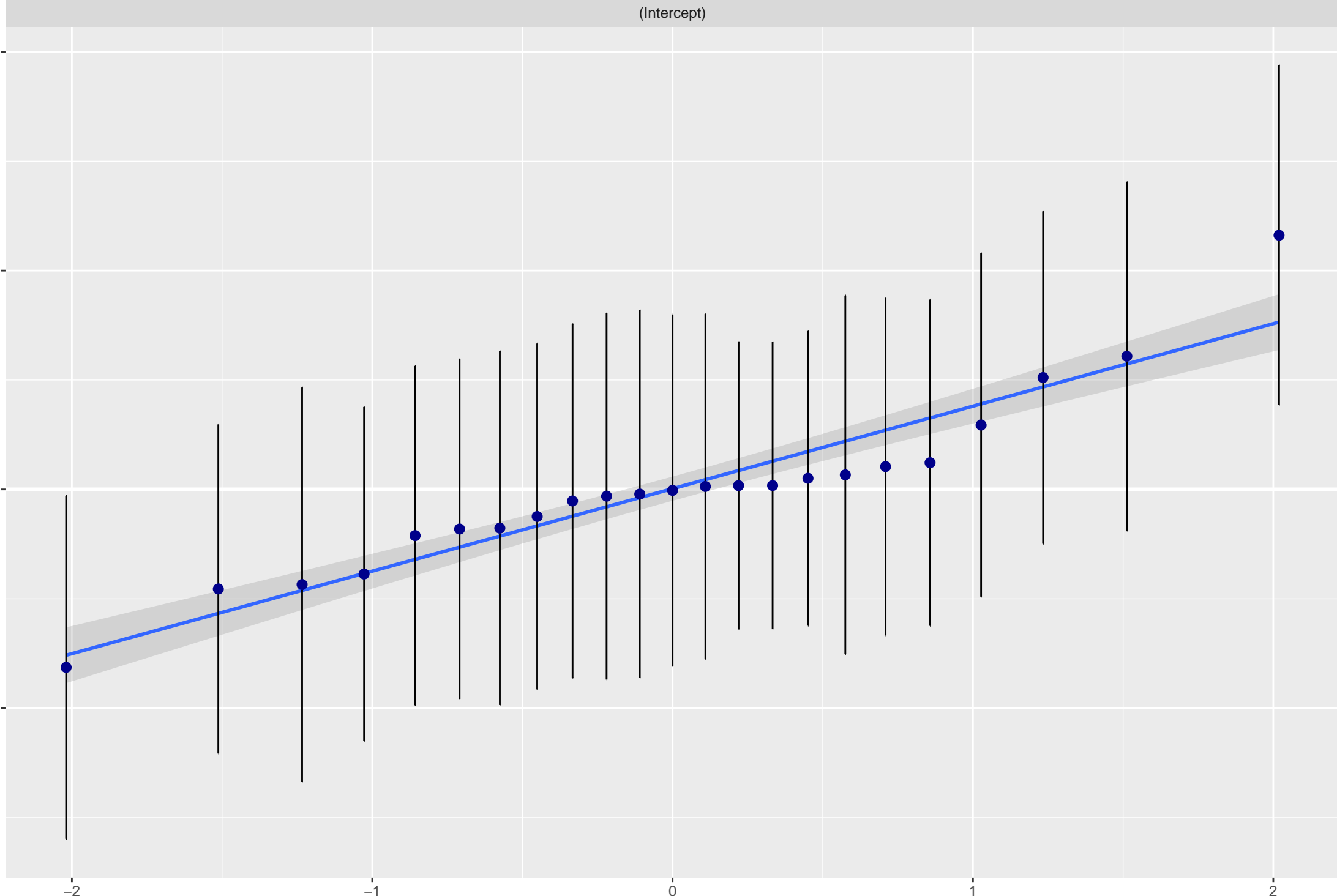
-1

0

1

2

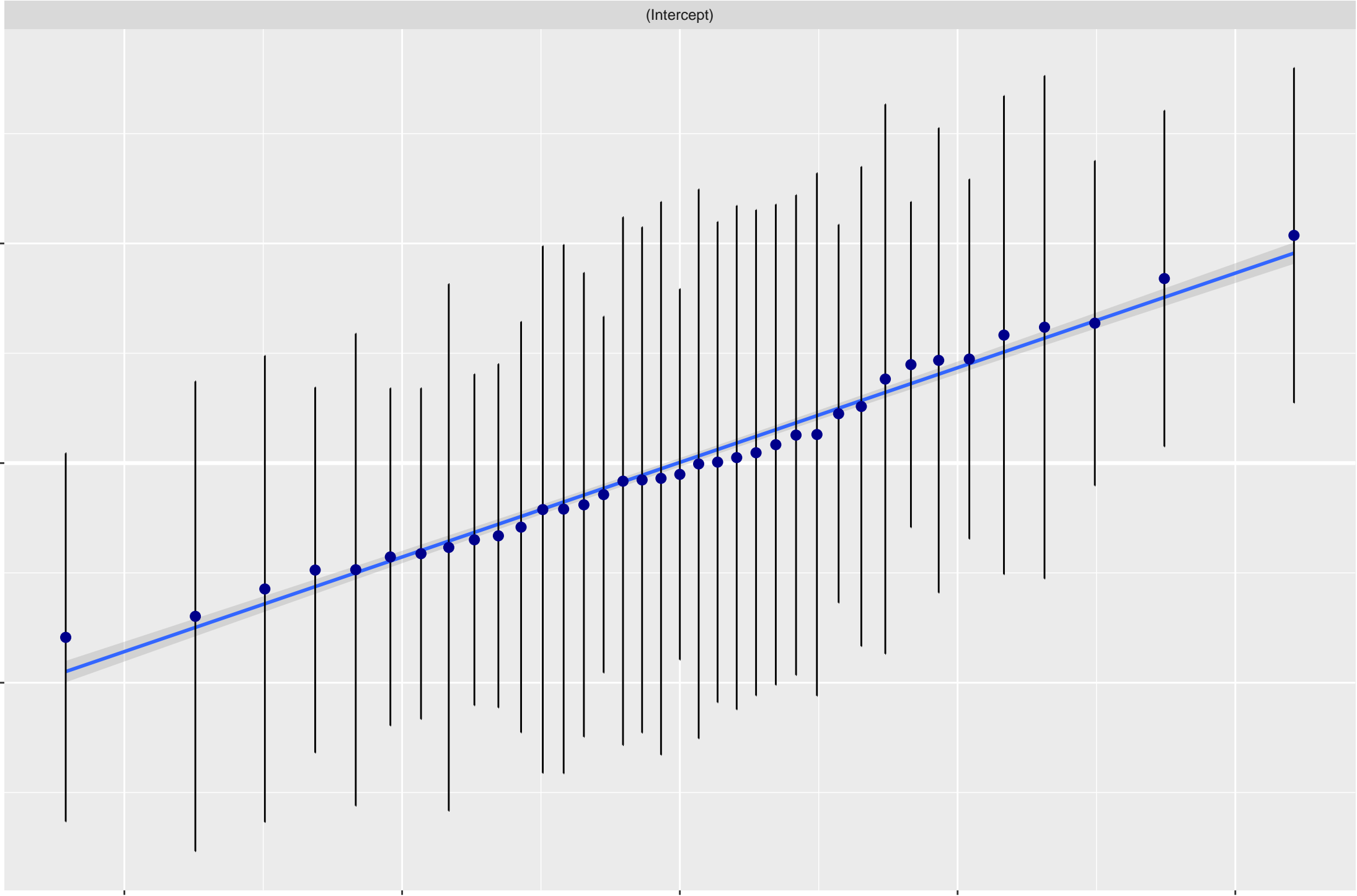
Standard normal quantiles



(Intercept)

Random effect quantiles

Standard normal quantiles



(Intercept)

Random effect quantiles

0.8  
0.4  
0.0  
-0.4

-2

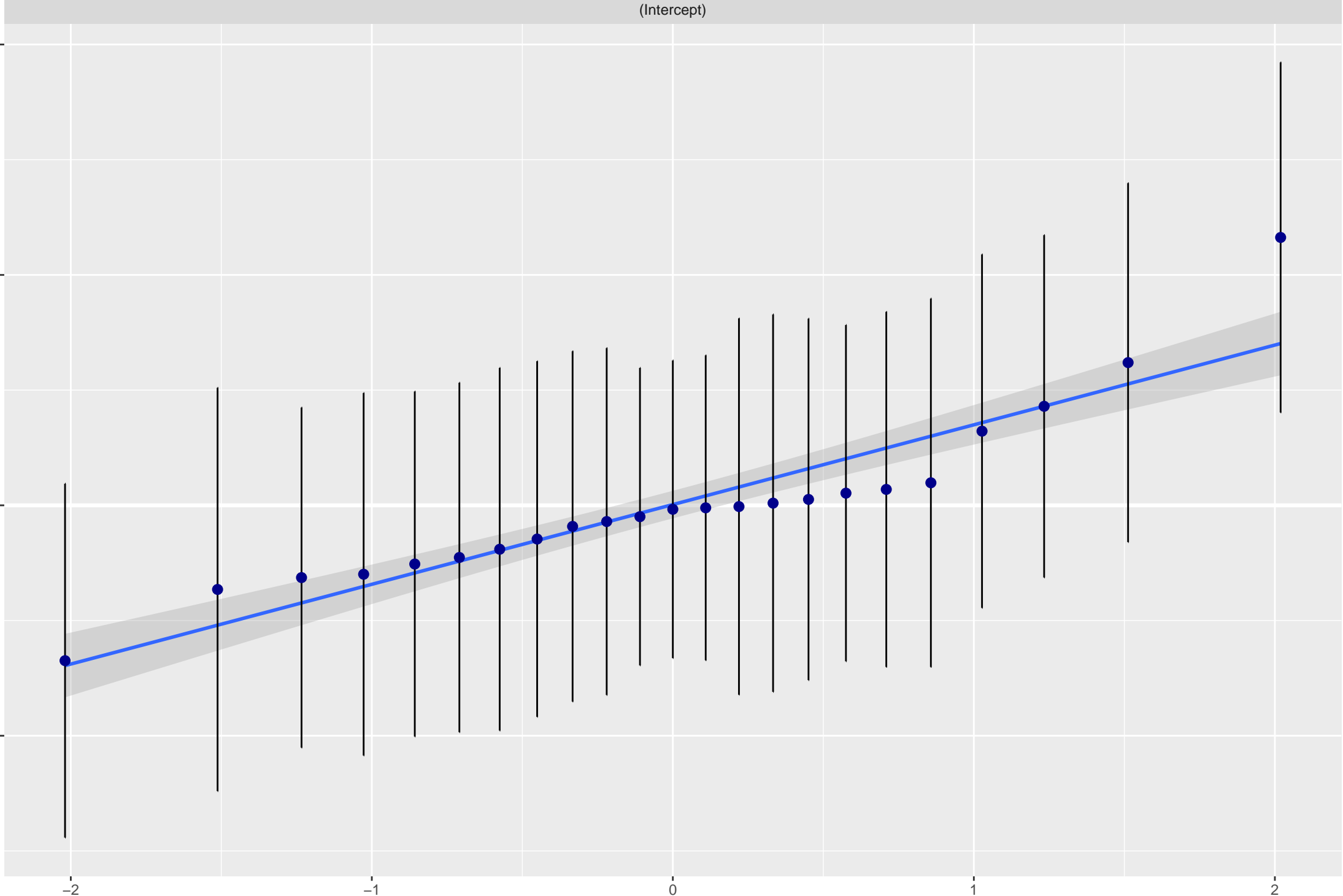
-1

0

1

2

Standard normal quantiles



(Intercept)

Random effect quantiles

-2

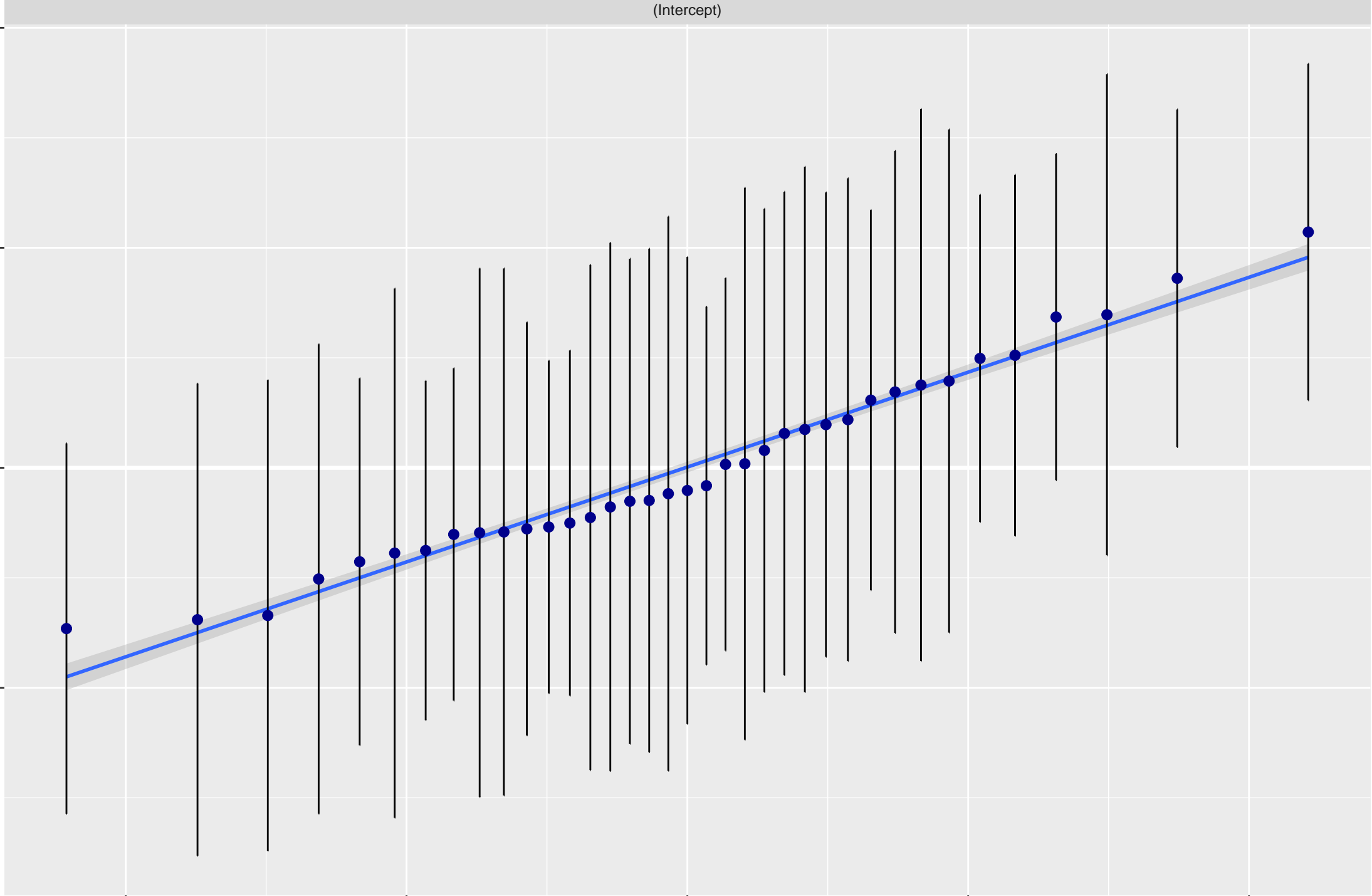
-1

0

1

2

Standard normal quantiles



(Intercept)

Random effect quantiles

0.8

0.4

0.0

-0.4

-2

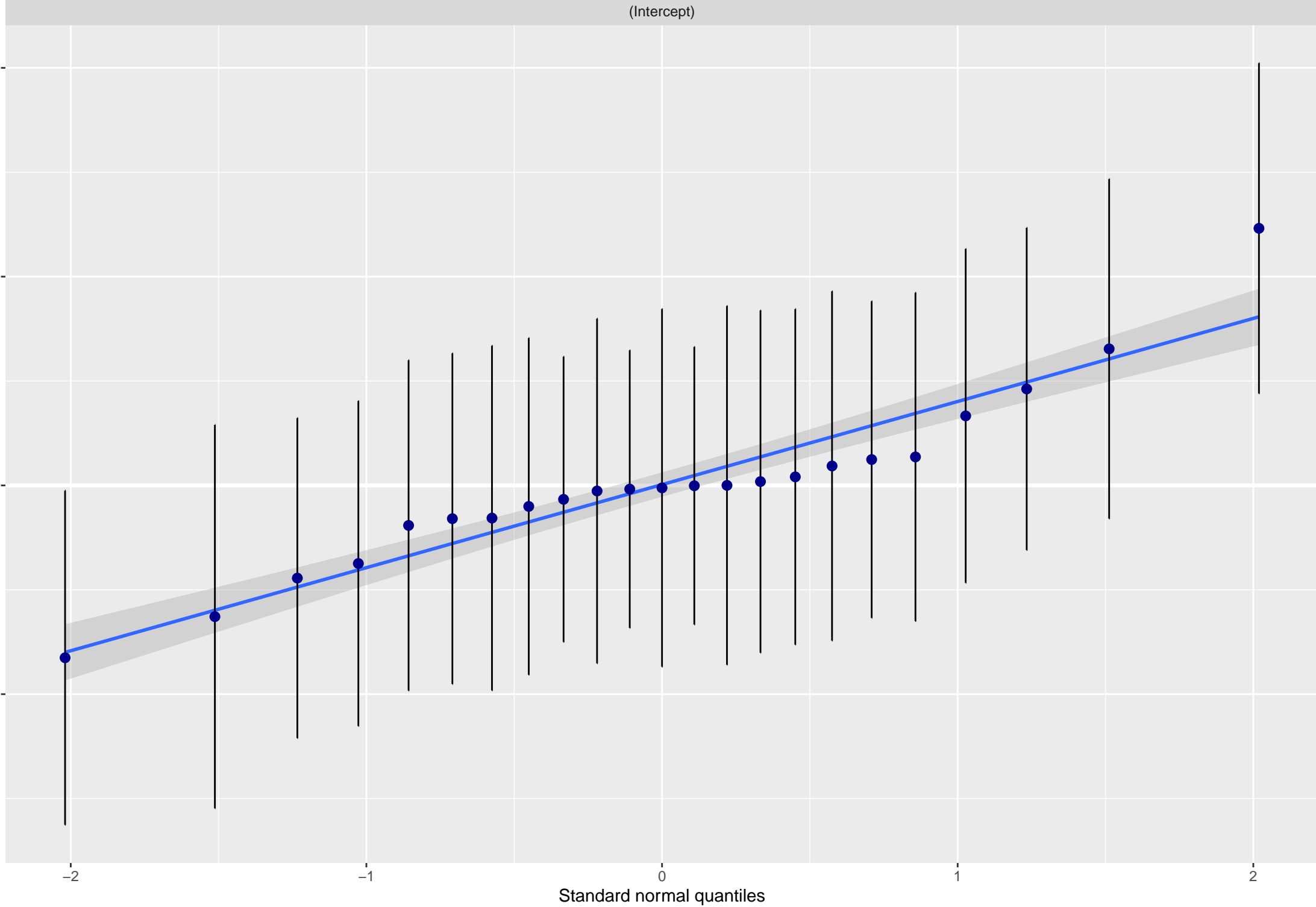
-1

0

1

2

Standard normal quantiles



(Intercept)

Random effect quantiles

0.4

0.0

-0.4

-2

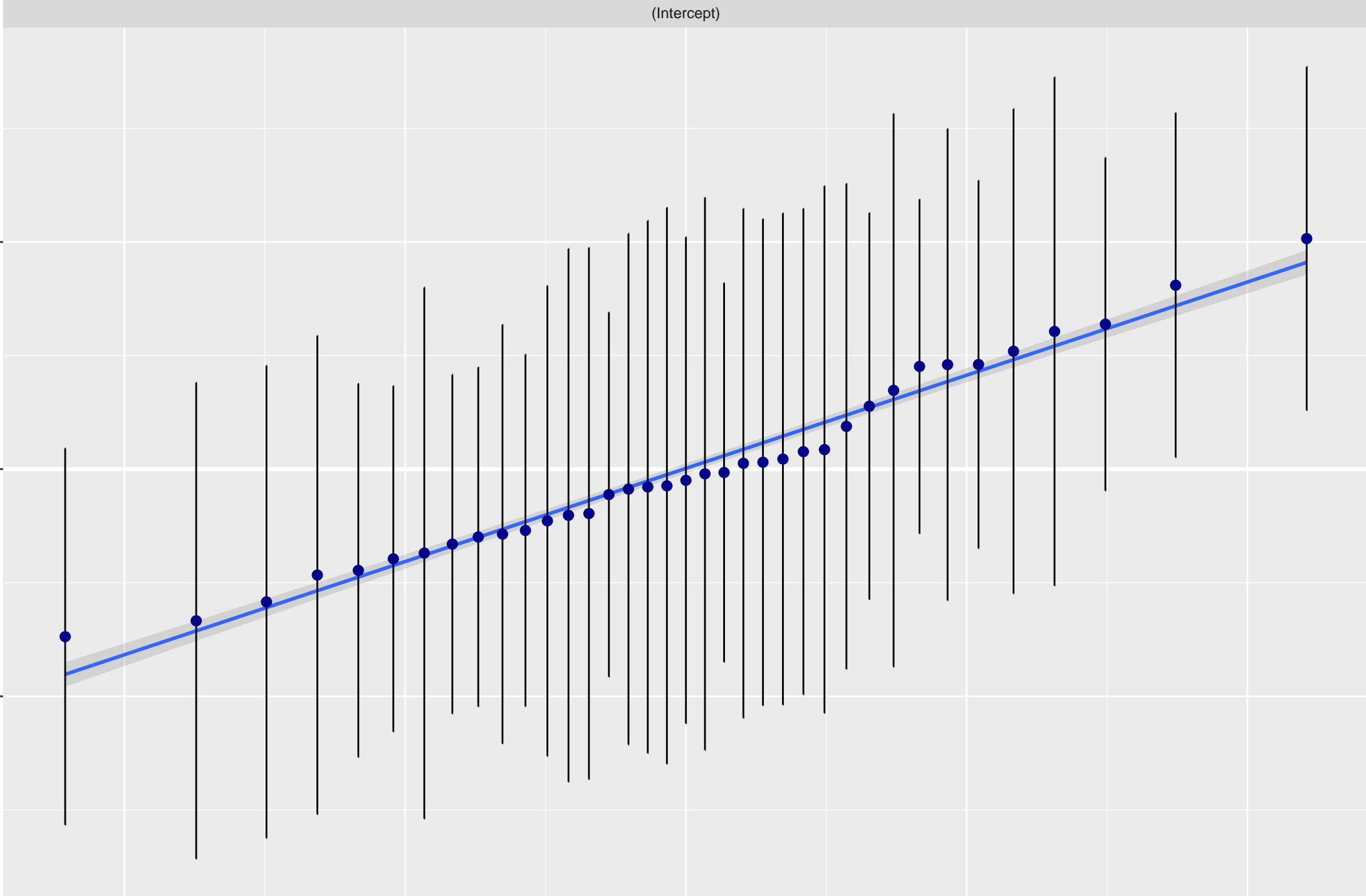
-1

0

1

2

Standard normal quantiles



(Intercept)

Random effect quantiles

0.8

0.4

0.0

-0.4

-2

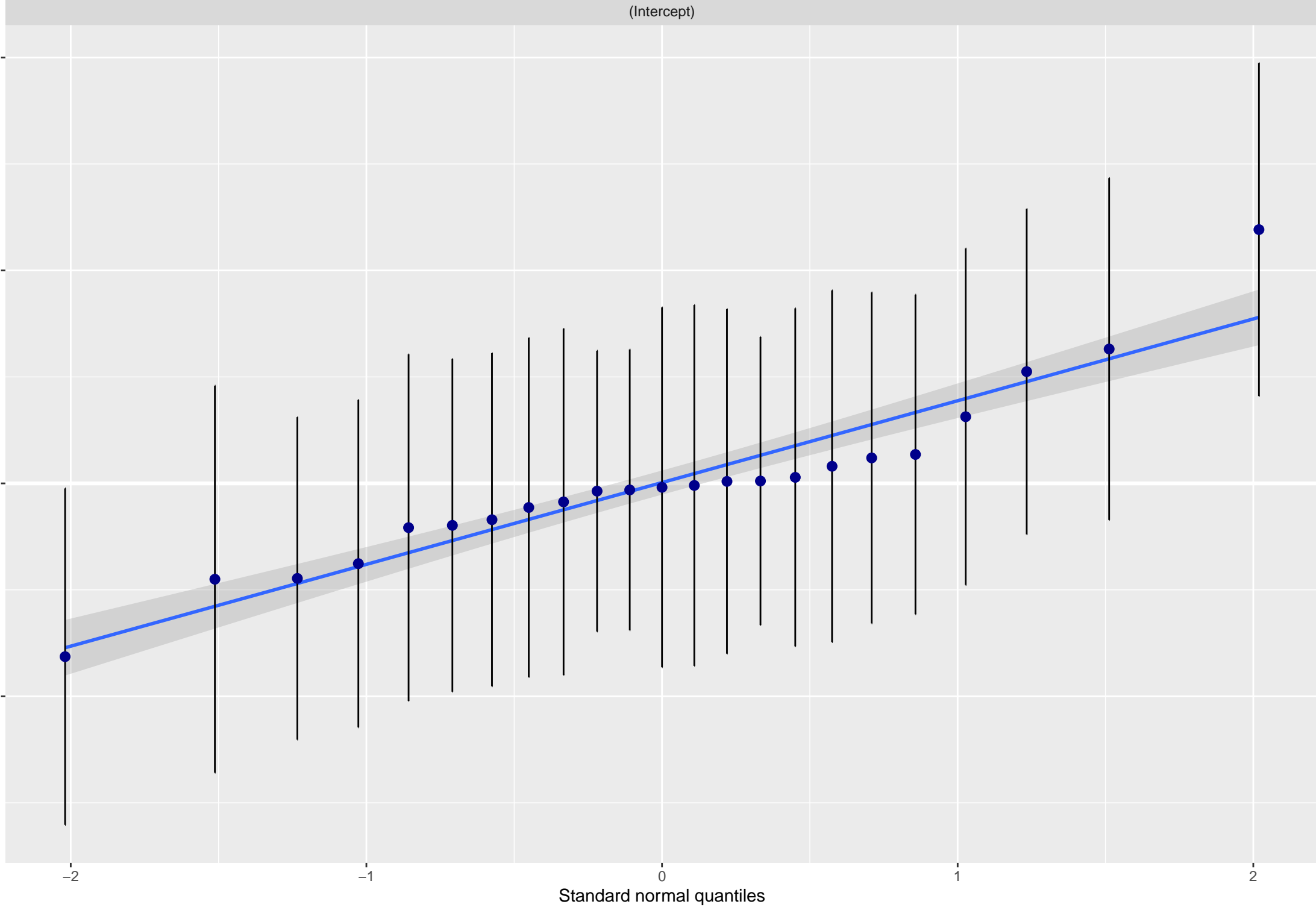
-1

0

1

2

Standard normal quantiles

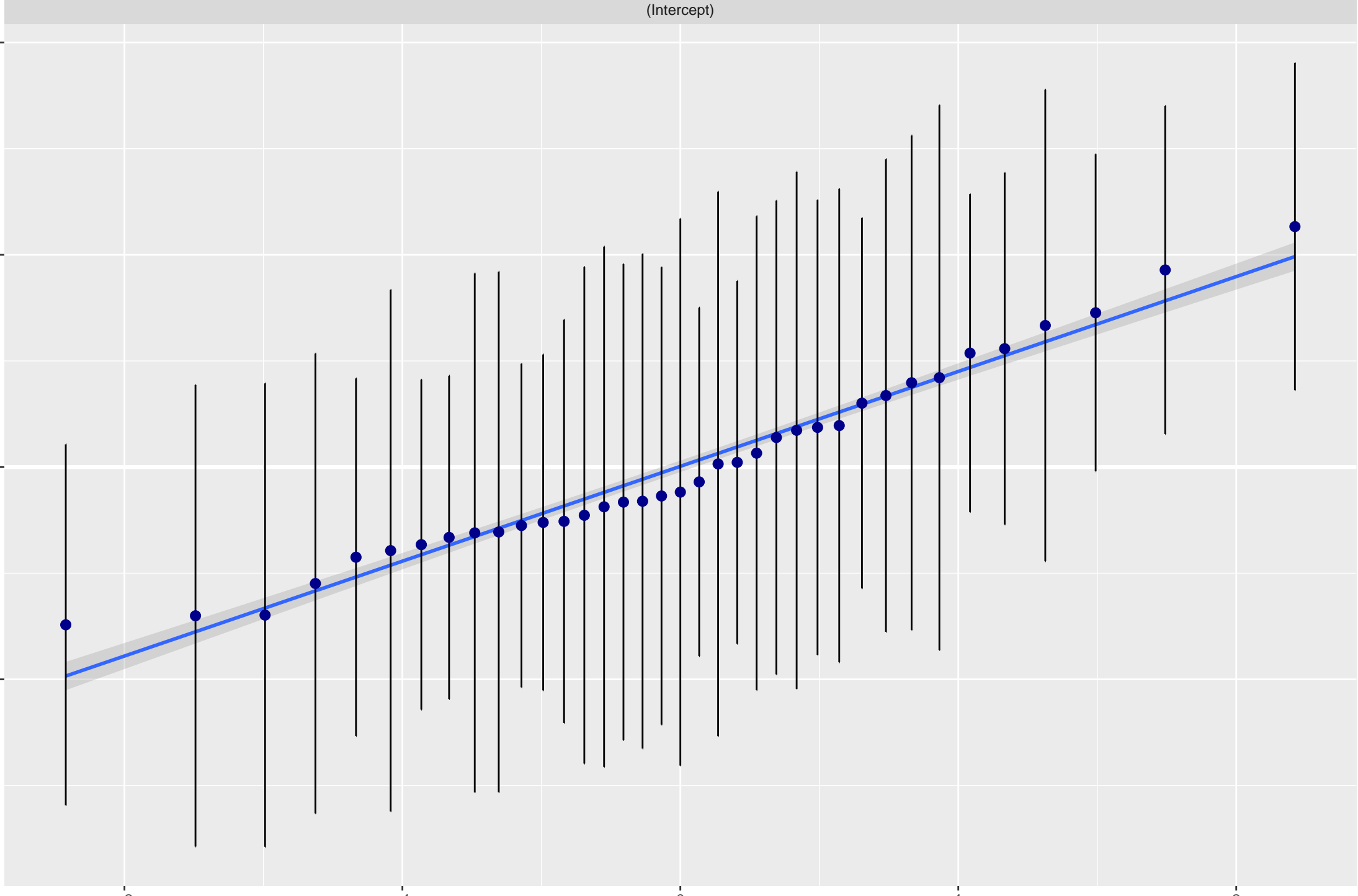




(Intercept)

Random effect quantiles

Standard normal quantiles



(Intercept)

Random effect quantiles

0.5

0.0

-0.5

-2

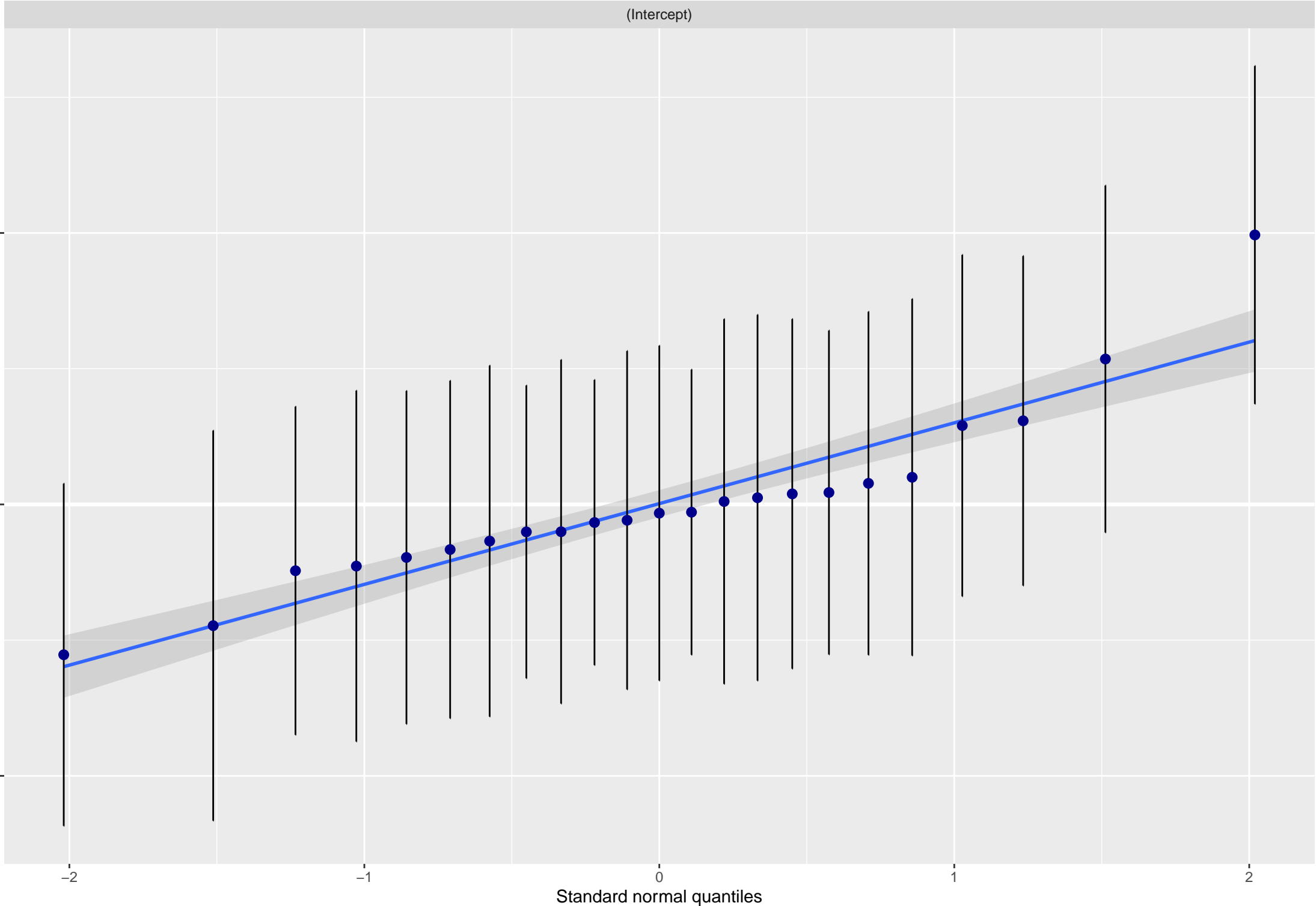
-1

0

1

2

Standard normal quantiles



# Model summaries for all models with delta AIC < 2

```
$location_exposure
Generalized linear mixed model fit by maximum likelihood (Laplace Approximation) ['glmerMod']
Family: Negative Binomial(1.9306) ( log )
Formula: no_fish ~ location_exposure + (1 | TrapID) + (1 | Date_YMD)
Data: trap_haul_no_zero
Control: glmerControl(optimizer = "bobyqa", optCtrl = list(maxfun = 10000))

      AIC      BIC    logLik deviance df.resid
2050.1  2068.7  -1020.1  2040.1      302

Scaled residuals:
    Min       1Q   Median       3Q      Max
-1.2037 -0.7880 -0.2461  0.5107  5.3797

Random effects:
Groups Name Variance Std.Dev.
TrapID (Intercept) 0.06906 0.2628
Date_YMD (Intercept) 0.04930 0.2220
Number of obs: 307, groups: TrapID, 37; Date_YMD, 23

Fixed effects:
              Estimate Std. Error z value Pr(>|z|)
(Intercept)      2.29083    0.01028  222.76 <2e-16 ***
location_exposureWindward -0.35041    0.01030  -34.03 <2e-16 ***
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Correlation of Fixed Effects:
      (Intr)
lctn_xparWn -0.002
convergence code: 0
Model failed to converge with max|grad| = 0.00794701 (tol = 0.001, component 1)

$`location_exposure + log_days_since_last_haul`
Generalized linear mixed model fit by maximum likelihood (Laplace Approximation) ['glmerMod']
Family: Negative Binomial(1.9306) ( log )
Formula: no_fish ~ location_exposure + log_days_since_last_haul + (1 | TrapID) + (1 | Date_YMD)
Data: trap_haul_no_zero
Control: glmerControl(optimizer = "bobyqa", optCtrl = list(maxfun = 10000))

      AIC      BIC    logLik deviance df.resid
2050.9  2073.2  -1019.4  2038.9      301

Scaled residuals:
    Min       1Q   Median       3Q      Max
-1.2020 -0.7777 -0.2409  0.4887  5.6067

Random effects:
Groups Name Variance Std.Dev.
TrapID (Intercept) 0.07250 0.2693
Date_YMD (Intercept) 0.04516 0.2125
Number of obs: 307, groups: TrapID, 37; Date_YMD, 23

Fixed effects:
              Estimate Std. Error z value Pr(>|z|)
(Intercept)      2.015915    0.009953  202.55 <2e-16 ***
location_exposureWindward -0.361016    0.009961  -36.24 <2e-16 ***
log_days_since_last_haul  0.121337    0.009677  12.54 <2e-16 ***
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Correlation of Fixed Effects:
      (Intr) lctn_W
lctn_xparWn -0.002
lg_dys_sn__ -0.027 -0.004
convergence code: 0
Model failed to converge with max|grad| = 0.00703049 (tol = 0.001, component 1)

$none
Generalized linear mixed model fit by maximum likelihood (Laplace Approximation) ['glmerMod']
Family: Negative Binomial(1.9306) ( log )
Formula: no_fish ~ (1 | TrapID) + (1 | Date_YMD)
Data: trap_haul_no_zero
Control: glmerControl(optimizer = "bobyqa", optCtrl = list(maxfun = 10000))

      AIC      BIC    logLik deviance df.resid
2051.1  2066.0  -1021.6  2043.1      303

Scaled residuals:
    Min       1Q   Median       3Q      Max
-1.2051 -0.7942 -0.2368  0.5634  5.3672

Random effects:
Groups Name Variance Std.Dev.
TrapID (Intercept) 0.07238 0.2701
Date_YMD (Intercept) 0.05305 0.2303
Number of obs: 307, groups: TrapID, 37; Date_YMD, 23

Fixed effects:
              Estimate Std. Error z value Pr(>|z|)
(Intercept)      2.24116    0.01005  223.1 <2e-16 ***
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
convergence code: 0
Model failed to converge with max|grad| = 0.0084944 (tol = 0.001, component 1)
```

```
$`design + location_exposure`
Generalized linear mixed model fit by maximum likelihood (Laplace Approximation) ['glmerMod']
Family: Negative Binomial(1.9306) ( log )
Formula: no_fish ~ design + location_exposure + (1 | TrapID) + (1 | Date_YMD)
Data: trap_haul_no_zero
Control: glmerControl(optimizer = "bobyqa", optCtrl = list(maxfun = 10000))

      AIC      BIC    logLik deviance df.resid
2051.6  2074.0  -1019.8  2039.6      301

Scaled residuals:
    Min       1Q   Median       3Q      Max
-1.2044 -0.7845 -0.2431  0.5268  5.3699

Random effects:
Groups Name Variance Std.Dev.
TrapID (Intercept) 0.06829 0.2613
Date_YMD (Intercept) 0.05064 0.2250
Number of obs: 307, groups: TrapID, 37; Date_YMD, 23

Fixed effects:
              Estimate Std. Error z value Pr(>|z|)
(Intercept)      2.4020    0.1844  13.023 <2e-16 ***
designZ           -0.1376    0.1988  -0.692  0.4888
location_exposureWindward -0.4521    0.2479  -1.824  0.0682 .
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Correlation of Fixed Effects:
      (Intr) desgnZ
designZ      -0.873
lctn_xparWn -0.630  0.585

$log_days_since_last_haul
Generalized linear mixed model fit by maximum likelihood (Laplace Approximation) ['glmerMod']
Family: Negative Binomial(1.9306) ( log )
Formula: no_fish ~ log_days_since_last_haul + (1 | TrapID) + (1 | Date_YMD)
Data: trap_haul_no_zero
Control: glmerControl(optimizer = "bobyqa", optCtrl = list(maxfun = 10000))

      AIC      BIC    logLik deviance df.resid
2052.0  2070.6  -1021.0  2042.0      302

Scaled residuals:
    Min       1Q   Median       3Q      Max
-1.2005 -0.7829 -0.2373  0.5300  5.5692

Random effects:
Groups Name Variance Std.Dev.
TrapID (Intercept) 0.07670 0.2769
Date_YMD (Intercept) 0.04943 0.2223
Number of obs: 307, groups: TrapID, 37; Date_YMD, 23

Fixed effects:
              Estimate Std. Error z value Pr(>|z|)
(Intercept)      1.973854    0.009435  209.21 <2e-16 ***
log_days_since_last_haul 0.117081    0.009433  12.41 <2e-16 ***
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Correlation of Fixed Effects:
      (Intr)
lg_dys_sn__ -0.020
convergence code: 0
Model failed to converge with max|grad| = 0.0091942 (tol = 0.001, component 1)
```

# Full model summary

```
alized linear mixed model fit by maximum likelihood (Laplace Approximation) ['glmerMod']
ly: Negative Binomial(1.9306) ( log )
la: no_fish ~ design + log_days_since_last_haul + location_exposure +      Exp_or_Cont + Exp_or_Cont * log_days_since_last_haul + (1 |
rapID) + (1 | Date_YMD)
ta: trap_haul_no_zero
ol: glmerControl(optimizer = "bobyqa", optCtrl = list(maxfun = 10000))

AIC      BIC    logLik deviance df.resid
6.4    2089.9  -1019.2   2038.4      298

d residuals:
in      IQ  Median      3Q      Max
43 -0.7741 -0.2536  0.4959  5.4737

# effects:
ps  Name      Variance Std.Dev.
ID   (Intercept) 0.07195  0.2682
_YMD (Intercept) 0.04690  0.2166
r of obs: 307, groups:  TrapID, 37; Date_YMD, 23

effects:
              Estimate Std. Error z value Pr(>|z|)
roapt)          1.99529    0.40950   4.873 1.1e-06 ***
nZ             -0.08840    0.20619  -0.429  0.6681
ays_since_last_haul 0.15998    0.14291   1.119  0.2629
ion_exposureWindward -0.42593    0.25075  -1.699  0.0894 .
r_ContExperimental  0.21593    0.40768   0.530  0.5964
ays_since_last_haul:Exp_or_ContExperimental -0.09207    0.16544  -0.557  0.5779

f. codes:  0 ...***... 0.001 ...**... 0.01 ...*... 0.05 ..... 0.1 ... . 1

lation of Fixed Effects:
      (Inter) design lg_____ lctn_W Ex__CE
nZ      -0.553
s_sn_____ -0.876  0.194
xperWm -0.356  0.590  0.088
__CntEx -0.527  0.021  0.567  0.007
:E__CE  0.505 -0.036 -0.606 -0.023 -0.940
```