Plots are just the <u>high urban index sites</u>
Predictions are the high urban index sites

???Should this be the low sites?

```
> modelBobcat<-glmmPQL(Day_Count~Year*Urban_Cat,random=list(Site=~1),data=Bobcat,family=quasipoisson)
iteration 1
> summary(modelBobcat)
Linear mixed-effects model fit by maximum likelihood
 Data: Bobcat
  AIC BIC logLik
   NA  NA     NA

Random effects:
 Formula: ~1 | Site
         (Intercept)   Residual
StdDev: 3.249736e-05 0.9388916

Variance function:
 Structure: fixed weights
 Formula: ~invwt
Fixed effects: Day_Count ~ Year * Urban_Cat
                          Value Std.Error DF   t-value p-value
(Intercept)           1.2527630 0.1983771  8  6.315060  0.0002
Year2020             -0.4989912 0.3227552  8 -1.546036  0.1607
Urban_Cathigh        -1.2527630 0.7683110  8 -1.630541  0.1416
Year2020:Urban_Cathigh 0.9044563 1.0111411  8  0.894491  0.3972
 Correlation:
                       (Intr) Yr2020 Urbn_C
Year2020               -0.615
Urban_Cathigh          -0.258  0.159
Year2020:Urban_Cathigh  0.196 -0.319 -0.760

Standardized Within-Group Residuals:
       Min         Q1        Med         Q3        Max
-1.9925928 -0.8219731  0.1423281  0.6929764  1.4232806

Number of Observations: 20
Number of Groups: 10
> no.covid<-data.frame(Year="2019",Urban_Cat="high"); covid<-data.frame(Year="2020",Urban_Cat="high")
> no.cov.pred<-predict(modelBobcat,no.covid,type="response",level=0)
> cov.pred<-predict(modelBobcat,covid,type="response",level=0)
> ((cov.pred-no.cov.pred)/no.cov.pred)*100
[1] 50
attr(,"label")
[1] "Predicted values"
```
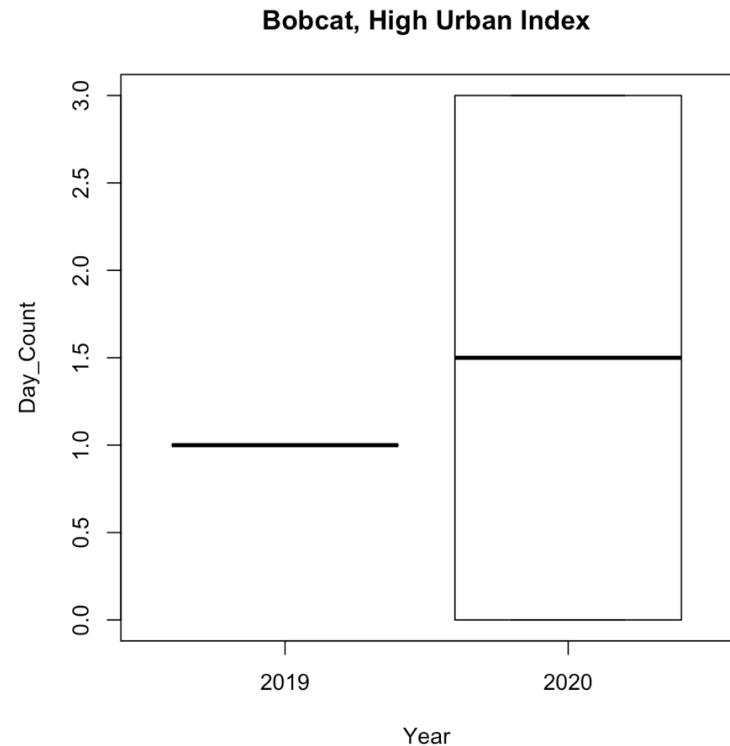

Bobcat, High Urban Index

Increased by 50% in high urban index sites

```
> modelJackrabbit<-glmmPQL(Day_Count~Year*Urban_Cat,random=list(Site=~1),data=Jackrabbit,family=quasipoisson)
iteration 1
iteration 2
iteration 3
iteration 4
> summary(modelJackrabbit)
Linear mixed-effects model fit by maximum likelihood
 Data: Jackrabbit
  AIC BIC logLik
   NA  NA     NA

Random effects:
 Formula: ~1 | Site
        (Intercept) Residual
StdDev:   0.6547267 1.823129

Variance function:
 Structure: fixed weights
 Formula: ~invwt
Fixed effects: Day_Count ~ Year * Urban_Cat
                         Value Std.Error DF  t-value p-value
(Intercept)          2.2926542 0.3721199  7  6.161063  0.0005
Year2020            -0.0256424 0.3310426  7 -0.077460  0.9404
Urban_Cathigh       -0.6523711 0.8975375  7 -0.726846  0.4909
Year2020:Urban_Cathigh -0.1566791 0.9450004  7 -0.165798  0.8730
 Correlation:
                   (Intr) Yr2020 Urbn_C
Year2020           -0.439
Urban_Cathigh      -0.415  0.182
Year2020:Urban_Cathigh  0.154 -0.350 -0.484

Standardized Within-Group Residuals:
       Min         Q1        Med        Q3       Max
-1.6105209 -0.6085088 -0.3336230  0.4122289  1.7024397

Number of Observations: 18
Number of Groups: 9
>
> no.covid<-data.frame(Year="2019",Urban_Cat="high"); covid<-data.frame(Year="2020",Urban_Cat="high")
> no.cov.pred<-predict(modelJackrabbit,no.covid,type="response",level=0)
> cov.pred<-predict(modelJackrabbit,covid,type="response",level=0)
> ((cov.pred-no.cov.pred)/no.cov.pred)*100
[1] -16.66667
```
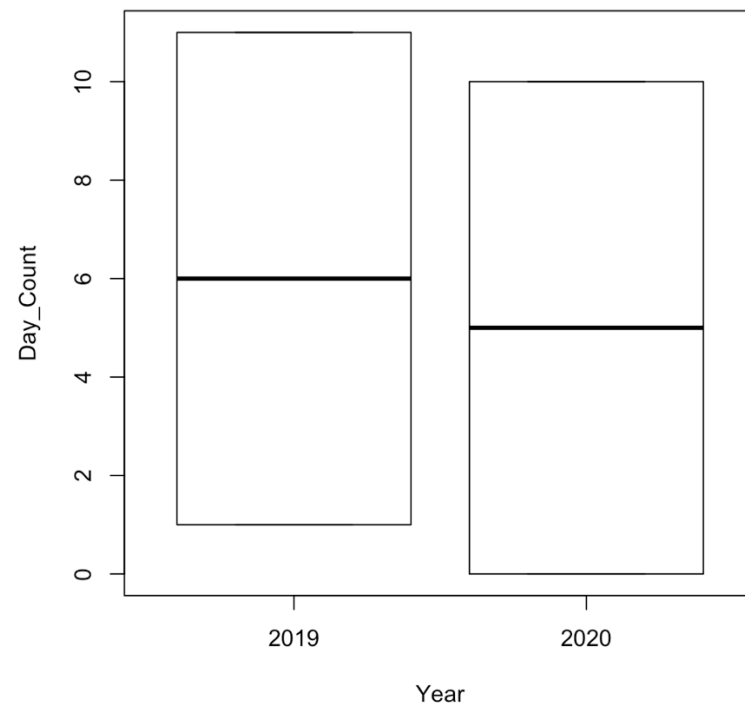

Jackrabbit

Decreased by 17% in high urban index sites

```
> modelCoyote<-glmmPQL(Day_Count~Year*Urban_Cat,random=list(Site=~1),data=Coyote,family=quasipoisson)
iteration 1
iteration 2
iteration 3
iteration 4
> summary(modelCoyote)
Linear mixed-effects model fit by maximum likelihood
 Data: Coyote
  AIC BIC logLik
   NA  NA     NA

Random effects:
 Formula: ~1 | Site
        (Intercept) Residual
StdDev:   0.4738573 1.663911

Variance function:
 Structure: fixed weights
 Formula: ~invwt
Fixed effects: Day_Count ~ Year * Urban_Cat
                         Value Std.Error DF    t-value p-value
(Intercept)          1.6844740 0.2732987 14   6.163490  0.0000
Year2020             0.0896122 0.3076369 14   0.291292  0.7751
Urban_Cathigh       -0.4188725 0.5502359 14  -0.761260  0.4591
Year2020:Urban_Cathigh 0.1555103 0.6387448 14  0.243462  0.8112
 Correlation:
                     (Intr) Yr2020 Urbn_C
Year2020             -0.588
Urban_Cathigh        -0.497  0.292
Year2020:Urban_Cathigh 0.283 -0.482 -0.641

Standardized Within-Group Residuals:
       Min         Q1        Med        Q3        Max
-1.4195804 -0.6136221 -0.3388765  0.3706310  1.9798300

Number of Observations: 32
Number of Groups: 16
> no.covid<-data.frame(Year="2019",Urban_Cat="high"); covid<-data.frame(Year="2020",Urban_Cat="high")
> no.cov.pred<-predict(modelCoyote,no.covid,type="response",level=0)
> cov.pred<-predict(modelCoyote,covid,type="response",level=0)
> ((cov.pred-no.cov.pred)/no.cov.pred)*100
[1] 27.77778
```
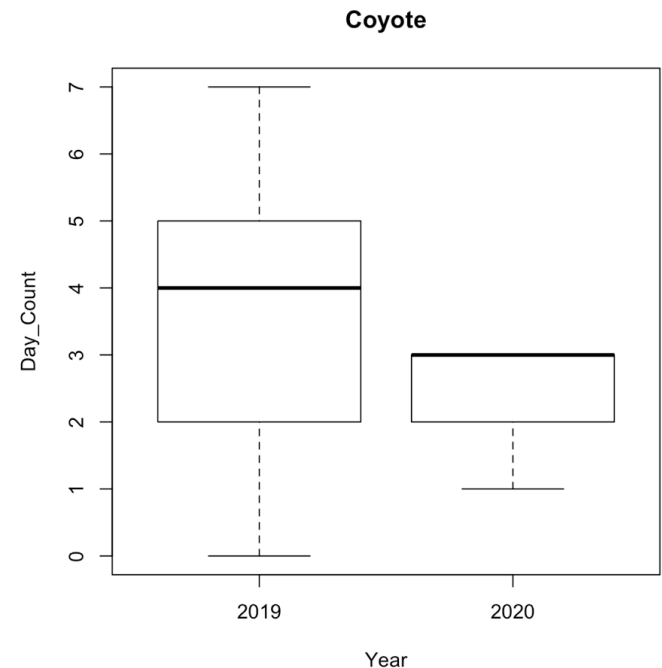

Coyote

Increased by 28% in high urban index sites

```
> modelHuman<-glmmPQL(Day_Count~Year*Urban_Cat,random=list(Site=~1),data=Human,family=quasipoisson)
iteration 1
iteration 2
iteration 3
iteration 4
iteration 5
> summary(modelHuman)
Linear mixed-effects model fit by maximum likelihood
 Data: Human
  AIC BIC logLik
   NA  NA     NA

Random effects:
 Formula: ~1 | Site
        (Intercept) Residual
StdDev:   0.8659574 1.547945

Variance function:
 Structure: fixed weights
 Formula: ~invwt
Fixed effects: Day_Count ~ Year * Urban_Cat
                          Value Std.Error DF    t-value p-value
(Intercept)           0.7007153 0.5834492 13  1.2009875  0.2512
Year2020              0.8109302 0.4995936 13  1.6231799  0.1285
Urban_Cathigh         1.2934075 0.6898672 13  1.8748644  0.0835
Year2020:Urban_Cathigh -0.2954642 0.5485818 13 -0.5385965  0.5993
 Correlation:
                       (Intr) Yr2020 Urbn_C
Year2020               -0.593
Urban_Cathigh          -0.846  0.501
Year2020:Urban_Cathigh  0.540 -0.911 -0.542

Standardized Within-Group Residuals:
      Min         Q1        Med        Q3        Max
-1.6520161 -0.7620299 -0.1436603 0.3109332 1.5936330

Number of Observations: 30
Number of Groups: 15
>
> no.covid<-data.frame(Year="2019",Urban_Cat="high"); covid<-data.frame(Year="2020",Urban_Cat="high")
> no.cov.pred<-predict(modelHuman,no.covid,type="response",level=0)
> cov.pred<-predict(modelHuman,covid,type="response",level=0)
> ((cov.pred-no.cov.pred)/no.cov.pred)*100
[1] 67.44186
```
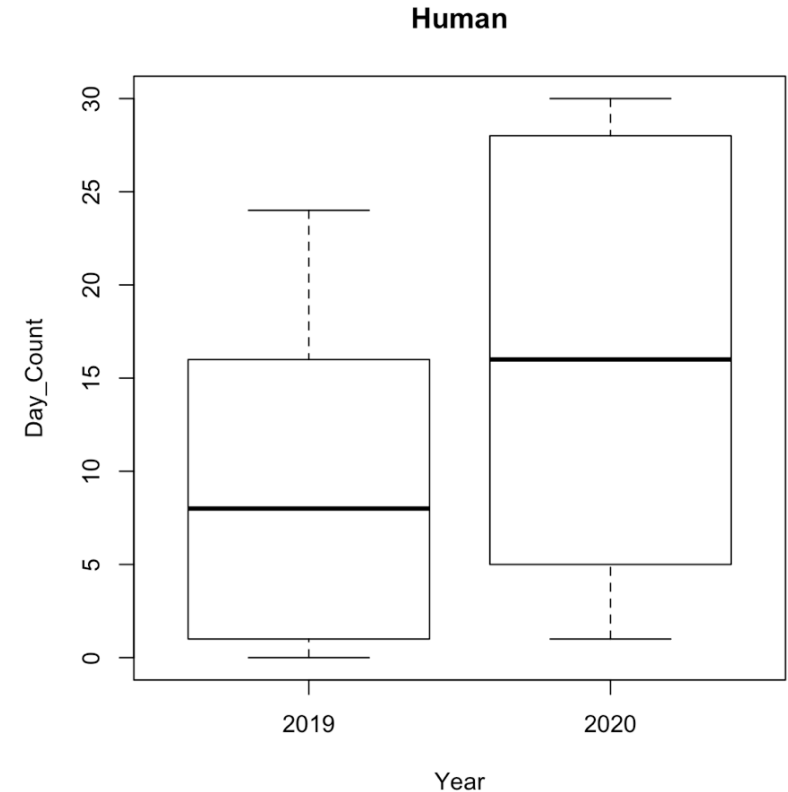

Human

Increased by 67% in high urban index sites

```
> modelCottontail_rabbit<-glmmPQL(Day_Count~Year*Urban_Cat,random=list(Site=~1),data=Cottontail_rabbit,family=quasipoisson)
iteration 1
iteration 2
iteration 3
iteration 4
iteration 5
iteration 6
> summary(modelCottontail_rabbit)
Linear mixed-effects model fit by maximum likelihood
 Data: Cottontail_rabbit
  AIC BIC logLik
   NA  NA     NA

Random effects:
 Formula: ~1 | Site
         (Intercept) Residual
StdDev:    0.4979181 1.632564

Variance function:
 Structure: fixed weights
 Formula: ~invwt
Fixed effects: Day_Count ~ Year * Urban_Cat
                          Value Std.Error DF    t-value p-value
(Intercept)           2.9036989 0.2649821  8 10.958095  0.0000
Year2020             -0.3334916 0.2440623  8 -1.366420  0.2090
Urban_Cathigh        -1.0319849 0.5750327  8 -1.794654  0.1105
Year2020:Urban_Cathigh 0.8089153 0.5426395  8  1.490705  0.1744
 Correlation:
                        (Intr) Yr2020 Urbn_C
Year2020               -0.384
Urban_Cathigh          -0.461  0.177
Year2020:Urban_Cathigh  0.173 -0.450 -0.544

Standardized Within-Group Residuals:
        Min          Q1         Med          Q3          Max
-1.642723479 -0.761068127  0.005980645  0.556373784  1.088890400

Number of Observations: 20
Number of Groups: 10
>
> no.covid<-data.frame(Year="2019",Urban_Cat="high"); covid<-data.frame(Year="2020",Urban_Cat="high")
> no.cov.pred<-predict(modelCottontail_rabbit,no.covid,type="response",level=0)
> cov.pred<-predict(modelCottontail_rabbit,covid,type="response",level=0)
> ((cov.pred-no.cov.pred)/no.cov.pred)*100
[1] 60.86957
```


Cottontail_rabbit

Increased by 61% in high urban index sites