

Zero-Inflation

```
confint(m1)
##                2.5 %   97.5 %
## count_(Intercept)  1.4302   1.7655
## count_child       -1.2388  -0.8469
## count_camper1      0.6505   1.0175
## zero_(Intercept)   0.5647   2.0302
## zero_persons       -0.8838  -0.2449
```

Zero-Inflation

- ▶ All of the predictors in both the count and inflation portions of the model are statistically significant.
- ▶ We can use other methods (for example non parametric methods) to compute CIs (probably more accurate)

PART 4A: Vuong Test for Zero-Inflation

Vuong Testing

- ▶ Note that the model output above does not indicate in any way if our zero-inflated model is an improvement over a standard Poisson regression.
- ▶ We can determine this by running the corresponding standard Poisson model and then performing a **Vuong Test** of the two models.

```
summary(p1 <- glm(count ~ child + camper,  
family = poisson, data = fishing))
```

Vuong Testing

- ▶ The Vuong test compares the zero-inflated model with an ordinary Poisson regression model.
- ▶ In this example, we can see that our test statistic is significant, indicating that the zero-inflated model is superior to the standard Poisson model.

```
vuong(p1, m1)

## Vuong Non-Nested Hypothesis Test-Statistic: -3.574
##
## (test-statistic is asymptotically distributed  $N(0,1)$ 
## under the null hypothesis that the models are
## indistinguishable)
## in this case:
##
## model2 > model1, with p-value 0.0001756
```