1 Breastfeeding and respiratory infection I

A total of 189,612 person-years of follow up were accumulated over the course of the study: 151,690 among infants who were being breastfed and 37,922 among infants not being breastfed. Over the course of follow up the investigators identified 514,230 incident cases of respiratory infection among breastfeeding infants and 140,312 among non-breastfeeding infants. Calculate the crude incidence rate difference and 95% CI comparing infants who were not breastfed with those who were.

```
fit <- glm(cases ~ -1 + PT + PT:not_breastfed, family = poisson(link = identity))
summary(fit)
```

```
##
## Call:
## glm(formula = cases ~ -1 + PT + PT:not_breastfed, family = poisson(link = identity))
##
## Deviance Residuals:
## [1]  0  0
##
## Coefficients:
##                  Estimate Std. Error z value Pr(>|z|)
## PT               3.390006   0.004727  717.10   <2e-16 ***
## PT:not_breastfed 0.310010   0.010951   28.31   <2e-16 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## (Dispersion parameter for poisson family taken to be 1)
##
##     Null deviance:        Inf  on 2  degrees of freedom
## Residual deviance: 1.1195e-10  on 0  degrees of freedom
## AIC: 32.678
##
## Number of Fisher Scoring iterations: 2
```

2 Breastfeeding and respiratory infection II

Calculate the crude incidence rate ratio and 95% CI comparing infants who were not breastfed with those who were.

```
fit <- glm(cases ~ not_breastfed + offset(log(PT)), family = poisson(link = log))
summary(fit)
```

```
##
## Call:
## glm(formula = cases ~ not_breastfed + offset(log(PT)), family = poisson(link = log))
##
## Deviance Residuals:
## [1]  0  0
##
## Coefficients:
##               Estimate Std. Error z value Pr(>|z|)
## (Intercept)   1.220832   0.001395  875.46   <2e-16 ***
## not_breastfed 0.087505   0.003012   29.05   <2e-16 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## (Dispersion parameter for poisson family taken to be 1)
##
##     Null deviance: 8.3002e+02  on 1  degrees of freedom
## Residual deviance: 1.1533e-10  on 0  degrees of freedom
## AIC: 32.678
##
## Number of Fisher Scoring iterations: 2
```

3 Malaria control with bednets

See the 2018 Lancet article *Efficacy of Olyset Duo, a bednet containing pyriproxyfen and permethrin, versus a permethrin-only net against clinical malaria in an area with highly pyrethroid-resistant vectors in rural Burkina Faso: a cluster-randomised controlled trial* (`Bednets.pdf` in `A9` folder of myCourses) by Tiono et. al. Reproduce the Rate ratio (95% CI) in Table 2. Calculate the rate difference and 95% CI comparing PPF-treated to Standard long-lasting insecticidal nets.