Solutions to the questions (session 11)

a. The interpretation of the variable `und` is that for every increase in one unit in the selectivity scale of the undergraduate institution the relative increase in the expected number of publications is, $e^{\beta_4} - 1 = e^{0.0723} - 1 = 0.07498$ (about 7.5%)

b. The remaining variables are adjusted for the presence of overdispersion by the following calculations:

- `mar`

```
. di 2*norm(-0.118/sqrt(2.717532))
.94293577
```

- `doc`

```
. di 2*norm(-0.088/sqrt(2.717532))
.9574275
```

- und

```
. di 2*(1-norm(2.385/sqrt(2.717532)))
.1479599
```

BE CAREFUL HERE!

- `ag`

```
. di 2*(1-norm(0.422/sqrt(2.717532)))
.7979576
```

BE CAREFUL HERE!

c. We added as offset, the logarithm of `minutes`, the variable containing the duration (in minutes) of the patient visit. There is no coefficient corresponding to `minutes` because this has been constrained to be 1.0.

d. The interpretation of the coefficients in the prognosis example are as follows:

(i) 22% more utterances were heard about prognosis when the physician thinks the patient is easier to communicate with ($e^{0.198} - 1 = 0.22$)

(ii) Almost four times more when the physician was a surgeon ($e^{1.343} = 3.831$)

(iii) 5.3% more for each malpractice claim that has been filed against the doctor ($e^{0.052} - 1 = 0.053$).

e. The results from the negative-binomial regression are similar to the scaled Poisson-regression results and only `sex` and `surgeon` were significant predictors of the number of utterances regarding prognostic material. This means that there was significant overdispersion in the data. Further, since the variable `sex` is significant in this analysis but not in the scale Poisson regression, we would be tempted to conclude that `sex` was significant, but was not possibly detected by the scaled (adjusted) Poisson analysis since the adjustment is rather inefficient (i.e., results in higher standard errors and thus lower power to detect real differences in the data).