```
================================================================================
import numpy as np
import pandas
import pylab as plt
import pymc3 as pm

from scipy.stats import norm, binom, poisson

# Data
np.random.seed(18472)                # set seed to replicate example
nobs= 750                            # number of obs in model

x1_2 = binom.rvs(1, 0.7, size=nobs)
x2 = norm.rvs(loc=0, scale=1.0, size=nobs)

xb = 1 - 1.5 * x1_2  - 3.5 * x2      # linear predictor, xb
exb = np.exp(xb)
py = poisson.rvs(exb)                # create y as adjusted

df = pandas.DataFrame({'x1_2': x1_2, 'x2':x2, 'py': py})   # re-write data

# Fit
niter = 10000                        # parameters for MCMC

with pm.Model() as model_glm:
    # define priors
    beta0 = pm.Flat('beta0')
    beta1 = pm.Flat('beta1')
    beta2 = pm.Flat('beta2')

    # define likelihood
    mu = np.exp(beta0 + beta1*x1_2 + beta2 * x2)
    y_obs = pm.Poisson('y_obs', mu, observed=py)

    # inference
    start = pm.find_MAP()             # Find starting value by optimization
    step = pm.NUTS()
    trace = pm.sample(niter, step, start, progressbar=True)

# Output
pm.summary(trace)

# show graphical output
pm.traceplot(trace)
plt.show()
================================================================================

This will produce the following output on screen:

beta0:
  Mean             SD               MC Error         95% HPD interval
  -------------------------------------------------------------------------------

  1.002            0.012            0.000            [0.978, 1.024]
  Posterior quantiles:
  2.5            25             50             75             97.5
  |--------------|==============|==============|--------------|

  0.978          0.994          1.002          1.010          1.024

beta1:
  Mean             SD               MC Error         95% HPD interval
  -------------------------------------------------------------------------------

  -1.500           0.006            0.000            [-1.512, -1.489]
  Posterior quantiles:
  2.5            25             50             75             97.5
  |--------------|==============|==============|--------------|

  -1.512         -1.504         -1.500         -1.496         -1.489

beta2:
```

```
Mean             SD               MC Error         95% HPD interval
------------------------------------------------------------------------------

-3.501           0.004            0.000            [-3.509, -3.492]
Posterior quantiles:
2.5              25               50               75               97.5
|--------------|==============|==============|--------------|

-3.509           -3.503           -3.501           -3.498           -3.492
```