

BIOS 6312: Modern Regression Analysis

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Set 8 supplementary slides for R enthusiasts

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EXAMPLES FOR SET 8

Examples for R enthusiasts:

- ▶ Bayesian regression in REACH (Slide 710)

EXAMPLES FOR SET 8

Examples for R enthusiasts:

- ▶ **Bayesian regression in REACH (Slide 710)**

BAYESIAN REGRESSION IN REACH

Reading in the REACH data:

- ▶ Read in data:

```
reach.data <- read.csv("reach.csv",  
                      header = TRUE,  
                      stringsAsFactors = FALSE)
```

BAYESIAN REGRESSION IN REACH

Making sure xcode is installed:

- ▶ In terminal, enter the following command:

```
xcode-select --install
```

BAYESIAN REGRESSION IN REACH

Making sure Rstan is installed:

- ▶ Install/load Rstan package:

```
install.packages("rstan",  
                 repos = "https://cran.r-project.org",  
                 dependencies = TRUE)  
  
library("rstanarm")
```

BAYESIAN REGRESSION IN REACH

Fit Bayesian regression model:

- ▶ Function: `stan_glm`.

```
zz <- stan_glm(alc.6 ~ reach,  
              family = gaussian(),  
              prior = normal(0, 5, autoscale = FALSE),  
              prior_intercept = normal(0, 10, autoscale = FALSE),  
              prior_aux = exponential(0.1, autoscale = FALSE),  
              data = reach.data)  
zz$coefficients  
zz$ses
```

- ▶ The `stan_glm` function does not seem to have an inverse-gamma prior; I showed you instead an exponential prior for the intercept.

BAYESIAN REGRESSION IN REACH

Fit Bayesian regression model:

- ▶ Output:

```
> zz$coefficients
(Intercept)      reach
      8.71999    -0.63548
```

```
> zz$ses
(Intercept)      reach
      0.13048      0.18894
```

- ▶ Will not produce an exact match with Stata.