

# Logistic Regression

Sahir Bhatnagar and James Hanley

EPIB 607

Department of Epidemiology, Biostatistics, and Occupational Health  
McGill University

`sahir.bhatnagar@mcgill.ca`

<https://sahirbhatnagar.com/EPIB607/>

November 16, 2018



# Parameter-contrasts

# Introduction to parameter-contrasts

- We started the course by talking about the case where there were no determinants, i.e., no subpopulations → there was one global parameter ( $\mu, \pi, \lambda$ ).

# Introduction to parameter-contrasts

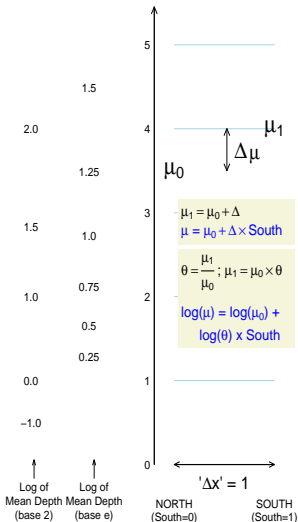
- We started the course by talking about the case where there were no determinants, i.e., no subpopulations → there was one global parameter ( $\mu$ ,  $\pi$ ,  $\lambda$ ).
- Now we concern ourselves with determinants of the global parameter. For example:
  - ▶  $\mu_{north}$  VS.  $\mu_{south}$
  - ▶  $\pi_{north}$  VS.  $\pi_{south}$
  - ▶  $\lambda_{north}$  VS.  $\lambda_{south}$

# Introduction to parameter-contrasts

- We started the course by talking about the case where there were no determinants, i.e., no subpopulations → there was one global parameter ( $\mu$ ,  $\pi$ ,  $\lambda$ ).
- Now we concern ourselves with determinants of the global parameter. For example:
  - ▶  $\mu_{north}$  VS.  $\mu_{south}$
  - ▶  $\pi_{north}$  VS.  $\pi_{south}$
  - ▶  $\lambda_{north}$  VS.  $\lambda_{south}$
- Today we introduce population parameter contrasts in a regression framework

$\mu$ 

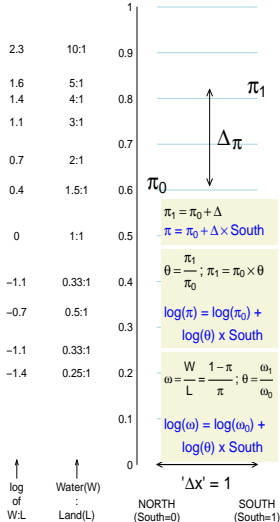
Mean Ocean  
depth (Km)



fn. of  $\mu_x = \beta_0$  (i.e., this fn. at South = 0) + an additional ' $\beta$ ' if South = 1

 $\pi$ 

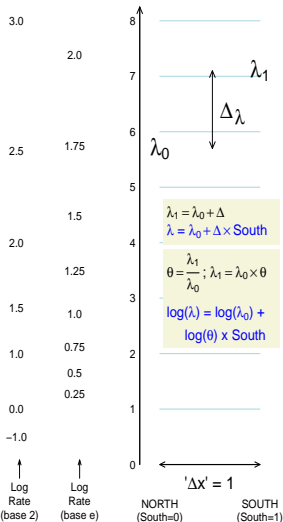
Proportion  
Water



fn. of  $\pi_x = \beta_0$  (i.e., this fn. at South = 0) + an additional ' $\beta$ ' if South = 1

 $\lambda$ 

Magnitude 6 or higher  
Earthquakes/Month



fn. of  $\lambda_x = \beta_0$  (i.e., this fn. at South = 0) + an additional ' $\beta$ ' if South = 1