

4th Report

2/2/2016

1 Introduction

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2 Framework

The algorithm has two main parts

- Simulate Data
- Estimate parameters

3 Models

$$\lambda = f(traits)$$
$$\mu = f(traits)$$

Model 1:

$$\lambda_i = e^{\theta_0 + \theta_1 a_i}$$
$$\mu_i = e^{\varphi_0 + \varphi_1 a_i}$$

Model 2:

$$\lambda_i = \theta_0 + \theta_1 a_i$$
$$\mu_i = \varphi_0 + \varphi_1 a_i$$

Model 3:

$$\lambda_i = \frac{\theta_0}{1 + e^{-\theta_1 a_i}}$$

3.1 Questions:

- Are those models realistic?, there is any biological meaning on this models?
- Would be a non-parametric approach a better alternative of those models?

4 Estimations

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5 First section

5.1 A subsection

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	n	real value	mean	median	min	max
1	1000	3.00	3.00	2.98	0.62	5.81
2	1000	4.00	5.03	3.95	-591.87	2410.71
3	1000	1.00	1.56	0.87	-13.42	347.45
4	1000	2.00	-1.03	1.63	-4045.67	2003.04

Table 1: Model 1

	n	real value	mean	median	min	max
1	1000	3.00	2.83	2.85	-15.46	17.76
2	1000	4.00	13.43	3.87	-4131.72	3329.81
3	1000	1.00	1.02	0.94	-15.02	18.60
4	1000	2.00	-5.88	1.60	-7333.90	3473.38

Table 2: Model 2

6 Abstract

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7 Introduction

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8 Methods

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	n	real value	mean	median	min	max
1	1000.00	3.00	4.55	3.34	1.39	63.37
2	1000	4.00	10.09	2.02	-1118.53	2702.20
3	1000	1.00	2.64	1.07	0.34	180.18
4	1000	2.00	-0.75	1.46	-3027.31	2999.15

Table 3: Model 3

	n	real value	mean	median	min	max
1	10000.00	3.00	3.02	3.00	0.02	6.27
2	10000.00	4.00	2.92	3.88	-5344.38	8316.81
3	10000.00	1.00	1.30	0.89	-85.51	1730.75
4	10000.00	2.00	0.33	1.41	-14784.51	6445.60

Table 4: Model 1

8.1 Equations

The deterministic part of the model is defined by this **in-line equation** as $\mu_i = \beta_0 + \beta_1 x$, and the stochastic part by the **centered equation**:

$$\frac{1}{\sqrt{2\pi}\sigma} e^{-(x-\mu_i)^2/(2\sigma^2)}$$

8.2 Tables

Table 5: This is a GLM summary table.

	Estimate	Std. Error	t value	Pr(> t)
(Intercept)	0.07	0.11	0.69	0.49
x	1.81	0.11	17.18	0.00

8.3 Plots

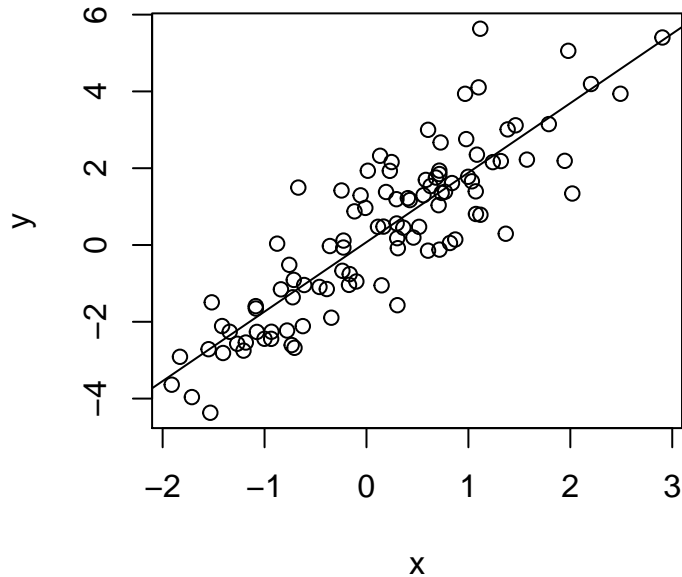


Figure 1: Relationship between x and y. The solid line is least-squares linear regression.