

Assignment 6. Hand in by Monday October 2.

- 1 The following data show the caries experience of children in 21 communities according to the (natural) fluoride concentration of their public water supply. DMF denotes "Decayed, Missing or Filled".

Dental caries experience of 7257 children
12-14 years of age in 21 communities.

Community	DMF Teeth per 100 children	Fluoride Concentration in ppm
1	236	1.9
2	246	2.6
3	252	1.8
4	258	1.2
5	281	1.2
6	303	1.2
7	323	1.3
8	343	0.9
9	412	0.6
10	444	0.5
11	556	0.4
12	652	0.3
13	673	0.0
14	703	0.2
15	706	0.1
16	722	0.0
17	733	0.2
18	772	0.1
19	810	0.0
20	823	0.1
21	1037	0.1

- Fit the relation $E[\text{DMF Teeth}] = \beta_0 + \beta_1 \log[\text{Fluoride} + 0.1]$
- Use the "pure error", estimable from the "repetitions at same fluoride level", to test the goodness of fit of this model.

the data are under "caries data" in www.epi.mcgill.ca/hanley/c697/

2 Is caffeine "cleared" faster from smokers than non-smokers?

Data and documentation are in <http://www.epi.mcgill.ca/hanley/c622/>

For each of your six subjects ...

- Obtain the estimated slope b_1 and its associated SE

$$\{ \text{model: } E[\log[\text{caffeine}]] = \beta_0 + \beta_1(\text{Time elapsed}) \}$$

- Rank the 6 b_1 's according to their precision (SE)
- Say why you think the estimates rank in this order

(base your explanation on visual inspection of 6 plots of $\log[\text{caffeine}]$ vs. Time)

3 Using Simple Linear Regression for Prediction: How Faithful was Old Faithful?

(Question 3 of homework due Friday June 9, 2000 in Course [678](#) this past june)

4 Using Non-linear relationships - vocabulary data for 1 child

(Question 6 of homework due Friday June 9, 2000 in Course [678](#) this past june)