

Soil Ingestion Study for Estimating Health Risk
Solution to Homework 15
BioEpi 691F
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Introduction:

This study is conducted to estimate the quantity of soil casually ingested by children by *a mass-balance equation*. This estimation is essential in assessing the health risk of chemical contamination of the soil.

Trace element was employed to meet our goal in this study. The amount of trace element in food samples, fecal samples and the concentration of trace element in soil are measured. Then the amount of soil ingested can be estimated by subtract the amount of trace element from that in fecal samples, then divided by the concentration of trace element in soil.

Materials and Methods:

This report only focuses on one trace element – AL, and this study was conducted in Western Massachusetts on 12 children, who have been identified by their parents as likely soil ingester. Food samples were collected in consecutive study and the fecal samples collected in a similar time period, by assumption that there is a 24 hour passage time from food to fecal for all subjects.

The results of this study were saved in three SAS data sets: Food.sd2 (containing information about the trace element amount in food), Fecal.sd2 (information about the trace element amount in fecal) and soil.sd2 (information about the trace element concentration in soil), which were download from the BIOEP691 courses website. A SAS program (hw.15) was created and employed to merge the three data and analysis of the data.

Discussion:

Question 1.

We assume if al_f of fecal subtracting that of food is less or equal zero, then ingest amount of AL is missing. The key question here is to match merge f_pid in FOOD and in FECAL, because sometimes they are different. We first sort by id to merge three files, then we use dropping if it doesn't match(see program). Because soil concentration unit is mg/g, so we multiple 1000 to get per mg soil.

Question 2.

The major problem is to get cumulative digest and total number of FD_PID per subject. Here we use do-end and assume the first digest and number equal zero.