

COAST Data Analysis Project – Due July 10, 2009

The Childhood Origins of ASThma (COAST) study is a prospective birth cohort study designed to evaluate interactions among age, sex, immune development and viral infections on the development of asthma and allergic diseases. This data analysis project will focus on one aspect of this study: the development of immune responses during the first year of life.

In the COAST study, immune responses were assessed at birth using umbilical cord blood samples and at age 1 year using peripheral blood samples. Immune responses are assessed in terms of phytohemagglutinin (PHA) induced levels of four cytokines: interferon-gamma (IFN- γ), interleukin-5 (IL-5), interleukin-10 (IL-10) and interleukin-13 (IL-13).

The data for this project are in the file `coast.csv` on your data disk. The variables of interest for this project are:

<code>infg.cb</code>	interferon- γ (pg/ml) in cord blood
<code>il5.cb</code>	interleukin-5 (pg/ml) in cord blood
<code>il10.cb</code>	interleukin-10 (pg/ml) in cord blood
<code>il13.cb</code>	interleukin-13 (pg/ml) in cord blood
<code>infg.1yr</code>	interferon- γ (pg/ml) at age 1 year
<code>il5.1yr</code>	interleukin-5 (pg/ml) at age 1 year
<code>il10.1yr</code>	interleukin-10 (pg/ml) at age 1 year
<code>il13.1yr</code>	interleukin-13 (pg/ml) at age 1 year
<code>sex</code>	sex of child (1=girl, 0=boy)

Your goal for this short data analysis project is to produce a simple one page summary sheet for one of the four cytokines (the one highlighted above). Based on your summary sheet, a reader should be able to assess key features of the distributions of cytokine levels in cord blood and at age 1 year. The reader should also be able to assess changes in cytokine levels over the first year of life. Your summary sheet should also address potential differences in immune development (cytokine levels at either time point and/or longitudinal change in cytokine levels) between boys and girls.