**Bangkok, Thailand** Self-Paced Exercise

**Questions for Students – Answer Key**

**What data are required to create a new setup and run an analysis?**

If the goal of your analysis is to examine only health impacts, you must load grid definitions, pollutants, air quality data (in either monitor or model form), incidence/prevalence rates, a population dataset, and at least one health impact function. If you would also like to examine economic impacts, you must load a valuation function.

**How many columns and rows are in the Bangkok Districts shapefile?**

253 columns and 73 rows

**What is the difference between a pollutant and a metric?**

A pollutant is the air-contaminating substance of interest in your analysis. In this case, the pollutant is PM2.5. A metric expresses the time period over which air quality values are modeled or observed and how the value is calculated (e.g., mean, maximum, minimum). In BenMAP-CE, the Metric field refers specifically to daily values calculated directly from daily observations, or through various mathematical calculations of hourly observations.

**What is the air quality metric for the Bangkok PM10 monitor data?**

The air quality metric for Bangkok PM10 monitor data is a daily average, here labeled “D24HourMean”.

**What health endpoints are included in the Bangkok Incidence Rates?**

The endpoints included in the Bangkok Incidence Rates are divided into two groups. The first, Mortality, includes mortality rates for the following causes: respiratory, cardiovascular, cerebrovascular disease, chronic lung, lung cancer, and ischemic heart disease. The second group of endpoints is Hospital Admissions, and contains rates for cardiovascular and respiratory hospital admissions

**What races are included in the Bangkok Population data?**

The 2014 Bangkok population data used in this analysis is not broken down by race. All races are included.

**What are the health endpoints of the Wong et al. health impact functions?**

In this analysis, we are using two health impact functions from Wong et al.; one for respiratory mortality and one for cardiovascular mortality.

**What is the source for the valuation estimate? Why is it necessary to adjust this estimate for use in Bangkok?**

The valuation function converts the U.S. EPA default mean VSL. We adjust this estimate for three reasons. First, we convert the VSL to be expressed in Thai Bhat rather than U.S. dollars. Second, the conversion accounts for inflation, or the general upward trend in prices over time. Finally, the VSL is converted to account for differences in income levels across countries and over time. Income has been shown to affect the value individuals place on mortality risk reductions (i.e., the VSL).

**What is the economic value for the benefits of the cap and trade program the Bangkok government is considering?**

The point estimate for your pooled valuation results should be about 7,604,798,464 Thai baht.

**Based on the analysis you performed, what would your final policy recommendation be to the Thai government as to whether they should implement the cap and trade policy? What information makes you support this recommendation?**

The final policy recommendation would be, yes, the Bangkok government should implement a cap and trade policy expected to reduce PM10 concentrations by 25%. Since the monetary benefits of the rollback outweigh the expected costs of the program, Bangkok will gain economically from implementing this program.