**Mexico City**

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 variable dataset and a valuation function.

**What is the relationship between the BenMAP data inputs and the grid definitions column/row index?**

All incidence rates and population data must be linked to a grid definition which matches the spatial scale of the data collected. Moreover, the column/row index links the specific input value to the polygon within the grid definition assigned to the incidence or population dataset.

**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 Mexico City PM2.5 monitor data?**

The air quality metric for Mexico City PM2.5 monitor data is a daily average, here labeled “D24HourMean”.

**What health endpoints are included in the Mexico City Incidence Rates?**

The health endpoints included in the Mexico City Incidence Rates are Mortality, All Cause, Mortality, Cerebrovascular Disease, Mortality, COPD, Mortality, Ischemic Heart Disease, and Mortality, Lung Cancer.

**What races are included in the Mexico City Population data?**

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

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

In this analysis, we uploaded the Krewski et al. functions with the endpoints Mortality, Ischemic Heart Disease, and Mortality, Lung Cancer via Excel file. We manually entered the Krewski et al. health impact function for Mortality, All Cause.

**What are the sources for the valuation estimates? Why is it necessary to adjust these estimates for use in Mexico?**

The first valuation function converts the U.S. EPA default mean VSL. The second valuation function converts a VSL estimate from the World Bank. We adjust these estimates for three reasons. First, we convert the VSL to be expressed in Mexican pesos 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 incremental rollback and the rollback to standard that the Mexican government is considering?**

The final valuation point estimate for the 5 ug/m3 incremental reduction is 179 billion Mexican pesos. For the rollback to a standard of 15 ug/m3, the valuation point estimate is 539 billion Mexican pesos.

**Based on the analysis you performed, what would your final policy recommendation be to the Mexican government as to whether they should implement the incremental rollback or rollback to a standard? What information makes you support this recommendation?**

The government should implement a rollback to a standard of 15 ug/m3, rather than an incremental reduction of 5 ug/m3, because there will be a greater, positive health impact on the population with the 15 ug/m3 standard. This standard will reduce more premature deaths as compared with the 5 ug/m3 incremental reduction.