**South Africa** 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 also load at least one valuation function.

**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 South Africa PM2.5 monitor data?**

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

**What health endpoints are included in the South Africa Incidence Rates?**

There are three endpoints included in the South Africa Incidence Rates data: all cause mortality, mortality from ischemic heart disease, and mortality from lung cancer.

**What races are included in the South Africa Population data?**

White, Black African, Indian/Asian, and Coloured.

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

The health endpoints for the Krewski et al. (2009) health impact functions are mortality from ischemic heart disease, mortality from lung cancer, and mortality rate from all causes.

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

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 [local currency] 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 new air quality standard the South African government is considering?**

The point estimate for your pooled valuation results should be about 79 billion South African rand.

**Based on the analysis you performed, what would your final policy recommendation be to the South African government as to whether they should implement the new air quality standard? What information makes you support this recommendation?**

The final policy recommendation would be, yes, the South African government should implement a new air quality standard expected to reduce PM2.5 concentrations by 20%. Since the monetary benefits of the rollback outweigh the cost of the program, South Africa will gain economically from passing this legislation.