Description of data for ITHIM case study cities: Santiago in Chile, Buenos Aires in Argentina, Mexico city

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Traffic Injuries** | **PM2.5 concentrations** | **Transport contribution to PM2.5** | **Transport emissions inventory** |
| Santiago | Matrix available for the ‘region’. We do not even have total road deaths counts of the ‘city’. Have searched literature but there is nothing. Provided by Luis and Kavi. Need to ask which year is the data.  **Update:** Matrix of 4-year period sent by Luis. It remains to be confirmed if this refers to the 5million population of Santiago | 29 µg/m3 (2014)  Source: [WHO](http://apps.who.int/gho/data/view.main.AMBIENTCITY2016?lang=en) | 31% in 2004 down from 45% in 2001 | EDGAR estimates of transport emission shares across the modes do not seem correct. It reports 4% of transport emissions from passenger cars. This is similar to Brazilian cities where we know ethanol is used. But I checked Chile doesn’t have that. I would use a non-ethanol city such as Bogota to estimate.  Corrected emission shares:  Buses (0.0728), heavy duty vehicles (0.0263), light duty vehicles (0.187), motorcycles (0.00565), passenger cars (0.708) |
| Mexico City | Total number of deaths is available (Andrea) but the matrix has a large proportion of unspecified road user categories. We need to use prediction model. | 20 µg/m3 (2014)  Source: [WHO](http://apps.who.int/gho/data/view.main.AMBIENTCITY2016?lang=en) | 42% in 2006  Source: WHO source apportionment database | Buses (0.439), heavy duty vehicles (0.257), light duty vehicles (0.176), motorcycles (0.038), passenger cars (0.09)  Corrected version:  Buses (0.0596), heavy duty vehicles (0.0454), light duty vehicles (0.0312), motorcycles (0.00282), passenger cars (0.861) |
| Buenos Aires | Same as Santiago, matrix available for region (city is 83% of region’s population), but many unspecified categories. We do not have counts of deaths for the city. | 14 µg/m3 (2014)  Source: [WHO](http://apps.who.int/gho/data/view.main.AMBIENTCITY2016?lang=en) | No data available for Buenos Aires. We could use Cordoba city’s estimate – 32% in 2010. Source: WHO source apportionment database. Lookup Montevideo. | Buses (0.096), heavy duty vehicles (0.126), light duty vehicles (0.163), motorcycles (0.016), passenger cars (0.6) |

Injury model: Developing an injury model to predict normalised who-hit-whom (WHW) matrices using travel data. We use Sao Paulo and Belo Horizonte in Brazil and Bogota city to ‘train’ the model. For these cities we have trips data (distance travelled by different on-road modes) and WHW matrices.

Transport emission estimates for Mexico City using Bogota or Buenos Aires: Using travel surveys of the two cities (Mexico city and one of the other two) calculate the distance travelled (in relative terms also works) by ‘road-based’ motorised modes. Then proportionally estimate the mode-specific emissions for Mexico city.

Emissions from EDGAR also include LDV and HDV—we have to assume these are goods vehicles, and therefore, will not be included in the travel survey. This means, we can estimate the emissions for passenger motorised modes, but for goods vehicles we have to estimate using population of the cities.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | Bogota | Bogota | Santiago | Santiago | Mexico City | Mexico City |
|  | Mode share | Emissions  EDGAR | Mode share | Emissions  EDGAR | Mode share | Emissions  EDGAR |
| Car |  |  | 43.82 |  |  |  |
| Motorcycles |  |  | 0.05\* |  |  |  |
| Bus |  |  | 47.61 |  |  |  |
| Taxi |  |  | 8.53 |  |  |  |
| LDV |  |  |  |  |  |  |
| HDV |  |  |  |  |  |  |

\*estimated as one-tenth of ‘other’ category

**References**

|  |
| --- |
| Santiago PM2.5 source apportionment—original references mentioned in WHO source apportionment database  Jorquera H. Source apportionment of PM10 and PM2.5 at Tocopilla, Chile (22°05′ S, 70°12′ W). Environ Monit Assess 2009; 153: 235–51. |
| Jorquera H, Rappenglück B. Receptor modeling of ambient VOC at Santiago, Chile. Atmos Environ 2004; 38: 4243–63. |
| Jorquera H, Barraza F. Source apportionment of ambient PM2.5 in Santiago, Chile: 1999 and 2004 results. Sci Total Environ 2012; 435-436: 418–29. |