Annex 1

The Moran's *I* statistics for spatial autocorrelation of paediatric tuberculosis was assessed at a global scale using Moran's I statistic as follow:

$$\frac{n}{So}\ \frac{\sum_{i=1}^{n}\sum_{j=1}^{n} wi,j\ Zi\ Zj}{\sum_{i=1}^{n} zi^2}$$

where Z_i is the deviation of an attribute for feature *i* from its mean ($x_i - \bar{x}$), $W_{i,j}$ is the spatial weight between feature *i* and *j*, *n* is equal to the total number of features, and *So* is the aggregate of all the spatial weights:

$So = \sum_{i=1}^{n}\sum_{j=1}^{n} wi,j$

The zI-score for the statistics is computed as $zI = \frac{I - E[I]}{\sqrt{V[I]}}$

where: $E[I] = -1/(n-1)$, $V[I] = E[I^2] - E[I]^2$

Appendix 2

Box: The spatiotemporal models constructed using WinBUGS software, version 1.4

```
model {
#Likelihood
        for(i in 1:638) {
                y[i] ~ dpois(mu[i])
                log(mu[i]) <- log(exp.y[i]) + alpha + beta[1]*time[i] +beta[2]*quar2[i]
+ beta[3]*quar3[i] + beta[4]*quar4 [i] +beta[5]*sex[i] + beta[6]*mean temperature[i]
+ beta[7]*mean rainfall[i] + beta[8]*illiterate[i]+ beta[9]*migrant[i] +
beta[10]*firewood[i] +beta[11]*urban[i] + u[district[i]]+ v[district[i]]
                        }
#Priors
for (i in 1: 20) {
 u[i]~ dnorm(0.0, tau.u)
}
        v[1:20] ~ car.normal(adj[], weights[], num[], tau.v)
for(j in 1: 84) { weights[j] <- 1}

for(i in 1:11){
beta[i]~ dnorm(0.0,1.0E-6)
RR[i]<-exp(beta[i])
}
                alpha ~ dflat();
                tau.u ~ dgamma(0.001, 0.001);
                #sigma.u <- 1/sqrt(tau.u)
                tau.v ~ dgamma(0.001, 0.001);
                #sigma.v <- 1/sqrt(tau.v);
        }
```

i refers to 20 districts and 16 quarters