According to Wikipedia, if , then

Assume that:

#----------------------------------------------

For this model, assume that the amount of time that it takes for an individual during time step j to cross pixel i is given by

Where . Here, is the distance traveled in time step j in pixel i and is a vector of covariates associated with pixel i. Furthermore, notice that is latent (i.e., not directly observable). This implies that:

Let be the total amount of time in step j (this is our actual observation), where is the number of pixels traversed within step j. As a result, we have that:

For our priors, we assume that:

#----------------------------------------------

Can we approximate ?

A first order Taylor series expansion around and gives:

In this expression, is the distance traversed in time step j.

#-----------------------------------

Our final model is given by:

If we use JAGS to fit this model, perhaps the parameters "b" and can be modeled as individual-level random effects.