1014-92-783 **P. van den Driessche*** (pvdd@math.uvic.ca). *Metapopulation Models for Disease Spread.*

A disease transmission ODE model for a metapopulation is formulated. Travel rates between patches are assumed to depend on disease status, and an expression for the basic reproduction number $\mathcal{R}_0$ is derived. By using a comparison theorem, the disease free equilibrium is shown to be globally asymptotically stable if $\mathcal{R}_0 < 1$. For a disease with short exposed and immune periods (e.g., gonnorhea) in an environment with two patches, the model is analyzed in more detail. In the case that travel rates of infectious and susceptible individuals are the same, an asymptotically autonomous system is used to show that $\mathcal{R}_0$ is a sharp threshold, with disease approaching an endemic equilibrium in both patches if $\mathcal{R}_0 > 1$. Results indicate that spatial heterogenity and travel between patches can influence disease spread in a complicated way. (Received September 23, 2005)