

| model class                    | Reference                 | Host system   | Parasite system                                       | movement phases | movement factors                      | movement data                     | infection spread processes | infection spread factors                    | infection data     |
|--------------------------------|---------------------------|---|---|-----------------|---------------------------------------|-----------------------------------|----------------------------|---|--------------------|
| proximity-based metapopulation | Ajelli et al.<br>2010*    | humans  | Influenza virus                                       | -               | -                                     | census data<br>airport records    | force of infection         | node size and proximity<br>(gravity)        | government records |
|                                | Balcon et al.<br>2009     | humans  | Influenza virus                                       | -               | -                                     | govn't records<br>airport records | -                          | node size and proximity<br>(gravity)        | government records |
|                                | Charu et al.<br>2017      | humans  | Influenza virus                                       | -               |                                       | census data<br>govn't records     |                            | node size and proximity<br>(gravity)        | physician recrods  |
|                                | Davis et al.<br>2008      | great gerbils<br><i>(Rhomomys opimus)</i>           | plague<br><i>(Yersinia pestis)</i>                    | -               | -                                     | field data<br>(mark-recapture)    | -                          | inter-node distance<br>(percolation)        | -                  |
|                                | Laperrière et al.<br>2016 | great gerbils<br><i>(Rhomomys opimus)</i>           | fleas<br><i>(Xenopsylla gerbilli)</i>                 | -               | -                                     | field data<br>(mark-recapture)    | -                          | inter-node distance                         | -                  |
|                                | Gurarie and Seto<br>2009  | humans  | blood flukes<br><i>(Schistosoma japonicum)</i>        | -               | -                                     | -                                 | -                          | node size and proximity<br>(gravity)        | -                  |
|                                | Remais et al.<br>2010     | humans  | blood flukes<br><i>(Schistosoma japonicum)</i>        | -               | -                                     | -                                 | -                          | proximity to streams<br>landscape structure | -                  |
|                                | Xia et al.<br>2004        | humans  | measles<br><i>(Morbillivirus)</i>                     | -               | -                                     | -                                 | -                          | node size and proximity<br>(gravity)        | government records |
| kernel-based metapopulation    | Becker and Hall, 2016     | non-specific  | non-specific  | D-A             | -                                     | -                                 | -                          | habitat quality,<br>provisioning            | -                  |
|                                | Craft et al.<br>2011*     | Serengheti lions<br><i>(Panthero leo)</i>           | canine distemper virus<br><i>(Morbillivirus)</i>      | D-A             | host phenotype<br>(nomad vs resident) | field data<br>(GPS)               | -                          | infectious period                           | -                  |
|                                | Cross et al.<br>2005      | non-specific  | non-specific  | D-A             | none                                  | -                                 | -                          | -   | -                  |
|                                | Dalziel et al.<br>2013    | humans  | non-specific  | D-A             | host identity                         | census data                       | -                          | -   | -                  |
|                                | Fulford et al.<br>2002    | brushtail possums<br><i>(Trichosurus vulpecula)</i> | bovine tuberculosis<br><i>(Mycobacterium bovis)</i>   | D-A             | age,<br>migrant mortality             | -                                 | -                          | -   | -                  |
|                                | Gog et al.<br>2002        | non-specific  | non-specific  | D-A             | none                                  | -                                 | -                          | -   | -                  |
|                                | Green et al.<br>2006      | livestock   | foot-and-mouth disease<br><i>(Apthae epizooticae)</i> | D-A             | individual identity                   | Govn't records                    | -                          | -   | Govn't records     |
|                                | Harding et al.<br>2012    | non-specific  | non-specific  | D-A             | -                                     | -                                 | -                          | allee effects                               | -                  |
|                                | Hess et al.<br>1996       | non-specific  | non-specific  | D-A             | node density                          | -                                 | -                          | -   | -                  |

|                                  |                           |   |  |       |   |                                |   |                                |
|----------------------------------|---------------------------|---|--|-------|---|--------------------------------|---|--------------------------------|
|                                  | Leach et al., 2016        | non-specific  | non-specific                                       | D-A   | node density                              | -                              | -   | habitat quality                |
|                                  | McCallum and Dobson 2002  | non-specific  | non-specific                                       | D-A   | -   | -                              | -   | -                              |
|                                  | Park, 2012                | non-specific  | non-specific                                       | D-A   | -   | -                              | -   | -                              |
|                                  | Russel et al. 2006        | raccoons<br>( <i>Procyon lotor</i> )                      | rabies<br>( <i>Lyssavirus</i> )                    | D-A   | node density                              | -                              | -   | -                              |
|                                  | Colizza et al., 2008      | humans  | non-specific                                       | D-A   | traffic,<br>node density                  | census data<br>airline records | -   | group size                     |
| Coupled metapopulation           | Jesse et al. 2008         | non-specific  | non-specific                                       | D-A   | -   | -                              | -   | -                              |
|                                  | Jesse and Hesterbeek 2011 | non-specific  | non-specific                                       | D-A   | preferred movement distance               | -                              | -   | -                              |
| individual-based spatial network | Ajelli et al. 2010*       | humans  | Influenza virus                                    | D-A   | host identity                             | census data                    | force of infection                                    | distance                       |
|                                  | Aleta et al. 2017         | humans  | Influenza-like virus                               | D-A   | -   | -                              | -   | -                              |
|                                  | Bonnel et al. 2010        | red colobus monkeys<br>( <i>Procolobus rufomitratus</i> ) | microparasites<br>(non-specific)                   | D-T-A | Food resource distribution                | -                              | force of infection<br>(direct transmission)           | node proximity                 |
|                                  | Craft et al. 2011*        | Serengheti lions<br>( <i>Panthero leo</i> )               | canine distemper virus<br>( <i>Morbillivirus</i> ) | D-T-A | host phenotype<br>(nomad vs resident)     | field data<br>(GPS)            | -   | infectious period              |
|                                  | Keeling et al. 2010       | humans  | multiple   | D-A   | host phenotype<br>(commuter/non-commuter) | census data                    | -   | time of day<br>Gov'n't records |
|                                  | Meloni et al. 2011        | humans  | non-specific                                       | D-A   | infection risk in patches                 | -                              | -   | -                              |
|                                  | Riley and Ferguson 2006   | humans  | smallpox   | D-A   | host identity                             | census data                    | force of infection                                    | -                              |
|                                  | Springer et al. 2017      | sifakas   | <i>Chryptosporidium</i>                            | D-A   | host identity                             | field data<br>(GPS)            | force of infection<br>(environmental<br>transmission) | range overlap                  |
|                                  | Tracey et al. 2014        | bobcats   | Feline immunodeficiency virus                      | D-A   | host identity<br>landscape structure      | field data<br>(GPS)            | -   | -                              |