R review (pre-workshop videos)

* [**Review of vectors**](file:///C:\evans\GITS\spatialR\html\Rintroduction.html#review-of-vectors)
  + [Creating vectors](file:///C:\evans\GITS\spatialR\html\Rintroduction.html#creating-vectors)
  + [Summarizing vectors](file:///C:\evans\GITS\spatialR\html\Rintroduction.html#summarizing-vectors)
  + [Indexing vectors](file:///C:\evans\GITS\spatialR\html\Rintroduction.html#indexing-vectors)
  + [Logical vectors](file:///C:\evans\GITS\spatialR\html\Rintroduction.html#logical-vectors)
  + [Randomly sampling a vector](file:///C:\evans\GITS\spatialR\html\Rintroduction.html#randomly-sampling-a-vector)
  + [Factoral vector](file:///C:\evans\GITS\spatialR\html\Rintroduction.html#factoral-vector)
* [**Review of data.frames**](file:///C:\evans\GITS\spatialR\html\Rintroduction.html#review-of-data.frames)
  + [Creating and viewing data.frames](file:///C:\evans\GITS\spatialR\html\Rintroduction.html#creating-and-viewing-data.frames)
  + [Manipulating data.frames](file:///C:\evans\GITS\spatialR\html\Rintroduction.html#manipulating-data.frames)
  + [Describing data.frames](file:///C:\evans\GITS\spatialR\html\Rintroduction.html#describing-data.frames)
  + [Basic sampling](file:///C:\evans\GITS\spatialR\html\Rintroduction.html#basic-sampling)
* [**Review of lists**](file:///C:\evans\GITS\spatialR\html\Rintroduction.html#review-of-lists)
  + [Creating and working with list objects](file:///C:\evans\GITS\spatialR\html\Rintroduction.html#creating-and-working-with-list-objects)
* [**Review of matrices and arrays**](file:///C:\evans\GITS\spatialR\html\Rintroduction.html#review-of-matrices-and-arrays)
  + [Creating and working with matrix/array objects](file:///C:\evans\GITS\spatialR\html\Rintroduction.html#creating-and-working-with-matrixarray-objects)
* [**Review of tables**](file:///C:\evans\GITS\spatialR\html\Rintroduction.html#review-of-tables)
  + [Creating and working with tables objects](file:///C:\evans\GITS\spatialR\html\Rintroduction.html#creating-and-working-with-tables-objects)
* [**Review of object types**](file:///C:\evans\GITS\spatialR\html\Rintroduction.html#review-of-object-types)
  + [Check and verfy object classes](file:///C:\evans\GITS\spatialR\html\Rintroduction.html#check-and-verfy-object-classes)
  + [Object definition and coersion](file:///C:\evans\GITS\spatialR\html\Rintroduction.html#object-definition-and-coersion)
* [**Loops and apply family functions**](file:///C:\evans\GITS\spatialR\html\Rintroduction.html#loops-and-apply-family-functions)
  + [Iterators using for and which loops](file:///C:\evans\GITS\spatialR\html\Rintroduction.html#iterators-using-for-and-which-loops)
  + [Iterators using apply type functions](file:///C:\evans\GITS\spatialR\html\Rintroduction.html#iterators-using-apply-type-functions)
* [**File manipulation**](file:///C:\evans\GITS\spatialR\html\Rintroduction.html#file-manipulation)
  + [Various base functions for on disk file manipulation](file:///C:\evans\GITS\spatialR\html\Rintroduction.html#various-base-functions-for-on-disk-file-manipulation)
* [**Spatial classes**](file:///C:\evans\GITS\spatialR\html\Rintroduction.html#spatial-classes)
  + [sp vector objects (historic class, being depreciated)](file:///C:\evans\GITS\spatialR\html\Rintroduction.html#sp-vector-objects-historic-class-being-depreciated)
  + [sf vector objects (modern class)](file:///C:\evans\GITS\spatialR\html\Rintroduction.html#sf-vector-objects-modern-class)
  + [terra raster objects (replaces raster library)](file:///C:\evans\GITS\spatialR\html\Rintroduction.html#terra-raster-objects-replaces-raster-library)
* [**Exercises**](file:///C:\evans\GITS\spatialR\html\Rintroduction.html#exercises)
  + [Variance function](file:///C:\evans\GITS\spatialR\html\Rintroduction.html#variance-function)
    - [Translate variance equation to code](file:///C:\evans\GITS\spatialR\html\Rintroduction.html#translate-variance-equation-to-code)
    - [Write variance function](file:///C:\evans\GITS\spatialR\html\Rintroduction.html#write-variance-function)
  + [Write function to reclassify a vector](file:///C:\evans\GITS\spatialR\html\Rintroduction.html#write-function-to-reclassify-a-vector)
  + [Shannon’s Entropy function (diversity)](file:///C:\evans\GITS\spatialR\html\Rintroduction.html#shannons-entropy-function-diversity)
    - [1 - Proportion of species](file:///C:\evans\GITS\spatialR\html\Rintroduction.html#proportion-of-species)
    - [2- Natural log of proportions](file:///C:\evans\GITS\spatialR\html\Rintroduction.html#natural-log-of-proportions)
    - [3 - Multiplication of proportions and log](file:///C:\evans\GITS\spatialR\html\Rintroduction.html#multiplication-of-proportions-and-log)
    - [Function for Entropy](file:///C:\evans\GITS\spatialR\html\Rintroduction.html#function-for-entropy)
* [**Miscellaneous query and manipulation of sf objects**](file:///C:\evans\GITS\spatialR\html\Rintroduction.html#miscellaneous-query-and-manipulation-of-sf-objects)

 [**1.1 - Reading and writing of spatial classes**](file:///C:\evans\GITS\spatialR\html\day01_session01.html#reading-and-writing-of-spatial-classes)

* [Read shapefile vector from disk](file:///C:\evans\GITS\spatialR\html\day01_session01.html#read-shapefile-vector-from-disk)
* [Subset vector data](file:///C:\evans\GITS\spatialR\html\day01_session01.html#subset-vector-data)
* [Write vector data](file:///C:\evans\GITS\spatialR\html\day01_session01.html#write-vector-data)
* [Read raster data](file:///C:\evans\GITS\spatialR\html\day01_session01.html#read-raster-data)
* [Read multi-band raster](file:///C:\evans\GITS\spatialR\html\day01_session01.html#read-multi-band-raster)
* [Coercion of raster data](file:///C:\evans\GITS\spatialR\html\day01_session01.html#coersion-of-raster-data)
* [Write raster data](file:///C:\evans\GITS\spatialR\html\day01_session01.html#write-raster-data)

 [**1.2 - Indexing and query of spatial vector classes**](file:///C:\evans\GITS\spatialR\html\day01_session01.html#indexing-and-query-of-spatial-vector-classes)

* [Create point vector](file:///C:\evans\GITS\spatialR\html\day01_session01.html#create-point-vector)
* [Subset rows of point vector](file:///C:\evans\GITS\spatialR\html\day01_session01.html#subset-rows-of-point-vector)
* [Create random sample](file:///C:\evans\GITS\spatialR\html\day01_session01.html#create-random-sample)
* [Subset using bracket query](file:///C:\evans\GITS\spatialR\html\day01_session01.html#subset-using-bracket-query)
* [Query to get percent](file:///C:\evans\GITS\spatialR\html\day01_session01.html#query-to-get-percent)
* [Aggregated statistics](file:///C:\evans\GITS\spatialR\html\day01_session01.html#aggregrated-statistics)
* [Random sample polygons](file:///C:\evans\GITS\spatialR\html\day01_session01.html#random-sample-polygons)
* [Distance-based random sample](file:///C:\evans\GITS\spatialR\html\day01_session01.html#distace-based-random-sample)

 [**1.3 Functions**](file:///C:\evans\GITS\spatialR\html\day01_session01.html#functions)

* [Step through and dissect function](file:///C:\evans\GITS\spatialR\html\day01_session01.html#step-through-and-dissect-function)
* [Write observed mean distance function](file:///C:\evans\GITS\spatialR\html\day01_session01.html#write-observed-mean-distance-function)

 [**1.4 Basic plotting of spatial objects**](file:///C:\evans\GITS\spatialR\html\day01_session01.html#basic-plotting-of-spatial-objects)

* [Plot attribute query](file:///C:\evans\GITS\spatialR\html\day01_session01.html#plot-attribute-query)
* [Plot nominal colors](file:///C:\evans\GITS\spatialR\html\day01_session01.html#plot-nominal-colors)
* [Plot continuous colors](file:///C:\evans\GITS\spatialR\html\day01_session01.html#plot-continious-colors)

 [2.1 - Vector analysis](file:///C:\evans\GITS\spatialR\html\day02_session01.html#vector-analysis)

* [Read data](file:///C:\evans\GITS\spatialR\html\day02_session01.html#read-data)
* [Buffer points](file:///C:\evans\GITS\spatialR\html\day02_session01.html#buffer-points-to-200m-hint-st_buffer)
* [Clip polygons](file:///C:\evans\GITS\spatialR\html\day02_session01.html#clip-polygons)
* [Calculate spatial area fractions](file:///C:\evans\GITS\spatialR\html\day02_session01.html#calculate-spatial-area-fractions)
* [Point in polygon](file:///C:\evans\GITS\spatialR\html\day02_session01.html#point-in-polygon)
* [Spatial aggregation (dissolve)](file:///C:\evans\GITS\spatialR\html\day02_session01.html#spatial-aggregration-dissolve)
* [Spatial aggregation (zonal)](file:///C:\evans\GITS\spatialR\html\day02_session01.html#spatial-aggregration-zonal)

 [2.2 Raster data analysis](file:///C:\evans\GITS\spatialR\html\day02_session01.html#raster-data-analysis)

* [Read raster data (single band and multi band)](file:///C:\evans\GITS\spatialR\html\day02_session01.html#read-raster-data-single-band-and-multi-band)
* [Global raster statistics](file:///C:\evans\GITS\spatialR\html\day02_session01.html#global-raster-statistics)
* [Raster transformations](file:///C:\evans\GITS\spatialR\html\day02_session01.html#raster-transformations)
* [Multi-band statistics](file:///C:\evans\GITS\spatialR\html\day02_session01.html#multi-band-statistics)
* [Multi-band functions](file:///C:\evans\GITS\spatialR\html\day02_session01.html#multi-band-functions)
* [Focal statistics](file:///C:\evans\GITS\spatialR\html\day02_session01.html#focal-statistics)
* [Focal functions](file:///C:\evans\GITS\spatialR\html\day02_session01.html#focal-functions)
* [Reproject raster](file:///C:\evans\GITS\spatialR\html\day02_session01.html#reproject-raster)

 [2.3 - Raster/Vector integration](file:///C:\evans\GITS\spatialR\html\day02_session01.html#rastervector-integration)

* [Read data](file:///C:\evans\GITS\spatialR\html\day02_session01.html#read-data-1)
* [Extract raster values for points](file:///C:\evans\GITS\spatialR\html\day02_session01.html#extract-raster-values-for-points)
* [Extract raster values for polygons](file:///C:\evans\GITS\spatialR\html\day02_session01.html#extract-raster-values-for-polygons)
* [Aggregate polygon raster values](file:///C:\evans\GITS\spatialR\html\day02_session01.html#aggregrate-polygon-raster-values)

 [2.4 Quantifying landscape structure](file:///C:\evans\GITS\spatialR\html\day02_session01.html#quantifying-landscape-structure)

* [Read data](file:///C:\evans\GITS\spatialR\html\day02_session01.html#read-data-2)
* [Reclassifying to forest/non-forest](file:///C:\evans\GITS\spatialR\html\day02_session01.html#reclassifing-to-forestnon-forest)
* [Smooth by calculating percent forest](file:///C:\evans\GITS\spatialR\html\day02_session01.html#smooth-by-calculating-percent-forest)
* [Forest cores](file:///C:\evans\GITS\spatialR\html\day02_session01.html#forest-cores)
* [Landscape-level metrics](file:///C:\evans\GITS\spatialR\html\day02_session01.html#landscape-level-metrics)
* [Sample-level metrics](file:///C:\evans\GITS\spatialR\html\day02_session01.html#sample-level-metrics)

 [**3.1 - Distance and proximity**](file:///C:\evans\GITS\spatialR\html\day03_session01.html#distance-and-proximity)

* [Read data](file:///C:\evans\GITS\spatialR\html\day03_session01.html#read-data)
* [Create distance matrix](file:///C:\evans\GITS\spatialR\html\day03_session01.html#create-distance-matrix)
* [Distance matrix - nearest neighbors](file:///C:\evans\GITS\spatialR\html\day03_session01.html#distance-matrix---nearest-neighbors)
* [Distance matrix - conditional nearest neighbors](file:///C:\evans\GITS\spatialR\html\day03_session01.html#distance-matrix---conditional-nearest-neighbors)
* [Graph structures - nearest neighbors](file:///C:\evans\GITS\spatialR\html\day03_session01.html#graph-structures---nearest-neighbors)

 [**3.2 Spatial dependency - Point Pattern Analysis**](file:///C:\evans\GITS\spatialR\html\day03_session01.html#spatial-dependency---point-pattern-analysis)

* [read data](file:///C:\evans\GITS\spatialR\html\day03_session01.html#read-data-1)
* [Create spatstat object](file:///C:\evans\GITS\spatialR\html\day03_session01.html#create-spatstat-object)
* [Identify duplicates](file:///C:\evans\GITS\spatialR\html\day03_session01.html#identify-duplicates)
* [Geits G(r) statistic](file:///C:\evans\GITS\spatialR\html\day03_session01.html#geits-gr-statistic)
* [Ripley’s-K statistic](file:///C:\evans\GITS\spatialR\html\day03_session01.html#ripleys-k-statistic)

 [**3.3 Spatial dependency - global autocorrelation**](file:///C:\evans\GITS\spatialR\html\day03_session01.html#spatial-dependency---global-autocorrelation)

* [Read data](file:///C:\evans\GITS\spatialR\html\day03_session01.html#read-data-2)
* [Spatial Weights Matrix (Wij)](file:///C:\evans\GITS\spatialR\html\day03_session01.html#spatial-weights-martix-wij)
* [Calculate Moran’s-I (global autocorrelation)](file:///C:\evans\GITS\spatialR\html\day03_session01.html#calculate-morans-i-global-autocorrelation)
* [Calculate Geary’s-C (global autocorrelation)](file:///C:\evans\GITS\spatialR\html\day03_session01.html#calculate-gearys-c-global-autocorrelation)
* [Calculate Getis-Ord (global autocorrelation)](file:///C:\evans\GITS\spatialR\html\day03_session01.html#calculate-getis-ord-global-autocorrelation)

 [**3.4 Spatial dependency - model assumptions**](file:///C:\evans\GITS\spatialR\html\day03_session01.html#spatial-dependency---model-assumptions)

* [Read data](file:///C:\evans\GITS\spatialR\html\day03_session01.html#read-data-3)
* [Create linear model](file:///C:\evans\GITS\spatialR\html\day03_session01.html#create-linear-model)
* [Moran’s-I on regression residuals](file:///C:\evans\GITS\spatialR\html\day03_session01.html#morans-i-on-regression-residuals)

 [**3.4 Spatial dependency - local autocorrelation**](file:///C:\evans\GITS\spatialR\html\day03_session01.html#spatial-dependency---local-autocorrelation)

* [read data](file:///C:\evans\GITS\spatialR\html\day03_session01.html#read-data-4)
* [Local-G](file:///C:\evans\GITS\spatialR\html\day03_session01.html#local-g)
* [Cross correlation algebraic approximation](file:///C:\evans\GITS\spatialR\html\day03_session01.html#cross-correlation-algebraic-approximation)

 [**3.5 - Time-series analysis**](file:///C:\evans\GITS\spatialR\html\day03_session01.html#time-series-analysis)

* [Read data](file:///C:\evans\GITS\spatialR\html\day03_session01.html#read-data-5)
* [Subset single pixel time-series observation](file:///C:\evans\GITS\spatialR\html\day03_session01.html#subset-single-pixel-time-series-observsation)
* [Imputing missing values](file:///C:\evans\GITS\spatialR\html\day03_session01.html#imputing-missing-values)
* [Smoothing time-series](file:///C:\evans\GITS\spatialR\html\day03_session01.html#smoothing-time-series)
* [Smoothing time-series (confidence)](file:///C:\evans\GITS\spatialR\html\day03_session01.html#smoothing-time-series-confidence)
* [Create time-series class object](file:///C:\evans\GITS\spatialR\html\day03_session01.html#create-time-series-class-object)
* [Specify trend model](file:///C:\evans\GITS\spatialR\html\day03_session01.html#specify-trend-model)
* [Periodicity](file:///C:\evans\GITS\spatialR\html\day03_session01.html#periodicity)

 [**3.6 - Raster time-series analysis**](file:///C:\evans\GITS\spatialR\html\day03_session01.html#raster-time-series-analysis)

* [Temporal statistical aggregation](file:///C:\evans\GITS\spatialR\html\day03_session01.html#temporal-statistical-aggretration)
* [Rate of change](file:///C:\evans\GITS\spatialR\html\day03_session01.html#rate-of-change)
* [Mann-Kendall](file:///C:\evans\GITS\spatialR\html\day03_session01.html#mann-kendall)
* [Raster time-series trend model](file:///C:\evans\GITS\spatialR\html\day03_session01.html#raster-time-series-trend-model)

Random Forests (Binominal)

 [**Data preparation**](file:///C:\evans\GITS\spatialR\html\RandomForest_binomial.html#data-preparation)

* [Read shapefile vector and img rasters from disk](file:///C:\evans\GITS\spatialR\html\RandomForest_binomial.html#read-shapefile-vector-and-img-rasters-from-disk)
* [Extract raster values](file:///C:\evans\GITS\spatialR\html\RandomForest_binomial.html#extract-raster-values)
* [Check data balance](file:///C:\evans\GITS\spatialR\html\RandomForest_binomial.html#check-data-balance)
* [Check for collinearity and multi-collinearity](file:///C:\evans\GITS\spatialR\html\RandomForest_binomial.html#check-for-collinearity-and-multi-collinearity)
* [Create data withhold](file:///C:\evans\GITS\spatialR\html\RandomForest_binomial.html#create-data-withhold)

 [**Specify probabilistic binomial model**](file:///C:\evans\GITS\spatialR\html\RandomForest_binomial.html#specify-probabilistic-binomial-model)

* [Apply a model selection procedure](file:///C:\evans\GITS\spatialR\html\RandomForest_binomial.html#apply-a-model-selection-procedure)
* [Evaluate selected parameter significance](file:///C:\evans\GITS\spatialR\html\RandomForest_binomial.html#evaluate-selected-parameter-significane)
* [Fit final model](file:///C:\evans\GITS\spatialR\html\RandomForest_binomial.html#fit-final-model)
* [Derive importance](file:///C:\evans\GITS\spatialR\html\RandomForest_binomial.html#derive-importance)

 [**Model validation**](file:///C:\evans\GITS\spatialR\html\RandomForest_binomial.html#model-validation)

* [Confusion matrix based statistics](file:///C:\evans\GITS\spatialR\html\RandomForest_binomial.html#confusion-matrix-based-statistics)
* [Log Loss](file:///C:\evans\GITS\spatialR\html\RandomForest_binomial.html#log-loss)
* [cross-validation](file:///C:\evans\GITS\spatialR\html\RandomForest_binomial.html#cross-validation)
* [Sensitivity test](file:///C:\evans\GITS\spatialR\html\RandomForest_binomial.html#sensitivity-test)
* [Prediction calibration](file:///C:\evans\GITS\spatialR\html\RandomForest_binomial.html#prediction-callibration)

 [**Spatial predictions**](file:///C:\evans\GITS\spatialR\html\RandomForest_binomial.html#spatial-predictions)

* [Subset rasters](file:///C:\evans\GITS\spatialR\html\RandomForest_binomial.html#subset-rasters)
* [Create prediction raster](file:///C:\evans\GITS\spatialR\html\RandomForest_binomial.html#create-prediction-raster)
* [Spatial uncertainty](file:///C:\evans\GITS\spatialR\html\RandomForest_binomial.html#spatial-uncertainty)

 [**Functional relationships and inference**](file:///C:\evans\GITS\spatialR\html\RandomForest_binomial.html#functional-relationships-and-inference)

* [Partial dependence probability plots](file:///C:\evans\GITS\spatialR\html\RandomForest_binomial.html#partial-dependence-probability-plots)
* [Shapley analysis - aggregated](file:///C:\evans\GITS\spatialR\html\RandomForest_binomial.html#shapley-analysis---aggregated)
* [Shapley analysis - individual (observation)](file:///C:\evans\GITS\spatialR\html\RandomForest_binomial.html#shapley-analysis---individual-observsation)

Random Forest (Density)

* [**Data preparation**](file:///C:\evans\GITS\spatialR\html\RandomForest_density.html#data-preparation)
  + [Read shapefile vector and img rasters from disk](file:///C:\evans\GITS\spatialR\html\RandomForest_density.html#read-shapefile-vector-and-img-rasters-from-disk)
  + [Create intensity process](file:///C:\evans\GITS\spatialR\html\RandomForest_density.html#create-intensity-process)
  + [Assign raster values](file:///C:\evans\GITS\spatialR\html\RandomForest_density.html#assign-raster-values)
  + [Check for collinearity and multi-collinearity](file:///C:\evans\GITS\spatialR\html\RandomForest_density.html#check-for-collinearity-and-multi-collinearity)
* [**Specify Poisson (density) random forests model**](file:///C:\evans\GITS\spatialR\html\RandomForest_density.html#specify-poisson-density-random-forests-model)
  + [Apply a model selection procedure](file:///C:\evans\GITS\spatialR\html\RandomForest_density.html#apply-a-model-selection-procedure)
  + [Fit final model](file:///C:\evans\GITS\spatialR\html\RandomForest_density.html#fit-final-model)
  + [Derive importance](file:///C:\evans\GITS\spatialR\html\RandomForest_density.html#derive-importance)
* [**Validation**](file:///C:\evans\GITS\spatialR\html\RandomForest_density.html#validation)
* [**Spatial predictions**](file:///C:\evans\GITS\spatialR\html\RandomForest_density.html#spatial-predictions)
  + [Subset rasters](file:///C:\evans\GITS\spatialR\html\RandomForest_density.html#subset-rasters)
  + [Create prediction raster](file:///C:\evans\GITS\spatialR\html\RandomForest_density.html#create-prediction-raster)
* [**Compare density and probability results**](file:///C:\evans\GITS\spatialR\html\RandomForest_density.html#compare-density-and-probability-results)

Graph-theoretic gravity model

 [**Wetland complex data preparation**](file:///C:\evans\GITS\spatialR\html\GravityModel.html#wetland-complex-data-preparation)

* [Read in wetlands data](file:///C:\evans\GITS\spatialR\html\GravityModel.html#read-in-wetlands-data)
* [Create wetlands graph](file:///C:\evans\GITS\spatialR\html\GravityModel.html#create-wetlands-graph)
* [Graph metrics](file:///C:\evans\GITS\spatialR\html\GravityModel.html#graph-metrics)
* [Plot graph metric](file:///C:\evans\GITS\spatialR\html\GravityModel.html#plot-graph-metric)

 [**Field-data preparation**](file:///C:\evans\GITS\spatialR\html\GravityModel.html#field-data-preparation)

* [Read site data](file:///C:\evans\GITS\spatialR\html\GravityModel.html#read-site-data)
* [Saturated Graph](file:///C:\evans\GITS\spatialR\html\GravityModel.html#saturated-graph)
  + [1. Create graph from site locations](file:///C:\evans\GITS\spatialR\html\GravityModel.html#create-graph-from-site-locations)
  + [2. Merge the graph with genetic distance.](file:///C:\evans\GITS\spatialR\html\GravityModel.html#merge-the-graph-with-genetic-distance.)

 [**Spatial model data preparation**](file:///C:\evans\GITS\spatialR\html\GravityModel.html#spatial-model-data-prepration)

* [Read raster data using terra](file:///C:\evans\GITS\spatialR\html\GravityModel.html#read-raster-data-using-terra)
* [Reclassify wetlands](file:///C:\evans\GITS\spatialR\html\GravityModel.html#reclassify-wetlands)
* [Calculate the proportion of the landscape around sites](file:///C:\evans\GITS\spatialR\html\GravityModel.html#calculate-the-proportion-of-the-landscape-around-sites)
  + [Challenge:](file:///C:\evans\GITS\spatialR\html\GravityModel.html#challenge)
* [Add values of rasters to sample sites](file:///C:\evans\GITS\spatialR\html\GravityModel.html#add-values-of-rasters-to-sample-sites)
* [Add raster covariates to graph edges (lines).](file:///C:\evans\GITS\spatialR\html\GravityModel.html#add-raster-covariates-to-graph-edges-lines.)
* [What about categorical variables?](file:///C:\evans\GITS\spatialR\html\GravityModel.html#what-about-categorical-variables)
* [Evaluate node and edge correlations](file:///C:\evans\GITS\spatialR\html\GravityModel.html#evaluate-node-and-edge-correlations)
* [Add node data](file:///C:\evans\GITS\spatialR\html\GravityModel.html#add-node-data)
  + [1. Build node data](file:///C:\evans\GITS\spatialR\html\GravityModel.html#build-node-data)
  + [2. Merge nodes and edges](file:///C:\evans\GITS\spatialR\html\GravityModel.html#merge-nodes-and-edges)

 [**Gravity model**](file:///C:\evans\GITS\spatialR\html\GravityModel.html#gravity-model)

* [Develop hypothesis](file:///C:\evans\GITS\spatialR\html\GravityModel.html#develop-hypothesis)
* [Compare competing models.](file:///C:\evans\GITS\spatialR\html\GravityModel.html#compare-competing-models.)
* [Fit final model(s)](file:///C:\evans\GITS\spatialR\html\GravityModel.html#fit-final-models)
* [Back predict global fit model](file:///C:\evans\GITS\spatialR\html\GravityModel.html#back-predict-global_fit-model)
* [Aggregate estimates and plot](file:///C:\evans\GITS\spatialR\html\GravityModel.html#aggregrate-estimates-and-plot)