**Example\_2\_Analysis Files**

This folder includes the processed dataset, stan model, and R code necessary to perform the analysis for Example 2.

*ex2.Rda*

This file contains the processed dataset. Each row relates to a unique transect. There are 9695 transects. The columns are described below:

* *y*: the percent total gap cover for each transect.
* *plot*: the unique plot each transect is within. Each plot is presented as a number. There are 3256 different plots.
* *obs*: the observer who collected cover data at each transect. Each observer is presented as a number to protect privacy. There are 199 different observers.
* *e1,e2,e3*: a “1” in the column designates the Level III EPA ecoregion the transect is located in. e1 refers to the Central ecoregion, e2 refers to the Mojave ecoregion, and e3 refers to the Northern ecoregion.
* *y1, y2, y3, y4, y5, y6, y7, y8*: a “1” in the column designates the year data was collected at the transect. These are recorded as years y1 to y8 referring to 2011 to 2018 respectively.

*ex2\_heterogeneous\_variance\_mixed\_effects.stan*

This file contains the stan model for the heterogeneous-variance mixed-effects model. See the comments within the code for more details on the model.

*ex2\_heterogeneous\_variance\_mixed\_effects\_analysis.R*

This file contains the R code to run the heterogeneous-variance mixed-effects analysis. It includes the necessary packages, further data set up and formatting, and uploading and fitting the stan model which draws samples of the posterior distribution. See comments within the Rscript for more details.