

Introduction:

This document ties together the five different files that make up the GRASP example drawn from the Connecticut Collaboration for Fall Prevention (CCFP) at the Yale Pepper Center. This example takes a sample of 40 zip code tabulation areas (ZCTAs) from the total of 111 used in the formal, published analysis and serves for demonstrational purposes only. Data has been sanitized by removing identifying information and adding random noise.

Keyword Categories:

Clinical:	Longitudinal Falls among Older Persons
Genetics:	Not Applicable (N/A)
Statistical:	Bayesian hierarchical analysis, spatio-temporal correlation
Software:	WinBUGS
Related:	translational research, T2, non-randomized design, CMS data, ecological

References:

Murphy TE, Tinetti ME, and Allore HG, Hierarchical models to evaluate translational research: connecticut collaboration for fall prevention. *Contemporary Clinical Trials* 2008; **29**: 343-350.

Tinetti ME, et al., Effect of dissemination of evidence in reducing injuries from falls. *N Engl J Med* 2008; **359**: 252-261.

Component Files:

- PDF file explaining entire example: SpatioTempSummaryMurphy.pdf (file you are reading)
- PDF file of manuscript describing CCFP: See References Cited Above.
- WinBUGS program: SpatioTempProgramMurphy.txt
- WinBUGS data file: SpatioTempDataMurphy.txt
- WinBUGS inits file: SpatioTempInitsMurphy.txt
- PDF file showing WinBUGS output: SpatioTempOutputMurphy.pdf

Optimal Use:

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| 1. Read this Summary file completely: | Component a listed above |
| 2. Read the articles describing the design of CCFP: | Component b listed above |
| 3. Run the WinBUGS program in concert with the data and inits files: | Components c, d and e above |
| 4. Generate output that should appear like that shown in the PDF file: | Component f listed above |

Prerequisites:

To run the example you must have a working knowledge of WinBUGS that allows you to compile the WinBUGS program, load the data file, load the initial values for each random effect with a defined prior distribution, run the model long enough to verify convergence of the Markov Chains, then run a post-convergence sample which is typically reported as the final, publishable result. This is the bare bones procedure for running anything in WinBUGS. So if you've ever done anything with WinBUGS, you've already done or at least had to think about each of these steps. Note that although WinBUGS uses *.odc type files, it has no problem running the *.txt counterparts and each of the files listed above was successfully run in WinBUGS as a plain text file. The tutorial for WinBUGS provides a number of step by step examples that can get you up to speed to run this example.

Potential Applications:

The contents here may be useful to folks performing longitudinal analyses of spatial, areal units with precise quantification of spatio-temporal correlation. We foresee applying these techniques to community-based interventions such as for nutrition in schools, which often use non-randomized designs. Although our example uses spatial units, simpler forms can easily be extracted from this material for non-spatial units of analysis.

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Any feedback on how to make this submission more useful is welcome. Log into the main GRASP page, i.e. <http://grasp.med.yale.edu> and choose the “forum” link in the upper menu on the right to enter feedback on any GRASP submission. Please refer to the specific file names when commenting so we can appropriately steer your suggestions.