**Title:** Inference for Count Data

**Date/Time:** May 2, 2018 10:30 AM to Noon (ET)

**Speakers:** Noel Cressie, University of Wollongong (Australia) and University of Missouri

**Chair:** Wendy Martinez

**Sponsor:** WSS Methodology

**Abstract:** This talk will be largely review in nature and informal in the sense that audience participation and discussion is highly encouraged. Count data are often used as numerators in rates (e.g., unemployment, poverty, disease), and those rates can sometimes be massaged, transformed, and used in a statistical model with additive Gaussian errors. The Fay-Herriot model for small area estimation of rates does this, but it relies on large denominators and a central limit theorem that says averages of binary observations are approximately Gaussian. This talk will be centered around statistical models that avoid these approximations. We start with a conditional distribution of the counts, conditional on a process of the underlying population's true rates. If we assume that this conditional model is a GLM, then a log link gives the underlying process to be log Gaussian. We see that this is a natural generalization of the Fay-Herriot model, which can also be viewed as a GLM with an identity link and an underlying Gaussian process. When the data are spatial or spatio-temporal, it is natural to include spatial or spatio-temporal dependence in the Gaussian part of the underlying process. The Missouri node of the NSF Census Research Network (NCRN) has been building these sorts of Generalized Fay-Herriot (GFH) models for small area counts (equivalently rates), and there are different flavors that we have published. Our desire is that the research move from journal publications to use by government agencies. The talk will conclude with a "free-for-all" discussion of what it will take for that to happen!

**Location:** Bureau of Labor Statistics Janet Norwood Conference Center, Rooms 9 & 10

To be placed on the seminar attendance list at the Bureau of Labor Statistics, you need to e-mail your name, affiliation, and seminar name to wss_seminar@bls.gov (underscore after 'wss') by noon at least two days in advance of the seminar. Please bring a photo ID to the seminar. BLS is located at 2 Massachusetts Avenue, NE. Use the Red Line to Union Station. Parking in the area of BLS is available at Union Station. For parking information see http://www.unionstationdc.com/parking. No validation is available from BLS for reduced parking rates.

**IMPORTANT**: BLS is now following enhanced security protocols and screenings for access to the facility. All personnel need to remove all items from their pockets/person (to include belts) and electronic devices from their person or clothing and place the items in the designated bin to be screened through the x-ray machine. Please allow extra time to get through security.

**WebEx:** WebEx event address:
**https://dol.webex.com/dol/j.php?MTID=m6cfd12a84f0c83e1f2c21d6cae973bf4**

**For audio:**

Call-in toll-free number (Verizon): 1-866-865-9536  (US)
Attendee access code: 744 124 3

Note: Particular computer configurations might not be compatible with WebEx.