Supplementary Table 1. Monte Carlo Estimation of Negative Binomial Variations with Two Predictors

Monte Carlo Estimates without Missing Data									
U1 on X1 [Population parameter set at .20, with binomial association of .30]									
		NBH			**NBI**			**NB**	
N = 100	P Bias	Coverage	Power	P Bias	Coverage	Power	P Bias	Coverage	Power
20% Zeros	.062	93.5%	27.5%	-.012	90.5%	34.5%	.083	91.5%	38.0%
50% Zeros	.105	91.0%	21.5%	.165	89.0%	31.5%	.560	87.0%	42.0%
80% Zeros	-.156	81.5%	18.0%	.120	82.0%	25.5%	.856	92.0%	28.0%
N = 500									
20% Zeros	.014	94.0%	73.0%	-.006	95.5%	83.5%	.084	93.5%	89.5%
50% Zeros	.017	92.5%	52.0%	.139	91.5%	78.5%	.485	79.5%	94.5%
80% Zeros	-.099	90.5%	28.0%	.153	90.5%	43.5%	.627	79.5%	66.0%
N = 1000									
20% Zeros	-.007	95.5%	95.0%	-.021	95.0%	99.5%	.069	97.0%	99.5%
50% Zeros	-.010	94.5%	79.5%	.116	93.0%	95.5%	.462	56.5%	100%
80% Zeros	-.050	91.0%	42.0%	.153	91.5%	68.5%	.614	74.0%	93.0%
U1 on X2 [Population parameter set at .40]									
		NBH			**NBI**			**NB**	
N = 100	P Bias	Coverage	Power	P Bias	Coverage	Power	P Bias	Coverage	Power
20% Zeros	-.079	88.5%	60.0%	-.304	90.5%	34.5%	-.312	80.0%	53.0%
50% Zeros	.089	88.0%	45.5%	-.325	81.5%	41.5%	-.393	81.5%	34.0%
80% Zeros	.195	82.0%	35.5%	-.315	75.0%	36.0%	-.620	81.5%	14.0%
N = 500									
20% Zeros	-.018	93.5%	99.5%	-.249	68.5%	98.5%	-.262	66.5%	98.5%
50% Zeros	.003	91.5%	95.0%	-.240	79.0%	92.5%	-.310	69.0%	88.0%
80% Zeros	.037	90.5%	74.5%	-.221	86.0%	70.0%	-.450	72.5%	39.5%
N = 1000									
20% Zeros	.003	94.5%	100%	-.232	52.5%	100%	-.244	46.5%	100%
50% Zeros	.013	94.5%	100%	-.217	71.0%	100%	-.281	56.5%	100%
80% Zeros	.017	90.5%	93.5%	-.197	85.5%	91.0%	-.402	66.0%	69.5%
Monte Carlo Estimates with 20% Missing Data									
U1 on X1 [Population parameter set at .20, with binomial association of .30]									
		NBH			**NBI**			**NB**	
N = 100	P Bias	Coverage	Power	P Bias	Coverage	Power	P Bias	Coverage	Power
20% Zeros	.016	90.5%	19.5%	-.027	90.5%	25.5%	.082	92.0%	32.0%
50% Zeros	-.002	87.0%	18.5%	.128	87.0%	27.5%	.595	88.0%	35.5%
80% Zeros	-.255	82.5%	22.0%	.043	77.5%	29.5%	.635	77.0%	84.5%
N = 500									
20% Zeros	.048	93.0%	65.0%	.016	95.0%	75.5%	.105	94.0%	82.5%
50% Zeros	.090	91.0%	50.5%	.186	92.0%	69.5%	.526	76.5%	88.0%

80% Zeros	.099	90.5%	31.0%	.030	89.0%	51.0%	.724	80.5%	63.0%
N = 1000									
20% Zeros	-.011	93.0%	87.5%	-.023	93.5%	97.0%	.068	93.0%	98.0%
50% Zeros	.005	93.0%	72.5%	.119	90.5%	91.5%	.462	75.0%	98.5%
80% Zeros	.023	92.5%	47.0%	.195	91.0%	65.0%	.635	77.0%	84.5%
	U1 on X2 [Population parameter set at .40]								
		NBH			**NBI**			**NB**	
N = 100	P Bias	Coverage	Power	P Bias	Coverage	Power	P Bias	Coverage	Power
20% Zeros	.006	88.5%	59.0%	-.257	86.5%	52.0%	-.272	84.5%	48.5%
50% Zeros	.033	86.0%	47.5%	-.245	84.5%	42.0%	-.328	87.5%	34.5%
80% Zeros	.176	81.5%	34.0%	-.245	79.0%	33.5%	-.409	69.0%	61.0%
N = 500									
20% Zeros	.009	94.5%	99.5%	-.271	77.5%	98.5%	-.242	75.5%	97.5%
50% Zeros	.010	93.0%	93.0%	-.216	82.0%	88.5%	-.280	79.0%	87.5%
80% Zeros	.003	94.5%	65.5%	-.208	89.0%	61.5%	-.414	84.5%	38.0%
N = 1000									
20% Zeros	.003	95.5%	100%	-.234	55.0%	100%	-.247	51.5%	100%
50% Zeros	.001	93.0%	100%	-.221	73.5%	99.5%	-.284	61.0%	99.0%
80% Zeros	.002	94.0%	90.5%	-.209	84.0%	83.0%	-.409	69.0%	61.0%

Note: P Bias = Parameter Bias. Coverage = the proportion of replications for which the 95% confidence interval includes the parameter value. Power = the proportion of replication for which the null hypothesis that a parameter is equal to zero is rejected at the .05 level. NBH = Negative binomial hurdle model. NBI = Negative binomial inflated model (non-hurdle). NB = negative binomial model (without zero inflation). Two predictors included in modeling population parameters. The population was modeled on a zero-inflated, negative binomial hurdle model, with a first predictor (X1) set to an association of .30 with the binomial portion of the model and .20 with the count portion of the model. The second predictor (X2) was set to an association of .40 with the count portion of the model and 0 on the binomial portion of the model. X1 and X2 were set to covary at .20.

SUPPLEMENTAL INFORMATION. EXAMPLE SYNTAX

Title: Monte Carlo Analysis of data created with negative binomial hurdle model. Sample size = 100; 0% missing Data, 20% zero scores on the DV

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MONTECARLO:                          #this command describes details of the simulation study#
NAMES ARE u1 x1 x2;                  #assign names to the variables in the generated dataset#
NOBSERVATIONS = 100;                 #specify sample size for data generation and analysis #
NREPS = 200;                                          #specify the # of replications #
SEED = 459876;          #specifies the seed to be used for the random draws (random number) #
GENERATE = u1(nbh);     # specifies the scale of the dependent variable for data generation#
COUNT = u1(nbh);                                      #specifies u1 as a count variable#
REPSAVE = ALL;          #saves replications (for later analysis with NB and NBI models)#
SAVE = NBH.100.0M.20Z.rep*.dat                        #Identifies file names to save data#

model POPULATION:    #provides population parameter values to be used in data generation #
[x1-x2@0];                                                        #defines IV means#
x1-x2@1;                                                      #defines IV variances#
x1 with x2*.2;                                          #defines covariance between IVs#
u1 ON x1*.2;                                  #defines the population parameter u1 on X1#
u1 ON x2*.4;                                   #defines the population parameter u1 on X2
[u1@1];                                                    #defines intercept of DV#
U1@3;                                                  #defines dispersion of DV#
[u1#1@-1.386];          #defines the percentage of zero values [-1.386 = 20% zeros]#
u1#1 on x1@-.3;      #defines parameter between likelihood of being a zero value and X1.#

model:                          #specifies the model to test – for this model, same as population#
[x1-x2@0];
x1-x2@1;
x1 with x2*.2;
u1 ON x1*.2;
u1 ON x2*.4;
[u1@1];
U1@3;
[u1#1@-1.386];
u1#1 on x1@-.3;
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