N	P	SNR = 1 SIR = 1	SNR = 1 SIR = 5	SNR = 1 SIR = 25	SNR = 5 SIR = 1	SNR = 5 SIR = 5	SNR = 5 SIR = 25	SNR = 25 SIR = 1	SNR = 25 SIR = 5	SNR = 25 SIR = 25
100 samples	2	[0.810, 0.842]	[0.819, 0.848]	[0.839, 0.872]	[0.849, 0.876]	[0.879, 0.903]	[0.889, 0.915]	[0.864, 0.893]	[0.889, 0.915]	[0.910, 0.932]
		[0.616, 0.657]	**[0.619, 0.657]**	**[0.645, 0.691]**	**[0.696, 0.732]**	**[0.681, 0.717]**	**[0.704, 0.745]**	**[0.715, 0.755]**	**[0.706, 0.750]**	**[0.735, 0.775]**
		[0.609, 0.648]	*[0.614, 0.655]*	*[0.622, 0.668]*	*[0.678, 0.714]*	*[0.654, 0.689]*	*[0.678, 0.723]*	*[0.690, 0.734]*	*[0.668, 0.712]*	*[0.686, 0.730]*
	4	[0.813, 0.841]	[0.850, 0.876]	[0.843, 0.874]	[0.856, 0.883]	[0.897, 0.919]	[0.901, 0.925]	[0.857, 0.889]	[0.895, 0.920]	[0.909, 0.932]
		[0.636, 0.673]	**[0.631, 0.670]**	**[0.671, 0.715]**	**[0.696, 0.733]**	**[0.690, 0.728]**	**[0.723, 0.762]**	**[0.709, 0.751]**	**[0.717, 0.758]**	**[0.753, 0.793]**
		[0.602, 0.642]	*[0.587, 0.628]*	*[0.615, 0.664]*	*[0.624, 0.663]*	*[0.622, 0.661]*	*[0.651, 0.695]*	*[0.658, 0.705]*	*[0.661, 0.707]*	*[0.633, 0.676]*
	6	[0.774, 0.806]	[0.805, 0.836]	[0.820, 0.854]	[0.829, 0.857]	[0.871, 0.895]	[0.886, 0.913]	[0.844, 0.875]	[0.884, 0.910]	[0.888, 0.913]
		[0.590, 0.628]	**[0.616, 0.657]**	**[0.610, 0.656]**	**[0.671, 0.710]**	**[0.671, 0.709]**	**[0.696, 0.740]**	**[0.673, 0.716]**	**[0.700, 0.742]**	**[0.723, 0.763]**
		[0.528, 0.568]	*[0.568, 0.607]*	*[0.555, 0.604]*	*[0.596, 0.635]*	*[0.602, 0.643]*	*[0.599, 0.644]*	*[0.587, 0.635]*	*[0.586, 0.634]*	*[0.591, 0.641]*
	8	[0.716, 0.751]	[0.752, 0.786]	[0.758, 0.795]	[0.778, 0.808]	[0.840, 0.867]	[0.842, 0.875]	[0.792, 0.828]	[0.864, 0.892]	[0.863, 0.893]
		[0.553, 0.597]	**[0.565, 0.604]**	**[0.550, 0.598]**	**[0.616, 0.655]**	**[0.653, 0.692]**	**[0.631, 0.678]**	**[0.649, 0.697]**	**[0.681, 0.724]**	**[0.688, 0.732]**
		[0.514, 0.554]	*[0.514, 0.553]*	*[0.501, 0.551]*	*[0.531, 0.573]*	*[0.558, 0.598]*	*[0.522, 0.571]*	*[0.543, 0.589]*	*[0.570, 0.615]*	*[0.534, 0.588]*
	10	[0.624, 0.662]	[0.651, 0.688]	[0.672, 0.717]	[0.695, 0.734]	[0.770, 0.801]	[0.788, 0.824]	[0.725, 0.768]	[0.801, 0.838]	[0.848, 0.879]
		[0.522, 0.561]	**[0.526, 0.566]**	**[0.536, 0.585]**	**[0.560, 0.600]**	**[0.587, 0.626]**	**[0.583, 0.632]**	**[0.601, 0.647]**	**[0.622, 0.666]**	**[0.668, 0.712]**
		[0.485, 0.527]	*[0.486, 0.527]*	*[0.491, 0.540]*	*[0.501, 0.542]*	*[0.492, 0.535]*	*[0.526, 0.575]*	*[0.510, 0.561]*	*[0.480, 0.526]*	*[0.494, 0.545]*
200 samples	2	[0.924, 0.942]	[0.935, 0.950]	[0.931, 0.949]	[0.948, 0.962]	[0.970, 0.979]	[0.973, 0.984]	[0.956, 0.971]	[0.969, 0.979]	[0.976, 0.986]
		[0.758, 0.790]	**[0.775, 0.806]**	**[0.762, 0.801]**	**[0.846, 0.873]**	**[0.852, 0.878]**	**[0.861, 0.889]**	**[0.873, 0.900]**	**[0.858, 0.887]**	**[0.888, 0.915]**
		[0.735, 0.769]	*[0.748, 0.784]*	*[0.738, 0.779]*	*[0.812, 0.842]*	*[0.815, 0.842]*	*[0.833, 0.864]*	*[0.835, 0.866]*	*[0.823, 0.856]*	*[0.839, 0.870]*
	4	[0.928, 0.945]	[0.959, 0.970]	[0.957, 0.972]	[0.966, 0.976]	[0.977, 0.985]	[0.979, 0.988]	[0.965, 0.977]	[0.978, 0.987]	[0.983, 0.991]
		[0.789, 0.819]	**[0.807, 0.836]**	**[0.822, 0.855]**	**[0.869, 0.893]**	**[0.869, 0.894]**	**[0.882, 0.911]**	**[0.883, 0.909]**	**[0.899, 0.922]**	**[0.909, 0.931]**
		[0.729, 0.764]	*[0.732, 0.767]*	*[0.749, 0.787]*	*[0.789, 0.820]*	*[0.800, 0.830]*	*[0.806, 0.842]*	*[0.821, 0.855]*	*[0.826, 0.859]*	*[0.822, 0.856]*
	6	[0.921, 0.938]	[0.942, 0.956]	[0.955, 0.970]	[0.948, 0.962]	[0.975, 0.984]	[0.977, 0.986]	[0.957, 0.973]	[0.979, 0.987]	[0.982, 0.990]
		[0.755, 0.786]	**[0.776, 0.808]**	**[0.788, 0.824]**	**[0.843, 0.869]**	**[0.879, 0.901]**	**[0.886, 0.911]**	**[0.876, 0.906]**	**[0.896, 0.922]**	**[0.903, 0.926]**
		[0.665, 0.698]	*[0.686, 0.725]*	*[0.680, 0.723]*	*[0.759, 0.795]*	*[0.763, 0.795]*	*[0.771, 0.808]*	*[0.782, 0.820]*	*[0.796, 0.834]*	*[0.778, 0.817]*
	8	[0.882, 0.904]	[0.925, 0.943]	[0.910, 0.932]	[0.928, 0.945]	[0.967, 0.977]	[0.968, 0.979]	[0.942, 0.960]	[0.973, 0.983]	[0.977, 0.986]
		[0.674, 0.714]	**[0.714, 0.747]**	**[0.731, 0.773]**	**[0.808, 0.838]**	**[0.839, 0.866]**	**[0.836, 0.867]**	**[0.854, 0.883]**	**[0.870, 0.897]**	**[0.882, 0.908]**
		[0.604, 0.644]	*[0.615, 0.652]*	*[0.653, 0.697]*	*[0.704, 0.742]*	*[0.711, 0.745]*	*[0.693, 0.736]*	*[0.744, 0.783]*	*[0.736, 0.774]*	*[0.740, 0.778]*
	10	[0.790, 0.821]	[0.846, 0.872]	[0.854, 0.883]	[0.872, 0.896]	[0.944, 0.958]	[0.952, 0.967]	[0.904, 0.927]	[0.954, 0.969]	[0.972, 0.983]
		[0.604, 0.642]	**[0.628, 0.668]**	**[0.673, 0.719]**	**[0.731, 0.766]**	**[0.776, 0.808]**	**[0.784, 0.821]**	**[0.831, 0.862]**	**[0.851, 0.880]**	**[0.876, 0.903]**
		[0.569, 0.608]	*[0.559, 0.601]*	*[0.588, 0.637]*	*[0.620, 0.660]*	*[0.641, 0.679]*	*[0.634, 0.678]*	*[0.684, 0.729]*	*[0.695, 0.739]*	*[0.697, 0.741]*
400 samples	2	[0.981, 0.988]	[0.987, 0.993]	[0.987, 0.993]	[0.991, 0.996]	[0.996, 0.999]	[0.995, 0.998]	[0.993, 0.996]	[0.998, 0.999]	[0.997, 0.999]
		[0.913, 0.932]	**[0.920, 0.939]**	**[0.916, 0.939]**	**[0.957, 0.969]**	**[0.966, 0.976]**	**[0.964, 0.977]**	**[0.968, 0.980]**	**[0.970, 0.981]**	**[0.977, 0.986]**
		[0.886, 0.909]	*[0.894, 0.916]*	*[0.884, 0.911]*	*[0.934, 0.950]*	*[0.946, 0.960]*	*[0.944, 0.962]*	*[0.950, 0.965]*	*[0.947, 0.963]*	*[0.954, 0.968]*
	4	[0.990, 0.995]	[0.995, 0.998]	[0.995, 0.998]	[0.996, 0.998]	[0.999, 0.999]	[0.999, 1.000]	[0.995, 0.998]	[0.999, 1.000]	[0.999, 1.000]
		[0.940, 0.955]	**[0.954, 0.966]**	**[0.949, 0.965]**	**[0.972, 0.982]**	**[0.980, 0.987]**	**[0.983, 0.990]**	**[0.984, 0.991]**	**[0.984, 0.991]**	**[0.988, 0.994]**
		[0.889, 0.911]	*[0.899, 0.920]*	*[0.898, 0.922]*	*[0.934, 0.950]*	*[0.948, 0.962]*	*[0.948, 0.964]*	*[0.948, 0.963]*	*[0.957, 0.970]*	*[0.952, 0.967]*
	6	[0.988, 0.993]	[0.994, 0.997]	[0.995, 0.998]	[0.995, 0.998]	[0.998, 0.999]	[0.999, 1.000]	[0.995, 0.998]	[0.999, 1.000]	[0.999, 1.000]
		[0.935, 0.950]	**[0.949, 0.962]**	**[0.945, 0.963]**	**[0.977, 0.985]**	**[0.979, 0.987]**	**[0.981, 0.989]**	**[0.980, 0.989]**	**[0.991, 0.995]**	**[0.989, 0.994]**
		[0.855, 0.880]	*[0.872, 0.896]*	*[0.879, 0.906]*	*[0.928, 0.945]*	*[0.924, 0.940]*	*[0.935, 0.954]*	*[0.940, 0.957]*	*[0.948, 0.963]*	*[0.942, 0.959]*
	8	[0.982, 0.988]	[0.993, 0.996]	[0.990, 0.996]	[0.993, 0.996]	[0.998, 0.999]	[0.998, 0.999]	[0.993, 0.997]	[0.997, 1.000]	[0.999, 1.000]
		[0.901, 0.921]	**[0.921, 0.939]**	**[0.931, 0.949]**	**[0.965, 0.977]**	**[0.976, 0.984]**	**[0.978, 0.987]**	**[0.978, 0.988]**	**[0.985, 0.992]**	**[0.987, 0.993]**
		[0.787, 0.818]	*[0.809, 0.836]*	*[0.826, 0.859]*	*[0.890, 0.911]*	*[0.904, 0.922]*	*[0.898, 0.922]*	*[0.922, 0.942]*	*[0.924, 0.944]*	*[0.937, 0.956]*
	10	[0.937, 0.952]	[0.964, 0.976]	[0.969, 0.981]	[0.974, 0.982]	[0.996, 0.998]	[0.995, 0.998]	[0.981, 0.990]	[0.998, 0.999]	[0.997, 1.000]
		[0.789, 0.819]	**[0.822, 0.849]**	**[0.842, 0.873]**	**[0.942, 0.956]**	**[0.950, 0.963]**	**[0.962, 0.975]**	**[0.970, 0.982]**	**[0.979, 0.988]**	**[0.985, 0.992]**
		[0.707, 0.742]	*[0.701, 0.737]*	*[0.720, 0.763]*	*[0.843, 0.871]*	*[0.841, 0.866]*	*[0.851, 0.881]*	*[0.903, 0.927]*	*[0.902, 0.925]*	*[0.902, 0.925]*

Table 1: 95% confidence interval of the area under the ROC curve for differing sample sizes N, AR model order P, SIR and SNR. The standard text is for GC with known weights; the **bold** is for CGC and the *italics* is for MGC. In each case, CGC's interval is consistently higher than MGC's. As SNR increases, N decreases or P increases, this difference in performance increases.

N	P	SNR = 1 SIR = 1	SNR = 1 SIR = 5	SNR = 1 SIR = 25	SNR = 5 SIR = 1	SNR = 5 SIR = 5	SNR = 5 SIR = 25	SNR = 25 SIR = 1	SNR = 25 SIR = 5	SNR = 25 SIR = 25
100 samples	2	**[0.005, 0.203]** *[0.003, 0.214]*	**[0.005, 0.210]** *[0.002, 0.203]*	**[0.005, 0.217]** *[0.003, 0.216]*	**[0.008, 0.219]** *[0.002, 0.183]*	**[0.007, 0.212]** *[0.002, 0.194]*	**[0.007, 0.209]** *[0.003, 0.185]*	**[0.017, 0.216]** *[0.002, 0.168]*	**[0.018, 0.219]** *[0.002, 0.172]*	**[0.017, 0.200]** *[0.002, 0.170]*
	4	**[0.006, 0.254]** *[0.007, 0.269]*	**[0.006, 0.265]** *[0.006, 0.275]*	**[0.008, 0.265]** *[0.008, 0.276]*	**[0.009, 0.266]** *[0.004, 0.255]*	**[0.009, 0.268]** *[0.005, 0.237]*	**[0.012, 0.257]** *[0.004, 0.250]*	**[0.016, 0.275]** *[0.004, 0.229]*	**[0.017, 0.262]** *[0.003, 0.234]*	**[0.024, 0.261]** *[0.004, 0.224]*
	6	**[0.007, 0.314]** *[0.021, 0.340]*	**[0.008, 0.322]** *[0.013, 0.311]*	**[0.008, 0.319]** *[0.017, 0.320]*	**[0.013, 0.313]** *[0.009, 0.301]*	**[0.015, 0.313]** *[0.012, 0.293]*	**[0.018, 0.329]** *[0.009, 0.278]*	**[0.018, 0.310]** *[0.006, 0.303]*	**[0.028, 0.318]** *[0.008, 0.289]*	**[0.029, 0.317]** *[0.007, 0.283]*
	8	**[0.009, 0.374]** *[0.033, 0.394]*	**[0.008, 0.382]** *[0.030, 0.371]*	**[0.009, 0.382]** *[0.024, 0.382]*	**[0.015, 0.377]** *[0.023, 0.363]*	**[0.011, 0.388]** *[0.016, 0.373]*	**[0.014, 0.390]** *[0.021, 0.354]*	**[0.021, 0.377]** *[0.015, 0.336]*	**[0.030, 0.377]** *[0.012, 0.349]*	**[0.030, 0.367]** *[0.015, 0.351]*
	10	**[0.015, 0.430]** *[0.053, 0.440]*	**[0.009, 0.440]** *[0.047, 0.451]*	**[0.010, 0.439]** *[0.058, 0.445]*	**[0.017, 0.442]** *[0.045, 0.430]*	**[0.013, 0.455]** *[0.037, 0.434]*	**[0.024, 0.451]** *[0.041, 0.417]*	**[0.017, 0.445]** *[0.028, 0.408]*	**[0.021, 0.443]** *[0.026, 0.414]*	**[0.039, 0.451]** *[0.027, 0.405]*
200 samples	2	**[0.001, 0.089]** *[0.002, 0.139]*	**[0.001, 0.088]** *[0.002, 0.132]*	**[0.001, 0.085]** *[0.002, 0.135]*	**[0.001, 0.090]** *[0.001, 0.097]*	**[0.002, 0.089]** *[0.001, 0.098]*	**[0.002, 0.087]** *[0.001, 0.090]*	**[0.003, 0.092]** *[0.001, 0.095]*	**[0.003, 0.088]** *[0.001, 0.090]*	**[0.004, 0.094]** *[0.001, 0.084]*
	4	**[0.002, 0.108]** *[0.004, 0.182]*	**[0.001, 0.107]** *[0.004, 0.158]*	**[0.001, 0.102]** *[0.004, 0.166]*	**[0.002, 0.100]** *[0.002, 0.140]*	**[0.002, 0.105]** *[0.001, 0.127]*	**[0.002, 0.105]** *[0.001, 0.128]*	**[0.002, 0.103]** *[0.001, 0.130]*	**[0.003, 0.099]** *[0.001, 0.115]*	**[0.004, 0.114]** *[0.001, 0.109]*
	6	**[0.002, 0.126]** *[0.008, 0.209]*	**[0.002, 0.120]** *[0.004, 0.192]*	**[0.001, 0.122]** *[0.006, 0.184]*	**[0.002, 0.117]** *[0.003, 0.159]*	**[0.002, 0.116]** *[0.002, 0.154]*	**[0.002, 0.121]** *[0.002, 0.157]*	**[0.003, 0.123]** *[0.002, 0.150]*	**[0.003, 0.116]** *[0.003, 0.159]*	**[0.004, 0.120]** *[0.002, 0.153]*
	8	**[0.003, 0.145]** *[0.013, 0.249]*	**[0.002, 0.145]** *[0.011, 0.252]*	**[0.002, 0.143]** *[0.009, 0.225]*	**[0.002, 0.129]** *[0.006, 0.204]*	**[0.002, 0.126]** *[0.004, 0.209]*	**[0.002, 0.126]** *[0.003, 0.182]*	**[0.003, 0.124]** *[0.004, 0.190]*	**[0.002, 0.128]** *[0.003, 0.170]*	**[0.003, 0.126]** *[0.003, 0.193]*
	10	**[0.002, 0.171]** *[0.028, 0.288]*	**[0.003, 0.170]** *[0.024, 0.288]*	**[0.002, 0.169]** *[0.017, 0.278]*	**[0.002, 0.140]** *[0.013, 0.241]*	**[0.002, 0.145]** *[0.009, 0.243]*	**[0.003, 0.150]** *[0.007, 0.234]*	**[0.003, 0.141]** *[0.005, 0.218]*	**[0.003, 0.147]** *[0.004, 0.230]*	**[0.003, 0.147]** *[0.004, 0.207]*
400 samples	2	**[0.001, 0.070]** *[0.001, 0.083]*	**[0.001, 0.061]** *[0.001, 0.076]*	**[0.001, 0.059]** *[0.001, 0.068]*	**[0.001, 0.040]** *[0.000, 0.044]*	**[0.001, 0.039]** *[0.001, 0.041]*	**[0.001, 0.045]** *[0.000, 0.042]*	**[0.001, 0.042]** *[0.001, 0.045]*	**[0.001, 0.039]** *[0.000, 0.037]*	**[0.001, 0.041]** *[0.001, 0.037]*
	4	**[0.001, 0.088]** *[0.002, 0.109]*	**[0.001, 0.080]** *[0.002, 0.105]*	**[0.001, 0.071]** *[0.001, 0.092]*	**[0.001, 0.045]** *[0.001, 0.061]*	**[0.001, 0.042]** *[0.001, 0.054]*	**[0.001, 0.044]** *[0.001, 0.049]*	**[0.001, 0.045]** *[0.000, 0.047]*	**[0.001, 0.045]** *[0.000, 0.037]*	**[0.001, 0.044]** *[0.000, 0.038]*
	6	**[0.001, 0.110]** *[0.003, 0.133]*	**[0.001, 0.102]** *[0.002, 0.125]*	**[0.001, 0.104]** *[0.002, 0.122]*	**[0.001, 0.055]** *[0.001, 0.085]*	**[0.001, 0.048]** *[0.001, 0.073]*	**[0.001, 0.050]** *[0.001, 0.068]*	**[0.001, 0.048]** *[0.001, 0.058]*	**[0.001, 0.049]** *[0.001, 0.055]*	**[0.001, 0.045]** *[0.000, 0.051]*
	8	**[0.002, 0.150]** *[0.006, 0.181]*	**[0.002, 0.140]** *[0.005, 0.166]*	**[0.002, 0.134]** *[0.004, 0.159]*	**[0.001, 0.085]** *[0.001, 0.117]*	**[0.001, 0.072]** *[0.001, 0.107]*	**[0.001, 0.063]** *[0.001, 0.097]*	**[0.001, 0.052]** *[0.001, 0.087]*	**[0.001, 0.049]** *[0.001, 0.071]*	**[0.001, 0.046]** *[0.001, 0.071]*
	10	**[0.002, 0.178]** *[0.012, 0.212]*	**[0.003, 0.167]** *[0.010, 0.203]*	**[0.002, 0.173]** *[0.012, 0.207]*	**[0.002, 0.127]** *[0.004, 0.156]*	**[0.001, 0.119]** *[0.004, 0.158]*	**[0.001, 0.111]** *[0.002, 0.145]*	**[0.001, 0.070]** *[0.001, 0.122]*	**[0.001, 0.056]** *[0.001, 0.116]*	**[0.001, 0.055]** *[0.001, 0.099]*

Table 2: 95% confidence interval of error of the estimated regional measure with respect to the true bivariate GC with weights known for differing sample sizes N, AR model order P, SIR and SNR. The **bold** text is the error for CGC and the *italics* is for GCCA. As the number of samples or the order increases, CGC performs better than GCCA. In addition, as SNR decreases, CGC performs worse.

N	P	SNR = 1			SNR = 5			SNR = 25		
		SIR = 1	SIR = 5	SIR = 25	SIR = 1	SIR = 5	SIR = 25	SIR = 1	SIR = 5	SIR = 25
100 samples	2	44.20%	45.47%	44.29%	32.13%	32.27%	30.29%	25.43%	28.19%	26.86%
	4	**52.07%**	48.27%	47.81%	39.87%	37.67%	36.48%	35.62%	32.19%	31.71%
	6	**52.33%**	**50.33%**	49.43%	44.00%	41.07%	39.43%	41.90%	38.10%	38.00%
	8	**54.13%**	**53.13%**	**52.38%**	46.13%	47.67%	42.76%	44.38%	38.57%	41.81%
	10	**54.60%**	**55.40%**	**53.43%**	49.93%	48.53%	48.48%	45.33%	44.48%	44.57%
200 samples	2	**65.27%**	**62.67%**	**61.81%**	45.60%	42.67%	41.81%	34.95%	35.05%	32.95%
	4	**70.60%**	**68.87%**	**68.48%**	**55.27%**	**51.07%**	48.57%	42.57%	40.48%	39.24%
	6	**77.47%**	**74.67%**	**73.71%**	**59.73%**	**56.13%**	**53.05%**	48.95%	**50.10%**	46.00%
	8	**81.00%**	**82.00%**	**78.67%**	**67.53%**	**67.00%**	**59.05%**	**57.62%**	**54.76%**	**53.62%**
	10	**87.20%**	**86.40%**	**82.67%**	**77.47%**	**76.60%**	**73.05%**	**66.10%**	**64.57%**	**61.62%**
400 samples	2	**75.40%**	**72.47%**	**69.43%**	41.13%	37.53%	32.10%	17.62%	15.05%	11.62%
	4	**83.73%**	**80.47%**	**79.90%**	**56.60%**	**50.73%**	46.76%	26.57%	24.48%	23.14%
	6	**87.07%**	**87.20%**	**84.57%**	**65.33%**	**63.27%**	**58.76%**	39.33%	38.29%	33.71%
	8	**92.73%**	**92.40%**	**90.29%**	**78.47%**	**76.40%**	**72.00%**	**53.71%**	**50.48%**	47.33%
	10	**94.80%**	**94.80%**	**94.67%**	**86.80%**	**88.27%**	**85.81%**	**70.10%**	**68.38%**	**65.05%**

Table 3: Percentage of simulations in which CGC is closer to the true causality in simulation than GCCA. **Bold** indicates those parameters for which CGC has less error a majority of the time. At low SNR or high model order P, CGC is closer to the true causality than GCCA for most simulations. For low numbers of samples and low model order, GCCA benefits from having fewer parameters, and is thus a slightly better estimator of the underlying causality; however, based on Table 2 both metrics are poor in estimating the underlying causality.