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Neighborhood Social Processes, Physical Conditions, and Disaster-Related Mortality:  
The Case of the 1995 Chicago Heat Wave

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The aggregation procedure for neighborhood community survey (CS) and systematic social observation (SSO)-based measures of collective efficacy, social network interaction /reciprocated exchange, and commercial decline extracts the empirical Bayes (EB) residual from three-level item response models of the component items for each scale (Sampson, et al. 1997; Raudenbush and Sampson 1999). Following Sampson et al., (1997) for Community Survey-based measures, at level one, a linear item-response model adjusts individual-level latent scale scores for missing data, taking into account the “difficulty” or severity level of items considered. At level two, neighborhood latent scores (intercepts in between-individual models) are adjusted for the social composition of Chicago neighborhoods through inclusion of controls for gender, age, race/ethnicity (African American, Latino vs. white), education, employment status (employed

vs. unemployed), marital status (never married, separated or divorced vs. married), home ownership, years resident in the neighborhood, and number of moves in the last five years. At level three, adjusted neighborhood intercepts vary randomly around the neighborhood grand mean. The standardized EB residual from the level-three model constitutes the adjusted neighborhood score to be employed as an independent variable in subsequent analyses of mortality. EB residuals regress neighborhood-specific random effects toward the grand mean by a factor proportional to the unreliability with which they have been estimated. The commercial decline scale is based on a three-level Rasch model (items within block faces within neighborhood clusters [NCs]) controlling for time of day during which the block face was observed at level two (Raudenbush and Sampson 1999).

**Table A1.** Correlations Among Variables in the Analysis (N = 77)

	Affluence	Residential Stability	Population Density	Proportion Living Alone
Affluence	—	—	—	—
Residential Stability	-.206	—	—	—
Population Density (logged)	-.133	-.486	—	—
Proportion Living Alone	.382	-.769	.339	—
Proportion Age 65+ Years	.281	.132	-.290	.304
Social Interaction/Exchange	.103	.272	-.367	-.022
Collective Efficacy	.271	.477	-.656	-.200
Commercial Density	-.238	-.435	.475	.264
Commercial Decline	-.538	-.283	.234	.037

**Table A1.** (Continued)

	Proportion Age 65+ Years	Social Interaction/Exchange	Collective Efficacy	Community Density
Affluence	—	—	—	—
Residential Stability	—	—	—	—
Population Density (logged)	—	—	—	—
Proportion Living Alone	—	—	—	—
Proportion Age 65+ Years	—	—	—	—
Social Interaction/Exchange	.268	—	—	—
Collective Efficacy	.349	.567	—	—
Commercial Density	-.226	-.301	-.450	—
Commercial Decline	-.399	-.206	-.328	.329

## REFERENCES

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