

Paul D. **Allison** (Ph.D., Sociology, Wisconsin, 1976) is Professor of Sociology and immediate Past Chair (4 yrs) of the Dept. of Sociology. He has received the Lazarsfeld Award for distinguished contributions to sociological methodology from the Am. Soc. Assn., is a member of the Sociological Research Association, and has had a Guggenheim Fellowship.

Scientific Accomplishment. Allison is an expert in new methods for the statistical analysis of observational data and has recently been focusing on models for longitudinal data, with applications in health and social inequality. In a paper in the *New Engl J Med*, Allison (w. N. Christakis) found that serious spousal illness (as marked by hospitalization) and spousal death appear to be independently associated with the risk of death of the partner, for both men and women. The hospitalization of a spouse was associated with a risk of death for the partner that was almost as great as that associated with the death of a spouse. Over the long run, for men, hospitalization of a spouse was associated with a risk of death that was 22 percent of the risk associated with the death of a spouse; for women, the risk was 16 percent of the risk associated with spousal death. This paper has been widely cited in the media and was followed by an *NEJM* editorial. Some of the results were obtained by a case–time–control fixed-effects method (*Sociol Method*), which allowed them to estimate the relationship between the hospitalization of a spouse and the subsequent death of the partner while controlling for all constant characteristics of the spouses and their environment. These characteristics could include poverty history, smoking history, educational level, and toxic exposures, whether such characteristics were measured or unmeasured. The implementation involved a parsing of the exposure period into couple-days and an estimation of a conditional logistic regression. In a paper in *Int J Epid*, information collected on retrospective occurrence times are combined with prospective occurrence times in the analysis of recurrent events from cohort studies. Data from the Women’s Interagency HIV Study are expanded from one to two records per participant and account for the within-individual dependence when estimating variances. This method for the analysis of bidirectional occurrence times will improve precision when the estimated associations are homogeneous across occurrence types, or may provide added insight into either the data collection or disease process when the estimated associations are heterogeneous. In a paper with P. England and others (*Soc of Educ*), a fixed effects model with lagged independent variables is used to adjudicate between two causal models for the relationship between occupational segregation and pay. This model shows no support for causation in either direction over a 20 year period.

Present and Future. Allison is engaged in a mixture of work on statistical methodology and some applications of statistics in empirical projects. He is studying what happens when multiple imputation methods based on the multivariate normal model are applied to the imputation of dichotomous and polytomous variables. While this would seem to be inappropriate, in fact it works very well when the imputed variables are predictor variables in a regression model. He is continuing his research on causal inference with panel data using fixed effects methods, with emphasis on the use of simultaneous equation modeling software to estimate models involving reciprocal causation. He is currently completing a book on fixed effects methods. The fixed effects simultaneous equation modeling methodology will be applied to an empirical study of the relationship between obesity and social class, supported by an NHLBI R01(**Chang**, PI). He is also working with former PSC research associate P. England (Stanford) on a project studying the decision to divorce. This project applies latent class regression models to longitudinal data on married couples determine what characteristics of couples determine who decides to initiate a divorce, the husband or the wife.

PSC and Research. Allison is Co-Investigator on an NHLBI R01 (**Chang**, PI; **Elo**, Co-Investigator) on the relationship between BMI and SES over the life cycle and between generations and is a Co-Investigator on an NIMH R01 (W. Holmes, PI) studying childhood sexual abuse and adult risk of HIV infection and on an NICHD R01 (D. Wiebe, PI) studying alcohol, firearms, and adolescent gun risk injury. Previously he was a Co-Investigator on an NIA R01 (N. Christakis, PI) and an NICHD R01 (P. England, PI); see above. He just completed 4 years on the PSC Executive Committee. With **Rosenbaum** and **Smith**, he provides statistical consulting to CHOPR (**Aiken**, **Clarke**, under an NINR P30). He will also serve on the Statistical Methods unit of the Methods section of the Development Core. He is Core Faculty in NINR T32 (**Aiken**)