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G-ESTIMATION OF ADDITIVE VS. MULTIPLICATIVE STRUCTURAL NESTED ACCELERATED FAILURE TIME MODELS: PREVENTING BIAS DUE TO THE HEALTHY WORKER SURVIVOR EFFECT. *S Picciotto, J Chevrier, E A Eisen (University of California, Berkeley CA 94720)

The healthy worker survivor effect arises when workers with poor health decrease their exposure. Healthier workers do not decrease their exposure, thus giving rise to weak, null, or protective effect estimates even when exposure causes disease. Robins developed g-estimation to correct for this type of bias, but until recently it had not been applied to occupational exposures. Published applications of g-estimation of structural nested accelerated failure time models (SNAFTMs) consider a time-varying binary exposure and assume an additive structural model. Removing the effect of one year of exposure increases (or decreases) the counterfactual survival time by a fixed amount. We present a multiplicative SNAFTM appropriate for harmful exposures. Under this alternative model, removing the effect of one year of exposure increases the counterfactual survival time by a fixed factor rather than a fixed amount. The log of the ratio of the counterfactual survival time under no exposure to the observed survival time is modeled as the product of the parameter to be estimated and the total duration of exposure. We illustrate g-estimation of both models using data from an occupational cohort study of ischemic heart disease in autoworkers exposed to metalworking fluids. We compare the two models and their interpretations. Cumulative exposure is a more biologically relevant measure than duration of exposure for chronic disease; we therefore consider extensions of SNAFTMs to continuous measures of exposure.

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EMERGENCY DEPARTMENT VISITS FOR TRAUMATIC BRAIN INJURY IN A BIRTH COHORT OF PUBLICLY INSURED CHILDREN. *C DiMaggio (Columbia University, New York, NY)

We examined New York City Medicaid records for emergency department services for children born between 1999 and 2005. We used the Barell Matrix to identify traumatic brain injury (TBI). We calculated age-specific incidence rates and mapped Bayesian-smoothed gender-adjusted standardized morbidity ratios at the ZIP Code Tabulation Area looking for hot spots based on probability exceedence grater than twice the city-wide risk. Of 29,593 injured children, 871 (2.9%) had diagnostic codes consistent with TBI. Three hundred twenty seven of the TBI patients (37.5%) were admitted for inpatient care and accounted for 6.3% of all injury admission among the cohort. Three of six recorded deaths occurred in children with head injury. Between 1999 and 2005, the overall TBI injury rate for cohort males was 5.0 per 10,000 population. The rate for females was 3.8 per 10,000 population. While overall the incidence declined as children aged, the 1999 cohort had the highest incidence at each year of life. Some ZIP code tabulation areas in New York City were at greater than 10 times the expected number of TBI. The probability of TBI risk exceeding twice the underlying city-wide risk in a particular ZIP Code tabulation area varied by age group, although some areas had persistently elevated risk for all age groups. In the United States the leading cause of TBI is motor vehicle crashes, particularly pedestrian injuries in urban areas. In 2005, New York City implemented a large-scale Safe Routes to School initiative of improvements to the built environment surrounding public schools at high risk for pediatric crash injuries. This study helps inform the these efforts by establishing a baseline and identifying areas of high risk.

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SHORT- AND LONG-TERM LOST WORK TIME AND HOUSEHOLD INCOME CHANGES ASSOCIATED WITH WORK-RELATED INJURIES AMONG CHILDREN ON AGRICULTURAL OPERATIONS: REGIONAL RURAL INJURY STUDY III. S G Gerberich, *B H Alexander, A D Ryan, C M Renier, T R Church, A Masten, P M McGovern, S J Mongin (University of Minnesota, Minneapolis, MN 55455)

This study was conducted among agricultural operation households to identify the short- and long-term physical, psychosocial, and economic consequences of injuries among children/youths living in the households and the burden on the overall operations. Baseline data, collected in Minnesota, Wisconsin, North Dakota, South Dakota, and Nebraska for 1,474 eligible agricultural households, used computer assisted telephone interview instruments; two six-month injury data collection periods followed baseline collection. Respective child/youth case and control households, for these two six-month periods were: 1) 100 cases (122 Injuries), 366 controls; and 2) 115 cases (138 injuries), 414 controls. Short-term consequences within the 6-month injury reporting periods were: 35% of children and 7% of other household members lost agricultural work time, while 5% and 7%, respectively, lost non-agricultural work time. Evaluation data were collected annually for the subsequent two years. Comparing case and control households, analyses focused on changes in lost work time among household members caring for an injured or ill child, between baseline and follow-up interviews. Confounders were selected for multiple logistic regression analyses using directed acyclic graphs; reweighting adjusted for response and eligibility biases. At one-year post-injury, case households were twice as likely as control households to have increased lost time from operation-related work due to a child's health issues (O.R. 2.1, 95% C.I. 1.1-4.1). There was no effect on household income during the same time period.

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SURVEILLANCE FOR ACQUIRED BRAIN INJURY IN CANADA: AN ONTARIO EXAMPLE. *A Colantonio, A Chen, D Parsons, B Zagorksi, R VanderLaan (University of Toronto and the Toronto Rehabilitation Institute, Toronto, ON M5G1V7, Canada)

Acquired Brain Injury is a leading cause of death and disability in North America. The aim of this presentation is to provide an overview of the first comprehensive surveillance system that combines brain injury from both traumatic (TBI) and non traumatic causes (NTBI) utilizing administrative data from publicly funded health care system in Canada. Cases were selected from both emergency room data from the National Ambulatory Care Reporting System and inpatient data from the Discharge Abstract Data and National Rehabilitation Reporting System for the fiscal years 2002-2006. For these years, 17,482 TBI and 19,311 cases were identified. Rates per thousand were 1.3 and 1.2 respectively which were as high as 2.3 in northern geographical areas.. The rationale for the inclusion of specified ICD-10 codes of TBI and NTBI cases (consisting of injury due to brain tumours, infections and anoxia for instance) are discussed. The presentation provides a discussion of the methodological issues related to combining surveillance systems that can guide planning and evaluation of services dedicated to injury prevention and post acute care.