

Session C4: Economic Analysis and Evaluation Research

Presentations Highlights:

Introductory Remarks on the Importance of Economic Analysis and Evaluation Research – Elyce Biddle

- The Why, What , When & How are questions that need to be asked when conducting economic analysis on intervention/strategy evaluations
- The Why answers if proposed interventions are suitable and feasible, if the intervention produces the desired results or have un expected benefits or results, and if the intervention is effective for the target population, public and similar entities
- The What answers if the process is appropriate, adequate, effective, and efficient
- The When answers at what stage(s) of the process produces the impact/outcome
- The How defines the objective, target, collected information, collection method/instruments, and the report
- Healthcare Programs and Businesses should care and look closely at the Societal and Business perspective

Economic Evaluation Methods in Public Safety and Health – Kwame Owusu-Edusei

- Economic Evaluation Methods currently consist of: Cost Analysis (CA), Cost-Effectiveness Analysis (CEA), Cost-Utility Analysis (CUA), Cost-Benefit Analysis (CBA), and Sensitivity Analysis (SA)
- CA is the systematic collection, categorization and analysis of program or intervention costs and cost of injury/illness
- CEA expresses outcomes in injuries prevented, derives a ratio of cost per unit of outcome, compares results with other inventions
- CUA expresses outcomes in units of individual's preference/utility ranking, derives a ratio of cost per unit of outcome, and compares results with other interventions
- CBA standardizes both costs and benefits over time and provides a net benefit/value or a benefit/cost ratio
- CBA only method that includes costs categories for direct medical, direct non-medical, indirect and intangible
- SA is the process of varying parameter assumptions in an economic evaluation to test robustness of model, identify influential parameters, and to explore impact on different populations
- Economic evaluation can be conducted at the company, local, state, and federal levels and can be used to set safety and health policies at every level

Business Perspective on Evaluation Methods – Kimberly Keller

- Business software is available for economic analysis of healthcare programs

Data Sources For Cross-Cutting Evaluations – Brian Day

- Occupational Safety & Health surveillance in the U.S. is limited, especially diseases having long latency and non-occupational causes
- Small fraction of occupational disease cases are reported; work relatedness difficult; physicians under report; and worker don't recognize link
- Data Sources are: Bureau of Labor Statistics (BLS) Annual Survey of Occupational Injuries and Illnesses, National Health Interview Survey, Death Certificates, and Worker's Compensation Data
- Occupational Data can be found in the BLS Survey but represented by only a small fraction of claims
- Non-Discriminate Data Bases exist but confidence intervals are unacceptably wide
- Medical claims databases typically are large with multiple year data, representing working populations, data exists with providers, facilities, and pharmacy. Also, contain diagnosis, procedure, and SIC codes
- Medical claims surveillance indicates health insurers relationship to employers, ability to get info to actionable party, integrates health promotion with occupational safety & health, and enables integration of geographic information
- Highmark a healthcare provider has 3.5M members in western & central PA and 6M members statewide, 23M served nationally, 11,000 employees, \$9B in revenue, and a significant technology infrastructure
- Highmark claims study encompasses a 3 year data base on 10 diseases, industry groups, contract holders, and the same SIC codes for up to 3 years
- The results were member count, disease cost estimates by industry, and prevalence rates in Highmark population
- Claims-based data sources are useful in occupational health promotion

An Application of Tobit Regression and Oaxaca Decomposition Technique to Estimate Effects of Smoking on Absence from Work Due to Illness – Paul Leigh

- Tobit Regression created by James Tobin, Nobel Prize winner
- In theory, limited, censored, or truncated dependent variable should exist beyond limit or censored value
- When the dependent variable Y is discrete across a certain range and continuous across another, we say that Y is censored
- Y is truncated when we only observe X for observations where Y would not be censored
- Possible solutions for censored data when Y is censored from below at 0: Just do a logit or probit for $Y=0$ vs. $Y>0$ (this omits much info about Y); just do a linear regression for ranges of X where all $Y>0$ (all information about Y for wide ranges of X is lost); just do a linear regression on observations where $Y>0$ (leads to censoring bias and underestimates X Y relationship; and do a linear regression on all cases (overall prediction line fits poorly for values of X)
- An alternative is the Tobit Model which estimates a regression model for the uncensored data and assumes that the censored data have the same distribution of errors as the uncensored data

- The weakness of the Tobit Model is that it is vulnerable to violations of the error distribution assumptions, if heteroskedastic errors exist, the computer uses a bad estimate of the error distribution to determine the chance that a case would be censored and the coefficient is biased
- A difficulty of Tobit is the effect of X on measured Y or theoretical (latent) Y; if theoretical Y, the estimated Tobit coefficient gives it directly to you; if measured Y, then marginal effect is complicated
- Conclusion is that Tobit is useful for truncated or censored data

Economic Analysis: An On-going Process – Norman J Waitzman

- When doing Ex Ante/Ex Post evaluation outside of workplace health and safety results vary; there is a large variation among Ex Ante Analysis and significant variation between Ex Ante and Ex Post Analysis
- Requirement for Ongoing Evaluation is results change due to changing environment but change also results from evolution of science
- A cautionary note about evaluation with respect to the workplace is that it presupposes an epidemiological model, no matter how sophisticated and the evaluation cannot surmount the constraints imposed by that model
- Socioeconomic determinants of Health is often less prominent, the socioeconomic gradient in nearly every measure of morbidity and the workplace is an integral part of its socioeconomic fabric
- Area socioeconomic factors and health are: income inequality, residential segregation by economic status, and demographic structure of the workplace
- Promotional activities that recognize socioeconomic determinants are psychosocial stresses associated with compensation mechanisms, including wage/benefit packages, job security, hours/flexibility of schedule, and evidence of “voice” (unions, training, job advancement ladders)

Opportunities for an integrated approach

- CDC-NCIPC currently has an RFA out for evaluation of workplace interventions for intimate partner violence, which includes an economic component

Barriers to Success

- Lack of Awareness
- Budget Constraints

Recommendations for overcoming identified barriers

- Government to take the lead in educating the public & private sector
- Continue to hold conferences/workshops
- Expand extramural research
- Realize the cost savings in the long run via awareness