OBJECTIVES: Measurement errors in independent variables may lead to attenuated estimates of their effects and may contaminate estimates for other covariates in conventional linear regression models (LRM). However, the direction and magnitude of these biases are difficult to determine theoretically. Measurement error is a serious problem in health services research as health status is a latent variable that can only be measured with error using proxy variables. This study empirically evaluated the validity of LRM models in health outcomes research.

METHODS: SEMs with a latent health construct are proposed and compared with LRM models to examine the bias of measurement errors in general health status using data from a study of the impact of pharmacist’s consultation on both health outcomes and costs (KP/USC study). Perceived health status at a given time point was modeled as a latent variable measured by the multiple scales of the SF-36. RESULTS: The latent health construct with multiple scales of the SF-36 and its SEMs for health outcomes and costs are empirically supported by the KP/USC data. SEM estimations of the latent health construct in both the measurement model and the structural model were all statistically significant with expected signs. As predicted, LRM estimates for the SF-36 scales were attenuated. However, there is no strong evidence that LRM estimations of treatment effect were contaminated by the measurement errors in the SF-36 or that the simultaneity between health outcomes and costs. CONCLUSIONS: Measurement errors in health status variables may result in attenuated estimates of health status effects on patient outcomes. Fortunately, careful study design can eliminate the contamination of treatment effect estimates due to errors in measuring health status. Moreover, SEM methods can be used to control both attenuation and resonance biases.

DEVELOPMENT OF A CHRONIC DISEASE INDICATOR USING A MANAGED CARE POPULATION
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OBJECTIVES: Accurate determination of disease prevalence in large patient populations is difficult. The objective of this research was to use pharmacy data to develop an index that estimates the presence and number of chronic diseases in a managed care population. METHODS: An expert panel evaluated 246 specific medication classes as to their likelihood to be indicative of a chronic disease. Those classes identified were then compared against medical records from two random samples of persons 18 years of age or older continuously enrolled for at least one year in a health maintenance organization. One sample was drawn from all eligible persons (n = 137), while the other sample was restricted to individuals 50 years of age or greater (n = 138). A cumulative number of chronic conditions was designated the chronic disease index (CDI). Sensitivity and specificity were calculated for those conditions with prevalence greater than 10% based upon medical record review. RESULTS: The expert panel designated 54 drug classes as containing medications used to treat chronic conditions. A total of 5640 medications were dispensed over a 1 year period for the 275 subjects. The average total number of chronic conditions via medical record review was 2.89 + 2.07, compared to 1.33 + 1.21 chronic conditions estimated by medication use. The CDI correlated well with the number of chronic conditions found via record review (r = 0.735, p < 0.0001). The specificity of pharmacy records to indicate the presence of hypertension, dyslipidemia, depression, and diabetes was 79.9%, 99.0%, 90.2%, and 99.6%, respectively. The sensitivity was 90.9%, 49.9%, 77.5%, and 62.2% for hypertension, dyslipidemia, depression, and diabetes, respectively. CONCLUSIONS: The CDI correlates well with documented chronic conditions. Pharmacy data can be useful in identifying persons with diagnoses of hypertension, dyslipidemia, depression, and diabetes.

BAYESIAN OR CLASSICAL DESIGN AND ANALYSIS: DOES IT MAKE A DIFFERENCE?
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INTRODUCTION: The utility of research results is measured primarily by its effects on decisions. Underpinning research are methods appropriate to the question or hypothesis. The role of Classical and Bayesian approaches remains in dispute in health services research. The goal of this study was to determine if results differ when both analytic techniques are used with the same dataset. METHOD: We searched MEDLINE and related databases for English-language articles published 1 January 1978 through 31 August 1999. We combined Bayesian and Classical statistics search terms, and their variants, with randomized control trials (RCTs) and meta-analyses. RESULTS: Searches found 18 studies in 14 publications that met all criteria for review—9 RCTs, 8 meta-analyses and 1 epidemiological estimate. Statistical analyses using both methods agreed in 5 RCTs, 4 meta-analyses, and for the epidemiological estimates. For 4 RCTs where results disagreed, Classical analysis the experimental intervention was efficacious compared to the control and Bayesian reanalysis concluded the experimental intervention was not proven efficacious. Classical meta-analyses of the four studies where results disagreed concluded the experimental intervention was not better than the control; Bayesian reanalysis concluded the intervention was efficacious. CONCLUSION: The conventional wisdom that Classical and Bayesian methods will give similar answers is not supported by this study. Disagreement on many fundamental beliefs between Classical and Baye-