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Sarah Geneser* (sgeneser@stanford.edu), 1201 Welch Road, Rm P060, Stanford, CA 94305-5488, **Stephanie L. Rutledge** (srutledge@projects.sdsu.edu), Comprehensive SDSU/UCSD Cancer Center Partner, 6363 Alvarado Court, Suite 103, San Diego, CA 92120, and **Sylvia K. Plevritis** (sylvia.plevritis@stanford.edu), 1201 Welch Rd, Rm P267, Stanford, CA 94305-5488. *Identifying Effective Age-Based Mammogram Screening Schedules Using a Stochastic Population Model of Breast Cancer.*

Breast cancer is the second leading cause of cancer death among women in the United States. Early diagnosis is essential to survival, and mammograms offer an effective means of detection. While the US Preventative Services Task Force recommends mammography for women over 40, national and international debate considers alternative screening age intervals, with various groups advocating screening ages 40-69, 50-69, and 50-79 years. Another approach to address the age-dependent effects of screening on survival outcome is to consider age-dependent screening schedules, yet no policies do so. Moreover, little work exists on optimizing the cost-effectiveness of mammography over age-based intervals.

In our work, we compare the relative effectiveness of targeting different age-groups (40-69, 50-69, and 50-79) for screening on breast cancer mortality. Additionally, we investigate the impact of annual and biannual screening schedules by age group on mortality. To accomplish this, we employ a Markovian epidemiological model that simulates breast cancer histories for a large population of individual patients. To determine the effect of varying screening protocols, we include screening, detection, treatment, and mortality components in our computational model. (Received September 22, 2009)