

## **Mammographic Screening for Breast Cancer: Lessons for Epidemiology and other Population Sciences**

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Mammographic screening for breast cancer was one of the earliest cancer screening procedures to undergo large randomized trials, the first of which began over 40 years ago. The history of studies on mammography will be reviewed in the context of what population sciences have learned and should understand about screening. Information needed when considering mass screening programs include effectiveness of the program in reducing mortality and morbidity, the underlying population burden of the condition being sought, characteristics of the screening procedure, and cost of the program. Known information in relation to breast cancer and mammography will be reviewed, especially unintended harms of false-positive screening tests and overdiagnosis. Despite multiple randomized controlled trials in several countries, evidence-based groups that have reviewed the results have issued recommendations that have varied from screening all women after the age of 40 to screening no women. Possibilities for the differences will be discussed. The effect of improved screening over time and the possible interaction of screening and treatment improvements will be explored. The social context of screening may be more important for certain diseases than evidence-based recommendations. Population scientists must understand the underlying issues of screening, some of which are outside the usual scope of the discipline, to maximize our contributions to population screening of all types.

### **Literature**

1. Fletcher SW, Elmore JG. Mammographic screening for breast cancer. *N Engl J Med* 2003;348:1672-1680.
2. Elmore JA, Armstrong K, Lehman CD, Fletcher SW. Screening for breast cancer. *JAMA* 2005;293:1245-1256.