Overdiagnosis chiefly occurs among women diagnosed with the smallest breast cancers and artificially inflates the share of these smallest tumors among all incident cancers. Using demographic decomposition, we quantify how much of the overall gain in life expectancy resulted from [1] changes in the annual share of cancers by tumor size, [2] improvements in mortality from breast cancer, and [3] improvements in mortality from competing causes. We also calculate the annual proportion of cancers by tumor size that resulted in death from breast cancer within 10 years of diagnosis. Life expectancy increased by 10.8 years for breast cancer patients between 1975 and 2002. Increases in the annual share of <1cm and 1-2 cm cancers among all incident cancers contributed 4.8 and 3.2 years to this gain in life expectancy. Under the assumption of 10% overdiagnosis based on clinical trial evidence, the contribution of overdiagnosis for <1cm and 1-2 cm cancers equaled 0.5 and 0.3 years to the gain in life expectancy. Thus, overdiagnosis contributed just 0.8 years to the 10.8-year gain in life expectancy (7%). Most of the observed gain in life expectancy resulted from improvements in breast cancer treatment rather than artificially from overdiagnosis.