

Estimating Annual Expenditures for Cancer Screening in the United States

It is difficult to imagine designing a system where screening expenditures are less transparent than has evolved organically in the United States. The US has no organized screening programs – meaning a nationwide program targeting a defined target population, using a specified screening practice that then tracks the number screened, the number of positive results (true and false positives), subsequent testing and total cost. Instead opportunistic screening occurs – a haphazard process involving different target populations, different screening practices and different payers.

Thus no comprehensive data exist on screening expenditures for any cancer in the United States. Instead all estimates are sensitive to the data source: the payer involved, the local practice style and the completeness of data on subsequent testing. Back of the envelope estimates are provided below.

Breast Cancer Screening (\$8-\$15 billion/yr)

A 2014 study estimated aggregate cost of screening to be \$8 billion in 2010 – prior to the widespread use of 3-D mammography and MRI.

<https://www.acpjournals.org/doi/10.7326/m13-1217>

A 2020 study used Blue Cross/Blue Shield insurance claims to calculate the cost of breast cancer screening as \$353 per women screened (screening and subsequent evaluation). They estimated a total of \$2 billion for privately insured women age 40-49 (41% of whom were screened).

<https://jamanetwork.com/journals/jamainternalmedicine/article-abstract/2763180>

Applying their \$353 estimate to the 53 million women age 50 to 80 (of whom 70% are screened) suggests an annual cost of \$13 billion in this age group – thus \$15 billion for all women. This does not including the cost of pathologic evaluation or the treatment of overdiagnosed women.

Colorectal Cancer (\$15-\$43 billion/yr)

There are 95 million Americans between age 50 and 75. CRC screening penetration is now [about 70%](#). Over 90% of those screened ultimately [receive colonoscopies](#). Based on current age-specific screening patterns in the US, researchers estimate that [14 million colonoscopies](#) are performed annually for CRC screening or surveillance.

The price of a colonoscopy varies widely: \$1000-\$3000. Thus the cost of 14 million colonoscopies alone is \$14-\$42 billion. FIT-DNA testing adds another billion – Cologuard reported [\\$1 billion in revenue](#) for 2019. This estimate does not include the cost of FIT testing (tiny relative to colonoscopy), or pathologic evaluation of lesions removed during colonoscopy ($\approx 25\%$ - 50% of colonoscopies result in polypectomy and thus pathologic evaluation).

Prostate Cancer (\$2-\$4 billion)

A 2013 study using 2007-09 Medicare data estimated the annual cost of PSA screening (including subsequent biopsy & pathology) to be \$36 per male beneficiary. Because 30% of these beneficiaries were screened, the cost per man screened was \$120 ($= 36/0.3$).

<https://acsjournals.onlinelibrary.wiley.com/doi/10.1002/cncr.28373>

Medicare data are not ideal for generalizing to the population receiving PSA screening. Because the men are older (and their PSA's higher), Medicare biopsy volume is higher than in younger populations. On the other hand, the Medicare fee schedule results in considerably lower expenditures for specific services than in the private sector. The following estimate assumes the two effects counterbalance one another.

The table below provides estimates of the number of men screened in various age groups in 2020. The data on population age structure come from the US Census; PSA penetration by age group come from the Behavioral Risk Factor Surveillance System ([BRFSS](#)).

Age Group	Male Population	PSA Penetration	Total Screened
40 to 44 years	10,028,675	5.5%	551,577
45 to 49 years	10,079,567	10.3%	1,038,195
50 to 54 years	10,075,795	22.4%	2,256,978
55 to 59 years	10,440,265	32.8%	3,424,407
60 to 64 years	10,051,170	41.8%	4,201,389
65 to 69 years	8,191,111	49%	4,013,644
70 to 74 years	6,529,918	55.4%	3,617,575
75 to 79 years	4,367,764	51.6%	2,253,766
80 to 84 years	2,671,396	40.4%	1,079,244
85 years and over	2,284,092	40.4%	922,773

Roughly 23.4 million men screened @ \$120 per screenee is \$2.8 billion. Given the uncertainties of generalizing from Medicare data, call it \$2-\$4 billion. This does not count the treatment expenditures for overdiagnosed men, the [excess hospitalization](#) associated with biopsy or account for the growing use of MRI and additional biomarkers (e.g. 4Kscore) in prostate cancer screening.

Skin Cancer (\$4-\$6 billion)

Expenditures for skin cancer screening are particularly opaque as there are no survey data on screening penetration in the population and there is no code for “screening skin exams” in Medicare (as it is not covered by Medicare & many commercial insurers). But the downstream effects of screening are obvious in increased procedures related to skin cancer.

A [2018 study](#) using 2013 Medicare data identified dermatologic procedure expenditures of \$2.7 billion in the fee-for-service population. In 2013, 28% of Medicare beneficiaries were enrolled in Medicare Advantage, leaving 72% in fee-for-service. This suggests overall Medicare expenditures for dermatologic procedures would have been closer to \$4 billion (= 2.7/.72). The majority of these procedures were related to skin cancer. Using a range of 50%-75%, produces an estimate of \$2-\$3 billion in Medicare expenditures

What is happening in the under 65 population is unknown. The population age 40-64 is twice as large as the 65+ (Medicare) population. Even if the rate of procedures in these younger patients were half that of Medicare, this would translate to \$4-\$6 billion of expenditures.

This estimate is only for skin cancer-related procedures. It does not include dermatopathology or evaluation & management services. And again, Medicare expenditures for specific services are considerably lower than in the private sector.

Other Cancers

Cervical cancer screening and follow-up is estimate to cost \approx \$7 billion annually.

<https://www.sciencedirect.com/science/article/pii/S0264410X1201081X>

Lung cancer screening has been estimated to cost \$740 per screen with subsequent diagnostic procedures.

<https://pubmed.ncbi.nlm.nih.gov/34600897/>

12.7% of adults aged 55–80 years met USPSTF criteria for lung cancer screening.

<https://www.cdc.gov/mmwr/volumes/69/wr/mm6908a1.htm>

This translates into over 10 million individuals. Lung cancer screening has been slow to take off, however. Assuming only 10%-20% are screened would produce an estimate of \$1- \$2 billion.

Although not recommended there is some screening for other cancers: thyroid, ovarian, liver etc.

Estimate of total expenditure on screening (\$40-\$80 billion)

Notes:

The above estimate includes \$3 billion for pathology-related services (anatomic pathology expenditures in Medicare fee-for-service alone were [\\$2 billion](#) a decade ago).

This estimate does not include the cost of treating overdiagnosed breast and prostate cancer patients. While some might argue that it also fails to include reduced treatment costs attributable to screening, screening typically increases the number of people undergoing treatment (in [breast cancer](#), for example, more women receive mastectomies and/or radiation).