

Supplementary Online Content

Fu SJ, Rose L, Dawes AJ, Knowlton LM, Ruddy KJ, Morris AM. Out-of-pocket costs among patients with a new cancer diagnosis enrolled in high-deductible health plans vs traditional insurance. *JAMA Netw Open*. 2021;4(12):e2134282.

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This supplementary material has been provided by the authors to give readers additional information about their work.

eTable 1. *ICD-9* and *ICD-10* Cancer Codes

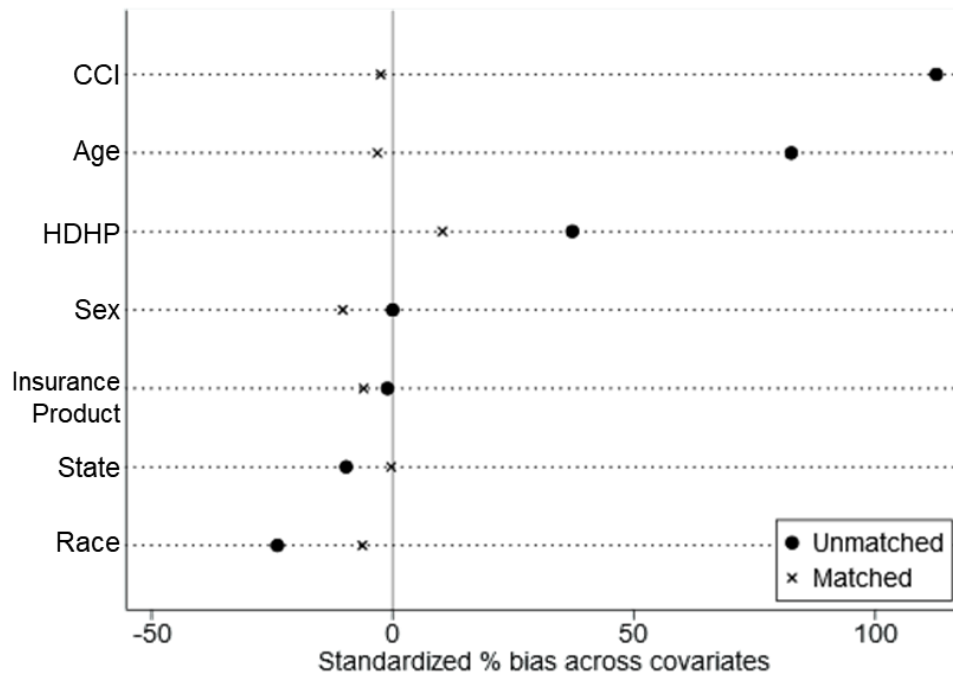
| Cancer type | <i>ICD-9</i> | <i>ICD-10</i> |
|-------------|---------------------------|---------------------------|
| Breast | 174-175 | C50 |
| Colorectal | 153-154 | C18-C20 |
| Lung | 162 | C34 |
| Other | 140-152; 155-161; 163-209 | C00-C17; C21-C33; C35-C7A |

eTable 2. Baseline Characteristics of Pre- and Post-Matched Cancer and Control Cohorts

| | Pre-matched | | Post-matched | |
|--------------------------|-----------------------------|---------------------------------|------------------------------|-------------------------------|
| | Cancer n=137,294 (7%) | Control n=1,924,045 (93%) | Cancer n=134,826 (50%) | Control n=134,826 (50%) |
| Age, median (IQR) | 53 (45-58) | 42 (31-52) | 53 (46-58) | 53 (46-59) |
| CCI, median (IQR) | 2 (1-3) | 0 (0-1) | 2 (1-3) | 3 (1-3) |
| Sex, n (%) | | | | |
| Female | 76,015 (55%) | 1,064,918 (55%) | 73,572 (55%) | 66,619 (49%) |
| Male | 61,279 (45%) | 859,127 (45%) | 61,254 (45%) | 68,207 (51%) |
| Race/ethnicity, n (%) | | | | |
| NHW | 112,107 (82%) | 1,376,858 (72%) | 110,071 (81%) | 105,023 (78%) |
| Black | 9,994 (7%) | 194,209 (10%) | 9,963 (7%) | 13,298 (10%) |
| Hispanic | 11,304 (8%) | 249,463 (13%) | 11,077 (8%) | 12,499 (9%) |
| Asian | 3,889 (3%) | 103,515 (5%) | 3,715 (3%) | 4,006 (3%) |
| Insurance Product, n (%) | | | | |
| HMO | 21,515 (16%) | 261,793 (14%) | 21,245 (16%) | 23,548 (17%) |
| POS | 93,021 (68%) | 1,341,410 (70%) | 91,027 (68%) | 85,189 (63%) |
| EPO | 14,707 (11%) | 221,699 (12%) | 14,524 (11%) | 15,552 (12%) |
| PPO | 6,164 (4%) | 78,511 (4%) | 6,147 (5%) | 7,322 (5%) |
| Indemnity | 72 (0%) | 473 (0%) | 72 (0%) | 111 (0%) |
| Other | 1,815 (1%) | 20,159 (1%) | 1,811 (1%) | 3,104 (2%) |
| HDHP, n (%) | 67,264 (49%) | 597,491 (31%) | 65,377 (48%) | 58,698 (44%) |

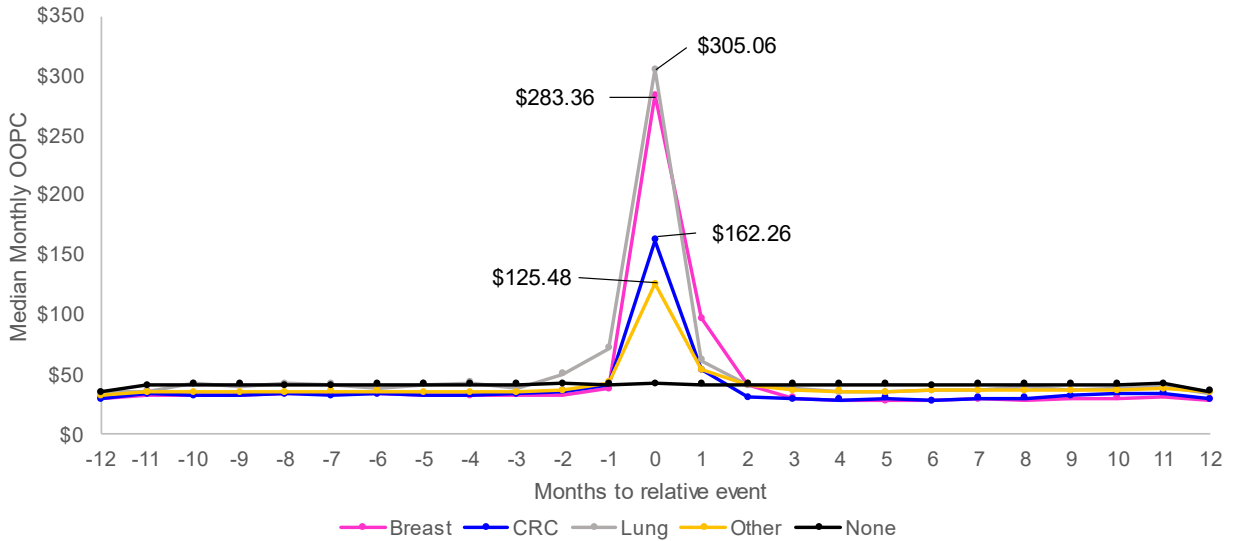
Abbreviations: n=number; IQR=interquartile range; CCI=Charlson comorbidity index; NHW=non-Hispanic White; HMO=health maintenance organization; POS=point-of-service; EPO=exclusive provider organization; PPO=preferred provider organization; HDHP=high deductible health plan

eFigure 1. Balance Tests After Propensity Score Matching



eFigure 2. OOPC by Cancer Type

A. Median Monthly OOPC by cancer type relative to event



B. Median Yearly OOPC by cancer type relative to event

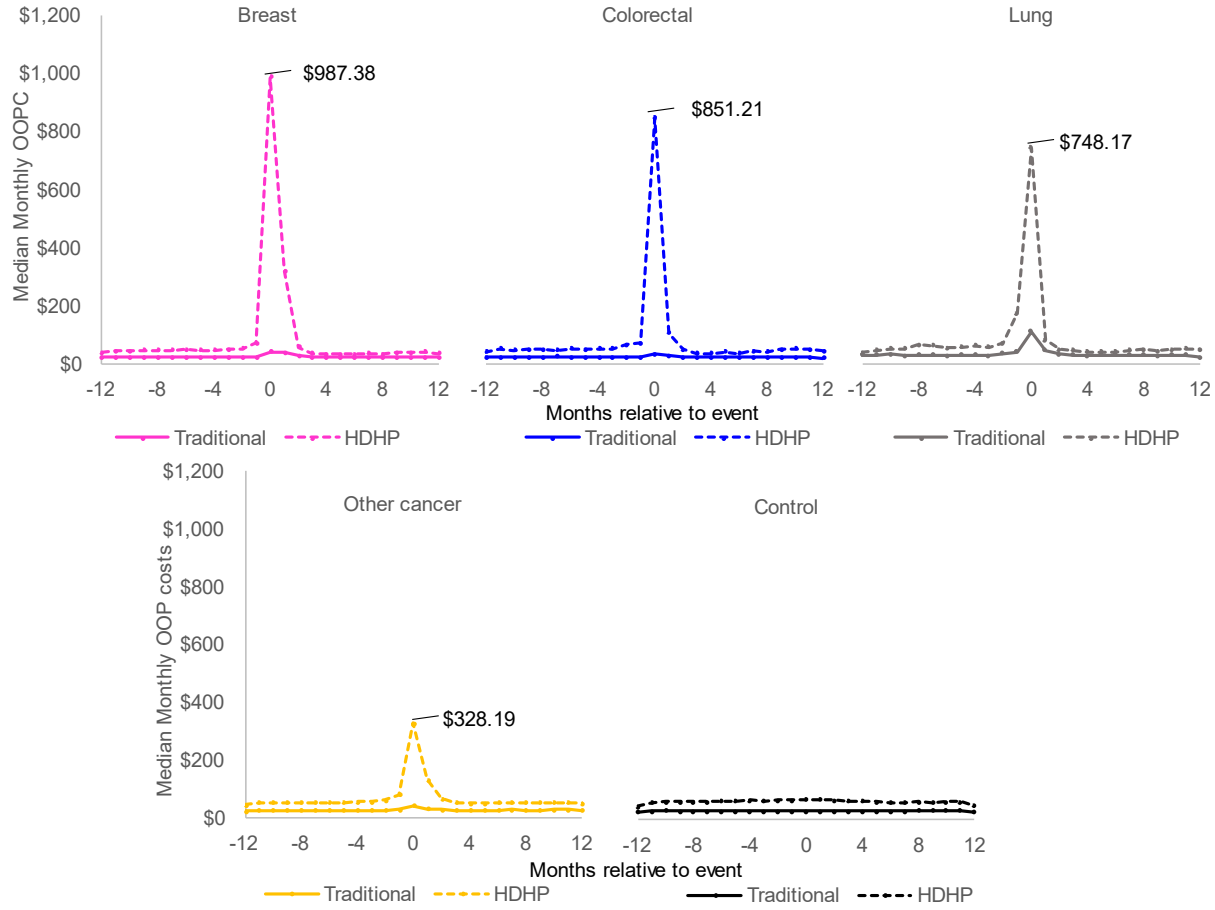
| Median yearly OOPC (IQR) | Pre-event | Post-event | Difference |
|--------------------------|----------------------------------|------------------------------------|-----------------------------------|
| Breast | \$477.71 (\$108.20 -1,435.90) | \$1,823.59 (\$419.96 -4,125.66) | \$705.42 (\$0 -3,027.19) |
| Colorectal | \$365.20 (\$81.45 -1,282.75) | \$1,193.85 (\$248.95 -3,346.63) | \$330.13 (-25.53 -2,246.54) |
| Lung | \$885.94 (\$229.00 -2,324.71) | \$1,649.16 (\$473.99 -3,399.16) | \$271.17 (-\$276.19 -1,774.36) |
| Other Cancer | \$348.89 (\$92.25 -1,131.91) | \$838.55 (\$276.54 -1,998.87) | \$220.34 (-\$66.25 -1,125.46) |
| Control | \$534.64 (\$159.70 -1,501.15) | \$682.62 (\$198.60 -1,819.50) | \$21.60 (-\$363.97 -712.05) |

*Comparison of yearly median OOPC difference amongst cancer type

Abbreviations: OOPC=out-of-pocket costs; IQR=interquartile range; HDHP=high-deductible health plan

eFigure 3. OOPC of HDHP vs Traditional Plan Enrollees by Cancer Type

A. Median monthly OOPC of HDHP vs traditional plan enrollees by cancer type



B. Median Yearly OOPC of HDHP vs traditional plan enrollees by cancer type

| Median Yearly OOPC (IQR) | Pre-event | | Post-event | | Difference | |
|--------------------------|-----------------------------------|-------------------------------------|-----------------------------------|---------------------------------------|-------------------------------------|-------------------------------------|
| | Traditional | HDHP | Traditional | HDHP | Traditional | HDHP |
| Breast | \$180.00 (\$33.60-604.26) | \$1,023.49 (\$355.69 - 2,218.74) | \$542.96 (\$107.70 - 1,936.78) | \$3,406.85 (\$1,673.59- 5,760.61) | \$160.00 (\$0-1,250.16) | \$1,975.99 (\$155.03 - 4,508.38) |
| CRC | \$150.82 (\$23.80-538.41) | \$897.71 (\$252.76 - 2,220.14) | \$349.04 (\$74.55- 1,250.52) | \$2,815.79 (\$1,277.81- 5,003.11) | \$65.54 (-\$14.63-698.81) | \$1,452.14 (-\$93.34 - 3,900.41) |
| Lung | \$413.13 (\$102.08 - 1,254.80) | \$1,737.22 (\$725.73 - 3,264.17) | \$782.60 (\$205.36- 2,257.93) | \$2,568.76 (\$1,282.30 - 4,518.74) | \$133.02 (-\$67.26 - \$1,055.20) | \$644.99 (-\$786.23 - 2,644.62) |
| Other cancer | \$170.01 (\$47.20-502.54) | \$754.25 (\$248.50 - 1,935.75) | \$347.28 (\$125.27 -843.84) | \$1,670.34 (\$887.42 - 3,003.66) | \$81.20 (-\$33.50-433.26) | \$732.37 (-\$210.66 - 1,938.67) |
| Control | \$270.98 (\$78.90-746.74) | \$1,161.35 (\$478.50 - 2,456.24) | \$342.51 (\$97.94 -982.96) | \$1,372.99 (\$595.33 - 2,793.19) | \$5.55 (-\$168.6-376.92) | \$103.84 (-\$846.77 - 1,293.97) |

Abbreviations: OOPC=out-of-pocket costs; IQR=interquartile range; CRC=colorectal; HDHP=high-deductible health plan

eTable 3. Deductibles and Charges During the Event Year

| | All Cancers | Lung | Breast | CRC | Other | No Cancer | All Cancer - HSA | No Cancer - HSA |
|-------------------|-------------|---------|--------|--------|--------|-----------|------------------|-----------------|
| Deductible | | | | | | | | |
| Average | 5733 | 5817 | 6538 | 5763 | 5606 | 2740 | 16453 | 7743 |
| SD | 9577 | 9693 | 10440 | 9677 | 9425 | 6647 | 13883 | 11085 |
| Median | 1447 | 1250 | 1649 | 1238 | 1395 | 143 | 13013 | 2486 |
| | | | | | | | | |
| Charges | | | | | | | | |
| Average | 237176 | 542880 | 477434 | 426158 | 187000 | 77078 | | |
| SD | 686768 | 1261800 | 878016 | 904562 | 61435 | 364990 | | |
| Median | 43200 | 148728 | 158818 | 99539 | 35093 | 6567 | | |

CRC: Colorectal Cancer; HSA: Health Savings Account; SD: standard deviation.