## Supplementary Results

## Table S1: Risk group level cost and effects (discounted at 5%) of 25 screening scenarios and a scenario without screening, per 1,000 simulated 40-year-olds, assuming perfect adherence

a. Effects of screening for the *very low* risk group

| Screening Strategy | | | FITs | Colonoscopies | Complications | CRC Incidence | CRC Mortality | Life Years[a] | Total QALYs[a] | Total Costs[ab] | ICER[ab] |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Test | Start Age | Interval | | | | | | | | | |
| No Screening | | | 0 | 36 | 0.03 | 36 | 12 | 17,910 | 17,899 | 531,056 | |
| FIT | 60 | 3 | 4,087 | 294 | 0.11 | 28 | 8 | 17,917 | 17,908 | 841,686 | Dominated |
| FIT | 60 | 2 | 6,110 | 385 | 0.13 | 26 | 7 | 17,919 | 17,909 | 881,028 | Dominated |
| FIT | 54 | 3 | 5,661 | 370 | 0.14 | 27 | 7 | 17,920 | 17,911 | 915,641 | 31,995 |
| FIT | 50 | 3 | 7,061 | 428 | 0.15 | 26 | 7 | 17,921 | 17,912 | 989,979 | Dominated |
| FIT | 54 | 2 | 8,219 | 482 | 0.16 | 25 | 6 | 17,921 | 17,913 | 981,909 | 33,639 |
| FIT | 60 | 1 | 10,181 | 559 | 0.17 | 24 | 6 | 17,920 | 17,911 | 983,128 | Dominated |
| FIT | 46 | 3 | 7,835 | 460 | 0.15 | 26 | 7 | 17,922 | 17,913 | 1,075,629 | Dominated |
| FIT | 50 | 2 | 9,538 | 538 | 0.17 | 25 | 6 | 17,923 | 17,914 | 1,075,858 | 63,911 |
| FIT | 46 | 2 | 10,778 | 588 | 0.18 | 25 | 6 | 17,923 | 17,915 | 1,192,966 | Dominated |
| FIT | 54 | 1 | 13,384 | 701 | 0.20 | 22 | 6 | 17,923 | 17,915 | 1,149,747 | 86,929 |
| FIT | 40 | 3 | 9,205 | 511 | 0.16 | 27 | 7 | 17,922 | 17,913 | 1,243,293 | Dominated |
| FIT | 50 | 1 | 15,233 | 778 | 0.22 | 22 | 6 | 17,925 | 17,917 | 1,300,489 | 96,014 |
| FIT | 40 | 2 | 12,485 | 649 | 0.19 | 25 | 7 | 17,924 | 17,915 | 1,417,130 | Dominated |
| FIT | 46 | 1 | 16,858 | 841 | 0.24 | 23 | 6 | 17,925 | 17,917 | 1,484,265 | 226,884 |
| COL | 60 | 10 | 0 | 1,978 | 0.34 | 18 | 5 | 17,922 | 17,913 | 1,527,701 | Dominated |
| FIT | 40 | 1 | 18,889 | 909 | 0.24 | 24 | 7 | 17,925 | 17,917 | 1,833,001 | Dominated |
| COL | 60 | 5 | 0 | 2,868 | 0.52 | 16 | 4 | 17,923 | 17,913 | 1,923,484 | Dominated |
| COL | 54 | 10 | 0 | 2,808 | 0.52 | 17 | 4 | 17,925 | 17,916 | 2,090,952 | Dominated |
| COL | 50 | 10 | 0 | 2,991 | 0.55 | 16 | 4 | 17,927 | 17,917 | 2,480,460 | Dominated |
| COL | 46 | 10 | 0 | 3,069 | 0.66 | 17 | 4 | 17,928 | 17,918 | 2,939,036 | Dominated |
| COL | 54 | 5 | 0 | 4,556 | 0.80 | 13 | 3 | 17,927 | 17,917 | 2,958,508 | Dominated |
| COL | 50 | 5 | 0 | 4,828 | 0.84 | 13 | 3 | 17,929 | 17,919 | 3,582,891 | 1,793,697 |
| COL | 40 | 10 | 0 | 4,003 | 0.70 | 15 | 4 | 17,929 | 17,918 | 4,102,124 | Dominated |
| COL | 46 | 5 | 0 | 5,681 | 0.97 | 13 | 3 | 17,930 | 17,919 | 4,577,339 | 3,977,790 |
| COL | 40 | 5 | 0 | 6,824 | 1.14 | 12 | 3 | 17,932 | 17,918 | 6,435,949 | Dominated |

b. Effects of screening for the *low* risk group

| Screening Strategy | | | FITs | Colonoscopies | Complications | CRC Incidence | CRC Mortality | Life Years[a] | Total QALYs[a] | Total Costs[ab] | ICER[ab] |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Test | Start Age | Interval | | | | | | | | | |
| No Screening | | | 0 | 57 | 0.05 | 57 | 20 | 17,893 | 17,876 | 840,912 | |
| FIT | 60 | 3 | 4,042 | 372 | 0.17 | 45 | 13 | 17,905 | 17,890 | 1,124,633 | Dominated |
| FIT | 60 | 2 | 6,037 | 471 | 0.19 | 42 | 11 | 17,907 | 17,892 | 1,153,974 | 19,124 |
| FIT | 54 | 3 | 5,625 | 455 | 0.20 | 44 | 12 | 17,909 | 17,894 | 1,195,225 | Dominated |
| FIT | 60 | 1 | 10,097 | 658 | 0.25 | 38 | 10 | 17,909 | 17,895 | 1,242,543 | Dominated |
| FIT | 54 | 2 | 8,175 | 577 | 0.23 | 40 | 11 | 17,911 | 17,897 | 1,249,685 | 19,258 |
| FIT | 50 | 3 | 7,035 | 515 | 0.22 | 43 | 12 | 17,911 | 17,897 | 1,266,575 | Dominated |
| FIT | 50 | 2 | 9,519 | 636 | 0.24 | 40 | 11 | 17,913 | 17,900 | 1,343,028 | Dominated |
| FIT | 46 | 3 | 7,821 | 549 | 0.21 | 43 | 12 | 17,911 | 17,898 | 1,353,677 | Dominated |
| FIT | 54 | 1 | 13,410 | 815 | 0.29 | 36 | 9 | 17,914 | 17,901 | 1,404,854 | 39,685 |
| FIT | 46 | 2 | 10,784 | 687 | 0.26 | 40 | 11 | 17,914 | 17,901 | 1,461,318 | Dominated |
| FIT | 40 | 3 | 9,203 | 597 | 0.22 | 44 | 12 | 17,912 | 17,898 | 1,524,008 | Dominated |
| FIT | 50 | 1 | 15,338 | 897 | 0.32 | 36 | 9 | 17,916 | 17,904 | 1,556,566 | 63,213 |
| FIT | 40 | 2 | 12,517 | 746 | 0.26 | 41 | 11 | 17,915 | 17,902 | 1,689,545 | Dominated |
| FIT | 46 | 1 | 17,029 | 960 | 0.33 | 37 | 10 | 17,917 | 17,905 | 1,746,359 | 182,494 |
| COL | 60 | 10 | 0 | 2,087 | 0.46 | 29 | 8 | 17,912 | 17,899 | 1,751,467 | Dominated |
| FIT | 40 | 1 | 19,117 | 1,022 | 0.33 | 39 | 11 | 17,917 | 17,904 | 2,104,788 | Dominated |
| COL | 60 | 5 | 0 | 2,961 | 0.66 | 26 | 7 | 17,914 | 17,900 | 2,116,045 | Dominated |
| COL | 54 | 10 | 0 | 2,858 | 0.68 | 26 | 7 | 17,917 | 17,905 | 2,284,883 | Dominated |
| COL | 50 | 10 | 0 | 3,113 | 0.71 | 25 | 6 | 17,920 | 17,907 | 2,688,824 | Dominated |
| COL | 54 | 5 | 0 | 4,549 | 0.96 | 21 | 5 | 17,920 | 17,907 | 3,086,369 | Dominated |
| COL | 46 | 10 | 0 | 3,197 | 0.82 | 27 | 7 | 17,921 | 17,908 | 3,155,140 | Dominated |
| COL | 50 | 5 | 0 | 4,923 | 1.02 | 20 | 5 | 17,923 | 17,910 | 3,726,554 | 370,130 |
| COL | 40 | 10 | 0 | 4,129 | 0.88 | 24 | 6 | 17,924 | 17,909 | 4,306,323 | Dominated |
| COL | 46 | 5 | 0 | 5,688 | 1.14 | 20 | 5 | 17,926 | 17,912 | 4,686,894 | 695,898 |
| COL | 40 | 5 | 0 | 6,920 | 1.33 | 18 | 4 | 17,929 | 17,912 | 6,555,452 | 2,053,361 |

c. Effects of screening for the *average* risk group

| Screening Strategy | | | FITs | Colonoscopies | Complications | CRC Incidence | CRC Mortality | Life Years[a] | Total QALYs[a] | Total Costs[ab] | ICER[ab] |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Test | Start Age | Interval | | | | | | | | | |
| No Screening | | | 0 | 83 | 0.07 | 83 | 28 | 17,873 | 17,848 | 1,211,915 | |
| FIT | 60 | 3 | 3,988 | 464 | 0.24 | 65 | 18 | 17,889 | 17,868 | 1,462,876 | Dominated |
| FIT | 60 | 2 | 5,948 | 573 | 0.27 | 61 | 16 | 17,892 | 17,871 | 1,480,195 | 11,509 |
| FIT | 54 | 3 | 5,580 | 556 | 0.27 | 64 | 18 | 17,894 | 17,874 | 1,527,861 | Dominated |
| FIT | 60 | 1 | 9,987 | 776 | 0.34 | 56 | 14 | 17,896 | 17,876 | 1,552,752 | Dominated |
| FIT | 54 | 2 | 8,119 | 690 | 0.31 | 59 | 16 | 17,898 | 17,879 | 1,568,124 | 12,402 |
| FIT | 50 | 3 | 7,001 | 619 | 0.30 | 62 | 17 | 17,897 | 17,877 | 1,595,055 | Dominated |
| FIT | 50 | 2 | 9,492 | 753 | 0.33 | 59 | 15 | 17,901 | 17,882 | 1,661,451 | Dominated |
| FIT | 46 | 3 | 7,800 | 654 | 0.29 | 63 | 17 | 17,899 | 17,879 | 1,685,377 | Dominated |
| FIT | 54 | 1 | 13,427 | 950 | 0.40 | 53 | 14 | 17,902 | 17,884 | 1,707,549 | 24,290 |
| FIT | 46 | 2 | 10,786 | 805 | 0.35 | 59 | 16 | 17,902 | 17,884 | 1,781,135 | Dominated |
| FIT | 40 | 3 | 9,197 | 701 | 0.29 | 64 | 18 | 17,899 | 17,880 | 1,858,394 | Dominated |
| FIT | 50 | 1 | 15,446 | 1,037 | 0.42 | 53 | 14 | 17,905 | 17,888 | 1,862,042 | 45,573 |
| FIT | 40 | 2 | 12,549 | 861 | 0.35 | 60 | 16 | 17,903 | 17,884 | 2,013,880 | Dominated |
| COL | 60 | 10 | 0 | 2,210 | 0.61 | 42 | 11 | 17,900 | 17,881 | 2,017,744 | Dominated |
| FIT | 46 | 1 | 17,217 | 1,103 | 0.44 | 54 | 14 | 17,907 | 17,889 | 2,057,988 | 128,069 |
| COL | 60 | 5 | 0 | 3,065 | 0.82 | 37 | 9 | 17,902 | 17,884 | 2,345,635 | Dominated |
| FIT | 40 | 1 | 19,373 | 1,158 | 0.43 | 57 | 16 | 17,906 | 17,888 | 2,427,946 | Dominated |
| COL | 54 | 10 | 0 | 2,920 | 0.86 | 38 | 10 | 17,907 | 17,890 | 2,518,294 | Dominated |
| COL | 50 | 10 | 0 | 3,253 | 0.91 | 37 | 9 | 17,911 | 17,894 | 2,936,137 | Dominated |
| COL | 54 | 5 | 0 | 4,540 | 1.16 | 30 | 7 | 17,912 | 17,895 | 3,241,023 | Dominated |
| COL | 46 | 10 | 0 | 3,344 | 1.00 | 39 | 10 | 17,913 | 17,895 | 3,410,330 | Dominated |
| COL | 50 | 5 | 0 | 5,029 | 1.24 | 29 | 7 | 17,916 | 17,899 | 3,896,161 | 180,213 |
| COL | 40 | 10 | 0 | 4,275 | 1.08 | 35 | 9 | 17,916 | 17,898 | 4,548,108 | Dominated |
| COL | 46 | 5 | 0 | 5,697 | 1.35 | 29 | 7 | 17,919 | 17,902 | 4,819,181 | 349,629 |
| COL | 40 | 5 | 0 | 7,028 | 1.56 | 26 | 6 | 17,924 | 17,905 | 6,696,070 | 708,260 |

d. Effects of screening for the *high* risk group

| Screening Strategy | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Test | Start Age | Interval | FITs | Colonoscopies | Complications | CRC Incidence | CRC Mortality | Life Years[a] | Total QALYs[a] | Total Costs[ab] | ICER[ab] |
| No Screening | | | 0 | 135 | 0.11 | 135 | 46 | 17,832 | 17,792 | 1,975,690 | |
| FIT | 60 | 2 | 5,749 | 777 | 0.42 | 99 | 27 | 17,864 | 17,830 | 2,139,982 | 4,300 |
| FIT | 60 | 3 | 3,870 | 649 | 0.38 | 106 | 30 | 17,859 | 17,824 | 2,148,370 | Dominated |
| FIT | 60 | 1 | 9,707 | 1,007 | 0.52 | 90 | 23 | 17,870 | 17,837 | 2,178,183 | 5,141 |
| FIT | 54 | 3 | 5,474 | 762 | 0.43 | 103 | 29 | 17,867 | 17,834 | 2,200,583 | Dominated |
| FIT | 54 | 2 | 7,976 | 919 | 0.48 | 96 | 25 | 17,873 | 17,842 | 2,211,588 | 7,751 |
| FIT | 50 | 3 | 6,913 | 833 | 0.46 | 101 | 27 | 17,872 | 17,839 | 2,261,428 | Dominated |
| FIT | 50 | 2 | 9,403 | 991 | 0.51 | 95 | 25 | 17,878 | 17,847 | 2,303,291 | Dominated |
| FIT | 54 | 1 | 13,369 | 1,217 | 0.61 | 86 | 22 | 17,881 | 17,851 | 2,315,132 | 10,752 |
| FIT | 46 | 3 | 7,739 | 870 | 0.45 | 102 | 28 | 17,874 | 17,842 | 2,356,947 | Dominated |
| FIT | 46 | 2 | 10,752 | 1,046 | 0.53 | 96 | 25 | 17,880 | 17,850 | 2,427,374 | Dominated |
| FIT | 50 | 1 | 15,562 | 1,321 | 0.65 | 86 | 22 | 17,885 | 17,857 | 2,472,317 | 28,069 |
| FIT | 40 | 3 | 9,167 | 914 | 0.45 | 103 | 29 | 17,875 | 17,843 | 2,534,984 | Dominated |
| COL | 60 | 10 | 0 | 2,425 | 0.88 | 68 | 18 | 17,877 | 17,847 | 2,551,250 | Dominated |
| FIT | 40 | 2 | 12,580 | 1,098 | 0.53 | 98 | 26 | 17,881 | 17,851 | 2,670,407 | Dominated |
| FIT | 46 | 1 | 17,495 | 1,391 | 0.66 | 87 | 23 | 17,887 | 17,859 | 2,682,285 | Dominated |
| COL | 60 | 5 | 0 | 3,231 | 1.13 | 59 | 15 | 17,880 | 17,852 | 2,806,337 | Dominated |
| COL | 54 | 10 | 0 | 3,059 | 1.22 | 62 | 16 | 17,888 | 17,861 | 2,996,730 | Dominated |
| FIT | 40 | 1 | 19,807 | 1,436 | 0.65 | 92 | 26 | 17,886 | 17,858 | 3,076,509 | Dominated |
| COL | 50 | 10 | 0 | 3,507 | 1.30 | 59 | 15 | 17,894 | 17,868 | 3,430,659 | Dominated |
| COL | 54 | 5 | 0 | 4,524 | 1.53 | 49 | 12 | 17,895 | 17,870 | 3,565,696 | Dominated |
| COL | 46 | 10 | 0 | 3,623 | 1.37 | 63 | 17 | 17,897 | 17,871 | 3,922,409 | Dominated |
| COL | 50 | 5 | 0 | 5,199 | 1.66 | 46 | 11 | 17,902 | 17,878 | 4,235,107 | 81,838 |
| COL | 40 | 10 | 0 | 4,544 | 1.49 | 57 | 14 | 17,903 | 17,877 | 5,033,423 | Dominated |
| COL | 46 | 5 | 0 | 5,719 | 1.76 | 48 | 12 | 17,907 | 17,883 | 5,097,948 | 172,568 |
| COL | 40 | 5 | 0 | 7,201 | 2.03 | 42 | 10 | 17,915 | 17,890 | 6,973,676 | 282,915 |

e. Effects of screening for the *very high* risk group

| Screening Strategy | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Test | Start Age | Interval | FITs | Colonoscopies | Complications | CRC Incidence | CRC Mortality | Life Years[a] | Total QALYs[a] | Total Costs[ab] | ICER[ab] |
| No Screening | | | 0 | 222 | 0.18 | 222 | 76 | 17,756 | 17,689 | 3,296,374 | Dominated |
| FIT | 60 | 1 | 9,016 | 1,358 | 0.81 | 144 | 37 | 17,822 | 17,768 | 3,209,564 | Dominates |
| FIT | 60 | 2 | 5,345 | 1,101 | 0.68 | 159 | 42 | 17,813 | 17,756 | 3,231,453 | Dominated |
| FIT | 54 | 2 | 7,610 | 1,292 | 0.78 | 152 | 40 | 17,829 | 17,777 | 3,268,440 | Dominated |
| FIT | 60 | 3 | 3,638 | 950 | 0.62 | 170 | 48 | 17,805 | 17,746 | 3,283,787 | Dominated |
| FIT | 54 | 1 | 12,890 | 1,638 | 0.95 | 136 | 34 | 17,841 | 17,793 | 3,300,695 | 3,687 |
| FIT | 54 | 3 | 5,237 | 1,107 | 0.70 | 165 | 45 | 17,819 | 17,764 | 3,309,921 | Dominated |
| FIT | 50 | 2 | 9,101 | 1,386 | 0.83 | 151 | 39 | 17,837 | 17,786 | 3,355,258 | Dominated |
| FIT | 50 | 3 | 6,679 | 1,195 | 0.75 | 161 | 43 | 17,827 | 17,774 | 3,358,728 | Dominated |
| COL | 60 | 10 | 0 | 2,657 | 1.25 | 112 | 29 | 17,832 | 17,784 | 3,432,092 | Dominated |
| FIT | 50 | 1 | 15,306 | 1,775 | 1.02 | 136 | 35 | 17,850 | 17,804 | 3,455,984 | 14,182 |
| FIT | 46 | 3 | 7,548 | 1,240 | 0.73 | 163 | 44 | 17,831 | 17,778 | 3,461,465 | Dominated |
| FIT | 46 | 2 | 10,529 | 1,453 | 0.86 | 152 | 40 | 17,842 | 17,793 | 3,485,059 | Dominated |
| COL | 60 | 5 | 0 | 3,352 | 1.53 | 99 | 25 | 17,837 | 17,791 | 3,580,870 | Dominated |
| FIT | 40 | 3 | 9,027 | 1,283 | 0.74 | 165 | 45 | 17,833 | 17,781 | 3,655,055 | Dominated |
| FIT | 46 | 1 | 17,489 | 1,867 | 1.05 | 138 | 36 | 17,854 | 17,809 | 3,680,416 | Dominated |
| FIT | 40 | 2 | 12,465 | 1,506 | 0.86 | 156 | 42 | 17,844 | 17,795 | 3,745,337 | Dominated |
| COL | 54 | 10 | 0 | 3,314 | 1.75 | 102 | 26 | 17,852 | 17,809 | 3,810,691 | Dominated |
| FIT | 40 | 1 | 20,104 | 1,909 | 1.03 | 146 | 40 | 17,853 | 17,808 | 4,123,967 | Dominated |
| COL | 54 | 5 | 0 | 4,510 | 2.06 | 84 | 20 | 17,863 | 17,823 | 4,162,832 | 38,064 |
| COL | 50 | 10 | 0 | 3,835 | 1.88 | 97 | 24 | 17,862 | 17,821 | 4,233,917 | Dominated |
| COL | 46 | 10 | 0 | 4,025 | 1.95 | 102 | 26 | 17,868 | 17,828 | 4,751,928 | Dominated |
| COL | 50 | 5 | 0 | 5,329 | 2.28 | 77 | 18 | 17,875 | 17,839 | 4,793,549 | 39,568 |
| COL | 46 | 5 | 0 | 5,780 | 2.40 | 80 | 20 | 17,884 | 17,848 | 5,602,818 | 82,326 |
| COL | 40 | 10 | 0 | 4,909 | 2.13 | 94 | 23 | 17,877 | 17,838 | 5,831,509 | Dominated |
| COL | 40 | 5 | 0 | 7,334 | 2.75 | 70 | 16 | 17,897 | 17,862 | 7,423,645 | 135,377 |

Abbreviations: COL = colonoscopy; CRC = colorectal cancer, FIT = faecal immunological test; QALYs = quality-adjusted life years

Note: details of the risk groups can be found in Table 2 of the manuscript

Grey shading highlights strategies on the efficient frontier.

a. Results are discounted at an annual rate of 5%
b. Costs are presented in Australian Dollars ($AUD)

## Table S2: Costs and effects of all a) uniform screening scenarios and b) personalised screening scenarios per 1,000 simulated 40-year-olds, assuming perfect adherence when costs are discounted at 5% and QALYs are discounted and weighted by age

a. Effects of uniform screening scenarios assuming perfect adherence

| Screening Strategy | | | FITs | Colonoscopies | Complications | CRC Incidence | CRC Mortality | Life Years[a] | Total QALYs[a] | Total Costs[bc] | ICER[c] |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Test | Start Age | Interval | | | | | | | | | |
| No Screening | | | 0 | 84 | 0.07 | 84 | 29 | 15,176 | 15,156 | 1,234,089 | |
| FIT | 60 | 3 | 3,981 | 467 | 0.24 | 66 | 19 | 15,190 | 15,172 | 1,240,498 | 413 |
| FIT | 60 | 2 | 5,935 | 576 | 0.27 | 62 | 16 | 15,192 | 15,175 | 1,256,805 | 5,643 |
| FIT | 54 | 3 | 5,571 | 561 | 0.28 | 64 | 18 | 15,194 | 15,177 | 1,304,332 | Dominated |
| FIT | 60 | 1 | 9,954 | 777 | 0.34 | 56 | 15 | 15,195 | 15,178 | 1,327,965 | Dominated |
| FIT | 54 | 2 | 8,101 | 695 | 0.32 | 59 | 16 | 15,197 | 15,181 | 1,343,651 | 14,720 |
| FIT | 50 | 3 | 6,990 | 625 | 0.30 | 63 | 17 | 15,196 | 15,180 | 1,371,842 | Dominated |
| FIT | 50 | 2 | 9,473 | 759 | 0.34 | 59 | 15 | 15,199 | 15,183 | 1,436,505 | Dominated |
| FIT | 46 | 3 | 7,789 | 660 | 0.29 | 63 | 17 | 15,197 | 15,181 | 1,462,077 | Dominated |
| FIT | 54 | 1 | 13,381 | 953 | 0.40 | 53 | 14 | 15,200 | 15,185 | 1,480,562 | 29,828 |
| FIT | 46 | 2 | 10,767 | 811 | 0.35 | 59 | 16 | 15,200 | 15,185 | 1,556,681 | Dominated |
| FIT | 50 | 1 | 15,397 | 1,042 | 0.43 | 53 | 14 | 15,202 | 15,188 | 1,634,262 | 52,279 |
| FIT | 40 | 3 | 9,187 | 707 | 0.30 | 64 | 18 | 15,198 | 15,182 | 1,635,282 | Dominated |
| FIT | 40 | 2 | 12,532 | 868 | 0.36 | 60 | 16 | 15,201 | 15,186 | 1,789,931 | Dominated |
| COL | 60 | 10 | 0 | 2,198 | 0.60 | 42 | 11 | 15,198 | 15,182 | 1,789,986 | Dominated |
| FIT | 46 | 1 | 17,171 | 1,109 | 0.44 | 54 | 14 | 15,204 | 15,190 | 1,830,442 | 139,134 |
| COL | 60 | 5 | 0 | 3,048 | 0.82 | 37 | 10 | 15,200 | 15,184 | 2,117,448 | Dominated |
| FIT | 40 | 1 | 19,338 | 1,165 | 0.44 | 57 | 16 | 15,204 | 15,189 | 2,201,540 | Dominated |
| COL | 54 | 10 | 0 | 2,928 | 0.86 | 39 | 10 | 15,204 | 15,189 | 2,294,199 | Dominated |
| COL | 50 | 10 | 0 | 3,245 | 0.91 | 37 | 9 | 15,207 | 15,192 | 2,706,770 | Dominated |
| COL | 54 | 5 | 0 | 4,540 | 1.16 | 31 | 7 | 15,207 | 15,193 | 3,016,912 | Dominated |
| COL | 46 | 10 | 0 | 3,341 | 1.01 | 39 | 10 | 15,208 | 15,194 | 3,181,465 | Dominated |
| COL | 50 | 5 | 0 | 5,012 | 1.24 | 29 | 7 | 15,211 | 15,197 | 3,664,480 | 251,583 |
| COL | 40 | 10 | 0 | 4,269 | 1.09 | 36 | 9 | 15,211 | 15,196 | 4,319,443 | Dominated |
| COL | 46 | 5 | 0 | 5,700 | 1.35 | 30 | 7 | 15,214 | 15,199 | 4,593,188 | 427,976 |
| COL | 40 | 5 | 0 | 7,011 | 1.57 | 26 | 6 | 15,217 | 15,201 | 6,462,019 | 869,224 |

b. Effects of personalised screening scenarios assuming perfect adherence[d]

| Screening Strategy | FITs | Colonoscopies | Complications | CRC Incidence | CRC Mortality | Life Years[a] | Total QALYs[a] | Total Costs[bc] | ICER[c] |
|---|---|---|---|---|---|---|---|---|---|
| No Screening | 0 | 84 | 0.07 | 84 | 29 | 15,176 | 15,156 | 1,234,089 | |
| PS01 | 360 | 130 | 0.09 | 81 | 27 | 15,178 | 15,159 | 1,467,668 | Dominated |
| PS02 | 515 | 141 | 0.10 | 81 | 27 | 15,179 | 15,160 | 1,471,312 | Dominated |
| PS03 | 1,722 | 276 | 0.16 | 73 | 23 | 15,184 | 15,166 | 1,505,808 | Dominated |
| PS04 | 2,554 | 324 | 0.18 | 71 | 22 | 15,185 | 15,167 | 1,513,829 | Dominated |
| PS05 | 2,190 | 305 | 0.18 | 72 | 23 | 15,186 | 15,168 | 1,520,843 | Dominated |
| PS06 | 3,322 | 368 | 0.20 | 70 | 22 | 15,187 | 15,169 | 1,542,584 | Dominated |
| PS07 | 5,226 | 525 | 0.27 | 63 | 18 | 15,192 | 15,175 | 1,628,434 | Dominated |
| PS08 | 5,920 | 562 | 0.28 | 63 | 18 | 15,193 | 15,177 | 1,656,571 | Dominated |
| PS09 | 6,017 | 568 | 0.28 | 63 | 18 | 15,193 | 15,177 | 1,662,780 | 20,620 |
| PS10 | 7,898 | 687 | 0.33 | 59 | 16 | 15,197 | 15,181 | 1,756,804 | 24,788 |
| PS12 | 10,057 | 792 | 0.36 | 57 | 15 | 15,198 | 15,183 | 1,834,425 | 32,204 |
| PS11 | 10,800 | 825 | 0.37 | 56 | 15 | 15,198 | 15,183 | 1,837,112 | Dominated |
| PS13 | 11,189 | 859 | 0.38 | 55 | 14 | 15,200 | 15,185 | 1,911,354 | 41,373 |
| PS14 | 11,700 | 881 | 0.39 | 55 | 14 | 15,200 | 15,185 | 1,924,610 | 43,491 |
| PS15 | 11,788 | 885 | 0.39 | 55 | 14 | 15,200 | 15,186 | 1,933,583 | 49,167 |
| PS16 | 11,089 | 1,023 | 0.44 | 52 | 13 | 15,201 | 15,186 | 1,978,086 | Dominated |
| PS17 | 11,398 | 1,037 | 0.44 | 52 | 13 | 15,202 | 15,187 | 1,999,556 | 50,356 |
| PS18 | 12,293 | 1,078 | 0.45 | 51 | 13 | 15,202 | 15,187 | 2,013,777 | 51,739 |
| PS19 | 12,939 | 1,106 | 0.46 | 51 | 13 | 15,202 | 15,188 | 2,063,215 | 55,162 |
| PS20 | 13,382 | 1,125 | 0.47 | 51 | 13 | 15,203 | 15,189 | 2,098,112 | 76,583 |
| PS21 | 13,646 | 1,136 | 0.47 | 51 | 13 | 15,203 | 15,189 | 2,116,904 | 78,423 |
| PS22 | 13,646 | 1,154 | 0.47 | 51 | 13 | 15,203 | 15,189 | 2,149,259 | 98,736 |
| PS23 | 14,052 | 1,169 | 0.48 | 52 | 14 | 15,204 | 15,190 | 2,193,345 | 98,758 |
| PS24 | 10,378 | 1,969 | 0.69 | 43 | 11 | 15,206 | 15,193 | 2,519,388 | 108,054 |
| PS25 | 11,518 | 2,017 | 0.70 | 43 | 11 | 15,206 | 15,193 | 2,564,321 | 118,157 |
| PS26 | 12,085 | 2,037 | 0.70 | 43 | 11 | 15,207 | 15,193 | 2,627,025 | 144,858 |
| PS27 | 12,085 | 2,100 | 0.71 | 43 | 11 | 15,207 | 15,194 | 2,699,821 | 168,462 |
| PS28 | 12,085 | 2,209 | 0.74 | 43 | 11 | 15,208 | 15,195 | 2,880,990 | Dominated |
| PS29 | 12,473 | 2,223 | 0.74 | 43 | 11 | 15,208 | 15,195 | 2,924,646 | 208,087 |
| PS30 | 6,964 | 3,480 | 0.99 | 35 | 9 | 15,211 | 15,197 | 3,512,866 | 244,752 |
| PS31 | 7,289 | 3,492 | 1.00 | 35 | 9 | 15,211 | 15,197 | 3,549,627 | 264,513 |
| PS32 | 7,289 | 3,804 | 1.05 | 34 | 8 | 15,212 | 15,199 | 3,943,469 | 358,974 |
| PS33 | 7,289 | 4,017 | 1.09 | 34 | 8 | 15,213 | 15,199 | 4,238,838 | 429,957 |
| PS34 | 3,372 | 4,929 | 1.25 | 30 | 7 | 15,214 | 15,200 | 4,694,318 | 522,899 |
| PS35 | 3,372 | 5,105 | 1.28 | 30 | 7 | 15,214 | 15,200 | 4,915,213 | 882,218 |
| PS36 | 3,372 | 5,531 | 1.35 | 29 | 7 | 15,216 | 15,201 | 5,515,822 | 951,617 |
| PS37 | 3,372 | 5,814 | 1.39 | 29 | 7 | 15,216 | 15,201 | 5,945,624 | 3,457,466 |
| PS38 | 0 | 6,612 | 1.51 | 27 | 6 | 15,217 | 15,201 | 6,365,416 | 3,689,986 |
| PS39 | 0 | 6,782 | 1.54 | 27 | 6 | 15,217 | 15,201 | 6,564,338 | 6,542,166 |

Abbreviations: COL = colonoscopy; CRC = colorectal cancer, FIT = faecal immunological test; ICER = incremental cost-effectiveness ratio; QALYs = quality-adjusted life years

Grey shading highlights screening scenarios on the efficient frontier.

a. Life years and QALYs are discounted at 5% and weighted by age
b. Costs are discounted at 5%
c. Costs are presented in Australian Dollars ($AUD)
d. The personalised screening scenarios are described in Table 3

**Table S3: Specifics of the personalised screening scenarios when costs are discounted at 5% and QALYs are discounted at 5% and weighted by age[a]**

| Screening Strategy | Risk Groups | | | | |
|---|---|---|---|---|---|
| | Very Low | Low | Average | High | Very High |
| PS1 | NoScr | NoScr | NoScr | NoScr | FIT_60_1 |
| PS2 | NoScr | NoScr | NoScr | NoScr | FIT_54_1 |
| PS3 | NoScr | NoScr | NoScr | FIT_60_2 | FIT_54_1 |
| PS4 | NoScr | NoScr | NoScr | FIT_60_1 | FIT_54_1 |
| PS5 | NoScr | NoScr | NoScr | FIT_54_2 | FIT_54_1 |
| PS6 | NoScr | NoScr | NoScr | FIT_54_1 | FIT_54_1 |
| PS7 | NoScr | NoScr | FIT_60_2 | FIT_54_1 | FIT_54_1 |
| PS8 | NoScr | NoScr | FIT_54_2 | FIT_54_1 | FIT_54_1 |
| PS9 | NoScr | NoScr | FIT_54_2 | FIT_54_1 | FIT_50_1 |
| PS10 | NoScr | FIT_54_2 | FIT_54_2 | FIT_54_1 | FIT_50_1 |
| PS11 | NoScr | FIT_54_2 | FIT_54_1 | FIT_54_1 | FIT_50_1 |
| PS12 | NoScr | FIT_54_2 | FIT_54_1 | FIT_50_1 | FIT_50_1 |
| PS13 | FIT_54_3 | FIT_54_2 | FIT_54_1 | FIT_50_1 | FIT_50_1 |
| PS14 | FIT_54_2 | FIT_54_2 | FIT_54_1 | FIT_50_1 | FIT_50_1 |
| PS15 | FIT_54_2 | FIT_54_2 | FIT_54_1 | FIT_50_1 | FIT_46_1 |
| PS16 | FIT_54_2 | FIT_54_2 | FIT_54_1 | FIT_50_1 | COL_50_5 |
| PS17 | FIT_54_2 | FIT_50_2 | FIT_54_1 | FIT_50_1 | COL_50_5 |
| PS18 | FIT_54_2 | FIT_54_1 | FIT_54_1 | FIT_50_1 | COL_50_5 |
| PS19 | FIT_54_2 | FIT_54_1 | FIT_50_1 | FIT_50_1 | COL_50_5 |
| PS20 | FIT_54_2 | FIT_50_1 | FIT_50_1 | FIT_50_1 | COL_50_5 |
| PS21 | FIT_50_2 | FIT_50_1 | FIT_50_1 | FIT_50_1 | COL_50_5 |
| PS22 | FIT_50_2 | FIT_50_1 | FIT_50_1 | FIT_50_1 | COL_46_5 |
| PS23 | FIT_50_2 | FIT_50_1 | FIT_50_1 | FIT_46_1 | COL_46_5 |
| PS24 | FIT_50_2 | FIT_50_1 | FIT_50_1 | COL_50_5 | COL_46_5 |
| PS25 | FIT_50_1 | FIT_50_1 | FIT_50_1 | COL_50_5 | COL_46_5 |
| PS26 | FIT_50_1 | FIT_50_1 | FIT_46_1 | COL_50_5 | COL_46_5 |
| PS27 | FIT_50_1 | FIT_50_1 | FIT_46_1 | COL_50_5 | COL_40_5 |
| PS28 | FIT_50_1 | FIT_50_1 | FIT_46_1 | COL_46_5 | COL_40_5 |
| PS29 | FIT_50_1 | FIT_46_1 | FIT_46_1 | COL_46_5 | COL_40_5 |
| PS30 | FIT_50_1 | FIT_46_1 | COL_50_5 | COL_46_5 | COL_40_5 |
| PS31 | FIT_46_1 | FIT_46_1 | COL_50_5 | COL_46_5 | COL_40_5 |
| PS32 | FIT_46_1 | FIT_46_1 | COL_50_5 | COL_40_5 | COL_40_5 |
| PS33 | FIT_46_1 | FIT_46_1 | COL_46_5 | COL_40_5 | COL_40_5 |
| PS34 | FIT_46_1 | COL_50_5 | COL_46_5 | COL_40_5 | COL_40_5 |
| PS35 | FIT_46_1 | COL_46_5 | COL_46_5 | COL_40_5 | COL_40_5 |
| PS36 | FIT_46_1 | COL_46_5 | COL_40_5 | COL_40_5 | COL_40_5 |
| PS37 | FIT_46_1 | COL_40_5 | COL_40_5 | COL_40_5 | COL_40_5 |
| PS38 | COL_50_5 | COL_40_5 | COL_40_5 | COL_40_5 | COL_40_5 |
| PS39 | COL_46_5 | COL_40_5 | COL_40_5 | COL_40_5 | COL_40_5 |

Abbreviations: COL = Colonoscopy; FIT = faecal immunochemical test; NoScr = no screening
Screening strategies: screening test, screening start age, screening interval
a. All screening ends at or before the age of 74 years

## Table S4: Costs and effects of all a) uniform screening scenarios and b) personalised screening scenarios per 1,000 simulated 40-year-olds, assuming perfect adherence when costs and QALYs are discounted at 3%

a. Effects of uniform screening scenarios assuming perfect adherence

| Screening Strategy | | | FITs | Colonoscopies | Complications | CRC Incidence | CRC Mortality | Life Years[a] | Total QALYs[a] | Total Costs[ab] | ICER[b] |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Test | Start Age | Interval | | | | | | | | | |
| No Screening | | | 0 | 84 | 0.07 | 84 | 29 | 24,044 | 23,998 | 2,131,337 | Dominated |
| FIT | 60 | 3 | 3,981 | 467 | 0.24 | 66 | 19 | 24,081 | 24,042 | 2,039,884 | Dominates |
| FIT | 60 | 2 | 5,935 | 576 | 0.27 | 62 | 16 | 24,088 | 24,050 | 2,047,061 | 861 |
| FIT | 54 | 3 | 5,571 | 561 | 0.28 | 64 | 18 | 24,091 | 24,054 | 2,108,708 | Dominated |
| FIT | 60 | 1 | 9,954 | 777 | 0.34 | 56 | 15 | 24,095 | 24,060 | 2,142,041 | Dominated |
| FIT | 54 | 2 | 8,101 | 695 | 0.32 | 59 | 16 | 24,099 | 24,064 | 2,144,612 | 7,275 |
| FIT | 50 | 3 | 6,990 | 625 | 0.30 | 63 | 17 | 24,096 | 24,060 | 2,178,311 | Dominated |
| FIT | 50 | 2 | 9,473 | 759 | 0.34 | 59 | 15 | 24,103 | 24,069 | 2,250,511 | Dominated |
| FIT | 46 | 3 | 7,789 | 660 | 0.29 | 63 | 17 | 24,098 | 24,062 | 2,279,045 | Dominated |
| FIT | 54 | 1 | 13,381 | 953 | 0.40 | 53 | 14 | 24,108 | 24,076 | 2,323,627 | 15,069 |
| FIT | 46 | 2 | 10,767 | 811 | 0.35 | 59 | 16 | 24,105 | 24,072 | 2,381,682 | Dominated |
| FIT | 40 | 3 | 9,187 | 707 | 0.30 | 64 | 18 | 24,098 | 24,063 | 2,452,550 | Dominated |
| FIT | 50 | 1 | 15,397 | 1,042 | 0.43 | 53 | 14 | 24,112 | 24,081 | 2,501,392 | 32,204 |
| FIT | 40 | 2 | 12,532 | 868 | 0.36 | 60 | 16 | 24,106 | 24,072 | 2,616,871 | Dominated |
| FIT | 46 | 1 | 17,171 | 1,109 | 0.44 | 54 | 14 | 24,113 | 24,083 | 2,716,181 | Dominated |
| COL | 60 | 10 | 0 | 2,198 | 0.60 | 42 | 11 | 24,105 | 24,072 | 2,815,371 | Dominated |
| FIT | 40 | 1 | 19,338 | 1,165 | 0.44 | 57 | 16 | 24,111 | 24,079 | 3,085,943 | Dominated |
| COL | 60 | 5 | 0 | 3,048 | 0.82 | 37 | 10 | 24,110 | 24,078 | 3,338,895 | Dominated |
| COL | 54 | 10 | 0 | 2,928 | 0.86 | 39 | 10 | 24,118 | 24,088 | 3,455,297 | Dominated |
| COL | 50 | 10 | 0 | 3,245 | 0.91 | 37 | 9 | 24,124 | 24,095 | 3,893,169 | 98,778 |
| COL | 46 | 10 | 0 | 3,341 | 1.01 | 39 | 10 | 24,126 | 24,098 | 4,338,784 | Dominated |
| COL | 54 | 5 | 0 | 4,540 | 1.16 | 31 | 7 | 24,127 | 24,099 | 4,560,398 | Dominated |
| COL | 50 | 5 | 0 | 5,012 | 1.24 | 29 | 7 | 24,134 | 24,108 | 5,259,267 | 110,258 |
| COL | 40 | 10 | 0 | 4,269 | 1.09 | 36 | 9 | 24,132 | 24,104 | 5,491,543 | Dominated |
| COL | 46 | 5 | 0 | 5,700 | 1.35 | 30 | 7 | 24,139 | 24,112 | 6,281,315 | 234,415 |
| COL | 40 | 5 | 0 | 7,011 | 1.57 | 26 | 6 | 24,147 | 24,119 | 8,165,431 | 285,040 |

b. Effects of personalised screening scenarios assuming perfect adherence[c]

| Screening Strategy | FITs | Colonoscopies | Complications | CRC Incidence | CRC Mortality | Life Years[a] | Total QALYs[a] | Total Costs[ab] | ICER[b] |
|---|---|---|---|---|---|---|---|---|---|
| No Screening | 0 | 84 | 0.07 | 84 | 29 | 24,044 | 23,998 | 2,131,337 | |
| PS01 | 1,568 | 264 | 0.16 | 73 | 23 | 24,064 | 24,022 | 2,325,151 | Dominated |
| PS02 | 1,722 | 276 | 0.16 | 73 | 23 | 24,066 | 24,024 | 2,328,301 | Dominated |
| PS03 | 2,554 | 324 | 0.18 | 71 | 22 | 24,068 | 24,028 | 2,334,210 | Dominated |
| PS04 | 4,457 | 481 | 0.25 | 64 | 19 | 24,082 | 24,044 | 2,388,587 | 5,634 |
| PS05 | 5,226 | 525 | 0.27 | 63 | 18 | 24,086 | 24,049 | 2,421,113 | 6,202 |
| PS06 | 5,920 | 562 | 0.28 | 63 | 18 | 24,089 | 24,053 | 2,452,809 | 7,685 |
| PS07 | 7,309 | 658 | 0.32 | 59 | 16 | 24,096 | 24,061 | 2,517,012 | 7,840 |
| PS08 | 7,406 | 663 | 0.32 | 59 | 16 | 24,097 | 24,062 | 2,524,438 | 10,732 |
| PS09 | 7,898 | 687 | 0.33 | 59 | 16 | 24,098 | 24,064 | 2,550,682 | 12,607 |
| PS10 | 8,715 | 739 | 0.34 | 57 | 15 | 24,102 | 24,068 | 2,612,964 | Dominated |
| PS11 | 10,414 | 822 | 0.37 | 55 | 14 | 24,104 | 24,072 | 2,671,669 | 15,773 |
| PS12 | 10,728 | 837 | 0.37 | 55 | 14 | 24,105 | 24,073 | 2,689,632 | 16,721 |
| PS13 | 10,117 | 947 | 0.42 | 53 | 14 | 24,107 | 24,075 | 2,725,078 | 19,526 |
| PS14 | 10,577 | 968 | 0.42 | 53 | 14 | 24,108 | 24,076 | 2,763,970 | 21,599 |
| PS15 | 11,089 | 991 | 0.43 | 52 | 14 | 24,109 | 24,077 | 2,782,499 | 22,238 |
| PS16 | 11,089 | 1,023 | 0.44 | 52 | 13 | 24,110 | 24,078 | 2,811,605 | 26,284 |
| PS17 | 12,293 | 1,078 | 0.45 | 51 | 13 | 24,111 | 24,080 | 2,860,808 | 26,934 |
| PS18 | 12,939 | 1,106 | 0.46 | 51 | 13 | 24,112 | 24,082 | 2,918,096 | 34,370 |
| PS19 | 13,203 | 1,117 | 0.46 | 51 | 13 | 24,113 | 24,082 | 2,939,743 | 44,551 |
| PS20 | 13,646 | 1,136 | 0.47 | 51 | 13 | 24,113 | 24,083 | 2,979,627 | 46,083 |
| PS21 | 10,378 | 1,595 | 0.61 | 46 | 12 | 24,117 | 24,089 | 3,226,411 | 46,622 |
| PS22 | 10,378 | 1,951 | 0.68 | 43 | 11 | 24,121 | 24,093 | 3,465,361 | 52,016 |
| PS23 | 11,148 | 1,983 | 0.69 | 42 | 11 | 24,121 | 24,094 | 3,491,503 | 56,483 |
| PS24 | 11,148 | 2,001 | 0.69 | 43 | 11 | 24,122 | 24,094 | 3,526,082 | 60,225 |
| PS25 | 11,518 | 2,017 | 0.70 | 43 | 11 | 24,122 | 24,095 | 3,560,357 | 68,807 |
| PS26 | 11,518 | 2,079 | 0.71 | 42 | 11 | 24,123 | 24,096 | 3,633,921 | 76,512 |
| PS27 | 6,575 | 2,788 | 0.87 | 37 | 9 | 24,127 | 24,100 | 4,079,776 | 96,653 |
| PS28 | 6,575 | 3,356 | 0.97 | 34 | 8 | 24,130 | 24,104 | 4,518,470 | 109,516 |
| PS29 | 6,575 | 3,465 | 0.99 | 35 | 9 | 24,132 | 24,106 | 4,711,626 | 121,339 |
| PS30 | 6,575 | 3,776 | 1.05 | 34 | 8 | 24,134 | 24,109 | 5,113,837 | 149,883 |
| PS31 | 3,047 | 4,286 | 1.14 | 31 | 7 | 24,136 | 24,110 | 5,459,786 | 176,486 |
| PS32 | 3,372 | 4,299 | 1.14 | 31 | 7 | 24,136 | 24,111 | 5,498,219 | 190,456 |
| PS33 | 3,372 | 4,715 | 1.21 | 30 | 7 | 24,138 | 24,112 | 5,839,990 | 199,604 |
| PS34 | 3,372 | 4,929 | 1.25 | 30 | 7 | 24,140 | 24,114 | 6,163,155 | 230,476 |
| PS35 | 3,372 | 5,355 | 1.32 | 29 | 7 | 24,142 | 24,116 | 6,770,919 | 305,621 |
| PS36 | 3,372 | 5,531 | 1.35 | 29 | 7 | 24,143 | 24,116 | 7,016,964 | 410,008 |
| PS37 | 0 | 6,328 | 1.47 | 27 | 6 | 24,144 | 24,118 | 7,613,850 | 511,280 |
| PS38 | 0 | 6,612 | 1.51 | 27 | 6 | 24,146 | 24,118 | 8,044,907 | 557,935 |
| PS39 | 0 | 6,782 | 1.54 | 27 | 6 | 24,146 | 24,119 | 8,270,010 | 1,157,855 |
| PS40 | 0 | 7,011 | 1.57 | 26 | 6 | 24,147 | 24,119 | 8,639,531 | 1,798,841 |

Abbreviations: COL = colonoscopy; CRC = colorectal cancer, FIT = faecal immunological test; ICER = incremental cost-effectiveness ratio; QALYs = quality-adjusted life years

Grey shading highlights screening scenarios on the efficient frontier.

a. Results are discounted at 3%
b. Costs are presented in Australian Dollars ($AUD)
c. The personalised screening scenarios are described in Table 5

**Table S5: Specifics of the personalised screening scenarios by willingness-to-pay threshold when cost and QALYs are discounted by 3%[a]**

| Screening Strategy | Risk Groups | | | | |
|---|---|---|---|---|---|
| | Very Low | Low | Average | High | Very High |
| PS1 | NoScr | NoScr | NoScr | FIT_60_2 | FIT_60_1 |
| PS2 | NoScr | NoScr | NoScr | FIT_60_2 | FIT_54_1 |
| PS3 | NoScr | NoScr | NoScr | FIT_60_1 | FIT_54_1 |
| PS4 | NoScr | NoScr | FIT_60_2 | FIT_60_1 | FIT_54_1 |
| PS5 | NoScr | NoScr | FIT_60_2 | FIT_54_1 | FIT_54_1 |
| PS6 | NoScr | NoScr | FIT_54_2 | FIT_54_1 | FIT_54_1 |
| PS7 | NoScr | FIT_60_2 | FIT_54_2 | FIT_54_1 | FIT_54_1 |
| PS8 | NoScr | FIT_60_2 | FIT_54_2 | FIT_54_1 | FIT_50_1 |
| PS9 | NoScr | FIT_54_2 | FIT_54_2 | FIT_54_1 | FIT_50_1 |
| PS10 | FIT_60_74_3 | FIT_54_2 | FIT_54_2 | FIT_54_1 | FIT_50_1 |
| PS11 | FIT_60_74_3 | FIT_54_2 | FIT_54_1 | FIT_54_1 | FIT_50_1 |
| PS12 | FIT_54_3 | FIT_54_2 | FIT_54_1 | FIT_54_1 | FIT_50_1 |
| PS13 | FIT_54_3 | FIT_54_2 | FIT_54_1 | FIT_54_1 | COL_54_5 |
| PS14 | FIT_54_3 | FIT_54_2 | FIT_54_1 | FIT_50_1 | COL_54_5 |
| PS15 | FIT_54_2 | FIT_54_2 | FIT_54_1 | FIT_50_1 | COL_54_5 |
| PS16 | FIT_54_2 | FIT_54_2 | FIT_54_1 | FIT_50_1 | COL_50_5 |
| PS17 | FIT_54_2 | FIT_54_1 | FIT_54_1 | FIT_50_1 | COL_50_5 |
| PS18 | FIT_54_2 | FIT_54_1 | FIT_50_1 | FIT_50_1 | COL_50_5 |
| PS19 | FIT_50_2 | FIT_54_1 | FIT_50_1 | FIT_50_1 | COL_50_5 |
| PS20 | FIT_50_2 | FIT_50_1 | FIT_50_1 | FIT_50_1 | COL_50_5 |
| PS21 | FIT_50_2 | FIT_50_1 | FIT_50_1 | COL_50_10 | COL_50_5 |
| PS22 | FIT_50_2 | FIT_50_1 | FIT_50_1 | COL_50_5 | COL_50_5 |
| PS23 | FIT_54_1 | FIT_50_1 | FIT_50_1 | COL_50_5 | COL_50_5 |
| PS24 | FIT_54_1 | FIT_50_1 | FIT_50_1 | COL_50_5 | COL_46_5 |
| PS25 | FIT_50_1 | FIT_50_1 | FIT_50_1 | COL_50_5 | COL_46_5 |
| PS26 | FIT_50_1 | FIT_50_1 | FIT_50_1 | COL_50_5 | COL_40_5 |
| PS27 | FIT_50_1 | FIT_50_1 | COL_50_10 | COL_50_5 | COL_40_5 |
| PS28 | FIT_50_1 | FIT_50_1 | COL_50_5 | COL_50_5 | COL_40_5 |
| PS29 | FIT_50_1 | FIT_50_1 | COL_50_5 | COL_46_5 | COL_40_5 |
| PS30 | FIT_50_1 | FIT_50_1 | COL_50_5 | COL_40_5 | COL_40_5 |
| PS31 | FIT_50_1 | COL_50_10 | COL_50_5 | COL_40_5 | COL_40_5 |
| PS32 | FIT_46_1 | COL_50_10 | COL_50_5 | COL_40_5 | COL_40_5 |
| PS33 | FIT_46_1 | COL_50_5 | COL_50_5 | COL_40_5 | COL_40_5 |
| PS34 | FIT_46_1 | COL_50_5 | COL_46_5 | COL_40_5 | COL_40_5 |
| PS35 | FIT_46_1 | COL_50_5 | COL_40_5 | COL_40_5 | COL_40_5 |
| PS36 | FIT_46_1 | COL_46_5 | COL_40_5 | COL_40_5 | COL_40_5 |
| PS37 | COL_50_5 | COL_46_5 | COL_40_5 | COL_40_5 | COL_40_5 |
| PS38 | COL_50_5 | COL_40_5 | COL_40_5 | COL_40_5 | COL_40_5 |
| PS39 | COL_46_5 | COL_40_5 | COL_40_5 | COL_40_5 | COL_40_5 |
| PS40 | COL_40_5 | COL_40_5 | COL_40_5 | COL_40_5 | COL_40_5 |

Abbreviations: COL = Colonoscopy; FIT = faecal immunochemical test; NoScr = no screening
Screening strategies: screening test, screening start age, screening interval
a. All screening ends at or before the age of 74 years

## Table S6: Costs and effects of all a) uniform screening scenarios and b) personalised screening scenarios per 1,000 simulated 40-year-olds, assuming perfect adherence when costs and QALYs are undiscounted

a. Effects of uniform screening scenarios assuming perfect adherence

| Screening Strategy | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Test | Start Age | Interval | FITs | Colonoscopies | Complications | CRC Incidence | CRC Mortality | Life Years[a] | Total QALYs[a] | Total Costs[ab] | ICER[b] |
| No Screening | | | 0 | 84 | 0.07 | 84 | 29 | 43,001 | 42,869 | 5,460,172 | Dominated |
| FIT | 60 | 2 | 5,935 | 576 | 0.27 | 62 | 16 | 43,149 | 43,049 | 4,739,664 | Dominates |
| FIT | 60 | 3 | 3,981 | 467 | 0.24 | 66 | 19 | 43,126 | 43,020 | 4,817,049 | Dominated |
| FIT | 54 | 2 | 8,101 | 695 | 0.32 | 59 | 16 | 43,176 | 43,084 | 4,850,988 | 3,179 |
| FIT | 60 | 1 | 9,954 | 777 | 0.34 | 56 | 15 | 43,173 | 43,081 | 4,852,104 | Dominated |
| FIT | 54 | 3 | 5,571 | 561 | 0.28 | 64 | 18 | 43,150 | 43,050 | 4,886,396 | Dominated |
| FIT | 50 | 3 | 6,990 | 625 | 0.30 | 63 | 17 | 43,164 | 43,067 | 4,935,602 | Dominated |
| FIT | 50 | 2 | 9,473 | 759 | 0.34 | 59 | 15 | 43,186 | 43,096 | 4,987,686 | Dominated |
| FIT | 46 | 3 | 7,789 | 660 | 0.29 | 63 | 17 | 43,165 | 43,069 | 5,077,689 | Dominated |
| FIT | 54 | 1 | 13,381 | 953 | 0.40 | 53 | 14 | 43,204 | 43,121 | 5,087,843 | 6,415 |
| FIT | 46 | 2 | 10,767 | 811 | 0.35 | 59 | 16 | 43,189 | 43,100 | 5,150,353 | Dominated |
| FIT | 40 | 3 | 9,187 | 707 | 0.30 | 64 | 18 | 43,164 | 43,067 | 5,270,930 | Dominated |
| FIT | 50 | 1 | 15,397 | 1,042 | 0.43 | 53 | 14 | 43,212 | 43,131 | 5,322,533 | 22,161 |
| FIT | 40 | 2 | 12,532 | 868 | 0.36 | 60 | 16 | 43,185 | 43,095 | 5,416,504 | Dominated |
| FIT | 46 | 1 | 17,171 | 1,109 | 0.44 | 54 | 14 | 43,211 | 43,130 | 5,590,545 | Dominated |
| COL | 60 | 10 | 0 | 2,198 | 0.60 | 42 | 11 | 43,205 | 43,125 | 5,984,373 | Dominated |
| FIT | 40 | 1 | 19,338 | 1,165 | 0.44 | 57 | 16 | 43,197 | 43,113 | 6,003,156 | Dominated |
| COL | 54 | 10 | 0 | 2,928 | 0.86 | 39 | 10 | 43,238 | 43,166 | 6,946,819 | Dominated |
| COL | 60 | 5 | 0 | 3,048 | 0.82 | 37 | 10 | 43,222 | 43,147 | 7,040,041 | Dominated |
| COL | 50 | 10 | 0 | 3,245 | 0.91 | 37 | 9 | 43,253 | 43,185 | 7,349,473 | 38,029 |
| COL | 46 | 10 | 0 | 3,341 | 1.01 | 39 | 10 | 43,254 | 43,185 | 7,669,729 | Dominated |
| COL | 40 | 10 | 0 | 4,269 | 1.09 | 36 | 9 | 43,271 | 43,205 | 8,919,959 | Dominated |
| COL | 54 | 5 | 0 | 4,540 | 1.16 | 31 | 7 | 43,268 | 43,203 | 9,072,841 | Dominated |
| COL | 50 | 5 | 0 | 5,012 | 1.24 | 29 | 7 | 43,287 | 43,226 | 9,720,205 | 56,975 |
| COL | 46 | 5 | 0 | 5,700 | 1.35 | 30 | 7 | 43,295 | 43,234 | 10,917,234 | Dominated |
| COL | 40 | 5 | 0 | 7,011 | 1.57 | 26 | 6 | 43,313 | 43,255 | 12,815,034 | 106,718 |

b. Effects of personalised screening scenarios assuming perfect adherence[c]

| Screening Strategy | FITs | Colonoscopies | Complications | CRC Incidence | CRC Mortality | Life Years[b] | Total QALYs[b] | Total Costs[bc] | ICER[b] |
|---|---|---|---|---|---|---|---|---|---|
| No Screening | 0 | 84 | 0.07 | 84 | 29 | 43,001 | 42,869 | 5,460,172 | Dominated |
| PS03 | 6,148 | 668 | 0.31 | 58 | 15 | 43,161 | 43,065 | 4,919,457 | Dominates |
| PS01 | 4,871 | 594 | 0.29 | 60 | 17 | 43,146 | 43,047 | 4,922,589 | Dominated |
| PS02 | 5,330 | 617 | 0.30 | 60 | 16 | 43,149 | 43,052 | 4,926,793 | Dominated |
| PS04 | 6,916 | 713 | 0.33 | 57 | 15 | 43,171 | 43,079 | 4,959,849 | 3,026 |
| PS05 | 7,611 | 750 | 0.34 | 56 | 15 | 43,179 | 43,089 | 4,995,978 | 3,359 |
| PS06 | 7,611 | 776 | 0.36 | 56 | 15 | 43,183 | 43,094 | 5,015,775 | 4,277 |
| PS07 | 8,103 | 801 | 0.37 | 56 | 15 | 43,187 | 43,099 | 5,049,437 | 6,193 |
| PS08 | 9,802 | 884 | 0.40 | 54 | 14 | 43,196 | 43,111 | 5,128,736 | 6,850 |
| PS09 | 10,206 | 902 | 0.40 | 53 | 14 | 43,198 | 43,113 | 5,147,483 | 7,753 |
| PS10 | 10,206 | 950 | 0.41 | 53 | 14 | 43,201 | 43,117 | 5,177,225 | 7,789 |
| PS11 | 10,628 | 969 | 0.42 | 52 | 14 | 43,203 | 43,120 | 5,210,998 | 10,596 |
| PS12 | 10,628 | 1,002 | 0.43 | 52 | 13 | 43,205 | 43,123 | 5,246,635 | 12,905 |
| PS13 | 11,832 | 1,056 | 0.44 | 51 | 13 | 43,210 | 43,129 | 5,323,387 | 13,478 |
| PS14 | 9,025 | 1,443 | 0.57 | 46 | 12 | 43,221 | 43,145 | 5,562,545 | 14,690 |
| PS15 | 9,025 | 1,537 | 0.59 | 46 | 12 | 43,226 | 43,151 | 5,674,015 | 17,799 |
| PS16 | 9,671 | 1,565 | 0.60 | 46 | 12 | 43,229 | 43,155 | 5,749,938 | 24,226 |
| PS17 | 9,935 | 1,576 | 0.60 | 46 | 12 | 43,230 | 43,156 | 5,776,707 | 24,681 |
| PS18 | 9,935 | 1,932 | 0.68 | 43 | 11 | 43,241 | 43,170 | 6,180,918 | 27,246 |
| PS19 | 10,704 | 1,964 | 0.68 | 42 | 11 | 43,243 | 43,172 | 6,235,349 | 28,675 |
| PS20 | 11,148 | 1,983 | 0.69 | 42 | 11 | 43,244 | 43,174 | 6,284,712 | 29,170 |
| PS21 | 11,148 | 2,063 | 0.71 | 42 | 11 | 43,247 | 43,178 | 6,397,904 | 32,093 |
| PS22 | 6,205 | 2,772 | 0.86 | 37 | 9 | 43,260 | 43,195 | 7,046,014 | 37,125 |
| PS23 | 6,575 | 2,788 | 0.87 | 37 | 9 | 43,261 | 43,196 | 7,086,658 | 41,179 |
| PS24 | 6,575 | 3,356 | 0.97 | 34 | 8 | 43,272 | 43,209 | 7,849,972 | 56,864 |
| PS25 | 6,575 | 3,776 | 1.05 | 34 | 8 | 43,281 | 43,220 | 8,480,538 | 61,177 |
| PS26 | 3,047 | 4,286 | 1.14 | 31 | 7 | 43,287 | 43,228 | 9,020,556 | 68,106 |
| PS27 | 3,047 | 4,703 | 1.21 | 30 | 7 | 43,292 | 43,234 | 9,620,268 | 98,538 |
| PS28 | 3,047 | 5,342 | 1.32 | 29 | 7 | 43,301 | 43,243 | 10,611,955 | 109,959 |
| PS29 | 0 | 5,785 | 1.38 | 28 | 6 | 43,304 | 43,246 | 11,134,728 | 149,697 |
| PS30 | 0 | 5,801 | 1.40 | 28 | 6 | 43,304 | 43,247 | 11,171,639 | 150,421 |
| PS31 | 0 | 6,260 | 1.47 | 27 | 6 | 43,308 | 43,251 | 11,894,768 | 172,055 |
| PS32 | 0 | 6,612 | 1.51 | 27 | 6 | 43,311 | 43,253 | 12,415,828 | 208,145 |
| PS33 | 0 | 7,011 | 1.57 | 26 | 6 | 43,313 | 43,255 | 13,052,084 | 327,048 |

Abbreviations: COL = colonoscopy; CRC = colorectal cancer, FIT = faecal immunological test; ICER = incremental cost-effectiveness ratio; QALYs = quality-adjusted life years

Grey shading highlights screening scenarios on the efficient frontier.

a. Results are undiscounted
b. Costs are presented in Australian Dollars ($AUD)
c. The personalised screening scenarios are described in Table 7

**Table S7: Specifics of the personalised screening scenarios by willingness-to-pay threshold, when costs and QALYs are undiscounted[a]**

| Screening Strategy | Risk Groups | | | | |
|---|---|---|---|---|---|
| | Very Low | Low | Average | High | Very High |
| PS1 | NoScr | FIT_60_3 | FIT_60_2 | FIT_60_1 | COL_60_10 |
| PS2 | NoScr | FIT_60_2 | FIT_60_2 | FIT_60_1 | COL_60_10 |
| PS3 | FIT_60_3 | FIT_60_2 | FIT_60_2 | FIT_60_1 | COL_60_10 |
| PS4 | FIT_60_3 | FIT_60_2 | FIT_60_2 | FIT_54_1 | COL_60_10 |
| PS5 | FIT_60_3 | FIT_60_2 | FIT_54_2 | FIT_54_1 | COL_60_10 |
| PS6 | FIT_60_3 | FIT_60_2 | FIT_54_2 | FIT_54_1 | COL_54_10 |
| PS7 | FIT_60_3 | FIT_54_2 | FIT_54_2 | FIT_54_1 | COL_54_10 |
| PS8 | FIT_60_3 | FIT_54_2 | FIT_54_1 | FIT_54_1 | COL_54_10 |
| PS9 | FIT_60_2 | FIT_54_2 | FIT_54_1 | FIT_54_1 | COL_54_10 |
| PS10 | FIT_60_2 | FIT_54_2 | FIT_54_1 | FIT_54_1 | COL_54_5 |
| PS11 | FIT_54_2 | FIT_54_2 | FIT_54_1 | FIT_54_1 | COL_54_5 |
| PS12 | FIT_54_2 | FIT_54_2 | FIT_54_1 | FIT_54_1 | COL_50_5 |
| PS13 | FIT_54_2 | FIT_54_1 | FIT_54_1 | FIT_54_1 | COL_50_5 |
| PS14 | FIT_54_2 | FIT_54_1 | FIT_54_1 | COL_54_10 | COL_50_5 |
| PS15 | FIT_54_2 | FIT_54_1 | FIT_54_1 | COL_50_10 | COL_50_5 |
| PS16 | FIT_54_2 | FIT_54_1 | FIT_50_1 | COL_50_10 | COL_50_5 |
| PS17 | FIT_50_2 | FIT_54_1 | FIT_50_1 | COL_50_10 | COL_50_5 |
| PS18 | FIT_50_2 | FIT_54_1 | FIT_50_1 | COL_50_5 | COL_50_5 |
| PS19 | FIT_54_1 | FIT_54_1 | FIT_50_1 | COL_50_5 | COL_50_5 |
| PS20 | FIT_54_1 | FIT_50_1 | FIT_50_1 | COL_50_5 | COL_50_5 |
| PS21 | FIT_54_1 | FIT_50_1 | FIT_50_1 | COL_50_5 | COL_40_5 |
| PS22 | FIT_54_1 | FIT_50_1 | COL_50_10 | COL_50_5 | COL_40_5 |
| PS23 | FIT_50_1 | FIT_50_1 | COL_50_10 | COL_50_5 | COL_40_5 |
| PS24 | FIT_50_1 | FIT_50_1 | COL_50_5 | COL_50_5 | COL_40_5 |
| PS25 | FIT_50_1 | FIT_50_1 | COL_50_5 | COL_40_5 | COL_40_5 |
| PS26 | FIT_50_1 | COL_50_10 | COL_50_5 | COL_40_5 | COL_40_5 |
| PS27 | FIT_50_1 | COL_50_5 | COL_50_5 | COL_40_5 | COL_40_5 |
| PS28 | FIT_50_1 | COL_50_5 | COL_40_5 | COL_40_5 | COL_40_5 |
| PS29 | COL_50_10 | COL_50_5 | COL_40_5 | COL_40_5 | COL_40_5 |
| PS30 | COL_46_10 | COL_50_5 | COL_40_5 | COL_40_5 | COL_40_5 |
| PS31 | COL_46_10 | COL_40_5 | COL_40_5 | COL_40_5 | COL_40_5 |
| PS32 | COL_50_5 | COL_40_5 | COL_40_5 | COL_40_5 | COL_40_5 |
| PS33 | COL_40_5 | COL_40_5 | COL_40_5 | COL_40_5 | COL_40_5 |

Abbreviations: COL = Colonoscopy; FIT = faecal immunochemical test; NoScr = no screening
Screening strategies: screening test, screening start age, screening interval
a. All screening ends at or before the age of 74 years

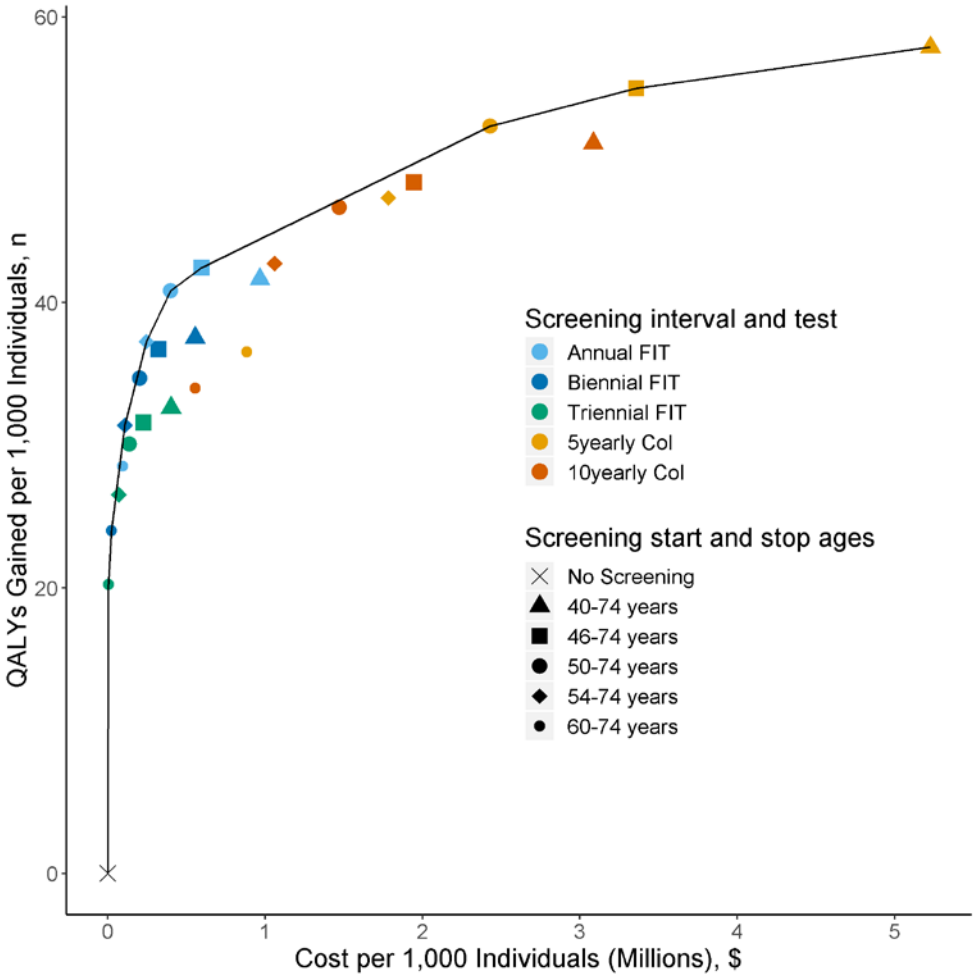
**Table S8: Threshold analysis: estimated cost of determining polygenic risk when personalised screening would be equally cost-effective to uniform annual screening from 50-74 years.**

| Scenario [a] | Cost [b] | Incremental cost compared to uniform screening | QALYs | Incremental QALYs compared to uniform screening | Incremental costs required to be cost-effective compared to uniform screening [c] | Difference between actual costs and required costs to be cost-effective [d] | Estimated cost to determine risk per individual |
|---|---|---|---|---|---|---|---|
| FIT_1_50_74 | $1,634,262 | | 17887.34 | | | - | - |
| PS14 | $1,437,254 | -$197,008 | 17883.63 | -3.71 | -$185,413 | $11,595 | $11.59 |
| PS15 | $1,450,510 | -$183,752 | 17884.03 | -3.31 | -$165,690 | $18,062 | $18.06 |
| PS16 | $1,478,770 | -$155,493 | 17884.77 | -2.57 | -$128,564 | $26,929 | $26.93 |
| PS17 | $1,503,986 | -$130,277 | 17885.41 | -1.93 | -$96,695 | $33,581 | $33.58 |
| PS18 | $1,539,677 | -$94,585 | 17886.31 | -1.03 | -$51,734 | $42,851 | $42.85 |
| PS19 | $1,589,115 | -$45,147 | 17887.39 | 0.05 | $2,377 | $47,524 | $47.52 |
| PS20 | $1,624,012 | -$10,250 | 17887.94 | 0.60 | $29,979 | $40,229 | $40.23 |
| PS21 | $1,642,804 | $8,542 | 17888.23 | 0.89 | $44,647 | $36,104 | $36.10 |

Abbreviations: QALYs = Quality Adjusted Life Years; FIT = faecal immunochemical test

a. Only scenarios with positive threshold costs are included
b. Costs for determining risk are excluded
c. Calculated by multiplying the incremental number of QALYs by the willingness-to-pay threshold of $50,000
d. Calculated by subtracting the incremental cost compared to uniform screening from the incremental costs required to be cost-effective compared to uniform screening

**Figure S1: Costs and quality-adjusted life years (discounted at 5%) per 1,000 40-year-olds assuming perfect adherence for 25 uniform colorectal cancer screening scenarios and a scenario without screening, with the efficient frontier connecting the economically efficient strategies[a]**

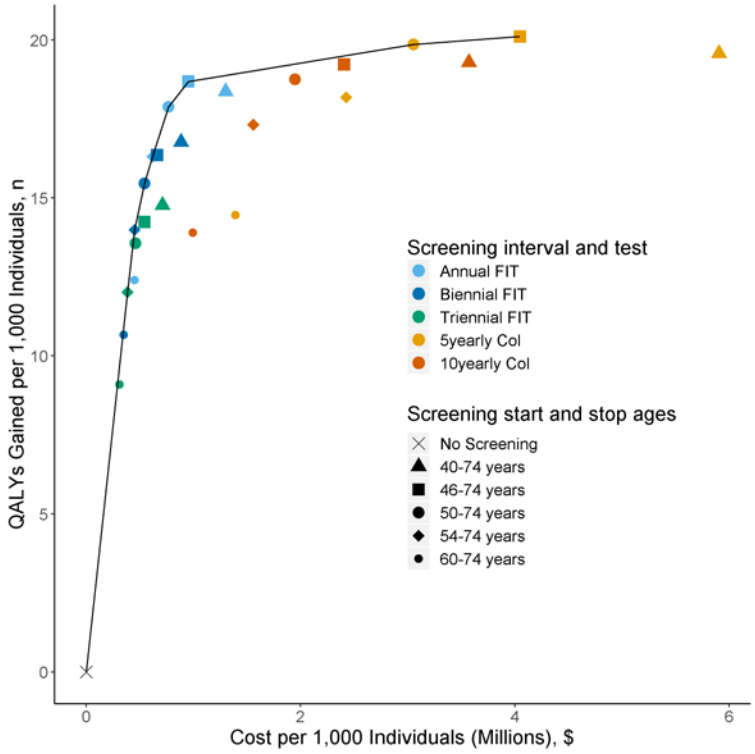



Abbreviations: Col = colonoscopy; FIT = faecal immunochemical test; QALYs = quality-adjusted life years

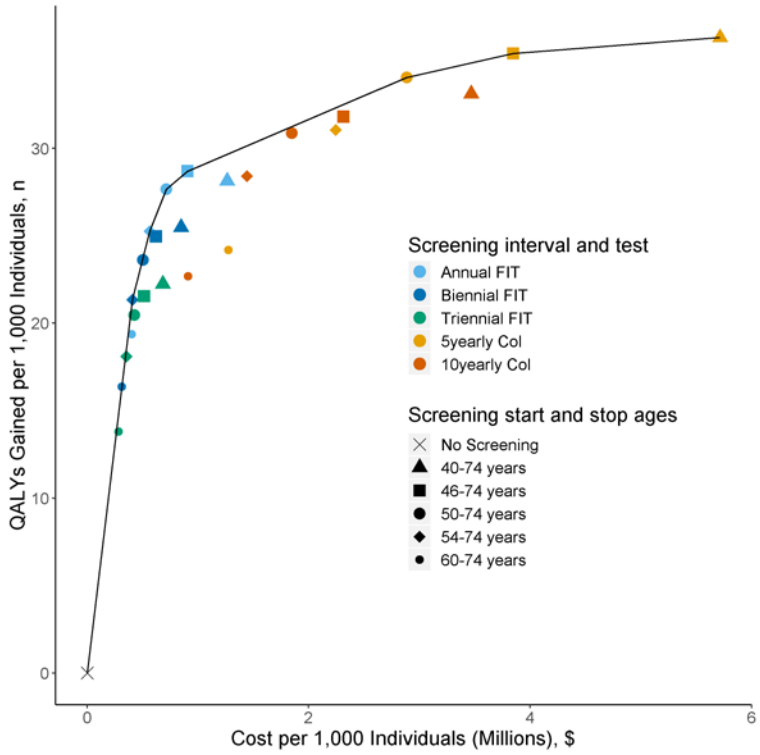
a. Discounted costs and life years gained reflect total costs and life years gained of a screening program, accounting for time preference for present over future outcomes. Quality-adjusted life years gained are plotted on the y-axis, and total costs are plotted on the x-axis. Each possible screening strategy is represented by a point. Strategies that form the solid line connecting the points lying left and upward are the economically rational subset of choices. This line is called the efficient frontier. The inverse slope of the line represents the incremental cost-effectiveness ratio of the connected strategies. Points lying to the right and beneath the line represent the dominated strategies.

**Figure S2: Risk group level costs and quality-adjusted life years (discounted at 5%) per 1,000 40-year-olds assuming perfect adherence for 25 colorectal cancer screening scenarios and a scenario without screening, with the efficient frontier connecting the economically efficient strategies[a]**

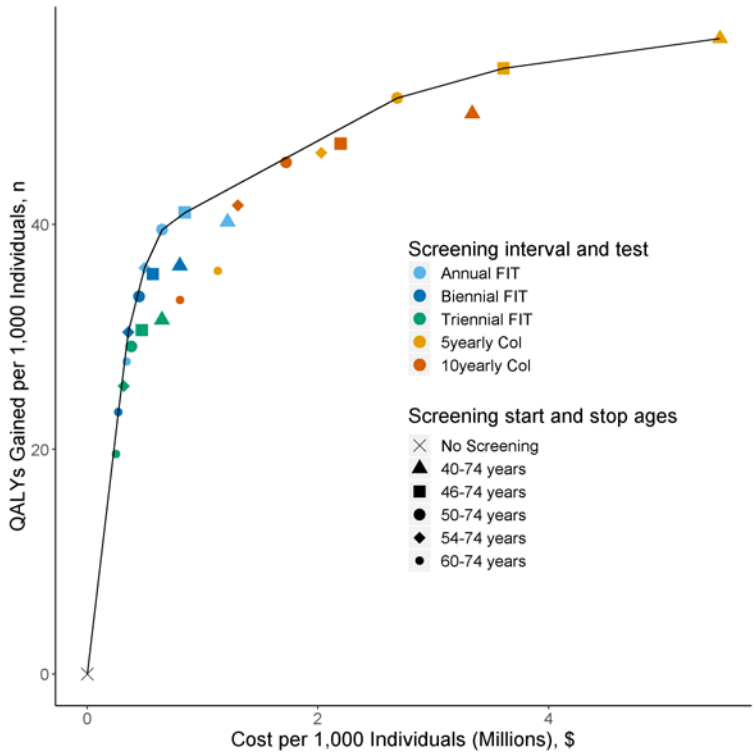
a) Very Low Risk



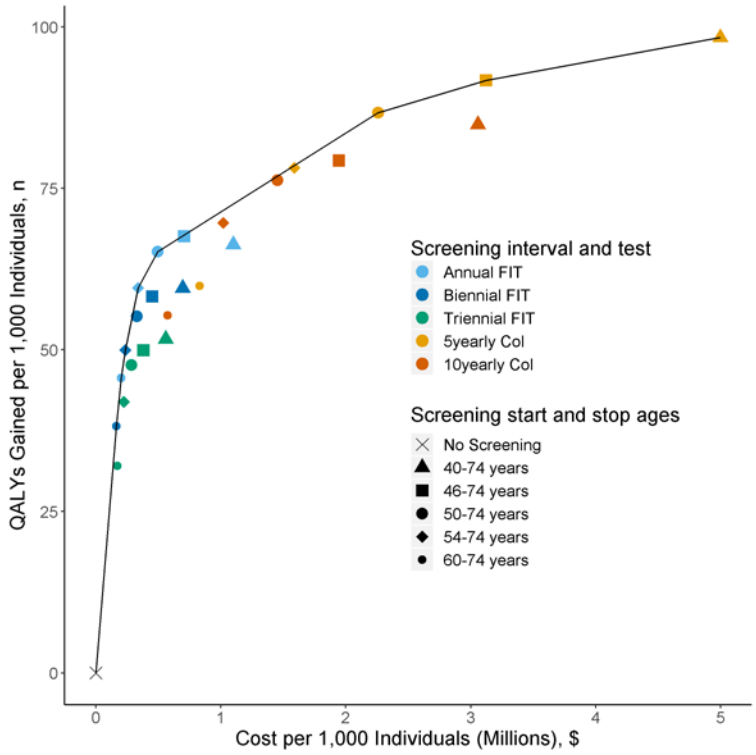
b) Low Risk



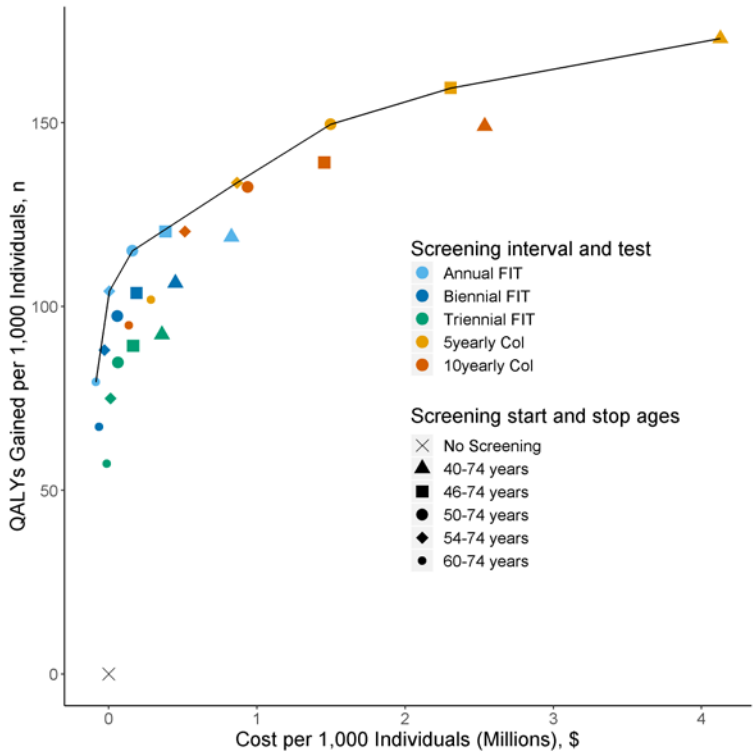

c) Average Risk



d) High Risk




e) Very High Risk

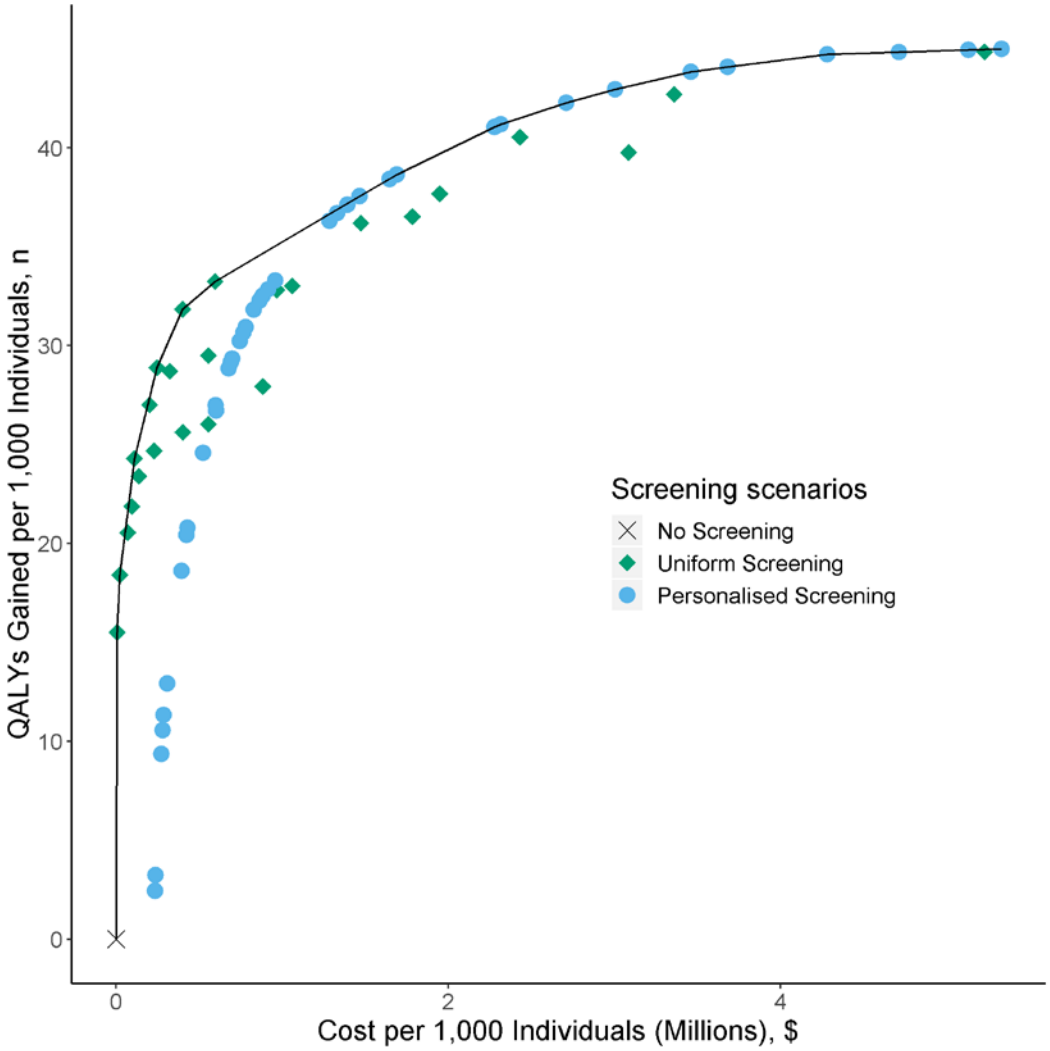



Abbreviations: Col = colonoscopy; FIT = faecal immunochemical test; QALY = quality-adjusted life years

a. Discounted costs and life years gained reflect total costs and life years gained of a screening program, accounting for time preference for present over future outcomes. Quality-adjusted life

years gained are plotted on the y-axis, and total costs are plotted on the x-axis. Each possible screening strategy is represented by a point. Strategies that form the solid line connecting the points lying left and upward are the economically rational subset of choices. This line is called the efficient frontier. The inverse slope of the line represents the incremental cost-effectiveness ratio of the connected strategies. Points lying to the right and beneath the line represent the dominated strategies.

**Figure S3: Costs (discounted at 5%) and quality-adjusted life years (discounted at 5% and weighted by age) per 1,000 40-year-olds assuming perfect adherence for all uniform and personalised colorectal cancer screening scenarios and a scenario without screening, with the efficient frontier connecting the economically efficient strategies[a]**

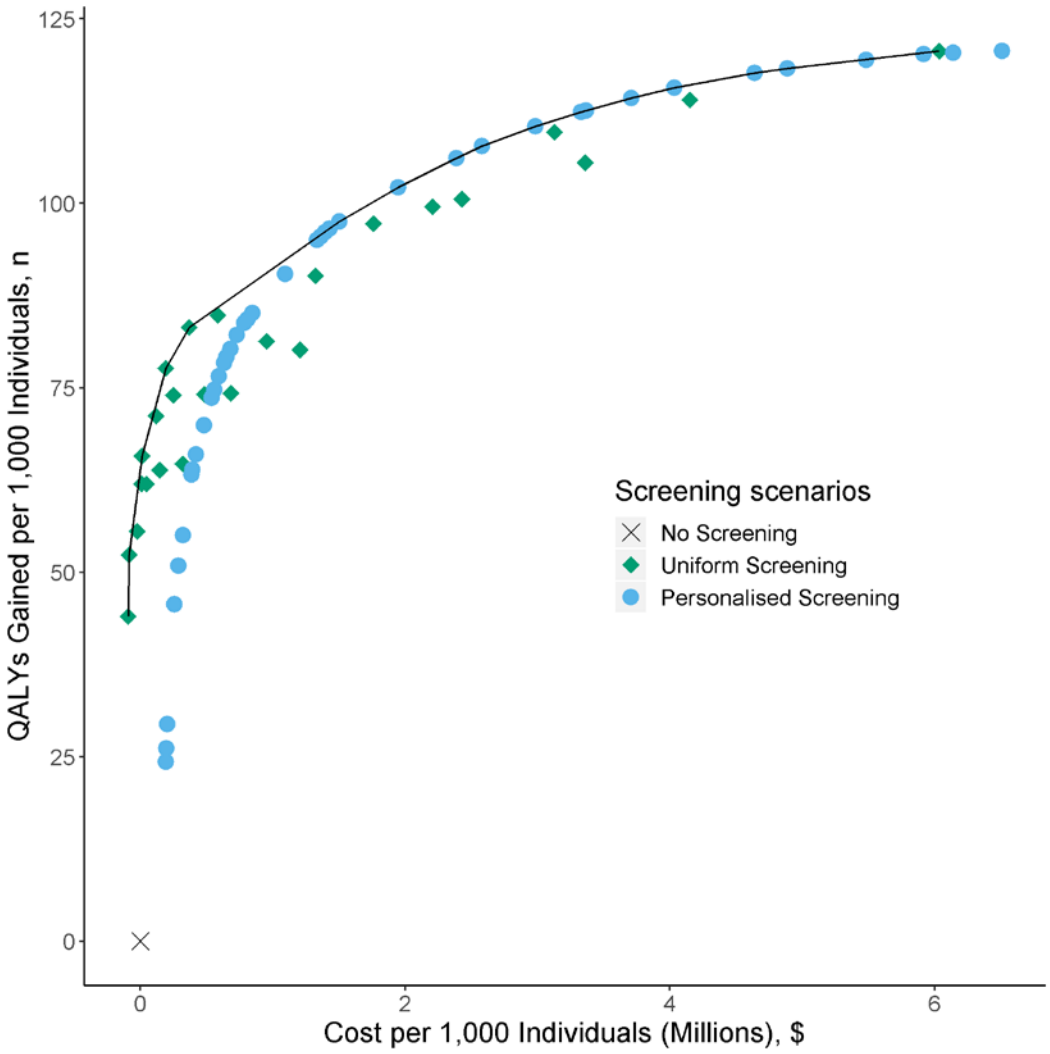



Abbreviations: QALY = quality-adjusted life years

Note: A description of the personalised screening scenarios can be found in Table 3.

a. Discounted costs and life years gained reflect total costs and life years gained of a screening program, accounting for time preference for present over future outcomes. Quality-adjusted life years gained are plotted on the y-axis, and total costs are plotted on the x-axis. Each possible screening strategy is represented by a point. Strategies that form the solid line connecting the points lying left and upward are the economically rational subset of choices. This line is called the efficient frontier. The inverse slope of the line represents the incremental cost-effectiveness ratio of the connected strategies. Points lying to the right and beneath the line represent the dominated strategies.

**Figure S4: Costs and quality-adjusted life years (discounted at 3%) per 1,000 40-year-olds assuming perfect adherence for all uniform and personalised colorectal cancer screening scenarios and a scenario without screening, with the efficient frontier connecting the economically efficient strategies[a]**

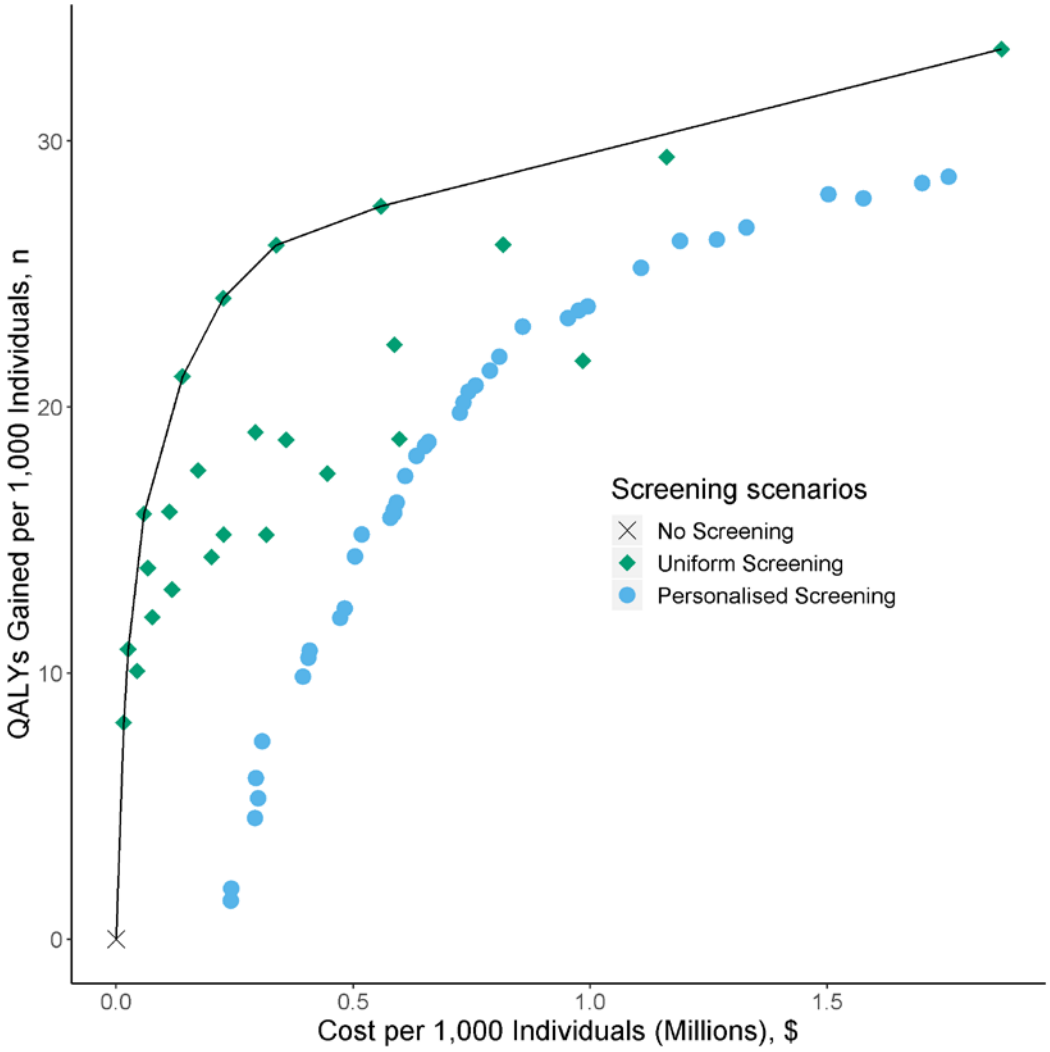



Abbreviations: QALY = quality-adjusted life years

Note: A description of the personalised screening scenarios can be found in Table 5.

a. Discounted costs and life years gained reflect total costs and life years gained of a screening program, accounting for time preference for present over future outcomes. Quality-adjusted life years gained are plotted on the y-axis, and total costs are plotted on the x-axis. Each possible screening strategy is represented by a point. Strategies that form the solid line connecting the points lying left and upward are the economically rational subset of choices. This line is called the efficient frontier. The inverse slope of the line represents the incremental cost-effectiveness ratio of the connected strategies. Points lying to the right and beneath the line represent the dominated strategies.

**Figure S5: Costs and quality-adjusted life years (discounted at 5%) per 1,000 40-year-olds assuming realistic participation for uniform screening and lowered adherence for personalised colorectal cancer screening scenarios and a scenario without screening, with the efficient frontier connecting the economically efficient strategies[a]**

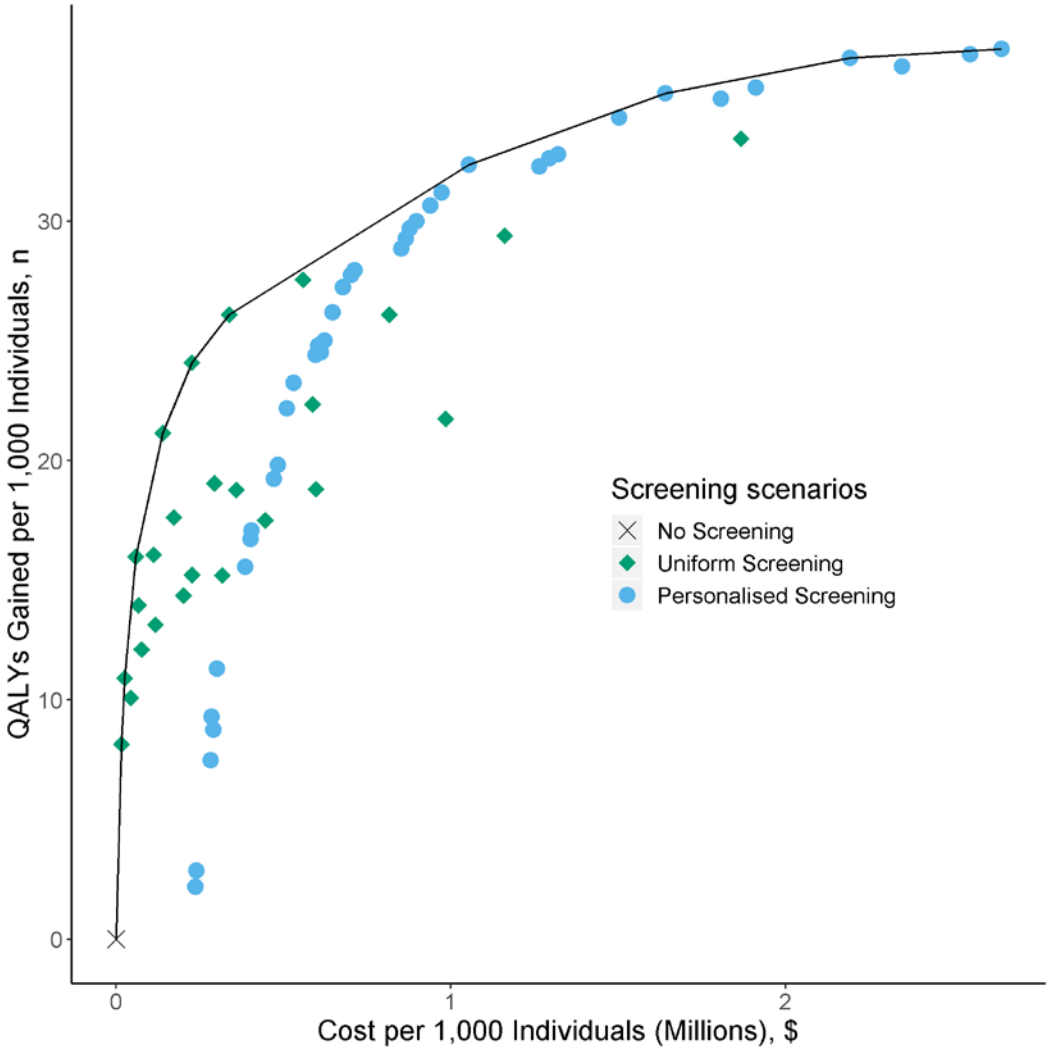



Abbreviations: QALY = quality-adjusted life years

Note: A description of the personalised screening scenarios can be found in Table 4 of the manuscript.

a. Discounted costs and life years gained reflect total costs and life years gained of a screening program, accounting for time preference for present over future outcomes. Quality-adjusted life years gained are plotted on the y-axis, and total costs are plotted on the x-axis. Each possible screening strategy is represented by a point. Strategies that form the solid line connecting the points lying left and upward are the economically rational subset of choices. This line is called the efficient frontier. The inverse slope of the line represents the incremental cost-effectiveness ratio of the connected strategies. Points lying to the right and beneath the line represent the dominated strategies.

**Figure S6: Costs and quality-adjusted life years (discounted at 5%) per 1,000 40-year-olds assuming realistic participation for uniform screening and higher adherence for personalised colorectal cancer screening scenarios and a scenario without screening, with the efficient frontier connecting the economically efficient strategies[a]**

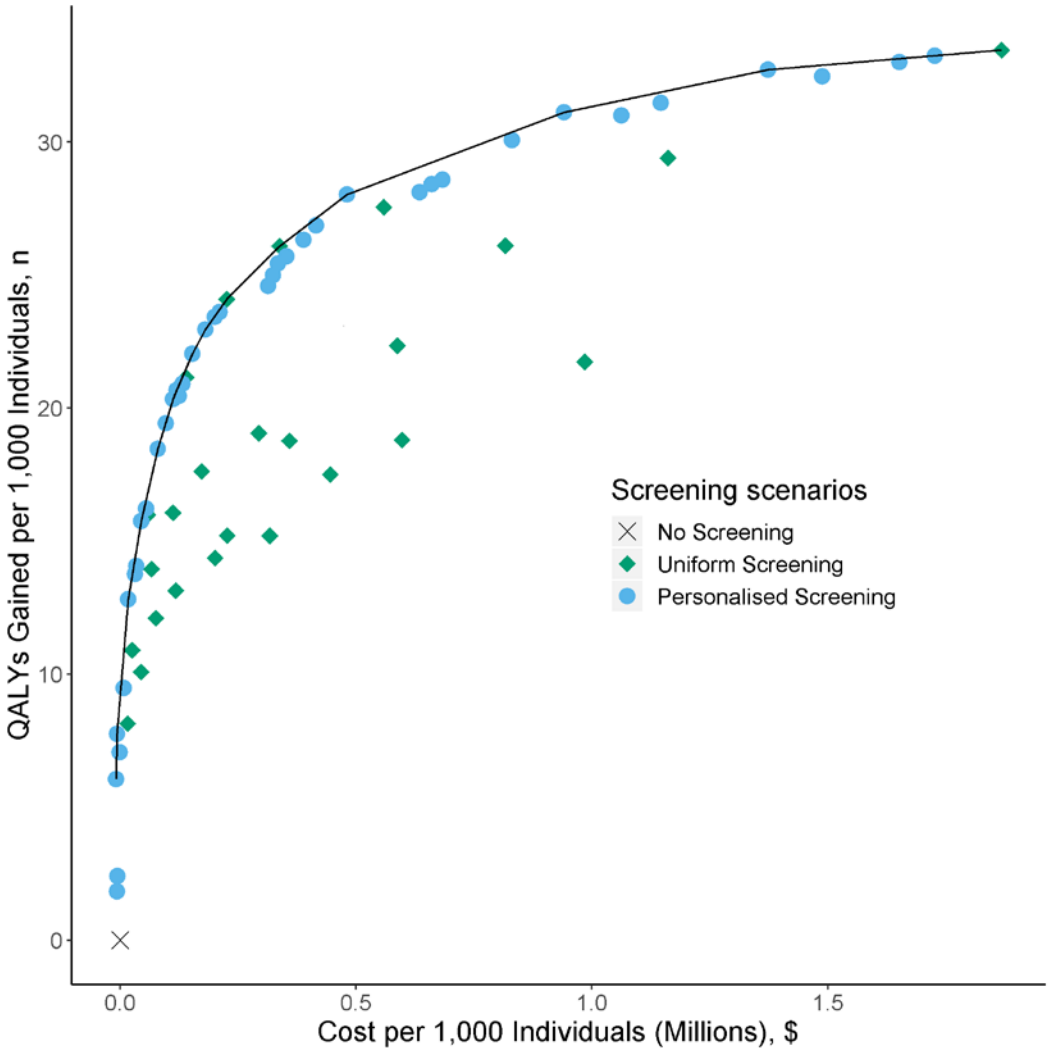



Abbreviations: QALY = quality-adjusted life years

Note: A description of the personalised screening scenarios can be found in Table 4 of the manuscript.

a. Discounted costs and life years gained reflect total costs and life years gained of a screening program, accounting for time preference for present over future outcomes. Quality-adjusted life years gained are plotted on the y-axis, and total costs are plotted on the x-axis. Each possible screening strategy is represented by a point. Strategies that form the solid line connecting the points lying left and upward are the economically rational subset of choices. This line is called the efficient frontier. The inverse slope of the line represents the incremental cost-effectiveness ratio of the connected strategies. Points lying to the right and beneath the line represent the dominated strategies.

**Figure S7: Costs and quality-adjusted life years (discounted at 5%) per 1,000 40-year-olds assuming realistic adherence for all uniform and personalised colorectal cancer screening scenarios and a scenario without screening, with the efficient frontier connecting the economically efficient strategies.[a] Costs for determining polygenic risk are excluded.**

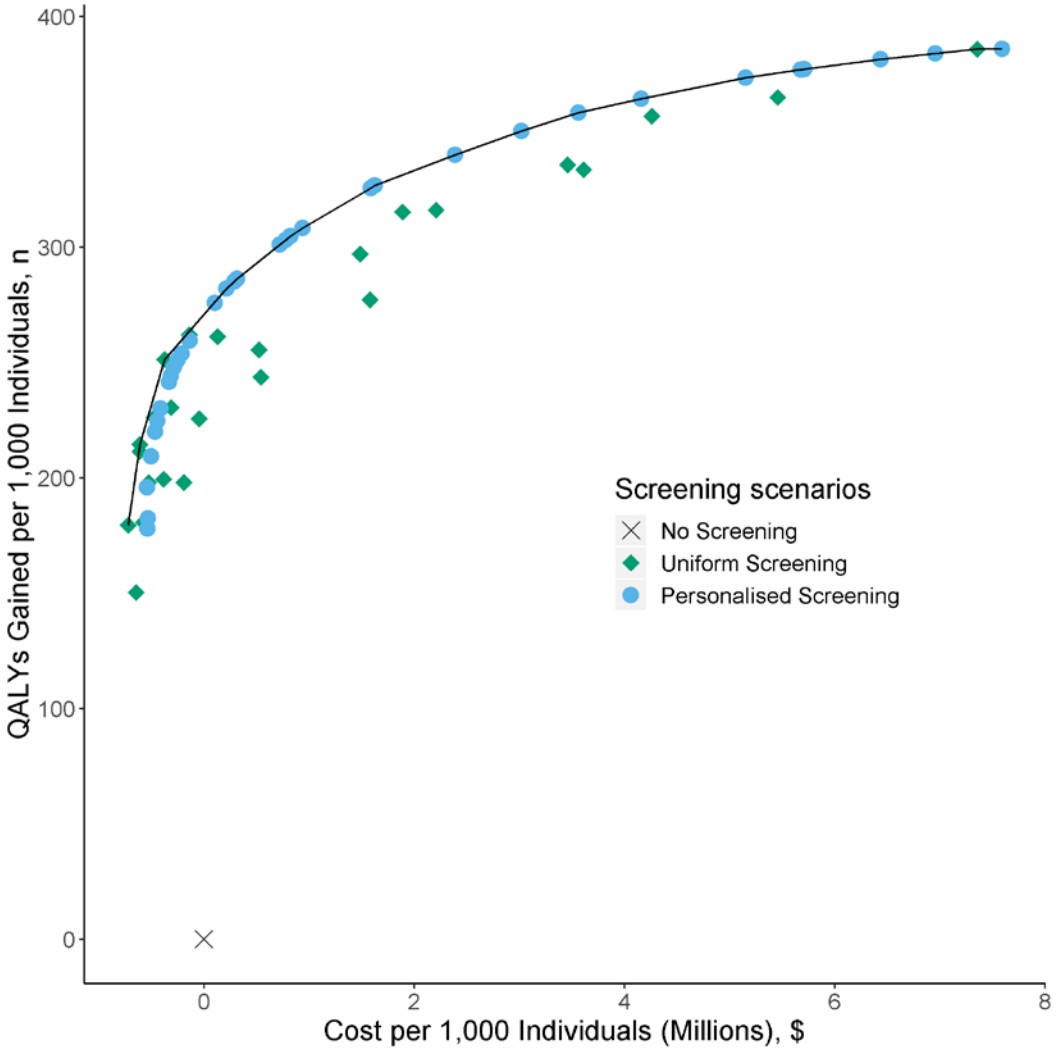



Abbreviations: QALY = quality-adjusted life years

Note: A description of the personalised screening scenarios can be found in Table 4 of the manuscript.

a. Discounted costs and life years gained reflect total costs and life years gained of a screening program, accounting for time preference for present over future outcomes. Quality-adjusted life years gained are plotted on the y-axis, and total costs are plotted on the x-axis. Each possible screening strategy is represented by a point. Strategies that form the solid line connecting the points lying left and upward are the economically rational subset of choices. This line is called the efficient frontier. The inverse slope of the line represents the incremental cost-effectiveness ratio of the connected strategies. Points lying to the right and beneath the line represent the dominated strategies.

**Figure S8: Costs and quality-adjusted life years (undiscounted) per 1,000 40-year-olds assuming perfect adherence for all uniform and personalised colorectal cancer screening scenarios and a scenario without screening, with the efficient frontier connecting the economically efficient strategies[a]**




Abbreviations: QALY = quality-adjusted life years;
Note: A description of the personalised screening scenarios can be found in Table 7.

a. Discounted costs and life years gained reflect total costs and life years gained of a screening program, accounting for time preference for present over future outcomes. Quality-adjusted life years gained are plotted on the y-axis, and total costs are plotted on the x-axis. Each possible screening strategy is represented by a point. Strategies that form the solid line connecting the points lying left and upward are the economically rational subset of choices. This line is called the efficient frontier. The inverse slope of the line represents the incremental cost-effectiveness ratio of the connected strategies. Points lying to the right and beneath the line represent the dominated strategies.