

Effective Technology and Its Economic Benefits: The Case of Colonoscopy

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Main findings from four medical technology areas



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HEALTHY SAVINGS

Medical Technology
and the Economic Burden of Disease



Anusuya Chatterjee, Jaque King, Sindhu Kubendran, and Ross DeVol

Average annual (2008-2010) economic effects:

- Net annual benefit was **\$23.6 billion**.
- Federal income tax revenue increased by **\$7.2 billion**.

Cumulative (2010-2035) economic impact*:

- **\$1.4 trillion gain** in the “increased incentives” scenario relative to the “continued incentives.”
- **\$3.4 trillion loss** in the “decreased incentives” scenario relative to “increased incentives.”

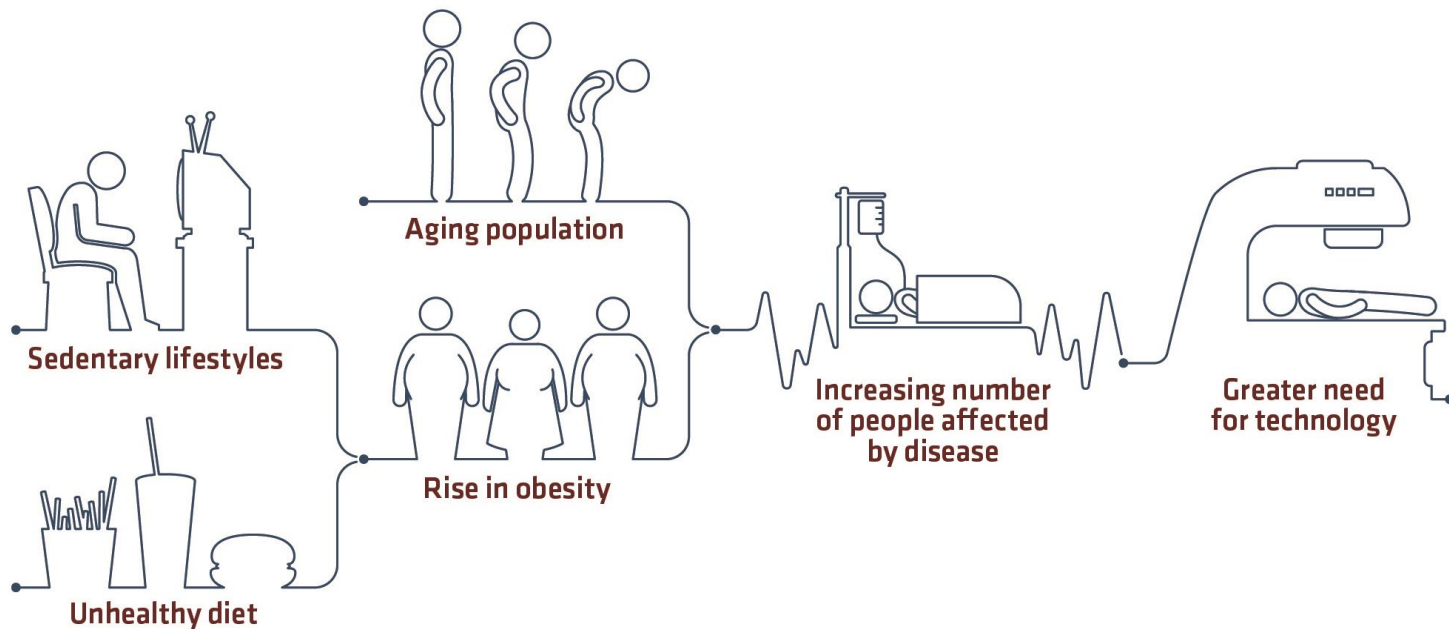
* 2010 dollars.



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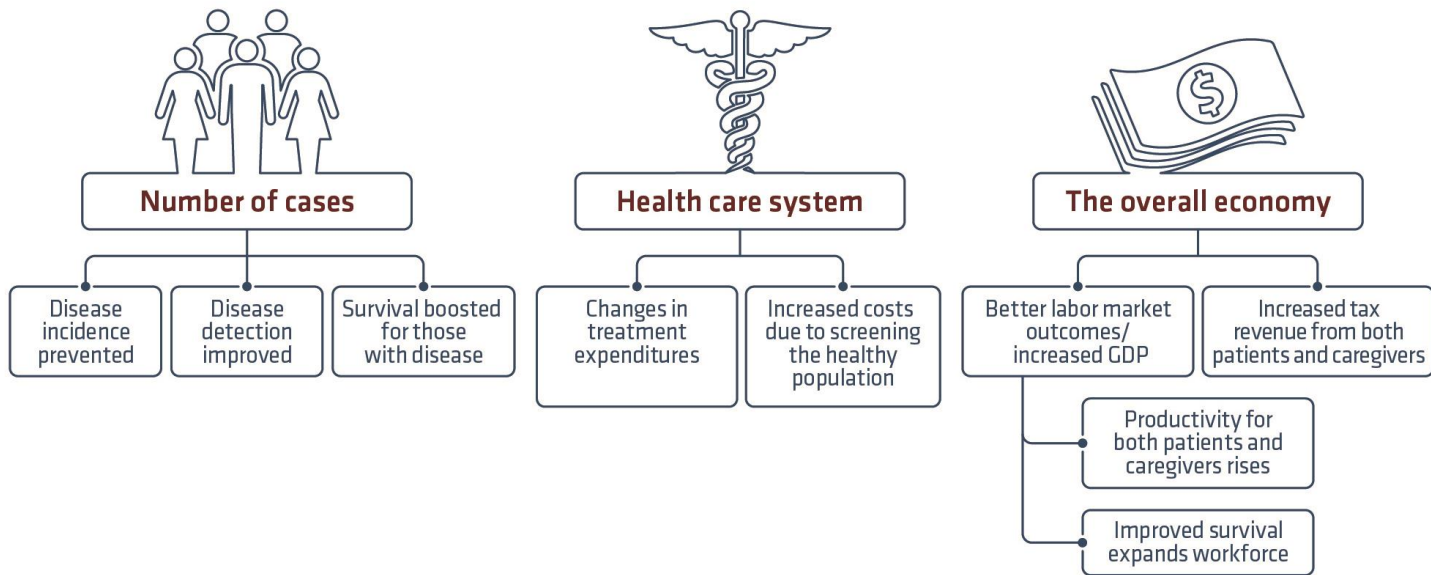
MED-TECH ADDRESSES A GROWING NEED



Source: Milken Institute.



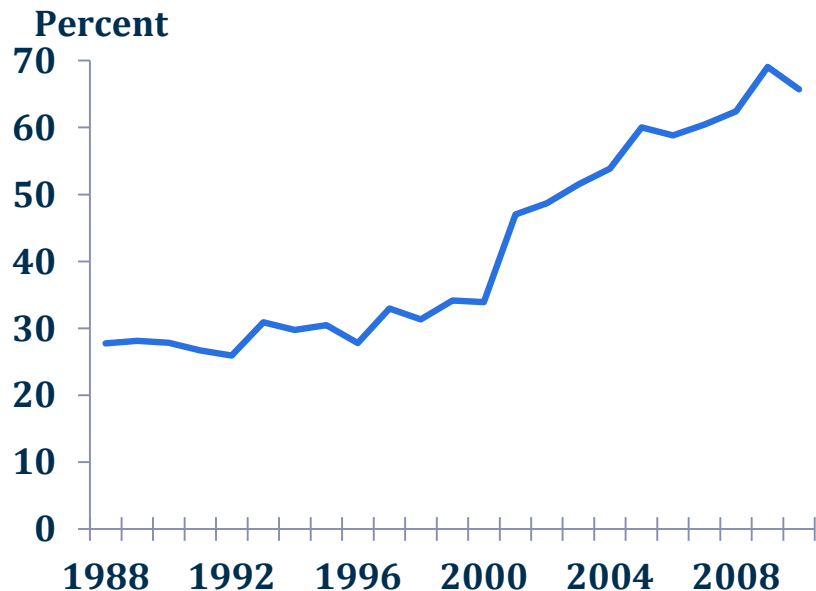
MED-TECH'S EFFECTS



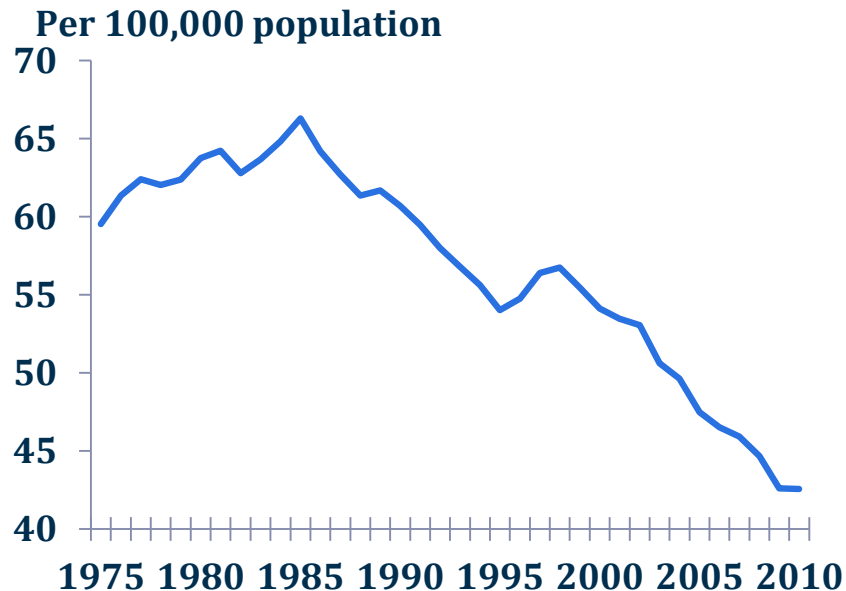


Changes in screening and incidence for colorectal cancer

Colorectal cancer screening as proportion of population 50+



Colorectal cancer incidence rates, age-adjusted

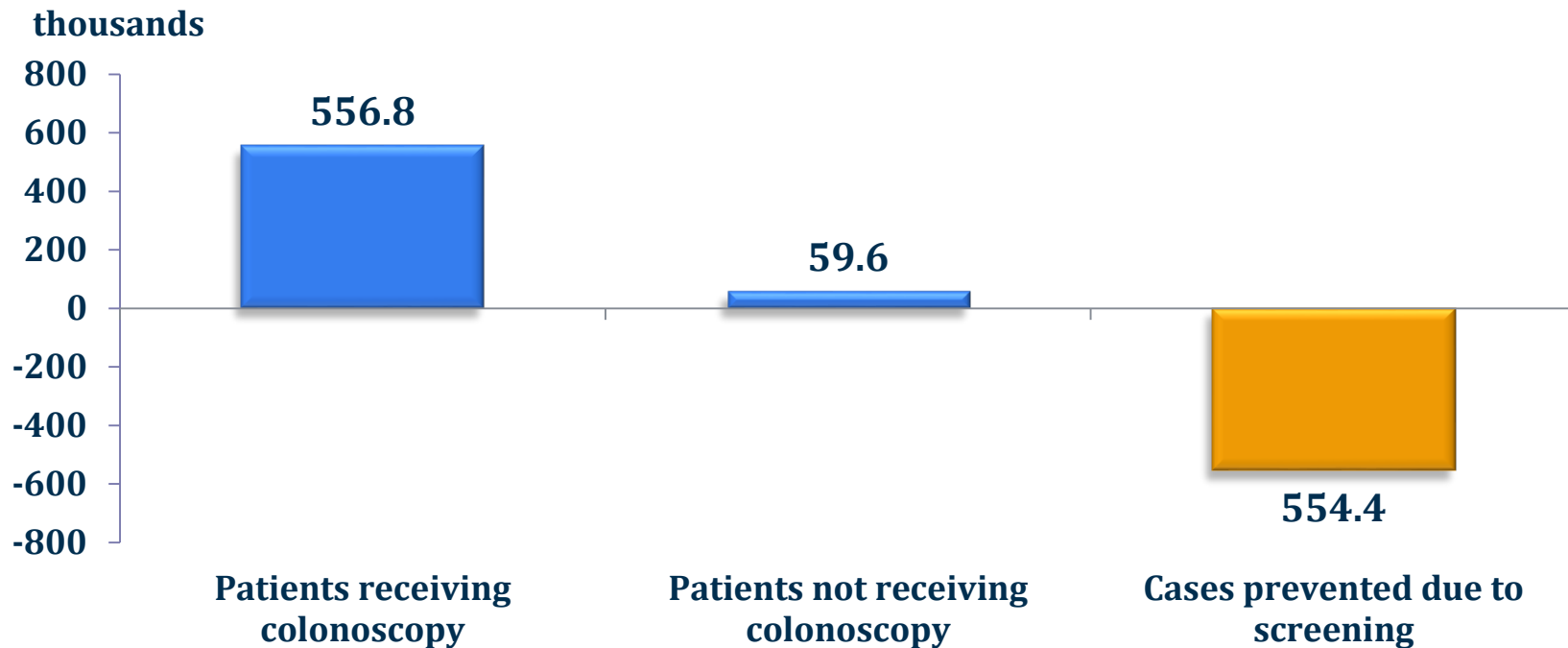


Sources: Centers for Disease Control and Prevention, National Cancer Institute, Milken Institute.



Population affected by colorectal cancer prevention and treatment

2010

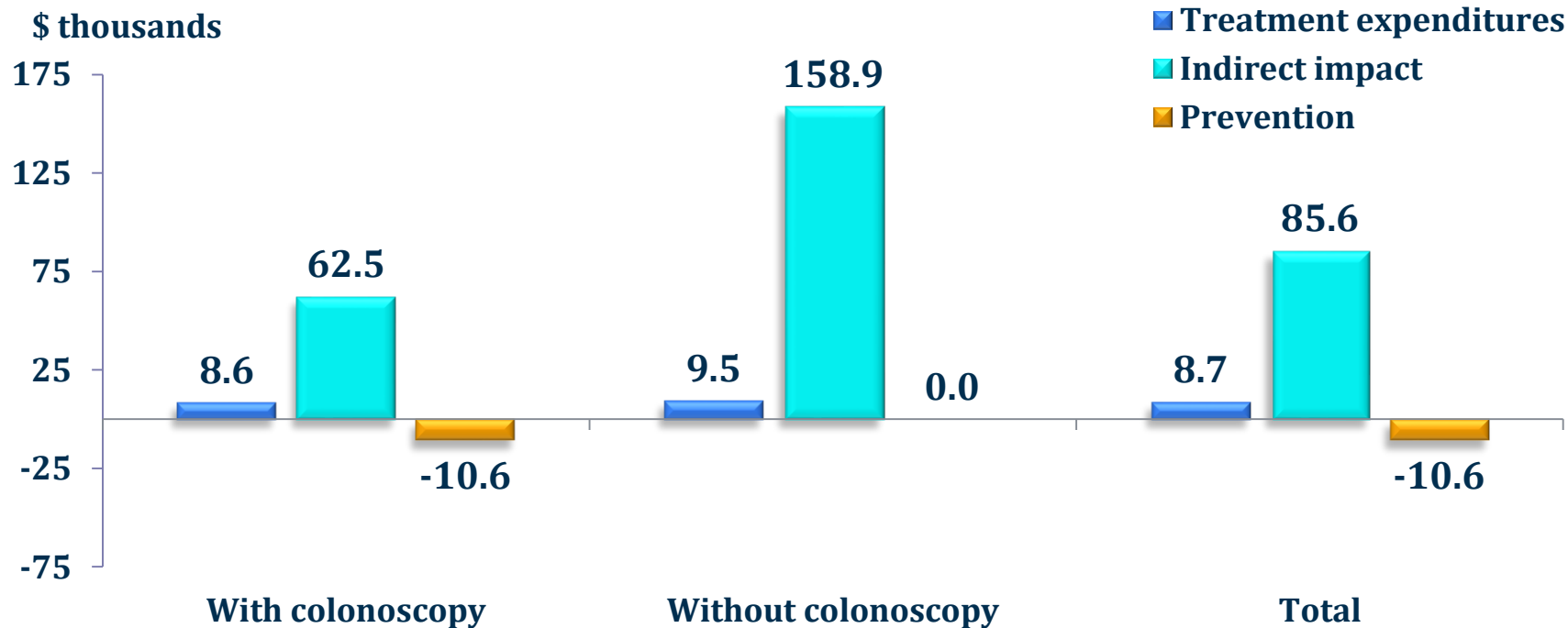


Sources: Medical Expenditure Panel Survey, Healthcare Cost and Utilization Project, Milken Institute.



Economic impact per person affected

Average (2008-2010)



Sources: Medical Expenditure Panel Survey, National Health Interview Survey, Milken Institute.



Total economic burden of prevention and treatment

Average (2008-2010), \$ millions

Technology	Treatment expenditures	Indirect impact	Diagnostics for the healthy population	Prevention
With colonoscopy	4,711.2	12,557.2	17,445.1	-12,218.3
Without colonoscopy	1,149.1	10,294.7	--	--
Total	5,860.3	22,851.8	17,445.1	-12,218.3

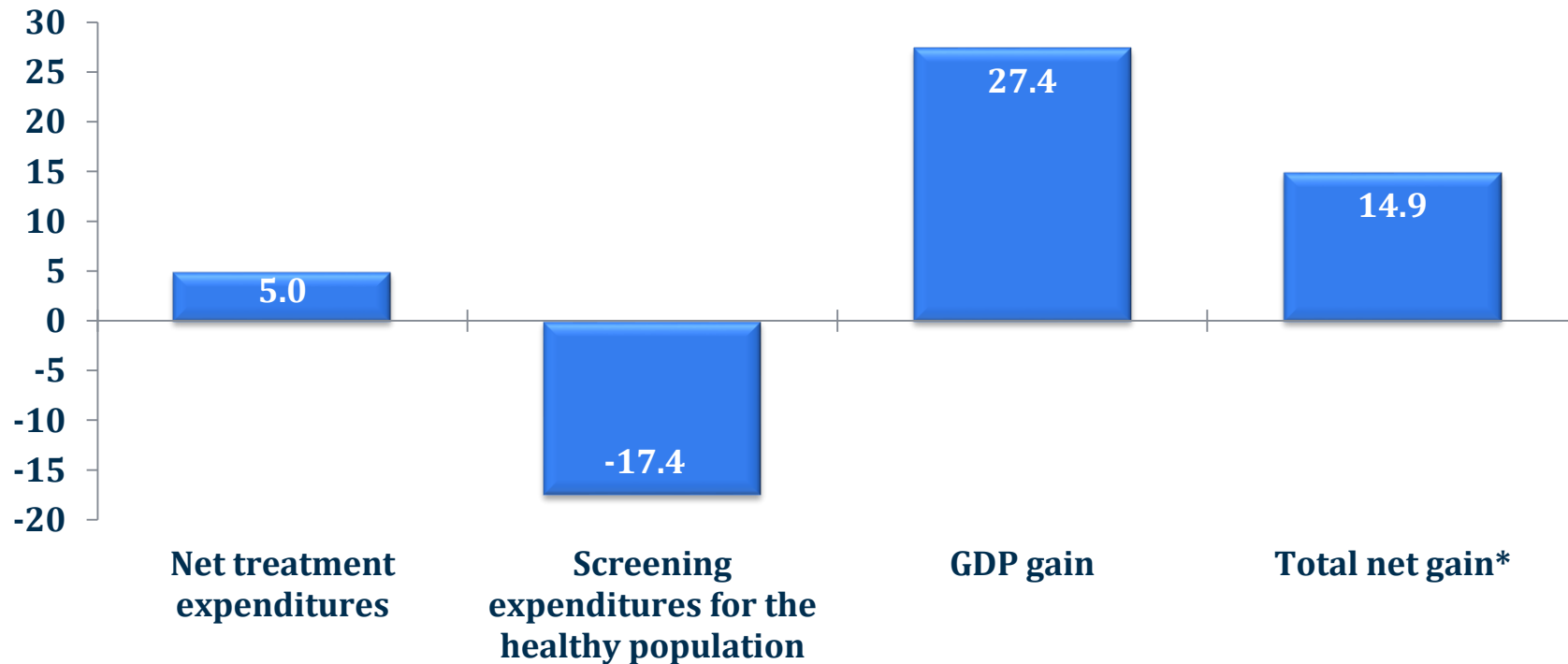
Sources: Medical Expenditure Panel Survey, National Health Interview Survey, Milken Institute.



Economic effect associated with medical technology in colorectal cancer prevention and detection

Average (2008-2010)

\$ billions



* Total net gain is the sum of treatment expenditures compared to non-users, screening of the healthy population, and the additional GDP contribution of those receiving treatment and their caregivers.



Methodology: Projections

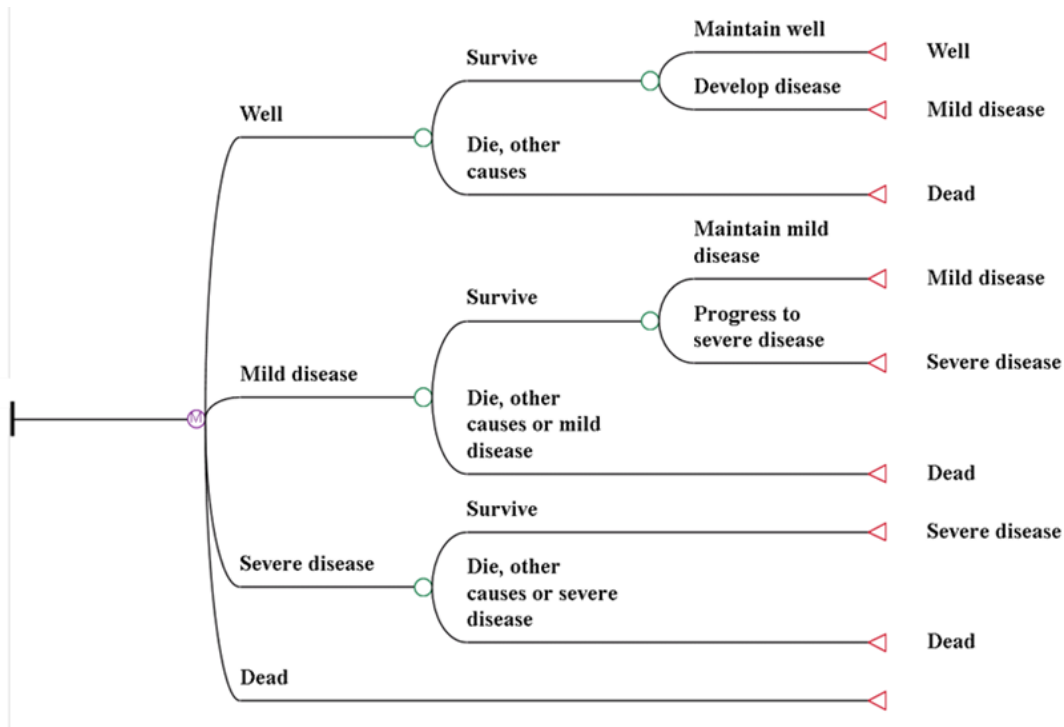
2011-2035

Three alternative future scenarios:

- 1) **Continued incentives (baseline):** Medical innovation growth remains at the same historical rate.
- 2) **Increased incentives (optimistic):** Medical innovation advances higher than historical rates.
- 3) **Decreased incentives (pessimistic):** Medical innovation progresses lower than historical rates.



Basic Markov decision tree to project number of cases





Projected economic burden for colorectal cancer

2010-2035 (2010 \$ billions)

Technology	Continued incentives	Increased incentives	Continued-increased
Colorectal cancer treatment expenditures	214.7	204.1	10.6
Prevented treatment expenditures	-120.5	-137.2	16.7
Colorectal cancer indirect impact	1,790.5	1,681.5	109.0
Prevented indirect impact	-331.5	-373.3	41.8
Colorectal cancer total economic burden	2,005.2	1,885.5	119.7
Prevented economic burden	-452.0	-510.5	58.5

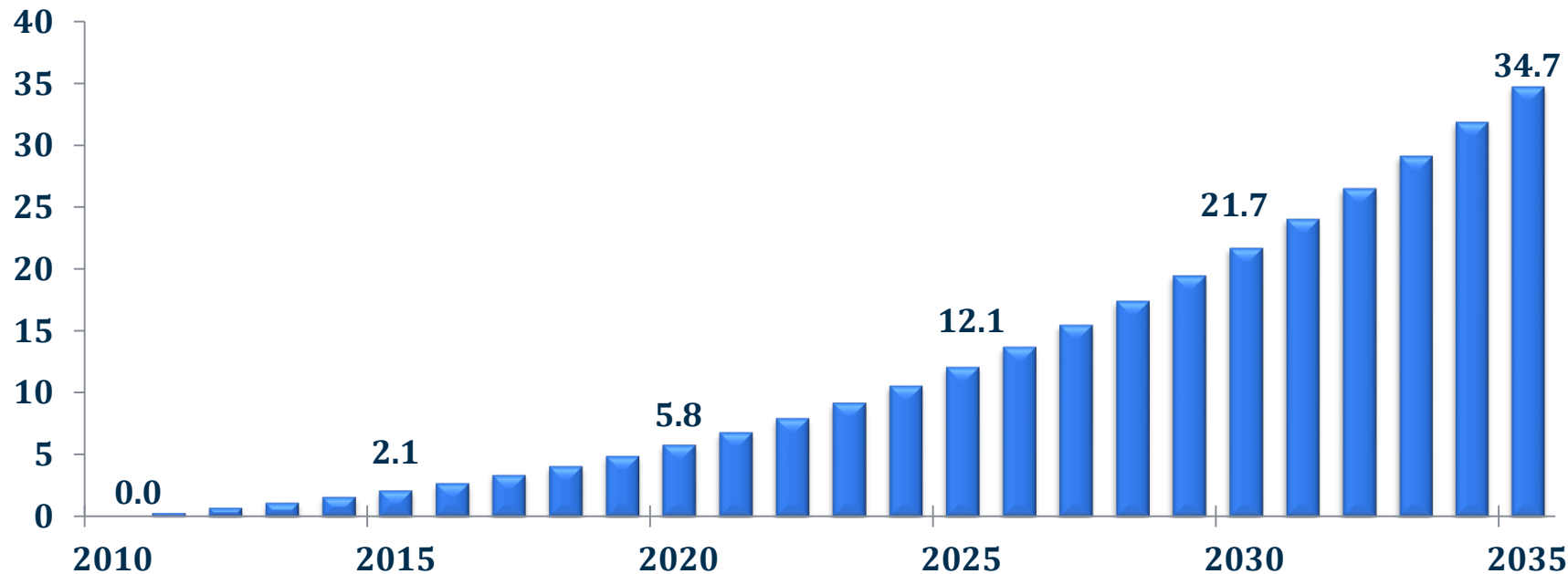
Sources: Medical Expenditure Panel Survey, National Health Interview Survey, Milken Institute.



Colorectal cancer treatment and prevention

Savings from increased incentives compared to continued incentives

\$ billions

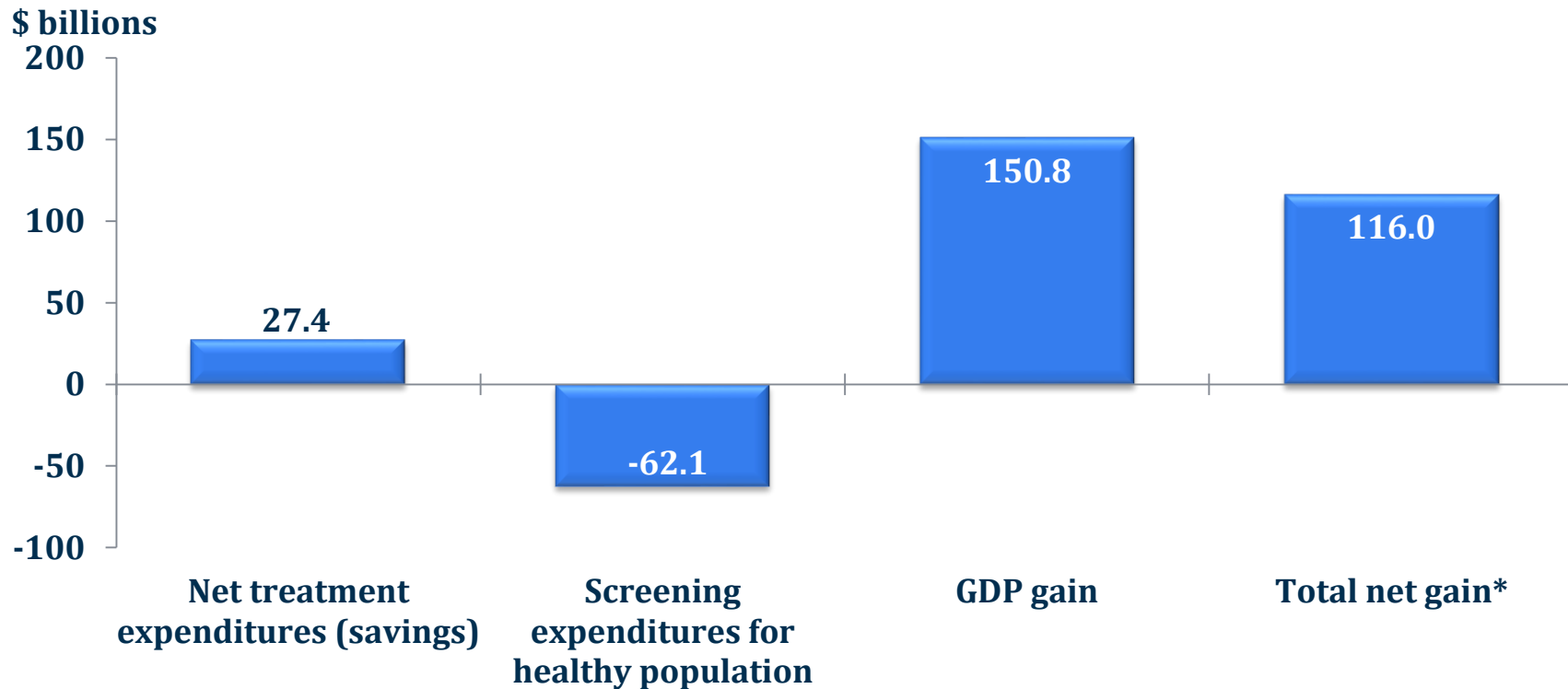


Sources: Medical Expenditure Panel Survey, National Health Interview Survey, Milken Institute.



Effect of increased medical technology incentives for colorectal cancer prevention and detection

Compared to continued incentives (2010-2035), in 2010 dollars



* Total net gain is the sum of treatment expenditures as compared to non-users, screening of the healthy population, and the additional GDP contribution of those receiving treatment and their caregivers.



Medical technology: Pros and Cons



Increase in health-care costs:

- Over-utilization
(Unnecessary, expensive
lab tests & procedures)



Med-tech facilitates:



Prevention



Early detection



Disease management