

Public Health Spending Saves Lives and Money

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Not only have many public health interventions in the United States been hugely successful, but they've also saved more money than they have cost.

And yet Americans spend relatively little money in that domain and far more on medical care that returns less value for its costs. Instead of continually complaining about how much is being spent on health care with little to show for it, maybe we should direct more of that money to public health.

What Do We Mean by Public Health?

It encompasses efforts made to improve the health of a broad population with investments not ordinarily considered "health care." For example, ad campaigns that encourage better health behaviors — like exercising or quitting smoking. Or efforts to improve housing and nutrition for low-income populations or the quality of air or drinking water for everyone.

An obvious success is vaccines. In the 1900s, polio and smallpox were eliminated in the United States. Other diseases — such as measles, rubella, diphtheria — became very, very rare.

In 1900, the largest cause of death, by far, was infectious disease. Now it's heart disease and cancer.

Other public health gains in the 20th century included advances in motor vehicle safety (still the largest cause of injury and death in children); safety improvements in the workplace (mostly in mines and construction); and cleaner water and better sanitation.

Fluoridation of our water supply (still surprisingly controversial in some circles) has

greatly improved the condition of our teeth.

Family planning options and contraceptive services helped reduce infant and maternal mortality, sexually transmitted infections and unwanted pregnancy. Finally, Americans recognized the hazards of tobacco use and began to make strides in its reduction in the latter half of the 20th century.

This century, Americans continue to attack the same problems, achieving some additional improvements. We introduced new vaccines, like those for HPV, and improved others, like those for influenza. We made strides in preventing and treating infectious diseases like H.I.V./AIDS and tuberculosis. Tobacco use has declined further. Maternal and infant mortality rates have continued to drop, although we're well behind many other advanced nations.

We screen more for cancer and heart disease, though we could do better here and in the provision of other preventive services. Studies find that half of recommended preventive services are not delivered, and public health programs can increase awareness of the value of those services. We continue to focus on reducing lead exposure in children, with significant success.

Why Is Funding So Low?

For all its benefits, spending on public health is surprisingly low. The private sector can't make money on it. That leaves the public sector, which is subject to political forces on spending and taxes, and is more focused on projects that might have more obvious and immediate benefits like, say, job creation through building a highway.

Also, some public health investments effectively tell people what to do (avoid sugar, for



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New Yorkers lined up to receive the smallpox vaccine in 1947. The disease has since been eradicated.

example). That's often viewed as paternalistic or bossy.

Of course, it's hard to pin down total public health spending. In 2017, the budget for the Centers for Disease Control and Prevention — which almost all agree is public health spending — was about \$12 billion.

The budget for the Health Resources and Services Administration — some of which is devoted to public health — was \$10.7 billion. (The agency helps people who are uninsured or medically vulnerable gain access to health care.)

The Agriculture Department spends more than \$100 billion on nutrition assistance and about \$1 billion on food safety, both of which arguably contribute to public health.

But even if we're generous, and call all of that public health spending, it's dwarfed by what Americans spend on health care directly.

This is made more surprising

by the fact that public health investments are often so valuable that they pay for themselves. There's no reason not to make them. In contrast, very few medical interventions pay for themselves; we typically hope that they are at least cost-effective, not that they save more than they cost.

Returns on Investment

A 2017 systematic review published in the *Journal of Epidemiology and Community Health* looked at studies that calculated the return on investment for public health interventions. The researchers identified 52 studies that looked at interventions at a local or national level.

Health protection interventions, which would include vaccinations, have saved \$34 for every \$1 spent on them, according to the review. But not every vaccine has a positive return. For example, in years for which the flu vaccine is a poor match for the actual influenza types that are

circulating, the return on investment can be as low as -21, meaning that it costs \$21 to save \$1.

In years for which the vaccine matches the disease well, the return on investment can be as high as 174. Such a high return occurs because of all the disease and death prevented.

Even legislative interventions can make big differences, with a median rate of return of 47. That's because they are relatively cheap and can target behavior at a national level. An example would be a tax on sugar-sweetened beverages (with a possible rate of return of 55).

Health promotion interventions, including programs to prevent falls among older people or campaigns to get people to quit smoking, have a typical return on investment of only 2. Returns can be higher if programs perform better at targeting high-risk people. Doing so conserves resources (those not wasted on people who are not

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likely to respond or be in need of help).

Childhood programs, improvements in the built environment (such as building sidewalks to encourage walking) and traffic safety have a typical return on investment of 5.

A paper published in the *Journal of Public Health* in 2017 examined the cost effectiveness of all public health guidance issued in Britain through June 2010. Thirty of the 200 recommendations were cost-saving, meaning they yielded more in returns than they cost. Almost 150 were cost-effective, meaning they provided adequate improvements in health and well-being for their cost, though they didn't save money over all.

This analysis was updated last year to include new economic evaluations carried out between 2011 and 2016. The conclusion of the new analyses is that more recent investments have not yielded returns as high as earlier ones, or have not been as cost-effective. This signals that the "easy" interventions have already been covered, and that there are diminishing returns to new investments.

But even with less advantageous returns, the more recent public health investments still have been worth the value they provide.

Think of it this way: Americans can expect to live into their late 70s, on average, in large part because of public health investments. From 1900 to 1999, life expectancy at birth increased from 47 years to 77 years. Although much of that was because of significant improvement in the care of babies and children, experts believe that 25 of the 30 years gained can be attributed to public health advances.