Nudge for Good: How to Boost Flu Vaccination

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Executive Summary

The influenza is a significant public health problem that also entails economic costs such as lower labor productivity, and severe disruptions to the healthcare system. The flu vaccination is the best tool to prevent the disease, yet despite many attempts at traditional policy approaches, such as government subsidization, we still fail to achieve adequate flu vaccination rates. Just as massive scientific efforts and financial investment are being mounted to develop a vaccine, we must have creative and scalable policy change focused on behavioral insights that will incentivize individuals to make healthier decisions. This is a call to action for policymakers to improve the health and wellbeing of our citizens and nation.

Introduction

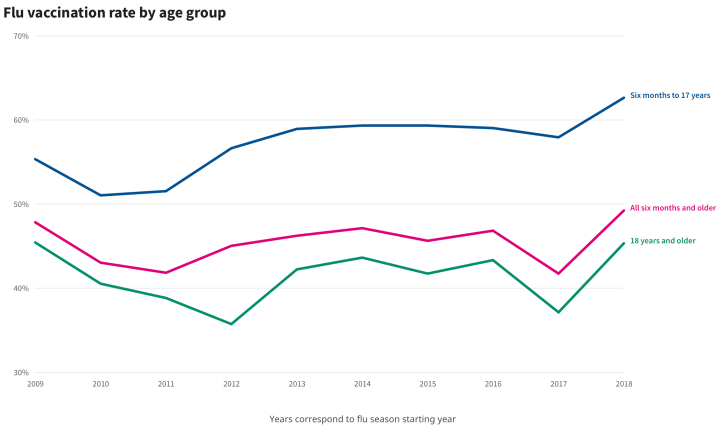
Background

The flu is a contagious respiratory illness caused by influenza viruses. It causes mild to severe symptoms including fever, body aches, sore throat, cough, fatigue, headaches, and its complications can lead to hospitalization or death, especially for the elder, or people with underlying health conditions. It infects millions of American every year. The Center for Disease Control and Prevention (CDC) estimated that there were 38 million cases, 18 million people sought flu medical visits, 410,000 were hospitalized, and 24,000 died during the 2019-2020 flu season.[1]

The crushing COVID-19 pandemic made it even worse. Influenza and COVID-19 carry nearly identical symptoms. As a result, it will cause public confusion as people cannot tell which virus they might have. What's more, as COVID-19 is fueling record numbers of hospitalizations, medical experts expressed concerns about a *twindemic* in which influenza could overwhelm the already-stressed hospitals, our frontline healthcare workers, and disrupt the supply chain of medical supplies.[2]

Medical experts argue that the best way to prevent the flu is by getting an annual flu vaccine. It is widely available at low cost, and has been shown effective to reduce mobility and morbidity rates. During 2018-2019, flu vaccination prevented an estimated 4.4 million influenza illnesses, 2.3 million influenza-associated medical visits, 58,000 hospitalizations, and 3,500 deaths.[3] Yet the majority of Americans still don't get vaccinated. The Federal government sets the goal of vaccinating 70% of the population, which has proven hard to achieve.[4] As shown in the graph, during the 2018-2019 flu season,

less than 50% of people age six months and older got a flu vaccine.



Is it a market failure?

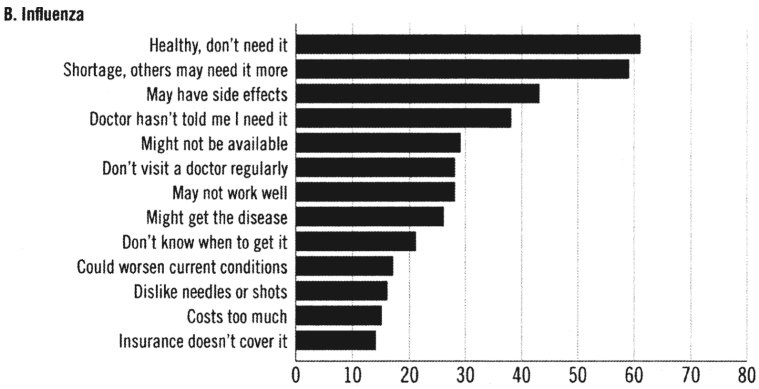
People who are infected with the flu can spread to others easily, for up to about 6 feet away through airborne droplets transmission. With a flu shot, people who are in low-risk groups, healthy, young, and fit can help protect those who are in high-risk groups, particularly people who are over 65, or have underlying health issues. Ultimately, the more people are vaccinated, the less likely it is for flu to be transmitted to others.

An individual who gets vaccination does not only protect themselves, but also protect those around them from being exposed to communicable diseases, which represents an example of **positive externality**. Oftentimes, the producer of goods with positive externalities, in this case, people who should be vaccinated, fail to capture the extra value the goods create for others. As a result, it is usually under-consumed. Government intervention can address this **market failure**, and move the vaccination rate closer to socially desirable levels.

Barriers to flu Immunization

A survey commissioned by the *American Academy of Family Physicians* (AAFP) investigated the impact of misconception and bias about flu and vaccine. According to the survey, when asked about the facts about influenza, 82% of adults got at least one fact wrong, and 28% got all of them wrong.[5] Among parents who are responsible for the wellbeing of themselves and their families, 59% reported at least one missed flu shot for their children: 21% believe flu shot will make their kids sick, 13% underestimate their risk of infection, and 10% do not perceive the flu as severe disease. What's more, millennials and African Americans are more likely to underestimate the risks of the flu. Men often underestimate the danger of the flu, and are more likely to forego a flu shot than women.

Alongside misconceptions about the flu and vaccination, studies have shown that another reason people don't get vaccinated is that their physicians never recommend it. A survey conducted by *Adelphi Research by Design*, interviewed 2,002 consumers and 200 healthcare providers, to gain a better understanding of why people fail to receive vaccinations. About 38% of consumers indicated that they would be more likely to get a vaccination if their healthcare provider recommenced it.[6] Thus, physicians can play an important role by providing information on the benefits of vaccination.



Economic Burden of Influenza

Influenza viruses pose a remarkable economic impact on society. According to recent data from the Bureau of Labor Statistics, the preliminary hourly wage of American workers is $29.5.[7] For those who don't get paid for sick days, that's $236 loss for every eight-hour workday. It is also estimated that flu costs $7 billion in sick days and lost productivity, and 17 million work days are missed per year. [8]

To provide an estimate of the average economic burden of seasonal influenza, *Putri et al*, evaluated both direct healthcare cost and indirect cost. They found that the total economic burden of influenza to the healthcare system and society was $11.2 billion. The age group with the largest share of the total direct medical costs was those aged ≥ 65 years. Those who aged 18-49 years have the largest share of the total indirect medical costs.[9]

The influenza is responsible for substantial financial cost to individuals, the healthcare system, and society. The high cost of influenza suggests that policy-makers need to be creative and experiment with behavioral interventions to find cost-effective measures to uptake the flu vaccine rate.

Policy Recommendations

Opting out of influenza vaccination

Research on **behavioral economics** indicates that, oftentimes individuals are irrational or biased, and neglect to take preventive measures. In response, governments are increasingly interested in leveraging behavioral insights to **nudge** citizens to engage in beneficial behaviors without restricting their choice autonomy. For example, some countries (e.g., Germany and The Netherlands) implemented "opt-in" policies, where citizens must express their willingness to donate organs. Whereas other countries (e.g., Austria and Belgium) have "opt-out" policies where citizens must indicate their unwillingness to participate. Empirical research found substantial differences in organ donation rate among those countries—90% in opt-out countries and below 15% in opt-in countries.[10] When given a choice, people are more likely to stick with the **default option**.

In a study by *Chapman et al,* 480 faculty and staff employees at Rutgers University were sent an email automatically scheduling them for flu shot on a specific time and location, with the option to opt out. As a result, 45% of participants in the opt-out group were vaccinated, compared to 33% in the opt-in group.

A simple tweak is for physicians to automatically schedule patients for flu shots in *Electronic Health Records* (EHRs), with

the option to cancel. Empirical research indicated that this could be an effective and scalable approach given individuals' inertia at the status quo.

What can an email do?

If the lack of recommendation from physicians prevented individuals from getting the flu vaccine, what measures can be taken to incentivize care providers?

A randomized clinical trial conducted by *Meeker et al* shed lights on how behavioral interventions decreased inappropriate antibiotic prescription. 248 clinicians were randomized to receive three different interventions for 18 months. One measure was by sending emails to clinicians that compared their antibiotic prescribing rates with those of "top performers" in their region. By engaging in peer competition, antibiotic prescription dramatically decreased from 19.9% to 3.7%.[11]

Similar intervention can boost flu vaccination. By showing healthcare providers their patients' vaccination rates against colleagues, we engage them in active peer competition. This intervention is cost-effective, easy to implement, and leverages the **anchor effect** by providing physicians a focal point as a reference.

Implementation Intentions

Sometimes people may make plans to get vaccinated, but keep putting it off, which behavioral economists often refer to as **time inconsistency.** Because individuals have relative preferences for immediate rewards, they often procrastinate immediate-cost activities, which in this case, to invest time and get vaccinated.[12]

A study by *Milkman et al* examined the effect of prompts to form implementation intentions on behavioral outcomes. In the field experiment, employees at a large utility company were sent reminder mailers with available dates and times for workplace vaccination clinics. Another group received mailers that prompted them to write down their chosen vaccination time and date. It resulted in a 12% increase in vaccination, compared to information-only groups.[13]

One method that may get more people to get vaccinated, especially the elderly, is to engage them in planning prompts. Just like the experiment above, we can send out mails that contain detailed location information about flu clinics, and a vaccine reminder template for them to fill out. This idea is that, by actively creating a plan, it will reduce the likelihood of forgetting to act, and people will have stronger commitment to their predetermined course of action.

Conclusion

The influenza claims millions of lives every year. While vaccination can save countless lives and families, and nearly every drug store provides easy and cheap access to it, the majority of American are still unvaccinated. While traditional policy tools exist, such as subsidies and educational campaigns, behaviorally-informed policies should be used more often in conjunction

with traditional measures. They help guide decision-makers who might be biased or irrational, prompt Americans to get a shot that they often misunderstand, distrusted and skipped, and eventually produce big social returns on small investments.

Glossary of Economic Terms

Market Failure - a situation in which the allocation of goods and services of a free market is not Pareto efficient, often leading to a net loss of economic value

Nudge - proposes positive reinforcement and indirect suggestions as ways to influence the behavior and decision making of groups or individuals

Positive Externality - a situation occurs when the consumption or production of a good causes a benefit to a third party

Behavioral Economics - study the effects of psychological, cognitive, cultural and social factors on the decisions of individuals and institutions

Default Option - pre-set courses of action that take effect if nothing is specified by the decision maker

Anchor Effect - an individual depends heavily on an initial piece of information offered (considered to be the "anchor") to make subsequent judgments during decision making

Time Inconsistency - a decision-maker's preferences change over time

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