

**Decision to get influenza vaccination:
A behavioral economic approach**

Yoshiro Tsutsui
Osaka University

Uri Benzion
Ben Gurion University

Shosh Shahrabani
Max Stern Academic College of Emek Yezreel

Gregory Yom Din
University of Haifa

Abstract

The aims of this study were to identify predictors regarding people's willingness to be vaccinated against influenza and to determine how to improve the inoculation rate using our original large-scale survey in the USA in 2005. The main results are (a) a model of bounded rationality explains vaccination behavior fairly well, i.e., people evaluate the costs and benefits of vaccination by applying risk aversion and time preference, while the 'status quo bias' of those who received vaccinations in the past affect their decision to be vaccinated in the future, (b) it is recommended to increase people's knowledge regarding flu vaccination, but not regarding influenza illness, (c) reducing the vaccination fee may be ineffective in raising the rate of vaccination.

Keywords: Influenza, Inoculation, Health belief model, Survey, Time preference.

The current study identified behaviors and beliefs regarding willingness to get a flu shot. It shows that individuals who were more willing to be vaccinated had stronger beliefs (a) in the probability of contracting the disease, (b) that influenza is serious, (c) that the vaccine is effective, and (d) that side effects of the vaccine are minor. These results are compatible with the HBM approach, suggesting that people rationally assess costs and benefits before deciding to be vaccinated.¹

¹ The high significance of *ILL* is consistent with the results of Blank et al. (2008). In their study, the level of influenza vaccination in five European countries was analyzed. Perception of the flu as a serious illness was determined to be one of the principal reasons for being vaccinated.

The current study is unique in that it uses survey questions to grasp preference factors such as attitude towards risk and time preference. We found that individuals who are more future oriented (i.e., have a lower discount rate) put greater emphasis on future benefits of vaccination and lesser emphasis on immediate costs. Therefore, they are more willing to be vaccinated. We also found that individuals with greater risk aversion are more willing to be vaccinated, suggesting that the fear of influenza dominates the fear of side effects of the vaccine. Finding that costs and benefits as well as preferences have strong explanatory power indicates that traditional economics is a powerful vehicle for understanding vaccination behavior.

Nonetheless, this paper argues that traditional economics is not sufficient to fully understand vaccination behavior. We speculated that rationality is bounded and examined whether overconfidence and past experience affect the behavior. We found that overconfidence does not directly affect willingness to be vaccinated, but indirectly affects it through subjective variables such as the probability of getting influenza, assessment of its severity, effectiveness of the vaccination, and assessment of side effects of the vaccination.

We confirmed status quo bias in that previously vaccinated individuals were more willing to take the vaccine. Dividing the respondents into two groups according to whether or not they had been vaccinated in the past, we confirmed our second hypothesis of status quo bias that people who had been vaccinated in the past automatically chose to be vaccinated again without careful examination. The subjective probability of contracting influenza (*PROB*) and the degree that the family would be bothered (*BOTHER*) became insignificant in the regression using those who had previously been vaccinated, suggesting our hypothesis is accurate.

Because influenza has large externalities on society, the optimal vaccination rate of society is probably higher than the optimal rate of individuals. Thus, our final goal was to find a way to raise the rate based on our results. While policy instruments may include reduction of the vaccination fee and dissemination of information regarding influenza and vaccination, our results suggest that reducing the fee will not significantly raise the vaccination rate.

Then, how about disseminating information? If rationality is bounded, and usually it is, advertisement strongly influences behavior. A problem is how to grasp the magnitude of information. The variable *EDUC* may be a good proxy because acquisition and digestion of information are easier for those with a higher education.² Although schooling did not directly affect willingness to be vaccinated, it affected willingness indirectly through subjective variables such as *PROB*, *EFFECT*, and *SIDE*. Closer inspection reveals that dissemination of

² White et al. (2008) studied relationships between health literacy (based on 28 health-related items in the National Assessment of Adult Literacy) and preventive health practice in the USA. They found that low literacy was associated with a decreased likelihood of flu vaccination in adults aged 65

information on the illness does not raise the vaccination rate, but information on the vaccination does.

References

Blank P., Schwenkglens M., Szucs T., 2008. Influenza vaccination coverage rates in five European countries during season 2006/07 and trends over six consecutive seasons. *BMC Public Health* 8, 272.

White S., Chen J., Atchison R., 2008. Relationship of preventive health practices and health literacy: a national study. *American Journal of Health Behavior* 32 (3), 227–242.