

# *Why do people not vaccinate?*

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## *Introduction*

While flu immunization is seen as beneficial by scientists, the general population does not obtain sufficient vaccination coverage all over the world. Flu vaccination coverage in European countries ranges from 2% to 70%. Even in the United States only 43.6% of adults are immunized. In the developing nation Ecuador the coverage was around 60% in 2009. A threshold of 80% is recommended by the World Bank. The immediate cost of vaccination is usually not very high. For example, the contract price of a flu shot is less than \$16 in the United States and often flu shots can be obtained for free according to the Center for Disease Control. The costs for society of abstaining from immunization due to lost income, doctoral visits and hospitalization from vaccination is very high. According to Ozawa et al. (2016), US adults which are not getting vaccinated sufficiently create an economic burden of around \$9 billion per year. 80% of this amount is due to individuals that are not immunized. Given the scientific consensus of the benefits of immunization not only for the individual but for society as a whole, the question arises why do people not vaccinate?

## *Methodology*

To our knowledge, this is the first paper that implements a vaccination program on a national scale in a developing nation. We investigate the question by examining monetary and non-monetary costs and benefits on influenza vaccination take-up. We implement a field experiment in a financial firm in Ecuador, to investigate how a change in prices, in opportunity costs as well as normative messages about selfish and altruistic benefits affect injection up-take. On a second stage, we are the first that are investigating changes in productivity, absenteeism and employee evaluations due to changes in a potentially health-changing device from a pure randomization. Further, we can compare objectively measured absenteeism with subjectively claimed absenteeism. While our randomized control trial is conducted in a developing country, we think it can be compared to studies in the developing world as well due to the nature of the firm. Our setting arguably adds external validity with a first vaccination study in a firm setting.

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## *Data*

We have pre- and post-intervention survey data as well as data on vaccination take-up during the vaccination campaign provided by the vaccination team. The surveys contain measures on preferences, perception of vaccines, subjective probability estimates on health and labor satisfaction questions. Further, we obtained administrative data on all employees containing information on gender, income, the departmental work place and many more covariates. For example, the administrative data contains health information from the medical center of the firm. Further, we will obtain swipe data of employees which contains the entrance date and time of an employee to a building of the company. This swipe data will be used to construct our objective proxy of absenteeism.

## *Preliminary Findings and Expected Results*

The results show that the probability of getting vaccinated does not change for employees for a price difference of around \$2.50 nor does an assignment to the weekend, interpreted as a change in opportunity costs, seem to induce take-up changes. However, normative messages, i.e. showing the benefits for the individual or for other individuals increases take-up by 6-7 pp. This is a large take-up increase of around 100% when comparing those employees that received normative messages to those of the control group that did not. On the second stage, we expect to find an increase in productivity as well as health and a reduction in absenteeism and tardiness given that flu shots should reduce the incidence of sickness. However, if influenza immunization increases risky behavior, we might observe the opposite. In any event, we can get at the mechanism of the second stage results using our post survey.

## *How the Presentation will Initiate Conversation*

Our research provides evidence that different motives, i.e. either altruism or selfishness can be activated to increase the provision of a good with a public good component, i.e. being vaccinated affects not only the probability of getting the flu yourself but also the probability that another person gets the flu. On the other hand, our price and opportunity costs treatments did not have an impact leaving us to believe that those factors are either not large concerns or that the treatment was not too large to matter for individuals to induce behavioral changes. Overall, we want the audience to think about ways to increase vaccination take-up from an economic perspective, since the topic has received more attention from public health and preventive medical care research and relatively little attention from economics. Further, on a second stage, we will show the benefit for the individual and firm to be vaccinated from a labor perspective. If the vaccination campaign leads to productivity increases that outweigh the campaign costs, one could argue that firms should implement vaccination campaigns at low costs to the individual or free of charge since the benefits will not only accrue to the individual but also the firm.