

INCREASING VACCINE UPTAKE AMONG SENIORS

Sending postcard reminders increases vaccination rates among elderly

Target a Priority Outcome The Centers for Disease Control and Prevention identify adults over age 65 as higher-risk for vaccine preventable diseases, and recommend a series of vaccinations for the elderly, including influenza, tetanus, pneumococcal, and herpes zoster (shingles). Healthy People 2020 identifies goals around increasing immunization rates to 30 percent of adults over age 60 receiving a shingles vaccine, 90 percent of adults over age 65 receiving a pneumococcal vaccine and a seasonal influenza vaccine.¹ The Louisiana Department of Health (LDH) identified increasing the number of vaccinated elderly as a priority, as well as interest in testing the impact of outreach efforts.

Translate Evidence-Based Insights LDH engages the elderly in a number of initiatives to increase vaccination rates, including sending a postcard reminder on recommended vaccines. Reminder-based interventions can improve healthcare-related compliance, including medication adherence and healthy behaviors.² They are also an effective way to increase compliance with vaccine schedules, as these initiatives aim to reduce rates of forgetfulness and complacency.³ Research shows that reminders may be particularly helpful in encouraging the elderly to vaccinate; while children maintain well-recorded vaccination schedules, adults often do not and thus miss important vaccinations.

¹ U.S. Department of Health and Human Services (HHS), Office of Disease Prevention and Health Promotion. Healthy People 2020. Updated February 16, 2018; <https://www.healthypeople.gov/2020/topics-objectives/topic/immunization-and-infectious-diseases/objectives>. Accessed February 16, 2018.

² Fenerty, Sarah D., et al. "The effect of reminder systems on patient's adherence to treatment." *Patient Preference and Adherence*, 2012: 6, 20 Feb. 2012, pp. 127–135.

³ Stone, Erin G., et al. "Interventions That Increase Use of Adult Immunization and Cancer Screening Services: A Meta-Analysis," *Annals of Internal Medicine*, 136:641-651. 2002.

Embed Tests The postcards were tested with an individual level randomized control trial, using a stepped-wedge design, between October 2017 – January 2018. LDH mailed postcard reminders to 208,867⁴ Louisiana residents aged 65-70 who were listed as overdue for receiving at least one of four vaccines as of September 2017. Individuals were randomly assigned to a month in which they received the postcard reminder (October, November, December, and January). In addition, the individuals were randomized within blocks created from his or her vaccination records (number of missing vaccines).

The study design allows for the evaluation of the impact of the postcard, as well as differential effects by month the postcard was sent. This study has three treatment arms based on when the postcard was sent: October, November, and December. Individuals randomized to receive the postcard reminder in January were considered the control group, as vaccination rates were analyzed for the full sample excluding vaccinations post-January.

Analyze Using Existing Data The Louisiana Immunization Information System (LIIS) records the most recent vaccination dates of all residents of Louisiana, as reported by doctors and pharmacists in Louisiana. The dates used for this study are the vaccination dates recorded by January 2018.

At the time of the study, reporting to LIIS was voluntary. This study treats missing vaccination records as if the individual did not receive a vaccination. Thus, the average treatment effect refers to the effect of individuals who take up the vaccine in a LIIS-records as opposed to individuals

⁴ While 208,867 individuals were in the initial study, the final sample and data set used for the analysis was 208,511 individuals.

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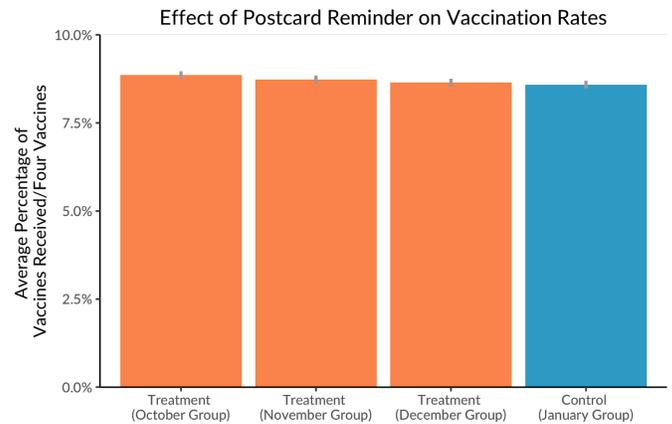
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who do not take up the vaccine or where it is not recorded in LIIS.

Reanalyzed Results The main result of interest is the proportion of vaccinations received out of all four vaccinations (influenza, tetanus, pneumococcal, and shingles)⁵ during the study period, September 2017 - January 2018. The postcard reminder had a small but detectable effect among individuals who received the postcard in October.

Individuals in the control group received 8.58 percent of their vaccinations during the study period. The results estimate that individuals in the October group had received 0.27 percentage points ($p = 0.002$, CI[0.12 pp, 0.42 pp])⁶ more vaccinations (563 vaccinations) than individuals in the control group. Individuals in the November group had received 0.15 percentage points ($p=0.13$, CI[-0.008 pp, 0.3pp]) more vaccinations (313 vaccinations) than the control group. Individuals in the December group had received 125 more vaccinations than the control group.

Descriptive statistics show that 29.8 percent of the control group received flu shots during the study period, compared to 30.5 percent of individuals in the October group, representing a difference of 384 individuals. Also compared to the control group, 0.4 percentage points more individuals (240 individuals) among the November group, and 0.3 percentage points more individuals (160 individuals) among the December group received flu shots during the study period.



Build Evidence This study showed that a postcard reminder can encourage elderly to vaccinate. This result is meaningful for LDH's outreach efforts: LDH will continue to send out postcard reminders, and will be sending the reminders out in one batch during the 2018-19 flu season. The study also showed that immunization registry data can be used effectively to send and analyze the impact of targeted and time-sensitive information to individuals. Future studies may target ways to increase non-flu vaccinations among the elderly or test different messages to further increase flu vaccinations.

⁵Unless noted otherwise, all of the analysis reported in this abstract was prespecified in an analysis plan, which can be found at <https://oes.gsa.gov>.

⁶P-values are adjusted with the Holm-Bonferroni procedure.