



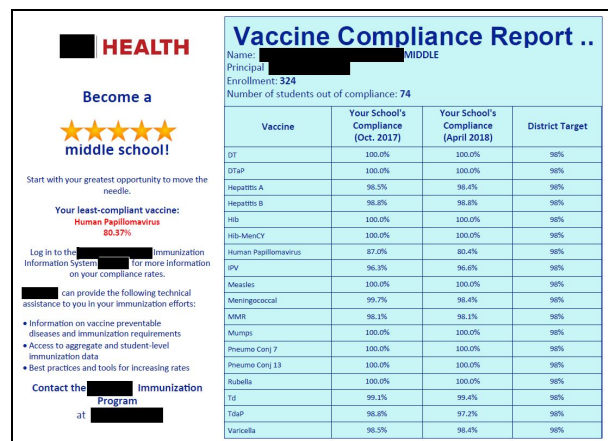
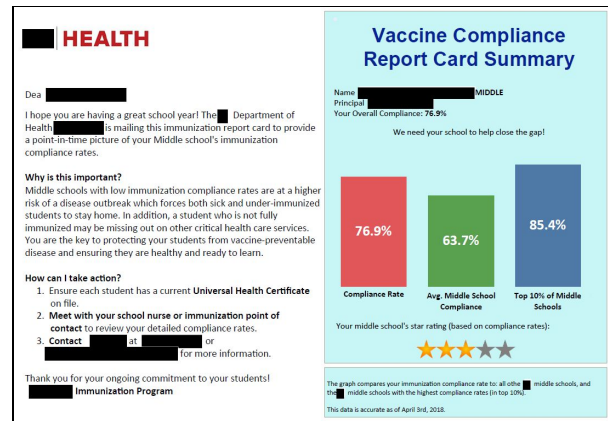
# Increasing Immunization Compliance in Schools

Data visualization for school-specific immunization compliance reports

**Target a Priority Outcome** The Centers for Disease Control and Prevention recommends vaccinations to protect children from sixteen vaccine-preventable diseases.<sup>1</sup> Meanwhile, declining immunization rates in the United States and resurgence of infectious diseases pose increasing public health challenges.<sup>2</sup> Recent evidence suggests that vaccine rates are high for infants and children entering kindergarten, but are lower and highly variable across states for adolescents. Coordinating federal efforts and pursuing the prevention of infectious diseases through immunizations is a goal of the National Vaccine Program Office in the U.S. Department of Health and Human Service.

**Translate Evidence-Based Insights** Evidence suggests that report cards providing comparative information can be successful in increasing immunization rates. For example, healthcare providers who received feedback that compared their performance to top physicians increased flu vaccinations from a rate of 40 percent to a rate of 58 percent.<sup>3</sup> OES and the Department of Health Immunization Program of a mid-size city (DOH) used data visualization software to design an immunization compliance report card for school leaders highlighting the school's immunization compliance rates compared to other similar schools. These report cards would target only school leadership, who would then use this information to contact parents and families. The report cards were in addition to usual DOH communication with school immunization points of contact, including bi-weekly emails which report overall compliance rates. The comparison rates provided were calculated based on category averages (e.g., day care, elementary, middle, high, etc.), rates observed for the top 10 percent of schools in each category, and the city target of 98 percent compliance. DOH mailed

up-to-date report cards to school leaders once each semester (November 2017 and April 2018).



**Embed Tests** The sample included 304 schools and 396 daycare centers. All education sites were randomly assigned to either the control condition (status quo with no report card) or the report card treatment condition.

**Analyze Using Existing Data** DOH uses a city-wide Immunization Information System (IIS) to centrally store immunization records for children and adults in the city, track immunization compliance and provide immunization data and reports, and provide online access to trainings to immunization histories. The report cards were populated with IIS data for each school and to measure the ultimate impact of the report cards.

<sup>1</sup> Recommended Vaccines by Age, Centers for Disease Control and Prevention. Accessed August 2018.

<sup>2</sup> Omer, Saad B., et al. "Vaccine refusal, mandatory immunization, and the risks of vaccine-preventable diseases." *New England Journal of Medicine* 360.19 (2009): 1981-1988.

<sup>3</sup> Kiefe, Catarina I., et al. "Improving quality improvement using achievable benchmarks for physician feedback: a randomized controlled trial." *JAMA* 285.22 (2001): 2871-2879.

**Results** The results suggest that there was no significant difference in compliance rates between treatment and control schools six months post-report card treatment. Immunization compliance was 76.3 percent among schools that received the report cards and 76.2 percent among school that did not ( $p = 0.836$ , 95% CI[-2.30, 2.84]). The same null results hold among day care, elementary, middle, and high schools, for each vaccine type. This result is consistent with the hypothesis that report cards in the absence of incentives for school leaders are a relatively weak mechanism for stimulating change, a conclusion that is consistent with existing evidence around interventions targeting principals.

**Build Evidence** This study illustrates how state immunization information systems (IIS) can provide school-level data on immunization rates to school leaders as well as comparative immunization rates across a set of peer schools. The report card template using the data visualization software is a standalone product available upon request. DOH has used the information from the report cards to improve targeted technical assistance and develop strategic interventions to improve school compliance rates, particularly for below-average schools that were not affected by the report card intervention. The collaboration demonstrated that state, city, and educational policymakers could use an IIS to automate the creation of personalized non-academic report cards.