Closing the Gap in COVID-19 Vaccination Uptake in the Dominican Republic

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Context

During the initial phase of its COVID-19 vaccination strategy in February 2021, the Government of the Dominican Republic (GoDR) made steady and significant progress in vaccinating its population with 15,301,734 vaccine doses administered as of March 6, 2022, and roughly 54 percent of the population vaccinated (based on a two-shot vaccine). The GoDR's initial strategy was to make vaccines available to the general public through a network of Vaccination Centers. However, as restrictions partially lifted, demand for vaccines slowed considerably with the rate of vaccination plateauing. The GoDR needed to implement new strategies to close the gap to reach a 100% vaccination rate.

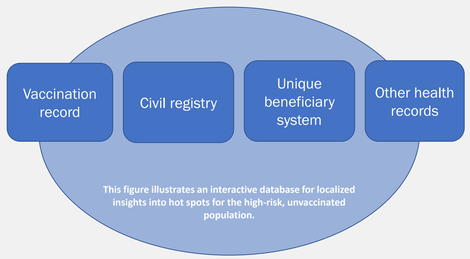
To develop and tailor effective strategies to the remaining unvaccinated population, the GoDR needed data to guide communications campaigns. Several local, ministry-owned databases collect and track COVID-19 vaccination data, but there was no single, comprehensive platform available to the Ministry of Health (MOH) for it to identify, in a holistic manner, geographic areas of lower vaccination rates. The Local Health System Sustainability Project (LHSS), under the USAID Integrated Health System IDIQ, provided technical assistance to the GoDR in repurposing existing data to inform COVID-19 communications campaigns and develop tailored strategies to ultimately increase rates of COVID-19 vaccination of high-risk groups

Activity Description

Working directly with the GoDR, LHSS identified two official databases that provided nominalized information with relevant personal data, such as gender, age, detailed geographic location (even reaching the neighborhood level) and some characteristics of an individual's health profile. The Central Electoral Board database maintains information on all documented persons over 18 years of age and the Single Beneficiary System (SIUBEN) maintains information on all persons who receive some type of social benefit within the government's social programs.

LHSS created an application based on Qlik®, a business intelligence software, allowing for the extraction of the relevant information from the available databases and linking it to the information from the vaccination database maintained through the Ministry of Health and the Neuralgic Center. The Center is an entity created under the leadership of the Vice Presidency of the Dominican Republic, and which is responsible for leading the National Vaccination Program called ***Vacúnate RD***. The GoDR can now use this application to process and analyze the different databases with a single tool in order to identify those unvaccinated or those who needed their second dose. Technical support included the development of a geographic distribution map illustrating the location of individuals not yet vaccinated and a dashboard aimed at facilitating decision-making by the GoDR.

To ensure sustainability, as part of the process LHSS trained the Data Manager of the Neuralgic Center on the use of this application. The Data Manager is tasked by the GoDR with updating the databases as new information becomes available and to expand its implementation based on other databases or health programs.



This figure illustrates an interactive database for localized insights into hot spots for the high-risk, unvaccinated population.

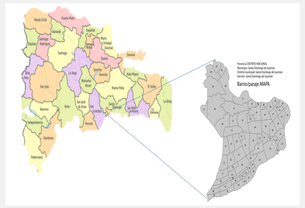
Activity Impact

This activity helped compile and synthesize disparate, already existing data to strengthen the health information system of the Dominican Republic with a focus on improving vaccination information. LHSS provided the GoDR with a technical expert who created the new database complete with application, distribution map and dashboard, and developed the capacity of the GoDR by training individuals whom they designated for continuous use and maintenance of the system. All stages of the activity put the GoDR first and foremost as both decision-maker during the process and owner of the final products.

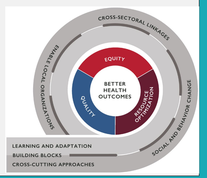
The activity addressed all three of the objective areas:

- **Impact on Equity:** The GoDR was provided with additional tools to identify and reach segments of the population it had missed during the initial stages of its vaccination campaign, potentially lowering morbidity and mortality rates especially for the high-risk population, such as those with co-morbidities.
- **Impact on Quality:** Combining multiple databases into a single database created population risk profiles such as age and co-morbidity, which facilitated integrated service provision in addition to targeting high-risk populations for vaccination.
- **Impact on Resource Optimization:** Utilization of existing systems and data to create a new application supporting the expansion of GoDR's vaccination efforts highlights a focus on both efficiency and cost effectiveness.

This tool identifies geographical areas or "hot spots" with low vaccination rates, allowing the MOH to focus outreach and communication efforts, specifically on those areas. It is regularly being updated by the GoDR with current data sets from which new lists of the unvaccinated population are generated and delivered to the Provincial Health Directorates on a bi-weekly basis to allow them to develop localized vaccine strategies. The software has been prioritized as an important tool for the National Vaccination Program with expectations to expand its implementation during the execution of other vaccination programs. The same tools can be easily modified in the future to target other populations at risk, contributing to sustainable health information systems.

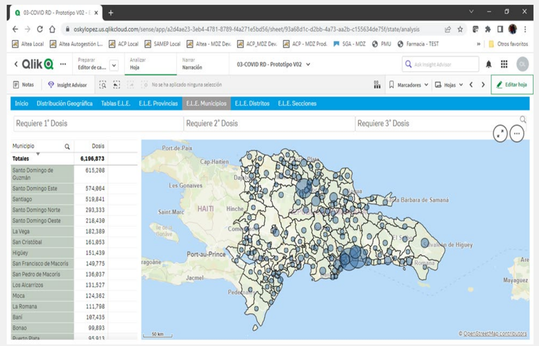


This figure shows a mapping visualization by neighborhood section and province used to target the unvaccinated population.



Evidence

The database is live and is owned by the GoDR. The effect of this database on improving vaccination coverage needs to be investigated. The map below presents a snapshot of the database capabilities to visualize priority target areas by municipality.



Screenshot of the interactive heat map to identify the unvaccinated population by municipality developed by LHSS and currently managed by the Health Cabinet leading the COVID-19 vaccination program in the Dominican Republic.

Facilitators

The fact that existing data and systems used by the activity already existed in the Dominican Republic enabled the rapid development of the tools and for them to be put to immediate use in identifying those not yet reached by the vaccination campaign. This was critical in the context of the COVID-19 emergency response.

Another critical factor in the activity's success can be attributed to the GoDR being the initiator of the process from the get-go. LHSS provided technical support in assisting the MOH to focus outreach and communication efforts specifically in areas with low vaccination rates. Each step of the decision-making process was led by the GoDR, ensuring localization and ownership of each aspect of the activity.

Challenges

One of the challenges faced in the development of the applications was the need to generate an environment of operability without violating the confidentiality of records. This challenge was expected and discussed thoroughly with the GoDR throughout the process. LHSS conducted a series of tests, ultimately designing an encryption algorithm that is applied uniformly in all the databases used and protects the confidentiality of individual's information.

Another challenge was the fact that crossing and combining databases was a time-consuming task since the national databases did not follow a standard format or data management system. This resulted in having to clean the existing databases and identify key common datasets that allowed for the linkage of information to generate a standard format for the newly developed tools.

Lessons Learned

Lessons learned during implementation of this activity included:

1. There are numerous existing databases in place that can be combined to generate useful information for decision-making and the implementation of public policies.
2. The methodological strategy of using a business intelligence tool allows for the use of these data in a flexible way, without the need to generate highly complex integrated systems, both from a technological and institutional point of view.
3. The development of this type of methodology is highly efficient, both in terms of development time and in the generation of institutional capacity for its permanent use.

It is reasonable to expect that the application of this type of methodology could generate a strong impact in strengthening the health systems in other countries as well, especially due to the availability of continuously improved health information systems and advances in technology.

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