

Mapping of Digital Health Tools and Technologies:

Lao PDR Country Report

August 2021

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Abbreviations and Acronyms

CCEI	Cold Chain Equipment Inventory
CHAI	Clinton Health Access Initiative
CO	Country Office
COD	Common Operational Datasets
DHIS 2	District Health Information System 2
DICE	Digital Health Center of Excellence
EIR	Electronic Immunization Registry
EMR	Electronic Medical Record
EU	European Union
GIS	Geographic Information Systems
HIV	Human Immunodeficiency Syndrome
HMIS	Health Management Information System
IVR	Interactive Voice Response
Lao PDR	Lao People's Democratic Republic
LDIS	Laboratory and Diagnostics Information System
LMIS	Logistics Management Information System
MFL	Master Facility Registry
MOH	Ministry of Health
NGO	Non-governmental organization
ODK	Open Data Kit
PIMS	Personnel Information Management System
RCCE	Risk Communication and Community Engagement
UMC	The Uppsala Monitoring Center
UN	United Nations
UNICEF	United Children's Fund
USAID	United States Aid
WB	World Bank
WFP	World Food Programme
WHO	World Health Organization

Overview

Introduction

According to the [Global Digital Health Index](#), Lao People's Democratic Republic (Lao PDR) started to replace paper-based health information systems with DHIS2 which has become the predominant platform in the country. Although the Ministry of Health (MOH) has worked alongside UNICEF since 2015 to draft a digital health strategy, it appears that the approval of it is still pending. However, a current Health Information System strategy 2017-2025 has been developed and approved by the MOH. There appears to be significant interest and momentum to continue to grow and develop the digital health ecosystem with significant support from the MOH.

However, the current COVID-19 pandemic has brought forth the urgency of the presence of a strong and integrated digital health ecosystem. The UNICEF Digital Health Mapping tool was created to address this need by identifying all existing digital health systems which can be leveraged towards the greater goal of strengthening the health care system in countries, besides adapting to respond and recover from the COVID-19 pandemic.

Following the overview, this report presents the digital health tools that are in use in Lao PDR with details of their usage and scale, and, where available, information about implementing agencies, donors etc. The report concludes with appendices which provide additional resources and information.

Background

UNICEF is implementing a comprehensive health response to COVID-19, focusing on outbreak control and mitigation of the collateral impacts of the pandemic, including the risks to the continuity of health services for children, women, and vulnerable populations in conflict-affected areas. A particular priority area is to support countries for the planning, introduction, and deployment of the COVID-19 vaccine. To support this effort, UNICEF has initiated a country mapping of relevant digital health tools and technologies that can be leveraged to support countries' health initiatives in general as well as for their response to COVID-19.

In addition to this, recently UNICEF and the World Health Organization (WHO) have co-founded the COVID-19 Digital Health Center of Excellence (DICE) to provide coordinated, standardized support and technical assistance to national governments and partners on digital health implementations and solutions, including COVID-19 and COVID-19 vaccine delivery.

The DICE is a multi-agency consortium with a UNICEF-WHO co-hosted secretariat. It is funded by the Bill & Melinda Gates Foundation and GIZ and endorsed by the World Bank, Centers for Disease Control (CDC), The Global Fund, Gavi, Digital Square, EU Commission, USAID and more. Partner organizations have identified staff who can be seconded in the short-term to provide immediate technical expertise. Additional resources will be sought to further coordinate and scale its ability to meet rapidly growing demand. If you would like to request support from the DICE, please write to contact@digitalhealthcoe.org.

Analysis Overview

An in-depth interview with the health specialist at the Lao PDR CO, specialists and consultants working at the national level, and the innovation specialists working at the regional (East Asia and Pacific RO) level was undertaken in May of 2021. The information gathered from the interview was supplemented with data from the [Map & Match exercise](#) by Digital Square and from the World Bank's Digital Health Landscaping assessment. The collated data was entered in the [Mapping of Digital Health Tools and Technologies tool](#).

There are 14 digital health implementations currently being used in Lao PDR. Seven (7) are implemented at the national level and the other 7 are implemented at the subnational level. Digital health tools cover multiple use cases and there is robust implementation of DHIS2. Four of the digital health tools utilized in the country are bespoke (custom made) or the software used is unknown.

Strengths

- The Health Information System strategy 2017-2025 provides a roadmap to strengthen the digital health ecosystem in the country and it appears that the MOH has already made significant progress by scaling-up and expanding DHIS2 use cases.
- There is a strong DHIS2 implementation at the national level that covers multiple use cases. Some of the other implemented tools are already interoperable with DHIS2 which promotes a cohesive digital health environment.

Gaps

- Although half of the tools are implemented at the national level, the other half are only implemented at the subnational level possibly missing some opportunities to continue to strengthen the digital health landscape.
- Four of the digital health systems in use are bespoke and would need further investments for interoperability with other government systems and for scaling-up.
- It is acknowledged that the mapping tool reflects the knowledge of the stakeholders included in the interview(s) and may be excluding systems not known to them. It would be imperative to engage with all organizations operating in the health space for a more comprehensive view.

Opportunities

- Explore the need and feasibility of expansion of digital tools to new areas that may offer the greatest impact on healthcare and delivery service, such as immunization stock forecasting and delivery monitoring and telemedicine.
- Explore the need and feasibility to transition bespoke digital health tools towards [digital public goods](#) so that a mature digital health ecosystem can be achieved faster.
- Scale-up many of the digital health tools used at the subnational level to national level, particularly those that are [digital public goods](#).
- Continue to invest in human resources capacity and infrastructure.
- Foster coordination with other UN agencies, INGOs, and entities engaged in digital health interventions as well as with the MOH to ensure a more comprehensive mapping in future exercises.

Digital Health Tools and Technologies

National

- [DHIS2](#)
- [DHIS2 Tracker Capture](#)
- [mSupply](#)
- [ArcGIS](#)
- [KoBo Toolbox](#)
- [Interactive Voice Response](#)
- [Bespoke Cold Chain Equipment Inventory](#)

Subnational

- [Bahmni](#)
- [VigiFlow](#)
- [ViVA](#)
- [Berlinger](#)
- [PIMS](#)
- [Common Geo-Registry](#)
- [Bespoke Master Facility Registry](#)

Digital Health Tool	DHIS2
<p>Description</p>	<p>DHIS2 is used as a national health information system platform for integrated data management and analysis for program monitoring and evaluation in 70+ countries. It is primarily used for reporting and analysis of routine health data; but also serves as a de facto facility registry, can be deployed for service availability mapping and other periodic survey activities, and as a data warehouse to facilitate integrated analysis. Increasingly, it is also used as a 'last-mile' solution for logistics monitoring, particularly at health facility level.</p> <p>DHIS2 comes with three data models 1) aggregate, 2) single events (e.g. for line-listing data) and 3) longitudinal tracking of any entity (patient or otherwise) over time. The core DHIS2 software includes a number of web apps for data capture, analysis, reports, maintenance, user management, data quality, etc. The tracker model supports use cases such as case-based surveillance and patient follow-up; and can be used in tandem with other data models. In addition, an Android app is a core component of the platform to enable out-of-the-box mobile data collection with no interoperability layers required. A DHIS2 Android Software Development Kit (SDK) enables developers to customize mobile application interfaces that integrate natively with DHIS2, supporting all three data models (aggregate, event, tracker). DHIS2 is entirely generic and configurable through a web interface, which means it can be used for any number of use cases.</p>
<p><u>Current Use Case(s)</u></p>	<p>Health Management Information Systems (HMIS), Immunization Stock Forecasting, Contact Tracing, Public Health and Disease Surveillance, Patient Registry, Electronic Immunization Registry (EIR), Data Visualization</p>
<p>Scale</p>	<p>National</p>
<p>Implementer(s)</p>	<p>MOH</p>
<p>Donor(s)</p>	<p>-</p>
<p>Licensing</p>	<p>Open Source</p>
<p>Website</p>	<p>https://dhis2.org/</p>
<p>Covid-19 Specific Functions</p>	<p>Digital packages for COVID-19 capitalize on the core functionality of DHIS2 and the DHIS2 Android Capture app to support COVID-19 surveillance and response activities. COVID-19 metadata packages are modular in nature and can be installed together or separately in a country's DHIS2 system:</p> <p>COVID-19 Case-based surveillance [tracker data model]: enrolls & tracks suspected cases; captures symptoms, demographics, risk factors & exposures; creates lab requests and captures laboratory data about the case; links confirmed cases with contacts; and monitors patient outcomes. This package can be installed as a standalone COVID-19 form or can be integrated into a country's existing integrated disease surveillance & response tracker.</p> <p>Contact registration & follow-up program [tracker data model]:</p>

	<p>strengthens active case detection through contact tracing activities, such as identification and follow-up of contacts of a suspected or confirmed COVID-19 case.</p> <p>Ports of Entry screening & follow-up program [tracker]: enrolls travelers who have visited high-risk locations at Ports of Entry for 14-day monitoring and follow-up.</p> <p>COVID-19 Surveillance Event Program [event]: a simplified line-list that captures a subset of minimum critical data points to facilitate rapid analysis & response, particularly useful when caseloads or burden of reporting exceeds capacity for case-based surveillance tracker</p> <p>COVID-19 Aggregate Surveillance [aggregate]: an aggregate reporting dataset that captures minimum necessary data points for daily or weekly reporting. Core DHIS2 functionality to support COVID-19 includes: longitudinal tracking of suspected and confirmed COVID-19 cases (through Tracker data model), line-listing (through Event data model), alerts & notifications (e.g. thresholds), working lists, DHIS2 Android App for seamless mobile data capture, automated dashboards, on-the-fly calculation of key indicators and data-push features for exporting and sharing COVID-19 data.</p>
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Digital Health Tool	DHIS2 Tracker Capture
Description	Tracker is an application within the DHIS2 platform for the collection of individual-level (or case-based) transactional data, such as medical records for individual patients, confirmed and suspected cases during a disease outbreak, logistical information on specific commodities, or school records for students, to list just a few examples. Tracker supports direct monitoring and follow-up on those cases as well as data analysis and reporting within an HMIS, health program, or other large-scale project that requires information management down to a granular level.
Current Use Case(s)	Immunization Delivery Monitoring, HIV Registry
Scale	National
Implementer(s)	MOH
Donor(s)	-
Licensing	Open Source
Website	https://dhis2.org/tracker/
Covid-19 Specific Functions	See information on Covid-19 specific functions in the DHIS2 box above .

Digital Health Tool	Bahmni
Description	Bahmni is an easy to use, open source hospital system for healthcare providers in low-resource settings.
Current Use Case(s)	Electronic Medical Record (EMR)
Scale	Subnational

Implementer(s)	Friends Without Borders
Donor(s)	-
Licensing	Open Source
Website	https://www.bahmni.org/
Covid-19 Specific Functions	The Bahmni COVID-19 starter kit is a set of COVID-19 artefacts that will be automatically imported into Bahmni systems running Bahmni 0.92. These artefacts would enable healthcare practices using Bahmni to capture COVID-19 specific data as CEIL complaint concepts with the overall impact of being able to report statistics of this disease on an international standard.

Digital Health Tool	VigiFlow
Description	VigiFlow is a management system for recording, processing and sharing reports of adverse effects. VigiFlow supports the domestic collection and processing of individual case safety report (ICSR) data, and its sharing of reports with for example VigiBase. It permits maximum local control and provides effective means for management review and analysis of national data.
<u>Current Use Case(s)</u>	Laboratory and Diagnostics Information System (LDIS)
Scale	Subnational
Implementer(s)	The Uppsala Monitoring Center (UMC), WHO
Donor(s)	-
Licensing	Proprietary
Website	https://www.who-umc.org/global-pharmacovigilance/vigiflow/
Covid-19 Specific Functions	In order to better understand the efficacy and safety of treatments used against COVID-19, it's crucial that countries share relevant adverse event reports in a timely manner. UMC provides this coding guidance for reports concerning COVID-19 treatments. That guidance can be found here .

Digital Health Tool	mSupply
Description	mSupply is a pharmaceutical supply chain management software primarily used by developing nations around the world. mSupply is designed from the ground up with pharmaceutical warehouses, stores and hospital dispensaries in mind. In Kiribati, Tupaia is integrated with mSupply to help reduce urgent orders and improve the supply chain. More information can be found here .
<u>Current Use Case(s)</u>	Logistics Management Information System (LMIS), Immunization Stock Forecasting
Scale	National

Implementer(s)	MOH
Donor(s)	-
Licensing	Proprietary
Website	https://msupply.org.nz/
Covid-19 Specific Functions	mSupply features multiple tools to support vaccination programs, including COVID-19 vaccination efforts: mSupply Desktop, mSupply Mobile, mSupply ColdChain, mSupply Dashboard, and mSupply Synchronization. mSupply has been used for patient registration, stock management, vaccination distribution and stock management, and data visualization by countries during their COVID-19 vaccination campaigns. A presentation of the COVID-10 related work can be seen here .

Digital Health Tool	ViVA
Description	The Visibility for Vaccines (ViVa) tool is a stock monitoring dashboard that visualizes the pipeline of vaccine orders and forecasts, enabling country governments to identify risks of stock-out or overstocking and take corrective action before they occur.
Current Use Case(s)	Immunization Stock Forecasting
Scale	Subnational
Implementer(s)	UNICEF
Donor(s)	-
Licensing	Proprietary
Website	https://www.vivaplatform.org/en/default.aspx
Covid-19 Specific Functions	ViVa is currently utilized by countries to track upcoming shipments for COVID-19 vaccines. Concerning examples of how countries have been using it for COVID-19 vaccinations' programs, considering the not very high amount of COVID-19 vaccines procured by countries so far through UNICEF and the few related data produced in that sense, there is not enough information at the moment to assess the impact on the planning of the COVID-19 vaccines.

Digital Health Tool	Berlinger
Description	External thermometer and alarm system for refrigerators and freezers used to store vaccinations .
Current Use Case(s)	Cold Chain Monitoring
Scale	Subnational
Implementer(s)	-
Donor(s)	-

Licensing	Proprietary
Website	https://www.berlingerusa.com/
Covid-19 Specific Functions	-

Digital Health Tool	Personnel Information Management System (PIMS)
Description	The Personnel Information Management System (PIMS) is a national registry of all civil servants that are in the government payroll. This includes healthcare workers.
<u>Current Use Case(s)</u>	Health Worker Registry
Scale	Subnational
Implementer(s)	Government of Lao PDR
Donor(s)	-
Licensing	Proprietary
Website	-
Covid-19 Specific Functions	-

Digital Health Tool	Common Geo-Registry
Description	A single source of reference information for the standardization, management and use of geographic data over time.
<u>Current Use Case(s)</u>	Master Facility Registry
Scale	Subnational
Implementer(s)	Clinton Health Access Initiative (CHAI)
Donor(s)	-
Licensing	Open Source
Website	https://dsme.community/common-geo-registry/
Covid-19 Specific Functions	-

Digital Health Tool	ArcGIS
Description	ArcGIS offers unique capabilities and flexible licensing for applying location-based analytics to your business practices. Gain greater insights using contextual tools to visualize and analyze your data. Collaborate and share via maps, apps, dashboards and reports.

Current Use Case(s)	Geographic Information System Mapping (GIS)
Scale	National
Implementer(s)	MOH, CHAI
Donor(s)	-
Licensing	-
Website	https://www.esri.com/en-us/arcgis/about-arcgis/overview
Covid-19 Specific Functions	ArcGIS has a COVID-19 specific site from which users can have access to maps, datasets, applications, and more for coronavirus disease 2019 (COVID-19). These resources are updated periodically with new information as it becomes available.

Digital Health Tool	KoBo Toolbox
Description	KoBoToolbox is a suite of tools for field data collection for use in challenging environments. Our software is free and open source. Most of our users are people working in humanitarian crises, as well as aid professionals and researchers working in developing countries. Our teams of developers and researchers are based in Cambridge, MA and many other places around the world.
Current Use Case(s)	Open Data Kit (ODK)
Scale	National
Implementer(s)	-
Donor(s)	-
Licensing	Open Source
Website	https://www.kobotoolbox.org/
Covid-19 Specific Functions	In the context of the COVID-19 pandemic, KoBoToolbox has proven a crucial element of many humanitarian and development-related response operations. Developers and members of the KoBoToolbox community have proactively provided cost-free access to unlimited server space, as well as guidance and templates for effective digital data collections forms for all organizations using these tools for COVID-19 response.

Digital Health Tool	Bespoke (MS Excel) Cold Chain Equipment Inventory (CCEI)
Description	Technology to continually keep track of cold chain equipment status (inventory and working status). In Lao PDR it does not include passive cold chain equipment such as cold boxes or vaccine carriers.
Current Use Case(s)	Cold Chain Equipment Inventory (CCEI)

Scale	National
Implementer(s)	MOH
Donor(s)	-
Licensing	Proprietary
Website	-
Covid-19 Specific Functions	-

Digital Health Tool	Bespoke (Google Sheets) Master Facility Registry
Description	<p>A master facility registry (MFL) is a complete listing of health facilities in a country (both public and private) and consists of a set of identification items for each facility and basic information on the service capacity of each facility.</p> <p>In Lao PDR, this information is imported into Common Geo-Registry</p>
Current Use Case(s)	Master Facility Registry
Scale	Subnational
Implementer(s)	-
Donor(s)	-
Licensing	Proprietary
Website	-
Covid-19 Specific Functions	-

Digital Health Tool	Unknown Interactive Voice Response (IVR)
Description	<p>Automated phone system technology that allows incoming callers to access information via a voice response system of pre-recorded messages.</p> <p>In Lao PDR short phone calls are made by both the village chief and health centre staff to a toll-free number. An automated, voice-guided system then asks them to report on the numbers of children who were planned to be immunized and those who were in a particular village on a particular date. It's easy for users to answer verbally and the system efficiently collects critical data that is used to ensure the quality of health services. More information can be found here.</p>
Current Use Case(s)	Interactive Voice Response (IVR)
Scale	National

Implementer(s)	MOH
Donor(s)	-
Licensing	-
Website	-
Covid-19 Specific Functions	-

Auxiliary tools

Tool	Common Operational Datasets (COD)
Description	CODs are authoritative reference datasets used to support operations and decision-making in the initial response of humanitarian emergencies as well as to enable activities such as microplanning. Frequently collected and used CODs are geographical shapefiles, health facility catchment areas, settlements, population estimates, satellite imagery, and ancillary geospatial layers.
<u>Current Use Case(s)</u>	Common Operational Datasets
Scale	National
Access to CODs	<u>Lao PDR's CODs</u>
Tool	TV, Radio, and Loudspeakers
Description	TV, radio, and loudspeakers are used for health messaging and/or risk communication and community engagement. Also used for community health worker training.
<u>Current Use Case(s)</u>	Traditional Media, RCCE, Community Health Worker Training
Scale	National
Implementer(s)	MOH

Annex 1: Use Case Definitions

Use Case	Description
Civil Registration and Vital Statistics (CRVS)	Digital systems used to record statistics on vital events, such as births, deaths, marriages, divorces and fetal deaths
Cold Chain Equipment Inventory	Technology to continually keep track of cold chain equipment status (inventory and working status)
Cold Chain Monitoring	Technology to continually monitor temperature-sensitive products being transported in a “cold chain”—that is, a supply chain of perishable and/or temperature-sensitive
Common Operational Datasets	Authoritative reference datasets needed to support operations and decision-making for all actors in a humanitarian response.
Community Based Information System (CBIS)	Family-centered health information system designed for CHWs to manage their work in educating households and delivering an integrated package of promotive, preventive, and basic curative health services
Comorbidity Registry	The presence of comorbidities can significantly affect a patient's treatment options, quality of life, and survival. Comorbidity registries keep track of comorbidities which help inform medical decisions
Contact Tracing	Contact tracing is the process of identifying all people that a positive patient has come in contact with
Core Mobile Services	Services used by GSM cellular phones (feature phones) (SMS Aggregator, SMS Shortcode, IVR Shortcode, USSD Services)
Data Visualization	Digital tools used for graphical representation of information and data
Digital Yellow Card	Digital credentialing for vaccinations
Electronic Medical Record (EMR)	Electronic record for patients - includes information about a patient's health history, such as diagnoses, medicines, tests, allergies, immunizations, and treatment plans
Geographic Information System	Framework for gathering, managing, and analyzing data
Health Management Information Systems (HMIS)	Data collection system to support planning, management, and decision making in health facilities and organizations. It can provide reliable and timely info on health system performance
Health Worker Registry	A registry of all the health workers in the country
Immunization Delivery Monitoring	Digital tools that are used for vaccine handling, distribution, and tracking of vaccines
Immunization Forecasting	The Immunization Calculation Engine (ICE) is an immunization evaluation and forecasting system, whose default immunization schedule supports all routine childhood, adolescent, and adult immunizations. ICE evaluates a patient's immunization history and generates the appropriate immunization recommendations for patients

Immunization Stock Forecasting	System or platforms that can forecast vaccine orders based on utilization which can enable COs to identify risks of stock outs or overstocking and take action before they occur
Interactive Voice Response (IVR)	Automated phone system technology that allows incoming callers to access information via a voice response system of pre-recorded messages
Laboratory and Diagnostics Information Systems (LDIS)	Software system that records, manages, and stores data for laboratories and can send laboratory test orders to lab instruments, tracking those orders, and then recording the results
Logistics Management Information System (LMIS)	System of records and reports used to aggregate, analyze, validate, and display data (from all levels of the logistics system) that can be used to make logistics decisions and manage the supply chain. Includes stock on hand, losses and adjustments, consumption, demand, issues, shipment status, and information about the cost of commodities managed in the system
Master Facility Registry	Comprehensive repository of health facilities of the country - would include all admin information and the status of the facility, staff, CCes, etc.
Mobile Community Health Worker Learning Management System (CHW LMS)	Learning management systems functioning in the country for community health workers
National ID	Digital national identity systems
Patient Registry	A patient registry is an organized system that uses observational study methods to collect uniform data (clinical and other) to evaluate specified outcomes for a population defined by a particular disease, condition, or exposure, and that serves one or more predetermined scientific, clinical, or policy purposes.
Pharmacy Information System	Supports the distribution and management of drugs, shows drug and medical device inventory, and facilitates preparing needed reports
Public Health and Disease Surveillance	Contributes data and information to assess and characterize the burden and distribution of adverse health events, prioritize public health actions, monitor the impact of control measures, and identify emerging health conditions that may have a significant impact upon population health
RapidPro	RapidPro is a software product that allows you to visually build the workflow logic for running mobile-based services. This software includes features for managing your users' contacts dynamically, graphically analyzing the data your service receives, connecting to multiple communication channels (ie SMS, voice, USSD, and social media), sending messages in multiple languages, and interoperating with external systems

Social Media for Risk Communication and Community Engagement (RCCE)	Utilization of social media for health messaging dissemination
Social Monitoring	Capture of what is said in social media platforms
Telemedicine	Platform used by providers to connect with patients and share video and images. It can be integrated with a provider's electronic health record and scheduling systems
Track and Trace System	Track and Trace systems enable the traceability/visibility of products from origin through various distribution processes down to patient
Traditional Media	Traditional media that may be used for outreach and messaging (TV, radio, other)

Additional Resources

Resources	Description	Website
Mapping of Digital Health Tools and Technologies in Countries (View only)	This workbook indicates the presence of tools and digital technologies being used for health initiatives and other sectors in UNICEF Country Offices (COs)	http://uni.cf/mapping-digital-health
M&M Global goods possible use cases	This document provides a list of Digital Square approved global goods mapped across the use cases visualized in the DATEC. The global goods are grouped by those that have already been adapted to match a use case and those that could be adapted to match a use case (i.e., simple, easy, low-lift adaptations).	https://static1.squarespace.com/static/59bc3457ccc5c5890fe7cacd/t/60522885399dca3568666606/1615997063979/Global+Goods+COVID+Map.pdf
Digital Implementation Investment Guide (DIIG): Integrating Digital Interventions into Health Programmes	This practical Guide provides a systematic process for countries to develop a costed implementation plan for digital health within one or more health programme areas, drawing guidance from the WHO guideline–recommended digital health interventions, providing direction to ensure investments are needs-based and contribute effective and interoperable systems aligned with national digital architecture, country readiness, health system and policy goals.	https://www.who.int/publications/i/item/9789240010567
Digital Health Atlas	The Digital Health Atlas is a WHO global technology registry platform aiming to strengthen the value and impact of digital health investments, improve coordination, and facilitate institutionalization and scale.	https://digitalhealthatlas.org/en/-/
Global Digital Health Index Country Profile	The Global Digital Health Index is an interactive digital resource that tracks, monitors, and evaluates the use of digital technology for health across countries.	http://index.digitalhealthindex.org/map

Assessing country readiness for COVID-19 vaccines	The country readiness assessments for COVID-19 vaccines are undertaken jointly by governments; the World Bank; Gavi, the Global Vaccine Alliance; the Global Fund to Fight AIDS, Malaria and Tuberculosis; UNICEF and the World Health Organization. This report presents initial findings of 128 countries as of March 2021	https://documents1.worldbank.org/curated/en/467291615997445437/pdf/Assessing-Country-Readiness-for-COVID-19-Vaccines-First-Insights-from-the-Assessment-Rollout.pdf
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