Country one pagers on European countries' health information systems monitoring the wider effects of COVID-19 on population health

D3.1 – November 2023
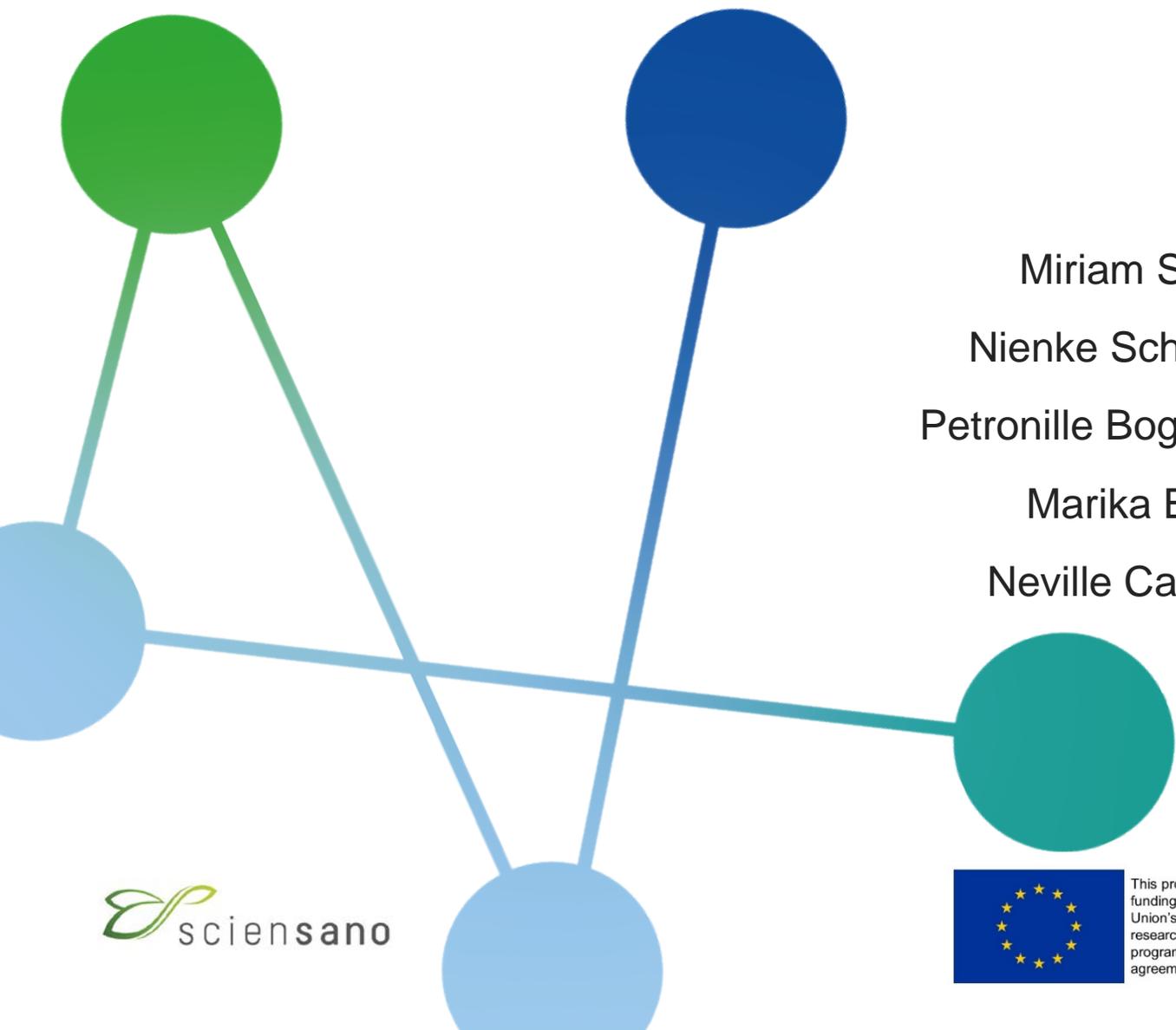
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PHIRI: Country one pagers on European countries' health information systems monitoring the wider effects of COVID-19 on population health

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I. Introduction

Within PHIRI, the Population Health Information Research Infrastructure, Work Package 3 (WP) focuses on reaching out and engaging key stakeholders at national and international level to ensure the sustainability of the project′s actions. The objectives of the WP are to:

- Have a comprehensive view on developments and the state of play of health information systems that monitor the wider effects of COVID-19 on population health at national level and international level;
- Create a base for interdisciplinary population health research through exchange and support at national and international level;
- Investigate routes for economic sustainability;
- Support integration of knowledge generated from PHIRI into policy.

Within this WP, task 3.1 aims to map the health information system (HIS) that monitors the effects of COVID-19 on population health. This is achieved through virtual country visits of selected European countries that are part of the PHIRI consortium. After receiving a training, the assessors performed targeted interviews with key national players that have dealt with the processing of the COVID-19 population health information in the country of interest.

The methodology applied for the country visits is derived from the methodology developed and piloted by WHO Regional Office for Europe (Verschuuren et al., 2016; World Health Organization Regional Office for Europe, 2015) in the framework of the WHO European Health Information Initiative (EHII) and the country visits performed in the Joint Action InfAct, for which the methodology was adapted as the WHO works through the Ministries of Health, while in InfAct the assessments were initiated and executed at the level of health information institutions and experts.

The country visits resulted in the identification of strengths and weaknesses of the different data flows monitoring the wider effects of COVID-19 in the examined countries. This has the potential to stimulate actions to improve the assessed information flows, and lead to the identification of good practices that can also be used in countries that are not taking part in the assessments. Consequently, this will contribute to better preparedness for future crises or other public health challenges. Other countries will be able to learn from the experiences that were gained during the assessments, and build on these when assessing their own health information data flows. Finally, this exercise created opportunities to engage and exchange with national HI stakeholders and authorities on COVID-19 experiences. Stimulating the improvement of health

information data flows monitoring the wider effects of COVID-19 the exchange of good practices, could lead to the reduction of health information inequalities between countries.

For detailed information on the process followed, please consult the PHIRI Health Information System (HIS) Assessments Manual version 3.0. The manual defines the objectives of the HIS assessment and how the assessment process is organized. It provides guidelines for the execution of the assessments and describes the roles and tasks of the different types of experts involved.

II. Aim

The deliverable 3.1 *Country one pagers on European countries' health information systems monitoring the wider effects of COVID-19 on population health* aims to provide an overview of the COVID-19 Health Information System Assessment one pagers already published on the PHIRI website, the Health Information Portal and available below in this document. Such one pagers summarise the outcomes of the assessments.

The outcomes of the assessment are also shaped in the form of a SWOT (Strengths, Weaknesses, Opportunities and Threats) analysis, and a set of concrete suggestions for improvement are provided. The concrete suggestions for improvement are formulated according to the SMART criteria, divided according to whether they can be achieved in the short, medium or long term, together with the stakeholders that should be involved. When relevant and feasible, the suggestions for improvement were complemented with good practices either from the countries of the assessors, or from other countries. Such documents have been already shared with the countries assessed and are not publicly available.

COVID-19 Health Information System Assessment one pagers publicly available:

- Italy - Assessment performed in January 2022 – 13 interviewees
- Portugal - Assessment performed in March 2022 – 4 interviewees
- Ireland - Assessment performed in April 2022 – 17 interviewees
- Malta - Assessment performed in May 2022 – 20 interviewees
- Hungary - Assessment performed in October 2022 – 4 interviewees

PHIRI
Population Health Information
Research Infrastructure

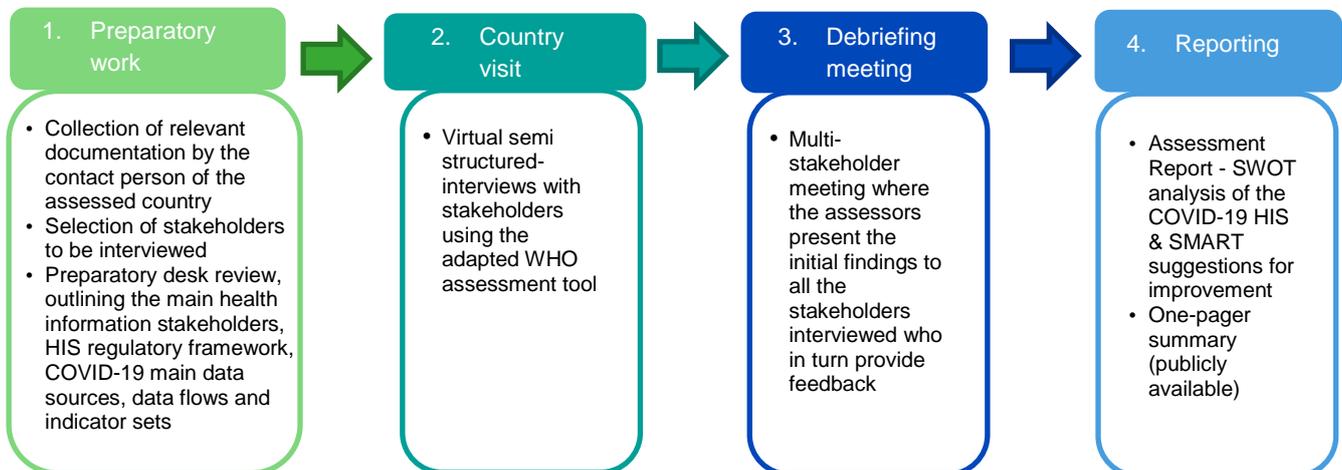# State-of-play of the COVID-19 Health Information System
Italy

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AIMS OF THE COVID-19 HIS ASSESSMENTS

1. **Identify strengths and weaknesses** of the different data flows across Health Information Systems, whilst monitoring the (broader) effects of COVID-19 in the examined countries.
2. Provide opportunities for other countries to **learn from the experiences** gained during the assessments, and build on these when assessing their own Health Information systems and/or data flows.
3. Potentially **identify data sources** that may not have been used or fully exploited yet and feed them to the Health Information Portal.

4. **Create opportunities** for **engagement** and **knowledge exchange** with national stakeholders and authorities.
5. Contribute to **capacity building** across Europe, which in turn can contribute towards reducing health information inequalities within and between countries.
6. Identify key recommendations for **resilient Health Information Systems** and towards **increased preparedness** for future crisis.

METHODOLOGY OF THE COVID-19 HIS ASSESSMENTS

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An adapted version of the Health Information System assessment tool developed by the WHO Regional Office for Europe (2015), including the add-on module on Infectious Diseases (2021), is used to guide the interviews. The assessment covers data collections and data sources, data analysis, reporting, knowledge translation, governance and resources, best practices and identified gaps.

COUNTRIES INVOLVED IN THE PHIRI COVID-19 HIS ASSESSMENTS

The assessments are performed in Austria, Belgium, Italy, Greece, Hungary, Ireland, Malta, the Netherlands, Norway and Portugal by the end of the project (November 2023). Italy, Portugal, Ireland, Malta and Norway were assessed in the first semester of 2022.

Health Information System (HIS)

The Ministry of Health (MoH), established the COVID-19 surveillance system in Italy. It set out the criteria and methods for reporting cases of SARS-CoV-2 infection jointly agreed with the Department of Infectious Diseases of the Italian National Institute of Health (ISS). These stakeholders, together with the Italian Office for Statistics (ISTAT) and Regions are important stakeholders in the Italian COVID-19 Health Information System.

Data collections/sources

- COVID-19 testing: Regions (Local health units) & ISS
- Molecular surveillance: ISS
- Mortality
  - Demographics (population register): ISTAT
  - Cause of death: ISTAT
- Vaccination: MoH vaccination information system
- Long term effects: ISS & ISTAT
- Seroprevalence: ISTAT
- Health surveys: ISTAT & ISS
- Long term care and nursing homes: ISS
- Long COVID: ISS

Data Analysis

- Indicators on monitoring capacity, capacity of diagnostic assessment, investigation and management of contacts, and transmission stability and the maintenance of health services (ISS)
- Quality control and feedback to the regions regarding test statistics (ISS)
- Compare mortality data flows and eliminate duplicates (ISTAT)
- Analyse mortality data in relation to population data for impact of COVID-19 (ISTAT)
- Foresight scenarios (ISS)

Reporting and knowledge translation

- Dashboards:
  - COVID-19 overview by the MoH
  - EpiCentro by ISS
- Weekly monitoring reports by ISS
- Ad hoc requests from the government to both ISS and ISTAT for reports
- Formal and informal communication between regions and national institutes
- Communication with regions on (upcoming) peak or cluster of COVID-19 cases

Governance and resources

- Data flows based on emergency legislation
- National scientific committee for translating scientific evidence to recommendations for policymakers
- Microdata on hospitalizations governed by MoH available for researchers
- Recovery and Resilience Plan with investments in eHealth
- Long recruitment process in administrations
- Same surveillance system used across all regions as well as at a national level

Best practices

- Health trajectories can be rebuilt as the MoH uses the same pseudonymised patient identifier
- Telemedicine as integral part of the Resilience and Recovery Plan
- Strong vaccination information system implemented before the COVID-19 crisis hit
- Short communication lines between both national and regional stakeholders
- Use of the same information system in all regions as well as on a national level, allowing for fast communication and feedback loops e.g. quality checks

Identified gaps

- Limited opportunities to link databases outside of the MoH
- Secondary use of data is hampered due to strict legislation and bureaucratic data access processes
- Shortage of public health professionals in administrations
- Need for a long term monitoring and surveillance strategies for COVID-19
- Communication gaps to the public at regional and national level
- Limited infodemic management awareness and practices

Assessment performed in:
January 2022

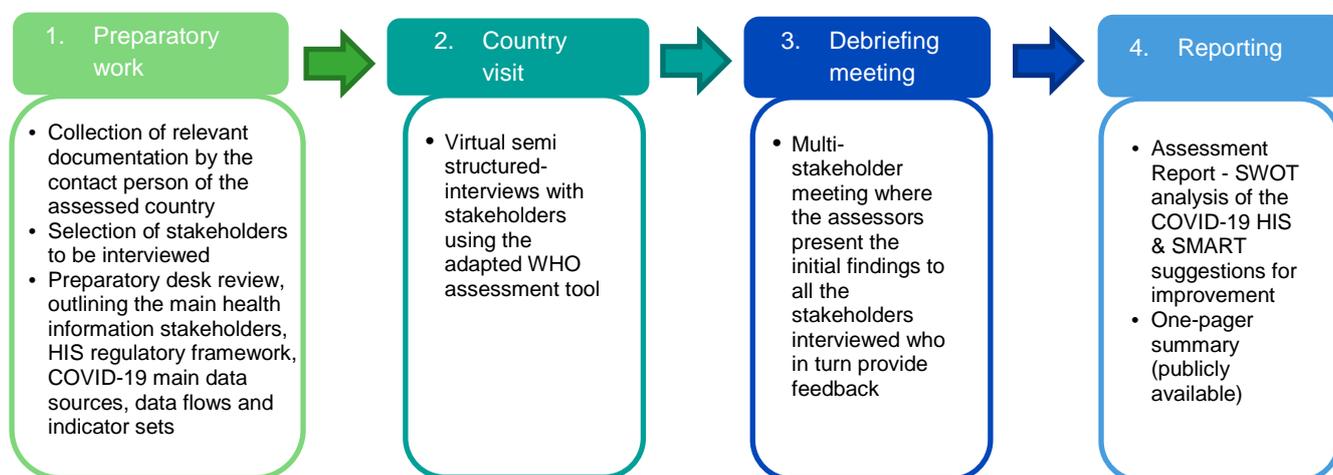# State-of-play of the COVID-19 Health Information System
Portugal

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COUNTRIES INVOLVED IN THE PHIRI COVID-19 HIS ASSESSMENTS

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Health Information System (HIS)

The Directorate General of Health (DGS) within the Ministry of Health formulates and coordinates the public health measures outlined in the contingency plan developed to respond to the COVID-19 crisis. The DGS also coordinates epidemiological surveillance and contact tracing and provides regular COVID-19 reports. Together with the Shared Services of Ministry of Health (SPMS), a state-owned enterprise, several electronic health systems (e.g. PEM/Electronic Medical Prescription, SCClínico Hospitalar, SNS 24, vaccination portal, SINAVE, Trace COVID-19) were used during the pandemic. Other important stakeholders in the Portuguese COVID-19 Health Information System (HIS) include the National Health Institute Doutor Ricardo Jorge (INSA), the Central Administration of the Health Services (ACSS) and the National Statistics Institute (INE).

Data collection/Sources

- *Cases*: Data on infections are collected by doctors, either in primary health care facilities or hospital, and mainly by laboratories and communicated to DGS using SINAVE
- *Surveillance systems*: Pre-existing surveillance system SINAVE for infectious diseases; new system Trace COVID-19 for case follow-up and contact tracing
- *Mortality*: SICO - electronic system for death certificates (updated every 10 minutes)
- *Vaccination*: Electronic national vaccination portal hosted by SPMS
- *Contact tracing app*: STAYAWAY COVID
- *Hospitalisations*: hospitals report COVID-19 cases to Regional Health Administrations

Data Analysis

- Comprehensive use of data science at DGS, SPMS and INSA, as well as analyses by external researchers
- Several scientific studies, surveys and academic publications were produced in collaboration with HIS stakeholders during the pandemic
- Relatively small group of core people conducting data analyses
- Data quality varies across the country (health units), depending both on the respective clinic's degree of trained personnel and information system

Reporting and knowledge translation

- Dashboards:
  o National
  o DGS
  o INE
- Regular monitoring reports:
  o DGS: daily bulletin
  o INSA: incidence map, risk map, nowcasting, forecasting
- Ad hoc requests from DGS to INSA or SPMS
- COVID-19 related data reported to international institutions e.g. ECDC, EuroMOMO

Governance and resources

- Faster data flows based on emergency legislation
- Data management is centrally organised via SPMS under DGS leadership
- Swift development of innovative digital tools e.g. Trace COVID-19, supporting pandemic management and data management
- Emergency plan developed to cope with the shortage of human resources in some HIS stakeholder institutions
- A preparedness plan was introduced just before the pandemic started
- Communication with the general public and the media is frequent and coordinated by DGS

Best practices

- Quick development of digital tools, their implementation and linkage
- Data management designed in an agile way with continuous feedback mechanisms (SPMS)
- Data linkage possible due to patient identifier
- Regular communication with the public (DGS daily bulletin, INSA: incidence map / risk map / nowcasting / forecasting)
- Mechanisms in place to ensure engagement with stakeholders (e.g. on behalf of SPMS webinars for labs on how to report positive cases)

Identified gaps

- Data flows and secondary data use threatened by lack of legal basis for the use of COVID-19 data beyond the pandemic
- Guidelines for secondary use of data not fully transparent for external researchers
- Shortage of human resources and tailored trainings in some HIS stakeholder institutions
- Partially parallel IT systems that require harmonisation
- Need to modernise old systems and digitalise paper-based processes for integration with more robust digital systems already in place

*Assessment performed in:
March 2022*

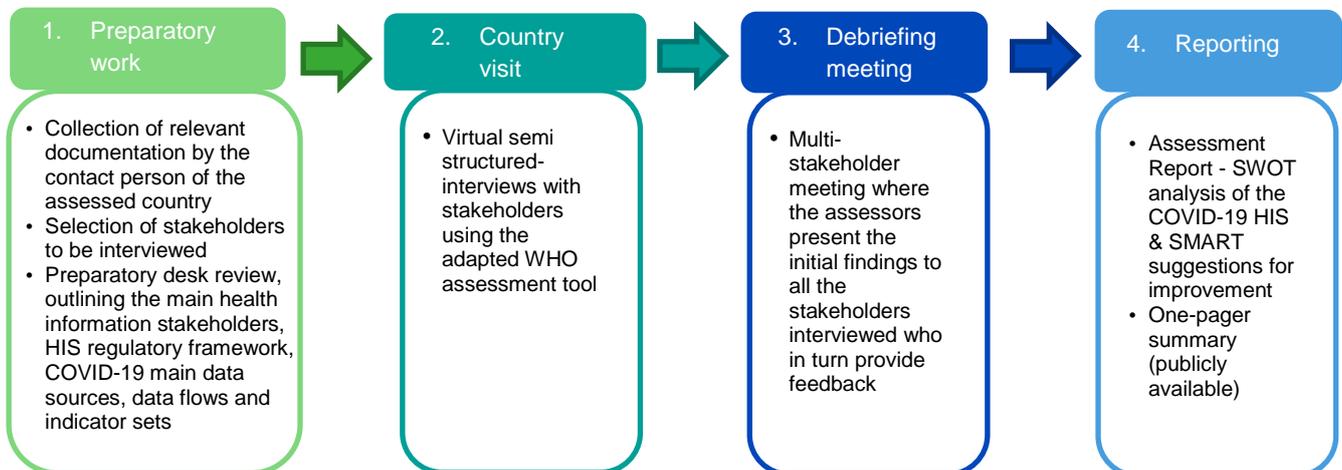# State-of-play of the COVID-19 Health Information System
Ireland

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State-of-play of the COVID-19 Health Information System
Ireland

Health Information System (HIS)

The Health Protection Surveillance Centre (HPSC) within the Health Service Executive (HSE) is Ireland's specialist agency for the surveillance of communicable diseases including COVID-19. These stakeholders, together with the Department of Health (DoH), the National Health Intelligence Unit (NHIU) at HSE, Health Information and Quality Authority (HIQA), Central Statistics Office (CSO), National Office of Clinical Audit (NOCA), and Economic and Social Research Institute (ESRI) are important stakeholders in the Irish COVID-19 Health Information System. They form part of the COVID-19 Data Coordination Group (which includes the Healthcare Pricing Office and the Ordinance Survey Ireland, but not HIQA and ESRI).

Data collections/sources

- Pre-existing national Computerised Infectious Disease Reporting (CIDR) system (HPSC) - expanded to include COVID-19 testing data and clinicians' notifications
- COVID Care Tracker (CCT) for contact tracing (HSE)
- Mortality (CSO)
- Molecular sequencing (UCD NVRL – National Virus Reference Lab)
- ICU Bed Information System (ICU-BIS) (NOCA)
- CoVax system for vaccinations (HSE)
- Serosurveillance (Seroepidemiology Unit – SEU within HPSC)
- Add-on COVID modules in well-established surveys eg SILC, Labour Force Survey (CSO)
- Ireland's COVID Tracker App (HSE)

Reporting and knowledge translation

- Dashboards:
  o Ireland's COVID-19 Data Hub (joint collaboration between DoH, HSE, CSO, HPSC, NOCA)
  o COVID-19 Information Hub (CSO)
  o Epidemiology of COVID-19 in Ireland (HPSC)
- Regular reports published (by HPSC, HIQA, NOCA)
- Ad hoc and internal requests by policymakers and National Public Health Emergency Team for COVID-19 (NPHET) to different stakeholders
- Expert Advisory Group (EAG) and COVID-19 Evidence Synthesis Team within HIQA support NPHET
- Strengthened international reporting eg. by HPSC with ECDC
- Feedback to public health professionals on outbreaks and trends by NOCA & from behavioural/ attitude surveys for management response plan by ESRI
- Regular press conferences by the Chief Medical Officer (CMO)
- Direct communication with the media by the DoH
- Dot (exact location) and local service area feedback to Depts Public Health via Atlas Finder.
- Spatial displays (by LEA) on GeoHive facilitated by NHIU

Best practices

- Development of Robotic Process Automation - aligns COVID-19 data across information systems and navigates CIDR to process laboratory records, notifications and contact-tracing data (saved lot of manual work; rigorous quality checks) (HPSC)
- Deliverable outcomes are clearly stated in government research contracts at ESRI
- Multiple official independent bodies (CSO, ESRI, NOCA) publish COVID-19 related health data – strengthens credibility, transparency & public trust; HIQA & NOCA provide recommendations
- Establishment of a permanent Seroepidemiology Unit (SEU) within HPSC
- COVID-19 Data Research Hub set up by the CSO – researchers apply to access data for secondary use.

Data Analysis

- Extensive validations and quality checks in CIDR, also using Robotic Process Automation which also eliminates duplicates
- Lack of use and collection of a harmonised standard unique person identifier across different health datasets challenges data linking and analysis
- Indicators on COVID-19 cases, deaths, hospital admissions, ICU admissions analysed & reported
- Looking at the wider impacts of COVID-19 on the economy, labour market, social & wellbeing, transport, energy & tourism (COVID-19 Information Hub by CSO)
- Data collection systems across different hospitals and community primary healthcare are not harmonised (both manual and digital data collection in place)
- Modelling and foresight studies performed (universities, Irish Epidemiological Modelling Advisory Group - IEMAG)
- COVID-19 geospatial analysis underpinned via case geo-referencing via Health Atlas Ireland

Governance and resources

- Strong collaboration between the different stakeholders
- Flexibility to mobilise resources; sufficient human resources (except epidemiologists and IT specialists)
- Great effort by DOH and HSE to roll out systems in a short and efficient manner eg CCT (for Contact Tracing), CoVax system (for vaccination).
- COVID-19 data collated and shared by CSO under different sections of the Statistics Act, following authorisation from the Minister for Health
- CIDR as a central surveillance system for COVID-19 informs both regional public health physicians and HPSC simultaneously
- Information management standards provided by HIQA but implementation and enforcement challenging
- Health Information Bill is being drafted - opportunities to address the current gaps in the legal framework for collection & sharing of health data

Identified gaps

- The licensing framework of healthcare service organisations does not require periodic evaluations
- Difficulty to recruit epidemiologists and IT specialists
- Lack of use of a harmonised standard unique person identifier (3 identifiers available - PPSN / IHI / COVID ID) across different health datasets challenges data linking and analysis
- Underuse of the Eircode created logistic challenges in the geo-referencing process
- Electronic Health Records (EHRs) are not in place
- Data collection systems across different hospitals and community primary healthcare are not harmonised (both manual and digital data collection in place)
- Data from the private healthcare sector is not submitted to the HSE - no legal framework in place; unclear who owns GP data
- IT systems security issues – cyberattack in May 2021

Assessment performed in:
April 2022

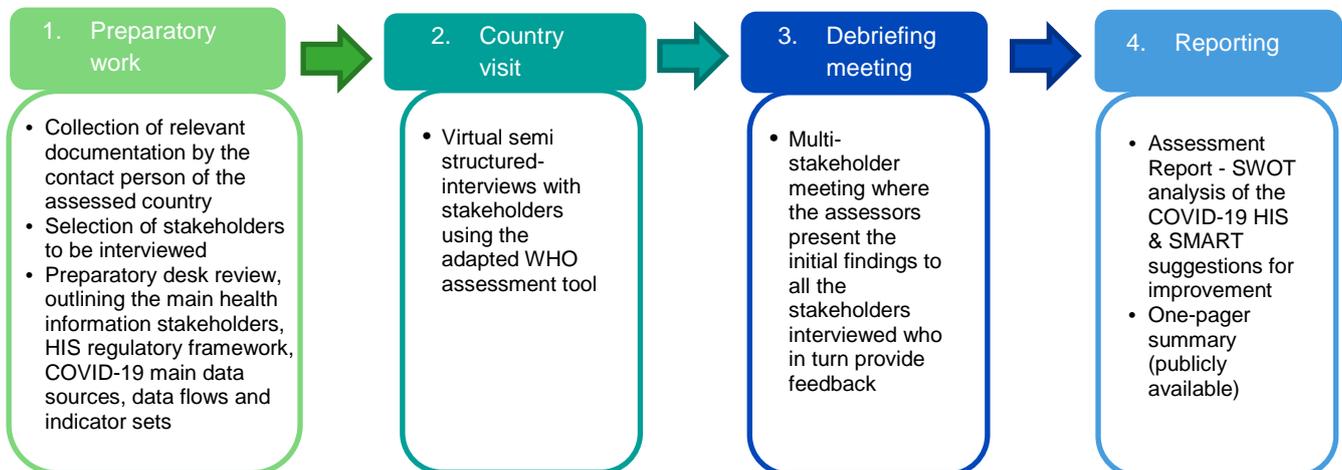# State-of-play of the COVID-19 Health Information System
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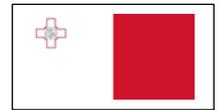
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Health Information System (HIS)

The main provider of public health services is the Ministry for Health (MFH), with the private sector providing mostly ambulatory services. The public health sector provides free services at the point of care. Malta and Gozo have one public acute general hospital each. The Superintendent of Public Health (SPH) and the Minister responsible for Health make recommendations to Cabinet for legal amendments in the relevant legislation. The SPH was overall responsible for the COVID-19 Public Health Response team (COVID-19 PH RT), that was set up to respond to the public health needs during the pandemic.

Data collections/sources

- The Public Health Act is an enabling legislation, containing the required provisions for COVID-19 data collection procedures and governance structure
- The COVID-19 PH RT team quickly adopted Go.Data by WHO, then developed its own data collection/management system
- *Cases*: Results sent daily to Data Management team (DMT) from Mater Dei Hospital (main state acute general hospital) lab, private labs and RAT providers. DMT updates Test, Track and Trace System (TTS) with new cases.
- *Mortality*: Daily sent to DMT, SPH, weekly to EuroMomo (excess mortality), enriched with demographic information, COVID-19 status, medical conditions and comorbidity, etc.
- *Testing*: Requests for testing made on the phone to helpline and through self-registration. Data captured in, matched with national central database and used by swabbing teams. Feedback on questions being asked by the public from Helpline team to COVID-19 PH RT team received
- *Hospitalisations*: Daily data sent to DMT by Bed Management Unit in Mater Dei Hospital (MDH) and Gozo General Hospital. Analysed and reported to ECDC.
- *Vaccination*: Development of custom-made system (Vaccination Registration System - VRS) integrated with EU Digital COVID certificates. Possibility to link the data to patient medications, healthcare activity data & identify vulnerable groups for prioritisation of vaccination
- *Molecular surveillance*: access to testing and sequencing data
- *COVID Alert Malta App*: Malta's national contact tracing app

Reporting and knowledge translation

- Daily (later weekly) press conferences were organized by the SPH
- Internal daily reports; dashboard available for the general public generated by the MFH available on Saħħa Facebook page & MFH website
- Basic information on COVID-19 provided in many languages to accommodate the foreign resident population, (im)migrants and migrant workers
- Television and Facebook were employed; engagement of political leadership and other government officials
- Dedicated sub-website located at covid19health.gov.mt with guidance for different sectors
- Hekk hu: scientific information page in Maltese with fact-checking on COVID/ health topics: run by healthcare professionals. It does not pertain to the MFH
- Engagement in infodemic management, mix of proactive and reactive approach to discuss health topics

Best practices

- Quick implementation of Go.Data which was adapted for COVID-19 with help from WHO
- Trust (and trustworthiness) in relation to health information had already been identified as a key priority in peacetime and was built over time
- Invested in national/ international networks before crisis
- Whole-of-government approach: e.g. ministries consulting with health ministry regularly
- Experts involved in an interdisciplinary manner to improve communication and dissemination activities
- Linkage of databases to ensure coverage of the vulnerable populations (e.g. prioritisation lists for vaccination)

Data Analysis

- All providers, public and private are obliged to report on all tests taken using the COVID Result Submission Portal (CRSP), unless a different submission channel is already in place with SPH
- Track & Trace System implemented by the DMT; holistic and integrated approach for all COVID data
- Unique person identifier provides opportunities to link data to other datasets
- Data analysis and quality control (standard checks such as missing data, misspelling of names, missing locality) are done by the DMT manually
- Daily upload of data on cases, mortality, vaccination and testing (and periodically for COVID Alert Malta) on GitHub

Governance and resources

- Collaboration with public and private laboratories
- Pandemic preparedness plan established prior to the COVID-19 pandemic, containing minor HIS elements in the strategy
- Employees performed multiple tasks at the same time and experienced a heavy workload
- Health Information was communicated via the Ministry Secretariat.
- The governance structure of the COVID-19 PH RT was clearly outlined and delineated internally within the Ministry
- Limited supply of data services and IT services necessitated outsourcing
- Multiple tasks were performed by volunteers in wave 1 of the pandemic

Identified gaps

- Malta's small size could hinder speed of uptake of innovative technologies in favour of manual methods especially when faced with shortage of resources
- Automated processes (for data validation and data quality checks) are essential when a system is faced with large data volumes
- Little promotion of GitHub: unawareness of its existence hinders the use of the data by researchers
- Minor health information system elements in the pandemic preparedness plan
- Difficulty to recruit IT profiles such as data specialists, data engineers

Assessment performed in:
May 2022

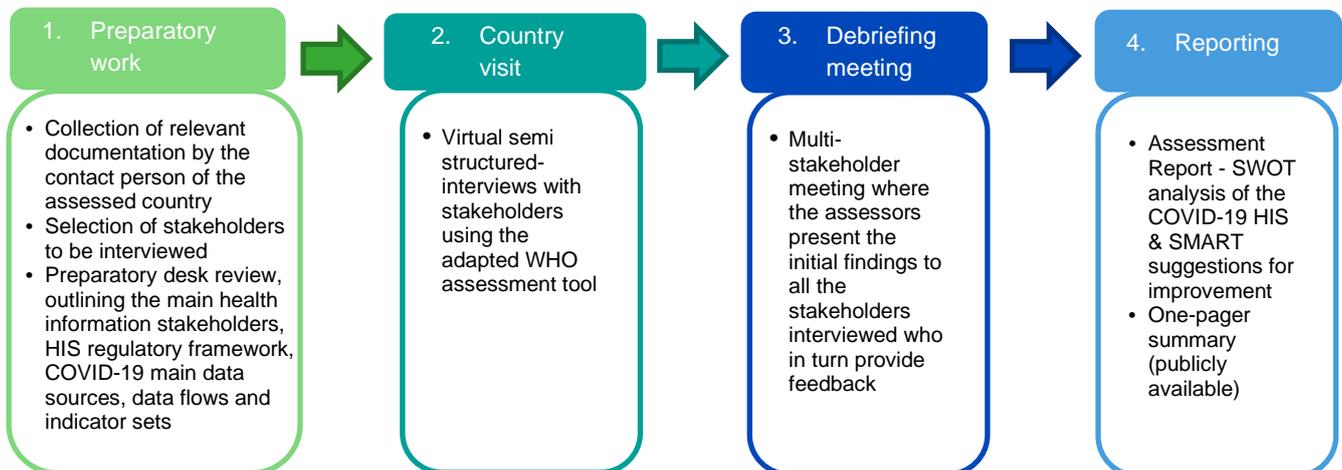# State-of-play of the COVID-19 Health Information System
Hungary

The [Population Health Information Research Infrastructure](#) (PHIRI) carries out COVID-19 Health Information System (HIS) assessments in selected countries that are part of the PHIRI consortium, mapping the Health Information System behind the data and information flows that monitor the effects of COVID-19 on population health.

AIMS OF THE COVID-19 HIS ASSESSMENTS

1. **Identify strengths and weaknesses** of the different data flows across Health Information Systems, whilst monitoring the (broader) effects of COVID-19 in the examined countries.
2. Provide opportunities for other countries to **learn from the experiences** gained during the assessments, and build on these when assessing their own Health Information systems and/or data flows.
3. Potentially **identify data sources** that may not have been used or fully exploited yet and feed them to the [Health Information Portal](#).

4. **Create opportunities** for **engagement** and **knowledge exchange** with national stakeholders and authorities.
5. Contribute to **capacity building** across Europe, which in turn can contribute towards reducing health information inequalities within and between countries.
6. Identify key recommendations for **resilient Health Information Systems** and towards **increased preparedness** for future crisis.

METHODOLOGY OF THE COVID-19 HIS ASSESSMENTS

Each country is assessed by experts from another country within the PHIRI consortium. A detailed [manual](#) explains the procedure followed in the assessments, with the steps summarised below.

1. Preparatory work	2. Country visit	3. Debriefing meeting	4. Reporting
• Collection of relevant documentation by the contact person of the assessed country • Selection of stakeholders to be interviewed • Preparatory desk review, outlining the main health information stakeholders, HIS regulatory framework, COVID-19 main data sources, data flows and indicator sets	• Virtual semi structured-interviews with stakeholders using the adapted WHO assessment tool	• Multi-stakeholder meeting where the assessors present the initial findings to all the stakeholders interviewed who in turn provide feedback	• Assessment Report - SWOT analysis of the COVID-19 HIS & SMART suggestions for improvement • One-pager summary (publicly available)

An adapted version of the [Health Information System assessment tool](#) developed by the WHO Regional Office for Europe (2015), including the add-on module on Infectious Diseases (2021), is used to guide the interviews. The assessment covers data collections and data sources, data analysis, reporting, knowledge translation, governance and resources, best practices and identified gaps.

COUNTRIES INVOLVED IN THE PHIRI COVID-19 HIS ASSESSMENTS

The assessments were performed in Belgium, [Italy](#), Hungary, [Ireland](#), [Malta](#), the Netherlands, Norway and [Portugal](#) between January 2022 and May 2023.

PHIRI
Population Health Information
Research Infrastructure

Health Information System (HIS)

The Hungarian healthcare system is funded through a single payer, the National Health Insurance Fund (NEAK). Every registered citizen possesses a social security number that is utilized for healthcare purposes and almost all citizens have access to healthcare services. A HIS for notifiable diseases has been in place in Hungary since 2014; physicians are obliged to report any new cases online within 24hours.

Data sources

The main health data sources in Hungary are the: National E-Health Infrastructure (EESZT), National Health Insurance Fund (NEAK), National Public Health Centre (NPHC/ NNK) and the Hungarian Central Statistical Office data. During COVID-19, EESZT collected data on tests, vaccinations and medical care centrally. Results of PCR tests were automatically transmitted to the (NPHC/ NNK). Data were reported to TESSY and the country actively participated in COVID-19 specific surveys, mostly issued by NPHC/ NNK and some with the support of universities.

Data Analysis

Cooperation was established with university researchers for data analysis. Modelling was performed at the NPHC. Preparations are underway for the design of the sectoral data center, which will allow anonymous research queries based on EESZT during the pandemic. The server was planned to be established at the Ministry of the Interior and managed by government IT agencies such as the Government IT Development Agency and Cyber Security agency.

Reporting and knowledge translation

- The country had a centralized communication channel, the Coronavirus.gov and daily press conferences by the Operational Corps, streamed on television and on social media. In the course of the pandemic, communication was reduced to weekly reports.
- A free phone call number, offering information on COVID-19 was set up.
- A dedicated team, mainly coordinated by government actors and members of the Ministry of Interior, with multidisciplinary experts was allocated to reporting to understand and process the new results for the daily reports.

Governance and resources

- In January 2020, the Hungarian government established an 11-member Operational Corps led by the Interior Minister and the Minister of Human Capacities. The Operative Corps was responsible for organizing the medical and epidemiological measures taken in response to the COVID-19 pandemic such as testing and allocating physical and human resources.
- The legislation in place allowed to introduce new mandatory diseases for reporting.
- The legislation for the implementation of public health and social measures had to be developed.
- Centralized oversight of health care services enabled effective implementation of health system directives, e.g. for the dedication of hospital beds to COVID-19 patients.
- At the healthcare providers level, students and volunteers were involved to decrease the lack of specialized human resources.
- Screening buses were repurposed as testing and vaccination buses.

Best practices

- A unique person identifier is used for the patients allowing linkage of data across different databases.
- A COVID-19 Data Lake containing data that is depersonalized in a standard manner, was established and coordinated by the Ministry of the Interior.
- An increase in the use of telemedicine was recorded: currently it is mandatory for GPs to make digital prescriptions.
- Quick adaptive capacity in the development of new tools, such as the Business Intelligence (BI) platform that provided information on multiple data collection (e.g. protective equipment, bed occupancy), was registered. Such information allowed the government to react quickly when needed i.e. emerging of new variants.
- Existing legislation supported the country to quickly react and set up new data flows instead of working under emergency legislation.
- Identification of groups and areas in which the vaccination hesitancy was higher led to the organisation of national events, such as hackathons in collaboration with universities, to create targeted campaigns.
- Successful collaboration with the private sector: an agreement with all the Hungarian mobile providers (e.g. Vodafone, Telecom) was set up to obtain depersonalized aggregated mobile cell data, allowing the generation of a stay-at-home and mobility index and information on compliance with restrictions on mobility.
- Attention to testing of hard-to-reach population groups via the organisation of "screening buses" strategically located.
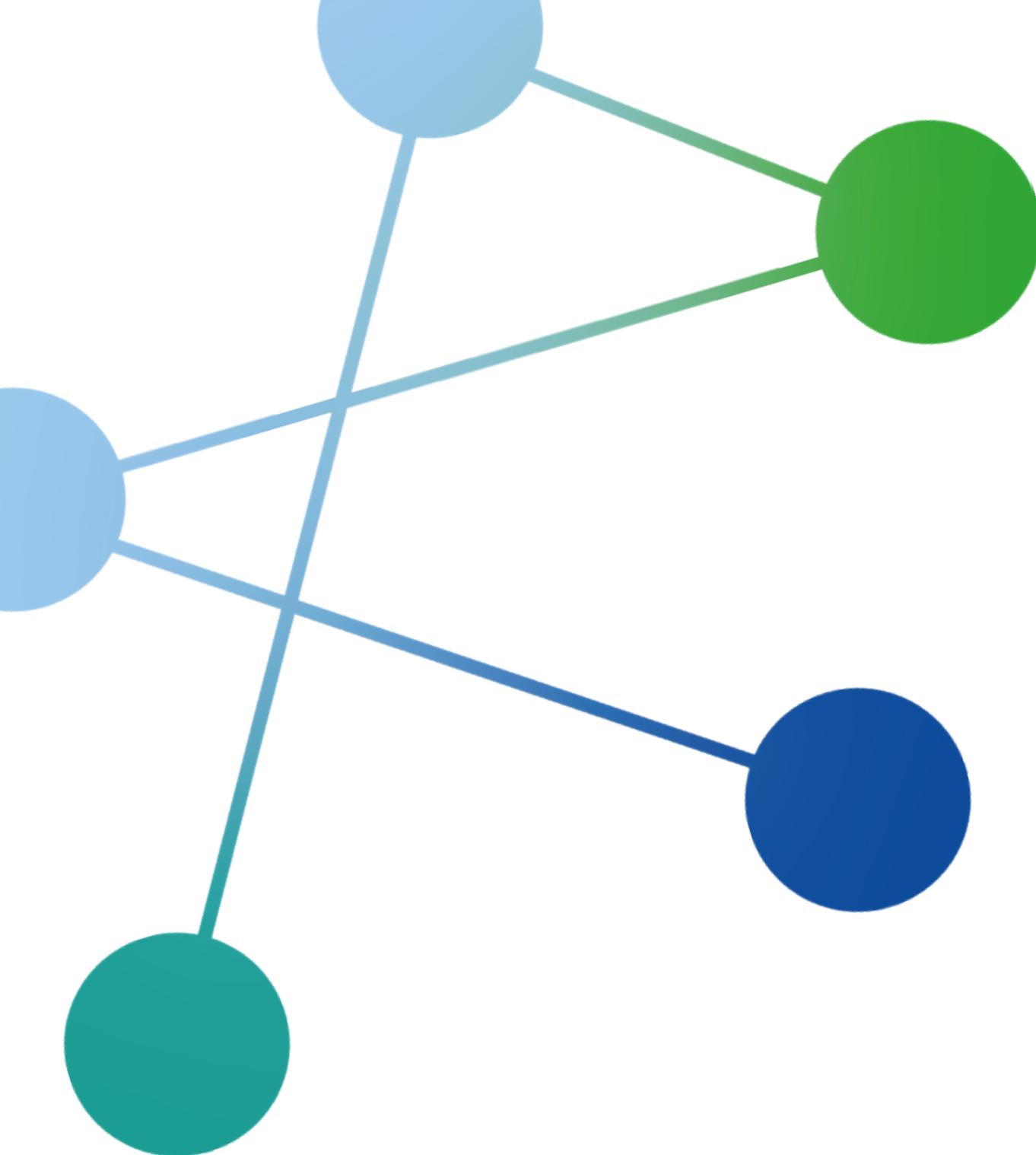
Identified gaps

- Shortage of human resources with regards to IT capacities, reporting and knowledge translation. Despite a team being in place for such tasks, the resources of HIS stakeholders were insufficient to process all the requests for reports they received.
- Due to the increase in data input during the pandemic, continuous long-lasting ICT updates became necessary to ensure proper functioning of the system.
- National reference labs became overburdened, due to the rapid increase in demand for laboratory services.
- Manual data entry was required for the recording of antigen tests, followed by manual submission to the NPHI, resulting in prolonged waiting times for data availability and introduced a heightened risk of errors during the data input phase.

Assessment performed in:
October 2022

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