PHAC DATA STRATEGY: IMPLEMENTATION PLAN

THEMES	PHASE 1: October 2019 - September 2020 (1 year)	PHASE 2: October 2020 - September 2022 (2 years)	PHASE 3: October 2022 - March 2024 (1.5 years)
DATA GOVERNANCE A data governance structure that supports the strategic and efficient management of data within PHAC and is inclusive of public health government partners	We will adopt a data governance structure to enable strategic and effective management of data across PHAC by: 1. appointing a Chief Data Officer (CDO) with clear roles and responsibilities 2. establishing an executive-level data governance model that is: - responsible to drive the implementation of the PHAC Data Strategy and to define how results will be measured in four years - principles-based and guided by Terms of Reference co-developed with all Branches and existing governance committees - co-led by the CDO and one other PHAC DG - served by the PHAC Data Hub as its "enabling arm" and secretariat	We will adopt a foundation for PHAC's data ecosystem by: 1. establishing a data priority-setting exercise, integrated with existing data priority-setting exercises, such as those with Statistics Canada and Health Canada 2. establishing a baseline cost for our data holdings and acquisitions to inform future needs, and a central funding source for future data acquisitions	We will adopt an iterative approach to ensure PHAC's governance remains impactful, relevant and effective by: 1. optimizing the data procurement process for consistency, efficiency and value 2. evaluating outcomes and impacts of the Data Strategy v1.0, consulting with staff and partners to determine successes, challenges and needs, and developing PHAC's Data Strategy v2.0
DATA AS AN ASSET A collaborative and integrated data planning, acquisition, and management cycle	We will know our PHAC data landscape and recognize opportunities to improve its interconnectivity by: 1. completing an environmental scan of our data needs, data holdings, data use - and the resulting gaps 2. completing an environmental scan of our data sharing agreements and other methods of data procurement, acquisition & dissemination 3. publishing an iterative, interactive and searchable inventory of data holdings	We will implement an integrated approach for data planning, acquisition, and management PHAC-wide by: 1. launching, implementing, and updating a "data policy suite" to manage data across the data lifecycle, aligned with the evolving data landscape to: - ensure protection of privacy and uphold legal obligations - ensure data quality and security - respect diversity and inclusion (including SGBA+) - manage risks and opportunities in the era of machine learning and artificial intelligence 2. implementing strategies and tools for interoperability of data and metadata standards, aligned with open science, such that data is usable, discoverable, and available 3. ensuring the maintenance and centralized processing for data holdings from national data providers, including sound data management and access administration 4. increasing the amount of sex and gender disaggregated data (especially for priority health issues), and encouraging F/P/T partners and G&C recipients to collect data in a gender sensitive manner and to integrate SGBA+ considerations	We will adopt a collaborative approach with our partners to enhance PHAC's data management by: 1. establishing a team to negotiate and register data sharing agreements, broker bulk data sharing approaches where feasible or where centralization has initiated, and support data acquisitions from P/Ts 2. leveraging existing structures to co-develop a collaborative governance model with partners (F/P/T, NIOs, Statistics Canada, CIHI and hospital-based networks) that supports Pan-Canadian public health data management, to address shared challenges and develop joint solutions
DATA INFRASTRUCTURE A stable, modern technical infrastructure for data collection, storage, analysis and dissemination	We will stabilize our collective foundation and define our needs for PHAC's data IT infrastructure and tools by: 1. completing the SAS migration to an expanded and stable network grid 2. introducing a new software/hardware profile with augmented tools for data users, and streamlining acquisition and deployment process for additional data analytics tools 3. establishing means to assign CS staff for data areas requiring IT expertise 4. Leveraging SSC Protected B cloud contracts and connectivity for data science pilots and projects 5. defining enterprise-wide needs for data management systems 6. developing the plan for a new technical Infrastructure for public health data, and securing sustainable funding	We will launch a secure, reliable, and interactive PHAC technical infrastructure by: 1. implementing a new enterprise-wide data management system, technical infrastructure, and tools for data collection, storage, analysis and dissemination, in an agile and iterative manner to meet security requirements of PHAC's key data providers, and aligned to the Federal Science and Technology Infrastructure Initiative	We will adopt an approach of continuous improvement to ensure PHAC has a relevant, reliable, and modern technical infrastructure in a rapidly evolving data environment, by: 1. re-evaluating the infrastructure and tools for effectiveness and implementing small and incremental changes in response to new requirements
SCIENCE-BASED ANALYTICS A broad, dedicated capability for advanced analytics and public health informatics	We will showcase and leverage PHAC's existing science-based analytics capacity by: 1. undertaking innovative data science and analytics pilot projects 2. creating job-shadowing opportunities with NML expertise to foster knowledge translation and showcase genomics and bioinformatics advancements 3. leveraging NML expertise (Public Health Risk Sciences, CNPHI, Bioinformatics) to strengthen PHAC's capacity for rapid dissemination of information	We will enhance PHAC's capacity for nimble and agile data analytics and public health informatics by: 1. launching and resourcing a cross-functional public health informatics surge team with diverse analytics expertise (epidemiology, geo-spatial analysis, genomics, predictive analytics, data science biostatistics, data privacy, economic, etc) 2. identifying and piloting new practices and software to strengthen the management of qualitative research methods and analysis 3. augmenting capability and capacity for data visualization to better support decision-making, knowledge transfer and communications with Canadians (including partners and stakeholders) 4. increasing and resourcing Agency-wide capabilities in artificial intelligence and machine learning 5. augmenting platforms and enhancing access to scientific publications to inform AI-based evidence synthesis for more robust evidence-based decision-making 6. leveraging open data sets to support open science and open government	We will maximize PHAC's data analytics capacity to support evidence-based decision-making in response to public health events and emerging health risks by: 1. leveraging the results of Phase 2 and scaling-up to establish means for real-time data analysis and sharing, especially in support of emergency response efforts
PARTNERSHIPS & COLLABORATION A dedicated network of public and private partners working together to leverage shared public health data	We will identify PHAC's data partners and understand the nature of each relationship by: 1. working with Branches to identify existing data partnerships (eg. user, funder, provider, collaborator, broker, curator, convenor, advisor, researcher, etc.) 2. identifying opportunities for new strategic data partnerships, for which data needs, gaps or synergies may exist 3. communicating the vision and intent of the PHAC Data Strategy with partners (including: F/P/T and local governments and departments, NIOs, Statistics Canada, CIHI and hospital-based networks)	We will enhance PHAC's existing partnerships and establish new ones by: 1. engaging other government departments to identify and share interoperable data 2. co-developing public health data pilot projects to better inform interventions that address social determinants of health with: a. other federal departments and other levels of government (P/T and local), especially where levers are under their purview b. academic institutions c. Public Health Chairs and National Collaborating Centres d. non-traditional and non-government data partners where internal data gaps have been identified or where there is potential to complement existing science-based analytics to support precision public health	We will create a deeper and more engaged network of data partners to support PHAC and broader public health objectives by: 1. leveraging the results of the partnerships pilots in Phase 2 and scaling-up, with a focus on supporting and developing targeted interventions for precision public health, and strategic use of grants and contribution funding opportunities
PEOPLE & CULTURE A data culture where our staff have the knowledge, tools, capacity and training to manage, interpret, use and understand data to inform public health decision-making and action	We will mobilize PHAC's data expertise and foster innovation by: 1. identifying and leveraging existing data analytics expertise through online profiles and immersive engagement opportunities 2. launching regular communication products to enhance information sharing and knowledge dissemination 3. establishing an informal network of communities of practice to facilitate learning and development of joint initiatives, including communities dedicated to: surveillance, epidemiology, data science, data management, qualitative analysis and research, external data partners, etc 4. championing use of modern collaborative tools that enable sharing of data-related best practices 5. Identifying modern data analytics tools that foster innovation, and supporting their roll-out and adoption PHAC-wide 6. developing and initiating implementation of a "data culture" strategy, to guide the change management and enable a culture that embraces experimentation and smart risk-taking	We will provide opportunities for PHAC staff to expand their understanding of data, data analytics, and digital by: 1. developing a learning roadmap for data by leveraging modern third-party web-based tools and self-directed learning, and customizable for specific audiences: epidemiologists, data analysts, database managers, program and policy, evaluation, executives, etc. 2. developing a "Data 101" onboarding package for PHAC staff with resources, tools and learning opportunities 3. building data awareness training related to privacy, ethics, information management, and program evaluation for all employees 4. expanding offerings of PHAC's "Fundamentals of Innovation" training and aligning course projects with Branch needs 5. Developing "Data and Digital" learning streams for PHAC staff, in partnership with the Digital Academy 6. launching a targeted recruitment program for data science and analytics, with rotational assignments in different complementary areas (including program analytics, laboratory science, strategic policy, program evaluation, privacy and ethics, and predictive analytics for finance and HR) 7. establishing a multi-year data science and analytics development program, with assignments across all areas of PHAC (EC03 to EC06) 8. creating partnerships with post-secondary institutions for year-round work opportunities - for students specializing in data analytics, and for PHAC staff to work closer with academia in public health and data analytics 9. leveraging user design (UX) to transform public health data into information and knowledge, in order to better support dissemination and enhance decision-making and action	We will foster a sustainable learning environment and data community in PHAC that is capable of evolving with the data and technology around it by: 1. establishing a joint group of senior-level & working-level individuals on the "Future of work" to leverage the results of Phase 2 and plan and make recommendations for future data-related HR and technology needs