

CT Academy | GoC Data Competency Framework

1.1 Data Digital and Organizational Awareness (Foundational)

1. Aware of key data and digital terms, standards, policies, documents, and communities, including: data terms, federal and departmental chief data offices' roles, federal and departmental data strategies, 2023-2026 data strategy for the federal public service, statistics act, policy on service and digital, Canada's digital ambition and digital standards
2. Understands what data are, the data life cycle (Plan, Collect, Process, Use/Share) and the many types of data that exist.
3. Understand the concept of information and terms related to data value, information and analysis.
4. Understands the value of data as a strategic asset and the importance of data literacy to your organization in supporting decision-making, research, learning and development, service delivery and measuring results.
5. Understands the roles, responsibilities, and accountability around data.
6. Knowledge of organizational data roles, policies, standards, processes and their intent.

1.2 Data Ethics (Foundational & Intermediate)

1. Is familiar with the meaning of data ethics, governance, consent, bias and discrimination, inclusiveness, fairness, accountability.
2. Understands and adheres to key ethics, privacy, legal, and security principles and standards, including: Privacy Act, Statistics Act, Policy on Government Security, Policy on Privacy Protection, Privacy Impact Assessments, Levels of Security, Gender-Based Analysis+, Tri-Council Policy Statement: Ethical Conduct for Research Involving Humans, Model Policy on Scientific Integrity, Directive on Automated Decision-Making, Disaggregated Data
3. Knows how to protect and share confidential data.
4. Understands the ethical implications of using A.I.
5. Identifies indicators of bias and ensures policy, programs, or services do not reinforce unintended biases.
6. Ensure data are used in alignment with their intended purpose by consulting with data owners or stewards.
7. Applies processes and procedures to ensure ethical approaches to research and data throughout the data life cycle.
8. Identifies ethical issues, privacy/security implications and barriers to accessibility.

1.3 Evidence-Informed Decision-Making (Foundational & Intermediate)

1. Prioritizes the use of knowledge and information gathered through data rather than simple anecdotal evidence.
2. Assists in answering and resolving business data questions.
3. Consults with appropriate authorities (e.g., subject matter experts, community leaders) to identify what is considered high-quality evidence in a given context.

4. Locates data to inform decision-making and supports assessment of their suitability. Documents when and where required data are not captured, collected, or are missing.
5. Uses data to understand users' needs and to design and develop products, programs and services that meet those needs (see Government of Canada Digital Standards: Playbook for more details).
6. Uses data and analytics to weigh the merit and impact of solutions or decisions prior to implementation.

2.1 Data Governance (Foundational & Intermediate)

1. Is familiar with data governance and data sovereignty, including First Nations Data Sovereignty, standards, directive, processes, including accessibility standards.
2. Can identify and proactively flags data issues or conflicts pertaining to data governance, stewardship.
3. Applies key policies, procedures and standards for the collection, access, and management of data.
4. Collaborates and negotiates to ensure common understanding of data manage access to data identify data privacy, security, or accessibility implications and barriers.

2.2 Data Collection (Foundational)

1. Understands the role of data collection and aware of common data collection methods and tools.
2. Identifies and uses existing data prior to collecting new data.
3. Adheres to policies, legislation, processes, and standards when collecting data (Privacy Act, Statistics Act, Departmental- or agency-specific acts on data collection, Policy on Government Security, Policy on Privacy Protection, Privacy Impact Assessments, Levels of Security, Gender-Based Analysis+, Tri-Council Policy Statement: Ethical Conduct for Research Involving Humans, Model Policy on Scientific Integrity).

2.3 Data Quality (Foundational & Intermediate)

1. Is familiar with the data quality framework and the different dimensions through which one can evaluate quality (ex: metadata definitions, standards, interpretability, coherence, relevance, accessibility, timeliness).
2. Understands the negative impact of poorly managed data on organizational operations and decision-making (covered in Evidence-Informed Decision-Making)
3. Reviews data to ensure validity, accuracy, and completeness (covered in Data Analysis)
4. Aligns with data standards to ensure and improve data quality (not covered in this course)
5. Engages directly with stakeholders and recognized authorities of data to build relationships that enhance trust within an organization, with stakeholders and with Canadians.
6. Identifies and analyzes outliers and anomalies within data and uses problem-solving approaches (e.g., Root Cause Analysis) to improve data quality (to be covered in other modules).

3.1 Asking Questions (Foundational & Intermediate)

1. Knowledge of when and how data can be used to inform a decision or not.
2. Uses critical thinking and asks questions to define the data needed, how it will be collected and how it will be used.

3. Considers the importance and use of data at the outset and not as an afterthought.
4. Frames questions around business and user needs that can be answered with the support of data.
5. Identifies pre-existing data that can be used to support or inform questions or decision-making.
6. Explores data and uses relevant frameworks to identify issues, support research or generate questions relating to practical situations.

3.2 Data Analytics (Foundational & Intermediate)

1. Familiar with basic functionality of commonly used software and can perform simple calculations, create charts and tables.
2. Can analyze data to answer simple business questions.
3. Considers the use of open source and freely available tools as compared to commercially provided.
4. Aware of the Directive on Automated Decision-Making and Algorithmic Impact Assessments.
5. Uses basic analytical methods and related tools, qualitative or quantitative, to generate insights.
6. Takes stated questions and develops an analysis plan including assessing relevant data and methods.
7. Understands various statistical methods, analyses, and related tools and when their use is appropriate.
8. Disseminates data and analytical findings openly to support other government endeavours as per the Digital Standards.
9. Recognizes and explores patterns, relationships and trends within data and across data sources to generate insights using a variety of methods.
10. Sets clear goals prior to analytical endeavours to ensure value added analyses and consults with all stakeholders to ensure data collection and analytical plans align with this value.
11. Conducts analysis using relevant data and methods for consumption across a wide range of audiences.
12. Evaluates results of analyses and compares with other findings.
13. Shares data and analytical findings openly to support other teams' work.
14. Can access and manipulates data from different sources, for example using flat files or Structured Query Language (SQL) queries.
15. Applies common analytical methods and tools to data, qualitative or quantitative, to generate insights.
16. Applies with the Directive on Automated Decision-Making, including the completion of an Algorithmic Impact Assessment, to identify, evaluate and mitigate risks associated with deploying an automated decision-making system.

3.3 Storytelling and Visualization (Foundational, Intermediate, & Advanced)

1. Presents information with accessible visuals, presentations, or stories to: help others understand a subject matter, inform a discussion report on progress, support decision-making or problem solving
2. Builds in accessibility and inclusivity in visuals and in content following best practices, such as the Government of Canada Digital Standards: Playbook.
3. Creates tables and graphical representations of data that are accurate and informative.
4. Includes correct and relevant references, labels and citations.
5. Displays holistic information, telling complete stories rather than presenting selective or incomplete evidence.
6. Ensures data presentations link directly to the original questions or line of thinking.

7. Assesses audience needs, familiarity with data and understanding of subject matter.
8. Evaluates storytelling and visualizations for accuracy and misrepresentation.
9. Communicate best data visualization practises and tools among data teams and others to avoid common mistakes and make data visualizations more effective.

3.4 Evaluating Outcomes (Foundational & Intermediate)

1. Understands the principles around evaluation and how data are used, interpreted, and applied as part of program or project monitoring, improvements or to demonstrate results.
2. Aware of basic analytical methods and techniques to measure and track the implementation or performance of a project or program.
3. Uses data for the purpose of measuring outcomes relating to policy, program implementation, legislation, regulation, decision-making and more.
4. Engages regularly with users, collecting feedback and data throughout the implementation of ideas or solutions to take into account how well they are working/performing, and utilizes the feedback to adjust course as needed (see Government of Canada Digital Standards: Playbook for more details).
5. Cross-compares results with other research and findings.
6. Retains and maintains original data and information utilized in decision-making to analyze outcomes compared to intent.
7. Collects follow-up data to assess the efficacy of decisions or solutions.
8. Identifies key takeaways from charts, tables and graphs to integrate with other information into future decision-making processes.