

# Guideline

## Data Quality

<b>Program Impacted</b>	<p>Project &amp; Asset Management <i>The City of Edmonton's projects are well managed and assets are maintained for accountable service delivery.</i></p> <p>Technology &amp; Data <i>The City of Edmonton's technology and data are leveraged to enable quality decision-making and enhance innovative service delivery.</i></p>
<b>Approved By</b>	City Clerk
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<b>Next Scheduled Review</b>	March 15, 2029

### Guideline Statement

This document provides guidance for managing the data quality of the City's data assets. The City of Edmonton recognizes data as an organizational asset as per the *A1477 Data and Information Management Administrative Policy* which states: *As a data-informed organization, the City of Edmonton will manage its data and information assets as strategic resources in an integrated manner to maximize their value in use, both internally and externally.*

This guideline falls under the *Governance* functional domain, as defined in *A1477 Data and Information Management Administrative Policy*.

### Scope

This guideline aims to establish a common understanding of data quality expectations and provide a framework for maintaining and improving data quality, enabling business areas to develop their own scope of data quality rules.

## Definitions

**Data Quality:** The degree to which data is fit-for-purpose and meets organizational needs.

**Metadata:** Metadata describes information, including but not limited to, the characteristics, context, content and structure.

**Referential Integrity:** The condition that exists when all intended references from data in one column of a table to data in another column in the same or a different table are valid. It represents constraints that govern the relationship of an occurrence of one entity to one or more occurrences of another entity.

## Guideline Description

This guideline provides direction for:

- defining key data quality dimensions relevant to the City of Edmonton,
- establishing clear guidelines and expectations for maintaining data quality,
- outlining the responsibilities associated with ensuring data quality, and
- enabling business areas to establish their own data quality policy tools according to their needs.

Benefits of good data quality include, but are not limited to:

- **Improved Decision-making:** The better the data quality, the more confidence users will have in the outputs they produce, lowering risk in the outcomes and increasing efficiency.
- **Enhanced Productivity:** Good-quality data allows staff to be more productive. Instead of spending time validating and fixing data errors, they can focus on their core mission.
- **Greater Compliance:** In situations where regulations govern work, good-quality data can help to assure compliance to necessary targets or standards.
- **Stronger Performance:** Good data allows teams to see the impact of policy changes and areas of potential improvements and considerations.
- **Robust Risk Mitigation:** Good-quality data lowers the risk of incorrect analysis leading to faulty decision-making, and reduces potential costs associated with poor quality data.

## Data Quality Dimensions

The City of Edmonton has identified six core Data Quality dimensions, aligning with industry standards<sup>1</sup>:

- **Accuracy:** The degree to which data reflects reality in correctness and precision.
- **Completeness:** The degree to which all required data is present and available for its intended use.
- **Consistency:** The degree to which data is internally non-contradictory.

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<sup>1</sup> [Data management Association International \(DAMA\)](#)

- **Timeliness:** The degree to which data is available when expected and needed for its intended use.
- **Uniqueness:** The degree to which there are no duplicate references to the same entity across the organization, expressed in either exact or similar wording.
- **Validity:** The degree to which data adheres to predefined rules, standards and constraints.

Please be aware that there is no single universally accepted list of data quality dimensions. The same data quality dimensions may have different names in different business areas; for example, the terms *accuracy* and *correctness* refer to the same dimension. Additionally, not all of the dimensions will be applicable to every data set.

### **Other Data Quality Dimensions Considerations**

It is crucial to understand and manage the six core dimensions; however, there are additional factors which can have an impact on the quality of data, even when all six core dimensions are deemed satisfactory. Other relevant data quality dimensions (including but not limited to) could be:

- **Accessibility:** The degree of effort required to discover, retrieve, process and use data.
- **Interpretability:** The degree to which data is understandable to the user and contains metadata.

### **Data Quality Dimension Metrics**

Data quality dimension metrics are standards determined by those entrusted to steward the data based on the criticality of the data, business relevance, and acceptability, as there is no one-size-fits-all solution when it comes to metrics for data quality. See the [Data Quality Template](#) for data quality dimension metrics template and examples of how to calculate the metrics.

### **Data Quality Continuous Improvement**

Data quality is an ongoing process. The following steps can be executed to help inform a continuous-improvement process for your area:

- **Identify Critical Data and Business Rules:** Identify the critical data and business rules that describe expectations about the quality characteristics of the data.
- **Perform an Initial Data Quality Assessment:** Data quality assessment involves examining data and comparing it against rules and expectations. Data subject matter experts need to evaluate findings and prioritize improvements. The goal is to gain insights for an actionable improvement strategy, starting with a small proof of concept.
- **Measure and Monitor:** Implement a data quality measurement and monitoring operation at intervals to inform data consumers about levels of quality, manage risks that may be introduced through changes to business or technical processes.

- **Manage Data Quality Issues:** Establish a process for logging, reporting data quality issues, classifying issues based on severity and tracking resolution timelines. See the [Data Quality Issue Tracker](#) as an example/template.
- **Develop Data Quality Reporting:** Regularly report data quality metrics to interested parties showing error rates by business areas, time-to-resolution for data issues and progress on data quality goals.

### **Roles and Responsibilities**

Maintaining data quality is a shared responsibility by all employees across the organization and those entrusted to those who steward the data. Ultimately, business areas are responsible for their own data.

### **References and Supporting Resources**

- [A1477 Data and Information Management Administrative Policy](#)
- [Digital Record Naming Convention Guideline](#)
- [Government of Canada Guidance on Data Quality](#)
- [DAMA - Data Management Body Of Knowledge\(DMBOK\)](#)
- [Data Quality Template](#)
- [Data Quality Issue Tracker](#)