

# Check Status Definitions

Dmitry Ilyn, Maxim Moinat

2025-12-21

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### 0.1 Introduction

In the DataQualityDashboard v2, new check statuses were introduced: `Error` and `Not Applicable`. These were introduced to more accurately reflect the quality of data contained in a CDM instance, addressing scenarios where pass/fail is not appropriate. The new set of mutually exclusive status states are listed below in priority order:

- **Is Error:** if a SQL error occurred during execution
- **Not Applicable:** if DQ check is not applicable for reasons explained in the section below
- **Failed:** if percent violating rows is greater than the threshold
- **Passed:** if percent violating rows is smaller than the threshold

### 0.2 Not Applicable

The results of a DQ check may not be applicable to a given CDM instance depending on the implementation and content of the instance. For example, the DQ check for plausible values of HbA1c lab results would pass with no violations even if there were no results for that lab test in the database. It is not uncommon to have > 1000 DQ checks that do not apply to a given CDM instance. The results from DQ checks that are not applicable skew to overall results. Listed below are the scenarios for which a DQ check result is flagged as `notApplicable`:

1. If the `cdmTable` DQ check determines that a table does not exist in the database, then all DQ checks (except `cdm_table`) addressing that table are flagged as `notApplicable`
2. If a table exists but is empty, then all field level and concept level checks for that table are flagged as `notApplicable`, except for `cdmField` checks, which evaluates if the field is defined or not. A `cdmField` check is marked as `notApplicable` if the CDM table it refers to does not exist (tested by `cdmTable`). An empty table is detected when the `measureValueCompleteness` DQ check for any of the fields in the table returns a denominator count = 0 (`numDenominatorRows=0`).
3. If a field is not populated, then all field level and concept level checks except for `measureValueCompleteness` and `isRequired` are flagged as `notApplicable`
  - a. A field is not populated if the `measureValueCompleteness` DQ check finds denominator count > 0 and number of violated rows = denominator count (`numDenominatorRows > 0 AND numDenominatorRows = numViolatedRows`).
  - b. The `measureValueCompleteness` check is marked as `notApplicable` if:

- a. The CDM table it refers to does not exist or is empty.
  - b. The CDM field it refers to does not exist.
  - c. The isRequired check is marked as not applicable if:
    - a. The CDM table it refers to does not exist or is empty.
    - b. The CDM field it refers to does not exist.
4. Flagging a Concept\_ID level DQ check as notApplicable depends on whether the DQ check logic includes a UNIT\_CONCEPT\_ID. There are two scenarios for DQ checks evaluating specific Concept\_ids.
- a. The DQ check does not include a UNIT\_CONCEPT\_ID (value is null). A DQ check is flagged as notApplicable if there are no instances of the Concept\_ID in the table/field. E.g. plausibility checks for specific conditions and gender. Both pregnancy and male do not have UNIT\_CONCEPT\_IDS.
  - b. The DQ check includes a UNIT\_CONCEPT\_ID. A DQ check is flagged as notApplicable if there are no instances of both concept and unit concept IDs in the table/field. E.g. all DQ checks referencing the concept\_ID for HbA1c lab results expressed in mg/dl units will be flagged as notApplicable if there are no instances of that concept\_ID in the table/field addressed by the DQ check.