Metadata explained

Exported from METEOR (AIHW's Metadata Online Registry)

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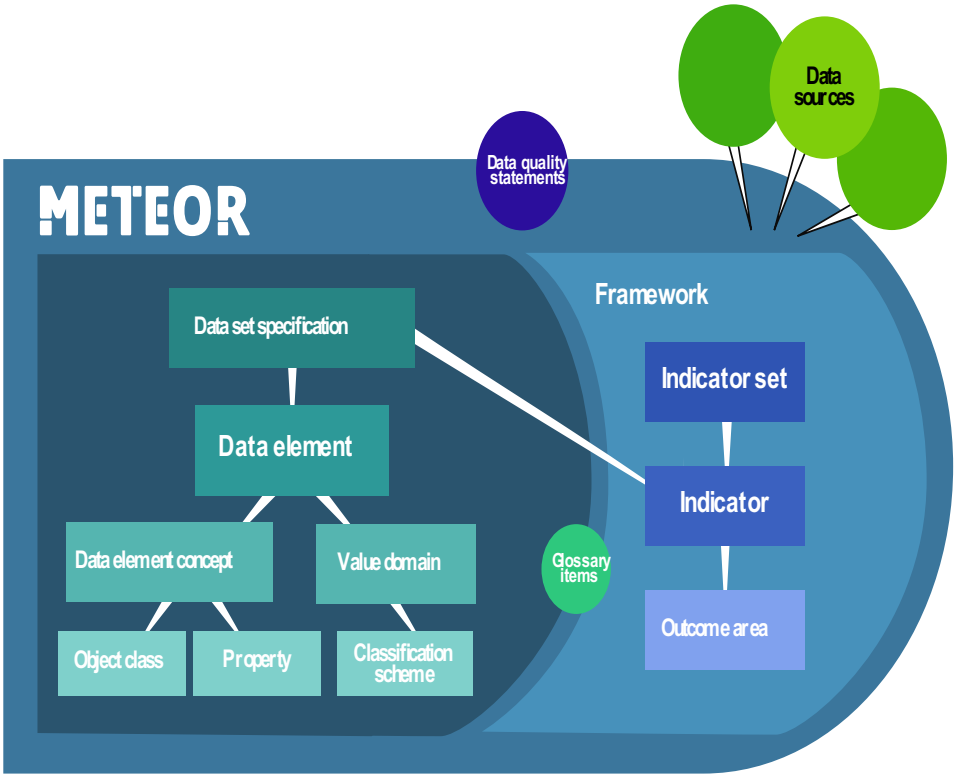
Metadata explained



At the AIHW we collect and manage data from a wide range of sources. However, we can't analyse or understand it without metadata.

METEOR is the AIHW's centralised metadata repository. There are different types of metadata that support the interpretation and reporting of data in a wide range of ways. In the diagram above you can see the relationships between all the different metadata elements and other information housed in METEOR.

On this page you will find information about what metadata is and how it is used.

The what and why of metadata

Metadata is the information about how the data are defined, collected and structured. It provides meaning and context, and helps with interpreting the data.

For example, the data value 17 is meaningless by itself. Is it a street number, a clinical measurement, a test result, the number of services provided, or something else?

When a data value such as 17 is associated with a specific metadata item (e.g. Person—tobacco smoking start age, total years N[NN]), its meaning becomes clear. Now we know it's the age that someone started smoking, in years – and that this particular person started smoking when they were 17.

Once we add information (metadata) about the unit of measurement (e.g. years), what the data relates to (e.g. a person), and what it is measuring (e.g. their age when they started smoking), we get a more useful data value. All these things – the units of measurement, what the data relates to, what it is measuring – are metadata.

Types of metadata in METEOR

You will find two types of metadata in METEOR: metadata items and navigational items.

Metadata items: METEOR has eight main types of metadata. They are based on the AIHW's interpretation of the ISO/IEC 11179 standards .

- **Data set specification**: a group of data elements for collection, e.g. Diabetes (clinical) NBPDS (National Best Practice Data Set)
- **Data element**: combination of a data element concept and a value domain, e.g. Person—diabetes mellitus status, code NN
- **Data element concept**: combination of an object class and a property, e.g. Person—diabetes mellitus status

- **Object class**: a person, organisation, group or event, e.g. Person, Health industry relevant organisation, Indigenous community, Emergency department stay
- **Property**: a characteristic of an object class, e.g. Diabetes mellitus status
- **Value domain**: a set of allowed values, e.g. Diabetes mellitus status code NN
- **Classification scheme**: an official terminology system, used in some value domains e.g. Australian Refined Diagnosis Related Groups version 6
- **Glossary item**: definition of a term e.g. Gestational diabetes mellitus

The sources of data and the quality of this data are also important to understand:

- **Data quality statements**: a statement attesting to the quality and suitability of the collected data e.g. Adoptions Australia 2019–20; Quality Statement
- **Data sources**: Raw data are collected by various jurisdictions, organisations and research groups, which are analysed, and used in indicators to provide information and statistics about the state of health and welfare in Australia. The Australian Census is an example of a data source.

Indicator items: METEOR includes the following metadata items which aid in the analysis of data:

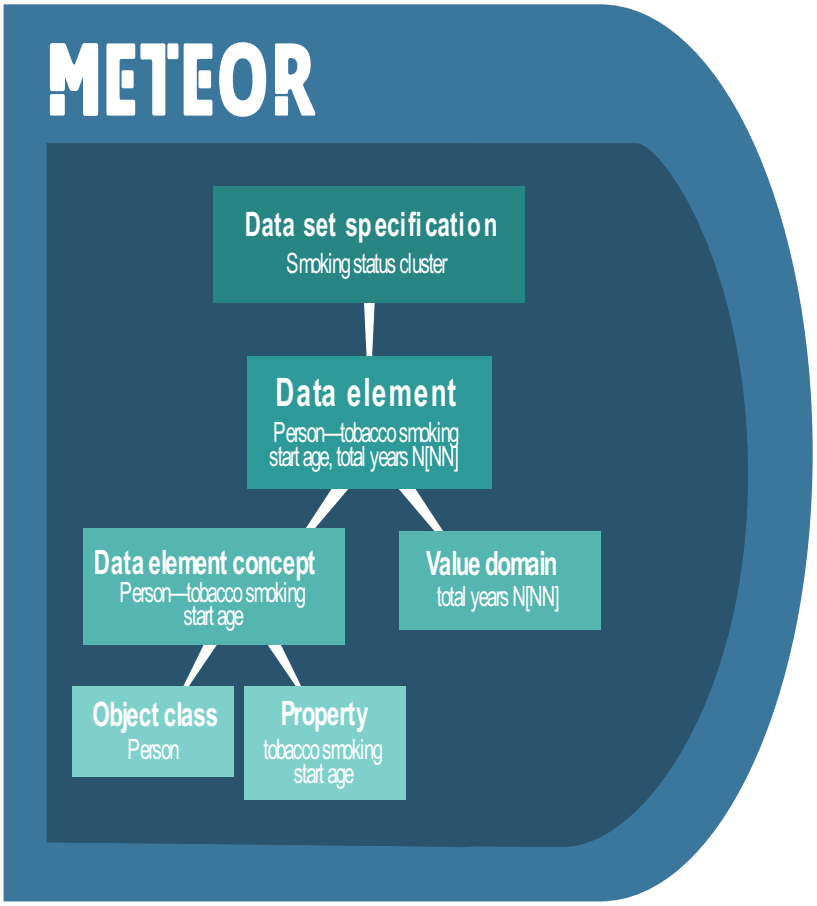
- **Framework**: a general grouping of indicators associated with broader topics
- **Indicator**: used to analyse the data with simple fractions, percentages, or complex formulae
- **Indicator set**: a group of indicators combined to provide analysis on a broader topic
- **Outcome area**: a statement defining the goal of the indicator, such as a government policy

Navigational items are added to METEOR by the Registrars to make the navigation and management of metadata items easier and more meaningful. Navigational items are not part of the official standards. There are two navigational items currently used in METEOR:

- **Property group**: a group of properties with similar characteristics e.g. Accommodation/living characteristics includes the properties Co-residency status, Homeless status, and Number of occupants
- **Object class specialisation**: a group of object class sub-types of object classes e.g. Person/group of persons includes the object classes Birth mother, Hospital patient, Prison entrant, and Medical graduate trainee

Metadata development

Different metadata types are constructed in different ways. The figure and text below provide an example of the construction of a data element.



The **object class** is Person, the **property** is Tobacco smoking start age, and the **value domain** is total years N[NN]. The object class and property combine to give the **data element concept** Person—tobacco smoking start age. Combining the data element concept with the value domain leads to the complete **data element** Person—tobacco smoking start age, total years N[NN]. And this data element is then used as part of the **data set specification** Smoking status cluster, which collects a group of related data elements together.

You can also see that the data element presents you with what are effectively instructions on how to phrase a survey question to collect this data. In this case, the question on a form could possibly be written as:

How old were you when you started smoking? ____ (in years)

Metadata standards

To be useful, everyone using metadata needs to use the same language, spelling, and formats, so the data collected by one group can be directly and accurately compared with the data collected by another. If they're different, they can't be compared or collated for national statistics or analysis. For example, if one jurisdiction defines 'young adults' as people aged between 20 and 25, but another defines them as people aged between 18 and 22, you can see that any data they each collect about 'young adults' can't be compared with each other because the age groups aren't the same.

This is why metadata standards are developed. They ensure that everyone is using the same formats for their metadata.

Metadata that have been endorsed for use across Australia are referred to as metadata standards. They go through a series of steps from being first proposed by expert groups, to being reviewed, edited and eventually approved as the current standard. This process is guided by the metadata experts at AIHW. You can read more about the approval system over at the registration authorities page.

METEOR is based on the international information modelling standard ISO/IEC 11179 .